

OPTIDRIVE™

Stock Drives Catalogue

Variable Speed Drives
& Accessories





UK Headquarters, Welshpool

Invertek Drives

Invertek Drives is dedicated to the design and manufacture of sophisticated electronic variable speed drives, used to control motors in a wide variety of industrial and energy saving applications.



The Organisation

State of the art UK headquarters house specialist facilities for innovation, manufacturing and global marketing.

The company pledges to implement and operate the ISO 14001 Environmental Management System to enhance environmental performance.

All operations, including innovation, are accredited to the exacting customer focused ISO 9001 quality standard.

The company's products are sold globally by a network of specialist distributors in over 80 different countries. Invertek Drives' unique and innovative Optidrive range is designed for ease of use and meets recognised international design standards for CE (Europe), UL (USA) and RCM (Australia).

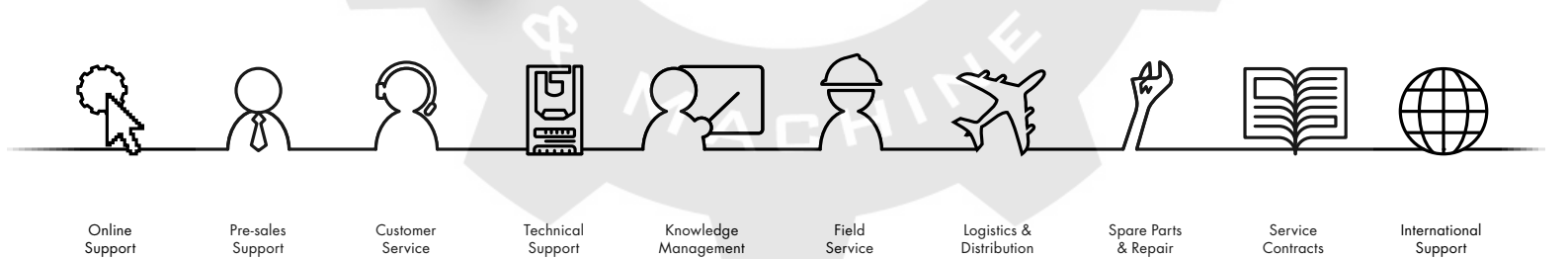
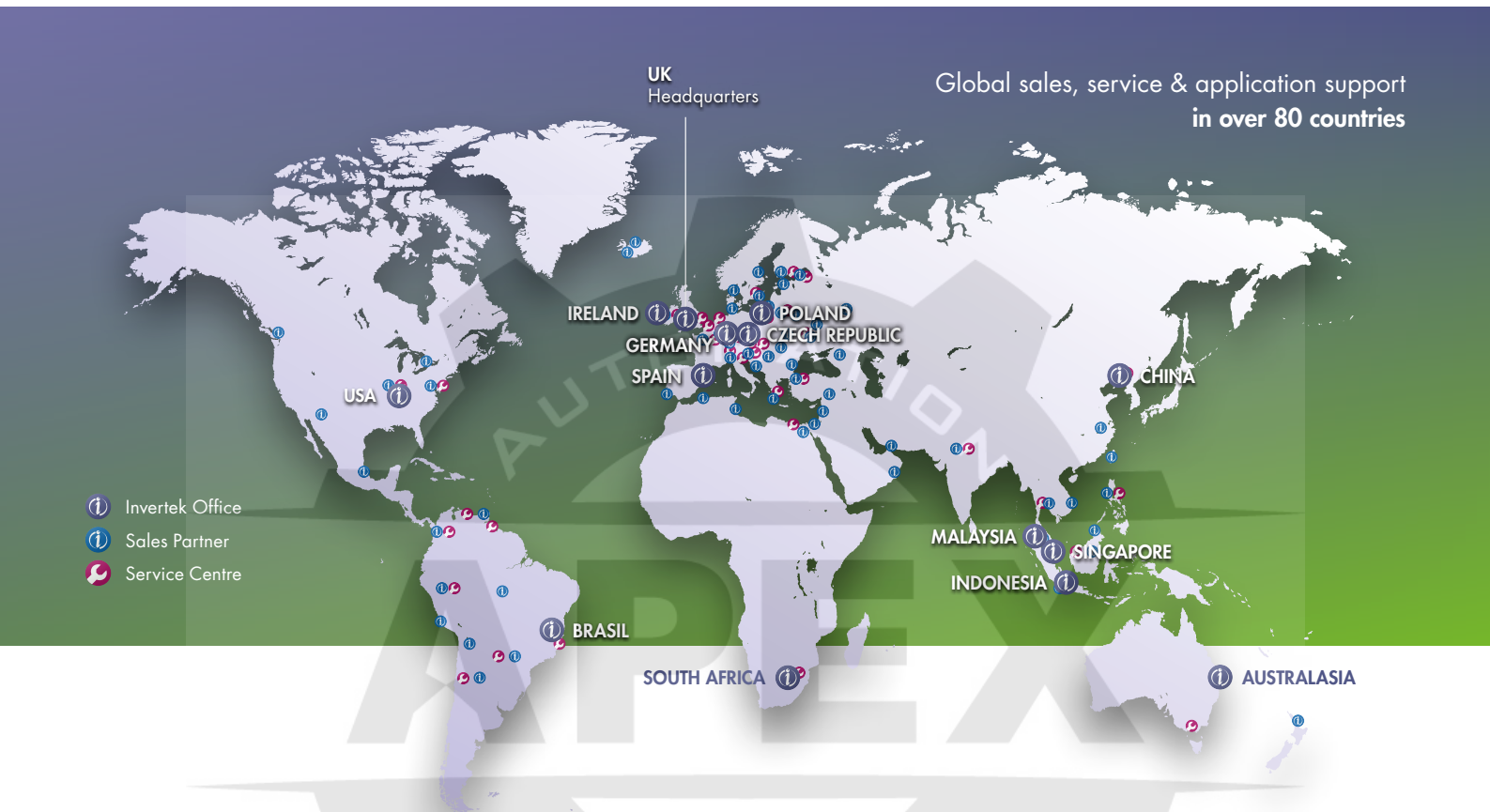


