UNIVERSAL SYSTEMS

This is **U.S.** – Shaping Industry. Defining Tomorrow.

CORPORATE CATALOGUE

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Our Brands and Our Offerings

INOVANCE | Midea | HICONICS | SUPCON

JAKA | Weldmate YOUR MATE | MEGAROBO Future Beyond Sight | KEENON

Automation

- PLC
- Motion Control
- DCS
- Remote IO
- SIS
- Instrumentation (valve controllers; Gas analytics)
- Universal Control System

Drives

- MV
- LV
- SERVO

Robots

- 6 Axis
- SCARA
- Cobots

Power Conversion Systems

- Commercial and Industrial Including Centralised PCS String Based
- Residential

Others

- Elevators / Escalators
- Control Room / Consoles
- Pharma Machines
- LED Screens

Disclaimer

Universal Systems has prepared this catalogue to provide an overview of the products, solutions, and capabilities available across our portfolio. While every effort has been made to ensure accuracy and completeness, some information may be subject to change or may not fully reflect the most current specifications.

Where vendor catalogues—such as those provided by Inovance, Supcon, Hiconics or others —are included or referenced, the original vendor documentation shall be considered the authoritative source. In the event of any discrepancy, omission, or conflict between this catalogue and the embedded vendor materials, the vendor's official catalogue and specifications take precedence.

Universal Systems accepts no liability for decisions made based solely on the information contained herein. We encourage all readers to verify critical details against the relevant vendor documentation or consult Universal Systems directly for clarification.

Table of Contents

1. About Universal Systems

At **Universal Systems**, our purpose is clear: to sustain, transform, and advance industries across Australia and New Zealand by delivering compliant, competitive, and future-ready solutions.

We specialise in advanced automation, drives, robotics, and intelligent control systems — partnering with global leaders such as Inovance, Supcon, HICONICS, JAKA, Megarobo, Keenon and others too. Through these partnerships, we bring world-class technologies to local industry, empowering businesses to operate smarter, safer, and more sustainably.

What sets us apart is our commitment to compliance and reliability. Every solution we deliver is benchmarked against international best practice and aligned with AS/NZS standards, ensuring our customers gain not only performance but peace of mind.

From PLCs and motion control to collaborative robotics and energy storage systems, Universal Systems provides the tools and expertise to build resilient foundations for innovation and prosperity.

UNIVERSAL SYSTEMS

2. Automation & Control Solutions

2.1 – Offering Overview

2.1.1 - PLCs

There are two series of PLC's presented here:

•The *Easy Series PLC* is a **cost-effective, scalable, entry to mid level controller** for small or medium complexity automation projects.

•The *H5U Series PLC* is a **high-performance, EtherCAT-enabled controller** for complex motion control and scalable industrial automation.

The *Easy Series PLC*

The *H5U Series PLC*

FEATURES / SPEC	EASY SERIES PLCs	H5U SERIES PLC
Built-in I/O	8 DI + 8 DO (sink/source options); expansion via GE20/GL20 modules	16 DI + 14 DO (including 4 high-speed inputs and 4 high-speed outputs at 200 kHz)
Commissioning Tools	Auto device scanning, offline simulation, servo debug without programming	Simulation mode (programs, axis, comms), high-resolution trace, firmware upgrade via SD card
Communications	RS232/RS485, Modbus RTU/TCP, CANopen (via expansion), Ethernet/IP, EtherCAT (higher models)	Native EtherCAT (72 slaves), Ethernet (Modbus TCP, sockets), CANopen/CANlink, RS485 (Modbus RTU)
Data Storage	Easy300: 1 MB; Easy500: 2 MB (128 KB non-volatile)	2 MB user variables (256 KB retained), ~150 KB soft elements retained
Expansion Options	GE20 expansion cards (digital, analog, comms, RTC, TF); GL20 distributed I/O modules (EtherCAT/Profinet bus couplers)	Up to 16 local GL10 modules; remote GR10 EtherCAT I/O modules
Motion Control Capacity	Easy301/302/320: up to 5 pulse axes; Easy502: 16 sync axes; Easy523: 32 sync axes (EtherCAT)	Up to 32 synchronised axes (max 32 EtherCAT, or 4 pulse axes)
Positioning	Entry-level to mid-range PLCs for compact automation	High-performance PLC for complex motion control
Program Capacity	Easy300: 128K steps; Easy500: up to 200K steps	200K steps
Programming Languages	LD, SFC, ST, FB/FC (with encryption)	LD, SFC, function block/function support
Programming Tools	Free (no license, no subscription)	Free (no license, no subscription)

•2.1.2 – Distributed I/O & IO Link

Distributed I/O Systems

Offering Overview

Inovance distributed I/O systems are designed to provide flexible, scalable, and cost-effective remote I/O solutions for modern industrial automation architectures.

