



Member of **Sumitomo Drive Technologies**

eco
OPTIDRIVE™

AC Variable Speed Drive

Energy efficient fan & pump control



0.75kW – 250kW / 1HP – 350HP
200–600V Single & 3 Phase Input



Fire Mode



BACnet
MS/TP
built-in as standard



Internal
EMC Filter



Energy Efficient Fan & Pump Control

- AC Induction (IM) Motors
- AC Permanent Magnet (PM) Motors
- Brushless DC (BLDC) Motors
- Synchronous Reluctance (SynRM) Motors

Instant Power Savings

Take Control of Your Environment

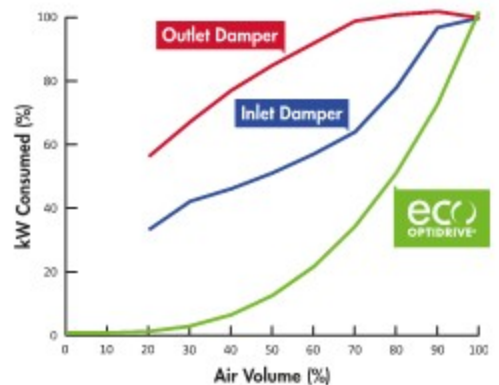
Modern building ventilation and air conditioning systems are designed to provide optimum climatic conditions for occupants throughout the whole year. As such, they must be designed to operate equally well during the hottest part of the day, with maximum sunlight, through to the colder night time and winter periods. Building designers must take account of these extremes and select components and systems capable of providing the required level of occupant comfort under all conditions. This results in systems operating the majority of the time at less than maximum capacity, which can mean reduced efficiency and wasted energy.

Optidrive Eco HVAC provides a perfect solution to the needs of designers looking to optimise the

performance of fans and pumps used in HVAC applications, allowing them to operate with maximum efficiency under all conditions. Invertek Drives' philosophy to provide innovative products with easy to use, energy efficient features ensures that time, cost and energy savings are maximised at all times, resulting in the shortest possible payback period – the time taken to recover the initial product and installation costs through financial savings achieved through installing Optidrive Eco HVAC drives.

For simple installation into your buildings management system all Optidrive Eco HVAC drives are provided with both BACnet and Modbus RTU as standard across the product range.

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.



IP55 / NEMA 12

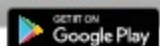
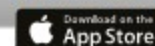
IP66 / NEMA 4X



Energy Savings Calculator

Estimate your potential energy savings, CO₂ emissions and financial savings

www.invertekdrives.com/calculator



Dedicated to HVAC Applications

Take control of your environment



Building Comfort

Energy Efficient Air Handling

Creating comfortable building environments without high energy costs

Where do the energy savings come from?

Air conditioning can use a significant amount of energy. In some cases it could even double energy consumption, not to mention the resultant increase in a company's carbon footprint.

Don't produce more airflow than you need!

Typically the air conditioning systems in buildings are designed for maximum occupancy and peak outside ambient. This means that for the majority of time there is large scope for running the systems at reduced speed and significant money to be saved with variable speed drives.

Optidrive Eco HVAC can vary the output of your air conditioning system to meet the varying demands throughout the day.

Variable Speed Control for Pumps

Optidrive Eco HVAC provides the ideal pump control solution for chiller, circulation and cooling pumps.

Airports
Hotels
Conference Centres
Shopping Centres
Hospitals
Kitchens
Schools
Offices
Laboratories



Building Safety Systems

Stairwell Pressurisation

Stairwell (escape route) pressurisation systems are being extensively employed in large buildings and complexes to help ensure the safe evacuation of occupants during a fire. Variable speed drives are playing an increasing role in maintaining pressures (of approximately 50 Pa) within these critical areas. Here Optidrive Eco HVAC is used to provide a smoke free escape by accurately maintaining the air pressure along that route.

Pressures must be maintained at a high enough level that a door opened between the fire floor and the escape route does not result in smoke entering the escape route. Equally, as doors and vents are opened along the escape route allowing air to escape the Optidrive and stairwell pressurisation system must increase output so that the required pressure is accurately maintained.

Fume Extraction

Many buildings now incorporate dedicated smoke management and extraction systems designed to safely extract smoke in the event of a fire, these systems are designed to localise and extract smoke such that the rest of the building remains smoke free and can be evacuated safely. Here the Optidrive's Fire Mode function is critical in maintaining continued operation of the smoke extraction system for the longest permissible period.

For applications such as underground car parks the fans providing fresh air intake are often reversed in the event of a fire to provide smoke extraction. Optidrive Eco HVAC is easily configured for bi-directional fire mode operation.

Fire Override



Fire override mode ignores signals and alarms, keeping the Optidrive Eco HVAC operating for as long as possible.