Innovative Products

- Easy to use variable speed drives
- Incredible performance
- Robust & reliable
- Low cost of installation & ownership
- Wide power range
0.37–250kW, 115V–600V



Company Overview



- Conveyors
- HVAC
- Machine Tools



- Manufacturing
- Pumping
- Process Control



- Elevators
- Cranes



World Leading Motor Control

Controlling the latest generation of permanent magnet motors and standard induction motors

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

- Low ambient operation (–10°C)
- Dedicated Hoist Mode
- CAN and Modbus RTU communication as standard

High Performance

Sensorless Vector Control

Up to 200% torque from zero speed ensures reliable starting and accurate speed control under all load conditions.

PM Motor Control

Future proof. Allows upgrade to the latest generation of high efficiency permanent magnet motors.

I/O & Communications

Optidrive P2 supports a wide range of interfaces to machine control systems.

Low Cost Installation

Built-in EMC Filter

An internal filter in every Optidrive P2 saves cost and time for installation.

Integral Brake Transistor

Saves space, cost and time for installation.



IP55 / NEMA 12

Up to 250kW



IP66 / NEMA 4X

Up to 22kW

Powerful PC based commissioning software

OptiTools Studio

OptiTools Studio allows parameter upload, download and storage and access to Optidrive P2 Simple PLC functionality.

See Page 24

OPTISTICK Smart

OPT-3-STICK-IN



- 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

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

150% overload for 60 seconds
 200% overload for 4 seconds
 Industrial heavy duty rating for every model

Multi Language
 Text Display

DIN Rail Mount
 (IP20)