These systems reduce panel wiring, simplify expansion, and integrate seamlessly with Inovance PLCs, motion controllers, and third-party control platforms.
They are ideally suited for machine builders and system integrators seeking .

IO-Link Solutions

Offering Overview

Inovance IO-Link solutions provide intelligent point-to-point communication between sensors/actuators and the control system. IO-Link enables real-time diagnostics, parameterisation, and reduced commissioning time while maintaining standard 24 V wiring.

This architecture is ideal for smart factories, predictive maintenance strategies, and rapid machine changeovers. High IP-rated field deployment (IP65/67/69K)
High IP-rated field deployment (IP65/67/69K)

FEATURES / SPEC	INOVANCE DISTRIBUTED I/O (GL20/GR10)	IO-LINK I/O
Supported Networks	**EtherCAT, PROFINET, CC-Link IE Field Basic, Modbus TCP**	Vendor-agnostic IO-Link protocol (IEC 61131-9)
Topology	Modular rack/slice-based; Daisy-chain fieldbus	Point-to-point from IO-Link master to devices (Star)
Module Types	Digital, Analog, Temperature, Counter, **Pulse/Positioning**, Comms	IO-Link masters (4/8/16 ports), Hubs, Sensors, Actuators
Expansion Options	**Up to 32 modules per GL20 station**; Scalable via fieldbus nodes	Expandable via additional Master ports or Hubs
Diagnostics	Channel-level LED, Fieldbus status, **InoProShop online monitoring**	Device-level (ID, Serial), Parameter R/W, Event history
IP Rating	**IP20** (Requires electrical cabinet)	**IP65 / IP67 / IP69K** (Cabinet-less / On-machine)
Wiring	**Tool-less Push-in terminals** for field wiring	Standard M12 / M8 unshielded cables (up to 20m)
Programming Tools	**InoProShop (CODESYS-based)** or **AutoShop**	Configured via IODD files within PLC environment

•2.1.3 – HMI’s

IT7000 HMI Range

The IT7000 series represents the next generation of industrial HMIs by Inovance, designed for enhanced display quality, flexible networking, and rich features suitable for modern industrial automation.
Available in 7", 10", and 15" display sizes, the IT7000 HMIs offer IP65-rated front panels for robust industrial environments.

Key Features

•High-resolution displays up to 1024×768 with 16 million colors
•Multi-protocol communication support including Ethernet, Modbus RTU/TCP, OPC UA, and MQTT
•Flexible connectivity with built-in Ethernet and serial ports
•Support for VNC remote access and mobile device connectivity
•Advanced data management with USB and micro SD card support
•Real-time clock and historical data logging capabilities
•User-friendly InoTouchPad software for configuration and programming
•JavaScript scripting for custom control and plug-in development
•IP65 front panel protection and long backlight lifespan (up to 50,000 hours)

Typical Use Cases

•Machine control and monitoring
•Data acquisition and visualization
•Remote operation and diagnostics
•Integration with IoT and Industry 4.0 systems

- 2.1.4 – SCADA

SOLISCADA is a **free** SCADA software designed for industrial data monitoring and control. It supports **up to 50,000 tags** at zero cost and offers unlimited scalability, revolutionizing industrial automation. Trusted by industries such as municipal services, oil & gas, Water, and manufacturing;

SOLISCADA delivers unparalleled efficiency and intelligence for modern industrial operations.

