

# OPTIDRIVE™

## Stock Drives Catalogue

Variable Speed Drives  
& Accessories



# Global Drive Solutions

wireless control for  
hundreds of applications

with Invertek Drives  
the solutions start here!

Invertek Drives Ltd are dedicated to the design, manufacture and marketing of electronic variable speed drives for controlling electric motors.

The state of the art UK headquarters houses specialist facilities for research & development, manufacturing and global marketing. All operations, including research and development, are accredited to the exacting customer focused ISO 9001:2008 quality standard.

The Company's products are sold globally by a network of specialist distributors in over 60 different countries. Invertek Drives' unique and innovative Optidrive range is designed for ease of use and installation and meets recognised international design standards for CE (Europe), cUL (North America), CTick (Australia) and Gost (Russia).

- ⑤ easy to use, reliable products with incredible performance
- ⑤ leading edge design and technology
- ⑤ highly committed to innovation
- ⑤ global support and suppliers



**INVERTEK  
DRIVES**  
www.invertek.ca



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# OPTIDRIVE PLUS 3<sup>GV</sup>

## 3<sup>rd</sup> Generation Vector Control

AC Variable Speed Drive  
 0.37kW – 160kW (0.5 – 250HP)  
 200 – 600V

200% torque down to 0.0Hz, reliable high speed operation and infra red communication

Optidrive Plus 3<sup>GV</sup> is the natural evolution of the Optidrive family adding ultimate motor control to established Optidrive benchmarks of control and ease of use.

Optidrive Plus 3<sup>GV</sup> uses 3<sup>GV</sup> technology, a revolutionary and patented motor control strategy. 3<sup>GV</sup> technology delivers 200% torque down to 0.0Hz allowing this unique open loop product to be used without any feedback device in many traditional closed loop applications.

Only the motor name plate data is required to achieve optimum performance, the drive continuously and automatically determines and tracks the key motor characteristics required for vector control.

Optidrive Plus 3<sup>GV</sup> can be commissioned using the unique Optiwand PDA software designed for use on pocket pc's. Communication takes place without wires using infrared light to quickly and accurately transfer data.

### Key Benefits

- Compact Design for reduced panel space requirements
- Easy Key Mounting Slots giving fast and easy installation
- Pluggable Control Terminals enable simple, easy access control wiring
- Up to 50°C Ambient Temperature, rugged design for harsh environments
- Internal RFI Filter for compliance with the latest EMC standards
- 14 Basic Parameters allow fast commission with powerful yet simple features
- High Visibility LED Display with user scaling, easy to read
- 32kHz Output Switching Frequency for ultra quiet motor operation
- 150% Overload for 60 Seconds (175% for 2 seconds), high starting capacity for demanding applications
- Mains dip ride through allows continuous operation through short periods of supply loss
- Built in Master—Slave control function with fast set up and selectable scaling
- Built in Infra Red programming port requires no cables



### Industry Sectors

- Plastics
- Machine Tools
- Rubber
- Cranes
- Pumping
- Elevators
- Chemical



Specification		OPTIDRIVE PLUS 3 <sup>GV</sup>	
Output Ratings	Overload capacity	150% for 60 secs; 175% for 2 secs	
	Frequency	0...500Hz	
Input Ratings	Frequency	48–62Hz	
	Voltage	200–240V ± 10% 1 Phase (0.37–22kW / 0.5–30HP) 200–240V ± 10% 3 Phase (1.5–90kW / 2–120HP) 380–480V ± 10% 1 Phase (0.75–90kW / 1–105HP) 380–480V ± 10% 3 Phase (1.5–160kW / 2–250HP) 480–525V ± 10% 3 Phase (55–200kW) 500–600V ± 10% 3 Phase (1.5–45kW / 2–60HP)	
Ambient Conditions	Temperature	Operating: -10 to 50°C max; Storage: -40 to 60°C	
	Altitude	0–2000m (derate 5% per 100m above 1000m)	
	Ingress protection	IP20; Optional IP55	
Programming	Keypad	Yes	
	PC	Yes	
	PDA	Yes	
Control Specification	Control method	V / F 3 <sup>GV</sup> Sensorless Vector Closed Loop Vector (with optional encoder feedback interface)	
	PWM Frequency	4...32kHz (effective)	
	V/Hz ratio	Linear (1 adjustment point)	
	Boost	Automatic after autotune	
	Stop mode	Coast/Ramp/DC Brake	
	Internal brake transistor	Yes (sizes 2–6); External resistor required	
	Capacity	100% Drive Rated Power continuously	
	Skip frequency	One point, adjustable frequency band	
	Frequency setpoint control		0...10V DC ± 10V DC 0...24V DC 4...20mA 0...20mA Digital—Keypad RS485 (Master Slave) Modbus RTU
		Preset speeds	8
		PI control	Yes
		Spin start	Yes
		Acceleration	0...3000 secs
	Deceleration	(2 ramps) 0...3000 secs	
	S Curve accel/decel	Firmware Download Available	
	PC setup software	Optistore V3	
	Programmable I/O	Input 1	Programmable Digital Input
Input 2 / Output 2		User-selectable Digital Input / Output	
Input 3		User-selectable Unipolar Analogue / Digital Input	
Input 4		User-selectable Bipolar Analogue / Digital Input	
Output 1		Programmable Analogue / Digital Output	
Relay 1		Relay Output (30V DC 5A, 250V AC 6A)	
Keypad Display		Operating display	Output Frequency, Current, RPM, Power and User Scalable values
	Remote mount	Optional Optiport Plus remote mounting keypad	
Motor Feedback	Feedback type	With Encoder Module — HTL or TTL	
	Pulses / Rev	Adjustable	
	Max. Frequency	500kHz	
Protective Functions	Inverter trip	Over voltage, over current, under voltage, external trip, motor overload, over temperature, short circuited, earth fault	
	Memory	Last 4 trips stored	
Bus Communication	Modbus RTU	Standard	
	Profibus DP	via Gateway	
	DeviceNet	via Gateway	
	RS485 (Optibus)	Standard	
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	
Additional Features		Built-in Master—Slave operation mode PID 'Sleep' mode Energy Optimising Function	



**OPTIDRIVE PLUS 3<sup>GV</sup> Electrical Data in kW**

200–240V 1 Phase	Motor Power (kW)	Output Current (A)	Frame Size
ODP-12037-IN	0.37	2.3	1
ODP-12075-IN	0.75	4.3	1
ODP-12150-IN	1.5	7	1
ODP-22150-IN	1.5	7	2
ODP-22220-IN	2.2	10.5	2

200–240V 3 Phase	Motor Power (kW)	Output Current (A)	Frame Size
ODP3-22150-IN	1.5	7	2
ODP3-22220-IN	2.2	10.5	2
ODP-32030-IN	3	14	3
ODP-32040-IN	4	18	3
ODP-32055-IN	5.5	25	3
ODP-42075-IN	7.5	39	4
ODP-42110-IN	11	46	4
ODP-42150-IN	15	61	4
ODP-42185-IN	18.5	72	4
ODP-52220-IN	22	90	5
ODP-52300-IN	30	110	5
ODP-52370-IN	37	150	5
ODP-52450-IN	45	180	5
ODP-62055-IN	55	202	6
ODP-62075-IN	75	240	6
ODP-62090-IN	90	300	6

Note: Suitable for use on single phase supply with 50% derating

380–480V 3 Phase	Motor Power (kW)	Output Current (A)	Frame Size
ODP-24075-IN	0.75	2.2	2
ODP-24150-IN	1.5	4.1	2
ODP-24220-IN	2.2	5.8	2
ODP-24400-IN	4	9.5	2
ODP-34055-IN	5.5	14	3
ODP-34075-IN	7.5	18	3
ODP-34110-IN	11	25	3
ODP-34150-IN	15	30	3
ODP-44185-IN	18.5	39	4
ODP-44220-IN	22	46	4
ODP-44300-IN	30	61	4
ODP-44370-IN	37	72	4
ODP-44450-IN#	45	90	4
ODP-54450-IN	45	90	5
ODP-54550-IN	55	110	5
ODP-54750-IN	75	150	5
ODP-54900-IN	90	180	5
ODP-64110-IN	110	202	6
ODP-64132-IN	132	240	6
ODP-64160-IN	160	300	6

Note: Suitable for use on single phase supply with 50% derating; # Drive has 110% overload for 60 secs

480–525V 3 Phase	Motor Power (kW)	Output Current (A)	Frame Size
ODP-55550-IN	55	90	5
ODP-55750-IN	75	110	5
ODP-55900-IN	90	150	5
ODP-65132-IN	132	202	6
ODP-65160-IN	160	240	6
ODP-65200-IN	200	270	6

