

# ODP-2-24220-3KF42-MN

## Optidrive P2 VFD Datasheet

**2.2 kW, 5.8 A, 380-480 V, 3PH**  
IP20 Variable Frequency Drive with EMC  
Filter and TFT Display



### Input Ratings

|                             |           |
|-----------------------------|-----------|
| Supply Voltage              | 380-480 V |
| Input Phases                | 3         |
| Supply Current Continuous   | 7.5 A     |
| Supply Fuse or MCB (Type B) | 10 A      |

### Output Ratings

|                     |                    |
|---------------------|--------------------|
| Motor Output Rating | 2.2 kW (3 HP)      |
| Output Voltage      | 0 – Supply Voltage |
| Output Current      | 5.8 A              |

### Cable Information

|                        |                    |
|------------------------|--------------------|
| Max Supply Cable Size  | 8 mm² (0.01 sq in) |
| Max Motor Cable Size   | 8 mm² (0.01 sq in) |
| Max Motor Cable Length | 100 m (328 ft)     |

### Factory Build Options

|                  |              |
|------------------|--------------|
| EMC Filter       | Internal EMC |
| Brake Transistor | Internal     |
| Enclosure        | IP20         |
| Display          | TFT Display  |
| PCB Coating      | Standard     |

### Dimensions

|         |                   |
|---------|-------------------|
| Size    | 2                 |
| Height  | 221 mm (8.7 in)   |
| Width   | 110 mm (4.33 in)  |
| Depth   | 185 mm (7.28 in)  |
| Weight  | 1.8 kg (3.97 lbs) |
| Fixings | 4 x M4            |

### Packaged Dimensions

|        |                   |
|--------|-------------------|
| Height | 265 mm (10.43 in) |
| Width  | 145 mm (5.71 in)  |
| Depth  | 230 mm (9.06 in)  |
| Weight | 1.9 kg (4.19 lbs) |



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



# OPTIDRIVE™ CP<sup>2</sup>

AC Variable Speed Drive

**Powerful Performance**  
Advanced motor control



0.75kW – 250kW / 1HP – 400HP  
**200–600V** Single & 3 Phase Input

# Powerful Performance

World leading control for the latest generation of permanent magnet and standard induction motors

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



## World Leading Motor Control

The 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.

Designed for fast installation and commissioning, Optidrive P2 provides the most cost effective solution for industry.

All Optidrive P2 units provide 150% overload for 60 seconds as standard, ensuring each drive is suitable for Heavy Duty applications, whilst the IP55 enclosed versions ensure the drive is tough enough to survive in industrial environments.

Extensive I/O and communications interface capabilities ensure the drive can be integrated quickly and efficiently into a wide variety of control systems with the minimum commissioning time, ensuring rapid start up. Invertertek's simple parameter structure, and carefully selected factory parameter settings ensure that commissioning time is kept to a minimum.



Compliant with international standards.  
Manufactured in the UK.

# 150% overload for 60 seconds



**IP20**

Up to 250kW



**IP55**

Up to 250kW



**IP66**

Up to 30kW

## 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.

# At a Glance...

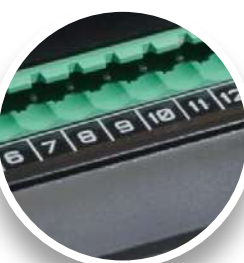
High performance, excellent usability and flexible to meet the needs of your application

Keyhole  
Mounts for fast  
installation

Integrated  
Keypad &  
Display

  
**IP55 / NEMA 12**

Integrated  
EMC Filter



Pluggable Control  
Terminals

Integrated Cable  
Management



Integral  
Brake  
Transistor

High Quality  
Long-life Fans



Contactor-style Power  
Wiring Arrangement



Keyhole  
Mounts for fast  
installation



DIN Rail Mount

Modbus RTU  
and CANopen  
on board as  
standard



Modbus  
CANopen



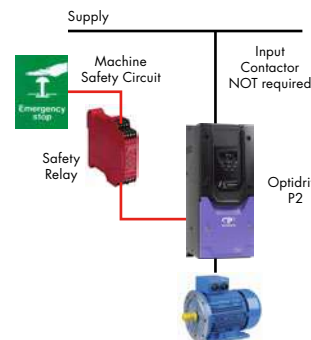
### Safe Torque Off (provided as standard)

