



Sumitomo Drive Technologies

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 Invertek 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



www.sumitomodrive.com

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



Sumitomo Drive Technologies

OPTIDRIVE™ E³

AC Variable Speed Drive

General Purpose Drive
Easy control for all motor types

Easy to Use

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food processing dosing pumps
portable machinery sawmills ventilation
food processing sawmills transfer pumps
circulating fans borehole pumps chemical fume
air handling units chilled water pumps climate control
kitchen extract olive oil decanting fountains thermal loops
treadmills blowers chemical fume removal conveyors air curtains
olive oil decanting air handling units fountains borehole cooling loops swimming pools sawmills ventilation fans
cooling loops precision polishing spas food processing
air curtains



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™ E³

IP20 Up to 37kW

Compact, robust and reliable general purpose drive for panel mounting

Modbus RTU CAN

on-board as standard

Incredibly Easy to Use

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

Optistick Smart
Rapid commissioning tool
See Page 10



Controls Multiple Motor Types

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

5 sizes cover global supply ratings



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™ E³

IP66 Outdoor Up to 22kW

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



Locally customisable

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



Switched or non-switched

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



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 removable 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

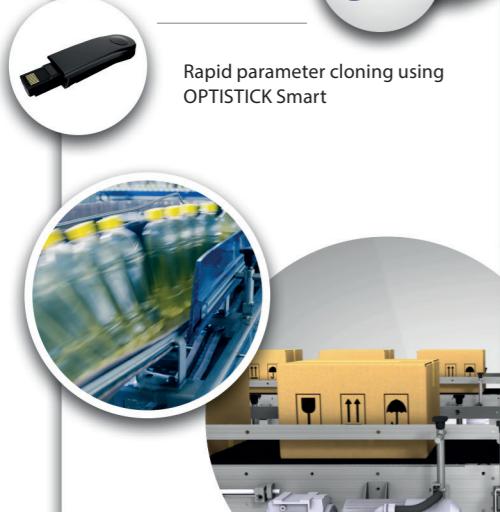
Switch modes at the touch of a button to optimise Optidrive E3 for your application

Single parameter application macro selection



| Industrial Mode |
|---|
| Industrial Mode optimises Optidrive E3 for load characteristics of typical industrial applications. |
| Applications include: |
| <ul style="list-style-type: none"> ✓ Conveyors ✓ Mixers ✓ Treadmills |

| |
|--|
| Sensorless Vector provides high starting torque and excellent speed regulation |
| IP20 panel mount units or IP66 for direct machine mounting |
| |



Modbus RTU CAN

on-board as standard

How much energy could you save?

Estimate potential energy savings, CO₂ emissions and financial savings for your application with the Invertek Drives Energy Savings Calculator app.



| Model Code | Product Family | Generation | Frame Size | Voltage Code | Output Current x 10 | Supply phases | EMC Filter | Brake Resistor | Enclosure Option |
|----------------|----------------|------------|------------|--------------|---------------------|---------------|------------|----------------|------------------|
| 110–115V ± 10% | 0.37 | 0.5 | 2.3 | 1 | 1.0 | 1 | # | | |
| 110–115V ± 10% | 0.75 | 1 | 4.3 | 1 | 1.5 | 1 | # | | |
| 110–115V ± 10% | 1.1 | 1.5 | 5.8 | 2 | 2.2 | 1 | # | | |
| 200–240V ± 10% | 0.37 | 0.5 | 2.3 | 1 | 1.5 | 2 | 7 | 1 | |
| 200–240V ± 10% | 0.75 | 1 | 4.3 | 1 | 1.5 | 2 | 7 | 2 | |
| 200–240V ± 10% | 1.1 | 1.5 | 5.8 | 2 | 2.2 | 3 | 10.5 | 2 | |
| 200–240V ± 10% | 1.5 | 2 | 7 | 2 | 4 | 5 | 15.3 | 3 | |
| 200–240V ± 10% | 2.2 | 3 | 10.5 | 2 | 4 | 5 | 18 | 3 | |
| 200–240V ± 10% | 5.5 | 7.5 | 24 | 3 | 5.5 | 10 | 30 | 4 | |
| 200–240V ± 10% | 7.5 | 10 | 30 | 4 | 11 | 15 | 46 | 4 | |
| 200–240V ± 10% | 11 | 15 | 46 | 4 | 15 | 20 | 61 | 5 | |
| 200–240V ± 10% | 18.5 | 25 | 72 | 5 | 18.5 | 25 | 72 | 5 | |
| 380–480V ± 10% | 0.75 | 1 | 2.2 | 1 | 0.75 | 1 | 2.2 | 1 | |
| 380–480V ± 10% | 1.5 | 2 | 4.1 | 1 | 1.5 | 2 | 4.1 | 2 | |
| 380–480V ± 10% | 1.5 | 2 | 4.1 | 2 | 2.2 | 3 | 5.8 | 2 | |
| 380–480V ± 10% | 2.2 | 3 | 5.8 | 2 | 4 | 5 | 9.5 | 2 | |
| 380–480V ± 10% | 4 | 5 | 9.5 | 2 | 5.5 | 7.5 | 14 | 3 | |
| 380–480V ± 10% | 5.5 | 7.5 | 14 | 3 | 7.5 | 10 | 18 | 3 | |
| 380–480V ± 10% | 7.5 | 10 | 18 | 3 | 11 | 15 | 24 | 3 | |
| 380–480V ± 10% | 11 | 15 | 24 | 3 | 15 | 20 | 30 | 4 | |
| 380–480V ± 10% | 18.5 | 25 | 39 | 4 | 18.5 | 25 | 39 | 4 | |
| 380–480V ± 10% | 22 | 30 | 46 | 4 | 22 | 30 | 46 | 4 | |
| 380–480V ± 10% | 30 | 40 | 61 | 5 | 30 | 40 | 61 | 5 | |
| 380–480V ± 10% | 37 | 50 | 72 | 5 | 37 | 50 | 72 | 5 | |