- This feature is crucial for ensuring smoke extraction from buildings in the event of a fire.
- Selectable logic means that the Optidrive Eco HVAC can be easily configured to the signal produced by your fire management system.
- With an independently set speed for fire mode operation, selectable as either forward or reverse direction, the Optidrive Eco HVAC has the flexibility to match the needs of your fire control system.
- Fire mode operation is indicated clearly on the drive display during periods of fire mode operation.
- Drive output logic can easily be configurable for indicating to external drives that fire mode is active.
- Internal clocks and timers monitoring operation in fire mode, giving clear information on usage.



OPTIFLOW™
Multiple Pump
Control

BACnet™
MS/TP
built-in as standard

**Internal
EMC Filter**



Energy Efficient Pump Control

- AC Induction (IM) Motors
- AC Permanent Magnet (PM) Motors
- Brushless DC (BLDC) Motors
- Synchronous Reluctance (SynRM) Motors

Energy Efficient Pumping

When a pump or pump set is selected, it must be suitable for operation during periods of maximum flow demand. In many applications, this maximum flow level may be rarely required, and as such the pump may operate for long periods at less than maximum flow capacity. By varying the speed of the pump to match the actual flow demand, significant energy savings are possible.

Optidrive Eco Pump has been designed to maximise the energy savings potential in pumping applications, whilst also providing significant additional benefits

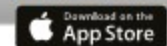
in reduced installation costs, maintenance costs and downtime. Throughout all this, Invertek's "Ease of Use" philosophy ensures that advanced features are simple to commission, without requiring extensive, in depth knowledge of a huge number of parameters. Optidrive Eco Pump has a simple menu structure, and provides just the right amount of parameters to allow flexibility without over complication.

Overall, this provides the perfect balance of Easy to Install, Easy to operate, Advanced Pump Control.



Energy Savings Calculator

Estimate your potential energy savings, CO₂ emissions and financial savings
www.invertekdrives.com/calculator



OPTIFLOW™ Multi-pump Control

Embedded control technology for multi-pump systems

Flexible pump station control with no PLCs or pump control units

Setpoint Control

A standard
feature on
all drives

Pump Prime Mode



Pump Prime with Burst Pipe
Detection

Pump prime mode allows starting of the pump in a safely controlled manner, to ensure consistent filling and pressurisation of pipe work and systems. Low pressure warnings are ignored during priming to allow the system to prime correctly, whilst a failsafe timeout prevents the pump from continuing to run in the event of a failure to prime. This helps to prevent the effects of water hammering (such as bursting water pipes) or damage to fountain / sprinkler heads.

The time limit, set for pump prime mode to complete, means that the pressure in the system must reach the minimum level within the set time. Failure of the system to pressurise would indicate a leak or burst pipe within the pump system and result in the Optidrive Eco Pump shutting down the pump. During normal operation the system pressure is still continuously monitored against the minimum level so that a burst pipe during normal operation will likewise result in the drive tripping 'low pressure' and shutting the pump down.

Independent pump
control system

Optiflow
Communications

Feedback
signal

Total Control

A single 'Master' drive acts to control and monitor system operation. Control connections are made to this drive only, saving installation time and reducing costs.

Simple Connection

Additional drives connected on the system require a single RJ45 connection and basic commissioning, leading to time savings and simplified installation.

Flexible Solution

The system can operate with up to five pumps in any configuration, e.g. Jockey Pump / Duty / Assist / Standby. Duty pumps are automatically rotated, ensuring maximum service life and system efficiency.



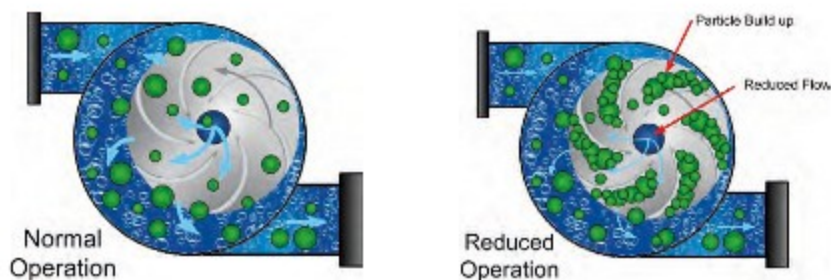
See OPTIFLOW™ in action

Scan to watch the video or visit
<http://youtu.be/9QQ89bQYdfs>

Avoid Pump Downtime

Blockage Detect/Clear

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



Dry Run Protection

Optidrive Eco Pump can evaluate a pump's speed/power and shut it off or warn when the pump starts to run dry, protecting it from heat/friction damage.

Motor Preheat Function

Optidrive Eco Pump features a motor preheat function to help ensure moisture is not permitted to collect on the motor in periods of inactivity and prior to motor start up. In addition, the motor preheat function can be used to keep condensation from developing on the motor as the motor cools down immediately following a stop. The feature is fully configurable, meaning the pump can be always available the instant it is required.

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.