Key Features

- Real-time monitoring and data acquisition with efficient data compression
- Support for over 100 industrial communication protocols including OPC, Modbus, and IEC104
- 3D visualization capabilities for digital representation of physical systems
- Object-oriented configuration enabling device modeling with specific attributes and control panels
- Mobile access for remote monitoring via various devices
- Advanced reporting and historical data logging
- Secure backups and redundancy options
- User-friendly interface with customizable dashboards and scripting support

Typical Use Cases

- Centralized monitoring of complex industrial processes
- Environmental protection and hydrometallurgy projects
- Urban heating and refined oil pipeline management
- Pharmaceutical manufacturing process control
- Hydropower plant monitoring and automation

2. Automation & Control Solutions

2.2 Brochures / Catalogues:

2.2.1 EASY PLC + Remote I/O

INOVANCE

Easy Series PLC

High performance, compact, EtherCAT-enabled PLC

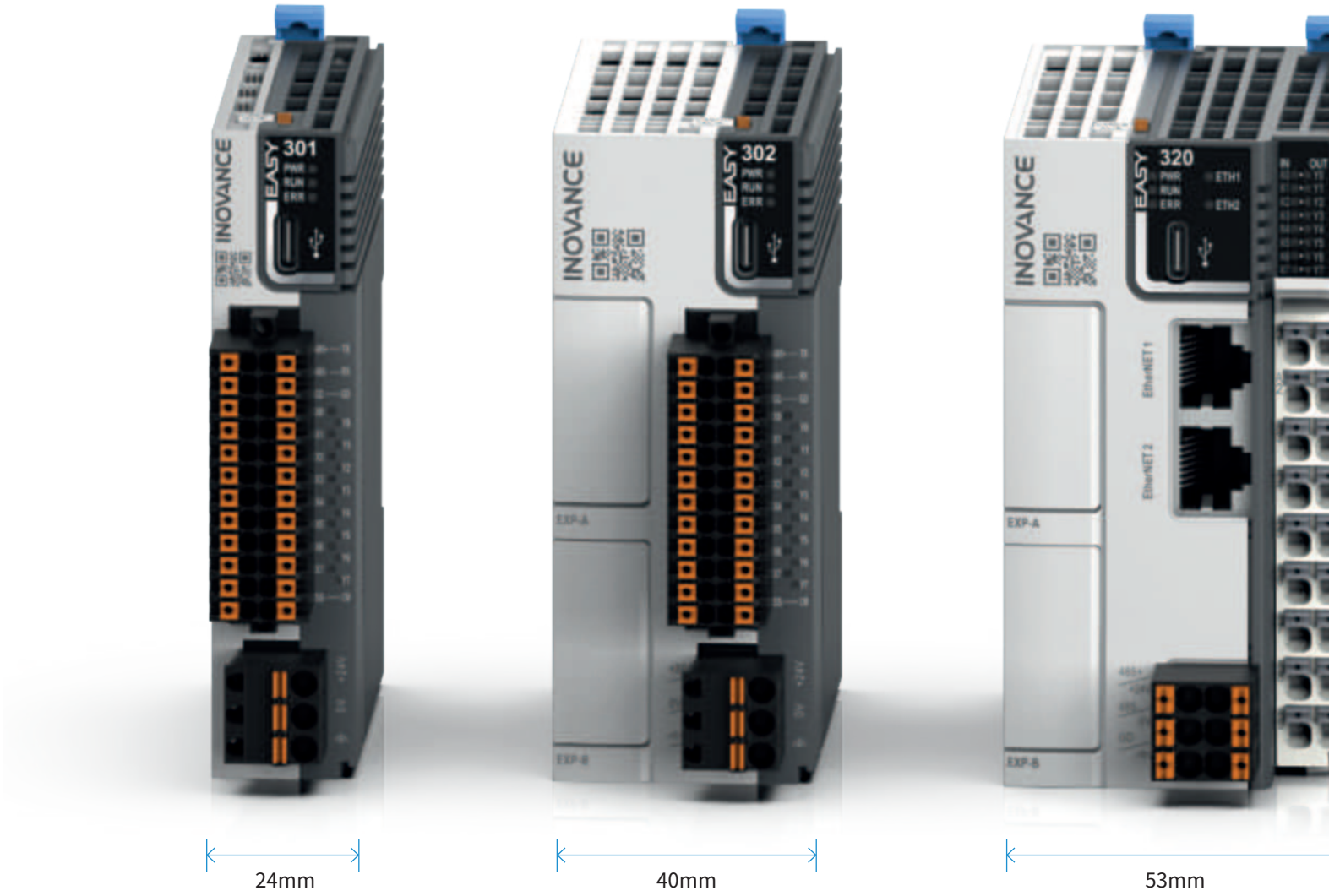
- Compact footprint
- A complete product range – from the simplest to the most complex motion control capable PLC
- PLCopen compliant axis control
- Simulation mode for offline debugging
- Real-time fieldbus