Note: Not UL Approved

500–600V 3 Phase	Motor Power (kW)	Output Current (A)	Frame Size
ODP-25075-IN*	0.75	1.7	2
ODP-25150-IN*	1.5	3.1	2
ODP-25220-IN*	2.2	4.1	2
ODP-25370-IN*	3.7	6.1	2
ODP-25550-IN*	5.5	9	2
ODP-35075-IN	7.5	14	3
ODP-35110-IN	11	18	3
ODP-35150-IN	15	24	3
ODP-45220-IN	22	39	4
ODP-45300-IN	30	46	4
ODP-45450-IN	45	62	4

\* Requires External Input Choke

**OPTIDRIVE PLUS 3<sup>GV</sup> Electrical Data in HP**

200–240V 1 Phase	Motor Power (HP)	Output Current (A)	Frame Size
ODP-12005-USA	0.5	2.3	1
ODP-12010-USA	1	4.3	1
ODP-12020-USA	2	7	1
ODP-22020-USA	2	7	2
ODP-22030-USA	3	10.5	2

200–240V 3 Phase	Motor Power (HP)	Output Current (A)	Frame Size
ODP3-22020-USA	2	7	2
ODP3-22030-USA	3	10.5	2
ODP-32040-USA	4	14	3
ODP-32050-USA	5	18	3
ODP-32075-USA	7.5	25	3
ODP-42100-USA	10	39	4
ODP-42150-USA	15	46	4
ODP-42200-USA	20	61	4
ODP-42250-USA	25	72	4
ODP-52300-USA	30	90	5
ODP-52400-USA	40	110	5
ODP-52500-USA	50	150	5
ODP-52600-USA	60	180	5
ODP-62075-USA	75	202	6
ODP-62100-USA	100	240	6
ODP-62120-USA	120	300	6

Note: Suitable for use on single phase supply with 50% derating

380–480V 3 Phase	Motor Power (HP)	Output Current (A)	Frame Size
ODP-24010-USA	1	2.2	2
ODP-24020-USA	2	4.1	2
ODP-24030-USA	3	5.8	2
ODP-24050-USA	5	9.5	2
ODP-34075-USA	7.5	14	3
ODP-34100-USA	10	18	3
ODP-34150-USA	15	25	3
ODP-34200-USA	20	30	3
ODP-44250-USA	25	39	4
ODP-44300-USA	30	46	4
ODP-44400-USA	40	61	4
ODP-44500-USA	50	72	4
ODP-44600-USA#	60	90	4
ODP-54600-USA	60	90	5
ODP-54750-USA	75	110	5
ODP-54100-USA	100	150	5
ODP-54120-USA	150	180	5
ODP-64150-USA	160	202	6
ODP-64175-USA	200	240	6
ODP-64210-USA	250	300	6

Note: Suitable for use on single phase supply with 50% derating; # Drive has 110% overload for 60 secs

500–600V 3 Phase	Motor Power (HP)	Output Current (A)	Frame Size
ODP-25010-USA*	1	1.7	2
ODP-25020-USA*	2	3.1	2
ODP-25030-USA*	3	4.1	2
ODP-25050-USA*	5	6.1	2
ODP-25075-USA*	7.5	9	2
ODP-35100-USA	10	14	3
ODP-35150-USA	15	18	3
ODP-35200-USA	20	24	3
ODP-45300-USA	30	39	4
ODP-45400-USA	40	46	4
ODP-45600-USA	60	62	4

\* Requires External Input Choke

Size 1

Size 2

Size 3

Size 4

Size 5

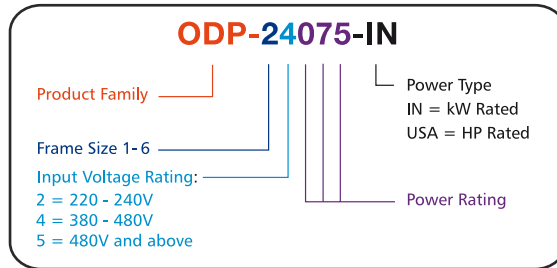
Size 6



OPTIDRIVE PLUS 3<sup>GV</sup> Dimensions

Size	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Fixings
1	155	80	130	1.1	2 × M4
2	260	100	175	2.6	2 × M4
3	260	171	175	5.3	4 × M4
4	520	340	220	28	4 × M8
5 (90 – 150A)	1045	340	220	67	4 × M8
5 (180A)	1045	340	330	67	4 × M8
6	1100	340	330	55	4 × M8

Supplied with External Input Choke



# OPTIDRIVE™ CP<sup>2</sup>

AC Variable Speed Drives

## Powerful Performance

The all new **OPTIDRIVE P2** provides world leading control for both standard induction motors and permanent magnet motors

0.75kW – 160kW / IHP – 250HP  
200 – 480V Single & 3 Phase Input

### World Leading Motor Control

#### Open and closed loop

- **Open loop control provides up to 200% torque from zero speed with standard induction motors**
- **Open loop control of the latest generation of high efficiency PM motors**
- **Closed loop control of standard induction motors with encoder feedback**

#### Easy Commissioning

Extensive I/O and communications interface capabilities ensure the drive can be integrated quickly and efficiently into a wide variety of control systems.

A simple parameter structure and carefully selected factory settings ensure fast and easy commissioning.

#### Key Features

- Industrial High Duty Rating, 150% Overload for 60 Seconds, 200% for 4 Seconds
- Built-in EMC Filter
- Built-in Keypad & Display with Remote Keypad option available
- Sensorless Vector control allows up to 200% torque from zero speed without encoder feedback
- PM Motor control allows operation with the latest generation of high efficiency motors
- I/O expansion and communication options provide increased flexibility
- Safe Torque Off (STO) meets IEC61508 SIL 2 & IEC62061 SIL 2
- Integral Brake Transistor
- Powerful OptiTools Studio PC software provides graphical commissioning, parameter backup storage and visual scope tracing functions
- Optistick Bluetooth Interface and parameter backup tool for wireless commissioning and rapid parameter copying
- CAN and Modbus RTU communication as standard



Manufacturing Pumping **Conveyer Systems** Machine Tools **Processing Plants** Plastics Rubber **Chemical Elevators Cranes**

## IP20

Available up to 11kW

## IP55

Available up to 160kW

## IP66

Available up to 7.5kW

- Low ambient operation ( $-10^{\circ}\text{C}$ )
- Programmed Maintenance Intervals
- Dedicated Hoist Mode



**Convenient  
Help Card**



**Optional LED or OLED**  
(IP55 & IP66)



**DIN Rail Mount**  
(IP20)



**Pluggable  
Terminals**



**High Quality  
Long-life Fans**



## Dimensions (mm)

Size	2	3	4	5	6	7
Height	221	261	440	540	865	1280
Width	112	131	173	235	330	330
Depth	185	205	230	270	340	370



## OPTIDRIVE P2 Option Modules

### Expansion Modules

Extended Functionality



#### Encoder Feedback

Product Code: **OPT-2-ENCOD-IN**

- Compatible with Incremental Encoders up to 4096ppr
- 5 Volt Power Supply built-in
- Inputs suitable for 5 – 24 Volt DC
- Encoder Frequency up to 500kHz

#### Extended I/O

Product Code: **OPT-2-EXTIO-IN**

- Additional 3 Digital Inputs
- Additional Relay Output

#### Extended Relay

Product Code: **OPT-2-CASCD-IN**

Additional 3 Relay Outputs:

- Relay 3** – Drive Healthy Indication
- Relay 4** – Drive Fault Indication
- Relay 5** – Drive Running Indication

### Fieldbus Interfaces

Communication Options



Product Code: **OPT-2-ETHNT-IN**



Product Code: **OPT-2-DEVNT-IN**



Product Code: **OPT-2-PROFB-IN**

## Model Reference

### 200–240V ± 10% 1 Phase Input IP20 with LED Display

kW Models	kW	HP Models	HP	Output Current (A)	Size
ODP-2-22075-1KF42	0.75	ODP-2-22010-1HF42	1	4.3	2
ODP-2-22150-1KF42	1.5	ODP-2-22020-1HF42	2	7	2
ODP-2-22220-1KF42	2.2	ODP-2-22030-1HF42	3	10.5	2

### 200–240V ± 10% 3 Phase Input IP20 with LED Display

kW Models	kW	HP Models	HP	Output Current (A)	Size
ODP-2-22075-3KF42	0.75	ODP-2-22010-3HF42	1	4.3	2
ODP-2-22150-3KF42	1.5	ODP-2-22020-3HF42	2	7	2
ODP-2-22220-3KF42	2.2	ODP-2-22030-3HF42	3	10.5	2
ODP-2-32040-3KF42	4	ODP-2-32050-3HF42	5	18	3

### 380–480V ± 10% 3 Phase Input IP20 with LED Display

kW Models	kW	HP Models	HP	Output Current (A)	Size
ODP-2-24075-3KF42	0.75	ODP-2-24010-3HF42	1	2.2	2
ODP-2-24150-3KF42	1.5	ODP-2-24020-3HF42	2	4.1	2
ODP-2-24220-3KF42	2.2	ODP-2-24030-3HF42	3	5.8	2
ODP-2-24400-3KF42	4	ODP-2-24050-3HF42	5	9.5	2
ODP-2-34055-3KF42	5.5	ODP-2-34075-3HF42	7.5	14	3
ODP-2-34075-3KF42	7.5	ODP-2-34100-3HF42	10	18	3
ODP-2-34110-3KF42	11	ODP-2-34150-3HF42	15	24	3

