

# OPTIDRIVE™

## Stock Drives Catalogue

Variable Speed Drives  
& Accessories





UK Headquarters, Welshpool

## Inverter Drives

**Inverter Drives** is dedicated to the design and manufacture of sophisticated electronic variable speed drives, used to control motors in a wide variety of industrial and energy saving applications.



## The Organisation

State of the art UK headquarters house specialist facilities for innovation, manufacturing and global marketing.

The company pledges to implement and operate the ISO 14001 Environmental Management System to enhance environmental performance.

All operations, including innovation, are accredited to the exacting customer focused ISO 9001 quality standard.

The company's products are sold globally by a network of specialist distributors in over 80 different countries. Inverter Drives' unique and innovative Optidrive range is designed for ease of use and meets recognised international design standards for CE (Europe), UL (USA) and RCM (Australia).

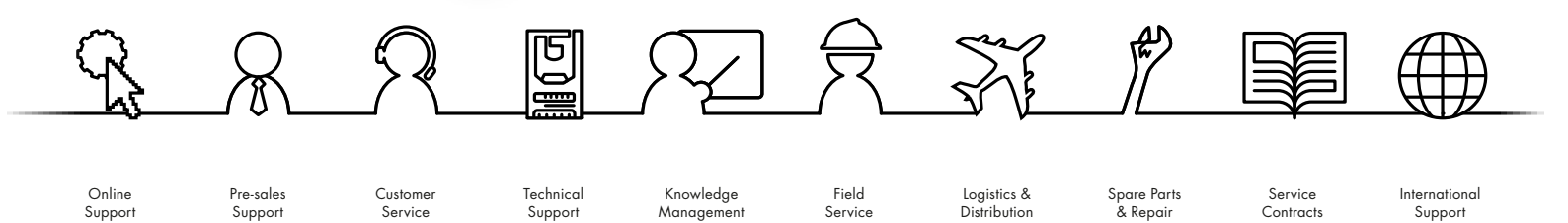


## Innovative Products

- Easy to use variable speed drives
- Incredible performance
- Robust & reliable
- Low cost of installation & ownership
- Wide power range  
0.37–250kW, 115V–600V



# Company Overview



- Conveyors
- HVAC
- Machine Tools



- Manufacturing
- Pumping
- Process Control



- Elevators
- Cranes



# OPTIDRIVE™

## AC Variable Speed Drives



P2

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### Page AC Variable Speed Drives

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### Options

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Easy to use,  
reliable products  
with incredible  
performance

Global service and  
support network  
leading edge design  
& technology



Member of Sumitomo Drive Technologies



|                       |                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor Types           | 3 Phase Induction Motor (IM)<br>Permanent Magnet AC Motor (PM)<br>Brushless DC Motor (BLDC)<br>Synchronous Reluctance Motor (SynRM) |                                                                                                                                                                                                                                                                                                       |
| Typical Applications  | General Industrial<br>Fans<br>Pumps<br>Crane & Hoist                                                                                |                                                                                                                                                                                                                                                                                                       |
| Input Ratings         | Supply Voltage                                                                                                                      | 200 – 240 Volts $\pm$ 10%<br>380 – 480 Volts $\pm$ 10%<br>500 – 600 Volts $\pm$ 10%                                                                                                                                                                                                                   |
| Output Ratings        | Output Power                                                                                                                        | 230 Volt 1 Phase Input : Up to 10.5A / 2.2kW / 3HP<br>230 Volt 3 Phase Input : Up to 248A / 75kW / 100HP<br>400 Volt 3 Phase Input : Up to 480A / 250kW / 400HP<br>460 Volt 3 Phase Input : Up to 480A / 250kW / 400HP<br>575 Volt 3 Phase Input : Up to 150A / 110kW / 150HP                         |
|                       | Overload Capacity                                                                                                                   | 150% for 60 Seconds<br>200% for 4 seconds                                                                                                                                                                                                                                                             |
| Ambient Conditions    | Temperature                                                                                                                         | -10 – 50°C                                                                                                                                                                                                                                                                                            |
|                       | Humidity                                                                                                                            | 95% Max, non condensing                                                                                                                                                                                                                                                                               |
| Enclosure             | Ingress Protection                                                                                                                  | IP20, IP55, IP66                                                                                                                                                                                                                                                                                      |
|                       | Keypad                                                                                                                              | Built-in Keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                                                                       |
|                       | Display                                                                                                                             | Built-in multi language text display                                                                                                                                                                                                                                                                  |
| Control Specification | Control Method                                                                                                                      | V/F Control<br>Energy Optimised V/F<br>3GV Sensorless Vector Speed Control<br>3GV Sensorless Vector Torque Control<br>Closed Loop (Encoder) Speed Control<br>Closed Loop (Encoder) Torque Control<br>PM Vector Control<br>BLDC Control<br>Synchronous Reluctance Motor Control                        |
|                       | PWM Frequency                                                                                                                       | 4 – 32kHz Effective                                                                                                                                                                                                                                                                                   |
|                       | Braking                                                                                                                             | Motor Flux Braking<br>Built-in Braking Transistor                                                                                                                                                                                                                                                     |
|                       | Setpoint Control                                                                                                                    | Analog Signal<br>0 to 10 Volts<br>10 to 0 Volts<br>-10 to + 10 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4 mA<br>Digital<br>Motorised Potentiometer (Keypad)<br>Modbus RTU<br>CANopen<br>Other<br>PROFIBUS DP (DPV1)<br>PROFINET IO<br>DeviceNet<br>EtherNet/IP<br>EtherCat<br>Modbus TCP |
| Fieldbus Connectivity | Built In                                                                                                                            | CANopen<br>125 – 1000kbps<br>Modbus RTU<br>9.6 – 115.2 kbps selectable<br>8N1, 8N2, 8E1, 8O1                                                                                                                                                                                                          |
|                       | Optional                                                                                                                            |                                                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|                       |                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
| I/O Specification     | Programmable Inputs                                                                                                                 | 5 Total as standard (Optional additional 3)<br>3 Digital (Optional additional 3)<br>2 Analog / Digital Selectable<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms                                                                                                               |
|                       | Digital Inputs                                                                                                                      | Resolution : 12 bits<br>Response time : < 4ms<br>Accuracy : <1% full scale<br>Parameter adjustable scaling and offset                                                                                                                                                                                 |
|                       | Analog Inputs                                                                                                                       | 4 Total (Optional additional 3)<br>2 Analog / Digital<br>2 Relays (Optional additional 3)                                                                                                                                                                                                             |
|                       | Programmable Outputs                                                                                                                | Maximum Voltage : 250 VAC, 30 VDC<br>Switching Current Capacity : 6A AC, 5A DC                                                                                                                                                                                                                        |
|                       | Relay Outputs                                                                                                                       | 0 to 10 Volt<br>0 to 20mA<br>4 to 20mA                                                                                                                                                                                                                                                                |
|                       | Analog Outputs                                                                                                                      |                                                                                                                                                                                                                                                                                                       |
| Application Features  | PI(D) Control                                                                                                                       | Internal PID Controller<br>Multi Setpoint Select<br>Standby / Sleep Mode<br>Boost Function                                                                                                                                                                                                            |
|                       | Fire Mode                                                                                                                           |                                                                                                                                                                                                                                                                                                       |
|                       | Load Monitoring                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|                       | Duty / Assist / Standby                                                                                                             |                                                                                                                                                                                                                                                                                                       |
|                       | Hoist Mode                                                                                                                          | Dedicated Hoist Mode<br>Motor Holding Brake Pre-Torque & Control<br>Over Limit Protection                                                                                                                                                                                                             |
|                       | Pump Blockage Detection                                                                                                             |                                                                                                                                                                                                                                                                                                       |
|                       | Pump Cleaning                                                                                                                       |                                                                                                                                                                                                                                                                                                       |
|                       | Multi-pump control                                                                                                                  |                                                                                                                                                                                                                                                                                                       |
|                       | Pump Stir                                                                                                                           |                                                                                                                                                                                                                                                                                                       |



## E3 (3ph Out)

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## E3 (1ph Out)

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## Eco

Pages 14–19

|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                  |                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 3 Phase Induction Motor (IM)<br>Permanent Magnet AC Motor (PM)<br>Brushless DC Motor (BLDC)<br>Synchronous Reluctance Motor (SynRM)                                                                                                                                   |                                                                                     | Single Phase AC Motor<br>Permanent Split Capacitor (PSC)<br>Shaded Pole                                                                                                                                                                               |                                                                                     | 3 Phase Induction Motor (IM)<br>Permanent Magnet AC Motor (PM)<br>Brushless DC Motor (BLDC)<br>Synchronous Reluctance Motor (SynRM)                                                                                                                                                                              |                                                                                                          |
| General Industrial Fans Pumps                                                                                                                                                                                                                                         |                                                                                     | General Industrial Fans Pumps                                                                                                                                                                                                                         |                                                                                     | Fans Pumps                                                                                                                                                                                                                                                                                                       |                                                                                                          |
| 110 – 115 Volts ± 10%<br>200 – 240 Volts ± 10%<br>380 – 480 Volts ± 10%                                                                                                                                                                                               |                                                                                     | 110 – 115 Volts ± 10%<br>200 – 240 Volts ± 10%                                                                                                                                                                                                        |                                                                                     | 200 – 240 Volts ± 10%<br>380 – 480 Volts ± 10%<br>500 – 600 Volts ± 10%                                                                                                                                                                                                                                          |                                                                                                          |
| 110 Volt 1 Phase Input : Up to 5.8A / 1.1kW / 1.5HP<br>230 Volt 1 Phase Input : Up to 15.3A / 4kW / 5HP<br>230 Volt 3 Phase Input : Up to 18A / 18.5kW / 25HP<br>400 Volt 3 Phase Input : Up to 46A / 37kW / 50HP<br>460 Volt 3 Phase Input : Up to 46A / 37kW / 50HP |                                                                                     | 110 Volt 1 Phase Input : Up to 10.5A / 0.55kW / 0.75HP<br>230 Volt 1 Phase Input : Up to 10.5A / 1.1kW / 1.5HP                                                                                                                                        |                                                                                     | 230 Volt 1 Phase Input : Up to 10.5A / 2.2kW / 3HP<br>230 Volt 3 Phase Input : Up to 248A / 75kW / 100HP<br>400 Volt 3 Phase Input : Up to 480A / 250kW / 400HP<br>460 Volt 3 Phase Input : Up to 480A / 250kW / 400HP<br>575 Volt 3 Phase Input : Up to 150A / 110kW / 150HP                                    |                                                                                                          |
| 150% for 60 Seconds<br>175% for 2.5 seconds<br>-20 – 50°C                                                                                                                                                                                                             |                                                                                     | 150% for 60 Seconds<br>175% for 2.5 seconds<br>-20 – 50°C                                                                                                                                                                                             |                                                                                     | 110% for 60 seconds<br>150% for 15 seconds<br>-10 – 50°C                                                                                                                                                                                                                                                         |                                                                                                          |
| 95% Max, non condensing<br>IP20, IP66                                                                                                                                                                                                                                 |                                                                                     | 95% Max, non condensing<br>IP20, IP66                                                                                                                                                                                                                 |                                                                                     | 95% Max, non condensing<br>IP20, IP55, IP66                                                                                                                                                                                                                                                                      |                                                                                                          |
| Built-in Keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                                       |                                                                                     | Built-in Keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                       |                                                                                     | Built-in Keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                                                                                  |                                                                                                          |
| 7 Segment LED                                                                                                                                                                                                                                                         |                                                                                     | 7 Segment LED                                                                                                                                                                                                                                         |                                                                                     | Built-in multi language text display                                                                                                                                                                                                                                                                             |                                                                                                          |
| V/F Control<br>Energy Optimised V/F<br>Sensorless Vector Speed Control<br>PM Vector Control<br>BLDC Control<br>Synchronous Reluctance Motor Control                                                                                                                   |                                                                                     | V/F Voltage Vector<br>Energy Optimised V/F                                                                                                                                                                                                            |                                                                                     | Eco Sensorless Vector Control<br>Open Loop Permanent Magnet Vector<br>Open Loop BLDC Vector<br>Open Loop Synchronous Reluctance Vector                                                                                                                                                                           |                                                                                                          |
| 4 – 32kHz Effective                                                                                                                                                                                                                                                   |                                                                                     | 4 – 32kHz Effective                                                                                                                                                                                                                                   |                                                                                     | 4 - 32kHz Effective                                                                                                                                                                                                                                                                                              |                                                                                                          |
| Motor Flux Braking                                                                                                                                                                                                                                                    |                                                                                     | Motor Flux Braking                                                                                                                                                                                                                                    |                                                                                     | Motor Flux Braking                                                                                                                                                                                                                                                                                               |                                                                                                          |
| Built-in Braking Transistor (Not Frame Size 1)                                                                                                                                                                                                                        |                                                                                     | Built-in Braking Transistor (Frame Size 2)                                                                                                                                                                                                            |                                                                                     |                                                                                                                                                                                                                                                                                                                  |                                                                                                          |
| Analog Signal                                                                                                                                                                                                                                                         | 0 to 10 Volts<br>10 to 0 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4 mA | Analog Signal                                                                                                                                                                                                                                         | 0 to 10 Volts<br>10 to 0 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4 mA | Analog Signal                                                                                                                                                                                                                                                                                                    | 0 to 10 Volts<br>10 to 0 Volts<br>-10 to + 10 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4 mA |
| Digital                                                                                                                                                                                                                                                               | Motorised Potentiometer (Keypad)<br>Modbus RTU<br>CANopen                           | Digital                                                                                                                                                                                                                                               | Motorised Potentiometer (Keypad)<br>Modbus RTU<br>CANopen                           | Digital                                                                                                                                                                                                                                                                                                          | Motorised Potentiometer (Keypad)<br>Modbus RTU<br>BACnet MS/TP                                           |
| CANopen                                                                                                                                                                                                                                                               | 125 – 1000kbps                                                                      | CANopen                                                                                                                                                                                                                                               | 125 – 1000kbps                                                                      | BACnet MS/ TP                                                                                                                                                                                                                                                                                                    | BACnet Application Specific Controller<br>9.6 – 76.8 kbps selectable<br>Data Format : 8N1, 8N2, 8E1, 8O1 |
| Modbus RTU                                                                                                                                                                                                                                                            | 9.6 – 115.2 kbps selectable                                                         | Modbus RTU                                                                                                                                                                                                                                            | 9.6 – 115.2 kbps selectable                                                         | Modbus RTU                                                                                                                                                                                                                                                                                                       | 9.6 – 115.2 kbps selectable<br>8N1, 8N2, 8E1, 8O1                                                        |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | BACnet/IP                                                                                                                                                                                                                                                                                                        | Plug-in BACnet/IP Interface<br>Dual LAN Ports<br>Device Level Ring                                       |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Other                                                                                                                                                                                                                                                                                                            | PROFIBUS DP (DPV1)<br>PROFINET IO<br>DeviceNet<br>EtherNet/IP<br>EtherCat<br>Modbus TCP                  |
| 4 Total<br>2 Digital<br>2 Analog / Digital Selectable<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms<br>Resolution : 12 bits<br>Response time : < 4ms<br>Accuracy : ± 2% full scale<br>Parameter adjustable scaling and offset                 |                                                                                     | 4 Total<br>2 Digital<br>2 Analog / Digital Selectable<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms<br>Resolution : 12 bits<br>Response time : < 4ms<br>Accuracy : ± 2% full scale<br>Parameter adjustable scaling and offset |                                                                                     | 5 Total as standard (Optional additional 3)<br>3 Digital (Optional additional 3)<br>2 Analog / Digital Selectable<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms<br>Resolution : 12 bits<br>Response time : < 4ms<br>Accuracy : <1% full scale<br>Parameter adjustable scaling and offset |                                                                                                          |
| 2 Total<br>1 Analog / Digital<br>1 Relay                                                                                                                                                                                                                              |                                                                                     | 2 Total<br>1 Analog / Digital<br>1 Relay                                                                                                                                                                                                              |                                                                                     | 4 Total (Optional additional 3)<br>2 Analog / Digital<br>2 Relays (Optional additional 3)                                                                                                                                                                                                                        |                                                                                                          |
| Maximum Voltage : 250 VAC, 30 VDC<br>Switching Current Capacity : 6A AC, 5A DC                                                                                                                                                                                        |                                                                                     | Maximum Voltage : 250 VAC, 30 VDC<br>Switching Current Capacity : 6A AC, 5A DC                                                                                                                                                                        |                                                                                     | Maximum Voltage : 250 VAC, 30 VDC<br>Switching Current Capacity : 6A AC, 5A DC                                                                                                                                                                                                                                   |                                                                                                          |
| 0 to 10 Volt                                                                                                                                                                                                                                                          |                                                                                     | 0 to 10 Volt                                                                                                                                                                                                                                          |                                                                                     | 0 to 10 Volt<br>0 to 20mA<br>4 to 20mA                                                                                                                                                                                                                                                                           |                                                                                                          |
| Internal PI Controller Standby / Sleep Function                                                                                                                                                                                                                       |                                                                                     | Internal PI Controller Standby / Sleep Function                                                                                                                                                                                                       |                                                                                     | Internal PID Controller<br>Multi Setpoint Select<br>Standby / Sleep Mode<br>Boost Function                                                                                                                                                                                                                       |                                                                                                          |
| Bidirectional Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)                                                                                                                                                                                             |                                                                                     | Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)                                                                                                                                                                                           |                                                                                     | Bidirectional<br>Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)                                                                                                                                                                                                                                     |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Over Torque Protection (Fan / Pump Blocked)<br>Under Torque Protection (Broken Belt / Shaft)<br>Pump Blockage Detection with Cleaning                                                                                                                                                                            |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Built-in Multi Pump Support<br>Automatic Changeover on Fault<br>Automatic Changeover on Run Time<br>Fully Redundant                                                                                                                                                                                              |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                  |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Pump load monitoring with autotune function, user configurable                                                                                                                                                                                                                                                   |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Adjustable Bidirectional Pump Cleaning Cycle operation                                                                                                                                                                                                                                                           |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Control of fixed speed assist pumps (with cascade control module)                                                                                                                                                                                                                                                |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Control of Duty, Assist and Standby variable speed pumps via internal Master – Slave network                                                                                                                                                                                                                     |                                                                                                          |
|                                                                                                                                                                                                                                                                       |                                                                                     |                                                                                                                                                                                                                                                       |                                                                                     | Automatic pump stir function                                                                                                                                                                                                                                                                                     |                                                                                                          |

## World Leading Motor Control

Controlling the latest generation of permanent magnet motors and standard induction motors

Optidrive P2 offers the perfect combination of high performance together with ease of use to allow even the most demanding applications to be tackled easily.

