

OPTIDRIVE™

AC Variable Speed Drive

General Purpose Drives
Dedicated to Low Power Applications



0.37kW – 11kW / 0.5HP – 15HP
200–480V 3 Phase Input

General Purpose

Dedicated to low power applications, Optidrive E2 combines innovative technology, reliability, robustness and ease of use in a range of compact IP20 & IP66 enclosures

Key Features

- ✓ **Intuitive Keypad Control**
Precise digital control at the touch of a button.
- ✓ **Simple Commissioning**
14 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.
- ✓ **Integral RFI Filter**
Options for built-in and external filters for full EMC compliance.
- ✓ **Modbus RTU**
Easy integration with your control & monitoring systems.
- ✓ **Compact Enclosures**
Small mechanical envelopes to help minimise your space requirements.
- ✓ **Brake Chopper (Sizes 2 & 3)**
Dynamic & compact options with heatsink mounted resistor.
- ✓ **High Overload Capability**
150% overload for 60 seconds.
175% overload for 2 seconds.
- ✓ **Industrial Ambient Ratings**
IP20 Enclosure: 50°C
IP66 Enclosure: 40°C



Bottling Pumping Processing Plants HVAC Baggage Handling Chemical Woodworking Agricultural Mining Conveyor Systems

IP20

- Available up to 11KW
- Easy to use
- Compact & robust



IP66

- Available up to 7.5KW
- Dust-tight
- Washdown ready

More details on page 4 & 5



Single Phase

- Available up to 1.1KW
- Single-phase motor control
- Special boost phase

More details on page 6 & 7



**Convenient
Help Card**



**Optistick
Programming**



DIN Rail Mount



**EMC & Varistor
Disconnect**



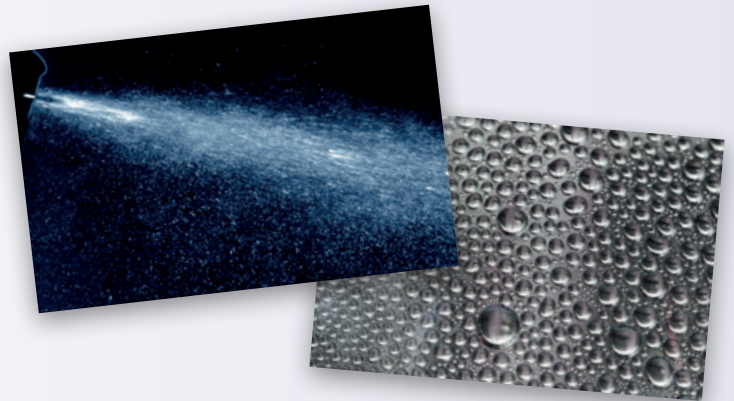
**Optional
Braking Resistor**

OPTIDRIVE™ E² IP66

Ready to wash down



Switched and Non-switched IP66 models available.



Optidrive E2 IP66

Environmentally protected, the Optidrive E2 IP66 can be mounted directly on your processing equipment.



Dust-tight Design

Install in-situ and be sure of protection from dust and contaminants.

Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, the Optidrive E2 IP66 is ideal for high-pressure washdown applications.

On-drive Control

IP66 models feature optional, convenient controls for speed control, REV/OFF/FWD and Power ON/OFF, complete with safety lock.

IP66

Recommended for:

- Paper
- Petroleum
- Food Processing
- Aggregate / Cement
- Mining
- Textile
- Horticultural
- Chemical
- Agricultural



IP66 / NEMA 4X

Dimensions IP20 & IP66

NOT TO SCALE



| Size | 1 | 2 | 3 | 1 | 2 | 3 |
|-------------|--------|--------|--------|--------|--------|--------|
| Enclosure | IP20 | IP20 | IP20 | IP66 | IP66 | IP66 |
| Height (mm) | 173 | 221 | 261 | 232 | 257 | 310 |
| Width (mm) | 82 | 104 | 131 | 161 | 188 | 210.5 |
| Depth (mm) | 123 | 150 | 175 | 175 | 187 | 243 |
| Weight (kg) | 1.1 | 2.6 | 4 | 2.8 | 4.6 | 7.4 |
| Fixings | 4 x M4 | 4 x M4 | 4 x M4 | 4 x M4 | 4 x M4 | 4 x M4 |