### 200–240V ± 10% 3 Phase Input IP55

kW Models	kW	HP Models	HP	Output Current (A)	Size
ODP-2-42055-3KF4N	5.5	ODP-2-42075-3HF4N	7.5	30	4
ODP-2-42075-3KF4N	7.5	ODP-2-42100-3HF4N	10	39	4
ODP-2-42110-3KF4N	11	ODP-2-42150-3HF4N	15	46	4
ODP-2-52150-3KF4N	15	ODP-2-52020-3HF4N	20	61	5
ODP-2-52185-3KF4N	18.5	ODP-2-52025-3HF4N	25	72	5
ODP-2-62022-3KF*N	22	ODP-2-62030-3HF*N	30	90	6
ODP-2-62030-3KF*N	30	ODP-2-62040-3HF*N	40	110	6
ODP-2-62037-3KF*N	37	ODP-2-62050-3HF*N	50	150	6
ODP-2-62045-3KF*N	45	ODP-2-62060-3HF*N	60	180	6
ODP-2-72055-3KF*N	55	ODP-2-72075-3HF*N	75	202	7
ODP-2-72075-3KF*N	75	ODP-2-72100-3HF*N	100	248	7
ODP-2-72090-3KF*N	90	ODP-2-72120-3HF*N	120	312	7

### 380–480V ± 10% 3 Phase Input IP55

kW Models	kW	HP Models	HP	Output Current (A)	Size
ODP-2-44110-3KF4N	11	ODP-2-44150-3HF4N	15	25	4
ODP-2-44150-3KF4N	15	ODP-2-44200-3HF4N	20	30	4
ODP-2-44185-3KF4N	18.5	ODP-2-44250-3HF4N	25	39	4
ODP-2-44220-3KF4N	22	ODP-2-44300-3HF4N	30	46	4
ODP-2-54300-3KF4N	30	ODP-2-54040-3HF4N	40	61	5
ODP-2-54370-3KF4N	37	ODP-2-54050-3HF4N	50	72	5
ODP-2-64045-3KF*N	45	ODP-2-64060-3HF*N	60	90	6
ODP-2-64055-3KF*N	55	ODP-2-64075-3HF*N	75	110	6
ODP-2-64075-3KF*N	75	ODP-2-64100-3HF*N	100	150	6
ODP-2-64090-3KF*N	90	ODP-2-64150-3HF*N	150	180	6
ODP-2-74110-3KF*N	110	ODP-2-74160-3HF*N	160	202	7
ODP-2-74132-3KF*N	132	ODP-2-74200-3HF*N	200	240	7
ODP-2-74160-3KF*N	160	ODP-2-74250-3HF*N	250	302	7

\* Indicates brake chopper factory fitting option  
 Replace with a “1” for no internal brake chopper  
 Replace with a “4” if a brake chopper is required

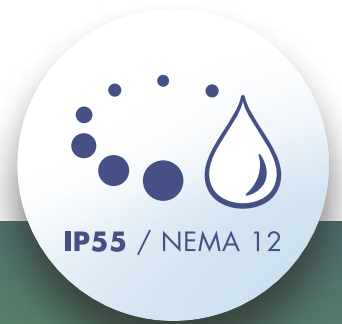
## Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 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	230 Volt 1 Phase Input : 0.75 – 2.2kW (1 – 3HP) 230 Volt 3 Phase Input : 0.75 – 90kW (1 – 120HP) 400 Volt 3 Phase Input : 0.75 – 160kW 460 Volt 3 Phase Input : 1 – 250HP
	Overload Capacity	150% for 60 seconds, 200% for 4 seconds
	Output Frequency	0 – 500Hz, 0.1Hz resolution
Ambient Conditions	Temperature	Storage : –40 to 60°C Operating : –10 to 40°C
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m
	Humidity	95% Max, non-condensing
Enclosure	Ingress Protection	IP20 (Frame sizes 2 & 3 only) IP55 (Frame sizes 4 & above) IP66 (Frame sizes 2 & 3 only)
Programming	Keypad	Built-in Keypad as standard Optional remote mountable keypad
	Display	Optional LED or OLED Display
	Programming	OptiTools Studio / OPTISTICK
Control Specification	Control Method	V/F Voltage Vector Energy Optimised V/F Sensorless Vector Speed Control Sensorless Vector Torque Control Closed Loop (Encoder) Speed Control Closed Loop (Encoder) Torque Control Open Loop PM Vector Control
	PWM Frequency	4–32kHz Effective
	Stopping Mode	Ramp to Stop : User Adjustable 0.1 – 600 seconds Coast to Stop
	Braking	Motor Flux Braking Built-in Braking Transistor (Optional for frame sizes 6 & 7)
	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 CANopen Optional Profibus DP, DeviceNet, EthernetIP
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	10 – 30 Volt DC, internal or external supply, NPN 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	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
Control Features	Hoist Operation	Dedicated Hoist Operation Mode
	PID Control	Internal PID control with feedback display
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
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.

# OPTIDRIVE™

AC Variable Speed Drives

# HVAC



## Energy Efficient Fan & Pump Control

**OPTIDRIVE HVAC** has an innovative design, combined with robust performance to provide powerful flow control and reliability in a compact drive

0.75kW – 160kW / IHP – 250HP  
200 – 480V Single & 3 Phase Input

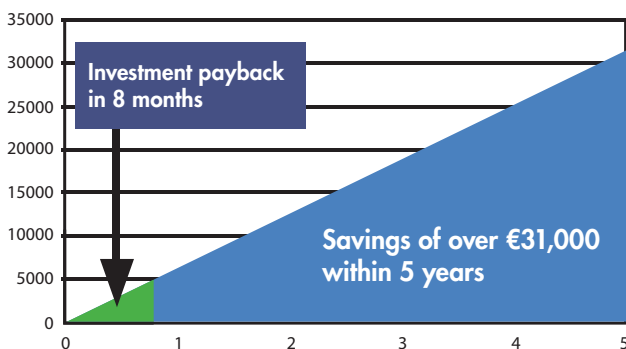
### PID Control

The Optidrive HVAC has a PID controller built in that is fully integrated with both HVAC and energy efficient features and is packaged in a user friendly way to ensure ease of use and fast commissioning.

### Energy Savings Calculator

Visit [www.invertek.co.uk](http://www.invertek.co.uk) to estimate your potential energy savings, CO<sub>2</sub> emissions and financial savings using our free software.

#### Example savings based on a 45kW load



Using Optidrive HVAC compared to direct on-line control, an estimated 20% reduction in speed results in potential energy savings of 50%.

Calculation based on a typical estimated factory working week and energy costs, including estimated component and installation costs.

### Key Features

- Dedicated HVAC drive for centrifugal fan and pump applications
- Built-in EMC Filter as standard
- IP55 Enclosed
- Multi Language Plain Text OLED display
- Energy optimisation maximises operating efficiency
- BACnet and Modbus RTU provided as standard
- Built-in Hours Run kWh meters
- Bi-directional Fire Mode overrides the drive control providing ventilation in emergencies
- Built-in PID controller allows setpoint pressure or temperature to be accurately maintained
- Advanced software application functions reduce commissioning time and provide optimum performance
- Up to 32kHz output switching frequency for quiet motor operation
- Built-in Sleep and Wake functions ensure operation only when required



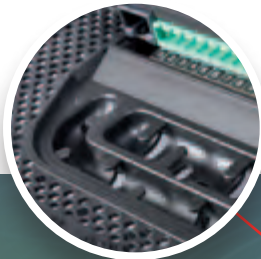
**Hand/Auto Selection**



**Maintenance Indicator**



**Multi Language OLED Display**



**Integrated Cable Management**



**High Quality Long-life Fans**



## Improved Fan Efficiency

### Energy Optimisation and Monitoring

The advanced optimisation function intelligently matches energy usage to the driven load to ensure your fan operates at maximum efficiency. The in-built energy consumption meters allow energy consumption to be clearly displayed and savings to be calculated.

### Intelligent Standby

To reduce energy used by slow-running fans, Optidrive HVAC has an intelligent standby/sleep function to shut off output from the drive until demand for air flow increases.

### Broken Belt Detection

Optidrive HVAC can intelligently monitor current/speed to provide immediate warning of broken belts between motors and ventilation fans.

### Resonance Avoidance

Optidrive HVAC can be easily configured to avoid frequencies that cause resonance in ventilation systems, preventing unnecessary noise and mechanical damage to motors and fans.

## Prevent Pump Downtime

### Blockage Detect/Clear

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

### Pump Clean/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.

### Dry Run Protection

Optidrive HVAC 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 HVAC 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.

