



Sumitomo Drive Technologies

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#### Optidrive E3

##### ✓ Low Power Applications

Dedicated to low power applications, Optidrive E3 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 E3 IP66

Environmentally protected, IP66 rated models can be mounted directly on your processing equipment.



##### ✓ Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, Optidrive E3 IP66 models are ideal for high-pressure washdown applications.

##### ✓ On-drive Control

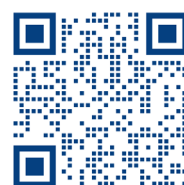
IP66 models feature optional, convenient controls for speed control, REV/OFF/FWD and Power ON/OFF, complete with safety lock.

##### ✓ Single Phase Motor Control

Optidrive E3 for Single Phase Motors provides accurate speed control of single phase PSC or shaded pole motors. Special boost phase ensures reliable starting, initially ramping the motor voltage up to rated voltage whilst maintaining a fixed starting frequency, before reducing the frequency and voltage to the desired operating point.

#### About Inverter Drives

- ✓ Sales, service & application support in over 80 countries
- ✓ World-class production, innovation & training facilities at UK headquarters
- ✓ Global assembly cells controlled by cloud-based manufacturing database
- ✓ ISO 14001 environmental & ISO 9001 quality management systems



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# OPTIDRIVE™ E<sup>3</sup>

AC Variable Speed Drive

General Purpose Drive  
Easy control for all motor types

Easy to Use



[www.sumitomodrive.com](http://www.sumitomodrive.com)

For worldwide locations, please visit [www.sumitomodrive.com/worldwide](http://www.sumitomodrive.com/worldwide)  
Contact your local representative at [www.sumitomodrive.com/representative](http://www.sumitomodrive.com/representative)  
Tel: 1-800-SM-CYCLO (762-9256)



0.37kW – 37kW / 0.5HP – 50HP  
110 – 480V Single & 3 Phase Input

IP20

IP66



Easy to Use

General Purpose Drive

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



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



**Intuitive Keypad Control**  
Precise digital control at the touch of a button.



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

Industrial | Pump | Fan  
See Page 6

IP20

Up to 37kW

- ✓ Easy to use
- ✓ Compact & robust

See Page 4

IP66

Up to 22kW

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

See Page 5



Sensorless Vector Control for all Motor Types

IM

IE2 & IE3 Induction Motors

PM

AC Permanent Magnet Motors

BLDC

Brushless DC Motors

SynRM

Synchronous Reluctance Motors

Precise and reliable control for IE2, IE3 & IE4 motors

Key Features

- ✓ Internal Category C1 EMC filter
- ✓ Internal PI control
- ✓ Internal brake chopper
- ✓ Dual analogue inputs
- ✓ Operates up to 50°C
- ✓ Bluetooth connectivity
- ✓ Option for control of single phase motors (see Page 8)

**Modbus RTU**  
**CAN**  
on-board as standard

Internal Category C1 EMC Filter

An internal filter in every Optidrive E3 saves cost and time for installation.  
Cat C1 according to EN61800-3:2004





# OPTIDRIVE™ E<sup>3</sup>

IP20 Up to 37kW

Compact, robust and reliable general purpose drive for panel mounting

Incredibly Easy to Use

- ✓ Built in PI control, EMC filter (C1) & brake chopper
- ✓ Application macros for industrial, fan and pump operation
- ✓ Bluetooth connectivity

Controls Multiple Motor Types

- ✓ IE2, 3 & 4
- ✓ IM, PM, BLDC and SynRM

5 sizes cover global supply ratings

Modbus RTU CAN  
on-board as standard

Optistick Smart  
Rapid commissioning tool  
See Page 10

Simple Installation  
DIN rail and keyhole mounting options

Fast Connection  
5mm rising clamp terminals with captive screws

Quick Reference  
Integrated help card

Operates up to 50°C

Power supply connects at top

Dual analogue inputs

Motor supply connects at base



Simply Power Up

Optidrive E3 provides precise motor control and energy savings using the factory settings. Simply power up and the drive can immediately deliver energy savings.