Summary

- All drives operate at variable speed for maximum energy efficiency.
- Operating time (Hours Run) is automatically balanced and duty pumps rotated
- Automatic system reconfiguration in the event of a pump fault (including the master pump).
- Continued system operation when drives are individually powered off (including the master drive).
- Communication and +24V control voltage shared between drives via a standard RJ45 patch lead.
- Independent maintenance indicators for each pump.
- Any pump can be switched to Hand operation at the touch of a button, and will automatically rejoin the network when switched back to Auto.
- For waste water applications each pump can be set for blockage/ragging detection and activate an automatic de-ragging/pump cleaning cycle.
- Optional mains isolator with lock-off for safe pump maintenance.
- Optiflow function configured through simple parameter set-up and intelligent drive self configuration.

Consistent Flow

The required pressure and flow levels are maintained regardless of how many pumps are required. When demand increases, additional pumps are automatically brought on stream to assist and are switched off again when not required.

Reduced Downtime

In the event of a fault, or if a pump needs to be isolated for maintenance, the system will automatically continue to operate with the remaining available pumps. The mains power can even be completely isolated from the Master drive without affecting operation of the Slave drives.



Save Energy

Accurate speed control of fans and pumps provides the most energy efficient control method

Energy optimisation function minimises energy usage in real time under partial load conditions

Sleep & wake functions ensure operation only when required

Save Money

Advanced on-board features remove the need for peripheral equipment

Intelligent maintenance interval timing allows programmable maintenance reminders, avoiding costly downtime

Automatic load monitoring provides an early warning of potential faults, such as belt failures or blocked filters

Save Time

Built in keypad and OLED text display provides intuitive operation

Simple parameter structure with carefully selected default values reduce commissioning time

Practical design allows easy access to power and control terminals without specialist tools

Key Features



ECO Vector Motor Control



Standard Induction Motors



Permanent Magnet AC Motors

Brushless DC Motors

Synchronous Reluctance Motors

Energy Optimised Design



Internal EMC Filter



Low Noise Operation



Improved Fan Efficiency

Unique Eco Vector Sensorless Control

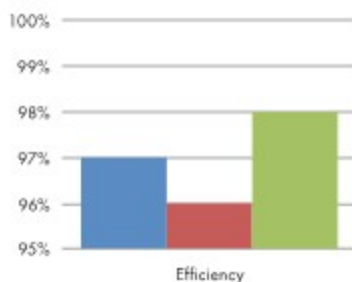
Optidrive Eco HVAC uses advanced motor control, designed to provide the most energy efficient motor control possible. Operation with standard IM Motors, Permanent Magnet or Synchronous Reluctance motors is possible, all without requiring any feedback device or optional modules – simply change parameters to suit the connected motor, autotune and operate!

Eco Vector continuously adjusts in real time to provide the most efficient operating conditions for the load, typically reducing energy consumption by 2 – 3% compared to standard AC drives – providing similar long term costs savings to selecting a higher efficiency motor.

Energy Optimised Design

Optidrive Eco HVAC up to frame size 5 are designed with film capacitors, replacing the traditional electrolytic capacitors used in the DC link. Film capacitors have lower losses, and also remove the need for AC, DC or swinging chokes, improving overall drive efficiency. Efficiency is improved by up to 4% compared to standard AC drives, whilst also reducing supply current total harmonic distortion (iTHD), improving the Real Power Factor and reducing total input current, leading to cost savings on installation through reduced cable and fuse ratings and smaller supply transformer rating.

Improved Efficiency, Reduced Lifetime Costs: e.g. for a 37kW load, operating 10 hours per day, 5 days per week, 50 weeks per year, improving the efficiency by just 1% will provide an energy saving > 900kWh per year.



Typical efficiency comparison for Optidrive Eco HVAC vs other AC variable speed drives

Standard AC Variable Speed Drive
 AC Variable Speed Drive + 4% Line Choke
 Optidrive Eco HVAC

Drive Features

A compact and robust range of drives dedicated to HVAC

Internal EMC Filter

Compliant with global EMC Standards

Maintenance interval timer and service indication

Multi Language Text Display

Multi Language Text Display

Installed as standard on all IP55 & IP66 models

- Clear multi-line text display
- Operates -10 to 50°C
- Wide viewing angle, effective in dark and light conditions
- Customisable display
- Multi-language selection



Hand / Auto Keypad



Pluggable terminals



Integrated cable management



Long Life, Dual Ball Bearing Fans



IP66 with optional mains disconnect



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.

Optidrive Eco HVAC monitors the load output profile throughout the speed range and compares it to normal operating conditions (established during commissioning). Sensitivity adjustment means that it is possible to detect the indications of a belt failure (such as belt slipping) prior to complete failure of the belt.

Drive Controlled Bypass

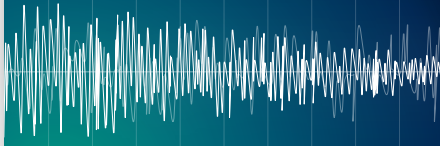
Optidrive Eco HVAC can operate as a bypass controller when installed as part of a bypass circuit. Activation of Bypass mode can be determined intelligently by the Optidrive Eco HVAC drive based on a command from the building management system. Additionally the drive can be set to automatically select bypass mode when entering into a trip condition ensuring minimal disruption to service.