## Dimensions (mm)

Size	2	3	4	5	6	7
Height	257	310	440	540	865	1280
Width	188	210.5	173	235	330	330
Depth	238	256	230	270	340	370

NOT TO SCALE



## Optidrive HVAC Option Modules



### Expansion Modules

Extended Functionality

### Cascade Control

Product Code: OPT-2-CASCD-IN

- Additional 3 Relay Outputs

### Extended I/O

Product Code: OPT-2-EXTIO-IN

- Additional 3 Digital Inputs
- Additional Relay Output

### Fieldbus Interfaces

Communication Options



### BACnet/IP

Product Code: OPT-2-BACNT-IN



## Model Reference

200–240V ± 10% 1 Phase Input					
kW Models		HP Models			
With Filter	kW	With Filter	HP	Output Current (A)	Size
ODV-2-22075-1KFIN	0.75	ODV-2-22010-1HFIN	1	4.3	2
ODV-2-22150-1KFIN	1.5	ODV-2-22020-1HFIN	2	7	2
ODV-2-22220-1KFIN	2.2	ODV-2-22030-1HFIN	3	10.5	2

200–240V ± 10% 3 Phase Input					
kW Models		HP Models			
With Filter	kW	With Filter	HP	Output Current (A)	Size
ODV-2-22075-3KFIN	0.75	ODV-2-22010-3HFIN	1	4.3	2
ODV-2-22150-3KFIN	1.5	ODV-2-22020-3HFIN	2	7	2
ODV-2-22220-3KFIN	2.2	ODV-2-22030-3HFIN	3	10.5	2
ODV-2-32040-3KFIN	4	ODV-2-32050-3HFIN	5	18	3
ODV-2-32055-3KFIN	5.5	ODV-2-32075-3HFIN	7.5	25	3
ODV-2-42075-3KFIN	7.5	ODV-2-42100-3HFIN	10	39	4
ODV-2-42110-3KFIN	11	ODV-2-42150-3HFIN	15	46	4
ODV-2-52150-3KFIN	15	ODV-2-52020-3HFIN	20	61	5
ODV-2-52185-3KFIN	18.5	ODV-2-52025-3HFIN	25	72	5
ODV-2-52220-3KFIN	22	ODV-2-52030-3HFIN	30	90	5
ODV-2-62030-3KFIN	30	ODV-2-62040-3HFIN	40	110	6
ODV-2-62037-3KFIN	37	ODV-2-62050-3HFIN	50	150	6
ODV-2-62045-3KFIN	45	ODV-2-62060-3HFIN	60	180	6
ODV-2-62055-3KFIN	55	ODV-2-62075-3HFIN	75	202	6
ODV-2-72075-3KFIN	75	ODV-2-72100-3HFIN	100	248	7
ODV-2-72090-3KFIN	90	ODV-2-72120-3HFIN	120	312	7

380–480V ± 10% 3 Phase Input					
kW Models		HP Models			
With Filter	kW	With Filter	HP	Output Current (A)	Size
ODV-2-24075-3KFIN	0.75	ODV-2-24010-3HFIN	1	2.2	2
ODV-2-24150-3KFIN	1.5	ODV-2-24020-3HFIN	2	4.1	2
ODV-2-24220-3KFIN	2.2	ODV-2-24030-3HFIN	3	5.8	2
ODV-2-24400-3KFIN	4	ODV-2-24050-3HFIN	5	9.5	2
ODV-2-34055-3KFIN	5.5	ODV-2-34075-3HFIN	7.5	14	3
ODV-2-34075-3KFIN	7.5	ODV-2-34100-3HFIN	10	18	3
ODV-2-44110-3KFIN	11	ODV-2-44150-3HFIN	15	24	4
ODV-2-44150-3KFIN	15	ODV-2-44200-3HFIN	20	30	4
ODV-2-44185-3KFIN	18.5	ODV-2-44250-3HFIN	25	39	4
ODV-2-44220-3KFIN	22	ODV-2-44300-3HFIN	30	46	4
ODV-2-54300-3KFIN	30	ODV-2-54040-3HFIN	40	61	5
ODV-2-54370-3KFIN	37	ODV-2-54050-3HFIN	50	72	5
ODV-2-54450-3KFIN	45	ODV-2-54060-3HFIN	60	90	5
ODV-2-64055-3KFIN	55	ODV-2-64075-3HFIN	75	110	6
ODV-2-64075-3KFIN	75	ODV-2-64100-3HFIN	100	150	6
ODV-2-64090-3KFIN	90	ODV-2-64150-3HFIN	150	180	6
ODV-2-64110-3KFIN	110	ODV-2-64160-3HFIN	160	202	6
ODV-2-74132-3KFIN	132	ODV-2-74200-3HFIN	200	240	7
ODV-2-74160-3KFIN	160	ODV-2-74250-3HFIN	250	300	7

## Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 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	230 Volt 1 Phase Input : 0.75 – 2.2kW (1 – 3HP) 230 Volt 3 Phase Input : 0.75 – 90kW (1 – 120HP) 400 Volt 3 Phase Input : 0.75 – 160kW 460 Volt 3 Phase Input : 1 – 250HP	
	Overload Capacity	110% for 60 seconds, 125% for 2 seconds	
	Output Frequency	0 – 120Hz, 0.1Hz resolution	
Ambient Conditions	Temperature	Storage : –40 to 60°C Operating : –10 to 40°C	
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	
	Humidity	95% Max, non-condensing	
Enclosure	Ingress Protection	IP55	
Programming	Keypad	Built-in Keypad as standard Optional remote mountable keypad	
	Display	Built-in Multi Language OLED Display	
	Programming	OptiTools Studio / OPTISTICK	
Control Specification	Control Method	Variable Torque V/F Variable Torque Energy Optimised V/F	
	PWM Frequency	4–32kHz Effective	
	Stopping Mode	Ramp to Stop : User Adjustable 1 – 600 seconds 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
	Optional	BACnet IP, Profibus DP, DeviceNet	
	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		10 – 30 Volt DC, internal or external supply, NPN 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	
Control Features	Fire Mode	Selectable direction Selectable speed reference	
	Broken Belt Detection	Under load monitoring with autotune configuration	
	PID Control	Internal PID control with feedback display	
Pump Control Features	Pump Blockage Detection	Pump load monitoring with autotune function, user configurable	
	Pump Cleaning	Adjustable Pump Cleaning Cycle operation	
	Multi-pump Control	Control of fixed speed assist pumps via optional 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	
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	

# OPTIDRIVE™



AC Variable Speed Drives

## General Purpose

**OPTIDRIVE E2** is dedicated to low power applications and combines innovative technology, reliability, robustness and ease of use in a range of compact IP20 & IP66 enclosures

0.37kW – 11kW / 0.5HP – 15HP  
200 – 480V Single & 3 Phase Input

### Key Features

- ✓ **Intuitive Keypad Control**  
Precise digital control at the touch of a button.
- ✓ **Simple Commissioning**  
12 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.
- ✓ **Integral RFI Filter**  
Options for built-in and external filters for full EMC compliance.
- ✓ **Modbus RTU**  
Easy integration with your control & monitoring systems.
- ✓ **Compact Enclosures**  
Small mechanical envelopes to help minimise your space requirements.
- ✓ **Brake Chopper (Sizes 2 & 3)**  
Dynamic & compact options with heatsink mounted resistor.
- ✓ **High Overload Capability**  
150% overload for 60 seconds.  
175% overload for 2 seconds.
- ✓ **Industrial Ambient Ratings**  
IP20 Enclosure: 50°C  
IP66 Enclosure: 40°C





Bottling Pumping Processing Plants HVAC Baggage Handling Chemical Woodworking Agricultural Mining Conveyor Systems

**IP20**

Available up to 11kW

**IP66**

Available up to 7.5kW



**Convenient  
Help Card**



**EMC & Varistor  
Disconnect**



**Optistick  
Programming**



**DIN Rail Mount**



**Optional Braking  
Resistor**





IP66 / NEMA 4X



## IP66

### Recommended for:

- Paper
- Petroleum
- Food Processing
- Aggregate / Cement
- Mining
- Textile
- Horticultural
- Chemical
- Agricultural

## Optidrive E2 IP66

Environmentally protected, the Optidrive E2 IP66 can be mounted directly on your processing equipment.

### ✓ Dust-tight Design

Install in-situ and be sure of protection from dust and contaminants.

### ✓ Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, the Optidrive E2 IP66 is 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.



Switched and Non-switched IP66 models available.

