

About Sumitomo Drive Technologies

Sumitomo Drive Technologies has been trusted for over 130 years to provide quality products and innovative solutions to help our customers solve their complex challenges. This rich history has made us a leading manufacturer of power transmission and control products in a wide variety of applications for leading brands around the globe.

Since 1966, Sumitomo Machinery Corporation of America has served the United States by providing local sales and support to a variety of customers spanning the many industries that are unique to our region, such as food and beverage, parcel handling, automotive, and mining.



OPTIDRIVE™ CP²

AC Variable Speed Drive

Powerful Performance
Advanced motor control

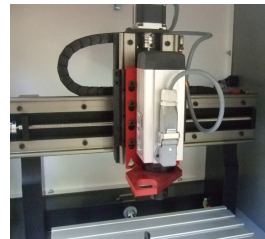
Global Drive Solutions

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



Crane Control

Demanding application at South African mine



Machine Tool OEM

UK machine tool supplier specifies Optidrive



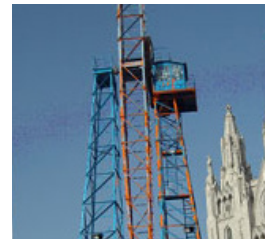
Film Manufacturing

Optimum tension control in Australia



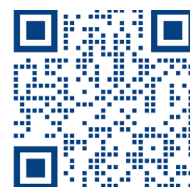
Food Processing

Precision conveyor control in Spain



Amusement Parks

Reliable control of difficult loads in Spain



www.sumitomodrive.com

For worldwide locations, please visit www.sumitomodrive.com/worldwide
Contact your local representative at www.sumitomodrive.com/representative
Tel: 1-800-SM-CYCLO (762-9256)



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



Powerful Performance

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

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



IP20

Up to 350HP, 450A



IP55 / NEMA 12

Up to 250HP, 302A



IP66 / NEMA 4X

Up to 10HP, 18A

World Leading Motor Control

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

Designed for fast installation and commissioning, Optidrive P2 provides the most cost effective solution for industry.

All Optidrive P2 units provide 200% overload for 4 seconds as standard, ensuring each drive is suitable for Heavy Duty applications, whilst the IP55 enclosed versions ensure the drive is tough enough to survive in industrial environments.

Extensive I/O and communications interface capabilities ensure the drive can be integrated quickly and efficiently into a wide variety of control systems with the minimum commissioning time, ensuring rapid start up. Inverter's simple parameter structure, and carefully selected factory parameter settings ensure that commissioning time is kept to a minimum.



Compliant with international standards. Manufactured in the UK.

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.

200% overload for 4 seconds

At a Glance...

High performance, excellent usability and flexible to meet the needs of your application