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

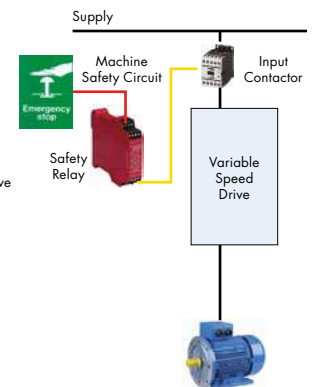
- Simple machine design reduces component costs, saves panel space and minimises installation time
- Faster shut down and reset procedures reduce system maintenance time
- Better safety standard compared to mechanical solution
- Better motor connection. Single cable with no interruption.



### With



### Without



# Applications

High performance, accurate motor control for even the most demanding of applications



## Mining & Quarrying

- Feed conveyers
- Crushers
- Cranes

## Metals & Processing

- Grinding
- Cutting
- Polishing
- Drilling
- Rolling

## Rubber & Plastics

- Extruders
- Moulding
- Mixers
- Winding

## Food & Beverage

- Conveyers
- Pumps
- Mixers
- Palletisers

Powerful, versatile and  
easy to use

## Cranes



### Requirements:

- High starting torque
- Smooth motor operation throughout starting and stopping phases
- Motor holding brake control
- Avoidance of load droop and sag
- Regeneration and braking capability during load lowering

### Optidrive P2 provides:

- Dedicated Hoist Mode Operation with motor holding brake control algorithm
- Up to 200% torque from zero speed in vector operation without encoder feedback
- Multiple Preset Speed or variable speed operation
- Built in dynamic braking transistor, requires only an external resistor

## Compressors



### Requirements:

- Precise regulation of speed to ensure a consistent end product
- High starting torque demand in many applications
- Maximum efficiency under all conditions
- Safe operation to prevent accidents and injuries

### Optidrive P2 Provides:

- PM Motor control mode to allows open loop operation with Permanent Magnet motors for maximum efficiency
- Maximum starting torque with standard AC motors
- Better than 0.5% speed holding accuracy in Open Loop Vector Operation
- Dedicated Safe Torque Off input complies with EN62061 SIL Level 2 for safe operation