Replace # in model code with colour-coded option

| Enclosure Types | |
|-----------------|-------------------------------------|
| A | IP66 Outdoor Use Non-switched |
| B | IP66 Outdoor Use Switched |
| 2 | IP20 |

| 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 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 |
| | Supply Frequency | 48–62Hz | | | Display | 7 Segment LED | | Programmable Inputs | 24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer |
| | Displacement Power Factor | > 0.98 | | | PC | OptiTools Studio | | Digital Inputs | 4 Total 2 Digital 2 Analog / Digital selectable |
| | Phase Imbalance | 3% Maximum allowed | | | Control Specification | Sensorless Vector Speed Control PM Vector Control BLDC Control Synchronous Reluctance | | Analog Inputs | 8–30 Volt DC, internal or external supply Response time < 4ms |
| | Inrush Current | < rated current | | | PWM Frequency | 4–32kHz Effective | | Programmable Outputs | Resolution: 12 bits Response time: < 4ms Accuracy: ± 2% full scale Parameter adjustable scaling and offset |
| | Power Cycles | 120 per hour maximum, evenly spaced | | | Stopping Mode | Ramp to stop: User Adjustable 0.1–600 secs Coast to stop | | Relay Outputs | 2 Total 1 Analog / Digital 1 Relay |
| Output Ratings | Output Power | 110V 1 Ph Input: 0.5–1.5HP (230V 3 Ph Output) 230V 1 Ph Input: 0.37–4kW (0.5–5HP) 230V 3 Ph Input: 0.37–11kW (0.5–15HP) 400V 3 Ph Input: 0.75–22kW 460V 3 Ph Input: 1–30HP | | | Braking | Motor Flux Braking Built-in braking transistor (not frame size 1) | | Analog Outputs | Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC |
| | Overload Capacity | 150% for 60 Seconds 175% for 2.5 seconds | | | Skip Frequency | Single point, user adjustable | | Application Features | 0 to 10 Volt |
| | Output Frequency | 0–500Hz, 0.1Hz resolution | | | Setpoint Control | Analog Signal Digital | | PI Control | Internal PI Controller Standby / Sleep Function |
| | Acceleration Time | 0.01–600 seconds | | | | Motorised Potentiometer (Keypad) Modbus RTU CANopen EtherNet/IP | | Fire Mode | Bidirectional Selectable Speed Setpoint (Fixed / PI / Analog / Fieldbus) |
| | Deceleration Time | 0.01–600 seconds | | | | | | Maintenance & Diagnostics | Fault Memory Last 4 Trips stored with time stamp |
| | Typical Efficiency | > 98% | | | | | | Data Logging | Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage |
| Ambient Conditions | Temperature | Storage: -40 to 60°C Operating: -20 to 50°C | | | Fieldbus | Built-in | CANopen: 125–1000 kbps Modbus RTU: 9.6–115.2 kbps selectable | Monitoring | Hours Run Meter |
| | Altitude | Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL) | | | | | | Standards Compliance | Adjustable speed electrical power drive systems. EMC requirements |
| | Humidity | 95% Max, non condensing | | | | | | Low Voltage Directive | 2014/30/EU |
| | Vibration | Conforms to EN61800-5-1 | | | | | | EMC Directive | Cat C1 according to EN61800-3:2004 |
| Enclosure | Ingress Protection | IP20, IP66 | | | | | | Machinery Directive | 2006/42/EC |
| | | | | | | | | Conformance | CE, UL, RCM |