- Low ambient operation (–10°C)
- Dedicated Hoist Mode
- CAN and Modbus RTU communication as standard

### High Performance

#### Sensorless Vector Control

Up to 200% torque from zero speed ensures reliable starting and accurate speed control under all load conditions.

#### PM Motor Control

Future proof. Allows upgrade to the latest generation of high efficiency permanent magnet motors.

#### I/O & Communications

Optidrive P2 supports a wide range of interfaces to machine control systems.

### Low Cost Installation

#### Built-in EMC Filter

An internal filter in every Optidrive P2 saves cost and time for installation.

#### Integral Brake Transistor

Saves space, cost and time for installation.



**IP55 / NEMA 12**

Up to 250kW



**IP66 / NEMA 4X**

Up to 22kW

### Powerful PC based commissioning software

## OptiTools Studio

OptiTools Studio allows parameter upload, download and storage and access to Optidrive P2 Simple PLC functionality.

See Page 24

### OPTISTICK Smart

OPT-3-STICK-IN



NFC

Bluetooth®

- Allows copying, backup and restore of drive parameters
- Provides Bluetooth interface to a PC running OptiTools Studio or the OptiTools Mobile app on a smartphone
- Onboard NFC (Near Field Communication) for rapid data transfer

Manufacturing Conveyor Systems Processing Plants Chemical  
Pumping Machine Tools Plastics Rubber Elevators Cranes

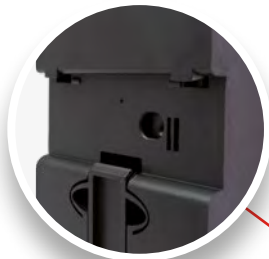
150% overload for 60 seconds  
200% overload for 4 seconds  
Industrial heavy duty rating for every model

Multi Language  
Text Display

DIN Rail Mount  
(IP20)

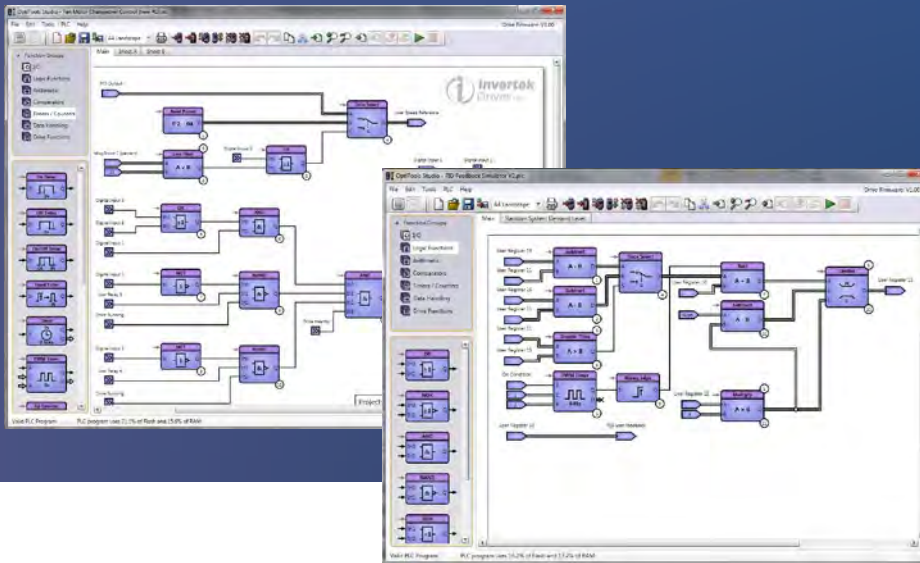
Pluggable Terminals

High Quality  
Long-life Fans



# High Performance | Easy to Use

## Simple PLC Functionality



A wide range of function types available including:

- Programmable Logic Functions
- Comparators
- Timers
- Mathematical Functions
- Drive specific functions

All blocks can be easily combined to create flexible programs.

Programs can be protected to prevent unauthorised copying.

Complete control over the drive including all inputs and outputs.

## Safe Torque Off (provided as standard)

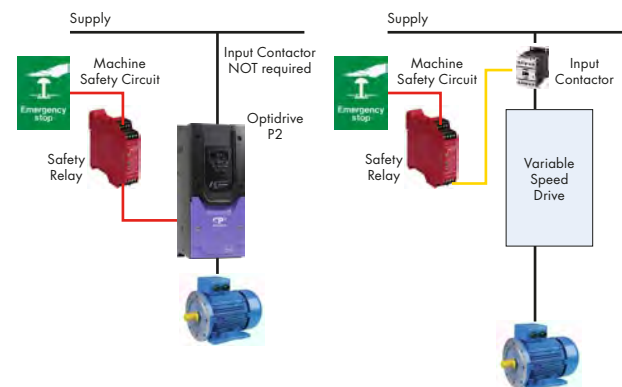
Optidrive P2 features a safe torque off function to allow simple integration into machine critical safety circuits.

- Simple machine design reduces component costs, saves panel space and minimises installation time
- Faster shut down and reset procedures reduce system maintenance time
- Better safety standard compared to mechanical solution
- Better motor connection. Single cable with no interruption.



## With

## Without




**IP20**

Up to 250kW


**IP55**

Up to 250kW


**IP66**

Up to 22kW

## Advanced Motor Control

Optidrive P2 has been uniquely developed to allow a wide range of different motor types to be used, with only parameter changes being required. This technology allows the same drive to be used in a wide range of applications, allowing OEMs and end user alike to take advantage of the energy saving provided by using the latest motor technologies.

### AC Induction Motors

The majority of AC motors in use today around the world are standard induction motors. These motors are relatively low cost, readily available and provide good performance with long service life. With the ever increasing focus on energy efficiency, motor manufacturers have refined and improved their designs in recent years.

Optidrive P2 has been developed to provide optimum control and maximum efficiency when operating with older motors designs, or newer high efficiency designs.

Operation can be in simple V/F control mode or in High Performance Third Generation Vector Mode, which provides up to 200% torque from zero speed without requiring an encoder.

### Permanent Magnet AC Motors

Permanent magnet AC motors provide improved efficiency compared to standard induction motors. Using permanent magnets in the motor construction eliminates the need for any magnetising current, reducing electrical losses. PM motors have been used for many years in high performance applications, however this has always required the use of a feedback device, such as a resolver or encoder. Optidrive P2 has been designed to operate with AC PM motors without requiring any feedback device, allowing them to be used for their energy efficiency benefits without incurring extra cost and complexity in applications which do not require position feedback.

### Brushless DC Motors

BLDC motors are similar to AC PM motors, however the design requires a slightly different control method to optimise the performance. Optidrive P2 has the flexibility to control this type of motor, requiring only simple parameter changes. This provides much greater flexibility for OEMs, allowing Optidrive P2 to be used in a variety of applications, with various motor types.

### Synchronous Reluctance Motors

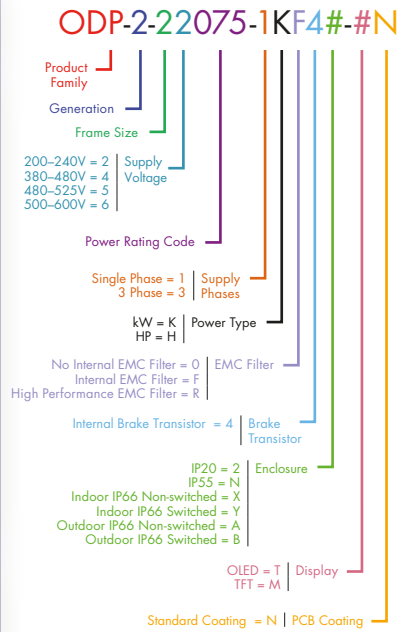
Synchronous Reluctance Motors (SynRM), not to be confused with Switched Reluctance Motors, share a similar stator construction to standard induction motors, however the rotor is substantially different, in order to improve the overall efficiency of the motor. SynRM motors are ideally suited to variable torque applications.

Optidrive P2 can control synchronous reluctance motors, allowing the energy saving benefits to be realised.

Replace # in model code with enclosure/display option

|                                 | kW   | Amps | Frame Size | Product Family          | Generation | Frame Size | Voltage Code | Power Rating Code | Supply Phases | Power Type | EMC Filter | Brake Transistor | IP20 Cabinet Mount | IP55 TFT Display | Indoor IP66 Non Switched | Indoor IP66 Switched | Outdoor IP66 Non Switched | Outdoor IP66 Switched |
|---------------------------------|------|------|------------|-------------------------|------------|------------|--------------|-------------------|---------------|------------|------------|------------------|--------------------|------------------|--------------------------|----------------------|---------------------------|-----------------------|
| 200–240V ± 10%<br>1 Phase Input | 0.75 | 4.3  | 2          | ODP - 2 - 2 2 075 - 1 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 1.5  | 7    | 2          | ODP - 2 - 2 2 150 - 1 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 2.2  | 10.5 | 2          | ODP - 2 - 2 2 220 - 1 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
| 200–240V ± 10%<br>3 Phase Input | 0.75 | 4.3  | 2          | ODP - 2 - 2 2 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 1.5  | 7    | 2          | ODP - 2 - 2 2 150 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 2.2  | 10.5 | 2          | ODP - 2 - 2 2 220 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 4    | 18   | 3          | ODP - 2 - 3 2 040 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 5.5  | 24   | 3          | ODP - 2 - 3 2 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 5.5  | 24   | 4          | ODP - 2 - 4 2 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 7.5  | 30   | 4          | ODP - 2 - 4 2 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 11   | 46   | 4          | ODP - 2 - 4 2 110 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 15   | 60   | 5          | ODP - 2 - 5 2 150 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 18.5 | 72   | 5          | ODP - 2 - 5 2 185 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 22   | 90   | 6          | ODP - 2 - 6 2 022 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 22   | 90   | 6A         | ODP - 2 - 6 2 022 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 30   | 110  | 6          | ODP - 2 - 6 2 030 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 30   | 110  | 6A         | ODP - 2 - 6 2 030 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 37   | 150  | 6          | ODP - 2 - 6 2 037 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 37   | 150  | 6B         | ODP - 2 - 6 2 037 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 45   | 180  | 6          | ODP - 2 - 6 2 045 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 45   | 180  | 6B         | ODP - 2 - 6 2 045 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 55   | 202  | 7          | ODP - 2 - 7 2 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 75   | 248  | 7          | ODP - 2 - 7 2 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
| 380–480V ± 10%<br>3 Phase Input | 0.75 | 2.2  | 2          | ODP - 2 - 2 4 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 1.5  | 4.1  | 2          | ODP - 2 - 2 4 150 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 2.2  | 5.8  | 2          | ODP - 2 - 2 4 220 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 4    | 9.5  | 2          | ODP - 2 - 2 4 400 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 5.5  | 14   | 3          | ODP - 2 - 3 4 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 7.5  | 18   | 3          | ODP - 2 - 3 4 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 11   | 24   | 3          | ODP - 2 - 3 4 110 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 11   | 24   | 4          | ODP - 2 - 4 4 110 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 15   | 30   | 4          | ODP - 2 - 4 4 150 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 18.5 | 39   | 4          | ODP - 2 - 4 4 185 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 22   | 46   | 4          | ODP - 2 - 4 4 220 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 30   | 61   | 5          | ODP - 2 - 5 4 300 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 37   | 72   | 5          | ODP - 2 - 5 4 370 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 45   | 90   | 6          | ODP - 2 - 6 4 045 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 45   | 90   | 6A         | ODP - 2 - 6 4 045 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 55   | 110  | 6          | ODP - 2 - 6 4 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 55   | 110  | 6A         | ODP - 2 - 6 4 055 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 75   | 150  | 6          | ODP - 2 - 6 4 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 75   | 150  | 6B         | ODP - 2 - 6 4 075 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 90   | 180  | 6          | ODP - 2 - 6 4 090 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 90   | 180  | 6B         | ODP - 2 - 6 4 090 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 110  | 202  | 6B         | ODP - 2 - 6 4 110 - 3 K | F          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      |                           |                       |
|                                 | 110  | 202  | 7          | ODP - 2 - 7 4 110 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 132  | 240  | 7          | ODP - 2 - 7 4 132 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 160  | 302  | 7          | ODP - 2 - 7 4 160 - 3 K | F          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 200  | 370  | 8          | ODP - 2 - 8 4 200 - 3 K | #          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 250  | 480  | 8          | ODP - 2 - 8 4 250 - 3 K | #          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
| 480–525V ± 10%<br>3 Phase Input | 132  | 185  | 7          | ODP - 2 - 7 5 132 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 150  | 205  | 7          | ODP - 2 - 7 5 150 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 185  | 255  | 7          | ODP - 2 - 7 5 185 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 200  | 275  | 7          | ODP - 2 - 7 5 200 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
| 500–600V ± 10%<br>3 Phase Input | 0.75 | 2.1  | 2          | ODP - 2 - 2 6 075 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 1.5  | 3.1  | 2          | ODP - 2 - 2 6 150 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 2.2  | 4.1  | 2          | ODP - 2 - 2 6 220 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 4    | 6.5  | 2          | ODP - 2 - 2 6 400 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 5.5  | 9    | 2          | ODP - 2 - 2 6 550 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 7.5  | 12   | 3          | ODP - 2 - 3 6 075 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 | 11   | 17   | 3          | ODP - 2 - 3 6 110 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      | A-MN                      | B-MN                  |
|                                 | 15   | 22   | 3          | ODP - 2 - 3 6 150 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               |                  |                          |                      | A-MN                      | B-MN                  |
|                                 | 15   | 22   | 4          | ODP - 2 - 4 6 150 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 18.5 | 28   | 4          | ODP - 2 - 4 6 185 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 22   | 34   | 4          | ODP - 2 - 4 6 220 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 30   | 43   | 4          | ODP - 2 - 4 6 300 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      | A-MN                      | B-MN                  |
|                                 | 37   | 54   | 5          | ODP - 2 - 5 6 370 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 45   | 65   | 5          | ODP - 2 - 5 6 450 - 3 K | 0          | 4          | #            |                   |               |            |            |                  | 2-MN               | N-MN             |                          |                      |                           |                       |
|                                 | 55   | 78   | 6          | ODP - 2 - 6 6 055 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 75   | 105  | 6          | ODP - 2 - 6 6 075 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 90   | 130  | 6          | ODP - 2 - 6 6 090 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |
|                                 | 110  | 150  | 6          | ODP - 2 - 6 6 110 - 3 K | 0          | 4          | #            |                   |               |            |            |                  |                    | N-MN             |                          |                      |                           |                       |

## Model Code Guide



### EMC Filter

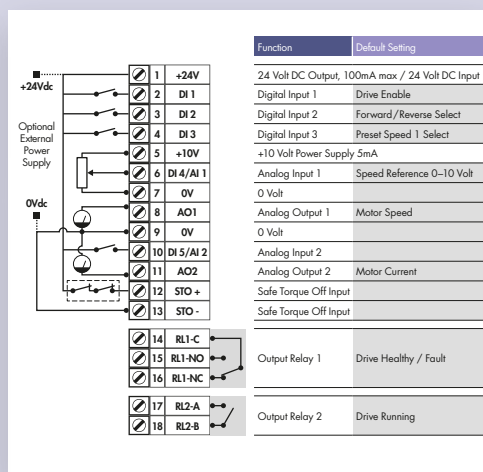
|          |                             |
|----------|-----------------------------|
| <b>0</b> | No Internal EMC Filter      |
| <b>F</b> | Internal EMC Filter         |
| <b>R</b> | High Performance EMC Filter |