| kW | HP | Amps | Size | kW Model Code | | | | | HP Model Code | | | | | Factory Build Options | | | | | | | | |
|----------------------------------------------------------|------|------|------|-------------------|-------------------|------------|----------------|--------------|---------------|-------------------|-----------------------|---------------|------------|-----------------------|----------------|--------------|--------------|------------|-----------------------|------------|------------------|-----------|
| | | | | Product Range | Generation | Frame Size | Supply Voltage | Power Rating | Input Phases | Power Type | Factory Build Options | Product Range | Generation | Frame Size | Supply Voltage | Power Rating | Input Phases | Power Type | Factory Build Options | EMC Filter | Brake Transistor | Enclosure |
| 110-115V ± 10% (230V 3 Phase Output) 1 Phase Input | - | 0.5 | 2.3 | 1 | N/A | | | | | | ODE-2-1-1-005-I-H | 0 | 1 | # | | | | | | | | |
| | - | 1 | 4.3 | 1 | N/A | | | | | | ODE-2-1-1-010-I-H | 0 | 1 | # | | | | | | | | |
| | - | 1.5 | 5.8 | 2 | N/A | | | | | | ODE-2-2-1-015-I-H | 0 | 4 | # | | | | | | | | |
| 200-240V ± 10% 1 Phase Input | 0.37 | 0.5 | 2.3 | 1 | ODE-2-1-2-037-I-K | # | 1 | # | | | ODE-2-1-2-005-I-H | # | 1 | # | | | | | | | | |
| | 0.75 | 1 | 4.3 | 1 | ODE-2-1-2-075-I-K | # | 1 | # | | | ODE-2-1-2-010-I-H | # | 1 | # | | | | | | | | |
| | 1.5 | 2 | 7 | 1 | ODE-2-1-2-075-I-K | # | 1 | # | | | ODE-2-1-2-011-I-H | # | 1 | # | | | | | | | | |
| | 1.5 | 2 | 7 | 2 | ODE-2-2-2-150-I-K | # | 4 | # | | | ODE-2-2-2-020-I-H | # | 4 | # | | | | | | | | |
| | 2.2 | 3 | 10.5 | 2 | ODE-2-2-2-220-I-K | # | 4 | # | | | ODE-2-2-2-030-I-H | # | 4 | # | | | | | | | | |
| 4 | 5 | 15 | 3 | ODE-2-3-2-040-I-K | # | 4 | # | | | ODE-2-3-2-050-I-H | # | 4 | # | | | | | | | | | |
| 200-240V ± 10% 3 Phase Input | 0.37 | 0.5 | 2.3 | 1 | ODE-2-1-2-037-3-K | 0 | 1 | # | | | ODE-2-1-2-005-3-H | 0 | 1 | # | | | | | | | | |
| | 0.75 | 1 | 4.3 | 1 | ODE-2-1-2-075-3-K | 0 | 1 | # | | | ODE-2-1-2-010-3-H | 0 | 1 | # | | | | | | | | |
| | 1.5 | 2 | 7 | 1 | ODE-2-1-2-150-3-K | 0 | 1 | # | | | ODE-2-1-2-020-3-H | 0 | 1 | # | | | | | | | | |
| | 1.5 | 2 | 7 | 2 | ODE-2-2-2-150-3-K | # | 4 | # | | | ODE-2-2-2-020-3-H | # | 4 | # | | | | | | | | |
| | 2.2 | 3 | 10.5 | 2 | ODE-2-2-2-220-3-K | # | 4 | # | | | ODE-2-2-2-030-3-H | # | 4 | # | | | | | | | | |
| 4 | 5 | 18 | 3 | ODE-2-3-2-040-3-K | # | 4 | # | | | ODE-2-3-2-050-3-H | # | 4 | # | | | | | | | | | |
| 380-480V ± 10% 3 Phase Input | 0.75 | 1 | 2.2 | 1 | ODE-2-1-4-075-3-K | # | 1 | # | | | ODE-2-1-4-010-3-H | # | 1 | # | | | | | | | | |
| | 1.5 | 2 | 4.1 | 1 | ODE-2-1-4-150-3-K | # | 1 | # | | | ODE-2-1-4-020-3-H | # | 1 | # | | | | | | | | |
| | 1.5 | 2 | 4.1 | 2 | ODE-2-2-4-150-3-K | # | 4 | # | | | ODE-2-2-4-020-3-H | # | 4 | # | | | | | | | | |
| | 2.2 | 3 | 5.8 | 2 | ODE-2-2-4-220-3-K | # | 4 | # | | | ODE-2-2-4-030-3-H | # | 4 | # | | | | | | | | |
| | 4 | 5 | 9.5 | 2 | ODE-2-2-4-400-3-K | # | 4 | # | | | ODE-2-2-4-050-3-H | # | 4 | # | | | | | | | | |
| | 5.5 | 7.5 | 14 | 3 | ODE-2-3-4-055-3-K | # | 4 | # | | | ODE-2-3-4-075-3-H | # | 4 | # | | | | | | | | |
| | 7.5 | 10 | 18 | 3 | ODE-2-3-4-075-3-K | # | 4 | # | | | ODE-2-3-4-100-3-H | # | 4 | # | | | | | | | | |
| 11 | 15 | 24 | 3 | ODE-2-3-4-110-3-K | # | 4 | 2 | | | ODE-2-3-4-150-3-H | # | 4 | 2 | | | | | | | | | |