Keyhole Mounts for fast installation

IP55 / NEMA 12

Integrated Keypad & Display

Integrated EMC Filter

Pluggable Control Terminals

Integrated Cable Management

Integral Brake Transistor

High Quality Long-life Fans

Contactor-style Power Wiring Arrangement

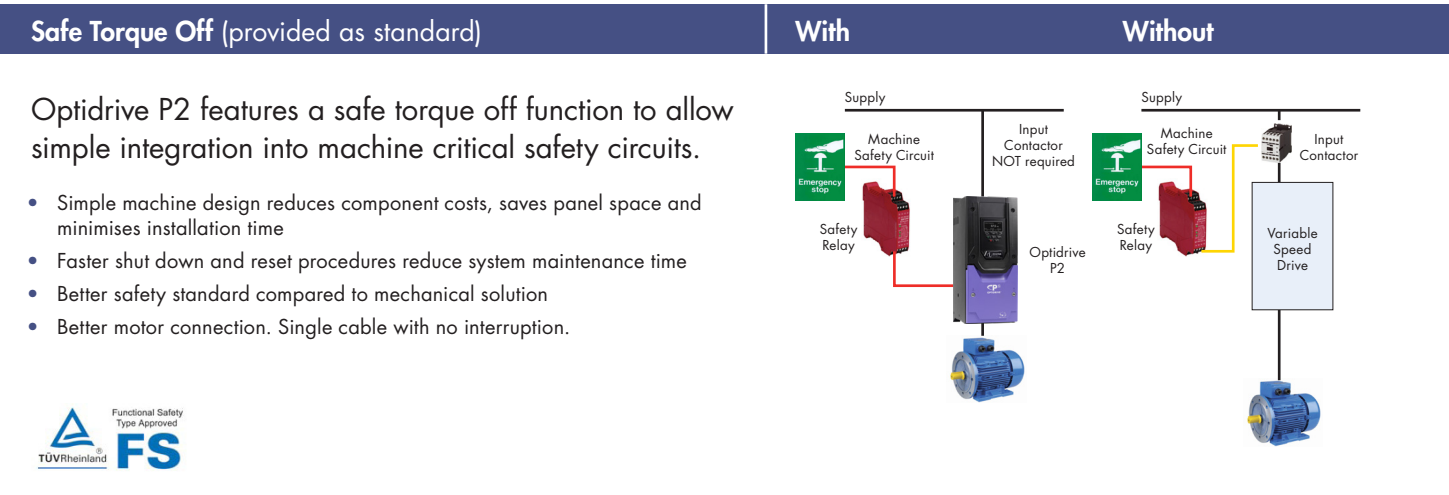
Keyhole Mounts for fast installation

DIN Rail Mount

Modbus RTU and CANopen on board as standard

Pluggable Modules for I/O, Encoder, Alternative Fieldbus

Modbus CANopen



Applications

High performance, accurate motor control for even the most demanding of applications



Mining & Quarrying

- Feed conveyers
- Crushers
- Cranes

Metals & Processing

- Grinding
- Cutting
- Polishing
- Drilling
- Rolling

Rubber & Plastics

- Extruders
- Moulding
- Mixers
- Winding

Food & Beverage

- Conveyers
- Pumps
- Mixers
- Palletizers

Powerful, versatile and easy to use



Cranes

Requirements:

- High starting torque
- Smooth motor operation throughout starting and stopping phases
- Motor holding brake control
- Avoidance of load droop and sag
- Regeneration and braking capability during load lowering

Optidrive P2 provides:

- Dedicated Hoist Mode Operation with motor holding brake control algorithm
- Up to 200% torque from zero speed in vector operation without encoder feedback
- Multiple Preset Speed or variable speed operation
- Built in dynamic braking transistor, requires only an external resistor



Compressors

Requirements:

- Precise regulation of speed to ensure a consistent end product
- High starting torque demand in many applications
- Maximum efficiency under all conditions
- Safe operation to prevent accidents and injuries

Optidrive P2 Provides:

- PM Motor control mode to allows open loop operation with Permanent Magnet motors for maximum efficiency
- Maximum starting torque with standard AC motors
- Better than 0.5% speed holding accuracy in Open Loop Vector Operation
- Dedicated Safe Torque Off input complies with EN62061 SIL Level 2 for safe operation



Winding

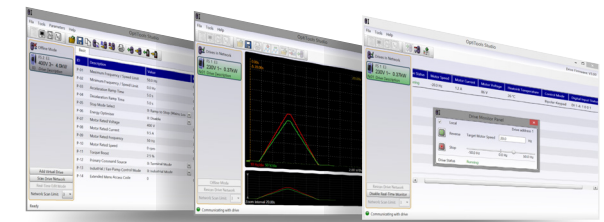
Requirements:

- Precise control of motor torque over a broad speed range
- Accurate control of material tension under all conditions
- Open or closed loop control capability, based on tension feedback or winding diameter
- Web break protection in case of material breakage

Optidrive P2 Provides:

- PID Closed Loop Tension Control with feedback from a load cell or dancer arm
- Open Loop Vector control provides optimum control of the output torque level
- Encoder feedback option allows for a very wide speed range, even down to zero speed
- Safe Torque Off input immediately disables the drive in Emergency conditions