## Model Reference

### 110 – 115V ± 10% | Phase Input – 3 Phase 230V Output (Voltage Doubler)

kW Models With Filter	Without Filter	kW	HP Models With Filter	Without Filter	HP	Output Current (A)	Size
–	–	–	–	ODE-2-11005-1H01#	0.5	2.3	1
–	–	–	–	ODE-2-11010-1H01#	1	4.3	1
–	–	–	–	ODE-2-21015-1H04#	1.5	5.8	2

### 200 – 240V ± 10% | Phase Input

kW Models With Filter	Without Filter	kW	HP Models With Filter	Without Filter	HP	Output Current (A)	Size
ODE-2-12037-1KB1#	ODE-2-12037-1K01#	0.37	ODE-2-12005-1HB1#	ODE-2-12005-1H01#	0.5	2.3	1
ODE-2-12075-1KB1#	ODE-2-12075-1K01#	0.75	ODE-2-12010-1HB1#	ODE-2-12010-1H01#	1	4.3	1
ODE-2-12150-1KB1#	ODE-2-12150-1K01#	1.5	ODE-2-12020-1HB1#	ODE-2-12020-1H01#	2	7	1
ODE-2-22150-1KB4#	ODE-2-22150-1K04#	1.5	ODE-2-22020-1HB4#	ODE-2-22020-1H04#	2	7	2
ODE-2-22220-1KB4#	ODE-2-22220-1K04#	2.2	ODE-2-22030-1HB4#	ODE-2-22030-1H04#	3	10.5	2

### 200 – 240V ± 10% 3 Phase Input

kW Models With Filter	Without Filter	kW	HP Models With Filter	Without Filter	HP	Output Current (A)	Size
–	ODE-2-12037-3K01#	0.37	–	ODE-2-12005-3H01#	0.5	2.3	1
–	ODE-2-12075-3K01#	0.75	–	ODE-2-12010-3H01#	1	4.3	1
–	ODE-2-12150-3K01#	1.5	–	ODE-2-12020-3H01#	2	7	1
ODE-2-22150-3KB4#	ODE-2-22150-3K04#	1.5	ODE-2-22020-3HB4#	ODE-2-22020-3H04#	2	7	2
ODE-2-22220-3KB4#	ODE-2-22220-3K04#	2.2	ODE-2-22030-3HB4#	ODE-2-22030-3H04#	3	10.5	2
ODE-2-32040-3KB4#	ODE-2-32040-3K04#	4	ODE-2-32050-3HB4#	ODE-2-32050-3H04#	5	18	3

### 380 – 480V ± 10% 3 Phase Input

kW Models With Filter	Without Filter	kW	HP Models With Filter	Without Filter	HP	Output Current (A)	Size
ODE-2-14075-3KA1#	ODE-2-14075-3K01#	0.75	ODE-2-14010-3HA1#	ODE-2-14010-3H01#	1	2.2	1
ODE-2-14150-3KA1#	ODE-2-14150-3K01#	1.5	ODE-2-14020-3HA1#	ODE-2-14020-3H01#	2	4.1	1
ODE-2-24150-3KA4#	ODE-2-24150-3K04#	1.5	ODE-2-24020-3HA4#	ODE-2-24020-3H04#	2	4.1	2
ODE-2-24220-3KA4#	ODE-2-24220-3K04#	2.2	ODE-2-24030-3HA4#	ODE-2-24030-3H04#	3	5.8	2
ODE-2-24400-3KA4#	ODE-2-24400-3K04#	4	ODE-2-24050-3HA4#	ODE-2-24050-3H04#	5	9.5	2
ODE-2-34055-3KA4#	ODE-2-34055-3K04#	5.5	ODE-2-34075-3HA4#	ODE-2-34075-3H04#	7.5	14	3
ODE-2-34075-3KA4#	ODE-2-34075-3K04#	7.5	ODE-2-34100-3HA4#	ODE-2-34100-3H04#	10	18	3
ODE-2-34110-3KA42	ODE-2-34110-3K042	11	ODE-2-34150-3HA42	ODE-2-34150-3H042	15	24	3

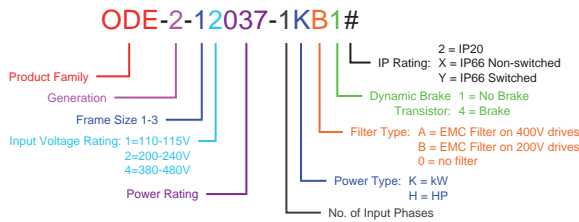
Colour Key: ■ Model not UL approved ■ 11kW / 15HP drives are available in IP20 enclosures only

Replace '#' in the model code with:


**2** for Optidrive E2 IP20

**X** for Optidrive E2 IP66  
Non-switched models


**Y** for Optidrive E2 IP66  
Switched models



## Dimensions (mm)

Optidrive E2 IP20	Height	Width	Depth	Weight (kg)	Fixings	
	<b>Size 1</b>	173	82	123	1.1	4 × M4
	<b>Size 2</b>	221	104	150	2.6	4 × M4
	<b>Size 3</b>	261	131	175	4	4 × M4

Optidrive E2 IP66	Height	Width	Depth	Weight (kg)	Fixings	
	<b>Size 1</b>	232	161	175	2.8	4 × M4
	<b>Size 2</b>	257	188	187	4.6	4 × M4
	<b>Size 3</b>	310	210.5	243	7.4	4 × M4

## Drive Specification

Input Ratings	Supply Voltage	110 – 115V ± 10% 200 – 240V ± 10% 380 – 480V ± 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	110 Volt 1 Phase Input : 0.5 – 1.5HP (230V 3 Phase Output) 230 Volt 1 Phase Input : 0.75 – 4kW (1 – 5HP) 230 Volt 3 Phase Input : 0.75 – 4kW (1 – 5HP) 400 Volt 3 Phase Input : 0.75 – 11kW 460 Volt 3 Phase Input : 1 – 15HP	
	Overload Capacity	150% for 60 seconds, 175% for 2 seconds	
	Output Frequency	0 – 500Hz, 0.1Hz resolution	
Ambient Conditions	Temperature	Storage : –40 to 60°C Operating : –10 to 40°C	
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	
	Humidity	95% Max, non-condensing	
Enclosure	Ingress Protection	IP20 IP66 (Excluding 11kW)	
	Programming	Keypad Built-in Keypad as standard Optional remote mountable keypad Display Built-in LED display Programming OptiTools Studio / OPTISTICK	
Control Specification	Control Method	V/F Voltage Vector Energy Optimised V/F	
	PWM Frequency	4 – 32kHz Effective	
	Stopping Mode	Ramp to Stop : User Adjustable 0.01 – 600 seconds Coast to Stop	
	Braking	Motor Flux Braking Built-in Braking Transistor (Frames 2 & 3)	
	Skip Frequency	Single point, user adjustable	
	Setpoint Control	Analog Signal	0 to 10 Volts 10 to 0 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA
		Digital	Motorised Potentiometer (Keypad) Modbus RTU
		Optional Gateway	Profibus DP, DeviceNet, EthernetIP
	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer
		Programmable Inputs	4 Total as standard 2 Digital 2 Analog / Digital Selectable
Digital Inputs		10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms	
Analog Inputs		Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	
Programmable Outputs		2 Total 1 Analog / Digital 1 Relay	
Relay Outputs		Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6A AC, 5A DC	
Analog Outputs		0 to 10 Volt	
Control Features	PID Control	Internal PID control with feedback display	
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	
	Monitoring	Hours Run Meter Energy Consumption meter	
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	

## Single Phase Motor Control

The **OPTIDRIVE E2** Single Phase is the World's first fully digital, fully packaged variable speed drive for controlling low power single phase motors

0.37kW – 1.1kW / 0.5HP – 1.5HP  
110 – 240V



### Optimised for Ease of Use

Designed to be cost effective and easy to use, the Optidrive E2 Single Phase is for use with PSC (Permanent Split Capacitor) or Shaded-Pole Single-Phase induction motors.

Optidrive E2 Single Phase uses a revolutionary motor control strategy to achieve reliable intelligent starting of single phase motors.

Optidrive E2 Single Phase has only 12 standard parameters to adjust in its basic form. The Optidrive's legendary ease of use ensures quick and easy drive commissioning. For the more advanced user the extended parameter set gives access to powerful additional functionality.

### Typical Applications

Direct-drive fans and blowers with PSC (permanent-split capacitor) and shaded pole motors on single-phase power. These are typically applications with a starting torque of between 50–100% of motor full load rated torque.