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

HP Models: Factory Settings
 Motor Rated Frequency: 60Hz
 Motor Rated Voltage: 460V

Replace # in model code with colour-coded option

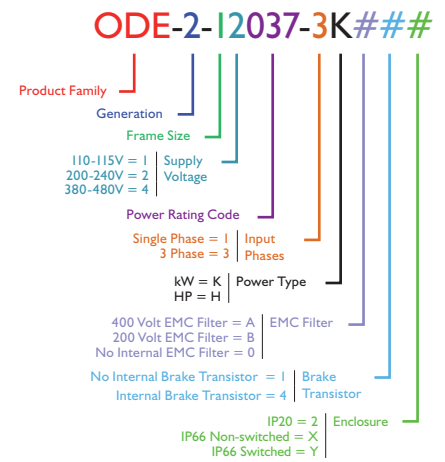
Drive Specification

| | | |
|----------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Ratings | Supply Voltage | 110 – 115V ± 10% 200 – 240V ± 10% 380 – 480V ± 10% |
| | Supply Frequency | 48 – 62Hz |
| | Phase Imbalance | 3% Maximum allowed |
| | Inrush Current | < rated current |
| | Power Cycles | 120 per hour maximum, evenly spaced |
| Output Ratings | Output Power | 110V 1 Phase Input: 0.5-1.5HP (230V 3 Phase Output) 230V 1 Phase Input: 0.75-4kW (1-5HP) 230V 3 Phase Input: 0.75-4kW (1-5HP) 400V 3 Phase Input: 0.75-11kW 460V 3 Phase Input: 1-15HP |
| | Overload Capacity | 150% for 60 seconds, 175% for 2 seconds |
| | Output Frequency | 0 – 500Hz, 0.1Hz resolution |
| | Ambient Conditions | Temperature: Storage : -40 to 60°C Operating : -10 - 50°C (IP20) -10 - 40°C (IP66) Altitude: Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m Humidity: 95% Max, non-condensing |
| Enclosure | Ingress Protection | IP20 IP66 (Excluding 11kW) |
| | Programming | Keypad: Built-in Keypad as standard Optional remote mountable keypad Display: Built-in LED display Programming: OptiTools Studio / OPTISTICK |