Hand / Auto

Allows manual control to easily be selected in the event of an automatic control system failure or for simplified commissioning / system checks, or when a fast temporary override of the control system is required. Built-in 'Auto Control Selection' allows return to automatic system control just as easily.



Noise Reduction



Quiet Motor Operation

High switching frequency selection (up to 32kHz) ensures motor noise is minimised.

Quiet System Mechanics

Simple skip frequency selection avoids stresses and noise caused by mechanical resonance in ducting or pipework.

Quiet Drive Operation

Long Life Dual Ball Bearing Fans provide quiet operation in addition to extended fan life.

Noise Reduction through Speed Control

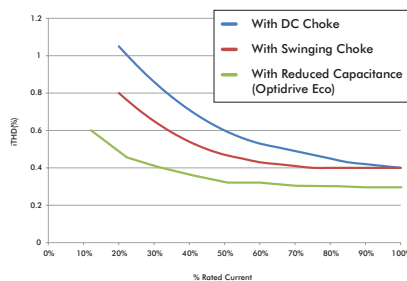
Optimising motor speed gives significant energy savings and reduces motor noise.

Reduced Harmonic Current Distortion

Optidrive Eco HVAC uses innovative design to improve overall efficiency whilst minimising the harmonic distortion levels. All drives designed for 3 phase power supply operation¹ up to frame size 5 utilise film capacitor in the DC link, providing exceptionally low harmonic current distortion without compromising efficiency. Frame size 6 and above include DC chokes and traditional electrolytic capacitors.

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

Typical iTHD values at full and part load

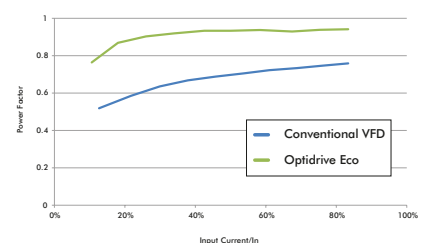


It can be clearly seen that the reduced DC link capacitance significantly reduces the total harmonic distortion at full load, and has a much greater benefit at part load compared to a conventional DC choke or swinging choke. This results in reduced overall input current and reduced transformer heating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

Optidrive Eco HVAC delivers

- Improved Efficiency, Reduced Lifetime Costs: e.g. for a 37kW load, operating 10 hours per day, 5 days per week, 50 weeks per year, improving the efficiency by just 1% will provide an energy saving > 900kWh per year
- Improved True Power Factor – No additional charges etc.
- Lower Mains Supply Current

Power factor comparison



Optidrive Eco offers improved power factor over conventional VFDs under all loads.

¹ 200V and 400V

Options & Accessories

Peripherals to help integrate Optidrive Eco HVAC with your HVAC systems



Optistick Smart

Optipad



Bluetooth

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

OPT-3-STICK-IN



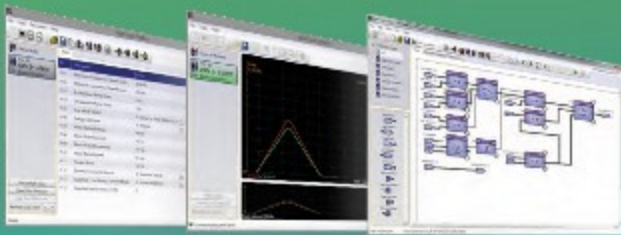
Remote Keypad & TFT Display

IP55 panel mount operator interface.

- Clear multi-line text display
- Multiple language select
- Customisable displays

OPT-3-OPPAD-IN

OptiTools Studio



Powerful PC Software

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

Fieldbus Interfaces



BACnet/IP
OPT-2-BNTIP-IN



PROFIBUS DP
OPT-2-PROFB-IN



DeviceNet
OPT-2-DEVNT-IN



EtherNet/IP
OPT-2-ETHNT-IN



Modbus TCP
OPT-2-MODIP-IN



PROFINET
OPT-2-PFNET-IN



EtherCAT
OPT-2-ETCAT-IN



Plug-in Options



Extended I/O
OPT-2-EXTIO-IN

- Additional 3 Digital Inputs
- Additional Relay Output

Cascade Control

OPT-2-CASCD-IN
Additional 3 Relay Outputs

Mains Isolator



Mains Isolator Option

Frame Sizes 2 & 3 can be factory ordered with a built in lockable isolator. An optional bolt on isolator is available for Frame Sizes 4 & 5.