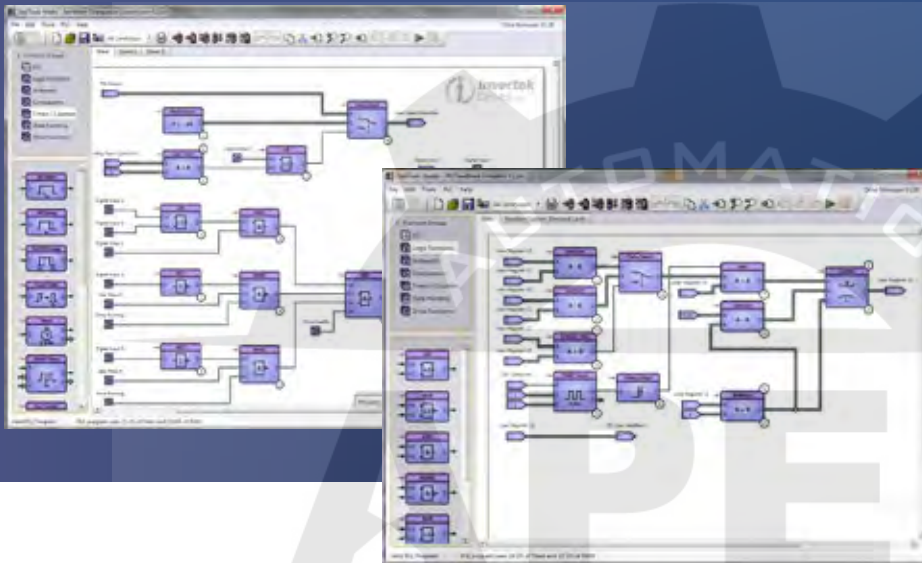
Pluggable Terminals

High Quality
 Long-life Fans



High Performance | Easy to Use

Simple PLC Functionality



A wide range of function types available including:

- Programmable Logic Functions
- Comparators
- Timers
- Mathematical Functions
- Drive specific functions

All blocks can be easily combined to create flexible programs.

Programs can be protected to prevent unauthorised copying.

Complete control over the drive including all inputs and outputs.

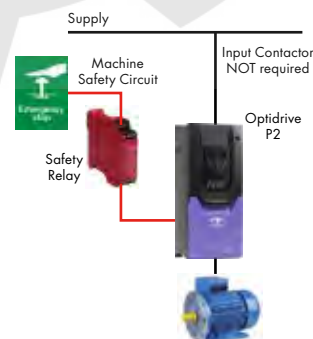
Safe Torque Off (provided as standard)

Optidrive P2 features a safe torque off function to allow simple integration into machine critical safety circuits.

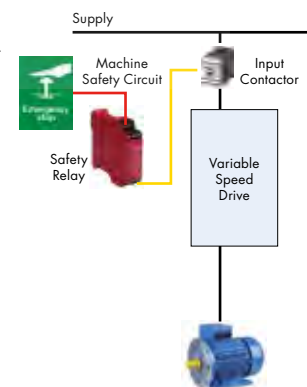
- Simple machine design reduces component costs, saves panel space and minimises installation time
- Faster shut down and reset procedures reduce system maintenance time
- Better safety standard compared to mechanical solution
- Better motor connection. Single cable with no interruption.



With



Without




IP20

Up to 250kW


IP55

Up to 250kW


IP66

Up to 22kW

Advanced Motor Control

Optidrive P2 has been uniquely developed to allow a wide range of different motor types to be used, with only parameter changes being required. This technology allows the same drive to be used in a wide range of applications, allowing OEMs and end user alike to take advantage of the energy saving provided by using the latest motor technologies.

AC Induction Motors

The majority of AC motors in use today around the world are standard induction motors. These motors are relatively low cost, readily available and provide good performance with long service life. With the ever increasing focus on energy efficiency, motor manufacturers have refined and improved their designs in recent years.

Optidrive P2 has been developed to provide optimum control and maximum efficiency when operating with older motors designs, or newer high efficiency designs.

Operation can be in simple V/F control mode or in High Performance Third Generation Vector Mode, which provides up to 200% torque from zero speed without requiring an encoder.

Permanent Magnet AC Motors

Permanent magnet AC motors provide improved efficiency compared to standard induction motors. Using permanent magnets in the motor construction eliminates the need for any magnetising current, reducing electrical losses. PM motors have been used for many years in high performance applications, however this has always required the use of a feedback device, such as a resolver or encoder. Optidrive P2 has been designed to operate with AC PM motors without requiring any feedback device, allowing them to be used for their energy efficiency benefits without incurring extra cost and complexity in applications which do not require position feedback.

Brushless DC Motors

BLDC motors are similar to AC PM motors, however the design requires a slightly different control method to optimise the performance. Optidrive P2 has the flexibility to control this type of motor, requiring only simple parameter changes. This provides much greater flexibility for OEMs, allowing Optidrive P2 to be used in a variety of applications, with various motor types.