| | | |
|-----------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Specification | Control Method | V/F Voltage Vector Energy Optimised V/F |
| | PWM Frequency | 4 – 32kHz Effective |
| | Stopping Mode | Ramp to Stop : User Adjustable 0.01 – 600 seconds Coast to Stop |
| | Braking | Motor Flux Braking Built-in Braking Transistor (Frames 2 & 3) |
| | Skip Frequency | Single point, user adjustable |
| I/O Specification | Power Supply | 24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer |
| | Programmable Inputs | 4 Total as standard 2 Digital 2 Analog / Digital Selectable |
| | Digital Inputs | 10 – 30 Volt DC, internal or external supply, Response time : < 4ms |
| | Analog Inputs | Resolution : 12 bits Response time : < 4ms Accuracy : < + / - 2% of full scale Parameter adjustable scaling and offset |
| Control Features | Programmable Outputs | 2 Total 1 Analog / Digital 1 Relay |
| | Relay Outputs | Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6AAC, |
| | Analog Outputs | 0 to 10 Volt |
| | PI Control | Internal PI control with feedback display |
| | Maintenance & Diagnostics | Fault Memory: Last 4 Trips stored with time stamp Data Logging: Logging of data prior to trip for diagnostic purposes : Output Current, Drive Temperature, DC Bus Voltage Monitoring: Hours Run Meter |

| | | |
|----------------------|-----------------------|---------------------------------------------------------------------------------|
| Standards Compliance | Low Voltage Directive | 2006/95/EC |
| | Machinery Directive | 98/37/EC |
| | EMC Directive | 2004/108/EC 230V 1 Ph Filtered Units category C1 according to EN61800-3:2004 |
| | | 400 Volt 3 Phase filtered units category C2 according to EN61800-3:2004 |
| Conformance | UL, cUL, C-Tick, Gost | |

Model Code Guide



OPTIDRIVE™ E² Single Phase

AC Variable Speed Drive

0.37kW – 1.1kW / 0.5HP – 1.5HP
110 – 240V



Single Phase Motor Control

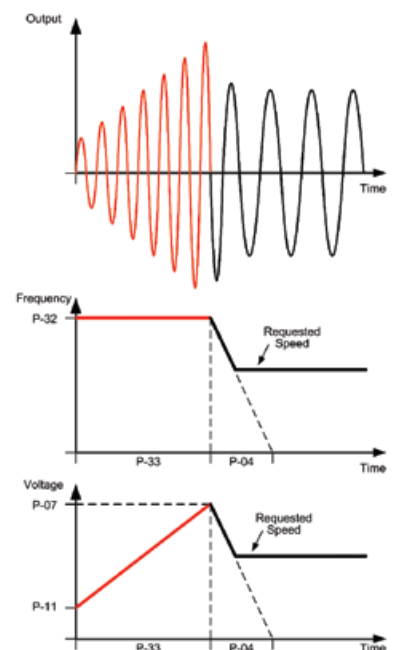
The Optidrive E2 Single Phase is the world's first fully digital, fully packaged variable speed drive for controlling low power single phase motors

Key Features

- 110 – 115V and 200 – 240V models available
- Single phase input/single phase output
- Small mechanical envelope
- Rugged industrial operation: IP20: 50°C ambient rating IP66: 40°C ambient rating
- Simple mechanical & electrical installation
- Fast setup, and simple operation. Factory default settings okay for most applications, only 14 basic parameters
- Unique motor control strategy optimised for Single Phase Motors
- Motor current and rpm indication
- Debugging using troubleshooting & P-00
- 150% overload for 60 secs (175% for 2 secs)
- Keypad control
- Integral RFI filter option
- Integral brake chopper (S2 only)
- Modbus RTU serial communications

Special Boost Phase

To ensure reliable starting, the Optidrive E2 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.



Designed to be cost effective and easy to use, the Optidrive E2 Single Phase is for use with PSC (Permanent Split Capacitor) or Shaded-Pole Single Phase induction motors.

Optidrive E2 Single Phase uses a revolutionary motor control strategy to achieve reliable intelligent starting of single phase motors.

Optidrive E2 Single Phase has only 14 standard parameters to adjust in its basic form. The Optidrive's legendary ease of use ensures quick and easy drive commissioning. For the more advanced user the extended parameter set gives access to powerful additional functionality.

Typical Applications

Optidrive E2 single phase output can be used to provide energy efficient, accurate speed control of single phase motors in a variety of applications, especially fans and pumps which typically do not require high starting torque. The control method used provides significant energy savings compared to alternative methods.