Product Codes:

Frame Size 4 = OPT-2-ISOL4-IN
Frame Size 5 = OPT-2-ISOL5-IN

BACnet MS/TP & Modbus RTU
on board as standard

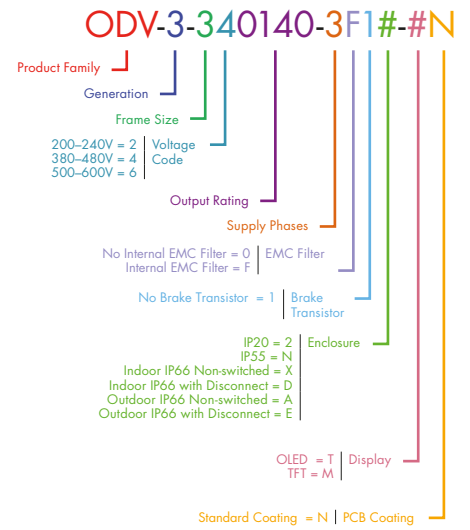
Replace # in model code with enclosure/display option

	kW	HP	Amps	Frame Size	Model Code							IP20 Cabinet Mount	IP55 TFT Display	Indoor IP66 Non Switched	Indoor IP66 with Disconnect	Outdoor IP66 Non Switched	Outdoor IP66 with Disconnect		
					Product Family	Generation	Frame Size	Voltage Code	Output Rating	Supply Phases	EMC Filter							Chassis	
200-240V ± 10% 1 Phase Input	0.75	1	4.3	2	ODV	-3	-2	2	0043	-1	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	1.5	2	7	2	ODV	-3	-2	2	0070	-1	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	2.2	3	10.5	2	ODV	-3	-2	2	0105	-1	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
200-240V ± 10% 3 Phase Input	0.75	1	4.3	2	ODV	-3	-2	2	0043	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	1.5	2	7	2	ODV	-3	-2	2	0070	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	2.2	3	10.5	2	ODV	-3	-2	2	0105	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	4	5	18	3	ODV	-3	-3	2	0180	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	5.5	7.5	24	3	ODV	-3	-3	2	0240	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	7.5	10	30	3	ODV	-3	-3	2	0300	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	7.5	10	30	4	ODV	-3	-4	2	0300	-3	F	1	#	2-MN	N-MN				
	11	15	46	4	ODV	-3	-4	2	0460	-3	F	1	#	2-MN	N-MN			A-MN	E-MN
	15	20	61	5	ODV	-3	-5	2	0610	-3	F	1	#	2-MN	N-MN				
	18.5	25	72	5	ODV	-3	-5	2	0720	-3	F	1	#	2-MN	N-MN				
	22	30	90	5	ODV	-3	-5	2	0900	-3	F	1	#	2-MN	N-MN				
	30	40	110	6	ODV	-3	-6	2	1100	-3	F	1	#	2-MN	N-MN				
	30	40	110	6A	ODV	-3	-6	2	1100	-3	F	1	#	2-MN					
	37	50	150	6	ODV	-3	-6	2	1500	-3	F	1	#	2-MN	N-MN				
	37	50	150	6A	ODV	-3	-6	2	1500	-3	F	1	#	2-MN					
	45	60	180	6	ODV	-3	-6	2	1800	-3	F	1	#	2-MN	N-MN				
	45	60	180	6B	ODV	-3	-6	2	1800	-3	F	1	#	2-MN					
55	75	202	7	ODV	-3	-7	2	2020	-3	F	1	#	2-MN	N-MN					
75	100	248	7	ODV	-3	-7	2	2480	-3	F	1	#	2-MN	N-MN					
380-480V ± 10% 3 Phase Input	0.75	1	2.2	2	ODV	-3	-2	4	0022	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	1.5	2	4.1	2	ODV	-3	-2	4	0041	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	2.2	3	5.8	2	ODV	-3	-2	4	0058	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	4	5	9.5	2	ODV	-3	-2	4	0095	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	5.5	7.5	14	2	ODV	-3	-2	4	0140	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	5.5	7.5	14	3	ODV	-3	-3	4	0140	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	7.5	10	18	3	ODV	-3	-3	4	0180	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	11	15	24	3	ODV	-3	-3	4	0240	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	15	20	30	3	ODV	-3	-3	4	0300	-3	F	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	15	20	30	4	ODV	-3	-4	4	0300	-3	F	1	#	2-MN	N-MN				
	18.5	25	39	4	ODV	-3	-4	4	0390	-3	F	1	#	2-MN	N-MN			A-MN	E-MN
	22	30	46	4	ODV	-3	-4	4	0460	-3	F	1	#	2-MN	N-MN			A-MN	E-MN
	30	40	61	5	ODV	-3	-5	4	0610	-3	F	1	#	2-MN	N-MN				
	37	50	72	5	ODV	-3	-5	4	0720	-3	F	1	#	2-MN	N-MN				
	45	60	90	5	ODV	-3	-5	4	0900	-3	F	1	#	2-MN	N-MN				
	55	75	110	6	ODV	-3	-6	4	1100	-3	F	1	#	2-MN	N-MN				
	55	75	110	6A	ODV	-3	-6	4	1100	-3	F	1	#	2-MN					
	75	100	150	6	ODV	-3	-6	4	1500	-3	F	1	#	2-MN	N-MN				
	75	100	150	6A	ODV	-3	-6	4	1500	-3	F	1	#	2-MN					
	90	150	180	6	ODV	-3	-6	4	1800	-3	F	1	#	2-MN	N-MN				
90	150	180	6B	ODV	-3	-6	4	1800	-3	F	1	#	2-MN						
110	175	202	6B	ODV	-3	-6	4	2020	-3	F	1	#	2-MN						
110	175	202	7	ODV	-3	-7	4	2020	-3	F	1	#	2-MN	N-MN					
132	200	240	7	ODV	-3	-7	4	2400	-3	F	1	#	2-MN	N-MN					
160	250	302	7	ODV	-3	-7	4	3020	-3	F	1	#	2-MN	N-MN					
200	300	370	8	ODV	-3	-8	4	3700	-3	F	1	#	2-MN						
250	350	450	8	ODV	-3	-8	4	4500	-3	F	1	#	2-MN						
500-600V ± 10% 3 Phase Input	0.75	1	2.1	2	ODV	-3	-2	6	0021	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	1.5	2	3.1	2	ODV	-3	-2	6	0031	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	2.2	3	4.1	2	ODV	-3	-2	6	0041	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	4	5	6.5	2	ODV	-3	-2	6	0065	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	5.5	7.5	9	2	ODV	-3	-2	6	0090	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	7.5	10	12	3	ODV	-3	-3	6	0120	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	11	15	17	3	ODV	-3	-3	6	0170	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	15	20	22	3	ODV	-3	-3	6	0220	-3	0	1	#	2-MN		X-TN	D-TN	A-MN	E-MN
	15	20	22	4	ODV	-3	-4	6	0220	-3	0	1	#	2-MN	N-MN				
	18.5	25	28	4	ODV	-3	-4	6	0280	-3	0	1	#	2-MN	N-MN			A-MN	E-MN
	22	30	34	4	ODV	-3	-4	6	0340	-3	0	1	#	2-MN	N-MN			A-MN	E-MN
	30	40	43	4	ODV	-3	-4	6	0430	-3	0	1	#	2-MN	N-MN			A-MN	E-MN
	37	50	54	5	ODV	-3	-5	6	0540	-3	0	1	#	2-MN	N-MN				
	45	60	65	5	ODV	-3	-5	6	0650	-3	0	1	#	2-MN	N-MN				
	55	75	78	6	ODV	-3	-6	6	0780	-3	0	1	#	2-MN	N-MN				
	75	100	105	6	ODV	-3	-6	6	1050	-3	0	1	#	2-MN	N-MN				
	90	125	130	6	ODV	-3	-6	6	1300	-3	0	1	#	2-MN	N-MN				
110	150	150	6	ODV	-3	-6	6	1500	-3	0	1	#	2-MN	N-MN					