Synchronous Reluctance Motors

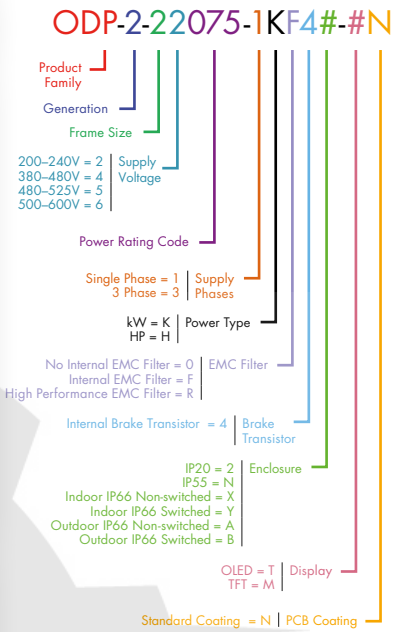
Synchronous Reluctance Motors (SynRM), not to be confused with Switched Reluctance Motors, share a similar stator construction to standard induction motors, however the rotor is substantially different, in order to improve the overall efficiency of the motor. SynRM motors are ideally suited to variable torque applications.

Optidrive P2 can control synchronous reluctance motors, allowing the energy saving benefits to be realised.

Replace # in model code with enclosure/display option

	kW	Amps	Frame Size	kW Model Code	Product Family	Generation	Frame Size	Voltage Code	Power Rating Code	Supply Phases	Power Type	EMC Filter	Brake Transistor	IP20 Cabinet Mount	IP55 TFT Display	Indoor IP66 Non Switched	Indoor IP66 Switched	Outdoor IP66 Non Switched	Outdoor IP66 Switched
200–240V ± 10% 1 Phase Input	0.75	4.3	2	ODP - 2 - 2 2 075 - 1 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	1.5	7	2	ODP - 2 - 2 2 150 - 1 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	2.2	10.5	2	ODP - 2 - 2 2 220 - 1 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
200–240V ± 10% 3 Phase Input	0.75	4.3	2	ODP - 2 - 2 2 075 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	1.5	7	2	ODP - 2 - 2 2 150 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	2.2	10.5	2	ODP - 2 - 2 2 220 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	4	18	3	ODP - 2 - 3 2 040 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	5.5	24	3	ODP - 2 - 3 2 055 - 3 K	F	4	#							2-MN				A-MN	B-MN
	5.5	24	4	ODP - 2 - 4 2 055 - 3 K	F	4	#								N-MN				
	7.5	30	4	ODP - 2 - 4 2 075 - 3 K	F	4	#							2-MN	N-MN			A-MN	B-MN
	11	46	4	ODP - 2 - 4 2 110 - 3 K	F	4	#							2-MN	N-MN			A-MN	B-MN
	15	60	5	ODP - 2 - 5 2 150 - 3 K	F	4	#							2-MN	N-MN				
	18.5	72	5	ODP - 2 - 5 2 185 - 3 K	F	4	#							2-MN	N-MN				
	22	90	6	ODP - 2 - 6 2 022 - 3 K	F	4	#								N-MN				
	22	90	6A	ODP - 2 - 6 2 022 - 3 K	F	4	#							2-MN					
	30	110	6	ODP - 2 - 6 2 030 - 3 K	F	4	#								N-MN				
	30	110	6A	ODP - 2 - 6 2 030 - 3 K	F	4	#							2-MN					
	37	150	6	ODP - 2 - 6 2 037 - 3 K	F	4	#								N-MN				
	37	150	6B	ODP - 2 - 6 2 037 - 3 K	F	4	#							2-MN					
	45	180	6	ODP - 2 - 6 2 045 - 3 K	F	4	#								N-MN				
	45	180	6B	ODP - 2 - 6 2 045 - 3 K	F	4	#							2-MN					
	55	202	7	ODP - 2 - 7 2 055 - 3 K	F	4	#								N-MN				
	75	248	7	ODP - 2 - 7 2 075 - 3 K	F	4	#								N-MN				
380–480V ± 10% 3 Phase Input	0.75	2.2	2	ODP - 2 - 2 4 075 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	1.5	4.1	2	ODP - 2 - 2 4 150 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	2.2	5.8	2	ODP - 2 - 2 4 220 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	4	9.5	2	ODP - 2 - 2 4 400 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	5.5	14	3	ODP - 2 - 3 4 055 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	7.5	18	3	ODP - 2 - 3 4 075 - 3 K	F	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	11	24	3	ODP - 2 - 3 4 110 - 3 K	F	4	#							2-MN				A-MN	B-MN