### Key Features

- 115V & 220V ratings
- Single phase input/single phase output
- Small mechanical envelope
- Rugged industrial operation:  
IP20: 50°C ambient rating  
IP66: 40°C ambient rating
- Simple mechanical & electrical installation
- Fast setup, and simple operation. Factory default settings okay for most applications, only 12 basic parameters
- Unique programmable boost feature to achieve intelligent starting
- Motor current and rpm indication
- Debugging using troubleshooting & P-00
- 150% overload for 60 secs (175% for 2 secs)
- Keypad control
- Integral RFI filter option
- Integral brake chopper (S2 only)
- Modbus RTU serial communications

# Fan Control Waste Water Pumping Food Processing

## Model Reference

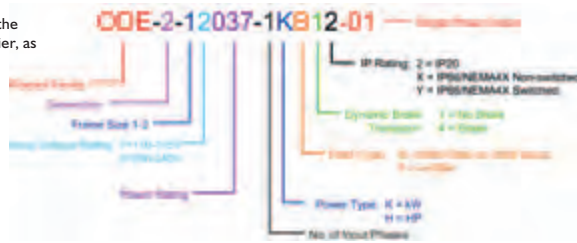
### 110–115V ± 10% 1 Phase Input

kW Models		HP Models			
With Filter	kW	Without Filter	HP	Output Current (A)	Size
–	–	ODE-2-11005-1H01#-01	0.5	7	1
–	–	ODE-2-21007-1H04#-01	0.75	10.5	2

### 200–240V ± 10% 3 Phase Input

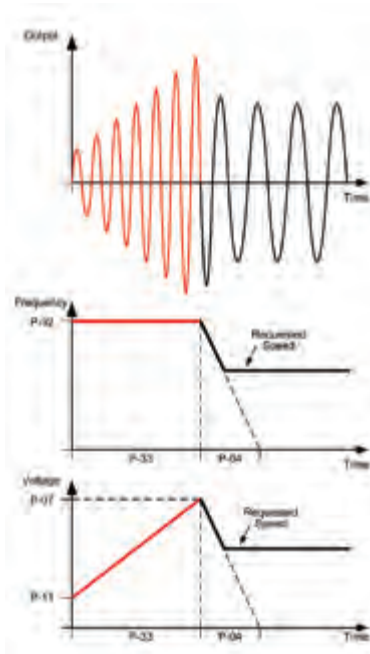
kW Models		HP Models			
With Filter	kW	Without Filter	HP	Output Current (A)	Size
ODE-2-12037-1KB1#-01	0.37	ODE-2-12005-1H01#-01	0.5	4.3	1
ODE-2-12075-1KB1#-01	0.75	ODE-2-12010-1H01#-01	1	7	1
ODE-2-22110-1KB4#-01	1.1	ODE-2-22015-1H04#-01	1.5	10.5	2

**Note:** Substitute the # for the appropriate IP Rating identifier, as shown in this diagram.




## Special Boost Phase Operation

To ensure reliable starting, the Optidrive E2 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.



## Dimensions (mm)

Optidrive E2 Single Phase	Height	Width	Depth	Weight (kg)	Fixings
 <b>Size 1</b>	173	82	123	1.1	4 × M4
<b>Size 2</b>	221	104	150	2.6	4 × M4

## Drive Specification

Input Ratings	Supply Voltage	110 – 115V ± 10% 200 – 240V ± 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	110 Volt 1 Phase Input : 0.5 – 0.75HP 230 Volt 1 Phase Input : 0.75 – 1.1kW (1 – 1.5HP)	
	Overload Capacity	150% for 60 seconds, 175% for 2 seconds	
	Output Frequency	0 – 120Hz, 0.1Hz resolution	
Ambient Conditions	Temperature	Storage : –40 to 60°C Operating : –10 to 40°C	
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	
	Humidity	95% Max, non-condensing	
Enclosure	Ingress Protection	IP20 IP66	
	Programming	Keypad : Built-in Keypad as standard Optional remote mountable keypad Display : Built-in LED display Programming : OptiTools Studio / OPTISTICK	
Control Specification	Control Method	Single Phase V/F with Starting Boost	
	PWM Frequency	4 – 32kHz Effective	
	Stopping Mode	Ramp to Stop : User Adjustable 0.1 – 600 seconds Coast to Stop	
	Braking	Motor Flux Braking Built-in Braking Transistor (Size 2 only)	
	Skip Frequency	Single point, user adjustable	
	Setpoint Control	Analog Signal	0 to 10 Volts 10 to 0 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA
			Digital
		Optional Gateway	Profibus DP, DeviceNet, Ethernet/IP
	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer
		Programmable Inputs	4 Total as standard 2 Digital 2 Analog / Digital Selectable
Digital Inputs		10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms	
Analog Inputs		Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	
Programmable Outputs		2 Total 1 Analog / Digital 1 Relay	
Relay Outputs		Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6A AC, 5A DC	
Analog Outputs		0 to 10 Volt	
Control Features	PID Control	Internal PID control with feedback display	
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	
	Monitoring	Hours Run Meter Energy Consumption meter	
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	

# OPTIDRIVE™

AC Variable Speed Drives



## The Integrated Drive Solution

Compact yet powerful, **OPTIDRIVE PCE** is the ideal solution for convenient motor control

Up to 1.5kW / 2HP  
200–240V 1 Phase Input  
380–480V 3 Phase Input



### Key Features

- High performance drive suitable for direct motor mounting
- Sensorless vector control—up to 200% torque from zero speed
- IP55 enclosure protects against dust and fluid ingress
- Available with local Potentiometer and forward / reverse selection
- Suitable for motor power ratings up to 1.5kW / 2HP
- Supplied with universal adaptor plates

## Model Reference

### 200–240V ± 10% 1 Phase Input

Switched Version		Non-switched Version		Output Current (A)
With EMC Filter	Without Filter	With EMC Filter	Without Filter	
OPC-I-12075-1KB1S	OPC-I-12075-1K01S	OPC-I-12075-1KB1N	OPC-I-12075-1K01N	4.5
OPC-I-12150-1KB1S	OPC-I-12150-1K01S	OPC-I-12150-1KB1N	OPC-I-12150-1K01N	7

### 380–480V ± 10% 3 Phase Input

Switched Version		Non-switched Version		Output Current (A)
With EMC Filter	Without Filter	With EMC Filter	Without Filter	
OPC-I-14075-3KA1S	OPC-I-14075-3K01S	OPC-I-14075-3KA1N	OPC-I-14075-3K01N	2.2
OPC-I-14150-3KA1S	OPC-I-14150-3K01S	OPC-I-14150-3KA1N	OPC-I-14150-3K01N	4.1

## Switched & Non-switched Units Available

Local potentiometer for speed control

**Programmable switch:**

Drive REV/OFF/FWD  
or:  
Hand/OFF/Auto

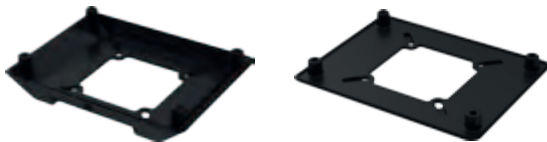


Switched

Non-switched

## Universal Adaptor Plates

Supplied with adaptor plates for direct fitting on most motors.



Deep adaptor plate

Shallow adaptor plate

## Optional Keypad

**Product code:**  
**OD-OPPTP-IN**



## Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 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	230 Volt 1 Phase Input : 0.75 – 1.5kW (1 – 2HP) 400 Volt 3 Phase Input : 0.75 – 1.5kW (1 – 2HP)	
	Overload Capacity	150% for 60 seconds, 175% for 2 seconds	
	Output Frequency	0 – 500Hz, 0.1Hz resolution	
Ambient Conditions	Temperature	Storage : –40 to 60°C Operating : –10 to 40°C	
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	
	Humidity	95% Max, non-condensing	
Enclosure	Ingress Protection	IP55	
Programming	Keypad	Optional remote mountable keypad	
	PC	Optistore V3	
Control Specification	Control Method	V/F Voltage Vector Energy Optimised V/F Sensorless Vector Speed Control Sensorless Vector Torque Control	
	PWM Frequency	4 – 32kHz Effective	
	Stopping Mode	Ramp to Stop : User Adjustable 0.1 – 600 seconds 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 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA
		Digital	Motorised Potentiometer (Keypad)
	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected
		Programmable Inputs	4 Total as standard 2 Digital 2 Analog / Digital Selectable
		Digital Inputs	10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms
Analog Inputs		Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	
Programmable Outputs		1 Relay	
Relay Output		Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6AAC, 5ADC	
Control Features	PID Control	Internal PID control with feedback display	
Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp	
	Monitoring	Energy Consumption meter	
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	



# OPTIFILTER

## RFI Line Filters

OPTIDRIVE Sizes 1, 2 & 3

A range of single and 3 phase input EMC filters compatible with the Optidrive product range



### Technical Data

Product Code	Supply Voltage	Current Rating	Leakage Current	Maximum Optidrive Power Ratings (230 Volt / 480 Volt)
OPT-2-E1016-00	240 (1Ph)	16 Amps	<3.5mA	0.75kW / N/A
OPT-2-E1030-00	240 (1Ph)	30 Amps	<3.5mA	2.2kW / N/A
OPT-2-E3006-00	480 (3Ph)	6 Amps	<30mA	0.75kW / 1.5kW
OPT-2-E3016-00	480 (3Ph)	16 Amps	<30mA	2.2kW / 4kW
OPT-2-E3030-00	480 (3Ph)	30 Amps	<30mA	4kW / 11kW

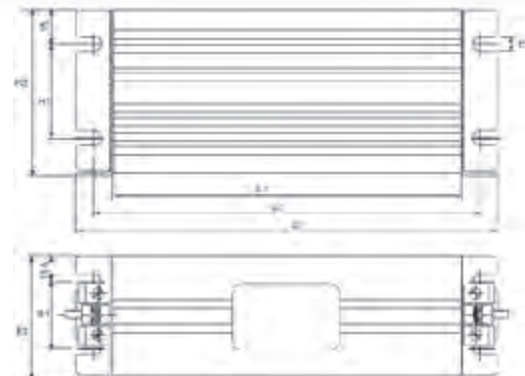
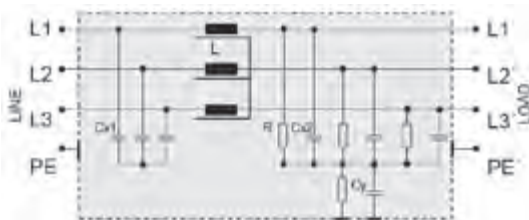
### Dimensions (mm)

Product Code	L1	L2	L3	H1	H2	B1	B2	D
OPT-2-E1016-00	98	130	113	50	81	25	54	7
OPT-2-E1030-00	98	130	113	50	81	25	54	7
OPT-2-E3006-00	200	232	215	50	81	25	54	7
OPT-2-E3016-00	200	232	215	50	81	25	54	7
OPT-2-E3030-00	240	272	255	50	81	25	54	7

All Optidrive products are manufactured as standard with an internal EMC filter, unless specified by the customer. In general, this internal filter will provide compliance with international standard requirements for the majority of industrial installations and applications.