CANopen EtherCAT EtherNet/IP

CE cULus LISTED E467465 IND.CONT.EQ

Easy series PLC: a comprehensive product range

Easy300

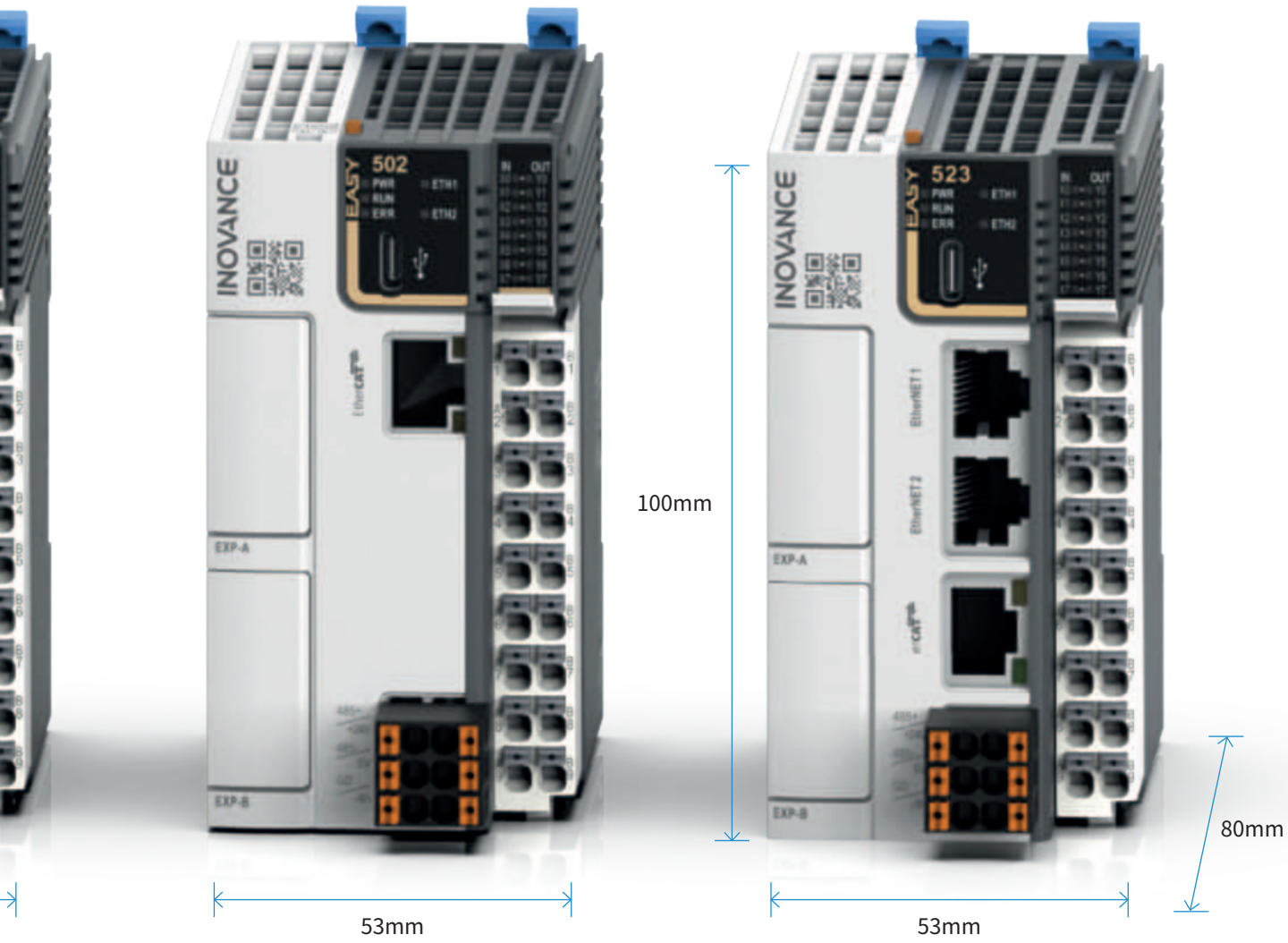


Ultra compact CPU
Easy301
RS232 + RS485

General CPU
Easy302
RS232 + RS485

CPU with Ethernet
Easy320
Dual Ethernet + RS485

Easy500



Motion control CPU
Easy502
EtherCAT + RS485

Motion control CPU with Ethernet
Easy523 Dual Ethernet
+ EtherCAT + RS485

EASY programming

Customized FB/FC - self defined variable programming assistant

EASY assembly & wiring

Easy to add and/or replace modules. Plug in wires directly with spring clamp terminals

EASY commissioning

Auto device scanning, easy configuration, servo debug without programming, offline simulation

The type-C port works as a programming port allowing support programs, uploading/downloading and debugging.

