Invertek Drives.com

HVAC Building Services

eco OPTIDRIVE™

AC Variable Speed Drive

HVAC BUILDING SERVICES

Energy efficient fan & pump control

BACnet built-in as standard

0.75kW – 250kW / 1HP – 350HP

200 – 600V Single & 3 Phase Input

eco OPTIDRIVE™

AC Variable Speed Drive

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

Fire Mode

BACnet 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

Take Control of Your Environment

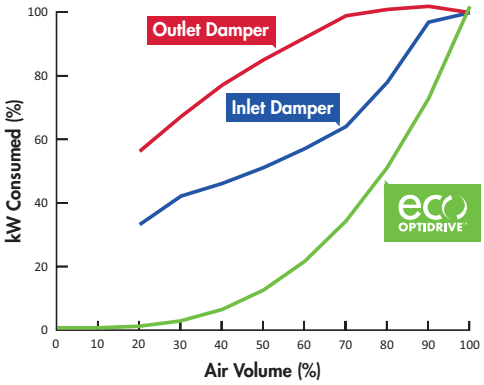
Modern building ventilation and air conditioning systems are designed to provide optimum climatic conditions for occupants throughout the whole year. As such, they must be designed to operate equally well during the hottest part of the day, with maximum sunlight, through to the colder night time and 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.

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.

Energy Savings Calculator

Estimate your potential energy savings, CO_2 emissions and financial savings

www.invertekdrives.com/calculator

Download on the App Store | GET IT ON Google play

Save Energy, Cut CO_2

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

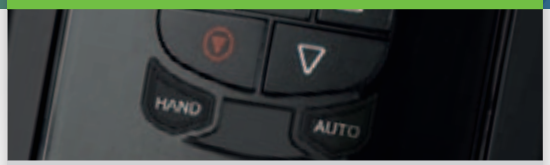
Save Time

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.

IP55 / NEMA 12 **IP66** / NEMA 4X

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.

Energy efficient control for HVAC systems

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 safety exact 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.

Drive Features

A compact and robust range of drives dedicated to HVAC

Maintenance interval timer and service indication

Internal EMC Filter

Compliant with global EMC Standards

Multi Language OLED Display

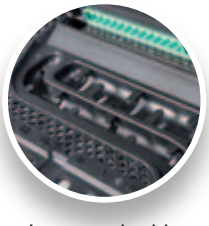
OLED Display

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

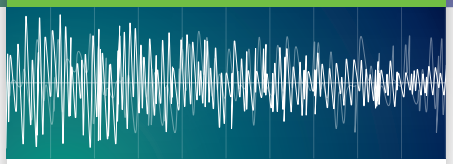
Optidrive Eco HVAC can operate as a bypass controller when installed as part of a bypass circuit. Activation of Bypass mode can be determined intelligently by the Optidrive Eco HVAC drive based on a command from the building management system. Additionally the drive can be set to automatically select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

Energy efficient control for HVAC systems

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

Temperature-controlled cooling fans ensure quiet operation in periods of reduced load.

Noise Reduction through Speed Control

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

Reduced Harmonic Current Distortion

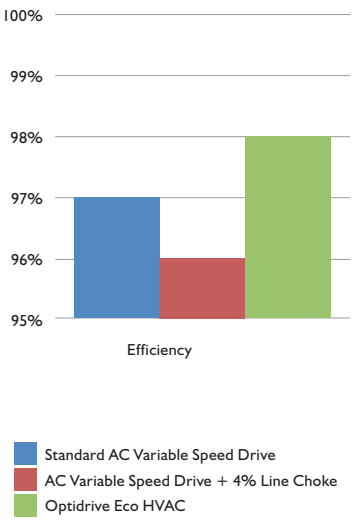
Optidrive Eco HVAC uses innovative design to improve overall efficiency whilst minimising the harmonic distortion levels. All drives designed for 3 phase power supply operation up to frame size 5 utilise film capacitor in the DC link, providing exceptionally low harmonic current distortion without compromising 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.

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 > 100kWh per year
- Improved True Power Factor – No additional charges etc.
- Lower Mains Supply Current

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



Options & Accessories

Peripherals to help integrate Optidrive Eco HVAC with your HVAC systems

Optistick

Rapid Commissioning Tool

Plug-in or wirelessly copy parameter sets between drives.

OPT-2-STICK-IN

Optipad

Remote Keypad & OLED Display

IP55 panel mount operator interface.