	11	24	4	ODP - 2 - 4 4 110 - 3 K	F	4	#								N-MN				
	15	30	4	ODP - 2 - 4 4 150 - 3 K	F	4	#							2-MN	N-MN			A-MN	B-MN
	18.5	39	4	ODP - 2 - 4 4 185 - 3 K	F	4	#							2-MN	N-MN			A-MN	B-MN
	22	46	4	ODP - 2 - 4 4 220 - 3 K	F	4	#							2-MN	N-MN			A-MN	B-MN
	30	61	5	ODP - 2 - 5 4 300 - 3 K	F	4	#							2-MN	N-MN				
	37	72	5	ODP - 2 - 5 4 370 - 3 K	F	4	#							2-MN	N-MN				
	45	90	6	ODP - 2 - 6 4 045 - 3 K	F	4	#								N-MN				
	45	90	6A	ODP - 2 - 6 4 045 - 3 K	F	4	#							2-MN					
	55	110	6	ODP - 2 - 6 4 055 - 3 K	F	4	#								N-MN				
	55	110	6A	ODP - 2 - 6 4 055 - 3 K	F	4	#							2-MN					
	75	150	6	ODP - 2 - 6 4 075 - 3 K	F	4	#								N-MN				
	75	150	6B	ODP - 2 - 6 4 075 - 3 K	F	4	#							2-MN					
	90	180	6	ODP - 2 - 6 4 090 - 3 K	F	4	#								N-MN				
	90	180	6B	ODP - 2 - 6 4 090 - 3 K	F	4	#							2-MN					
480–525V ± 10% 3 Phase Input	110	202	6B	ODP - 2 - 6 4 110 - 3 K	F	4	#							2-MN					
	110	202	7	ODP - 2 - 7 4 110 - 3 K	F	4	#								N-MN				
	132	240	7	ODP - 2 - 7 4 132 - 3 K	F	4	#								N-MN				
	160	302	7	ODP - 2 - 7 4 160 - 3 K	F	4	#								N-MN				
	200	370	8	ODP - 2 - 8 4 200 - 3 K	#	4	#							2-MN	N-MN				
	250	480	8	ODP - 2 - 8 4 250 - 3 K	#	4	#							2-MN	N-MN				
	132	185	7	ODP - 2 - 7 5 132 - 3 K	0	4	#								N-MN				
	150	205	7	ODP - 2 - 7 5 150 - 3 K	0	4	#								N-MN				
	185	255	7	ODP - 2 - 7 5 185 - 3 K	0	4	#									N-MN			
	200	275	7	ODP - 2 - 7 5 200 - 3 K	0	4	#									N-MN			
500–600V ± 10% 3 Phase Input	0.75	2.1	2	ODP - 2 - 2 6 075 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	1.5	3.1	2	ODP - 2 - 2 6 150 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	2.2	4.1	2	ODP - 2 - 2 6 220 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	4	6.5	2	ODP - 2 - 2 6 400 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	5.5	9	2	ODP - 2 - 2 6 550 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	7.5	12	3	ODP - 2 - 3 6 075 - 3 K	0	4	#							2-MN		X-TN	Y-TN	A-MN	B-MN
	11	17	3	ODP - 2 - 3 6 110 - 3 K	0	4	#							2-MN				A-MN	B-MN
	15	22	3	ODP - 2 - 3 6 150 - 3 K	0	4	#							2-MN				A-MN	B-MN
	15	22	4	ODP - 2 - 4 6 150 - 3 K	0	4	#								N-MN				
	18.5	28	4	ODP - 2 - 4 6 185 - 3 K	0	4	#							2-MN	N-MN			A-MN	B-MN
	22	34	4	ODP - 2 - 4 6 220 - 3 K	0	4	#							2-MN	N-MN			A-MN	B-MN
	30	43	4	ODP - 2 - 4 6 300 - 3 K	0	4	#							2-MN	N-MN			A-MN	B-MN
	37	54	5	ODP - 2 - 5 6 370 - 3 K	0	4	#							2-MN	N-MN				
	45	65	5	ODP - 2 - 5 6 450 - 3 K	0	4	#							2-MN	N-MN				
	55	78	6	ODP - 2 - 6 6 055 - 3 K	0	4	#								N-MN				
	75	105	6	ODP - 2 - 6 6 075 - 3 K	0	4	#								N-MN				
	90	130	6	ODP - 2 - 6 6 090 - 3 K	0	4	#								N-MN				
	110	150	6	ODP - 2 - 6 6 110 - 3 K	0	4	#								N-MN				