14 basic parameters allow simple adjustment for your application if required, with up to 50 parameters available in total for a highly flexible performance.

# OPTIDRIVE™ E<sup>3</sup>

IP66 Outdoor Up to 22kW

Outdoor rated enclosed drives for direct machine mounting, dust tight and ready for washdown duty

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

IP66 / NEMA 4X

Locally customisable  
Flat front to terminal cover with mounting points for switches and an internal PCB.

Switched or non-switched

Conformal coating as standard

- 1 2 x RJ45 ports eliminate the need for a splitter.
- 2 Easily accessible EMC disconnect
- 3 Easy to wire due to the large, accessible chamber and removeable gland plate.

IP66/Nema 4X outdoor rated

Built with tough polycarbonate plastics specifically chosen to withstand degradation by ultra violet (UV), greases, oils and acids. Also robust enough not to be brittle at -20°C.

Dust-Tight Design

Install directly on your processing equipment and be sure of protection from dust and contaminants.

Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, the Optidrive E3 IP66 is ideal for high-pressure washdown applications.

Switched models

Simply wire up the drive, turn the inbuilt potentiometer and the motor will start running – allowing immediate energy savings.

Saving energy cannot be easier than this!

For ultimate ease of use

Local Speed Potentiometer

Run Reverse / Off / Run Forward Switch

Lockable Mains Disconnect / Isolator





# Application Macros

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

Single parameter application macro selection



### Industrial Mode

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

Applications include:

- ✓ Conveyors
- ✓ Mixers
- ✓ Treadmills

Sensorless Vector provides high starting torque and excellent speed regulation

IP20 panel mount units or IP66 for direct machine mounting

Rapid parameter cloning using OPTISTICK Smart

### Pump Mode

Pump Mode makes energy efficient pump control easier than ever.

Applications include:

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

- Constant or variable torque
- Internal PI control

### Fan Mode

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

Applications include:

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

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

Modbus RTU CAN on-board as standard

How much energy could you save?

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



## OPTIDRIVE™ E3

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

Replace # in model code with colour-coded option

### Enclosure Types

**A** IP66 Outdoor Use Non-switched

**B** IP66 Outdoor Use Switched

**2** IP20

### EMC Filter

**F** Internal EMC Filter

**0** No Internal EMC Filter

IP20					
Size	1	2	3	4	5
mm Height	173	221	261	420	486
mm Width	83	110	131	171	222
mm Depth	123	150	175	212	226
kg Weight	1.0	1.7	3.2	9.1	18.1
Fixings	4xM5	4xM5	4xM5	4xM8	4xM8

IP66				
Size	1	2	3	4
mm Height	232	257	310	360
mm Width	161	188	210.5	240
mm Depth	162	182	238	275
kg Weight	2.5	3.5	7.0	9.5
Fixings	4xM4	4xM4	4xM4	4xM4