OptiTools Studio



Powerful PC Software

Drive commissioning and parameter backup

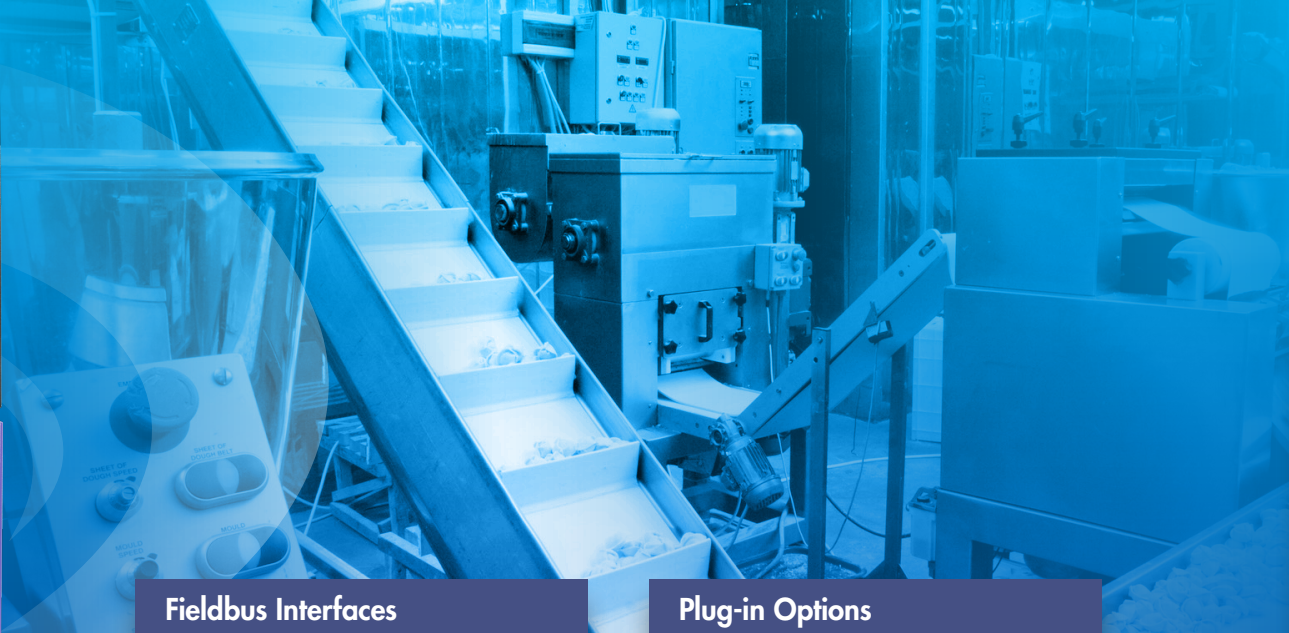
- Real-time parameter editing
- Drive network communication
- Parameter upload, download and storage
- Simple PLC function programming
- Real-time scope function and data logging
- Real-time data monitoring

Compatible with:

- Windows XP
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

Options & Accessories

Installation options, plug-in modules and commissioning tools



Installation & Peripheral Options

A range of external EMC Filters, Brake Resistors, Input Chokes and Output Filters are available, to suit all installation requirements

Modbus RTU and CANopen on board as standard

For additional communication interfaces or functionality a range of plug-in modules is available:

Fieldbus Interfaces



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



Encoder Feedback
OPT-2-ENCOD-IN (5 Volt)
OPT-2-ENCHT-IN (15 – 30 Volt)

Closed loop encoder feedback, compatible with a wide range of incremental encoders

Extended I/O
OPT-2-EXTIO-IN

- Additional 3 Digital Inputs
- Additional Relay Output

Extended Relay
OPT-2-CASCD-IN

Additional 3 Relay Outputs:

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

Functions are programmable / adjustable

Optistick Smart



Rapid Commissioning Tool

- Allows copying, backup and restore of drive parameters
- Provides Bluetooth interface to a PC running OptiTools Studio or the OptiTools Mobile app on a smartphone
- Onboard NFC (Near Field Communication) for rapid data transfer

- OPT-3-STICK-IN
- OPT-3-WLKIT-IN
- OptiStick Smart + Bluetooth Dongle
- OPT-3-PCKIT-IN
- Optistick Smart + Bluetooth Dongle + NFC Pad

PC Connection Kit



OPT-2-USB-OBUS is a dedicated PC connection kit for all Optidrive models, allowing direct connection from the PC USB port to the drive RJ45 communication connection for use with Optitools studio software.