Model Code Guide



EMC Filter

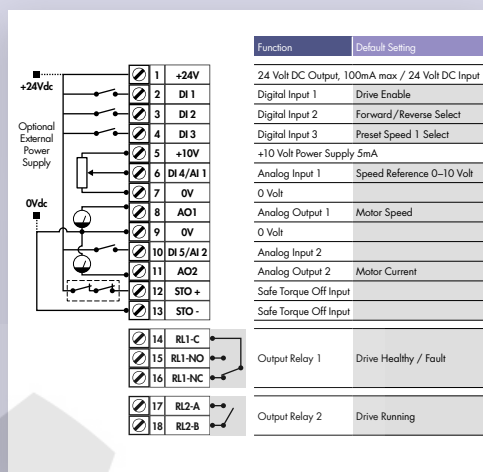
- O** No Internal EMC Filter
- F** Internal EMC Filter
- R** High Performance EMC Filter

kW Models: Factory Settings
Motor Rated Frequency: 50Hz
Motor Rated Voltage: 230/400/575V

Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 10% 500 – 600V ± 10%	Fieldbus Connectivity	Built-in	CANopen	125 – 1000kbps
	Supply Frequency	48 – 62Hz			Modbus RTU	9.6 - 115.2 kbps selectable 8N1, 8N2, 8E1, 8O1
	Displacement Power Factor	> 0.98		Optional	Other	PROFIBUS DP (DPV1) PROFINET IO DeviceNet EtherNet/IP EtherCAT Modbus TCP
	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: 1–400HP 575V 3Ph. Input: 0.75–110kW (1–150HP)	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer	
		Programmable Inputs		5 Total as standard (Optional additional 3) 3 Digital (Optional additional 3) 2 Analog / Digital Selectable 5 Digital With CAN IO Option		
				Digital Inputs	Opto - Isolated 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	
		PTC Input			Motor PTC / Thermistor Input Trip Level : 2.5kΩ	
	Typical Efficiency	> 98%		Programmable Outputs	7 Total (Optional additional 3) 2 Analog / Digital 2 Relays (Optional additional 3) 3 With CAN IO Option Module	
		Relay Outputs			Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 5A AC, 5A DC	
					Analog Outputs	0 to 10 Volt 0 to 20mA 4 to 20mA
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –10 to 50°C	Application Features	PID Control	Internal PID Controller Multi Setpoint Select Standby / Sleep Mode Boost Function	
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL)			Hoist Mode	Dedicated Hoist Mode Motor Holding Brake Pre-Torque & Control Over Limit Protection
	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	Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp	
Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad			Data Logging	Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage Plus more in Optitools
	Display	Built-in multi language text display		Maintenance Indicator		Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring
	PC	OptiTools Studio			Monitoring	Hours Run Meter Resettable & Non Resettable kWh meters Cooling Fan Run Time
Control Specification	Control Method	V/F Voltage Vector Energy Optimised V/F 3GV Sensorless Vector Speed Control 3GV Sensorless Vector Torque Control Closed Loop (Encoder) Speed Control Closed Loop (Encoder) Torque Control PM Vector Control BLDC Control Synchronous Reluctance	Standards Compliance	Low Voltage Directive		2014/35/EU
		PWM Frequency		4–32kHz Effective	EMC Directive	2014/30/EU
		Stopping Mode		Ramp to Stop: User Adjustable 0.01–600 secs Coast to Stop		Additional Conformance
		Braking		Motor Flux Braking Built-in Braking Transistor	Marine Certification	
		Skip Frequency		Single point, user adjustable		Environmental Conditions
	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 4mA PTC			
			Digital	Motorised Potentiometer (Keypad & Terminal) Modbus RTU CANopen		

Connection Diagram



NOT TO SCALE

		IP20							IP66			IP55				
Size		2	3	4	5	6A	6B	8	2	3	4	4	5	6	7	8
mm	Height	221	261	418	486	614	726	974	257	310	360	450	540	865	1280	1334
mm	Width	110	131	172	233	286	330	444	188	211	240	171	235	330	330	444
mm	Depth	185	205	240	260	320	320	423	172	235	271	252	270	332	358	423
kg	Weight	1.8	3.5	9.2	18.1	32	43	124.5	3.5	6.6	9.5	11.5	23	55	89	TBC