## Winding



### Requirements:

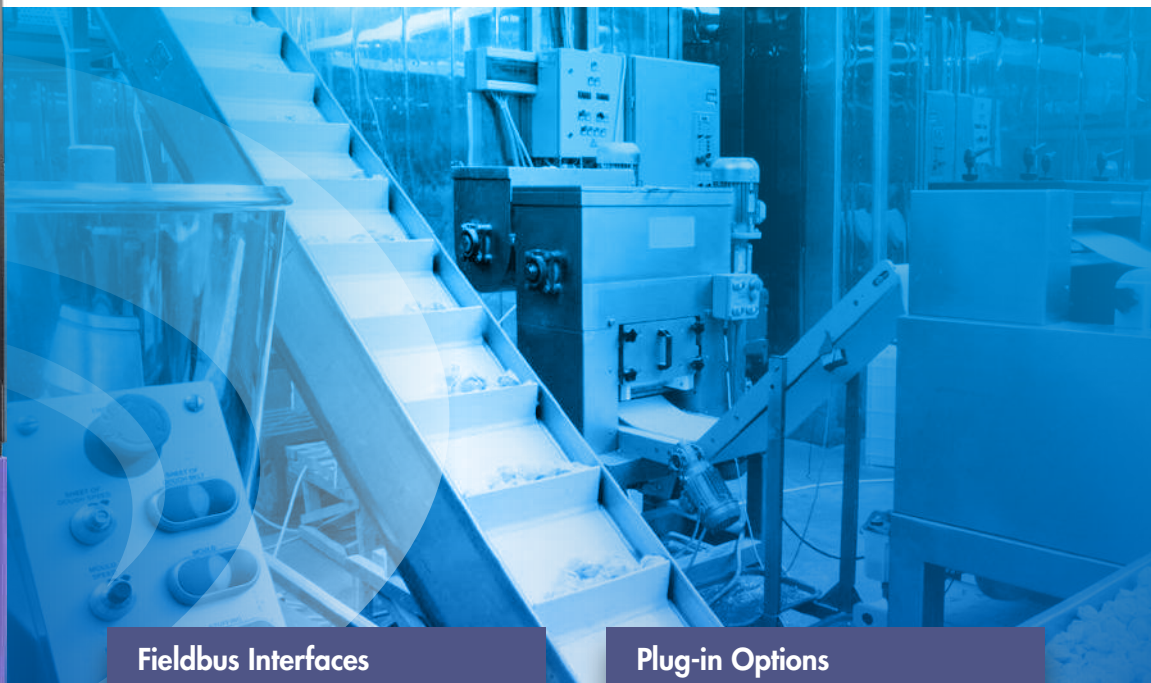
- Precise control of motor torque over a broad speed range
- Accurate control of material tension under all conditions
- Open or closed loop control capability, based on tension feedback or winding diameter
- Web break protection in case of material breakage

### Optidrive P2 Provides:

- PID Closed Loop Tension Control with feedback from a load cell or dancer arm
- Open Loop Vector control provides optimum control of the output torque level
- Encoder feedback option allows for a very wide speed range, even down to zero speed
- Safe Torque Off input immediately disables the drive in Emergency conditions

# Options & Accessories

Installation options, plug-in modules and commissioning tools



Modbus RTU and CANopen on board as standard

For additional communication interfaces or functionality a range of plug-in modules is available:

## Fieldbus Interfaces



**Profibus DP**  
OPT-2-PROFB-IN



**DeviceNet**  
OPT-2-DEVNT-IN



**Ethernet IP**  
OPT-2-ETHNT-IN



**Modbus TCP**  
OPT-2-MODIP-IN



**Profinet**  
OPT-2-PFNET-IN



**EtherCat**  
OPT-2-ETCAT-IN



## Plug-in Options



**Encoder Feedback**  
OPT-2-ENCOD-IN (5 Volt)  
OPT-2-ENCHT-IN (15 – 30 Volt)

Closed loop encoder feedback, compatible with a wide range of incremental encoders

**Extended I/O**  
OPT-2-EXTIO-IN

- Additional 3 Digital Inputs
- Additional Relay Output

**Extended Relay**  
OPT-2-CASCD-IN

Additional 3 Relay Outputs:

**Relay 3** – Drive Healthy Indication  
**Relay 4** – Drive Fault Indication  
**Relay 5** – Drive Running Indication

Functions are programmable / adjustable

# Installation & Peripheral Options

A range of external EMC Filters, Brake Resistors, Input Chokes and Output Filters are available, to suit all installation requirements

## Optistick Smart

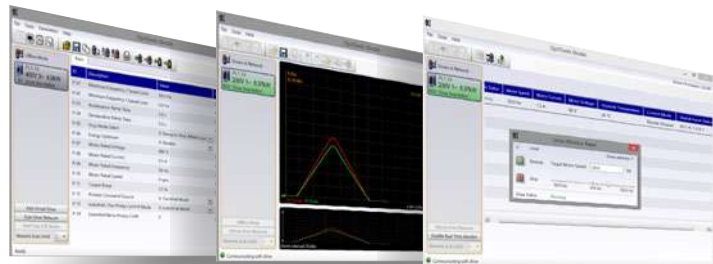


### Rapid Commissioning Tool

- 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

**OPT-3-STICK-IN**

## OptiTools Studio



### Powerful PC Software

#### Drive commissioning and parameter backup

- Real-time parameter editing
- Drive network communication
- Parameter upload, download and storage
- Simple PLC function programming
- Real-time scope function and data logging
- Real-time data monitoring