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

OPT-2-OPPAD-IN

Energy efficient control for HVAC systems

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 XP, Windows Vista & Windows 7

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

BACnet & Modbus RTU
on board as standard

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

eco OPTIDRIVE™

	kW	HP	Amps	Size	Model Code	Product Family	Generation	Frame Size	Voltage Code	Capacity	Supply Phases	EMC Filter	1 Quadrant	Enclosure Type	Display	PCB Coating
200–240V ± 10% 1 Phase Input	0.75	1	4.3	2	ODV -	3 -	2	2	0043 -	1	F	1	# -	#	N	
	1.5	2	7	2	ODV -	3 -	2	2	0070 -	1	F	1	# -	#	N	
	2.2	3	10.5	2	ODV -	3 -	2	2	0105 -	1	F	1	# -	#	N	
200–240V ± 10% 3 Phase Input	0.75	1	4.3	2	ODV -	3 -	2	2	0043 -	3	F	1	# -	#	N	
	1.5	2	7	2	ODV -	3 -	2	2	0070 -	3	F	1	# -	#	N	
	2.2	3	10.5	2	ODV -	3 -	2	2	0105 -	3	F	1	# -	#	N	
	4	5	18	3	ODV -	3 -	3	2	0180 -	3	F	1	# -	#	N	
	5.5	7.5	24	3	ODV -	3 -	3	2	0240 -	3	F	1	# -	#	N	
	7.5	10	30	4	ODV -	3 -	4	2	0300 -	3	F	1	N -	T	N	
	11	15	46	4	ODV -	3 -	4	2	0460 -	3	F	1	N -	T	N	
	15	20	60	5	ODV -	3 -	5	2	0600 -	3	F	1	N -	T	N	
	18.5	25	72	5	ODV -	3 -	5	2	0720 -	3	F	1	N -	T	N	
	22	30	90	5	ODV -	3 -	5	2	0900 -	3	F	1	N -	T	N	
	30	40	110	6	ODV -	3 -	6	2	1100 -	3	F	1	N -	T	N	
	37	50	150	6	ODV -	3 -	6	2	1500 -	3	F	1	N -	T	N	
	45	60	180	6	ODV -	3 -	6	2	1800 -	3	F	1	N -	T	N	
	55	75	202	7	ODV -	3 -	7	2	2020 -	3	F	1	N -	T	N	
	75	100	248	7	ODV -	3 -	7	2	2480 -	3	F	1	N -	T	N	
380–480V ± 10% 3 Phase Input	0.75	1	2.2	2	ODV -	3 -	2	4	0022 -	3	F	1	# -	#	N	
	1.5	2	4.1	2	ODV -	3 -	2	4	0041 -	3	F	1	# -	#	N	
	2.2	3	5.8	2	ODV -	3 -	2	4	0058 -	3	F	1	# -	#	N	
	4	5	9.5	2	ODV -	3 -	2	4	0095 -	3	F	1	# -	#	N	
	5.5	7.5	14	3	ODV -	3 -	3	4	0140 -	3	F	1	# -	#	N	
	7.5	10	18	3	ODV -	3 -	3	4	0180 -	3	F	1	# -	#	N	
	11	15	24	3	ODV -	3 -	3	4	0240 -	3	F	1	# -	#	N	
	15	20	30	4	ODV -	3 -	4	4	0300 -	3	F	1	N -	T	N	
	18.5	25	39	4	ODV -	3 -	4	4	0390 -	3	F	1	N -	T	N	
	22	30	46	4	ODV -	3 -	4	4	0460 -	3	F	1	N -	T	N	
	30	40	61	5	ODV -	3 -	5	4	0610 -	3	F	1	N -	T	N	
	37	50	72	5	ODV -	3 -	5	4	0720 -	3	F	1	N -	T	N	
	45	60	90	5	ODV -	3 -	5	4	0900 -	3	F	1	N -	T	N	
	55	75	110	6	ODV -	3 -	6	4	1100 -	3	F	1	N -	T	N	
	75	100	150	6	ODV -	3 -	6	4	1500 -	3	F	1	N -	T	N	
	90	150	180	6	ODV -	3 -	6	4	1800 -	3	F	1	N -	T	N	
	110	175	202	7	ODV -	3 -	7	4	2020 -	3	F	1	N -	T	N	
	132	200	240	7	ODV -	3 -	7	4	2400 -	3	F	1	N -	T	N	
	160	250	302	7	ODV -	3 -	7	4	3020 -	3	F	1	N -	T	N	
	200	300	370	8	ODV -	3 -	8	4	3700 -	3	F	1	2 -	T	N	
	250	350	450	8	ODV -	3 -	8	4	4500 -	3	F	1	2 -	T	N	
480–525V ± 10% 3 Phase Input	132	175	185	7	ODV -	3 -	7	5	1850 -	3	0	1	N -	T	N	
	150	200	205	7	ODV -	3 -	7	5	2050 -	3	0	1	N -	T	N	
	185	250	255	7	ODV -	3 -	7	5	2550 -	3	0	1	N -	T	N	
	200	270	275	7	ODV -	3 -	7	5	2750 -	3	0	1	N -	T	N	
500–600V ± 10% 3 Phase Input	0.75	1	2.1	2	ODV -	3 -	2	6	0021 -	3	0	1	# -	#	N	
	1.5	2	3.1	2	ODV -	3 -	2	6	0031 -	3	0	1	# -	#	N	
	2.2	3	4.1	2	ODV -	3 -	2	6	0041 -	3	0	1	# -	#	N	
	4	5	6.5	2	ODV -	3 -	2	6	0065 -	3	0	1	# -	#	N	
	5.5	7.5	9	2	ODV -	3 -	2	6	0090 -	3	0	1	# -	#	N	
	7.5	10	12	3	ODV -	3 -	3	6	0120 -	3	0	1	# -	#	N	
	11	15	17	3	ODV -	3 -	3	6	0170 -	3	0	1	# -	#	N	
	15	20	22	4	ODV -	3 -	4	6	0220 -	3	0	1	N -	T	N	
	18.5	25	28	4	ODV -	3 -	4	6	0280 -	3	0	1	N -	T	N	
	22	30	34	4	ODV -	3 -	4	6	0340 -	3	0	1	N -	T	N	
	30	40	43	4	ODV -	3 -	4	6	0430 -	3	0	1	N -	T	N	
	37	50	54	5	ODV -	3 -	5	6	0540 -	3	0	1	N -	T	N	
	45	60	65	5	ODV -	3 -	5	6	0650 -	3	0	1	N -	T	N	
	55	75	78	5	ODV -	3 -	5	6	0780 -	3	0	1	N -	T	N	
	75	100	105	6	ODV -	3 -	6	6	1050 -	3	0	1	N -	T	N	
	90	125	130	6	ODV -	3 -	6	6	1300 -	3	0	1	N -	T	N	
	110	150	150	6	ODV -	3 -	6	6	1500 -	3	0	1	N -	T	N	