OPTIDRIVE™ ^{E2}

Single Phase

| | kW | HP | Amps | Size |
|---------------------------------|------|------|------|------|
| 110–115V ± 10% 1 Phase Input | – | 0.5 | 7 | 1 |
| | – | 0.75 | 10.5 | 2 |
| 200–240V ± 10% 1 Phase Input | 0.37 | 0.5 | 4.3 | 1 |
| | 0.75 | 1 | 7 | 1 |
| | 1.1 | 1.5 | 10.5 | 2 |

| kW Model Code | | HP Model Code | |
|-------------------------------------|-----------------------|-------------------------------------|-----------------------|
| Product Range | Generation | Product Range | Generation |
| Frame Size | Supply Voltage | Frame Size | Supply Voltage |
| Power Rating | Input Phases | Power Rating | Input Phases |
| Power Type | Factory Build Options | Power Type | Factory Build Options |
| N/A | | ODE - 2 - 1 005 - 1 H # 1 # -01 | |
| N/A | | ODE - 2 - 2 007 - 1 H # 4 # -01 | |
| ODE - 2 - 1 2 037 - 1 K # 1 # -01 | | ODE - 2 - 1 2 005 - 1 H # 1 # -01 | |
| ODE - 2 - 1 2 075 - 1 K # 1 # -01 | | ODE - 2 - 1 2 010 - 1 H # 1 # -01 | |
| ODE - 2 - 2 110 - 1 K # 4 # -01 | | ODE - 2 - 2 015 - 1 H # 4 # -01 | |

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

HP Models: Factory Settings
 Motor Rated Frequency: 60Hz
 Motor Rated Voltage: 460V

EMC Filter
 Low Voltage Filter
 No EMI Filter

Brake Transistor
 No Internal Brake Transistor
 Internal Brake Transistor

Enclosure
 IP20
 IP66 Non Switched
 IP66 Switched

Factory Build Options

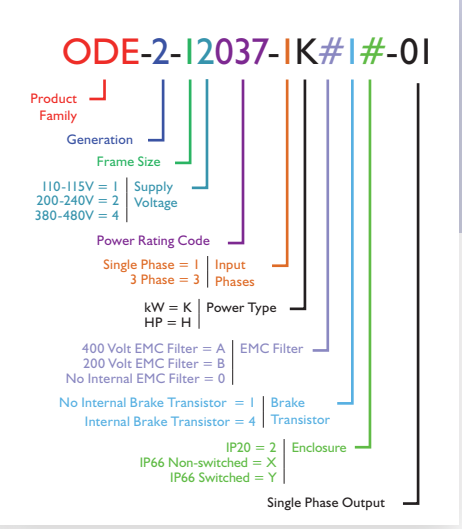
| | | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 1 | 4 | 2 | X | Y |
| | 0 | | | 2 | X | Y |
| B | 0 | 1 | | 2 | X | Y |
| B | 0 | | | 2 | X | Y |
| B | 0 | | 4 | 2 | X | Y |