Easy wiring with spring clamp terminals.

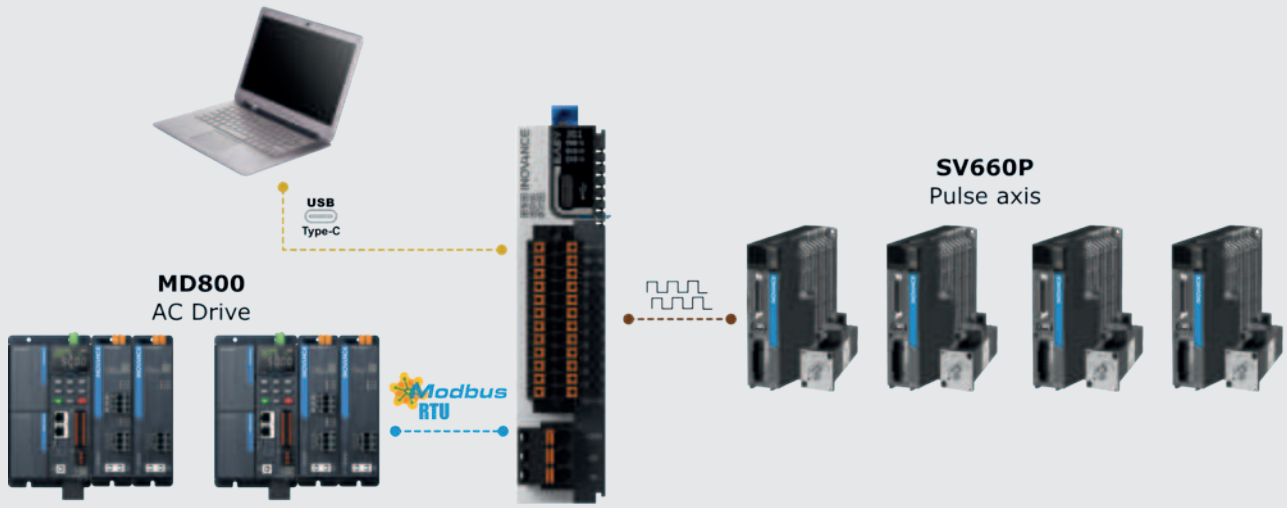
Slim and compact I/O expansion modules (GL20). Easy to plug in and remove for fast replacement.