OPT-2-USB485-OBUS

Optipad



Optipad Language Support

- English
- German
- Spanish
- Italian
- French
- Swedish
- Russian
- Polish
- Portuguese
- Finnish

OPT-3-OPPAD-IN

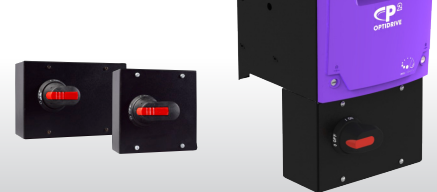
Through Hole Mount Kit



Through hole mount kits allow optidrive to be mounted through panel, ensuring that the heat from the drives heat sink is kept spate from the control electronics. This allows the optimum panel cooling arrangement to be used, with best possible separation of hot and cold air.

- OPT-2-TMHT04
- OPT-2-TMHT05
- OPT-2-TMHT06
- OPT-2-TMHT07

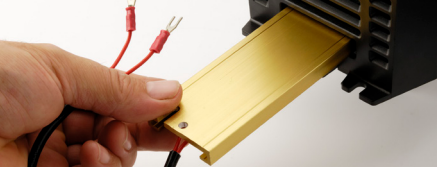
Local Isolator



Local isolator option allows complete disconnection of the incoming AC power to the drive. The isolator mounts directly to the drive, and provides a local disconnect option. The handle can be padlocked in the off position for safe maintenance.

OPT-2-ISOLO-S4
OPT-2-ISOLO-S5

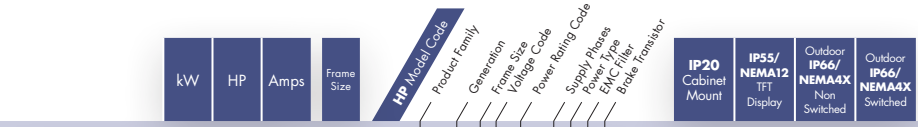
Brake Resistors



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.

OD-BR100-IN
OD-BRES4-IN

Replace # in model code with enclosure/display option



Input Voltage / Phases	kW	HP	Amps	Frame Size	HP Model Code	Product Family	Generation	Frame Size	Voltage Code	Power Rating Code	Supply Phase	Power Type	EMC Filter	Brake Transistor	IP20 Cabinet Mount	IP55/NEMA12 Display	Outdoor IP66/NEMA4X Non-Switched	Outdoor IP66/NEMA4X Switched	
200-240V ± 10% 1 Phase Input	0.75	1	4.3	2	ODP	-	2	-	2	010	-	1	H	F	4	#	2-MN	A-MN	B-MN
	1.5	2	7	2	ODP	-	2	-	2	020	-	1	H	F	4	#	2-MN	A-MN	B-MN
	2.2	3	10.5	2	ODP	-	2	-	2	030	-	1	H	F	4	#	2-MN	A-MN	B-MN

