

OPTIDRIVE™

AC Variable Speed Drive

General Purpose Drives
Dedicated to low power applications



0.37kW – 11kW / 0.5HP – 15HP
110–480V Single & 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**
Up to 50°C operation



Bottling Pumping Processing Plants HVAC Baggage Handling 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



Single Phase

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

More details on pages 6 & 7



Convenient Help Card



Optistick Programming



DIN Rail Mount



EMC & Varistor Disconnect



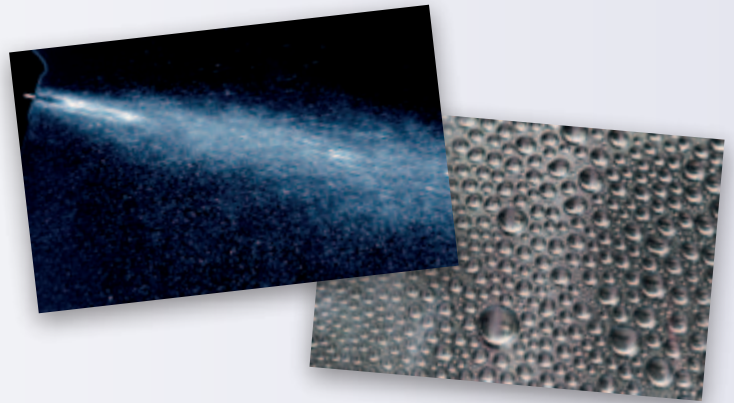
Optional Braking Resistor

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.

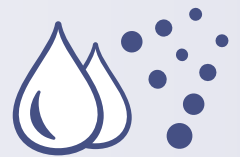
On-drive Control

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



		IP20			IP66		
		1	2	3	1	2	3
mm	Height	173	221	261	232	257	310
mm	Width	83	110	131	161	188	210.5
mm	Depth	123	150	175	179	187	245
kg	Weight	1.0	1.7	3.2	3.1	4.1	7.6
	Fixings	4 x M4	4 x M4	4 x M4	4 x M4	4 x M4	4 x M4

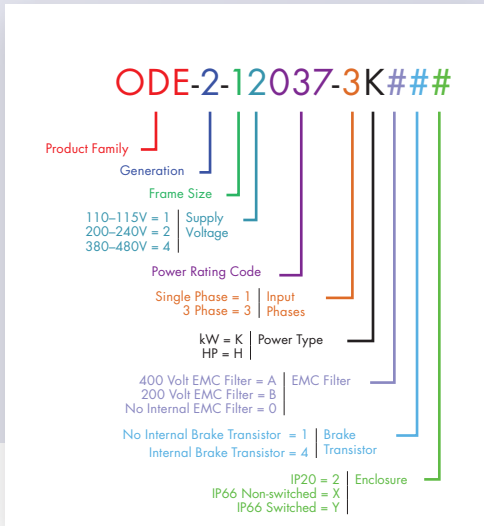
kW	HP	Amps	Size	kW Model Code							HP Model Code							Factory Build Options							
				Product Range	Generation	Frame Size	Supply Voltage	Power Rating	Input Phases	Power Type	Product Range	Generation	Frame Size	Supply Voltage	Power Rating	Input Phases	Power Type	EMC Filter	Low Voltage Filter	No EMC Filter	Brake Transistor	No Internal Brake Transistor	Internal Brake Transistor	IP20	IP66 Non-switched
110–115V ± 10% (230V 3 Phase Output) 1 Phase Input	–	0.5	2.3	1																					
	–	1	4.3	1																					
	–	1.5	5.8	2																					
200–240V ± 10% 1 Phase Input	0.37	0.5	2.3	1																					
	0.75	1	4.3	1																					
	1.5	2	7	1																					
	1.5	2	7	2																					
	2.2	3	10.5	2																					
	4	5	15	3																					
200–240V ± 10% 3 Phase Input	0.37	0.5	2.3	1																					
	0.75	1	4.3	1																					
	1.5	2	7	1																					
	1.5	2	7	2																					
	2.2	3	10.5	2																					
	4	5	18	3																					
380–480V ± 10% 3 Phase Input	0.75	1	2.2	1																					
	1.5	2	4.1	1																					
	1.5	2	4.1	2																					
	2.2	3	5.8	2																					
	4	5	9.5	2																					
	5.5	7.5	14	3																					
	7.5	10	18	3																					
	11	15	24	3																					