Scalable system architecture

Multiple configurations

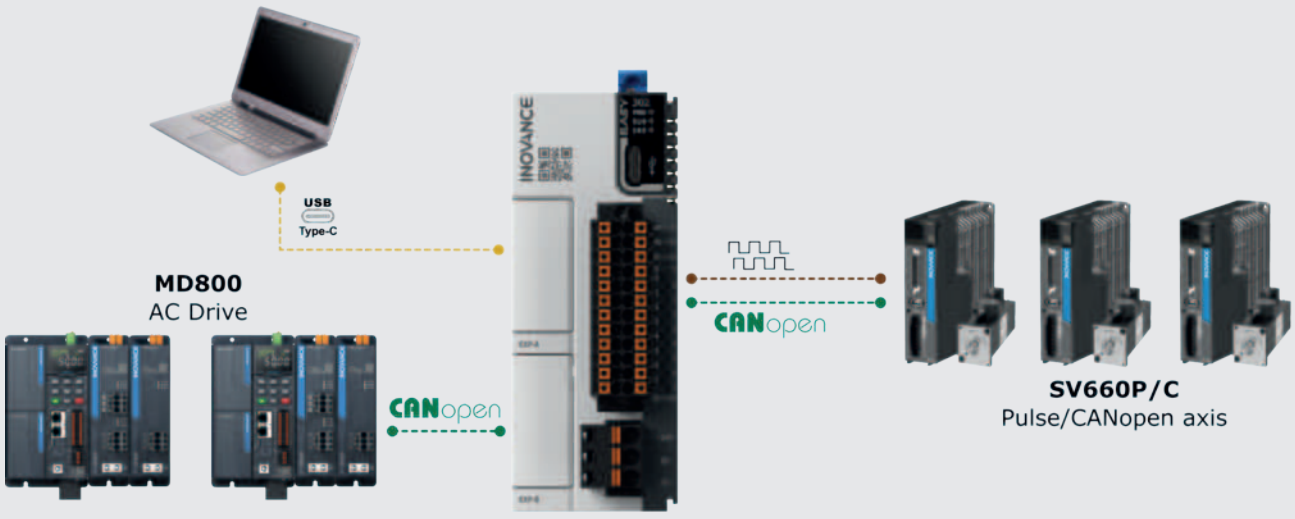
Easy301

Cost effective architecture using Modbus RTU communication and/or pulses to control the drives.



Easy302

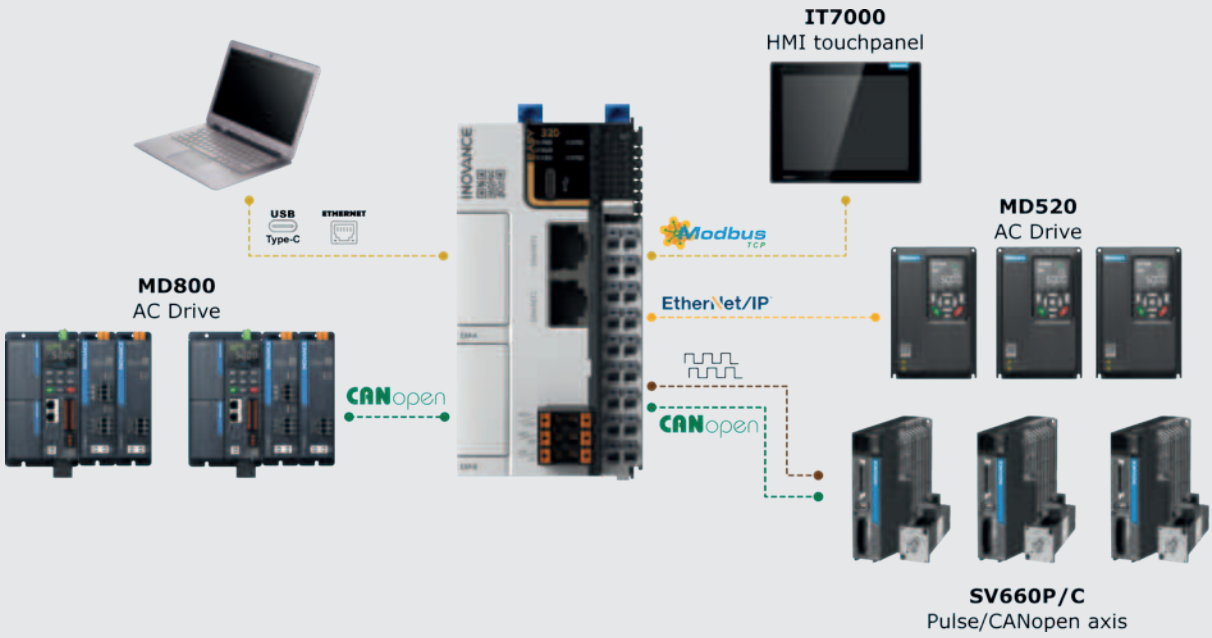
Flexible architecture using CANopen communication and/or pulses to control the drives.



The Easy PLC series can cover anything from the simplest pulse control architecture to the most complex motion control applications using EtherCAT and Ethernet/IP