**kW Models: Factory Settings**  
 Motor Rated Frequency: 50Hz  
 Motor Rated Voltage: 230/400/575V

## Drive Specification

|                       |                           |                                                                                                                                                                                                                                                                         |                           |                          |                                                                                                                                                   |
|-----------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Ratings         | Supply Voltage            | 200 – 240V ± 10%<br>380 – 480V ± 10%<br>500 – 600V ± 10%                                                                                                                                                                                                                | Fieldbus Connectivity     | Builtin                  | CANopen 125 – 1000kbps                                                                                                                            |
|                       | Supply Frequency          | 48 – 62Hz                                                                                                                                                                                                                                                               |                           | Optional                 | Modbus RTU<br>Other                                                                                                                               |
|                       | Displacement Power Factor | > 0.98                                                                                                                                                                                                                                                                  | I/O Specification         | Power Supply             | PROFIBUS DP (DPV1)<br>PROFINET IO<br>DeviceNet<br>EtherNet/IP<br>EtherCAT<br>Modbus TCP                                                           |
|                       | Phase Imbalance           | 3% Maximum allowed                                                                                                                                                                                                                                                      |                           |                          | 24 Volt DC, 100mA, Short Circuit Protected<br>10 Volt DC, 10mA for Potentiometer                                                                  |
|                       | Inrush Current            | < rated current                                                                                                                                                                                                                                                         |                           | Programmable Inputs      | 5 Total as standard (Optional additional 3)<br>3 Digital (Optional additional 3)<br>2 Analog / Digital Selectable<br>5 Digital With CAN IO Option |
|                       | Power Cycles              | 120 per hour maximum, evenly spaced                                                                                                                                                                                                                                     |                           |                          | Digital Inputs                                                                                                                                    |
| Output Ratings        | Output Power              | 230V 1Ph. Input: 0.75–2.2kW (1–3HP)<br>230V 3Ph. Input: 0.75–75kW (1–100HP)<br>400V 3Ph. Input: 0.75–250kW<br>460V 3Ph. Input: 1–400HP<br>575V 3Ph. Input: 0.75–110kW (1–150HP)                                                                                         |                           | Analog Inputs            | Opto - Isolated<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms                                                             |
|                       | Overload Capacity         | 150% for 60 seconds                                                                                                                                                                                                                                                     |                           |                          | Resolution: 12 bits<br>Response time: < 4ms<br>Accuracy: < 1% full scale<br>Parameter adjustable scaling and offset                               |
|                       | Output Frequency          | 0 – 500Hz, 0.1Hz resolution                                                                                                                                                                                                                                             |                           | PTC Input                | Motor PTC / Thermistor Input<br>Trip Level : 2.5kΩ                                                                                                |
|                       | Acceleration Time         | 0.01 – 600 seconds                                                                                                                                                                                                                                                      |                           |                          | 7 Total (Optional additional 3)<br>2 Analog / Digital<br>2 Relays (Optional additional 3)<br>3 With CAN IO Option Module                          |
|                       | Deceleration Time         | 0.01 – 600 seconds                                                                                                                                                                                                                                                      |                           | Relay Outputs            | Maximum Voltage: 250 VAC, 30 VDC<br>Switching Current Capacity: 5A AC, 5A DC                                                                      |
|                       | Typical Efficiency        | > 98%                                                                                                                                                                                                                                                                   |                           |                          | 0 to 10 Volt<br>0 to 20mA<br>4 to 20mA                                                                                                            |
| Ambient Conditions    | Temperature               | Storage: –40 to 60°C<br>Operating: –10 to 50°C                                                                                                                                                                                                                          | Application Features      | PID Control              | Internal PID Controller<br>Multi Setpoint Select<br>Standby / Sleep Mode<br>Boost Function                                                        |
|                       | Altitude                  | Up to 1000m ASL without derating<br>Up to 2000m maximum UL Approved<br>Up to 4000m maximum (non UL)                                                                                                                                                                     |                           |                          | Dedicated Hoist Mode<br>Motor Holding Brake Pre-Torque & Control<br>Over Limit Protection                                                         |
|                       | Humidity                  | 95% Max, non condensing                                                                                                                                                                                                                                                 | Maintenance & Diagnostics | Fault Memory             | Last 4 Trips stored with time stamp                                                                                                               |
|                       | Vibration                 | Conforms to IEC 60068-2-6<br>Sinusoidal Vibration<br>10 - 57Hz @ 0.075mm Pk<br>57 - 150Hz @ 1g Pk                                                                                                                                                                       |                           |                          | Data Logging                                                                                                                                      |
| Enclosure             | Ingress Protection        | IP20, IP55, IP66                                                                                                                                                                                                                                                        |                           | Maintenance Indicator    | Maintenance Indicator with user adjustable maintenance interval<br>Onboard service life monitoring                                                |
|                       | Programming               | Keypad: Built-in keypad as standard<br>Optional remote mountable keypad<br>Display: Built-in multi language text display<br>PC: OptiTools Studio                                                                                                                        |                           |                          | Monitoring                                                                                                                                        |
| Control Specification | Control Method            | V/F Voltage Vector<br>Energy Optimised V/F<br>3GV Sensorless Vector Speed Control<br>3GV Sensorless Vector Torque Control<br>Closed Loop (Encoder) Speed Control<br>Closed Loop (Encoder) Torque Control<br>PM Vector Control<br>BLDC Control<br>Synchronous Reluctance | Standards Compliance      | Low Voltage Directive    | 2014/35/EU                                                                                                                                        |
|                       | PWM Frequency             | 4–32kHz Effective                                                                                                                                                                                                                                                       |                           |                          | EMC Directive                                                                                                                                     |
|                       | Stopping Mode             | Ramp to Stop: User Adjustable 0.01 – 600 secs<br>Coast to Stop                                                                                                                                                                                                          |                           | Additional Conformance   | UL, cUL, EAC, RCM                                                                                                                                 |
|                       | Braking                   | Motor Flux Braking<br>Built-in Braking Transistor                                                                                                                                                                                                                       |                           |                          | Marine Certification                                                                                                                              |
|                       | Skip Frequency            | Single point, user adjustable                                                                                                                                                                                                                                           |                           | Environmental Conditions | DNV Type Approval                                                                                                                                 |
|                       | Setpoint Control          | Analog Signal: 0 to 10 Volts<br>10 to 0 Volts<br>–10 to +10 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4mA<br>PTC<br>Digital: Motorised Potentiometer (Keypad & Terminal)<br>Modbus RTU<br>CANopen                                                           |                           |                          | Designed to meet IEC 60721-3-3, in operation:<br>IP20 Drives: 3S2/3C2<br>IP55 & 66 Drives: 3S3/3C3                                                |

## Connection Diagram



NOT TO SCALE

|      |        | IP20 |     |     |      |     |     |       | IP66 |     |     | IP55 |     |     |      |      |
|------|--------|------|-----|-----|------|-----|-----|-------|------|-----|-----|------|-----|-----|------|------|
| Size |        | 2    | 3   | 4   | 5    | 6A  | 6B  | 8     | 2    | 3   | 4   | 4    | 5   | 6   | 7    | 8    |
| mm   | Height | 221  | 261 | 418 | 486  | 614 | 726 | 974   | 257  | 310 | 360 | 450  | 540 | 865 | 1280 | 1334 |
| mm   | Width  | 110  | 131 | 172 | 233  | 286 | 330 | 444   | 188  | 211 | 240 | 171  | 235 | 330 | 330  | 444  |
| mm   | Depth  | 185  | 205 | 240 | 260  | 320 | 320 | 423   | 172  | 235 | 271 | 252  | 270 | 332 | 358  | 423  |
| kg   | Weight | 1.8  | 3.5 | 9.2 | 18.1 | 32  | 43  | 124.5 | 3.5  | 6.6 | 9.5 | 11.5 | 23  | 55  | 89   | TBC  |

## Easy to Use

### General Purpose Drive

Focused on ease of use, **Optidrive E3** provides unrivalled simplicity of installation, connection and commissioning, allowing the user to benefit from precise motor control and energy savings within minutes.



#### Simple Commissioning

With just 14 basic parameters and application macro functions providing rapid set up, Optidrive E3 minimises start-up time.



#### Intuitive Keypad Control

Precise digital control at the touch of a button.



#### Application Macros

Switch between **Industrial, Pump & Fan** modes to optimise Optidrive E3 for your application.

Industrial | Pump | Fan

## IP20

Compact, robust and reliable general purpose drive for panel mounting

### Up to 37kW

- ✓ Easy to use
- ✓ Compact & robust



### Take a closer look at the stunning Optidrive E3



[www.invertekdrives.com/optidrive-e3](http://www.invertekdrives.com/optidrive-e3)

### Sensorless Vector Control for all Motor Types

#### IM

IE2 & IE3  
Induction  
Motors

#### PM

AC Permanent  
Magnet Motors

#### BLDC

Brushless DC  
Motors

#### SynRM

Synchronous  
Reluctance  
Motors

#### LSPM

Line Start PM  
Motor

Precise and reliable control for  
**E2, IE3, IE4 & IE5 motors**

## IP66 Outdoor

### Up to 22kW

- ✓ Outdoor rated
- ✓ Dust-tight
- ✓ Washdown ready



#### Coated Heatsink as Standard

Ideal for hygiene based operations requiring washdown — such as food and beverage



### Key Features

- ✓ Internal Category C1 EMC filter
- ✓ Internal PI control
- ✓ Internal brake chopper
- ✓ Dual analogue inputs
- ✓ Operates up to 50°C
- ✓ Bluetooth® connectivity
- ✓ Option for control of single phase motors

**Modbus RTU**  
**CAN**

on-board as standard

### Internal Category C1 EMC Filter

An internal filter in every Optidrive E3 saves cost and time for installation.

Cat C1 according to EN61800-3:2004



# Application Macros

Switch modes at the touch of a button to optimise Optidrive E3 for your application

Single parameter application macro selection



## Industrial Mode

**Industrial Mode** optimises Optidrive E3 for load characteristics of typical industrial applications.

### Applications include:

- ✓ Conveyors
- ✓ Mixers
- ✓ Treadmills

**Sensorless Vector** provides high starting torque and excellent speed regulation

**IP20** panel mount units or **IP66** for direct machine mounting



Rapid parameter cloning using **OPTISTICK**



## Pump Mode

**Pump Mode** makes energy efficient pump control easier than ever.

### Applications include:

- ✓ Dosing Pumps
- ✓ Borehole Pumps
- ✓ Transfer Pumps
- ✓ Swimming Pools
- ✓ Spas
- ✓ Fountains

- Constant or variable torque
- Internal PI control



## Fan Mode

**Fan Mode** (inc. fire operation) makes air handling a breeze, ideal for simple HVAC systems.

### Applications include:

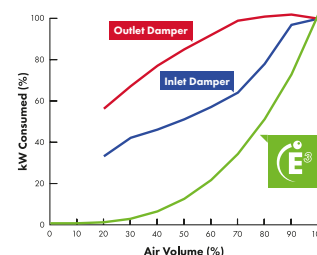
- ✓ Air Handling Units
- ✓ Ventilation Fans
- ✓ Circulating Fans
- ✓ Air Curtains
- ✓ Kitchen Extract



- High efficiency **variable torque** motor control
- Flying start capability
- Mains loss ride through
- PI control

## Instant Power Savings

The graph below shows the incredible efficiency of Optidrive E3 for controlling airflow compared to traditional damper control methods.



## Modbus RTU CAN

on-board as standard

## How much energy could you save?

Estimate potential energy savings, CO<sub>2</sub> emissions and financial savings for your application with the Invertek Drives **Energy Savings Calculator** app.



Download on the  
**App Store**

GET IT ON  
**Google Play**



[www.invertekdrives.com/calculator](http://www.invertekdrives.com/calculator)

|                                 | kW   | HP  | Amps | Frame | Model Code             | Product Family | Generation | Frame Size | Voltage Code | Output Current x 10 | Supply Phases | EMC Filter | Brake Transistor | Enclosure Option |
|---------------------------------|------|-----|------|-------|------------------------|----------------|------------|------------|--------------|---------------------|---------------|------------|------------------|------------------|
| 110–115V ± 10%<br>1 Phase Input | 0.37 | 0.5 | 2.3  | 1     | ODE - 3 - 1 1 0023 - 1 | 0              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 0.75 | 1   | 4.3  | 1     | ODE - 3 - 1 1 0043 - 1 | 0              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.1  | 1.5 | 5.8  | 2     | ODE - 3 - 2 1 0058 - 1 | 0              | 4          | #          |              |                     |               |            |                  |                  |
| 200–240V ± 10%<br>1 Phase Input | 0.37 | 0.5 | 2.3  | 1     | ODE - 3 - 1 2 0023 - 1 | #              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 0.75 | 1   | 4.3  | 1     | ODE - 3 - 1 2 0043 - 1 | #              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 7    | 1     | ODE - 3 - 1 2 0070 - 1 | #              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 7    | 2     | ODE - 3 - 2 2 0070 - 1 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 2.2  | 3   | 10.5 | 2     | ODE - 3 - 2 2 0105 - 1 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 4    | 5   | 15.3 | 3     | ODE - 3 - 3 2 0153 - 1 | 0              | 4          | #          |              |                     |               |            |                  |                  |
| 200–240V ± 10%<br>3 Phase Input | 0.37 | 0.5 | 2.3  | 1     | ODE - 3 - 1 2 0023 - 3 | 0              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 0.75 | 1   | 4.3  | 1     | ODE - 3 - 1 2 0043 - 3 | 0              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 7    | 1     | ODE - 3 - 1 2 0070 - 3 | 0              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 7    | 2     | ODE - 3 - 2 2 0070 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 2.2  | 3   | 10.5 | 2     | ODE - 3 - 2 2 0105 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 4    | 5   | 18   | 3     | ODE - 3 - 3 2 0180 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 5.5  | 7.5 | 24   | 3     | ODE - 3 - 3 2 0240 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 7.5  | 10  | 30   | 4     | ODE - 3 - 4 2 0300 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 11   | 15  | 46   | 4     | ODE - 3 - 4 2 0460 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 15   | 20  | 61   | 5     | ODE - 3 - 5 2 0610 - 3 | F              | 4          | 2          |              |                     |               |            |                  |                  |
|                                 | 18.5 | 25  | 72   | 5     | ODE - 3 - 5 2 0720 - 3 | F              | 4          | 2          |              |                     |               |            |                  |                  |
|                                 |      |     |      |       |                        |                |            |            |              |                     |               |            |                  |                  |
| 380–480V ± 10%<br>3 Phase Input | 0.75 | 1   | 2.2  | 1     | ODE - 3 - 1 4 0022 - 3 | #              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 4.1  | 1     | ODE - 3 - 1 4 0041 - 3 | #              | 1          | #          |              |                     |               |            |                  |                  |
|                                 | 1.5  | 2   | 4.1  | 2     | ODE - 3 - 2 4 0041 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 2.2  | 3   | 5.8  | 2     | ODE - 3 - 2 4 0058 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 4    | 5   | 9.5  | 2     | ODE - 3 - 2 4 0095 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 5.5  | 7.5 | 14   | 3     | ODE - 3 - 3 4 0140 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 7.5  | 10  | 18   | 3     | ODE - 3 - 3 4 0180 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 11   | 15  | 24   | 3     | ODE - 3 - 3 4 0240 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 15   | 20  | 30   | 4     | ODE - 3 - 4 4 0300 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 18.5 | 25  | 39   | 4     | ODE - 3 - 4 4 0390 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 22   | 30  | 46   | 4     | ODE - 3 - 4 4 0460 - 3 | #              | 4          | #          |              |                     |               |            |                  |                  |
|                                 | 30   | 40  | 61   | 5     | ODE - 3 - 5 4 0610 - 3 | F              | 4          | 2          |              |                     |               |            |                  |                  |
|                                 | 37   | 50  | 72   | 5     | ODE - 3 - 5 4 0720 - 3 | F              | 4          | 2          |              |                     |               |            |                  |                  |
|                                 |      |     |      |       |                        |                |            |            |              |                     |               |            |                  |                  |
|                                 |      |     |      |       |                        |                |            |            |              |                     |               |            |                  |                  |
|                                 |      |     |      |       |                        |                |            |            |              |                     |               |            |                  |                  |

Replace # in model code with colour-coded option

## Enclosure Types

A



**IP66**  
Outdoor Use  
Non-switched

B



**IP66**  
Outdoor Use  
Switched

2



**IP20**

## EMC Filter

F

Internal EMC Filter

0

No Internal EMC Filter

## IP20



| Size      | 1    | 2    | 3    | 4    | 5    |
|-----------|------|------|------|------|------|
| mm Height | 173  | 221  | 261  | 420  | 486  |
| mm Width  | 83   | 110  | 131  | 171  | 222  |
| mm Depth  | 123  | 150  | 175  | 212  | 226  |
| kg Weight | 1.0  | 1.7  | 3.2  | 9.1  | 18.1 |
| Fixings   | 4xM5 | 4xM5 | 4xM5 | 4xM8 | 4xM8 |