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

Model Code Guide



Drive Specification

Input Ratings	Supply Voltage	110 – 115V ± 10% 200 – 240V ± 10% 380 – 480V ± 10%	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer
	Supply Frequency	48 – 62Hz		Programmable Inputs	4 Total as standard 2 Digital 2 Analog / Digital Selectable
	Phase Imbalance	3% Maximum allowed		Digital Inputs	10 – 30 Volt DC, internal or external supply, Response time: < 4ms
	Inrush Current	< rated current		Analog Inputs	Resolution: 12 bits Response time: < 4ms Accuracy: < ± 2% of full scale Parameter adjustable scaling and offset
	Power Cycles	120 per hour maximum, evenly spaced		Programmable Outputs	2 Total 1 Analog / Digital 1 Relay
Output Ratings	Output Power	110V 1 Phase: 0.5–1.5HP (230V 3 Phase Output) 230V 1 Phase: 0.75–4kW / 1–5HP 230V 3 Phase: 0.75–4kW / 1–5HP 400V 3 Phase: 0.75–11kW 460V 3 Phase: 1–15HP	Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC	
	Overload Capacity	150% for 60 seconds 175% for 2 seconds	Analog Outputs	0 to 10 Volt	
	Output Frequency	0 – 500Hz, 0.1Hz resolution	Control Features	PI Control Internal PI control with feedback display	
	Ambient Conditions	Temperature: Storage: –40 to 60°C Operating: –10 to 50°C 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	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	
Programming	Keypad	Builtin Keypad as standard Optional remote mountable keypad	Standards Compliance	Low Voltage Directive: 2006/95/EC EMC Directive: 2004/108/EC 230V 1 Phase Filtered Units category C1 according to EN61800-3:2004 400V 3 Phase filtered units category C2 according to EN61800-3:2004 Machinery Directive: 98/37/EC Conformance: CE, UL, cUL, C-Tick, GOST Ingress Protection: IP20 IP66 (Excluding 11kW / 15HP)	
	Display	Builtin 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 secs Coast to Stop			
	Braking	Motor Flux Braking Builtin Braking Transistor (Frames 2 & 3)			
	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 4mA			
	Digital	Motorised Potentiometer (Keypad) Modbus RTU			
	Optional Gateway	PROFIBUS DP, DeviceNet, EtherNet/IP			

OPTIDRIVE™ E² Single Phase

AC Variable Speed Drive

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



Single Phase Motor Control

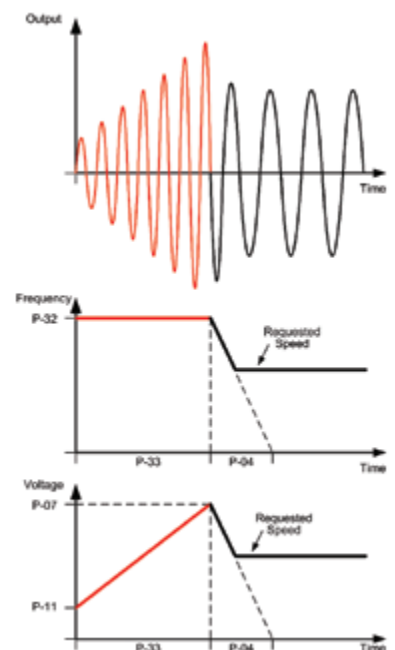
The Optidrive E2 Single Phase is the world's first fully digital, fully packaged variable speed drive for controlling low power single phase motors

Key Features

- 110 – 115V and 200 – 240V models available
- Single phase input/single phase output
- Small mechanical envelope
- Rugged industrial operation: Up to 50°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