## Drive Specification

Input Ratings	Supply Voltage	110-115V±10% 200-240V±10% 380-480V±10%	Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer
	Supply Frequency	48-62Hz		Display	7 Segment LED		Programmable Inputs	4 Total 2 Digital 2 Analog / Digital selectable
Output Ratings	Displacement Power Factor	> 0.98	Control Specification	PC	OptiTools Studio	Digital Inputs	Digital Inputs	8-30 Volt DC, internal or external supply Response time < 4ms
	Phase Imbalance	3% Maximum allowed		Control Method	Sensorless Vector Speed Control PI Vector Control BLDC Control Synchronous Reluctance		Analog Inputs	Resolution: 12 bits Response time: < 4ms Accuracy: ± 2% full scale Parameter adjustable scaling and offset
Ambient Conditions	Inrush Current	< rated current	Braking	PWM Frequency	4-32kHz Effective	Programmable Outputs	Programmable Outputs	2 Total 1 Analog / Digital 1 Relay
	Power Cycles	120 per hour maximum, evenly spaced		Stopping Mode	Ramp to stop: User Adjustable 0.1-600 secs Coast to stop		Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC
Enclosure	Output Power	110V 1 Ph Input: 0.5-1.5HP (230V 3 Ph Output) 230V 3 Ph Input: 0.37-1.1kW (0.5-1.5HP) 400V 3 Ph Input: 0.75-2.2kW 460V 3 Ph Input: 1-3.0HP	Skip Frequency	Braking	Motor Flux Braking Built-in braking transistor (not frame size 1)	Analog Outputs	Analog Outputs	0 to 10 Volt
	Overload Capacity	150% for 60 Seconds 175% for 2.5 seconds		Setpoint Control	Single point, user adjustable		Application Features	PI Control Standby / Sleep Function
Fieldbus	Output Frequency	0-500Hz, 0.1Hz resolution	Setpoint Control	Analog Signal	0 to 10 Volts 10 to 0 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4mA	Maintenance & Diagnostics	PI Control	Bidirectional Selectable Speed Setpoint (Fixed / PI / Analog / Fieldbus)
	Acceleration Time	0.01-600 seconds		Digital	Motorised Potentiometer (Keypad) Modbus RTU CANopen EtherNet/IP		Fire Mode	Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage
Fieldbus	Deceleration Time	0.01-600 seconds	Fieldbus	Built-in	CANopen Modbus RTU	Standards Compliance	Fault Memory	Last 4 Trips stored with time stamp
	Typical Efficiency	> 98%		Built-in	9.6-115.2 kbps selectable		Data Logging	Adjustable speed electrical power drive systems. EMC requirements
Enclosure	Temperature	Storage: -40 to 60°C Operating: -20 to 50°C	Enclosure	Ingress Protection	IP20, IP66		Monitoring	Hours Run Meter
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)		Ingress Protection	IP20, IP66		Low Voltage Directive	Adjustable speed electrical power drive systems. EMC requirements
Enclosure	Humidity	95% Max, non condensing	Enclosure	Ingress Protection	IP20, IP66	Standards Compliance	EMC Directive	2014/30/EU Cat C1 according to EN61800-3:2004
	Vibration	Conforms to EN61800-5-1		Ingress Protection	IP20, IP66		Machinery Directive	2006/42/EC
Enclosure	Typical Efficiency	> 98%	Enclosure	Ingress Protection	IP20, IP66	Standards Compliance	Conformance	CE, UL, RCM
	Typical Efficiency	> 98%		Ingress Protection	IP20, IP66		Conformance	CE, UL, RCM



OPTIDRIVE™ E3

For Single Phase Motors

IP20 IP66

Up to 1.1kW

Single Phase Motor Control for PSC & Shaded-Pole Motors

Key Features

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

Modbus RTU CAN

on-board as standard

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



Dedicated to Single Phase Motor Control

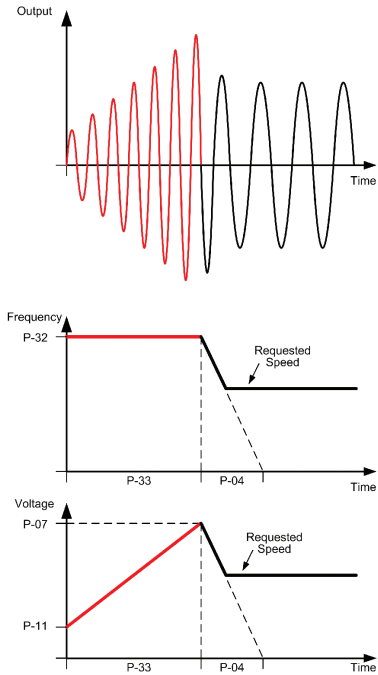
Designed to be cost effective and easy to use, the Optidrive E3 for Single Phase Motors is for use with PSC (Permanent Split Capacitor) or Shaded-Pole Single Phase induction motors.