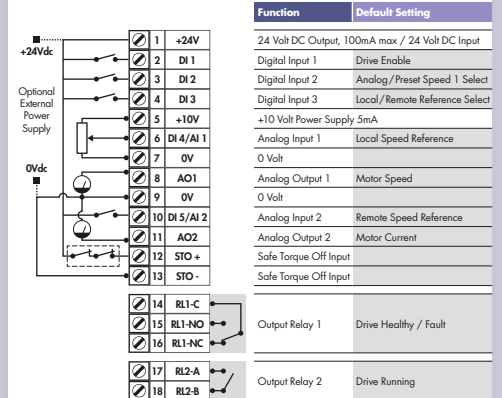
Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 10% 500 – 600V ± 10%	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer	
	Supply Frequency	48 – 62Hz		Programmable Inputs	5 Total as standard (optional additional 3) 3 Digital (optional additional 3) 2 Analog / Digital selectable	
	Displacement Power Factor	> 0.98		Digital Inputs	Opto - Isolated 8 – 30 Volt DC, internal or external supply Response time < 4ms	
	Phase Imbalance	3% Maximum allowed		Analog Inputs	Resolution: 12 bits Response time: < 4ms Accuracy: < 1% full scale Parameter adjustable scaling and offset	
	Inrush Current	< rated current		PTC Input	Motor PTC / Thermistor Input Trip Level : 3kΩ	
	Power Cycles	120 per hour maximum, evenly spaced		Programmable Outputs	2 Total 1 Analog / Digital 1 Relay	
	Output Ratings	Output Power		230V 1Ph. Input: 0.75–2.2kW (1–3HP) 230V 3Ph. Input: 0.75–75kW (1–100HP) 400V 3Ph. Input: 0.75–250kW 460V 3Ph. Input: 1–350HP 575V 3Ph. Input: 0.75–110kW (1–150HP)	Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 5A
Overload Capacity	110% for 60 seconds 165% for 4 seconds	Analog Outputs	0 to 10 Volts / 10 to 0 Volts 0 to 20mA / 20 to 0mA 4 to 20mA / 20 to 4mA			
Output Frequency	0 – 250Hz, 0.1Hz resolution	Application Features	PID Control	Internal PID Controller Multi-setpoint Select Standby / Sleep Mode Boost Function		
Typical Efficiency	> 98%	Fire Mode	Bi-directional Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)			
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –10 to 50°C	Load Monitoring	High Current Protection (Fan / Bump Blocked) Low Current Protection (Broken Belt / Shaft) Pump Blockage Detection with Cleaning		
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)	Duty / Assist / Standby	Built-in Multi-Pump Support Automatic Changeover on Fault Automatic Changeover on Time Fully Redundant		
	Humidity	95% Max, non condensing	Pump Control Features	Pump Blockage Detection	Pump load monitoring with autotune function, user configurable	
	Vibration	Conforms to EN61800-5-1 2007, IEC 60068-2-6	Pump Cleaning	Adjustable Bi-directional Pump Cleaning Cycle operation		
Enclosure	Ingress Protection	IP20, IP55, IP66	Multi-Pump Control	Control of fixed speed assist pumps (with cascade control module) Control of Duty, Assist and Standby variable speed pumps via internal Master – Slave network		
	Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad	Pump Stir	Automatic pump stir to prevent sediment build-up	
Control Specification	Display	Built-in multi language text display	Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp	
	PC	OptiTools Studio		Data Logging	Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage	
	Control Method	Eco Sensorless Vector Open Loop Permanent Magnet Vector Open Loop BLDC Vector Open Loop Synchronous Reluctance Vector		Maintenance Indicator	Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring	
	PWM Frequency	4 – 32kHz Effective		Monitoring	Hours Run Meter Resettable & Non-Resettable kWh meters Cooling Fan Run Time	
	Stopping Mode	Ramp to stop: User Adjustable 0.1–600 secs Coast to stop		Standards Compliance	Low Voltage Directive	2014/35/EU
	Braking	AC Flux Braking		EMC Directive	2014/30/EU	
	Skip Frequency	Single point, user adjustable		Additional Conformance	UL, cUL, EAC, RCM	
Fieldbus Connectivity	Built-in	BACnet MS/TP	BACnet Application Specific Controller 9.6 - 76.8 kbps selectable Data Format: 8N1, 8N2, 8O1, 8E1	Harmonic Currents	IEC61000-3-12	
		Modbus RTU	9.6 - 115.2 kbps selectable Data Format: 8N1, 8N2, 8O1, 8E1	Environmental Conditions	Designed to meet IEC 60721-3-3, in operation: IP20 Drives: 3S2/3C2 IP55 & 66 Drives: 3S3/3C3	
	Optional	BACnet/IP	Plug-in BACnet/IP interface Dual IAN ports Device Level Ring	Other	PROFIBUS DP (DPV1) PROFINET IO DeviceNet EtherNet/IP EtherCAT Modbus TCP	