For Single Phase Motors

IP20 IP66

Up to 1.1kW

Single Phase Motor Control for PSC & Shaded-Pole Motors

Key Features

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

Modbus RTU CAN

on-board as standard

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



Pump control in swimming pools & spas

Simple airflow control

Dedicated to Single Phase Motor Control

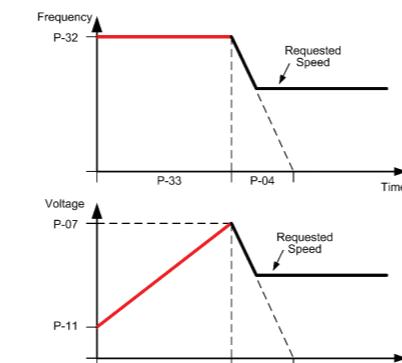
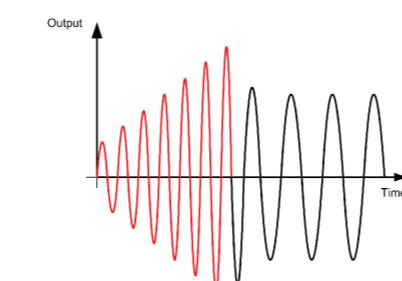
Designed to be cost effective and easy to use, the Optidrive E3 for Single Phase Motors is for use with PSC (Permanent Split Capacitor) or Shaded-Pole Single Phase induction motors.

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

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

Special Boost Phase

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



OPTIDRIVE™ E³

For Single Phase Motors

kW HP Amps Size

110–115V±10% 0.37 0.5 7 1
1 Phase Input 0.55 0.75 10.5 2

200–240V±10% 0.37 0.5 4.3 1
1 Phase Input 0.75 1 7 1
1.1 1.5 10.5 2

Model Code Product Family Generation Frame Size Voltage Code Capacity Supply Phases EMC Filter Brakes Transistor Enclosure Type Single Phase Output

Replace # in model code with colour-coded option

Enclosure Types

A IP66
Outdoor Use Non-switched

B IP66
Outdoor Use Switched

2 IP20

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

Model Code Guide:

ODE-3-120043-3F12-01
Product Family
Generation
Frame Size
110–115V = 1
200–240V = 2
380–480V = 4
Capacity
Single Phase = 1
3 Phase = 3
Supply Phases
Internal EMC Filter = F
No Internal EMC Filter = 0
EMC Filter
IP20 = 2
IP66 Outdoor use Non-switched = A
IP66 Outdoor use Switched = B
Enclosure Type
Single Phase Output

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 | 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) | | Fieldbus | CANopen 125–1000 kbps Modbus RTU 9.6–112.5 kbps selectable | | 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 | | I/O Specification | 24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer | | Machinery Directive | 2006/42/EC |
| | Output Frequency | 0–500Hz, 0.1Hz resolution | | Power Supply | 4 Total 2 Digital 2 Analog / Digital selectable | | Conformance | CE, UL, RCM |
| | Acceleration Time | 0.01–600 seconds | | Digital Inputs | 8–30 Volt DC, internal or external supply Response time < 4ms | | | |
| | Deceleration Time | 0.01–600 seconds | | Analog Inputs | Resolution: 12 bits Response time: < 4ms Accuracy: ± 2% full scale Parameter adjustable scaling and offset | | | |
| | Typical Efficiency | >98% | | Programmable Outputs | 2 Total 1 Analog / Digital 1 Relay | | | |
| | Ambient Conditions | Temperature: -40 to 60°C Operating: -20 to 50°C | | Relay Outputs | Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC | | | |
| | Temperature | Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL) | | Analog Outputs | 0 to 10 Volt | | | |
| | Altitude | 95% Max, non condensing | | | | | | |
| | Humidity | Conforms to EN61800-5-1 | | | | | | |
| | Vibration | | | | | | | |
| | Enclosure | | | | | | | |
| | Ingress Protection | | | | | | | |
| | Programming | | | | | | | |
| | Keypad | | | | | | | |
| | Display | | | | | | | |
| | PC | | | | | | | |