Where a higher standard of EMC compliance is desired or required, Invertek Drives can provide a range of suitable filters to ensure that an EMC compliant solution for all possible applications can be realised.

Filters are available for single and three phase supply drives with input currents up to 16 Amps single phase and 30 Amps 3 phase. The filters are intended to mount alongside the drive and feature a simple mounting arrangement.



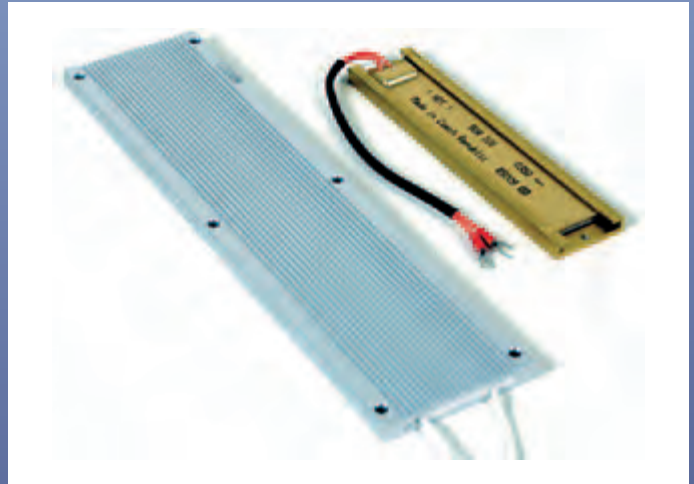


# OPTIBRAKE

## Dynamic Braking Resistors

OPTIDRIVE Sizes 2 and above

Optibrake dynamic braking resistors are designed specifically for the Optidrive range. For use with high inertia loads which need to be stopped rapidly. Optibrake dynamic braking resistors assist the Optidrive in managing the electrical energy returned from the motor during braking by converting it to heat energy.



### Specification

**Product Code:** OD-BR100-IN

**Description:** 100 Ohm, 200W continuous, 12kW peak for 0.125s

**Dimensions:** 188 × 40 × 9mm

**Recommended Drive Size:** Size 2 and 3

**Product Code:** OD-BRES4-IN

**Description:** 33 Ohm, 500W continuous, 21kW peak for 0.125s

**Dimensions:** 330 × 80 × 10mm

**Recommended Drive Size:** Size 4, 5 and 6

### Key Benefits

- Optidrive software protects the Optibrake from overload, hence no need for expensive overload relays
- Internal fusible element ensures fail safe operation
- Size 2 & 3 fits within the base of the drive with no space envelope penalty
- Series/parallel arrangements for more demanding applications

### Key Physical Features

- IP21, robust assembly
- Metal clad housing
- Internal fuse link protection



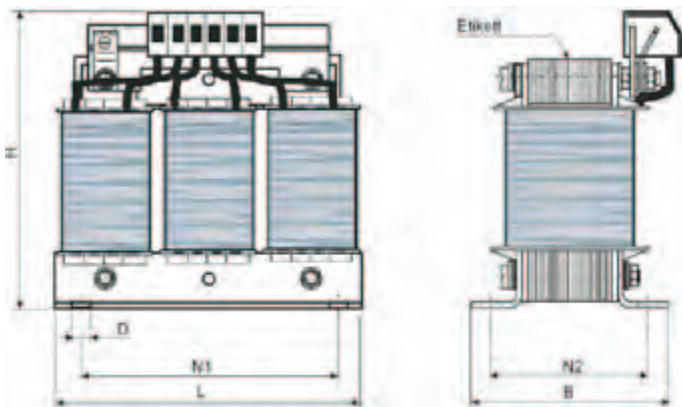
# INPUT CHOKES

Reduce supply harmonic current distortion and increase protection against mains voltage spikes and notches

Input chokes can be used to reduce the supply line harmonic currents and voltage distortion generated by almost all inverter drives on the market today. Invertek Drives have selected a range of chokes matched to the Optidrive range to provide the best reduction in supply current harmonics whilst also providing enhanced protection for the Optidrive against transient voltages ('spikes') or other mains borne interference.

Input chokes are available for the complete range of Optidrive products, and are recommended for use in all installations and in particular:

- where the local mains supply quality may be poor or unknown
- where high current switching loads such as large DC drives or soft starts are operating
- where the mains supply impedance is low
- in remote areas prone to lightning strikes



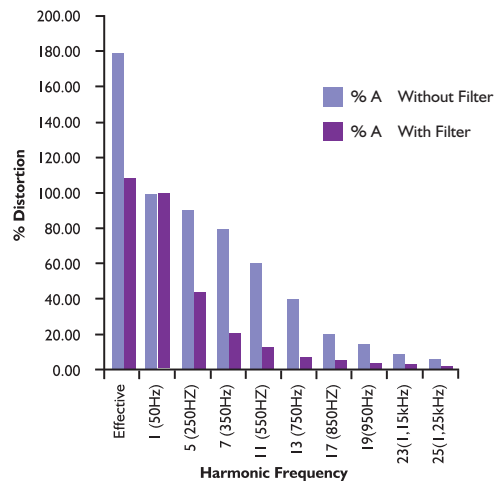
## Technical Data

Product Code	Phase	Maximum Voltage	Maximum Input Current	Inductance	Enclosure	Optidrive Frame Sizes
OPT-2-L1016-00	1	230	16 Amps	1.8mH	IP00	FS 1
OPT-2-L1025-00	1	230	25 Amps	1.mH	IP00	FS 2
OPT-2-L1035-00	1	230	35 Amps	0.84mH	IP00	FS 3
OPT-2-L3010-00	3	500	10 Amps	2.9mH	IP00	FS 1
OPT-2-L3016-00	3	500	16 Amps	1.8mH	IP00	FS 2
OPT-2-L3036-00	3	500	36 Amps	0.81mH	IP00	FS 3
OPT-2-L3050-00	3	500	50 Amps	0.58mH	IP00	FS 4
OPT-2-L3090-00	3	500	90 Amps	0.32mH	IP00	FS 5
OPT-2-L3200-00	3	500	200 Amps	0.0735mH	IP00	FS 6
OPT-2-L3300-00	3	500	300 Amps	0.0049mH	IP00	FS 7

## Dimensions (mm)

Product Code	L	B	H	N1	N2	D	Mass (kg)	Connections (mm <sup>2</sup> )
OPT-2-L1016-00	78	78	80	56	49	4.8	1.1	4
OPT-2-L1025-00	85	75	92	64	59	4.8	1.8	10
OPT-2-L1035-00	96	100	105	84	64	5.8	2.3	10
OPT-2-L3010-00	125	71	127	100	55	5 x 8	2.5	2.5
OPT-2-L3016-00	155	77	153	130	57	8 x 12	4.1	4
OPT-2-L3036-00	190	82	205	170	58	8 x 12	7.2	10
OPT-2-L3050-00	190	102	220	170	78	8 x 12	8.7	16
OPT-2-L3090-00	240	107	280	185	85	10 x 18	16	35
OPT-2-L3200-00	310	180	260	224	117	10 x 18	35	Busbar
OPT-2-L3300-00	370	180	310	248	139	10 x 18	48	Busbar

## Fourier Analysis of Harmonic Distortion



The graph shows the effect of using an input choke on typical 4kW/ 5HP drive. The 50Hz current is used as a reference and is the current which delivers the useful power to the motor. The reduction in the total effective (RMS) current is clear.