Replace # in model code with colour-coded option

Drive Specification

| | | | |
|---------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Input Ratings | Supply Voltage | 110 – 115V ± 10% 200 – 240V ± 10% | |
| | Supply Frequency | 48 – 62Hz | |
| | Phase Imbalance | 3% Maximum allowed | |
| | Inrush Current | < rated current | |
| Output Ratings | Output Power | 110V 1 Phase Input: 0.5–0.75HP 230V 1 Phase Input: 0.75–1.1kW (1–1.5HP) | |
| | Overload Capacity | 150% for 60 seconds, 175% for 2 seconds | |
| | Output Frequency | 0 – 120Hz, 0.1Hz resolution | |
| | Power Cycles | 120 per hour maximum, evenly spaced | |
| Ambient Conditions | Temperature | Storage : –40 to 60°C Operating : –10 to 50°C (IP20) –10 to 40°C (IP66) | |
| | Altitude | Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m | |
| | Humidity | 95% Max, non-condensing | |
| Enclosure | Ingress Protection | IP20 IP66 | |
| Programming | Keypad | Built-in Keypad as standard Optional remote mountable keypad | |
| | Display | Built-in LED display | |
| | Programming | OptiTools Studio / OPTISTICK | |
| Control Specification | Control Method | Single Phase V/F with Starting Boost | |
| | PWM Frequency | 4 – 32kHz Effective | |
| | Stopping Mode | Ramp to Stop : User Adjustable 0.1 – 600 seconds Coast to Stop | |
| | Braking | Motor Flux Braking Built-in Braking Transistor (Size 2 only) | |
| | Skip Frequency | Single point, user adjustable | |
| | Setpoint Control | Analog Signal | 0 to 10 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA |
| | | Digital | Motorised Potentiometer (Keypad) Modbus RTU |
| Optional Gateway | | Profibus DP, DeviceNet, Ethernet/IP | |
| I/O Specification | Power Supply | 24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer | |
| | Programmable Inputs | 4 Total as standard 2 Digital 2 Analog / Digital Selectable | |
| | Digital Inputs | 10 – 30 Volt DC, internal or external supply, Response time : < 4ms | |
| | Analog Inputs | Resolution : 12 bits Response time : < 4ms Accuracy : < + / - 2% of full scale Parameter adjustable scaling and offset | |
| Control Features | Programmable Outputs | 2 Total 1 Analog / Digital 1 Relay | |
| | Relay Outputs | Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6AAC, 5ADC | |
| | Analog Outputs | 0 to 10 Volt | |
| | PID Control | Internal PID control with feedback display | |
| Maintenance & Diagnostics | Fault Memory | Last 4 Trips stored with time stamp | |
| | Data Logging | Logging of data prior to trip for diagnostic purposes : Output Current, Drive Temperature, DC Bus Voltage | |
| | Monitoring | Hours Run Meter | |
| Standards Compliance | Low Voltage Directive | 2006/95/EC | |
| | Machinery Directive | 98/37/EC | |
| | EMC Directive | 2004/108/EC 230 Volt 1 Phase unit category C1 according to EN61800-3 | |
| | Conformance | UL, cUL, C-Tick, Gost | |

Model Code Guide



| Size | 1 | 2 | 1 | 2 |
|-------------|--------|--------|--------|--------|
| Enclosure | IP20 | IP20 | IP66 | IP66 |
| Height (mm) | 173 | 221 | 232 | 257 |
| Width (mm) | 82 | 104 | 161 | 188 |
| Depth (mm) | 123 | 150 | 175 | 187 |
| Weight (kg) | 1.1 | 2.6 | 2.8 | 4.6 |
| Fixings | 4 x M4 | 4 x M4 | 4 x M4 | 4 x M4 |

Optidrive E2

✓ Low Power Applications

Dedicated to low power applications, Optidrive E2 combines innovative technology, reliability, robustness and ease of use in a range of compact IP20 & IP66 enclosures.

✓ Simple Commissioning

14 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.

✓ Optidrive E2 IP66

Environmentally protected, the Optidrive E2 IP66 can be mounted directly on your processing equipment.

✓ Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, the Optidrive E2 IP66 is ideal for high-pressure washdown applications.

✓ On-drive Control

IP66 models feature optional, convenient controls for speed control, REV/OFF/FWD and Power ON/OFF, complete with safety lock.

✓ Single Phase Motor Control

The Optidrive E2 Single Phase is the world's first fully digital, fully packaged variable speed drive for controlling low power single phase. Special Boost Phase To ensure reliable starting, the Optidrive E2 Single Phase 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.



UK Head Office, Welshpool

Invertek 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. All company operations are accredited to the exacting customer focused ISO 9001:2008 quality standard. The company's products are sold globally in over 65 different countries. Invertek Drives' unique and innovative drives are designed for ease of use and meet with recognised international design standards.

Global Drive Solutions

Optidrive E2 combines innovative technology, reliability & robustness.



BELGIUM

Ready meal production line automation.



ITALY

Precision control of portable chamfering.



UK

Reliable control of machine tools.



GREECE

Control of decanters in olive oil production.



Optidrive E2 User Guide



Scan to download or visit the Invertek Drives website

www.invertekdrives.com/optidrive-e2

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