OPTIDRIVE™ E³
AC Variable Speed Drive

General Purpose Drive
Easy control for all motor types

Easy to Use

0.37kW – 22kW / 0.5HP – 30HP
110 – 480V Single & 3 Phase Input

IP20 IP66
OPTIDRIVE™ E3

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

Take a closer look at the stunning Optidrive E3

www.invertekdrives.com/optidrive-e3

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
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

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)

IP66

Up to 7.5kW

- Dust-tight
- Washdown ready

See Page 5

Modbus RTU
CANopen

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 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.
Enclosed drives for direct machine mounting, dust-tight and ready for washdown duty

**Optidrive E3 IP66**

- **Up to 7.5kW**
- Coated Heatsink as Standard
  - Ideal for hygiene based operations requiring washdown — such as food and beverage
- Fanless Heatsink
  - For reliable, cost effective operation
- Switched or Non-Switched

**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.

**Optidrive E3 IP66 Switched**
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

Conformal coating as standard

Conformal coating as standard

IP66 / NEMA 4X

For reliable, cost effective operation

Coated Heatsink as Standard

For reliable, cost effective operation

Switched or Non-Switched

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.

Optidrive E3 IP66 Switched
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!
Application Macros

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

**Industrial Mode**

Optidrive E3 optimises 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

**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

**Instant Power Savings**

The graph below shows the incredible efficiency of Optidrive E3 for controlling airflow compared to traditional damper control methods.

**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.

www.invertekdrives.com/calculator
**Enclosure & Display Types**

- **IP20**
  - Size: 2 x 3 x 4
  - Height: 1.75 cm, Width: 8.3 cm, Depth: 9.7 cm
  - Weight: 0.3 kg
- **IP66**
  - Non-switched
  - Size: 2 x 3 x 4
  - Height: 1.75 cm, Width: 8.3 cm, Depth: 9.7 cm
  - Weight: 0.3 kg
- **IP69**
  - Switched
  - Size: 2 x 3 x 4
  - Height: 1.75 cm, Width: 8.3 cm, Depth: 9.7 cm
  - Weight: 0.3 kg

**EMC Filter**
- Internal EMC Filter
- No Internal EMC Filter

**Drive Specification**

<table>
<thead>
<tr>
<th>Voltage Range</th>
<th>110–115V ± 10%</th>
<th>200–240V ± 10%</th>
<th>380–480V ± 10%</th>
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**Output Power**

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<td>15</td>
<td>24.3</td>
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**I/O Specification**

- Power Supply: 24V DC, 150mA, Short Circuit Protected
- Programmable Inputs: 6 Total, 2 Digital, 2 Analog / Digital selectable
- Digital Inputs: 6–30V DC, external or external supply
- Analog Inputs: 4 Total, 2 Analog / Digital selectable, 1 Relay
- Programmable Outputs: 4 Total
- Relay Outputs: Maximum Voltage 250 VAC, 30 VDC
- Switching Current Capacity: 6A AC, 3A DC

**Environmental Conditions**

- Temperature: Storage: -40 to 60°C, Operating: -10 to 50°C
- Humidity: 95% Max, non-condensing
- Altitude: Up to 1000m ASL without derating, Up to 2000m maximum (not UL)
- Fixings: 4 x M4, 4 x M4, 4 x M4

**Dimensions**

- Height: 172 mm, Width: 86 mm, Depth: 196 mm
- Height: 172 mm, Width: 86 mm, Depth: 196 mm
- Height: 172 mm, Width: 86 mm, Depth: 196 mm

**Weight**

- 0.3 kg
- 0.3 kg
- 0.3 kg

**Certifications**

- CE, UL, C-Tick
- Conformance: EN61800-3:2000, CE, UL, C-Tick

**Control Method**

- Sensorless Vector Speed Control
- PM Motor Control
- Vector Control
- Sensorless Vector Speed Control

**Fieldbus**

- CANopen
- Modbus
- CANopen
- Modbus

**Input Ratings**

- Supply Frequency: 48–62Hz
- Power Factor: > 0.98
- Phase Imbalance: 3% Maximum allowed
- Inrush Current: < rated current
- Power Cycles: 120 per hour maximum, evenly spaced

**Output Ratings**

- Overload Capacity: 150% for 60 Seconds, 175% for 2.5 seconds
- Output Frequency: 0–50 Hz, 0 Hz resolution
- Typical Efficiency: > 98%

**Ambient Conditions**

- Temperature: Storage: -40 to 60°C, Operating: -10 to 50°C
- Humidity: 95% Max, non-condensing
- Altitude: Up to 1000m ASL without derating, Up to 2000m maximum (not UL)
- Fixings: 4 x M4, 4 x M4, 4 x M4
Pump control in swimming pools & spas

