Invertek Drives.com

Optidrive Overview

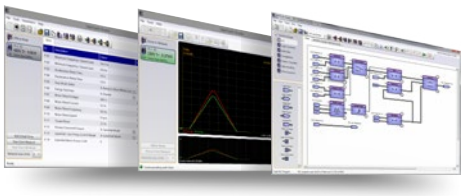
Variable Frequency Drives

OPTIDRIVE™

Invertek Drives.com

OptiTools Studio

Onboard PLC Programming for the Optidrive P2 and Eco ranges.



Powerful PC Software

Drive commissioning and parameter backup

- Real-time parameter editing
- Drive network communication
- Parameter upload, download and back-up 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 8.1
Windows 10

Optistick Smart

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

OptiTools Mobile

Smartphone App

Download on the App Store

GET IT ON Google Play

OptiTools Mobile is an intuitive and easy-to-use Smartphone App which provides wireless configuration and monitoring of the Optidrive product range.

Application Reference Table

Application	E3	P2	Eco
Compressor	✓	✓	✓
Fan	✓	✓	✓
Pump	✓	✓	✓
Conveyor	✓	✓	
Mixer	✓	✓	
Treadmill	✓	✓	
Blower	✓		✓
Extractor	✓		✓
Crane		✓	
Crusher		✓	
Extruder		✓	
Hoist		✓	
Winch		✓	
Winder		✓	

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
- **LSPM** — Line Start PM Motor

Precise and reliable control for
IE3, IE4 & IE5 motors

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OPTIDRIVE™ E3

IP20 Up to 1.1kW/1.5HP

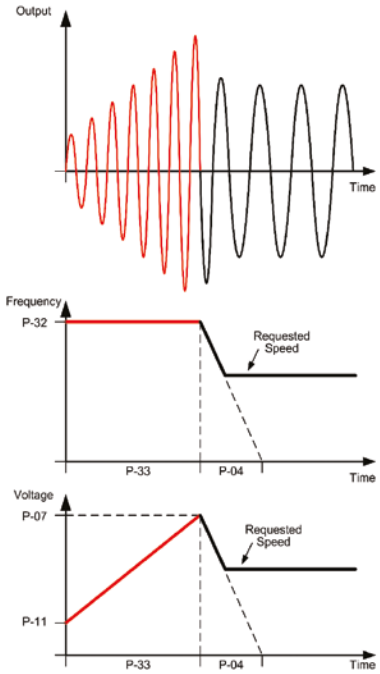
IP66/NEMA 4X Up to 1.1kW/1.5HP

Single Phase Motor Control
for Permanent Split Capacitor & Shaded-Pole Motors

One of the only manufacturers to produce a drive dedicated for single phase motors.

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.



Single Phase Input / Output

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

- Provides the same 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

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
- ✓ Simple air flow control

Modbus

CANopen

0.37kW–1.1kW/0.5HP-1.5HP
110–240V Single Phase Input

www.invertekdrives.com/optidrive-e3-single-phase

OPTIDRIVE™ E3

IP20 Up to 37kW/50HP

IP66/NEMA 4X Up to 22kW/30HP

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.

Application Macros

Industrial Mode | Pump Mode | Fan Mode

Easy to Use

Invertek's core philosophy is to ensure all products are highly advanced yet easy to use. Combining a simple parameter set with carefully chosen base values ensures you spend less time commissioning and trouble shooting and more time operating.

IM, PM, BLDC, SynRM Motor Control

E3 can operate with standard squirrel cage induction motors, higher efficiency permanent magnet AC motors or Brushless DC motors. Synchronous reluctance motors are also supported. This gives a single drive solution that can be easily utilised whatever the motor type and allows you to immediately take advantage of high efficiency motors.

Suitable for a Wide Range of Applications

From simple fans and pumps, through to compressors and conveyers, the Optidrive E3 handles a wide range of applications with fast installation and simple programming.

Cabinet Mount or Enclosed

Available with either IP20 cabinet mount enclosure type or wall/machine mountable IP66/NEMA 4X enclosure.

IP66/NEMA 4X

Being fully dust protected, suitable for washdown and built with tough polycarbonate plastics specifically chosen to withstand degradation by ultra violet (UV), and low temperatures, making it suitable for indoor or outdoor installations even in harsh environments. Two models are available: simple enclosed drives or the "switched" version with a built in control switch, potentiometer and local mains disconnect /isolator.

Key Features

- ✓ Up to 480VAC
- ✓ Internal EMC Filter
- ✓ Built In PI Control
- ✓ Modbus RTU onboard
- ✓ CAN onboard
- ✓ Optional Ethernet/IP
- ✓ Optional Modbus TCP
- ✓ Dual Analog Inputs
- ✓ Built in Brake Transistor
- ✓ Up to 122°F / 50°C Ambient

Modbus RTU
CAN
on-board as standard

Compact, robust and reliable general purpose drive

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!

Same dimensions as a non-switched model.

For ultimate ease of use

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

www.invertekdrives.com/optidrive-e3

OPTIDRIVE™ P2

IP20 Up to 250kW/400HP

IP55/NEMA 12 Up to 250kW/400HP

IP66/NEMA 4X Up to 30kW/40HP

Powerful Performance

World leading control for the latest generation of permanent magnet and standard induction motors

The Optidrive P2 offers the perfect combination of high performance together with ease of use to allow even the most demanding applications to be tackled easily.