## IP66



| Size      | 1    | 2    | 3    | 4    |
|-----------|------|------|------|------|
| mm Height | 232  | 257  | 310  | 360  |
| mm Width  | 161  | 188  | 211  | 240  |
| mm Depth  | 162  | 182  | 235  | 271  |
| kg Weight | 2.3  | 3.5  | 6.6  | 9.5  |
| Fixings   | 4xM4 | 4xM4 | 4xM4 | 4xM4 |

## Drive Specification

|                           |                           |                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Ratings             | Supply Voltage            | 110 – 115V ± 10%<br>200 – 240V ± 10%<br>380 – 480V ± 10%                                                                                                                                                                                                                                                                                                           |
|                           | Supply Frequency          | 48 – 62Hz                                                                                                                                                                                                                                                                                                                                                          |
|                           | Displacement Power Factor | > 0.98                                                                                                                                                                                                                                                                                                                                                             |
|                           | Phase Imbalance           | 3% Maximum allowed                                                                                                                                                                                                                                                                                                                                                 |
|                           | Inrush Current            | < rated current                                                                                                                                                                                                                                                                                                                                                    |
|                           | Power Cycles              | 120 per hour maximum, evenly spaced                                                                                                                                                                                                                                                                                                                                |
| Output Ratings            | Output Power              | 110V 1 Ph Input: 0.5–1.5HP (230V 3 Ph Output)<br>230V 1 Ph Input: 0.37–4kW (0.5–5HP)<br>230V 3 Ph Input: 0.37–18.5kW (0.5–25HP)<br>400V 3 Ph Input: 0.75–37kW<br>460V 3 Ph Input: 1–50HP                                                                                                                                                                           |
|                           | Overload Capacity         | 150% for 60 Seconds<br>175% for 2.5 seconds                                                                                                                                                                                                                                                                                                                        |
|                           | Output Frequency          | 0 – 500Hz, 0.1Hz resolution                                                                                                                                                                                                                                                                                                                                        |
|                           | Acceleration Time         | 0.01 – 600 seconds                                                                                                                                                                                                                                                                                                                                                 |
|                           | Deceleration Time         | 0.01 – 600 seconds                                                                                                                                                                                                                                                                                                                                                 |
|                           | Typical Efficiency        | > 98%                                                                                                                                                                                                                                                                                                                                                              |
|                           | Ambient Conditions        | Temperature: Storage: –40 to 60°C<br>Operating: –20 to 50°C<br>Altitude: Up to 1000m ASL without derating<br>Up to 2000m maximum UL approved<br>Up to 4000m maximum (non UL)<br>Humidity: 95% Max, non condensing<br>Vibration: Conforms to EN61800-5-1                                                                                                            |
|                           | Enclosure                 | Ingress Protection: IP20, IP66                                                                                                                                                                                                                                                                                                                                     |
| Programming               | Keypad                    | Built-in keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                                                                                                                                    |
|                           | Display                   | 7 Segment LED                                                                                                                                                                                                                                                                                                                                                      |
|                           | PC                        | OptiTools Studio                                                                                                                                                                                                                                                                                                                                                   |
|                           | Control Specification     | Control Method: Sensorless Vector Speed Control<br>PM Vector Control<br>BLDC Control<br>Synchronous Reluctance<br>PWM Frequency: 4–32kHz Effective<br>Stopping Mode: Ramp to stop: User Adjustable 0.1–600 secs<br>Coast to stop<br>Braking: Motor Flux Braking<br>Built-in braking transistor (not frame size 1)<br>Skip Frequency: Single point, user adjustable |
| Fieldbus                  | Setpoint Control          | Analog Signal: 0 to 10 Volts<br>10 to 0 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4mA<br>Digital: Motorised Potentiometer (Keypad)<br>CANopen<br>Modbus RTU<br>EtherNet/IP                                                                                                                                                                             |
|                           | Built-in                  | CANopen: 125–1000 kbps<br>Modbus RTU: 9.6–115.2 kbps selectable                                                                                                                                                                                                                                                                                                    |
| I/O Specification         | Power Supply              | 24 Volt DC, 100mA, Short Circuit Protected<br>10 Volt DC, 10mA for Potentiometer                                                                                                                                                                                                                                                                                   |
|                           | Programmable Inputs       | 4 Total<br>2 Digital<br>2 Analog / Digital selectable                                                                                                                                                                                                                                                                                                              |
|                           | Digital Inputs            | 8 – 30 Volt DC, internal or external supply<br>Response time < 4ms                                                                                                                                                                                                                                                                                                 |
|                           | Analog Inputs             | Resolution: 12 bits<br>Response time: < 4ms<br>Accuracy: ± 2% full scale<br>Parameter adjustable scaling and offset                                                                                                                                                                                                                                                |
|                           | Programmable Outputs      | 2 Total<br>1 Analog / Digital<br>1 Relay                                                                                                                                                                                                                                                                                                                           |
|                           | PTC Input                 | Motor PTC / Thermistor Input<br>Trip Level: 2.5Ω                                                                                                                                                                                                                                                                                                                   |
| Application Features      | Relay Outputs             | Maximum Voltage: 250 VAC, 30 VDC<br>Switching Current Capacity: 6A AC, 5A DC                                                                                                                                                                                                                                                                                       |
|                           | Analog Outputs            | 0 to 10 Volt                                                                                                                                                                                                                                                                                                                                                       |
|                           | PI Control                | Internal PI Controller<br>Standby / Sleep Function                                                                                                                                                                                                                                                                                                                 |
| Maintenance & Diagnostics | Fault Memory              | Last 4 Trips stored with time stamp                                                                                                                                                                                                                                                                                                                                |
|                           | Data Logging              | Logging of data prior to trip for diagnostic purposes:<br>Output Current<br>Drive Temperature<br>DC Bus Voltage                                                                                                                                                                                                                                                    |
|                           | Monitoring                | Hours Run Meter                                                                                                                                                                                                                                                                                                                                                    |
| Standards Compliance      | Low Voltage Directive     | Adjustable speed electrical power drive systems.<br>EMC requirements                                                                                                                                                                                                                                                                                               |
|                           | EMC Directive             | 2014/30/EU<br>Cat C1 according to EN61800-3:2004                                                                                                                                                                                                                                                                                                                   |
|                           | Machinery Directive       | 2006/42/EC                                                                                                                                                                                                                                                                                                                                                         |
|                           | Conformance               | CE, UL, RCM                                                                                                                                                                                                                                                                                                                                                        |

# OPTIDRIVE™

For Single Phase Motors

**IP20**

**IP66**

**Up to 1.1kW**

Single Phase Motor  
Control for PSC &  
Shaded-Pole Motors

## Key Features

- ✓ 110–115V and 200–240V models
- ✓ Small mechanical envelope
- ✓ Rugged industrial operation
- ✓ Fast setup, and simple operation with 14 basic parameters
- ✓ Unique motor control strategy optimised for single phase motors
- ✓ Motor current and rpm indication
- ✓ Built in PI control, EMC filter (C1) & brake chopper
- ✓ Application macros for industrial, fan and pump operation
- ✓  Bluetooth® connectivity

**Modbus RTU**  
**CAN**

on-board as standard

150% overload for 60 secs  
(175% for 2 secs)



Pump control in  
swimming pools & spas



Simple airflow control

## Dedicated to Single Phase Motor Control

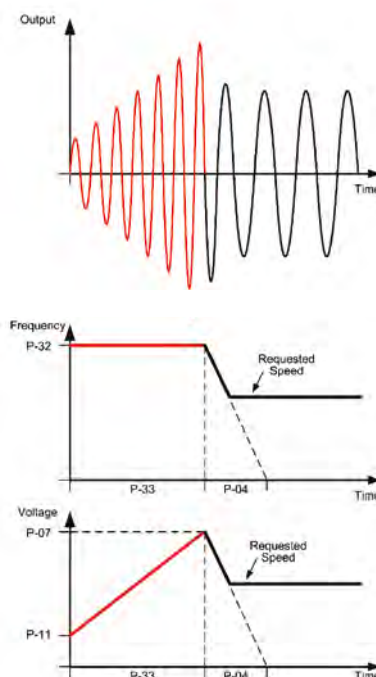
Designed to be cost effective and easy to use, the Optidrive E3 for Single Phase Motors is for use with PSC (Permanent Split Capacitor) or Shaded-Pole Single Phase induction motors.

Optidrive E3 for Single Phase Motors uses a revolutionary motor control strategy to achieve reliable intelligent starting of single phase motors.

- Removes the need for 3 phase supply wiring
- Provides the same performance features as the 3 phase Optidrive E3
- The ideal energy saving solution where high starting torque is not required — typically including fans, blowers, centrifugal pumps, fume extractors and air flow controllers

## Special Boost Phase

To ensure reliable starting of single phase motors, the drive initially ramps the motor voltage up to rated voltage whilst maintaining a fixed starting frequency, before reducing the frequency and voltage to the desired operating point.



|                                 | kW   | HP   | Amps | Size | Model Code             | Product Family | Generation | Frame Size | Voltage Code | Capacity | Supply Phases | EMC Filter | Brake Transistor | Enclosure Type | Single Phase Output |
|---------------------------------|------|------|------|------|------------------------|----------------|------------|------------|--------------|----------|---------------|------------|------------------|----------------|---------------------|
| 110–115V ± 10%<br>1 Phase Input | 0.37 | 0.5  | 7    | 1    | ODE - 3 - 1 1 0070 - 1 | # 1            | # - 01     |            |              |          |               |            |                  |                |                     |
|                                 | 0.55 | 0.75 | 10.5 | 2    | ODE - 3 - 2 1 0105 - 1 | # 4            | # - 01     |            |              |          |               |            |                  |                |                     |
| 200–240V ± 10%<br>1 Phase Input | 0.37 | 0.5  | 4.3  | 1    | ODE - 3 - 1 2 0043 - 1 | # 1            | # - 01     |            |              |          |               |            |                  |                |                     |
|                                 | 0.75 | 1    | 7    | 1    | ODE - 3 - 1 2 0070 - 1 | # 1            | # - 01     |            |              |          |               |            |                  |                |                     |
|                                 | 1.1  | 1.5  | 10.5 | 2    | ODE - 3 - 2 2 0105 - 1 | # 4            | # - 01     |            |              |          |               |            |                  |                |                     |

Replace # in model code with colour-coded option

## Enclosure Types

|          |                                                                                   |                                      |
|----------|-----------------------------------------------------------------------------------|--------------------------------------|
| <b>A</b> |  | <b>IP66 Outdoor Use Non-switched</b> |
| <b>B</b> |  | <b>IP66 Outdoor use Switched</b>     |
| <b>2</b> |  | <b>IP20</b>                          |

## EMC Filter

|          |                        |
|----------|------------------------|
| <b>F</b> | Internal EMC Filter    |
| <b>0</b> | No Internal EMC Filter |

## Model Code Guide:

**ODE-3-120043-3F12-01**

|                |            |            |              |          |                                 |               |                                                       |            |                                                                   |                  |                                                                                |                |                     |
|----------------|------------|------------|--------------|----------|---------------------------------|---------------|-------------------------------------------------------|------------|-------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------|----------------|---------------------|
| Product Family | Generation | Frame Size | Voltage Code | Capacity | Single Phase = 1<br>3 Phase = 3 | Supply Phases | Internal EMC Filter = F<br>No Internal EMC Filter = 0 | EMC Filter | No Internal Brake Transistor = 1<br>Internal Brake Transistor = 4 | Brake Transistor | IP20 = 2<br>IP66 Outdoor use Non-switched = A<br>IP66 Outdoor use Switched = B | Enclosure Type | Single Phase Output |
|----------------|------------|------------|--------------|----------|---------------------------------|---------------|-------------------------------------------------------|------------|-------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------|----------------|---------------------|

## IP20

| Size      | 1      | 2      |
|-----------|--------|--------|
| mm Height | 173    | 221    |
| mm Width  | 83     | 110    |
| mm Depth  | 123    | 150    |
| kg Weight | 1.0    | 1.7    |
| Fixings   | 4 x M5 | 4 x M5 |

## IP66

| Size      | 1      | 2      |
|-----------|--------|--------|
| mm Height | 232    | 257    |
| mm Width  | 161    | 188    |
| mm Depth  | 162    | 182    |
| kg Weight | 2.3    | 3.5    |
| Fixings   | 4 x M4 | 4 x M4 |

## Drive Specification

|                    |                           |                                                                                                     |                                                                    |                                                                                                                     |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|--------------------|---------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Input Ratings      | Supply Voltage            | 110 – 115V ± 10%<br>200 – 240V ± 10%                                                                | Control Specification                                              | Control Method                                                                                                      | V/F Voltage<br>Energy Optimised V/F                                      | Application Features | PI Control                                                                         | Internal PI Controller<br>Standby / Sleep Function                               |                                                                                                                 |                                                                      |
|                    | Supply Frequency          | 48 – 62Hz                                                                                           |                                                                    | PWM Frequency                                                                                                       | 4–32kHz Effective                                                        |                      | Fire Mode                                                                          | Selectable Speed Setpoint (Fixed / PI / Analog / Fieldbus)                       |                                                                                                                 |                                                                      |
|                    | Displacement Power Factor | > 0.98                                                                                              |                                                                    | Stopping Mode                                                                                                       | Ramp to stop: User Adjustable 0.1–600 secs<br>Coast to stop              |                      | Maintenance & Diagnostics                                                          | Fault Memory                                                                     | Last 4 Trips stored with time stamp                                                                             |                                                                      |
|                    | Phase Imbalance           | 3% Maximum allowed                                                                                  |                                                                    | Braking                                                                                                             | Motor Flux Braking<br>Built-in braking transistor (frame size 2)         |                      |                                                                                    | Data Logging                                                                     | Logging of data prior to trip for diagnostic purposes:<br>Output Current<br>Drive Temperature<br>DC Bus Voltage |                                                                      |
|                    | Inrush Current            | < rated current                                                                                     |                                                                    | Skip Frequency                                                                                                      | Single point, user adjustable                                            |                      |                                                                                    | Monitoring                                                                       | Hours Run Meter                                                                                                 |                                                                      |
|                    | Power Cycles              | 120 per hour maximum, evenly spaced                                                                 |                                                                    | Setpoint Control                                                                                                    | Analog Signal                                                            |                      | 0 to 10 Volts<br>10 to 0 Volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4mA | Standards Compliance                                                             | Low Voltage Directive                                                                                           | Adjustable speed electrical power drive systems.<br>EMC requirements |
| Output Ratings     | Output Power              | 110V 1 Ph Input: 0.5–0.75HP<br>230V 1 Ph Input: 0.37–1.1kW (0.5–1.5HP)                              | Digital                                                            |                                                                                                                     | Motorised Potentiometer (Keypad)<br>Modbus RTU<br>CANopen<br>EtherNet/IP | EMC Directive        | 2014/30/EU<br>230V 1Ph. Filtered Units : Cat C1 according to EN61800-3:2004        |                                                                                  |                                                                                                                 |                                                                      |
|                    | Overload Capacity         | 150% for 60 Seconds<br>175% for 2.5 seconds                                                         | Fieldbus                                                           |                                                                                                                     | Built-in                                                                 | CANopen              | 125–1000 kbps                                                                      |                                                                                  | Machinery Directive                                                                                             | 2006/42/EC                                                           |
|                    | Output Frequency          | 0 – 500Hz, 0.1Hz resolution                                                                         |                                                                    |                                                                                                                     |                                                                          | Modbus RTU           | 9.6–115.2 kbps selectable                                                          |                                                                                  | Conformance                                                                                                     | CE, UL, RCM                                                          |
|                    | Acceleration Time         | 0.01 – 600 seconds                                                                                  |                                                                    |                                                                                                                     |                                                                          | I/O Specification    | Power Supply                                                                       | 24 Volt DC, 100mA, Short Circuit Protected<br>10 Volt DC, 10mA for Potentiometer |                                                                                                                 |                                                                      |
|                    | Deceleration Time         | 0.01 – 600 seconds                                                                                  | Programmable Inputs                                                |                                                                                                                     | 4 Total<br>2 Digital<br>2 Analog / Digital selectable                    |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
| Typical Efficiency | > 98%                     | Digital Inputs                                                                                      | 8 – 30 Volt DC, internal or external supply<br>Response time < 4ms |                                                                                                                     |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
| Ambient Conditions | Temperature               | Storage: –40 to 60°C<br>Operating: –20 to 50°C                                                      | PTC Input                                                          | Motor PTC / Thermistor Input<br>Trip Level: 2.5Ω                                                                    |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|                    | Altitude                  | Up to 1000m ASL without derating<br>Up to 2000m maximum UL approved<br>Up to 4000m maximum (non UL) | Analog Inputs                                                      | Resolution: 12 bits<br>Response time: < 4ms<br>Accuracy: ± 2% full scale<br>Parameter adjustable scaling and offset |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|                    | Humidity                  | 95% Max, non condensing                                                                             | Programmable Outputs                                               | 2 Total<br>1 Analog / Digital<br>1 Relay                                                                            |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|                    | Vibration                 | Conforms to EN61800-5-1                                                                             | Relay Outputs                                                      | Maximum Voltage: 250 VAC, 30 VDC<br>Switching Current Capacity: 6A AC, 5A DC                                        |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
| Enclosure          | Ingress Protection        | IP20, IP66                                                                                          | Analog Outputs                                                     | 0 to 10 Volt                                                                                                        |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
| Programming        | Keypad                    | Built-in keypad as standard<br>Optional remote mountable keypad                                     |                                                                    |                                                                                                                     |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|                    | Display                   | 7 Segment LED                                                                                       |                                                                    |                                                                                                                     |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |
|                    | PC                        | OptiTools Studio                                                                                    |                                                                    |                                                                                                                     |                                                                          |                      |                                                                                    |                                                                                  |                                                                                                                 |                                                                      |

## Energy Efficient Fan & Pump Control

AC Induction (IM) Motors

AC Permanent Magnet (PM) Motors

Brushless DC (BLDC) Motors

Synchronous Reluctance (SynRM) Motors

Multi Language  
Text Display

**OPTIFLOW™**  
Multiple Pump  
Control

**BACnet™**  
MS/TP  
built-in as standard

Internal  
EMC Filter

Fire Mode

### Key Features

ECO Vector Motor Control



Energy Optimised Design



Internal EMC Filter



Low Noise Operation



### How much energy could you save?

Estimate potential energy savings,  
CO<sub>2</sub> emissions and financial savings for  
your application with the Inverter Drives  
Energy Savings Calculator app.