**OPTIDRIVE™ E3**
For Single Phase Motors

**IP20**  **IP66**

Up to 1.1kW

**Single Phase Motor Control for PSC & Shaded-Pole Motors**

**Key Features**

- 10–115V 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**
**CANopen**
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.
### Drive Specification

#### Input Ratings
- **Supply Voltage**: 110–115V ± 10%, 200–240V ± 10%
- **Frequency**: 48–62 Hz
- **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**: 110V: 1 HP, 208V: 1.5 HP, 230V: 0.37–1.1 kW (0.5–1.5 HP)
- **Overload Capacity**: 150% for 60 seconds, 175% for 2.5 seconds
- **Output Frequency**: 0–120 Hz, 0.1 Hz resolution
- **Typical Efficiency**: > 98%

#### Ambient Conditions
- **Temperature**: Storage: -40 to 60°C, Operating: -10 to 50°C
- **Altitude**: Up to 2000 m ASL without derating, Up to 4000 m ASL (non UL)
- **Humidity**: 95% Max, non-condensing

#### Enclosure & Display Types
- **IP20**: Non-switched
- **IP66**: Switched

#### EMC Filter
- **Internal**: F
- **No Internal**: 0

### Fieldbus
- **CANopen**: 125–1000 kbps
- **Modbus**: 9.6–115.2 kbps selectable

### Power Supply
- **24 Volt DC**: 150mA, Short Circuit Protected
- **10 Volt DC**: SN2 for Parameterization

### I/O Specification
- **Programmable Inputs**: 4 Total, 2 Digital, 2 Analog / Digital selectable
- **Digital Inputs**: 6–30 Volt DC, internal or external supply
- **Analog Inputs**: Resolution: 12 bits, Response time: < 1 ms, Accuracy: ± 0.2% full scale, Parameter adjustable scaling and offset
- **Programmable Outputs**: 2 Analog / Digital, 1 Relay
- **Relay Outputs**: Maximum Voltage: 250 VAC, 30 VDC, Switching Current Capacity: 6A AC, 3A DC

### Standards
- **Low Voltage Directive**: Adjustable speed electrical power drive systems
- **EMC Directive**: 2004/108/EC
- **Machinery Directive**: 2006/42/EC
- **Conformity**: CE, UL, cUL

### Fixings

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**Model Code Guide**

ODE-3-120043-3F12-01

Product Family  | Generation  | Frame Size  | Voltage Code  | Capacity  | Supply Phases  | Enclosure Type  | Single Phase Output  | Internal EMC Filter  | No Internal Brake Transistor |
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**Replace # in model code with colour-coded option**

**Popular Products**

1. **ODE-3-1**: 0.37–0.75 HP
2. **ODE-3-2**: 0.55–1.1 HP
3. **ODE-3-3**: 0.75–1.5 HP

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**Fieldbus**

- **CANopen**: 125–1000 kbps
- **Modbus**: 9.6–115.2 kbps selectable

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**I/O Specification**

- **Power Supply**: 24 Volt DC, 150mA, Short Circuit Protected
- **Power Supply**: 10 Volt DC, SN2 for Parameterization

---

**Control**

- **Method**: V/F, Energy Optimized V/F, PWM
- **Stopping Mode**: Ramp to stop, User Adjustable 0.1–600 secs, Coast to stop
- **Braking**: Motor/Braking: Built-in braking transistor (frame size 2)
- **Skip Frequency**: Single point, user adjustable

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**Fieldbus**

- **CANopen**: 125–1000 kbps
- **Modbus**: RTU

---

**Application**

- **Control Method**: Energy Optimized V/F
- **Fieldbus**: CANopen

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**Maintenance & Diagnostics**

- **Fault Memory**: Last 4 Trips stored with time stamp
- **Data Logging**: Logging of data prior to trip for diagnostic purposes
- **Monitoring**: Drive Temperature, DC Bus Voltage

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**Standards**

- **Low Voltage Directive**: Adjustable speed electrical power drive systems
- **EMC Directive**: 2004/108/EC
- **Machinery Directive**: 2006/42/EC
- **Conformity**: CE, UL, cUL

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**Optidrive**

For Single Phase Motors

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**Inverters Drives.com**
Options & Accessories

**OPTISTICK**

Optistick
Rapid Commissioning Tool
- Allows copying, backup and restore of drive parameters
- Provides Bluetooth wireless interface to a PC running OptiTools Studio

**Remote Keypads**

Optipad
Remote Keypad & OLED Display

Optiport 2
Remote Keypad & LED Display

**RJ45 Accessories**

Cable Splitter
Optiport 2
RS485 3 Way Data Cable Splitter RJ45

External EMC Filters, Input Chokes & Output Filters are available

See [www.invertekdrives.com](http://www.invertekdrives.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 XP, Windows Vista & Windows 7, Windows 8 & Windows 8.1
Proven Worldwide in Low Power Applications

- 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

See www.invertekdrives.com/solutions for full case studies
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