Model Code Guide



Connection Diagram



NOT TO SCALE



Size	IP20							IP66			IP55			
	2	3	4	5	6A	6B	8	2	3	4	4	5	6	7
mm Height	221	261	418	486	614	726	995	257	310	360	450	540	865	1280
mm Width	110	131	160	222	286	330	482	188	211	240	171	235	330	330
mm Depth	185	205	240	260	320	320	480	186	235	271	252	270	330	360
kg Weight	1.8	3.5	10.4	19.9	42.5	43.5	112	3.5	6.6	9.5	12	23.1	55	89

Optidrive Eco HVAC

✓ Saving Energy / Reducing CO₂

With large scale increases in global energy costs and the introduction of taxes and legislation relating to the industrial production of CO₂ gases the need to reduce energy consumption and save money has never been greater. Optidrive Eco HVAC can be used with environmental sensors to reduce speed in air handling and pumping applications without compromising the required output of the system.

✓ Easy Installation

Compact and modern design utilising the latest available technology has accumulated in a robust HVAC drive with small dimensions and innovative mounting and cabling features.

✓ Simple Set-up & Rapid Commissioning

Optidrive Eco HVAC was developed from concept for ease of use. A handful of parameters configure the drive for basic HVAC applications. A short, concise product data means the drive is running in seconds. Advanced powerful functionality is equally easily accessible.

✓ Imaginative Enclosure Design

With a selection of IP55 and IP66 enclosures, Optidrive Eco HVAC is well suited to harsh environments, or where cabinet and cabling costs need to be reduced.

✓ Advanced Fan Control Functions

The key HVAC control functionality required for your application is inbuilt into the Optidrive Eco HVAC and packaged to be both quick and simple to activate. Added to this is the drive's own PLC programming flexibility that makes drive functionality virtually limitless.

✓ Options for Flexibility

Optidrive Eco HVAC combines both peripheral and factory built options to ensure you get the right drive, scaled to suit your application. With inbuilt BACnet and Modbus, and a host of communication options the Optidrive can integrate easily into your industrial network of choice.