[www.invertekdrives.com/calculator](http://www.invertekdrives.com/calculator)





**IP20 / NEMA 1**



**IP55 / NEMA 12**



**IP66 / NEMA 4X**

## Save Energy

**Accurate speed control** of fans and pumps provides the most energy efficient control method

**Energy optimisation function** minimises energy usage in real time under partial load conditions

**Sleep & wake functions** ensure operation only when required

## Save Money

**Advanced on-board features** remove the need for peripheral equipment

**Intelligent maintenance interval** timing allows programmable maintenance reminders, avoiding costly downtime

**Automatic load monitoring** provides an early warning of potential faults, such as belt failures or blocked filters

## Save Time

**Built in keypad and OLED text display** provides intuitive operation

**Simple parameter structure** with carefully selected default values reduce commissioning time

**Practical design** allows easy access to power and control terminals without specialist tools

### Fire Override Mode

Fire override mode ignores signals and alarms, keeping the drive operating for as long as possible.

This feature is crucial for ensuring smoke extraction from buildings in the event of a fire.

Selectable Normally Open or Normally Closed logic means that the Optidrive Eco can be easily configured to the signal produced by your fire management system.

With an independently set speed for fire mode operation, selectable as either forward or reverse direction, the Optidrive Eco has the flexibility to match the needs of your fire control system.

### Improved Fan Efficiency

#### Unique Eco Vector Sensorless Control

Optidrive Eco uses advanced motor control, designed to provide the most energy efficient motor control possible. Operation with standard IM Motors, Permanent Magnet or Synchronous Reluctance motors is possible, all without requiring any feedback device or optional modules – simply change parameters to suit the connected motor, autotune and operate!

Eco Vector continuously adjusts in real time to provide the most efficient operating conditions for the load, typically reducing energy consumption by 2 – 3% compared to standard AC drives – providing similar long term costs savings to selecting a higher efficiency motor.

#### Energy Optimised Design

Optidrive Eco up to frame size 5 are designed with film capacitors, replacing the traditional electrolytic capacitors used in the DC link. Film capacitors have lower losses, and also remove the need for AC, DC or swinging chokes, improving overall drive efficiency. Efficiency is improved by up to 4% compared to standard AC drives, whilst also reducing supply current total harmonic distortion (iTHD), improving the Real Power Factor and reducing total input current, leading to cost savings on installation through reduced cable and fuse ratings and smaller supply transformer rating.

### PID Control

Optidrive Eco has a PID controller built in that is fully integrated with both HVAC and energy efficient features and is packaged in a user friendly way to ensure ease of use and fast commissioning.

# Energy Efficient Pump Control

## OPTIFLOW™

Co-ordinated pump station control, built into each drive as standard, allows independent control of multiple pump applications.

- All pumps operate as variable speed for maximum energy saving.
- Equal run time sharing across every pump.
- Automatic system reconfiguration in the event of a pump fault (including the master pump).
- Continued system operation when drives are individually powered off (including the master drive).
- Communication and +24V control voltage shared between drives via a standard RJ45 patch lead.
- Independent maintenance indicators for each pump.
- Any pump can be switched to Hand operation at the touch of a button, and will automatically rejoin the network when switched back to Auto.
- For waste water applications each pump can be set for blockage/ragging detection and activate an automatic de-ragging/pump cleaning cycle.
- Optional mains isolator with lock-off for safe pump maintenance.
- Optiflow function configured through simple parameter set-up and intelligent drive self configuration.

### Setpoint Control

## OPTIFLOW™

A standard feature on every Optidrive Eco

### Independent pump system control

### OptiFlow Communications

### Feedback signal



### See OPTIFLOW™ in action

Scan to watch the video or visit  
<http://youtu.be/9QQ89bQYdfs>





## Pump Efficiency

### In-built Sleep Mode with Auto-boost

Sleep mode saves energy by detecting when a pump is running inefficiently and producing little useful work. Optidrive Eco can be programmed to enter into a sleep/disabled mode until the demand increases. To help prevent sleep mode oscillation, Optidrive Eco can automatically initiate a boost cycle to increase pressure on starting or stopping.

## Drive Controlled Bypass

Intelligent features within the Optidrive Eco allow a bypass circuit to be implemented. Activation of Bypass mode can be determined intelligently by the Optidrive Eco drive based on a command from the building management system. The drive can be set to automatically select bypass mode when entering into a trip condition ensuring minimal disruption to service.

## Avoid Pump Downtime

### Blockage Detect/Clear

Optidrive Eco can detect potential pump blockages in real time and trigger a programmed cleaning cycle to automatically clear them, preventing downtime.

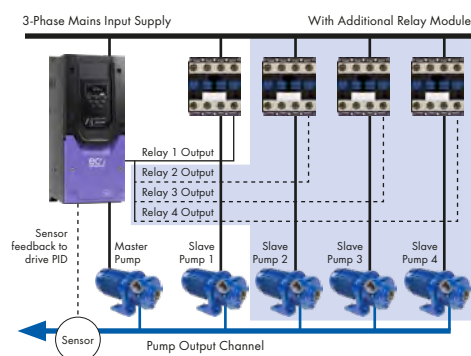
### Pump Clean/Stir Cycle

Triggered by a settable period of inactivity, a configurable cleaning cycle can be run to clear sediment, ensuring the pump is ready to run when needed.

### Dry Run Protection

Optidrive Eco can evaluate a pump's speed/power and shut it off or warn when the pump starts to run dry, protecting it from heat/friction damage.

## Cascade Control Pump Staging



### Variable speed duty pump with up to 4 assist pumps

Optidrive Eco can provide automatic operating time monitoring and balancing for assist pumps to share duty cycle. Run time clocks for all fixed speed assist pumps are maintained and visible within the Optidrive Eco for integration into the pump system maintenance schedules.

### Motor Preheat Function

Optidrive Eco features a motor preheat function to help ensure moisture is not permitted to collect on the motor in periods of inactivity and prior to motor start up. In addition, the motor preheat function can be used to keep condensation from developing on the motor as the motor cools down immediately following a stop. The feature is fully configurable, meaning the pump can be always available the instant it is required.

Replace # in model code with enclosure/display option

|                                 | kW   | HP  | Amps | Frame Size | Model Code             | Product Family | Generation | Frame Size | Voltage Code | Output Rating | Supply Phases | EMC Filter | Quadrant | IP20 Cabinet Mount | IP55 TFT Display | Indoor IP66 Non Switched | Indoor IP66 with Disconnect | Outdoor IP66 Non Switched | Outdoor IP66 with Disconnect |
|---------------------------------|------|-----|------|------------|------------------------|----------------|------------|------------|--------------|---------------|---------------|------------|----------|--------------------|------------------|--------------------------|-----------------------------|---------------------------|------------------------------|
| 200–240V ± 10%<br>1 Phase Input | 0.75 | 1   | 4.3  | 2          | ODV - 3 - 2 2 0043 - 1 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 1.5  | 2   | 7    | 2          | ODV - 3 - 2 2 0070 - 1 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 2.2  | 3   | 10.5 | 2          | ODV - 3 - 2 2 0105 - 1 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
| 200–240V ± 10%<br>3 Phase Input | 0.75 | 1   | 4.3  | 2          | ODV - 3 - 2 2 0043 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 1.5  | 2   | 7    | 2          | ODV - 3 - 2 2 0070 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 2.2  | 3   | 10.5 | 2          | ODV - 3 - 2 2 0105 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 4    | 5   | 18   | 3          | ODV - 3 - 3 2 0180 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 5.5  | 7.5 | 24   | 3          | ODV - 3 - 3 2 0240 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 7.5  | 10  | 30   | 3          | ODV - 3 - 3 2 0300 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 7.5  | 10  | 30   | 4          | ODV - 3 - 4 2 0300 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 11   | 15  | 46   | 4          | ODV - 3 - 4 2 0460 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 15   | 20  | 61   | 5          | ODV - 3 - 5 2 0610 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 18.5 | 25  | 72   | 5          | ODV - 3 - 5 2 0720 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 22   | 30  | 90   | 5          | ODV - 3 - 5 2 0900 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 30   | 40  | 110  | 6          | ODV - 3 - 6 2 1100 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 30   | 40  | 110  | 6A         | ODV - 3 - 6 2 1100 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 37   | 50  | 150  | 6          | ODV - 3 - 6 2 1500 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 37   | 50  | 150  | 6A         | ODV - 3 - 6 2 1500 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 45   | 60  | 180  | 6          | ODV - 3 - 6 2 1800 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 45   | 60  | 180  | 6B         | ODV - 3 - 6 2 1800 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 55   | 75  | 202  | 7          | ODV - 3 - 7 2 2020 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 75   | 100 | 248  | 7          | ODV - 3 - 7 2 2480 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
| 380–480V ± 10%<br>3 Phase Input | 0.75 | 1   | 2.2  | 2          | ODV - 3 - 2 4 0022 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 1.5  | 2   | 4.1  | 2          | ODV - 3 - 2 4 0041 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 2.2  | 3   | 5.8  | 2          | ODV - 3 - 2 4 0058 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 4    | 5   | 9.5  | 2          | ODV - 3 - 2 4 0095 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 5.5  | 7.5 | 14   | 2          | ODV - 3 - 2 4 0140 - 3 | F              | 1          | #          |              |               |               |            |          |                    |                  |                          |                             | A-MN                      | E-MN                         |
|                                 | 5.5  | 7.5 | 14   | 3          | ODV - 3 - 3 4 0140 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        |                           |                              |
|                                 | 7.5  | 10  | 18   | 3          | ODV - 3 - 3 4 0180 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 11   | 15  | 24   | 3          | ODV - 3 - 3 4 0240 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 15   | 20  | 30   | 3          | ODV - 3 - 3 4 0300 - 3 | F              | 1          | #          |              |               |               |            |          |                    |                  |                          |                             | A-MN                      | E-MN                         |
|                                 | 15   | 20  | 30   | 4          | ODV - 3 - 4 4 0300 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 18.5 | 25  | 39   | 4          | ODV - 3 - 4 4 0390 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 22   | 30  | 46   | 4          | ODV - 3 - 4 4 0460 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 30   | 40  | 61   | 5          | ODV - 3 - 5 4 0610 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 37   | 50  | 72   | 5          | ODV - 3 - 5 4 0720 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 45   | 60  | 90   | 5          | ODV - 3 - 5 4 0900 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 55   | 75  | 110  | 6          | ODV - 3 - 6 4 1100 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 55   | 75  | 110  | 6A         | ODV - 3 - 6 4 1100 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 75   | 100 | 150  | 6          | ODV - 3 - 6 4 1500 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 75   | 100 | 150  | 6A         | ODV - 3 - 6 4 1500 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 90   | 150 | 180  | 6          | ODV - 3 - 6 4 1800 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 90   | 150 | 180  | 6B         | ODV - 3 - 6 4 1800 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 110  | 175 | 202  | 6B         | ODV - 3 - 6 4 2020 - 3 | F              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             |                           |                              |
|                                 | 110  | 175 | 202  | 7          | ODV - 3 - 7 4 2020 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 132  | 200 | 240  | 7          | ODV - 3 - 7 4 2400 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 160  | 250 | 302  | 7          | ODV - 3 - 7 4 3020 - 3 | F              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 200  | 300 | 370  | 8          | ODV - 3 - 8 4 3700 - 3 | #              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 250  | 400 | 480  | 8          | ODV - 3 - 8 4 4800 - 3 | #              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
| 500–600V ± 10%<br>3 Phase Input | 0.75 | 1   | 2.1  | 2          | ODV - 3 - 2 6 0021 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 1.5  | 2   | 3.1  | 2          | ODV - 3 - 2 6 0031 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 2.2  | 3   | 4.1  | 2          | ODV - 3 - 2 6 0041 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 4    | 5   | 6.5  | 2          | ODV - 3 - 2 6 0065 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 5.5  | 7.5 | 9    | 2          | ODV - 3 - 2 6 0090 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 7.5  | 10  | 12   | 3          | ODV - 3 - 3 6 0120 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 11   | 15  | 17   | 3          | ODV - 3 - 3 6 0170 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  | X-TN                     | D-TN                        | A-MN                      | E-MN                         |
|                                 | 15   | 20  | 22   | 3          | ODV - 3 - 3 6 0220 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               |                  |                          |                             | A-MN                      | E-MN                         |
|                                 | 15   | 20  | 22   | 4          | ODV - 3 - 4 6 0220 - 3 | 0              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 18.5 | 25  | 28   | 4          | ODV - 3 - 4 6 0280 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 22   | 30  | 34   | 4          | ODV - 3 - 4 6 0340 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 30   | 40  | 43   | 4          | ODV - 3 - 4 6 0430 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             | A-MN                      | E-MN                         |
|                                 | 37   | 50  | 54   | 5          | ODV - 3 - 5 6 0540 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 45   | 60  | 65   | 5          | ODV - 3 - 5 6 0650 - 3 | 0              | 1          | #          |              |               |               |            |          | 2-MN               | N-MN             |                          |                             |                           |                              |
|                                 | 55   | 75  | 78   | 6          | ODV - 3 - 6 6 0780 - 3 | 0              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 75   | 100 | 105  | 6          | ODV - 3 - 6 6 1050 - 3 | 0              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 90   | 125 | 130  | 6          | ODV - 3 - 6 6 1300 - 3 | 0              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |
|                                 | 110  | 150 | 150  | 6          | ODV - 3 - 6 6 1500 - 3 | 0              | 1          | #          |              |               |               |            |          |                    | N-MN             |                          |                             |                           |                              |

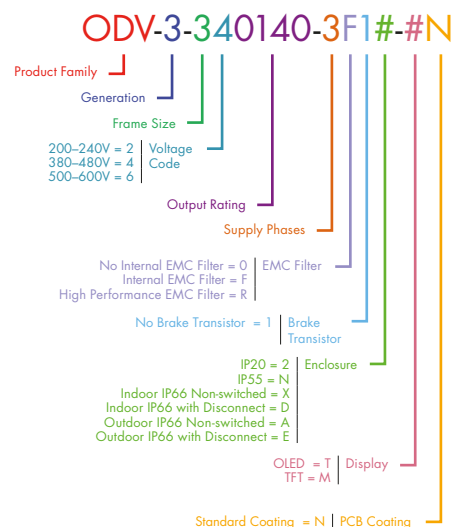
#### EMC Filter

- 0** No Internal EMC Filter
- F** Internal EMC Filter
- R** High Performance EMC Filter