Options & Accessories

Optistick Smart



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

EtherNet Module



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

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

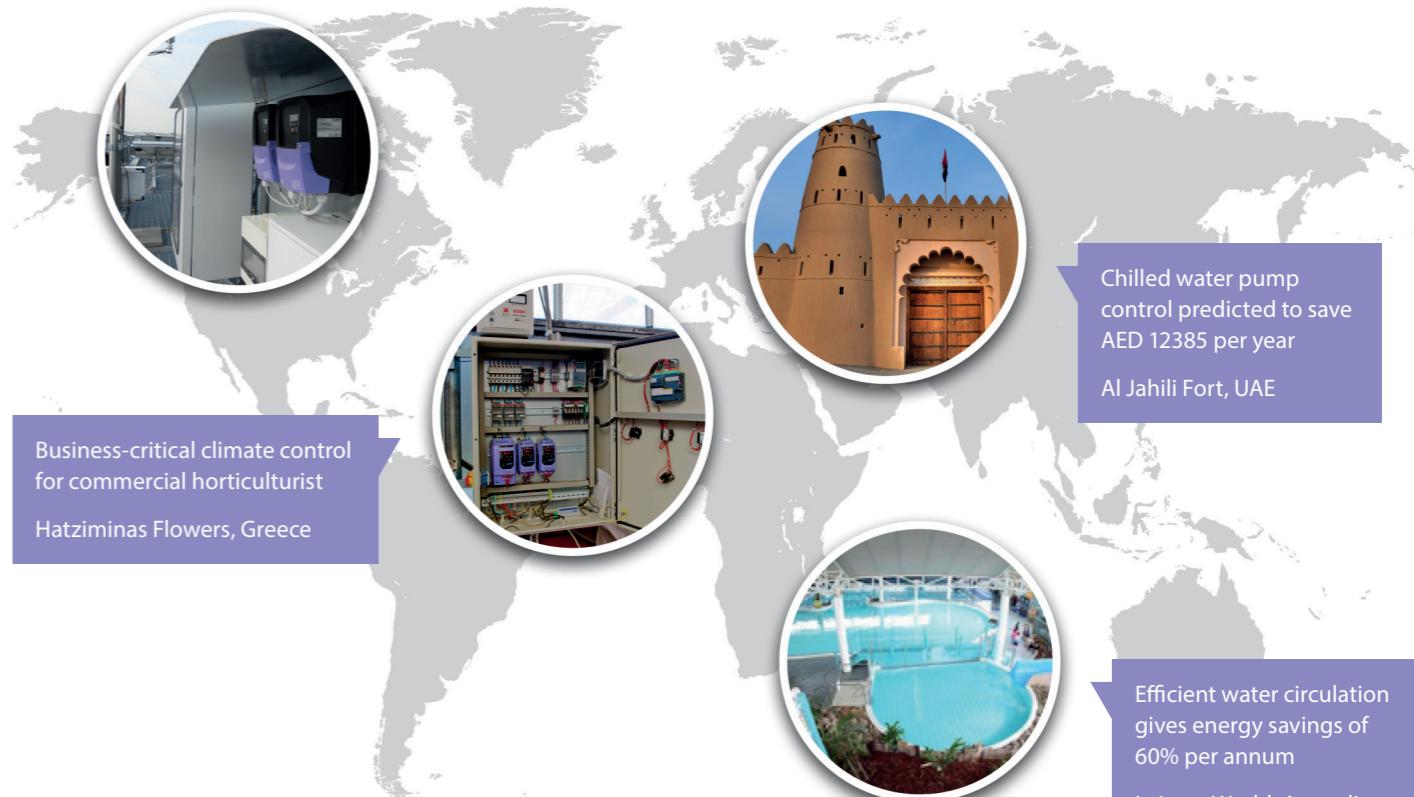
OPT-J4505-IN RJ45 Cable 0.5m
OPT-J4510-IN RJ45 Cable 1.0m
OPT-J4530-IN RJ45 Cable 3.0m
OPT-J45SP-IN RS485 3 Way Data Cable Splitter RJ45

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



External EMC Filters, Input Chokes & Output Filters are available

See www.sumitomodrive.com for details

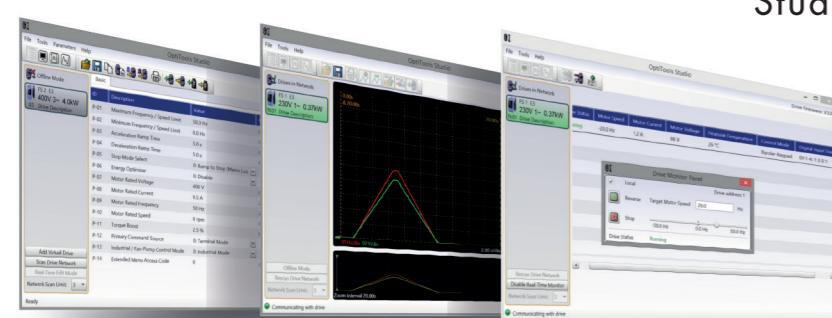


OptiTools Studio

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



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