UK Headquarters, Welshpool

Invertek 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. Invertek Drives' unique and innovative drives are designed for ease of use and meet with recognised international design standards.

Global HVAC Solutions

Invertek Drives operate at the heart of HVAC systems around the world



USA
National Portrait
Gallery climate control



UK
Saving energy in
ventilation and boilers



DUBAI
Saving energy in air
conditioning systems



SINGAPORE
Energy saving & noise
reduction programme



北京

北京市朝阳区东三环东路16号京粮大厦
1408号
邮编: 100020
电话: 010-84854688
传真: 010-84854698

辽宁 沈阳

沈阳市和平区和平北大街69号总统大厦
C座1903室
邮编: 110003
电话: 024-22812030
传真: 024-22812032

河北 石家庄

石家庄新华区誉宏路
邮编: 050000
电话: 15032607677

吉林 长春

长春市净月区南四环路
邮编: 130021
电话: 18626647838

河北 唐山

唐山市开平区现代装备制造工业区园区
道35号SCL营业部
邮编: 063021
电话: 0315-3390889
传真: 0315-3390858

黑龙江 哈尔滨

哈尔滨市香坊区香康街
邮编: 150036
电话: 18646118585

天津

天津市东丽经济开发区三经路7号
邮编: 300300
电话: 022-24980364
传真: 022-24985406

辽宁 大连

大连市沙河口区黄河路677号天兴-罗斯福国际中心写字楼1712室
邮编: 116021
电话: 0411-84521309
传真: 0411-84521306

上海

上海市长宁区虹桥路1386号文广大厦
1101室
邮编: 200336
电话: 021-34627877
传真: 021-34627922

浙江 杭州

杭州市下城区凤起路78号杭州国际假日
酒店商务楼408室
邮编: 310003
电话: 0571-28909729
传真: 0571-28909730

江苏 苏州

苏州市苏州新区狮山路88号金河国际中
心2111室
邮编: 215011
电话: 0512-68050638
传真: 0512-68050568

浙江 宁波

宁波市海曙区龙嘘路
邮编: 315016
电话: 13306687987
传真: 0574-89021801

江苏 无锡

无锡市滨湖区梁溪路万达广场A区写字
楼2011室
邮编: 214000
电话: 0510-82735106
传真: 0510-82722686

浙江 温州

温州市瓯海区高翔路
邮编: 325006
电话: 18857791797

江苏 南京

南京市秦淮区中山南路49号南京商贸世
纪广场16楼A2A4座
邮编: 210005
电话: 025-86890102
传真: 025-86890121

河南 郑州

郑州市金水区金水路24号润华商务花园
A座426室
邮编: 450012
电话: 0371-63857861
传真: 0371-63857222

山东 烟台

烟台市福山区银河路
邮编: 265500
电话: 18660559973

陕西 太原

太原市小店区荣军北街
邮编: 030031
电话: 13466825820
13994299571

安徽 合肥

合肥市政务区东流路999号新城国际A
座1707室
邮编: 230022
电话: 0551-62852400
传真: 0551-62852401

山东 济南

山东省济南市历下区华能路38号汇能大
厦2305室
邮编: 250014
电话: 0531-88119586
传真: 0531-88119585

湖北 武汉

武汉市硚口区中山大道1号越秀财富中
心1104A
邮编: 430000
电话: 027-85710230
传真: 027-85728831

山东 青岛

青岛市市南区山东路40号青岛广发金融
大厦1304-C
邮编: 266071
电话: 0532-86660107
传真: 0532-86660105

湖南 长沙

长沙市雨花区万家丽路欧亚达国际广场
3栋2475室
邮编: 410007
电话: 0731-84132878

福建 福州

福州市台江区五一中路88号平安大厦
7F-C2单元
邮编: 350004
电话: 0591-87608527
传真: 0591-87608617

广东 广州

广州市天河区林和西路161号中泰国际
A座1208室
邮编: 510620
电话: 020-38288422
传真: 020-38288580

香港

香港新界沙田安耀街2号新都广场28楼
19室
邮编: 999077
电话: 00852-24601881
传真: 00852-24601882

陕西 西安

西安市雁塔区高新四路一号高科广场A
座702室
邮编: 710075
电话: 029-88365200
传真: 029-88365202

云南 昆明

昆明市五华区红锦路
邮编: 650231
电话: 0871-63510627
传真: 0871-63510602

新疆 乌鲁木齐

乌鲁木齐沙依巴克区红庙子街道
邮编: 830002
电话: 18999995581
18609000851
传真: 0991-2657211

重庆

重庆市九龙坡区火炬大道99号千叶大厦
3栋14-4
邮编: 400010
电话: 023-63801663
传真: 023-63801662

宁夏 银川

宁夏银川市金凤区福州北街
邮编: 750001
电话: 13895489459

四川 成都

成都市青羊区人民南路一段86号城市之
心19楼E座
邮编: 610016
电话: 028-86203055
传真: 028-86203058