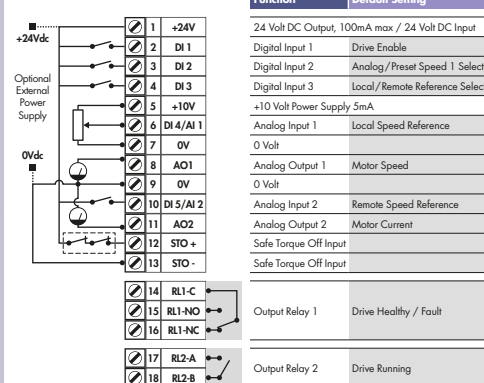
## Drive Specification

|                           |                                  |                                                                                                                                                                                                                                                                                 |
|---------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Ratings             | Supply Voltage                   | 200 – 240V ± 10%<br>380 – 480V ± 10%<br>500 – 600V ± 10%                                                                                                                                                                                                                        |
|                           | Supply Frequency                 | 48 – 62Hz                                                                                                                                                                                                                                                                       |
|                           | Displacement Power Factor        | > 0.98                                                                                                                                                                                                                                                                          |
|                           | Phase Imbalance                  | 3% Maximum allowed                                                                                                                                                                                                                                                              |
|                           | Inrush Current                   | < rated current                                                                                                                                                                                                                                                                 |
|                           | Power Cycles                     | 120 per hour maximum, evenly spaced                                                                                                                                                                                                                                             |
| Output Ratings            | Output Power                     | 230V 1Ph. Input: 0.75–2.2kW (1–3HP)<br>230V 3Ph. Input: 0.75–75kW (1–100HP)<br>400V 3Ph. Input: 0.75–250kW<br>460V 3Ph. Input: 1–400HP<br>575V 3Ph. Input: 0.75–110kW (1–150HP)                                                                                                 |
|                           | Overload Capacity                | 110% for 60 seconds<br>150% for 15 seconds                                                                                                                                                                                                                                      |
|                           | Output Frequency                 | 0 – 250Hz, 0.1Hz resolution                                                                                                                                                                                                                                                     |
|                           | Typical Efficiency               | > 98%                                                                                                                                                                                                                                                                           |
|                           | Ambient Conditions               | Temperature: Storage: –40 to 60°C<br>Operating: –10 to 50°C                                                                                                                                                                                                                     |
|                           | Altitude                         | Up to 1000m ASL without derating<br>Up to 2000m maximum UL approved<br>Up to 4000m maximum (non UL)                                                                                                                                                                             |
| Enclosure                 | Ingress Protection               | IP20, IP55, IP66                                                                                                                                                                                                                                                                |
|                           | Programming                      | Keypad: Built-in keypad as standard<br>Optional remote mountable keypad<br>Display: Built-in multi language text display<br>PC: OptiTools Studio                                                                                                                                |
| Control Specification     | Control Method                   | Eco Sensorless Vector<br>Open Loop Permanent Magnet Vector<br>Open Loop BLDC Vector<br>Open Loop Synchronous Reluctance Vector                                                                                                                                                  |
|                           | PWM Frequency                    | 4 – 32kHz Effective                                                                                                                                                                                                                                                             |
|                           | Stopping Mode                    | Ramp to stop: User Adjustable 0.1–600 secs<br>Coast to stop                                                                                                                                                                                                                     |
|                           | Braking                          | AC Flux Braking                                                                                                                                                                                                                                                                 |
|                           | Skip Frequency                   | Single point, user adjustable                                                                                                                                                                                                                                                   |
|                           | Setpoint Control                 | Analog Signal: 0 to 10 Volts / 10 to 0 Volts<br>–10 Volts to +10 Volts<br>0 to 20mA / 20 to 0mA<br>4 to 20mA / 20 to 4mA<br>Digital: Motorised Potentiometer (Keypad)<br>Modbus RTU<br>BACnet MS/TP                                                                             |
| Fieldbus Connectivity     | Built-in                         | BACnet Application Specific Controller<br>9.6 - 76.8 kbps selectable<br>Data Format: 8N1, 8N2, 8O1, 8E1<br>Modbus RTU<br>9.6 - 115.2 kbps selectable<br>Data Format: 8N1, 8N2, 8O1, 8E1                                                                                         |
|                           | Optional                         | BACnet/IP<br>Plug-in BACnet/IP interface<br>Dual IAN ports<br>Device Level Ring<br>PROFIBUS DP (DPV1)<br>PROFINET IO<br>DeviceNet<br>EtherNet/IP<br>EtherCAT<br>Modbus TCP                                                                                                      |
| I/O Specification         | Power Supply                     | 24 Volt DC, 100mA, Short Circuit Protected<br>10 Volt DC, 10mA for Potentiometer                                                                                                                                                                                                |
|                           | Programmable Inputs              | 5 Total as standard (optional additional 3)<br>3 Digital (optional additional 3)<br>2 Analog / Digital selectable                                                                                                                                                               |
| Digital Inputs            | Opto - Isolated                  | 8 – 30 Volt DC, internal or external supply<br>Response time < 4ms                                                                                                                                                                                                              |
|                           | Resolution: 12 bits              | Response time: < 4ms<br>Accuracy: < 1% full scale<br>Parameter adjustable scaling and offset                                                                                                                                                                                    |
| Analog Inputs             | Motor PTC / Thermistor Input     | Trip Level: 2.5Ω                                                                                                                                                                                                                                                                |
|                           | Programmable Outputs             | 2 Total<br>1 Analog / Digital<br>1 Relay                                                                                                                                                                                                                                        |
| Relay Outputs             | Maximum Voltage: 250 VAC, 30 VDC | Switching Current Capacity: 5A                                                                                                                                                                                                                                                  |
|                           | Analog Outputs                   | 0 to 10 Volts / 10 to 0 Volts<br>0 to 20mA / 20 to 0mA<br>4 to 20mA / 20 to 4mA                                                                                                                                                                                                 |
| Application Features      | PID Control                      | Internal PID Controller<br>Multi-setpoint Select<br>Standby / Sleep Mode<br>Boost Function                                                                                                                                                                                      |
|                           | Fire Mode                        | Bidirectional<br>Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)                                                                                                                                                                                                    |
|                           | Load Monitoring                  | High Current Protection (Fan / Bump Blocked)<br>Low Current Protection (Broken Belt / Shaft)<br>Pump Blockage Detection with Cleaning                                                                                                                                           |
|                           | Duty / Assist / Standby          | Built-in Multi-Pump Support<br>Automatic Changeover on Fault<br>Automatic Changeover on Time<br>Fully Redundant                                                                                                                                                                 |
|                           | Pump Control Features            | Pump Blockage Detection: Pump load monitoring with autotune function, user configurable<br>Pump Cleaning: Adjustable Bi-directional Pump Cleaning Cycle operation                                                                                                               |
|                           | Multi-Pump Control               | Control of fixed speed assist pumps (with cascade control module)<br>Control of Duty, Assist and Standby variable speed pumps via internal Master – Slave network<br>Pump Stir: Automatic pump stir to prevent sediment build-up                                                |
| Maintenance & Diagnostics | Fault Memory                     | Last 4 Trips stored with time stamp                                                                                                                                                                                                                                             |
|                           | Data Logging                     | Logging of data prior to trip for diagnostic purposes:<br>Output Current<br>Drive Temperature<br>DC Bus Voltage                                                                                                                                                                 |
|                           | Maintenance Indicator            | Maintenance Indicator with user adjustable maintenance interval<br>Onboard service life monitoring                                                                                                                                                                              |
|                           | Monitoring                       | Hours Run Meter<br>Resettable & Non-Resettable kWh meters<br>Cooling Fan Run Time                                                                                                                                                                                               |
|                           | Standards Compliance             | Low Voltage Directive: 2014/35/EU<br>EMC Directive: 2014/30/EU<br>Additional Conformance: UL, cUL, EAC, RCM<br>Harmonic Currents: IEC61000-3-12<br>Environmental Conditions: Designed to meet IEC 60721-3-3, in operation:<br>IP20 Drives: 3S2/3C2<br>IP55 & 66 Drives: 3S3/3C3 |

## Model Code Guide



## Connection Diagram



NOT TO SCALE

|      |        | IP20 |     |     |      |     |     |       | IP66 |     |     | IP55 |     |     |      |      |
|------|--------|------|-----|-----|------|-----|-----|-------|------|-----|-----|------|-----|-----|------|------|
| Size |        | 2    | 3   | 4   | 5    | 6A  | 6B  | 8     | 2    | 3   | 4   | 4    | 5   | 6   | 7    | 8    |
| mm   | Height | 221  | 261 | 418 | 486  | 614 | 726 | 974   | 257  | 310 | 360 | 450  | 540 | 865 | 1280 | 1334 |
| mm   | Width  | 110  | 131 | 172 | 233  | 286 | 330 | 444   | 188  | 211 | 240 | 171  | 235 | 330 | 330  | 444  |
| mm   | Depth  | 185  | 205 | 240 | 260  | 320 | 320 | 423   | 182  | 235 | 271 | 252  | 270 | 332 | 358  | 423  |
| kg   | Weight | 1.8  | 3.5 | 9.2 | 18.1 | 32  | 43  | 124.5 | 3.5  | 6.6 | 9.5 | 11.5 | 23  | 55  | 89   | TBC  |



# POWER PRECISION CONTROL

## THE NEW SIZE 8 RANGE

Now available in Optidrive P2 and Optidrive Eco ranges, combining the innovative features of these products with the ability to control motors rated up to 480 Amps.

It is available as IP20 for control cabinet mounting and as IP55 for direct mounting.



**OPTIDRIVE™ Size 8**  
Up to 250kW / 400HP  
380 – 480V

# OPTIDRIVE™ Size 8

200 – 250kW / 300 – 400HP  
**380 – 480V**

## High Power Drive Module

Optidrive Frame Size 8 extends the power rating capacity of Optidrive P2 and Optidrive Eco products up to 250kW / 400HP.

Combining all the features of the standard products, and providing the ability to control motors with rated current up to 480Amps, Frame Size 8 is available in an IP20 enclosure suitable for control cabinet mounting.

Frame Size 8 comes with a built in EMC Filter to meet Category C3 with an option to upgrade to a High Performance EMC Filter that meets Category C2. The drive also has a built in choke as standard.

A new IP55 enclosure is also available and is designed for direct plant/control room mounting.



| kW  | HP  | Amps |
|-----|-----|------|
| 200 | 300 | 370  |
| 250 | 400 | 480  |

| Model Code                    | Product Family | Generation | Frame Size | Voltage Code | Power Rating Code | Supply Phases | Power Type | EMC Filter | Brake Transistor |
|-------------------------------|----------------|------------|------------|--------------|-------------------|---------------|------------|------------|------------------|
| ODP - 2 - 8 4 200 - 3 K # 4 # |                |            |            |              |                   |               |            |            |                  |
| ODP - 2 - 8 4 250 - 3 K # 4 # |                |            |            |              |                   |               |            |            |                  |
| Model Code                    | Product Family | Generation | Frame Size | Voltage Code | Power Rating Code | Supply Phases | Power Type | EMC Filter | Brake Transistor |
| ODP - 2 - 8 4 300 - 3 H # 4 # |                |            |            |              |                   |               |            |            |                  |
| ODP - 2 - 8 4 400 - 3 H # 4 # |                |            |            |              |                   |               |            |            |                  |



| kW  | HP  | Amps |
|-----|-----|------|
| 200 | 300 | 370  |
| 250 | 400 | 480  |

| Model Code                   | Product Family | Generation | Frame Size | Voltage Code | Capacity | Supply Phases | Power Type | EMC Filter | Brake Transistor | Enclosure Type |
|------------------------------|----------------|------------|------------|--------------|----------|---------------|------------|------------|------------------|----------------|
| ODV - 3 - 8 4 3700 - 3 # 1 # |                |            |            |              |          |               |            |            |                  |                |
| ODV - 3 - 8 4 4800 - 3 # 1 # |                |            |            |              |          |               |            |            |                  |                |

| #    | Enclosure                   |
|------|-----------------------------|
| 2-MN | IP20 with TFT display       |
| N-MN | IP55 with TFT display       |
| #    | EMC Filter                  |
| 0    | No Internal EMC Filter      |
| F    | Internal EMC Filter         |
| R    | High Performance EMC Filter |

## Options Include

|                 |                                     |
|-----------------|-------------------------------------|
| OPT-2-L31500-00 | Frame Size 8 AC Line Choke 500A, 1% |
| OPT-2-M3500-00  | Frame Size 8 Output Choke 500A      |
| OPT-2-L3500-00  | Frame Size 8 AC Line Choke 500A, 4% |
| OPT-2-E3500-00  | Frame Size 8 EMC Filter             |

## Size 8 Drive Specification

|                    |                           |                                                                                                                                                       |
|--------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Ratings      | Supply Voltage            | 380 – 480V ± 10%                                                                                                                                      |
|                    | Supply Frequency          | 48 – 62Hz                                                                                                                                             |
|                    | Displacement Power Factor | > 0.98                                                                                                                                                |
|                    | Phase Imbalance           | 3% Maximum allowed                                                                                                                                    |
|                    | Inrush Current            | < rated current                                                                                                                                       |
|                    | Power Cycles              | 120 per hour maximum, evenly spaced                                                                                                                   |
| Output Ratings     | Output Power              | 400V 3Ph. Input: 200 & 250kW<br>460V 3Ph. Input: 300 & 400HP                                                                                          |
|                    | Overload Capacity         | P2: 150% for 60 seconds<br>Eco: 110% for 60 seconds                                                                                                   |
|                    | Output Frequency          | 0 – 120Hz, 0.1Hz resolution                                                                                                                           |
|                    | Typical Efficiency        | > 97%                                                                                                                                                 |
|                    |                           |                                                                                                                                                       |
| Ambient Conditions | Temperature               | Storage: -40 to 60°C<br>Operating: -10 to 50°C                                                                                                        |
|                    | Altitude                  | Up to 1000m ASL without derating<br>Up to 4000m maximum                                                                                               |
|                    | Humidity                  | 95% Max, non condensing                                                                                                                               |
|                    | Enclosure                 | Ingress Protection IP20 / IP55                                                                                                                        |
|                    | Programming               | Keypad Built-in keypad as standard<br>Optional remote mountable keypad<br>Display Built-in multi language TFT display<br>PC OptiTools Studio          |
|                    | Standards Compliance      | Low Voltage Directive 2014/35/EU<br>EMC Directive 2014/30/EU<br>Additional Conformance UL, cUL, EAC, RCM, DNV<br>Harmonic Currents Eco: IEC61000-3-12 |

## Dimensions

| Enclosure | IP20  | IP55 |
|-----------|-------|------|
| mm Height | 974   | 1334 |
| mm Width  | 444   | 444  |
| mm Depth  | 423   | 423  |
| kg Weight | 124.5 | TBC  |



## Keypads & Displays

### OPTIPORT 2

Remote Keypad & LED Display

OPT-2-OPORT-IN



### OPTIPAD

Remote Keypad & TFT Display



#### Optipad Language Support

##### OPT-3-OPPAD-IN

English  
German  
Spanish  
Italian  
French  
Swedish  
Russian  
Polish  
Portuguese  
Finnish

##### OPT-3-OPPAD-TU

English  
German  
Turkish

Optiport 2 and Optipad units act as the remote keypad and display for the Optidrive on the network which has the same serial address. The physical layout and the operation of the Optiport keypad and display mimic the Optidrive exactly.