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

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

Special Boost Phase

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

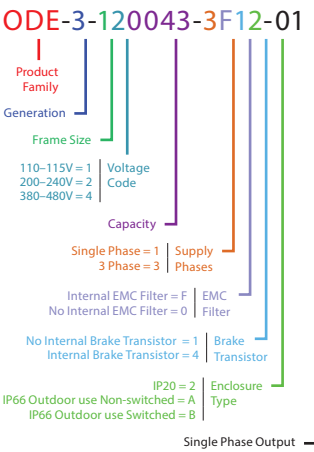


OPTIDRIVE™ E3

For Single Phase Motors

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

Model Code Guide:



Replace # in model code with colour-coded option

Enclosure Types



EMC Filter

- F Internal EMC Filter
- 0 No Internal EMC Filter

IP20	Size	1	2
mm	Height	173	221
mm	Width	83	110
mm	Depth	123	150
kg	Weight	1.0	1.7
	Fixings	4xM5	4xM5

IP66	Size	1	2
mm	Height	232	257
mm	Width	161	188
mm	Depth	162	182
kg	Weight	2.5	3.5
	Fixings	4xM4	4xM4


Drive Specification

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



Options & Accessories

Optistick Smart




OPT-3-STICK-IN

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

Remote Keypads




Optipad OPT-3-OPPAD-IN

Remote Keypad & TFT Display

Optiport 2 OPT-2-OPORT-IN

Remote Keypad & LED Display

RJ45 Accessories



Ideal for simple and fast connection of Modbus RTU/CAN networks

OPT-J4505-IN	RJ45 Cable 0.5m
OPT-J4510-IN	RJ45 Cable 1.0m
OPT-J4530-IN	RJ45 Cable 3.0m
OPT-J455P-IN	RS485 3 Way Data Cable Splitter RJ45

EtherNet Module

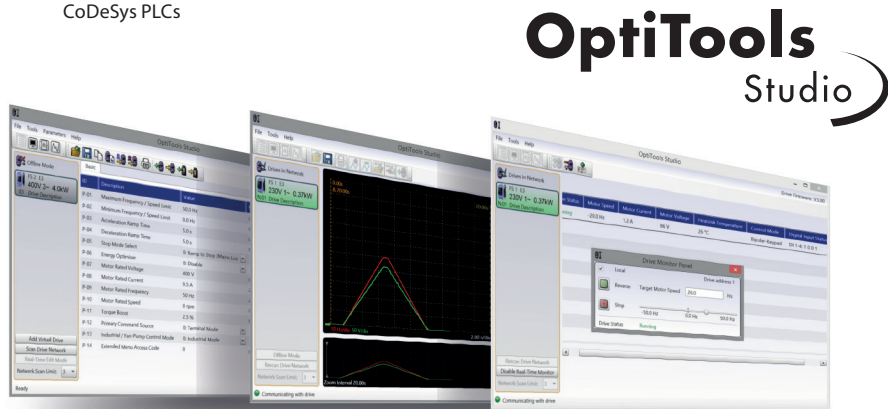


OPT-2-ETHEG-IN

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

External EMC Filters, Input Chokes & Output Filters are available

See [www.sumitomodrive.com](http://www.sumitomodrive.com) for details



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

Proven Worldwide in Low Power Applications



Cooling loop for solar energy research  
Solar Tech Lab, Italy

Chain wax development for Team Sky cycling team  
Muc-Off, UK

Chilled water pump control predicted to save AED 12385 per year  
Al Jahili Fort, UAE

Efficient water circulation gives energy savings of 60% per annum  
Leisure World, Australia

Business-critical climate control for commercial horticulturist  
Hatziminis Flowers, Greece

- Pallet handling in UK
- Olive oil decanting in Greece
- Seed processing in Netherlands
- Pizza making in Belgium
- Chamfering machines in Italy
- Machine tool OEM in UK
- Chemical fume removal in Singapore
- Sawmill optimisation in UK
- Precision polishing in Switzerland