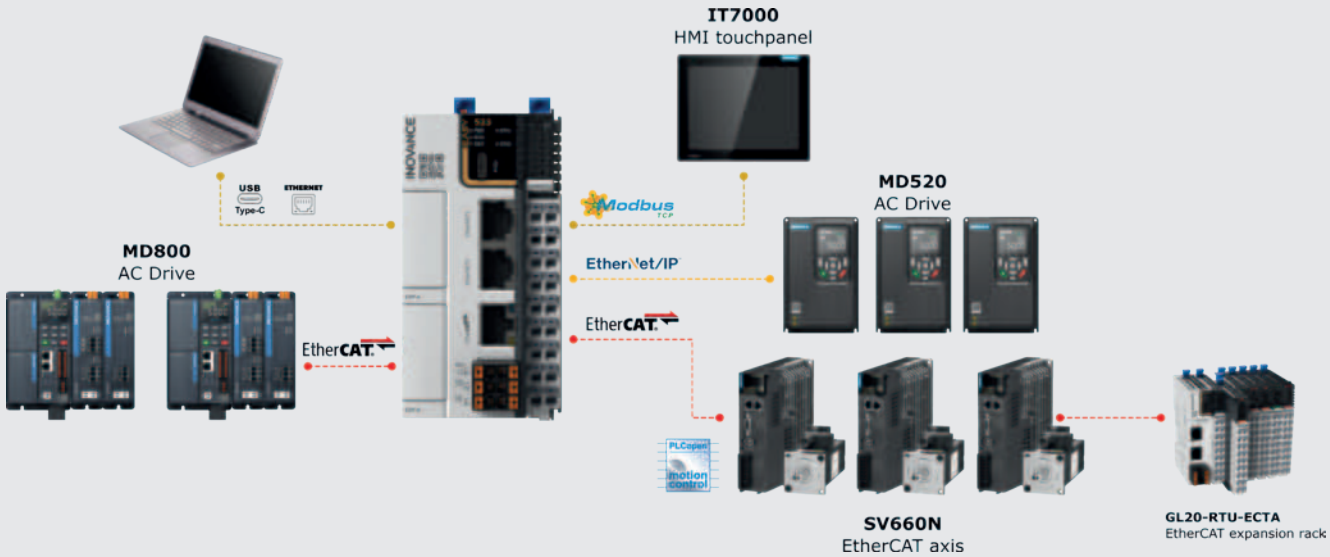
Easy320

Multiprotocol architecture using Ethernet/IP, CANopen communication and/or pulses to control the drives, and Modbus TCP with the HMI touchpanel



Easy523

Powerful motion control architecture using realtime EtherCAT communication and Ethernet/IP to control the drives, and Modbus TCP with the HMI touchpanel



Specifications

Basic specifications of easy series controller

Item	Easy300		
	Easy301-0808TN	Easy302-0808TN	Easy320-0808TN
Part number	01440323	01440324	01440325
Motion axis	4 pulse control axes	5 pulse control axes	5 pulse control axes
Expansion modules (GL20)	8	16	
Expansion slots (GE20)	–	2 (support communication/digital IO/analog IO/TF card/R	
Ethernet	–		2 Modbus TCP up to 32 slav Ethernet/IP scanner/adap
EtherCAT	–		
Serial communication	1 x RS232 1 x RS485 Support free protocol, Modbus RTU/ASC up to 16 slaves	1 x RS232, 1 x RS485 Support 1 x RS232/485 expansion and 1 x CAN expansion Support free protocol, Modbus RTU/ASC 16 slaves (recommended)	1 x RS485 Support 2 x RS232 /485 expansion and 1 x CAN expansion Support free protocol, Modbus RTU/ASC 16 slaves (recommended)
CAN communication	–	1 (requires expansion card), supports CANlink/CANopen m	
Program storage	128 K step		
Data storage	1 Mbyte (128 KB non-volatile) 150 KB soft element, non-volatile after No.1000		
Instruction execution time	20 K step / 2 ms		
Dimensions (WxHxD: mm)	24x100x83	40x100x83	53x100x80
Other interfaces	Type C	Type C, TF card (requires TF card expansion module)	
CAM and interpolation	–	Supports CAM and interpolation motion	
Encoder axis	4 channel encoder axis (8 x high speed inputs, up to 200 KHz)		
Built in I/Os	8 inputs (selectable sink/source) and 8 outputs (sink type - available, source type - con		
Programming languages	LD, SFC, ST, FB/FC (supports encryption functionality)		
Power supply	DC24V		