#### Specification

##### OPTIPORT 2

- Real-time keypad and display operation mimics Optidrive
- Single electrical interface for power and data
- Communicates with any compatible drive across a network
- Easy keypad switching to other network addresses
- IP54 rated when through panel mounted
- Bright LED Display
- Membrane keypad
- Parameter lock function available
- 3m Data Cable included

##### OPTIPAD

In addition to Optiport 2 features, Optipad benefits from:

- Multi-language TFT Display
- IP55 rated

- Simple plug in RJ45 connection
- 24 Volt DC Power provided directly by the Optidrive
- RS485 2 Wire Signal Interface
- Operating Temperature: -10°C to +50°C
- Storage Temperature: -40°C to +60°C

#### Compatible with:

Optidrive E3  
Optidrive P2  
Optidrive Eco

#### Configuration

Depending on the requirement of the application, Optiport 2 and Optipad keypads can be used in the following different ways:

##### 1 keypad with 1 drive



##### 1 keypad with multiple Optidrives (up to 63 max)



##### 2 keypads with 1 drive



##### 2 keypads with multiple Optidrives (up to 63 max)



Add a communication interface or extend functionality

Optidrive Compatibility

|                  |                                                                                     |                                                                                                                                                                                                                                                                          | P2 | Eco |
|------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|
| Field Bus        |    | <br><b>OPT-2-PROFB-IN</b><br>Supports PROFIBUS DPV1<br>Automatic Baud rate detection from 9.6kbps to 12mbps                                                                             | •  | •   |
|                  |    | <br><b>OPT-2-DEVNT-IN</b><br>Galvanically isolated bus electronics<br>Automatic baud rate detection<br>CIP Parameter Object Support                                                     | •  | •   |
|                  |    | <br><b>OPT-2-ETHNT-IN</b><br>Two Ethernet /IP ports<br>10/100Mbit half duplex operation<br>Supports DLR (Device Level Ring) and Linear network topology<br>CIP Parameter object support | •  | •   |
|                  |    | <br><b>OPT-2-MODIP-IN</b><br>Two Ethernet /IP ports<br>10/100Mbit half duplex operation<br>Modbus TCP with IT functionality                                                             | •  | •   |
|                  |   | <br><b>OPT-2-ETCAT-IN</b><br>Two Ethernet /IP ports<br>10/100Mbit half duplex operation<br>EtherCAT slave device                                                                       | •  | •   |
|                  |  | <br><b>OPT-2-PFNET-IN</b><br>Two Ethernet /IP ports<br>10/100Mbit half duplex operation                                                                                               | •  | •   |
|                  |  | <br><b>OPT-2-BNTIP-IN</b><br>Two Ethernet /IP ports<br>10/100Mbit half duplex operation<br>Supports Linear network topology                                                           |    | •   |
| Encoder Feedback |  | <b>OPT-2-ENCOD-IN</b><br>Suitable for standard TTL type encoders<br>Up to 4096ppr<br>5 Volt Power Supply on board<br>Maximum Input Frequency up to 500kHz                                                                                                                | •  |     |
|                  |  | <b>OPT-2-ENCHT-IN</b><br>Suitable for 24 Volt HTL type encoders<br>Up to 4096ppr<br>Up to 500kHz input frequency                                                                                                                                                         | •  |     |
| Extended I/O     |  | <b>OPT-2-EXTIO-IN</b><br>Provides an additional<br>3 Digital Inputs<br>2 Relay (Volt Free) Outputs                                                                                                                                                                       | •  | •   |
|                  |  | <b>OPT-2-CASCD-IN</b><br>Provides an additional<br>3 Relay (Volt Free) Outputs<br>Typical usage: Cascade control of Booster Pump sets                                                                                                                                    | •  | •   |
| External I/O     |  | <b>OPT-2-CANIO-IN</b><br>Standalone external I/O module<br>Additional 5 digital inputs<br>Additional 3 relay outputs<br>Connects via RJ45 socket                                                                                                                         | •  |     |

# OptiTools Studio

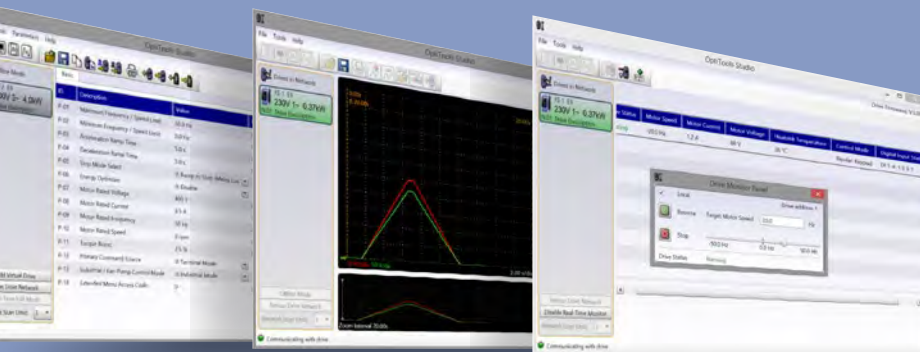
## OPTISTICK Smart

Rapid Commissioning Tool

OPT-3-STICK-IN

## Powerful PC Software

Drive commissioning and parameter backup



- Powerful PC based commissioning and programming software
- Multi Drive Network Support

### Supports two key functions:

- Drive Programming & Commissioning
  - Parameter Upload, Download & Storage
  - Changed Parameter Highlighting
  - Parameter List Printing
- Provides Access to Optidrive P2 & Eco PLC programming function
  - Function Blocked Based PLC Logic Programming
  - Advanced Drive Control Functions
  - Multiple Functions can be easily combined to produce powerful solutions
  - Program protection to prevent unauthorised copying
- Real-time scope function and data logging
- Real-time data monitoring

- Allows copying, backup and restore of drive parameters
- Provides Bluetooth interface to a PC running OptiTools Studio or the OptiTools Mobile app on a smartphone
- Onboard NFC (Near Field Communication) for rapid data transfer

### Compatible with:

Optidrive E3, Optidrive P2, Optidrive Eco

### Compatible with:

Windows Vista, Windows 7,  
Windows 8, Windows 8.1 & Windows 10



## PC Connection Kit

OPT-2-USB-OBUS



OPT-2-USB-OBUS is a dedicated PC connection kit for all Optidrive models, allowing direct connection from the PC USB port to the drive RJ45 communication connection for use with Optitools studio software.

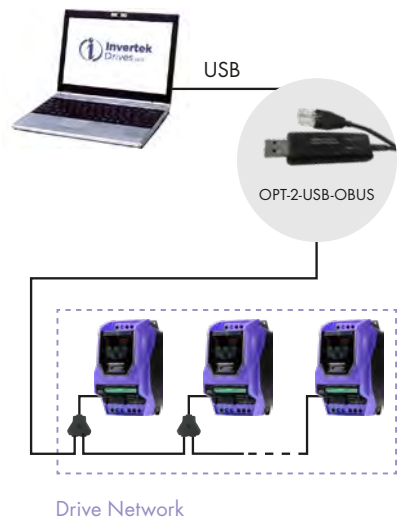
### Key Benefits

- To provide interface between PC and drive
- For use with OptiTools Studio PC software
- Provides electrical isolation between PC and drive network

### Features

- Isolated USB - RS485 connection adaptor
- USB2.0
- Compatible with Windows XP, Vista, 7, 8, 8.1, 10
- Supports Optitools Studio PC software connection to the drive
- 1.5 metre cable lengths

### Configuration



## RS485 Data Cable Splitter

OPT-J455P (RJ45 1 - 2 way)

RS485 data cable splitter is an RJ45 1 to 2-way connection block



## RJ45 Data Cables

RJ45 to RJ45 RS485 Data Cable, 0.5m length, Blue  
OPT-J4505

RJ45 to RJ45 RS485 Data Cable, 1.0m length, Blue  
OPT-J4510

RJ45 to RJ45 RS485 Data Cable, 3.0m length, Blue  
OPT-J4530



## RJ45 8 Way Network Hub

OPT-2-RJHUB-IN

## RJ45 Terminator

OPT-2-RJTRM-IN



## EtherNet Module

OPT-2-ETHEG-IN

- ODVA compliant EtherNet/IP Modbus Translator Device
- Compatible with all drive platforms: P2, E3 & Eco
- Integrated network switch: simplifying network architecture
- Compatible with RSLogix and CoDeSys PLCs



## Input Chokes

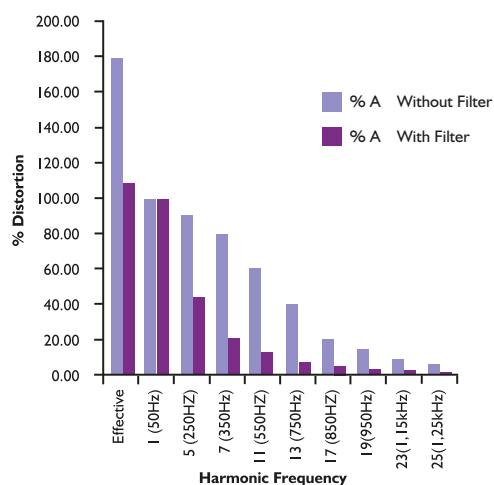
Reduce supply harmonic current distortion and increase protection against mains voltage spikes and notches

Input chokes can be used to reduce the supply line harmonic currents and voltage distortion generated by almost all inverter drives on the market today. Invertek Drives have selected a range of chokes matched to the Optidrive range to provide the best reduction in supply current harmonics whilst also providing enhanced protection for the Optidrive against transient voltages ('spikes') or other mains borne interference.

Input chokes are available for the complete range of Optidrive products, and are recommended for use in all installations and in particular:

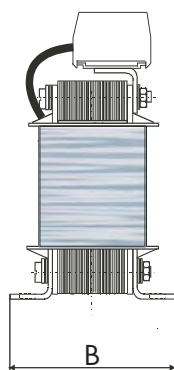
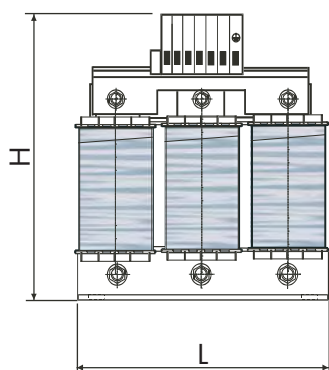
- where the local mains supply quality may be poor or unknown
- where high current switching loads such as large DC drives or soft starts are operating
- where the mains supply impedance is low
- in remote areas prone to lightening strikes

## Fourier Analysis of Harmonic Distortion



The graph shows the effect of using an input choke on typical 4kW/ 5HP drive. The 50Hz current is used as a reference and is the current which delivers the useful power to the motor. The reduction in the total effective (RMS) current is clear.

| Part Number    | Phases | Optidrive Size | Enclosure IP | Connection (mm <sup>2</sup> ) | L (mm) | H (mm) | B (mm) | Rated Volts | Rated Amps | Inductance (mH) | Weight (kg) |
|----------------|--------|----------------|--------------|-------------------------------|--------|--------|--------|-------------|------------|-----------------|-------------|
| OPT-2-L1016-20 | 1      | 1              | 20           | 4                             | 78     | 80     | 78     | 230 Max     | 16         | 1.8             | 1.1         |
| OPT-2-L1025-20 | 1      | 2              | 20           | 10                            | 85     | 158    | 76     |             | 25         | 1.1             | 1.8         |
| OPT-2-L1016-66 | 1      | 1              | 66           | 4                             | 82     | 70     | 70     | 230 Max     | 16         | 1.83            | 1.0         |
| OPT-2-L1025-66 | 1      | 2              | 66           | 10                            | 90     | 75     | 84     |             | 25         | 1.17            | 1.3         |
| OPT-2-L3006-20 | 3      | 1              | 20           | 2.5                           | 95     | 107    | 56     | 500 Max     | 6          | 4.8             | 1.3         |
| OPT-2-L3010-20 | 3      | 2              | 20           | 2.5                           | 125    | 127    | 71     |             | 10         | 2.9             | 2.5         |
| OPT-2-L3036-20 | 3      | 3              | 20           | 10                            | 190    | 205    | 82     |             | 36         | 0.81            | 7.2         |
| OPT-2-L3050-20 | 3      | 4              | 20           | 16                            | 190    | 220    | 102    |             | 50         | 0.58            | 8.7         |
| OPT-2-L3090-20 | 3      | 5              | 20           | 35                            | 240    | 280    | 107    |             | 90         | 0.32            | 16          |
| OPT-2-L3006-66 | 3      | 1              | 66           | 2.5                           | 115    | 88     | 74     | 600 Max     | 6          | 4.8             | 1.6         |
| OPT-2-L3010-66 | 3      | 2              | 66           | 2.5                           | 175    | 137    | 99     |             | 10         | 3.86            | 3.5         |
| OPT-2-L3018-66 | 3      | 3              | 66           | 10                            | 175    | 137    | 114    |             | 18         | 2.04            | 7           |
| OPT-2-L3200-00 | 3      | 6              | 00           | 9                             | 310    | 260    | 180    | 500         | 200        | 73.5            | 35          |
| OPT-2-L3300-00 | 3      | 7              | 00           | 9                             | 370    | 310    | 180    |             | 300        | 49.0            | 48          |



Output filters improve the quality of the output waveform

In most applications, the unfiltered output from an inverter drive gives satisfactory performance but to improve system functionality, reliability and longevity, output filtering is strongly recommended in some applications, including:

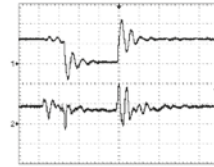
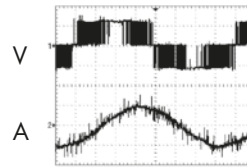
- Long motor cables, up to 200m
- High capacitance motor cables (i.e. typical "pyro" wire, used for fire protection)
- Multiple motors connected in parallel
- Motors without inverter grade insulation (typically older motors)

## Key Features

- Limits output voltage gradient, typically  $<200V/\mu s$
- Limits transient over voltages at the motor terminals, typically  $<1000V$
- Suppression of mains conducted interference in lower frequency ranges
- Compensation of capacitive load currents
- Reduction of RFI emissions from the motor cable
- Reduction of motor losses and audible noise caused by ripple

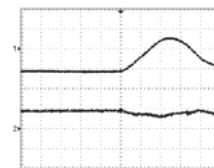
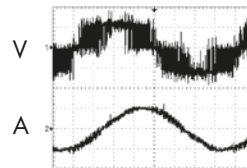
## Comparison of Characteristics

Without filter



Switching pulse

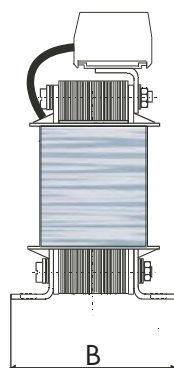
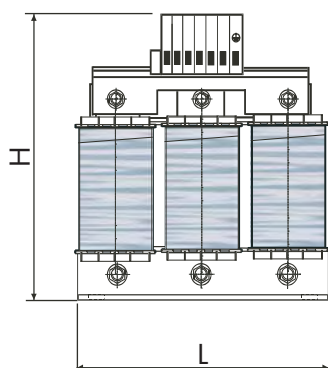
With filter



Switching pulse

**Note:** Switching pulse rises slower and to a lower amplitude with filter.

| Part Number    | Optidrive Size | Enclosure IP | Connection (mm <sup>2</sup> ) | L (mm) | H (mm) | B (mm) | Rated Volts | Rated Amps | Inductance (mH) | Weight (kg) |
|----------------|----------------|--------------|-------------------------------|--------|--------|--------|-------------|------------|-----------------|-------------|
| OPT-2-M3008-20 | 1              | 20           | 2.5                           | 95     | 107    | 61     | 500 Max     | 8          | 2.0             | 1.5         |
| OPT-2-M3012-20 | 2              | 20           | 4                             | 125    | 158    | 76     |             | 12         | 1.7             | 2.8         |
| OPT-2-M3030-20 | 3              | 20           | 10                            | 155    | 185    | 66     |             | 30         | 0.5             | 4.2         |
| OPT-2-M3075-20 | 4 & 5          | 20           | 35                            | 190    | 223    | 92     |             | 75         | 0.22            | 8.6         |
| OPT-2-M3180-00 | 5 & 6          | 00           | 11                            | 360    | 263    | 180    | 400 Max     | 180        | 0.09            | 30          |
| OPT-2-M3300-00 | 7              | 00           | 9                             | 380    | 310    | 180    |             | 300        | 0.053           | 48          |
| OPT-2-M3008-66 | 1              | 66           | 2.5                           | 115    | 85     | 74     | 600 Max     | 8          | 2.0             | 1.7         |
| OPT-2-M3012-66 | 2              | 66           | 2.5                           | 140    | 110    | 87     |             | 12         | 1.2             | 3.2         |
| OPT-2-M3018-66 | 3              | 66           | 10                            | 140    | 110    | 87     |             | 18         | 0.9             | 3.2         |

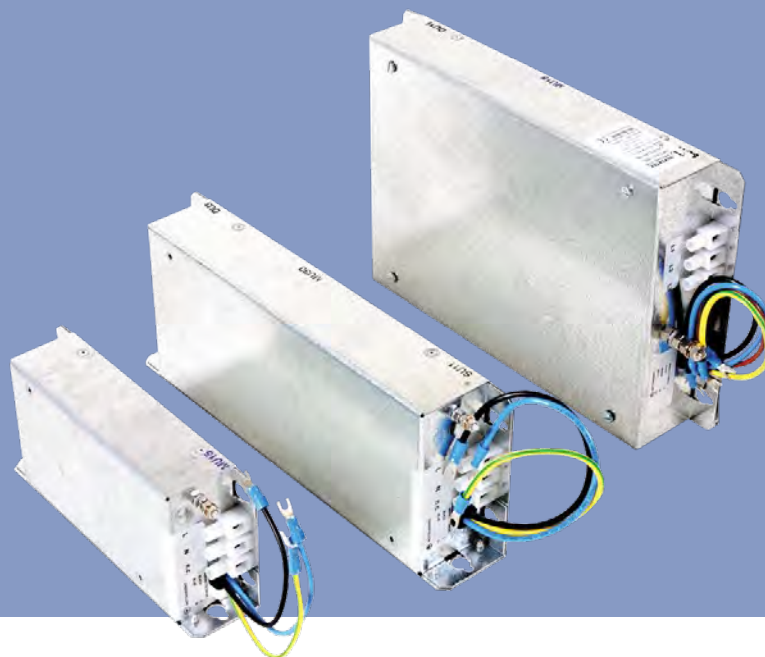


### OPTIFILTER

#### RFI Line Filters

All Optidrive products are manufactured as standard with an internal EMC filter, unless specified by the customer. In general, this internal filter will provide compliance with international standard requirements for the majority of industrial installations and applications.