STO as Standard

Optidrive P2 features a SIL2 certified Safe Torque Off function allowing the drive to be integrated as part of a safety system.

Advanced Fieldbus Capability

With Modbus RTU and CAN as standard plus the option of Ethernet/IP, Modbus TCP, Profibus DP, DeviceNet, Profinet or EtherCat, the Optidrive P2 offers the capability to connect with a wide range of fieldbus networks.

High Performance Motor Control for demanding applications

Optidrive P2 provides up to 200% motor torque from zero speed ensuring even the most difficult loads can be started. Additionally, open loop operation with ACPM and BLDC motors is also possible for optimum energy efficiency.

Function Block Programming for unique functions and customisation

An internal function block programming capability allows the drive to be uniquely customised to each application and can save cost by removing the need for additional external equipment such as simple PLC's or timers.

Additional Features:

- Up to 600VAC
- Internal EMC Filter
- Built in Function Block programming capability
- Built In PID Control
- Modbus RTU onboard
- CANopen onboard
- Optional Ethernet/IP and other Fieldbus
- Dual Analog Inputs
- Built in Brake Transistor
- Hoist Mode for lifting application
- Up to 122°F / 50°C Ambient
- Common DC Bus
- Torque Control
- Heavy overload capacity

Pluggable Modules

Pluggable Terminals

Fieldbus Interfaces

Modbus TCP · EtherNet/IP · PROFINET · EtherCAT Technology Group

Powerful, versatile and easy to use

PROFIBUS · DeviceNet

0.75kW–250kW/1HP-400HP
200–600V Single & 3 Phase Input

www.invertekdrives.com/optidrive-p2

OPTIDRIVE™ eco

IP20 Up to 250kW/400HP

IP55/NEMA 12 Up to 250kW/400HP

IP66/NEMA 4X Up to 30kW/40HP

Optidrive Eco Variable Frequency Drives

Optidrive Eco provides efficient, reliable and quiet control of motors for HVAC and pumping applications.

HVAC BUILDING SERVICES

Energy efficient fan & pump control

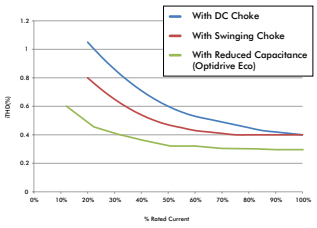
Optidrive Eco HVAC uses an innovative design to improve overall efficiency whilst minimising the harmonic distortion levels. All 3 phase input drives up to 90A (Size 5), utilise film capacitors in the DC link, providing exceptionally low harmonic current distortion and enhancing efficiency. Models exceeding 90A (Size 6-8) use traditional electrolytic capacitors and include DC chokes to mitigate harmonic distortion.

Optidrive Eco HVAC product range complies with the THC requirements of EN61000-3-12.

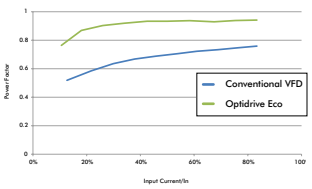
Reduced DC link capacitance significantly lowers the total harmonic distortion at full load, and has a much greater benefit at part load compared to a conventional DC choke or swinging choke. This results in reduced overall input current and reduced transformer heating effect.

Energy Efficient Air Handling

Typical iTHD values at full and part load

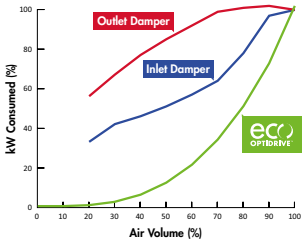


Power factor comparison



Instant Power Savings

The graph below shows a comparison between the efficiency of various methods which can be used to control the airflow produced by a fan.



From the data, it can be clearly seen that using methods such as dampers to restrict the airflow is much less efficient than controlling the speed of the fan using an Optidrive Eco HVAC.

Belt Break Detection

Optidrive Eco HVAC can provide immediate warning of broken belt between motor and fan. Due to its simple and flexible configuration the feature can also be used for any loss of load condition, such as broken coupling or other mechanical failure.

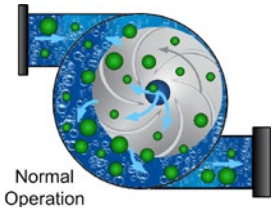
www.invertekdrives.com/hvac-building-services

PUMP CONTROL

Energy efficient pumping with **OPTIFLOW™**

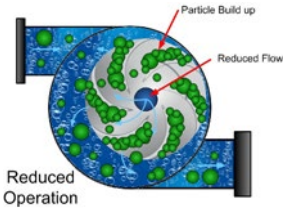
Blockage Detect/Clear

Optidrive Eco Pump can detect pump blockages and trigger a programmed cleaning cycle to automatically clear them, preventing downtime.



Pump Stir Cycle

Triggered by a settable period of inactivity, a configurable cleaning cycle can be run to clear sediment, ensuring the pump is ready to run when needed.



Key Features

- Energy Optimised Design
- Built in, simple PLC functionality
- Internal EMC filter
- Built in STO
- Built in PID controller
- Burst Pipe
- Optiflow Multi-Pump: duty assist/ duty standby/jockey pump
- Dry run protection
- Multi-Pump cascade
- Blocked pump detection and clean.
- Pump stir
- Fire mode
- Maintenance timer

www.invertekdrives.com/pump-control