Enclosure & Display Types

2-MN IP20 Cabinet Mount

N-TN IP55/NEMA12 With OLED Display

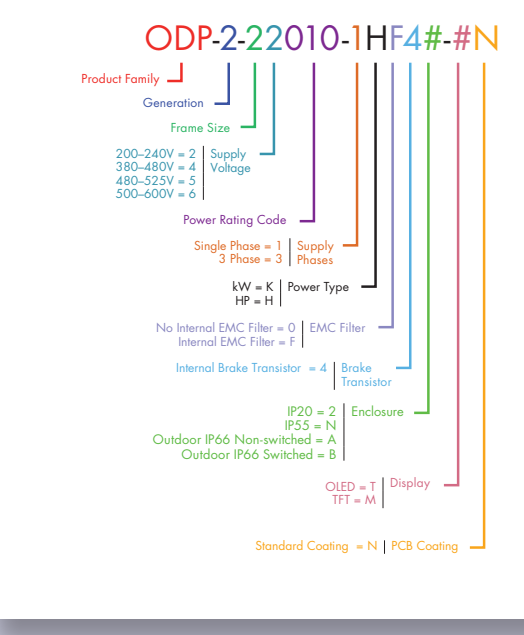
A-MN Outdoor IP66/NEMA4X Non-switched

B-MN Outdoor IP66/NEMA4X Switched

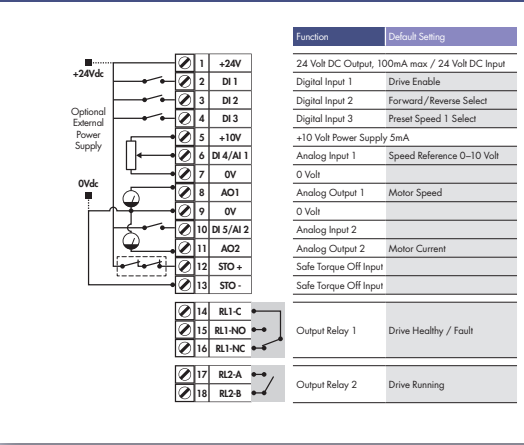
Drive Specification

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 (1–150HP)	
Overload Capacity	200% for 4 seconds		
Output Frequency	0 – 500Hz, 0.1Hz resolution		
Acceleration Time	0.01 – 600 seconds		
Deceleration Time	0.01 – 600 seconds		
Typical Efficiency	> 98%		
Ambient Conditions	Temperature	Storage: –40 - 140F Operating: 14 - 122F	
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 NEMA12, IP66 NEMA4X	
Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad	
	Display	Built-in multi language TFT	
	PC	OptiTools Studio	
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	
		PWM Frequency	4–32kHz Effective
		Stopping Mode	Ramp to Stop: User Adjustable 0.01–600 secs Coast to Stop
	Braking	Motor Flux Braking Built-in Braking Transistor	
		Skip Frequency	Single point, user adjustable 0 to 10 Volts 10 to 0 Volts –10 to +10 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4mA
	Setpoint Control	Analog Signal	Motorised Potentiometer (Keypad) Modbus RTU CANopen
		Digital	
	Fieldbus Connectivity	Built-in	CANopen 125 – 1000kbps
	Optional	Modbus RTU	9.6 - 115.2 kbps selectable 8N1, 8N2, 8E1, 8O1
	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, 10mA for Potentiometer	
	Programmable Inputs	5 Total as standard (Optional additional 3) 3 Digital (Optional additional 3) 2 Analog / Digital Selectable	
	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	
Relay Outputs	Motor PTC / Thermistor Input	Trip Level: 3kΩ	
	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: 5A 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	
	Hoist Mode	Dedicated Hoist Mode Motor Holding Brake Pre-Torque & Control Over Limit Protection	
	Maintenance & Diagnostics	Fault Memory Last 4 Trips stored with time stamp Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage	
Standards Compliance	Low Voltage Directive	2014/35/EU	
	EMC Directive	2014/30/EU	
Additional Conformance	UL, cUL, EAC, RCM		
Marine Certification	DNV Type Approval		
Environmental Conditions	Designed to meet IEC 60721-3-3, in operation: IP20 Drives: 3S2/3C2 IP55 & 66 Drives: 3S3/3C3		

Model Code Guide



Connection Diagram



Size	IP20							IP66 / NEMA4X			IP55 / NEMA12			
	2	3	4	5	6A	6B	8	2	3	4	4	5	6	7
mm Height	221	261	418	486	614	726	995	257	310	360	450	540	865	1280
mm Width	110	131	160	222	286	330	482	188	211	240	171	235	330	330
mm Depth	185	205	240	260	320	320	480	186	235	271	252	270	330	360
kg Weight	1.8	3.5	9.2	22.5	45	45	112	3.5	6.6	9.5	11.5	23	55	89

HP Models: Factory Settings
Motor Rated Frequency: 60Hz
Motor Rated Voltage: 30/460/575V