Enclosure & Display Types

Replace # in model code with colour-coded option

X-TN  **IP66** Non-switched OLED Display

D-TN  **IP66** Switched OLED Display

2-SN  **IP20** LED Display

N-TN  **IP55** OLED Display

2-TN  **IP20** OLED Display

Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 10% 500 – 600V ± 10%
	Supply Frequency	48 – 62Hz
	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	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 (1–120HP)
	Overload Capacity	110% for 60 seconds
	Output Frequency	0 – 120Hz, 0.1Hz resolution
	Typical Efficiency	> 98%
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –10 to 50°C
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)
	Humidity	95% Max, non condensing
	Vibration	Conforms to IEC 60068-2-6 Sinusoidal Vibration 10 – 57Hz @ 0.075mm Pk 57 – 150Hz @ 1g Pk
Enclosure	Ingress Protection	IP20, IP55, IP66
Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad
	Display	Built-in multi language OLED (IP55 & IP66) 7 Segment LED (IP20)
	PC	OptiTools Studio
Control Specification	Control Method	Eco Sensorless Vector Control Open Loop Permanent Magnet Vector Open Loop BLDC Vector Open Loop Synchronous Reluctance Vector
	PWM Frequency	4 – 32kHz Effective
	Stopping Mode	Ramp to stop: User Adjustable 1–600 secs Coast to stop
	Braking	Motor Flux Braking
	Skip Frequency	Single point, user adjustable
	Setpoint Control	Analog Signal: 0 to 10 Volts 10 to 0 Volts –10 to +10 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA
		Digital: Motorised Potentiometer (Keypad) Modbus RTU BACnet MS/TP
Fieldbus Connectivity	Built-in	BACnet MS/TP: BACnet Application Specific Controller 9.6 - 76.8 kbps selectable Date Format : 8N1, 8N2, 8E1, 8O1
		Modbus RTU: 9.6 - 115.2 kbps selectable 8N1, 8N2, 8E1, 8O1
	Optional	BACnet/IP: Plug-in BACnet/IP interface Dual LAN ports Device Level Ring
		Other: PROFIBUS DP (DPV1) PROFINET IO DeviceNet EtherNet/IP EtherCAT Modbus TCP