#### Compatible with:

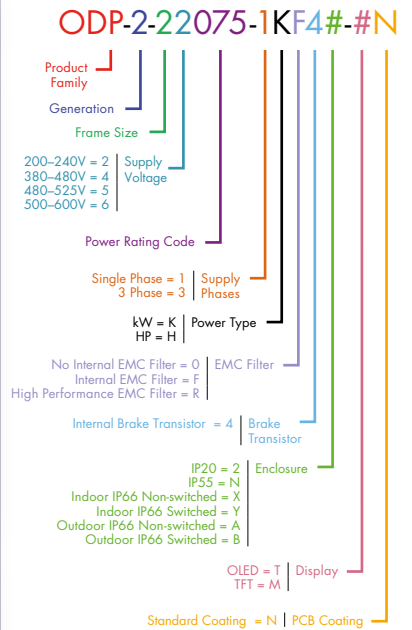
Windows Vista  
Windows 7  
Windows 8  
Windows 8.1  
Windows 10

Replace # in model code with enclosure/display option

|                                 | kW                 | Amps             | Frame Size  | Product Family | Generation | Frame Size | Voltage Code | Power Rating Code | Supply Phases | 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<br>1.5<br>2.2 | 4.3<br>7<br>10.5 | 2<br>2<br>2 | ODP            | - 2        | - 2        | 2            | 075               | - 1           | K          | F 4 #            | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 |                    |                  |             | ODP            | - 2        | - 2        | 2            | 150               | - 1           | K          | F 4 #            | 2-MN               |                  | X-TN                     | Y-TN                 | A-MN                      | B-MN                  |
|                                 |                    |                  |             | 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               |                  |                          |                      | A-MN                      | B-MN                  |
|                                 | 5.5                | 24               | 4           | ODP            | - 2        | - 4        | 2            | 055               | - 3           | K          | F 4 #            |                    | N-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 #            | 2-MN               |                  |                          |                      | A-MN                      | B-MN                  |
|                                 | 11                 | 24               | 4           | ODP            | - 2        | - 4        | 4            | 110               | - 3           | K          | F 4 #            |                    | N-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             |                          |                      |                           |                       |

kW Models: Factory Settings  
Motor Rated Frequency: 50Hz  
Motor Rated Voltage: 30/400/575V