# OUTPUT FILTERS

Output filters improve the quality of the output waveform

In most applications, the unfiltered output from an inverter drive gives satisfactory performance but to improve system functionality, reliability and longevity, output filtering is strongly recommended in some applications, including:

- Long motor cables, up to 200m
- High capacitance motor cables (i.e. typical “pyro” wire, used for fire protection)
- Multiple motors connected in parallel
- Motors without inverter grade insulation (typically older motors)



## Key Features

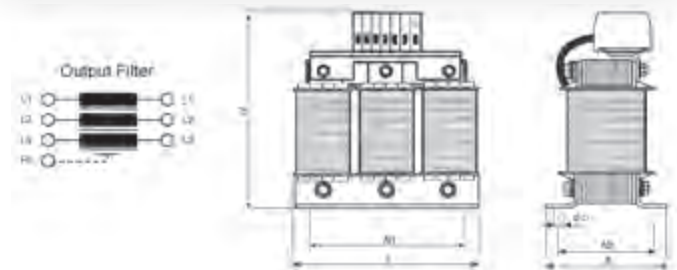
- Limits output voltage gradient, typically  $<200V/\mu s$
- Limits transient over voltages at the motor terminals, typically  $<1000V$
- Suppression of mains conducted interference in lower frequency ranges
- Compensation of capacitive load currents
- Reduction of RFI emissions from the motor cable
- Reduction of motor losses and audible noise caused by ripple

## Technical Data

Product Code	Maximum Voltage	Maximum Current	Inductance	Design	Optidrive Frame Sizes
OPT-2-M3008-00	500	8 Amps	2.0mH	IP00	FS 1
OPT-2-M3012-00	500	12 Amps	1.2mH	IP00	FS 2
OPT-2-M3024-00	500	24 Amps	0.7mH	IP00	FS 3
OPT-2-M3048-00	500	48 Amps	0.38mH	IP00	FS 4
OPT-2-M3090-00	500	90 Amps	0.19mH	IP00	FS 5
OPT-2-M3200-00	400	200 Amps	0.08mH	IP00	FS 6
OPT-2-M3300-00	400	300 Amps	0.053mH	IP00	FS 7

## Dimensions (mm)

Product Code	L	B	H	N1	N2	D	Mass (kg)	Connections (mm <sup>2</sup> )
OPT-2-M3008-00	95	107	61	56	43	4	1.5	2.5
OPT-2-M3012-00	125	158	76	100	55	5	2.8	4
OPT-2-M3024-00	155	185	66	130	57	8	4.2	10
OPT-2-M3048-00	190	210	82	170	58	8	7.3	16
OPT-2-M3090-00	190	223	102	170	78	8	11	35
OPT-2-M3200-00	310	180	260	224	117	10 x 18	35	Busbar
OPT-2-M3300-00	380	180	310	248	139	10 x 18	48	Busbar



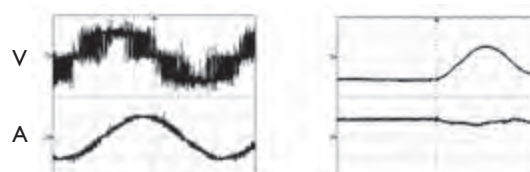
## Comparison of Characteristics

Without filter



Switching pulse

With filter



Switching pulse

**Note:** Switching pulse rises slower and to a lower amplitude with filter.

# OPTIPOINT 2

## Remote Keypad & Display

Optiport units act as the remote keypad and display for the Optidrive on the network which has the same serial address. The physical layout and the operation of the Optiport keypad and display mimic the Optidrive exactly.



### Specification

- Simple plug in RJ45 connection
- 24 Volt DC Power provided directly by the Optidrive
- RS485 2 Wire Signal Interface
- Protection Rating : IP55
- Operating Temperature : -10 to 50°C
- Storage Temperature : -40 - +60°C

**Product code:**

**OPT-2-OPOINT-IN**

**Compatible with:**

Optidrive E2, Optidrive P2, Optidrive HVAC

### Key Benefits

- Real-time keypad and display operation mimics Optidrive
- Single electrical interface for power and data
- Communicates with any compatible drive across a network
- Easy keypad switching to other network addresses
- IP54 rated when through panel mounted
- Bright LED Display
- Membrane keypad
- Parameter lock function available
- 3m Data Cable included

### Configuration

Depending on the requirement of the application, Optiport 2 can be used in the following different ways:

**One Optiport 2 with one drive**



**One Optiport 2 with multiple Optidrives (up to 63 max)**



**Two Optiport 2 with one drive**



**Two Optiport 2 with multiple Optidrives (up to 63 max)**



## 485AD

### PC Connection Kit

485AD PC Connection Kit is an isolated USB to RS485 communications adaptor designed for use with OptiTools Studio

**Product code:**  
**OD-485AD**



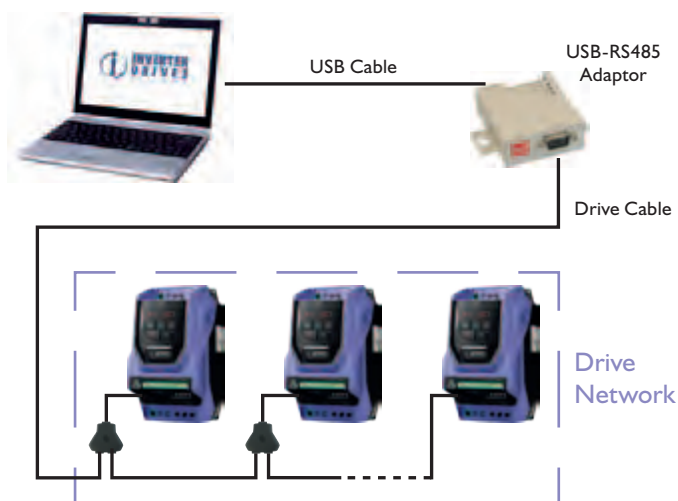
### Key Benefits

- To provide interface between PC and drive
- For use with OptiTools Studio PC software
- Panel mount possibility
- Provides electrical isolation between PC and drive network

### Components in this package

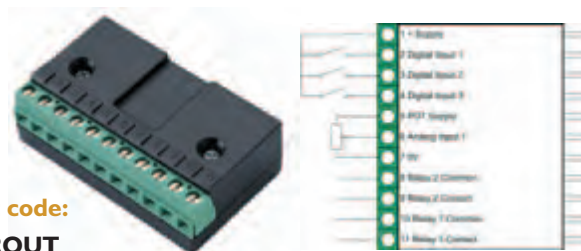
- USB-485 adaptor
- User and Installation guides
- USB cable
- DB9 – RJ11 cable
- DB9 – RJ45 cable
- Windows driver CD

### Configuration



## 2ROUT

2ROUT provides a programmable second relay output



**Product code:**  
**ODP-2ROUT**

### Specification

<b>Max relay switching voltage:</b>	250VAC / 220VDC
<b>Max relay switching current:</b>	1 Amp
<b>Max input voltage:</b>	± 50VDC
<b>Conformity:</b>	IP00, UL94V-0
<b>Environmental:</b>	-10°C – 50°C
<b>Dimensions:</b>	56 × 33 (not pins) × 14mm
<b>Compatible with:</b>	Optidrive E2

## 485SP

### RS485 Data Cable Splitter

RS485 data cable splitter is an RS485 1 to 2-way connection block



**Product code:**  
**OPT-RJ45SP (RJ45 1 - 2 way)**

## DATA CABLES

**Product code: OPT-J4505**  
RJ45 to RJ45 RS485 Data Cable, 0.5m length, Blue

**Product code: OPT-J4510**  
RJ45 to RJ45 RS485 Data Cable, 1.0m length, Blue

**Product code: OPT-J4530**  
RJ45 to RJ45 RS485 Data Cable, 3.0m length, Blue



# OptiTools Studio



## Powerful PC Software

Drive commissioning and parameter backup utility

- Real Time Parameter Editing
- Parameter Upload, Download and Compare Functions
- Function Block Commissioning Diagrams
- Multi Channel Scope and Datalogger functions
- Simple PLC function programming (additional patch required)

Compatible with Windows XP,  
Windows Vista & Windows 7

## OPTISTICK

### Rapid Commissioning

Product code: **OPT-2-STICK-IN**

- Allows rapid copying of parameters between multiple drives
- Provides Bluetooth wireless interface to a PC running OptiTools Studio
- Backup and restore of drive parameters

Compatible with:

Optidrive E2, Optidrive P2, Optidrive HVAC

 Bluetooth®



# OPTIDRIVE™

## Product Training Courses



### Monthly Training Program

Invertek training courses are held monthly at our Welshpool InnovationCentre. A tour of the manufacturing and production areas is included as well as transport to and from local airports. The courses operate on a flexible basis and can be easily tailored to suit all skill levels and requirements. Where required, delegates can attend specific modules or days to allow even greater flexibility.

#### Topics Covered



- Optidrive Principles & Operation
- Invertek Product Range Overview & Features
- Hands On Commissioning
- Basic Fault Finding & Diagnosis
- Installation Requirements & Guidelines
- Options
- Applications Overview

Login to ISource on the Invertek Website for further information and to book online.

[www.invertek.ca](http://www.invertek.ca)



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Global drive solutions...



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**Universal Electric Motors**

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85-IDLBR-00 Stock Drives Catalogue V3.2.2

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