Input Voltage	kW Models				kW Model Code										HP Models				HP Model Code									
	kW	HP	Amps	Size	Product Range	Generation	Frame Size	Supply Voltage	Power Rating	Input Phases	Power Type	Factory Build Options	Single Phase Output	Product Range	Generation	Frame Size	Supply Voltage	Power Rating	Input Phases	Power Type	Factory Build Options	Single Phase Output						
110–115V ± 10% 1 Phase Input	–	0.5	7	1	N/A										ODE - 2 - 1 1 005 - 1 H				0 1 # -01									
	–	0.75	10.5	2	N/A										ODE - 2 - 2 1 007 - 1 H				0 4 # -01									
200–240V ± 10% 1 Phase Input	0.37	0.5	4.3	1	ODE - 2 - 1 2 037 - 1 K				# 1 # -01		ODE - 2 - 1 2 005 - 1 H				# 1 # -01													
	0.75	1	7	1	ODE - 2 - 1 2 075 - 1 K				# 1 # -01		ODE - 2 - 1 2 010 - 1 H				# 1 # -01													
	1.1	1.5	10.5	2	ODE - 2 - 2 2 110 - 1 K				# 4 # -01		ODE - 2 - 2 2 015 - 1 H				# 4 # -01													

kW Models: Factory Settings
Motor Rated Frequency: 50Hz

HP Models: Factory Settings
Motor Rated Frequency: 60Hz

Factory Build Options

- EMC Filter: Low Voltage Filter, No EMC Filter
- Brake Transistor: No Internal Brake Transistor, Internal Brake Transistor
- Enclosure: IP20, IP66 Non-switched, IP66 Switched

EMC Filter	0	1	4	2	X	Y
Brake Transistor	0	1	4	2	X	Y
Enclosure	B	0	1	2	X	Y
	B	0	1	2	X	Y
	B	0	4	2	X	Y

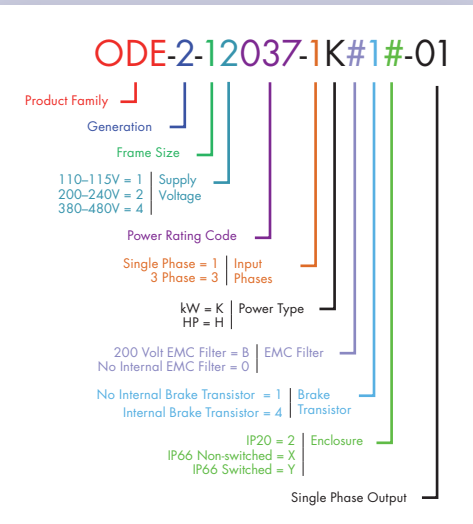
Replace # in model code with colour-coded option

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	
	Power Cycles	120 per hour maximum, evenly spaced	
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	
	Output Voltage	0 – 230V	
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –10 to 50°C	
	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	
Programming	Keypad	Built-in Keypad as standard Optional remote mountable keypad	
	Display	Built-in LED display	
	Programming	OptiTools Studio / Optistick	
	Control Method	Single Phase V/F with Starting Boost	
Control Specification	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 4mA
		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	
	Programmable Outputs	2 Total 1 Analog / Digital 1 Relay	
	Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC	
	Analog Outputs	0 to 10 Volt	
	Control Features	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	
Design Standards	Low Voltage Directive	2006/42/EC	
	EMC Directive	2004/108/EC	
	Machinery Directive	230 Volt 1 Phase unit category C1 according to EN61800-3	
	Conformance	98/37/EC	
	Ingress Protection	CE, UL, eUL, C-Tick, GOST	
		IP20, IP66	

Model Code Guide



NOT TO SCALE



Size	IP20		IP66	
	1	2	1	2
mm Height	173	221	232	257
mm Width	83	110	161	188
mm Depth	123	150	179	187
kg Weight	1.1	1.7	3.1	4.1
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 Headquarters, Welshpool

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.

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 Inverter Drives website

www.inverterdrives.com/optidrive-e2

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