## Model Code Guide



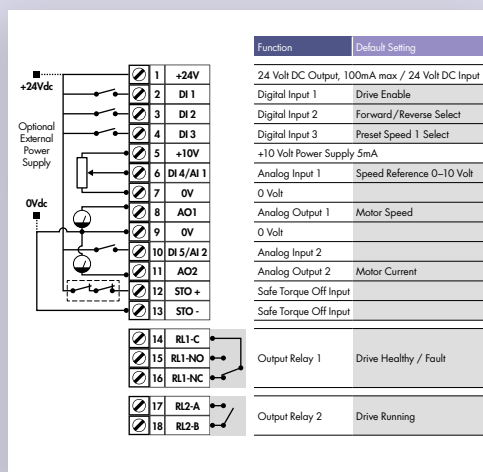
### EMC Filter

- O** 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         | 150% for 60 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: –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)                                                                                                                                                                     |
|                           | Humidity                  | 95% Max, non condensing                                                                                                                                                                                                                                                 |
|                           | Vibration                 | Conforms to IEC 60068-2-6<br>Sinusoidal Vibration<br>10 - 57Hz @ 0.075mm Pk<br>57 - 150Hz @ 1g Pk                                                                                                                                                                       |
| Enclosure                 | Ingress Protection        | IP20, IP55, IP66                                                                                                                                                                                                                                                        |
| Programming               | Keypad                    | Built-in keypad as standard<br>Optional remote mountable keypad                                                                                                                                                                                                         |
|                           | Display                   | Built-in multi language text display                                                                                                                                                                                                                                    |
|                           | PC                        | OptiTools Studio                                                                                                                                                                                                                                                        |
| 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 |
|                           | PWM Frequency             | 4–32kHz Effective                                                                                                                                                                                                                                                       |
|                           | Stopping Mode             | Ramp to Stop: User Adjustable 0.01 – 600 secs<br>Coast to Stop                                                                                                                                                                                                          |
|                           | Braking                   | Motor Flux Braking<br>Built-in Braking Transistor                                                                                                                                                                                                                       |
|                           | Skip Frequency            | Single point, user adjustable                                                                                                                                                                                                                                           |
|                           | 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 4mA<br>PTC<br>Digital<br>Motorised Potentiometer (Keypad & Terminal)<br>Modbus RTU<br>CANopen                                                       |
| Fieldbus Connectivity     | Builtin                   | CANopen 125 – 1000kbps<br>Modbus RTU 9.6 - 115.2 kbps selectable<br>8N1, 8N2, 8E1, 8O1                                                                                                                                                                                  |
|                           | Optional                  | Other<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<br>5 Digital With CAN IO Option                                                                                                                       |
|                           | Digital Inputs            | Opto - Isolated<br>8 – 30 Volt DC, internal or external supply<br>Response time < 4ms                                                                                                                                                                                   |
|                           | Analog Inputs             | Resolution: 12 bits<br>Response time: < 4ms<br>Accuracy: < 1% full scale<br>Parameter adjustable scaling and offset                                                                                                                                                     |
|                           | PTC Input                 | Motor PTC / Thermistor Input<br>Trip Level : 3kΩ                                                                                                                                                                                                                        |
|                           | Programmable Outputs      | 7 Total (Optional additional 3)<br>2 Analog / Digital<br>2 Relays (Optional additional 3)<br>3 With CAN IO Option Module                                                                                                                                                |
|                           | Relay Outputs             | Maximum Voltage: 250 VAC, 30 VDC<br>Switching Current Capacity: 5A AC, 5A DC                                                                                                                                                                                            |
|                           | Analog Outputs            | 0 to 10 Volt<br>0 to 20mA<br>4 to 20mA                                                                                                                                                                                                                                  |
| Application Features      | PID Control               | Internal PID Controller<br>Multi Setpoint Select<br>Standby / Sleep Mode<br>Boost Function                                                                                                                                                                              |
|                           | Hoist Mode                | Dedicated Hoist Mode<br>Motor Holding Brake Pre-Torque & Control<br>Over Limit Protection                                                                                                                                                                               |
| Maintenance & Diagnostics | Fault Memory              | Last 4 Trips stored with time stamp<br>Logging of data prior to trip for diagnostic purposes:<br>Output Current<br>Drive Temperature<br>DC Bus Voltage<br>Plus more in Optitools                                                                                        |
|                           | Data Logging              |                                                                                                                                                                                                                                                                         |
|                           | 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                                                                                                                                                                                                                                                              |
|                           | EMC Directive             | 2014/30/EU                                                                                                                                                                                                                                                              |
|                           | Additional Conformance    | UL, cUL, EAC, RCM                                                                                                                                                                                                                                                       |
|                           | Marine Certification      | DNV Type Approval                                                                                                                                                                                                                                                       |
|                           | Environmental Conditions  | Conformal Coated PCBs. Suitable for use in the following environments:<br>IP20: 3C2, 3S2<br>IP55 & IP66: 3C3, 3S3                                                                                                                                                       |

## 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  |

**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.

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### Optidrive P2 User Guide



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