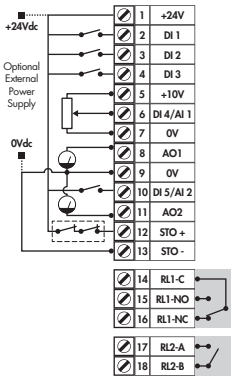
I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer
	Programmable Inputs	5 Total as standard (optional additional 3) 3 Digital (optional additional 3) 2 Analog / Digital selectable
	Digital Inputs	8 – 30 Volt DC, internal or external supply Response time < 4ms
	Analog Inputs	Resolution: 12 bits Response time: < 4ms Accuracy: < 1% full scale Parameter adjustable scaling and offset
	Programmable Outputs	4 Total (optional additional 3) 2 Analog / Digital 2 Relays (optional additional 3)
	Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC
	Analog Outputs	0 to 10 Volt 0 to 20mA 4 to 20mA
Application Features	PID Control	Internal PID Controller Multi Setpoint Select Standby / Sleep Mode Boost Function
	Fire Mode	Bidirectional Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)
	Load Monitoring	Over Torque Protection (Fan / Bump Blocked) Under Torque Protection (Broken Belt / Shaft) Pump Blockage Detection with Cleaning
	Duty / Assist / Standby	Built-in Multi Pump Support Autotmatic Changeover on Fault Automatic Changeover on Run Time Fully Redundant
Pump Control Features	Pump Blockage Detection	Pump load monitoring with autotune function, user configurable
	Pump Cleaning	Adjustable Bi-Directional Pump Cleaning Cycle operation
	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
	Pump Stir	Automatic pump stir function
Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp
	Data Logging	Logging of data prior to trip for diagnostic purposes : Output Current Drive Temperature DC Bus Voltage
	Maintenance Indicator	Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring
	Monitoring	Hours Run Meter Resettable & Non Resettable kWh meters Cooling Fan Run Time
Standards Compliance	Low Voltage Directive	Adjustable speed electrical power drive systems. EMC requirements
	EMC Directive	2004/108/EC 230V 1Ph. Filtered Units: Cat C1 According to EN 61800-3:2004 400V 3Ph. Units: Cat C2 According to EN61800-3:2004
	Machinery Directive	2006/42/EC
	Conformance	CE, UL, C-Tick, EAC
	Harmonic Distortion	EN61000-3-12

Model Code Guide

ODV-3-340140-3F1#-#N

- Product Family
- Generation
- Frame Size
- 200–240V = 2, 380–480V = 4, 480–525V = 5, 500–600V = 6 | Voltage Code
- Capacity
- Supply Phases
- No Internal EMC Filter = 0, Internal EMC Filter = F | EMC Filter
- No Brake Transistor = 1 | Brake Transistor
- IP20 = 2, IP55 = N, IP66 Non-switched = X, IP66 with Isolator = D | Enclosure
- 7 Segment LED = S, OLED = T | Display
- Standard Coating = N | PCB Coating

Connection Diagram



Function	Default Setting
24 Volt DC Output, 100mA max / 24 Volt DC Input	
Digital Input 1	Drive Enable
Digital Input 2	Analog/Preset Speed 1 Select
Digital Input 3	Local/Remote Reference Select
+10 Volt Power Supply 5mA	
Analog Input 1	Local Speed Reference
0 Volt	
Analog Output 1	Motor Speed
0 Volt	
Analog Input 2	Remote Speed Reference
Analog Output 2	Motor Current
Safe Torque Off Input	
Safe Torque Off Input	
Output Relay 1	Drive Healthy / Fault
Output Relay 2	Drive Running

NOT TO SCALE

	Size	IP20 2	IP20 3	IP66 2	IP66 3	IP55 4	IP55 5	IP55 6	IP55 7	IP20 8
mm	Height	221	261	257	310	450	540	865	1280	995
mm	Width	110	131	188	211	171	235	330	330	482
mm	Depth	185	205	239	266	252	270	330	360	480
kg	Weight	1.8	3.5	4.8	7.7	11.5	23	55	89	200