Where a higher standard of EMC compliance is desired or required, Invertek Drives can provide a range of suitable filters to ensure that an EMC compliant solution for all possible applications can be realised.



| Part Number    | Supply Phases | Optidrive Size | Enclosure IP | Length (mm) | Width (mm) | Depth (mm) | Rated Amps | Weight (kg) |
|----------------|---------------|----------------|--------------|-------------|------------|------------|------------|-------------|
| OPT-2-E1010-20 | 1             | 1              | 20           | 180         | 70         | 65         | 10         | 1.5         |
| OPT-2-E1025-20 | 1             | 2              | 20           | 250         | 70         | 65         | 25         | 2.8         |
| OPT-2-E1010-66 | 1             | 1              | 66           | 180         | 70         | 65         | 10         | 1.5         |
| OPT-2-E1025-66 | 1             | 2              | 66           | 250         | 70         | 65         | 25         | 2.8         |
| OPT-2-E3006-20 | 3             | 1              | 20           | 210         | 85         | 60         | 6          | 2.7         |
| OPT-2-E3016-20 | 3             | 2              | 20           | 230         | 120        | 65         | 16         | 2.7         |
| OPT-2-E3025-20 | 3             | 3              | 20           | 230         | 120        | 65         | 25         | 2.7         |
| OPT-2-E3050-20 | 3             | 4              | 20           | 115         | 150        | 65         | 50         | TBC         |
| OPT-2-E3080-20 | 3             | 5              | 20           | 373         | 170        | 65         | 80         | TBC         |
| OPT-2-E3180-20 | 3             | 6              | 20           | 470         | 180        | 115        | 180        | TBC         |
| OPT-2-E3300-00 | 3             | 7              | 0            | 660         | 260        | 130        | 300        | TBC         |
| OPT-2-E3006-66 | 3             | 1              | 66           | 210         | 85         | 60         | 6          | 2.7         |
| OPT-2-E3016-66 | 3             | 2              | 66           | 230         | 120        | 65         | 16         | 2.7         |
| OPT-2-E3025-66 | 3             | 3              | 66           | 200         | 150        | 65         | 25         | 2.7         |

## OPTIBRAKE

### Dynamic Braking Resistors

Optibrake dynamic braking resistors are designed specifically for the Optidrive range. For use with high inertia loads which need to be stopped rapidly. Optibrake dynamic braking resistors assist the Optidrive in managing the electrical energy returned from the motor during braking by converting it to heat energy.



| Part Number | Optidrive Size | Resistance | Rated Voltage | Rated Power (W) |       |
|-------------|----------------|------------|---------------|-----------------|-------|
|             |                |            |               | Continuous      | Peak  |
| OD-BR100-IN | 2, 3           | 100        | 900 VDC       | 200             | 12000 |
| OD-BRES4-IN | 4, 5           | 22         | 900 VDC       | 500             | 21000 |



## Local Isolator



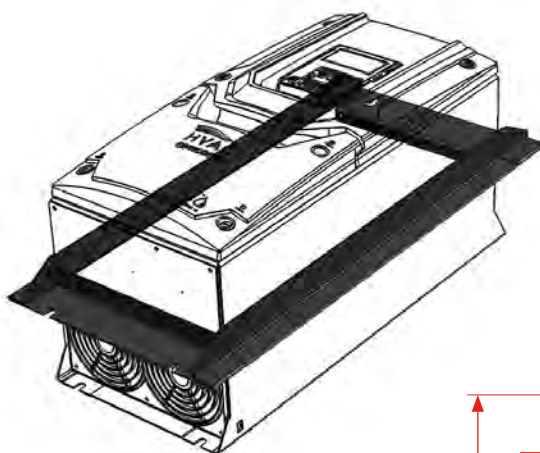
Local isolator option allows complete disconnection of the incoming AC power to the drive. The isolator mounts directly to the drive, and provides a local disconnect option. The handle can be padlocked in the off position for safe maintenance.

| Part Number    | Optidrive Size | H (mm) | W (mm) | D (mm) |
|----------------|----------------|--------|--------|--------|
| OPT-2-ISOLO-S4 | 4              | 170    | 173    | 80     |
| OPT-2-ISOLO-S5 | 5              | 230    | 235    | 100    |

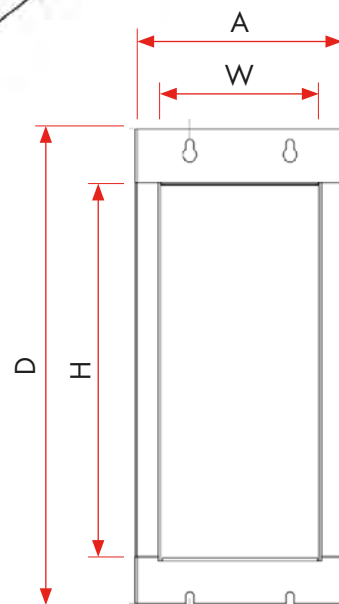
## Through Hole Mount Kit

Through hole mount kits allow optidrive to be mounted through panel, ensuring that the heat from the drives heat sink is kept spate from the control electronics. This allows the optimum panel cooling arrangement to be used, with best possible separation of hot and cold air.

Through panel mounting kits can be used with all IP55 frame size 4–7 units.



| Part Number  | Optidrive Size | Panel Cut Out Dimensions |             | Mount Dimensions |               |
|--------------|----------------|--------------------------|-------------|------------------|---------------|
|              |                | H mm (in)                | W mm (in)   | A mm (in)        | D mm (in)     |
| OPT-2-THMT04 | 4              | 425 (17.3)               | 180 (7.09)  | 228 (8.98)       | 521.5 (20.53) |
| OPT-2-THMT05 | 5              | 515 (21.26)              | 240 (9.65)  | 292 (11.5)       | 612.5 (24.11) |
| OPT-2-THMT06 | 6              | 815 (34.06)              | 335 (13.39) | 398 (15.67)      | 924 (36.38)   |
| OPT-2-THMT07 | 7              | 1230 (50.4)              | 335 (13.39) | 398 (15.67)      | 1342 (52.83)  |



|                             | Part Number      | Description                                                      | E3 | P2 | Eco |
|-----------------------------|------------------|------------------------------------------------------------------|----|----|-----|
| Braking Resistors           | OD-BR100-IN      | Brake Resistor, Size 2, 100R, 200W                               | ●  | ●  |     |
|                             | OPT-BR050-IN-155 | Brake Resistor, IP55, Size 2, 200W, 50R                          | ●  | ●  |     |
|                             | OD-BRES4-IN      | Brake Resistor, Size 4, 33R, 500W                                |    | ●  |     |
| Communication Interfaces    | OPT-2-ETCAT-IN   | EtherCAT Plug In Interface Module                                |    | ●  | ●   |
|                             | OPT-2-PROFB-IN   | Profibus DPV-1 Plug In Interface Module                          |    | ●  | ●   |
|                             | OPT-2-PFNET-IN   | Profinet IO Plug In Interface Module                             |    | ●  | ●   |
|                             | OPT-2-ETHNT-IN   | Ethernet/IP Plug In Interface Module                             |    | ●  | ●   |
|                             | OPT-2-DEVNT-IN   | DeviceNet Plug In Interface Module                               |    | ●  | ●   |
|                             | OPT-2-BNTIP-IN   | Bacnet IP Plug In Interface                                      |    |    | ●   |
|                             | OPT-2-MODIP-IN   | Modbus TCP Plug In Interface Module                              |    | ●  | ●   |
|                             | OD-PROFB-IN      | Profibus External Gateway & Cables                               | ●  | ●  | ●   |
|                             | OD-DEVNET-IN     | DeviceNET External Gateway & Cables                              | ●  | ●  | ●   |
|                             | OPT-2-ETHEG-IN   | EtherNet Module                                                  | ●  | ●  | ●   |
| Communications Options      | OPT-2-STICK-IN   | Optistick with Bluetooth Interface                               | ●  | ●  | ●   |
|                             | OPT-2-USB-OBUS   | USB PC Connection Kit                                            | ●  | ●  | ●   |
| Encoder Feedback Interfaces | OPT-2-ENCHT-IN   | Incremental Encoder Feedback Plug In Option Module (12 - 30Volt) |    | ●  |     |
|                             | OPT-2-ENCOD-IN   | Incremental Encoder Feedback Plug In Option Module (5Volt)       |    | ●  |     |
| External EMC Filters        | OPT-2-E1010-20   | Optifilter EMC Input Filter, 1 Phase, 10 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3006-20   | Optifilter EMC Input Filter, 3 Phase, 6 Amp, IP20                | ●  | ●  | ●   |
|                             | OPT-2-E1025-20   | Optifilter EMC Input Filter, 1 Phase, 25 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3016-20   | Optifilter EMC Input Filter, 3 Phase, 16 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3025-20   | Optifilter EMC Input Filter, 3 Phase, 25 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3050-20   | Optifilter EMC Input Filter, 3 Phase, 50 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3080-20   | Optifilter EMC Input Filter, 3 Phase, 80 Amp, IP20               | ●  | ●  | ●   |
|                             | OPT-2-E3180-20   | Optifilter EMC Input Filter, 3 Phase, 180 Amp, IP20              | ●  | ●  | ●   |
|                             | OPT-2-E3300-00   | Optifilter EMC Input Filter, 3 Phase, 300 Amp, IP00              | ●  | ●  | ●   |
| External EMC Filters IP66   | OPT-2-E1010-66   | Optifilter EMC Input Filter, 1 Phase, 10 Amp, IP66               | ●  | ●  | ●   |
|                             | OPT-2-E3006-66   | Optifilter EMC Input Filter, 3 Phase, 6 Amp, IP66                | ●  | ●  | ●   |
|                             | OPT-2-E1025-66   | Optifilter EMC Input Filter, 1 Phase, 25 Amp, IP66               | ●  | ●  | ●   |
|                             | OPT-2-E3016-66   | Optifilter EMC Input Filter, 3 Phase, 16 Amp, IP66               | ●  | ●  | ●   |
|                             | OPT-2-E3025-66   | Optifilter EMC Input Filter, 3 Phase, 25 Amp, IP66               | ●  | ●  | ●   |
| Frame Size 8 Accessories    | OPT-2-L31500-00  | Frame Size 8 AC Line Choke 500A, 1%                              |    | ●  |     |
|                             | OPT-2-M3500-00   | Frame Size 8 Output Choke 500A                                   |    | ●  |     |
|                             | OPT-2-L3500-00   | Frame Size 8 AC Line Choke 500A, 4%                              |    | ●  |     |
|                             | OPT-2-E3500-00   | Frame Size 8 EMC Filter                                          |    | ●  |     |
| I/O Options                 | ODP-2ROUT-IN     | Dual Relay Output Card                                           | ●  |    |     |
|                             | OPT-HVACO-IN     | HVACO Drive Running & Tripped Relay Output Card                  | ●  |    |     |
|                             | OPT-2-CASCD-IN   | Cascade Control Plug In Option Module                            |    | ●  | ●   |
|                             | OPT-2-EXTIO-IN   | Extended I/O Plug In Option Module                               |    | ●  | ●   |
|                             | OPT-LOGIP-11     | 110V Logic Input Card                                            | ●  |    |     |
|                             | OPT-LOGIP-23     | 230V Logic Input Card                                            | ●  |    |     |
|                             | OPT-2-LOCMO-IN   | Optidrive P2 / HVAC Local Mouse                                  |    | ●  | ●   |
|                             | OPT-2-CANIO-IN   | External Remote I/O Interface                                    |    | ●  |     |
| Input Chokes                | OPT-2-L1016-20   | Input Choke, 1 Phase, 16 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L1025-20   | Input Choke, 1 Phase, 25 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L3006-20   | Input Choke, 3 Phase, 6 Amp, IP20                                | ●  | ●  | ●   |
|                             | OPT-2-L3010-20   | Input Choke, 3 Phase, 10 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L3036-20   | Input Choke, 3 Phase, 36 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L3050-20   | Input Choke, 3 Phase, 50 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L3090-20   | Input Choke, 3 Phase, 90 Amp, IP20                               | ●  | ●  | ●   |
|                             | OPT-2-L3200-00   | Input Choke, 3 Phase, 200 Amp, IP00                              | ●  | ●  | ●   |
|                             | OPT-2-L3300-00   | Input Choke, 3 Phase, 300 Amp, IP00                              | ●  | ●  | ●   |
| Input Chokes IP66           | OPT-2-L1016-66   | Input Choke, 1 Phase, 16 Amp, IP66                               | ●  | ●  | ●   |
|                             | OPT-2-L1025-66   | Input Choke, 1 Phase, 25 Amp, IP66                               | ●  | ●  | ●   |
|                             | OPT-2-L3006-66   | Input Choke, 3 Phase, 6 Amp, IP66                                | ●  | ●  | ●   |
|                             | OPT-2-L3010-66   | Input Choke, 3 Phase, 10 Amp, IP66                               | ●  | ●  | ●   |
|                             | OPT-2-L3018-66   | Input Choke, 3 Phase, 18 Amp, IP66                               | ●  | ●  | ●   |
| Local Isolator              | OPT-2-ISOLO-S4   | Local Isolator, Frame Size 4                                     |    | ●  | ●   |
|                             | OPT-2-ISOLO-S5   | Local Isolator, Frame Size 5                                     |    | ●  | ●   |
| Output Filters              | OPT-2-M3008-20   | Output Filter, 8 Amp, IP20                                       | ●  | ●  | ●   |
|                             | OPT-2-M3012-20   | Output Filter, 12 Amp, IP20                                      | ●  | ●  | ●   |
|                             | OPT-2-M3030-20   | Output Filter, 30 Amp, IP20                                      | ●  | ●  | ●   |
|                             | OPT-2-M3180-00   | Output Filter, 180 Amp, IP20                                     | ●  | ●  | ●   |
|                             | OPT-2-M3075-20   | Output Filter, 75 Amp, IP20                                      | ●  | ●  | ●   |
|                             | OPT-2-M3300-00   | Output Filter, 300 Amp, IP00                                     | ●  | ●  | ●   |
| Output Filters IP66         | OPT-2-M3008-66   | Output Filter, 8 Amp, IP66                                       | ●  | ●  | ●   |
|                             | OPT-2-M3012-66   | Output Filter, 12 Amp, IP66                                      | ●  | ●  | ●   |
|                             | OPT-2-M3018-66   | Output Filter, 18 Amp, IP66                                      | ●  | ●  | ●   |
| PLC Licence                 | OPT-STUDIO-IN    | Optitools Studio PLC Function Single PC Licence                  |    | ●  | ●   |
| Remote Keypads              | OPT-2-OPORT-IN   | Optiport 2 with RJ45 Cable                                       | ●  | ●  | ●   |
|                             | OPT-2-OPPAD-IN   | Optipad Remote OLED Keypad with RJ45 Cable                       | ●  | ●  | ●   |
|                             | OPT-2-OPDTK-IN   | Optipad Remote OLED Keypad with RJ45 Cable (Turkish)             | ●  | ●  | ●   |
| RJ45 Accessories            | OPT-J4505-IN     | RS485 Data Cable, 0.5M RJ45                                      | ●  | ●  | ●   |
|                             | OPT-J4510-IN     | RS485 Data Cable, 1.0M RJ45                                      | ●  | ●  | ●   |
|                             | OPT-J4530-IN     | RS485 Data Cable, 3.0M RJ45                                      | ●  | ●  | ●   |
|                             | OPT-J45SP-IN     | RS485 3 Way Data Cable Splitter RJ45                             | ●  | ●  | ●   |
|                             | OPT-3-BNTSP-IN   | RJ45 BacNet connector                                            |    |    | ●   |
|                             | OPT-2-RJHUB-IN   | RS485 8 Way Network Hub RJ45                                     | ●  | ●  | ●   |
|                             | OPT-2-RJTRM-IN   | RJ45 Terminator                                                  | ●  | ●  | ●   |
| Through Hole Mount Kits     | OPT-2-THMT04     | Through Hole Mount Kit Frame Size 4                              |    | ●  | ●   |
|                             | OPT-2-THMT05     | Through Hole Mount Kit Frame Size 5                              |    | ●  | ●   |
|                             | OPT-2-THMT06     | Through Hole Mount Kit Frame Size 6                              |    | ●  | ●   |
|                             | OPT-2-THMT07     | Through Hole Mount Kit Frame Size 7                              |    | ●  | ●   |

**Inverter Drives Ltd** is dedicated to the design, manufacture and marketing of electronic variable speed drives. The state of the art UK headquarters houses specialist facilities for research & development, manufacturing and global marketing. The company pledges to implement and operate the ISO 14001 Environmental Management System to enhance environmental performance.

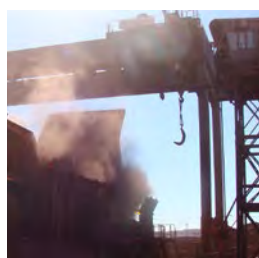
All company operations are accredited to the exacting customer focused ISO 9001:2008 quality standard. The company's products are sold globally in over 80 different countries. Inverter Drives' unique and innovative drives are designed for ease of use and meet with recognised international design standards.



UK Headquarters, Welshpool

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### Crane Control

Demanding application at South African mine



### Machine Tool OEM

UK machine tool supplier specifies Optidrive



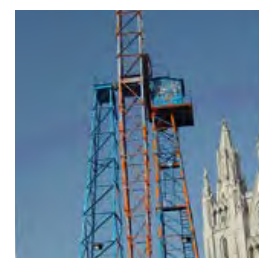
### Manufacturing

IP66 washdown duty drives in Singapore



### Food Processing

Precision conveyor control in Spain



### Amusement Parks

Reliable control of difficult loads in Spain

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