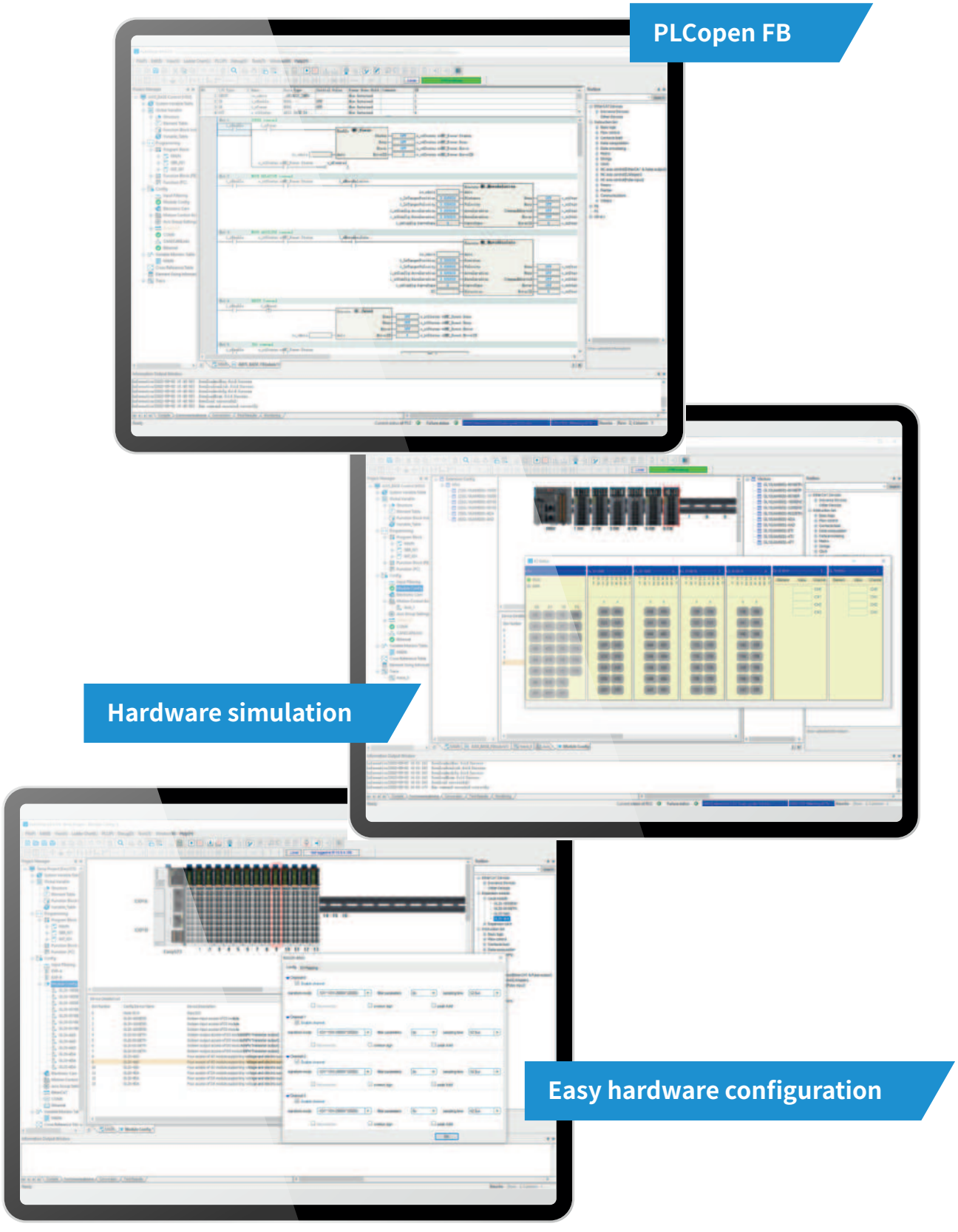
[1]Synchronised axes

[2]EtherCAT slaves include I/Os and synchronised and non-synchronised axes

	Easy500	
	Easy502-0808TN	**Easy523-0808TN**
	01440336	**01440326**
	A total of 16 synchronised axes are possible. This can be a max. of 16 EtherCAT axes[1], or a combination that includes a max. of five pulse control axes	A total of 32 synchronised axes are possible. This can be a max. of 32 EtherCAT axes[1], or a combination that includes a max. of five pulse control axes
TC)		
	–	2
es		Modbus TCP up to 32 slaves
ter		Ethernet/IP scanner/adapter
	Support up to 72 EtherCAT slaves[2] (including synchronised axes)	
)	1 x RS485 Support 2 x RS232/485 expansion and 1 x CAN expansion Support free protocol, Modbus RTU/ASC 16 slaves (recommended)	1 x RS485 Support 2 x RS232/485 expansion Support free protocol, Modbus RTU/ASC 16 slaves (recommended)
aster/slave (up to 62 slaves)		
	200 k step	
	2 Mbyte (128 KB non-volatile)	
		20 K step / 1.6 ms
ming soon)		

Autoshop

A powerful PC tool is provided as standard



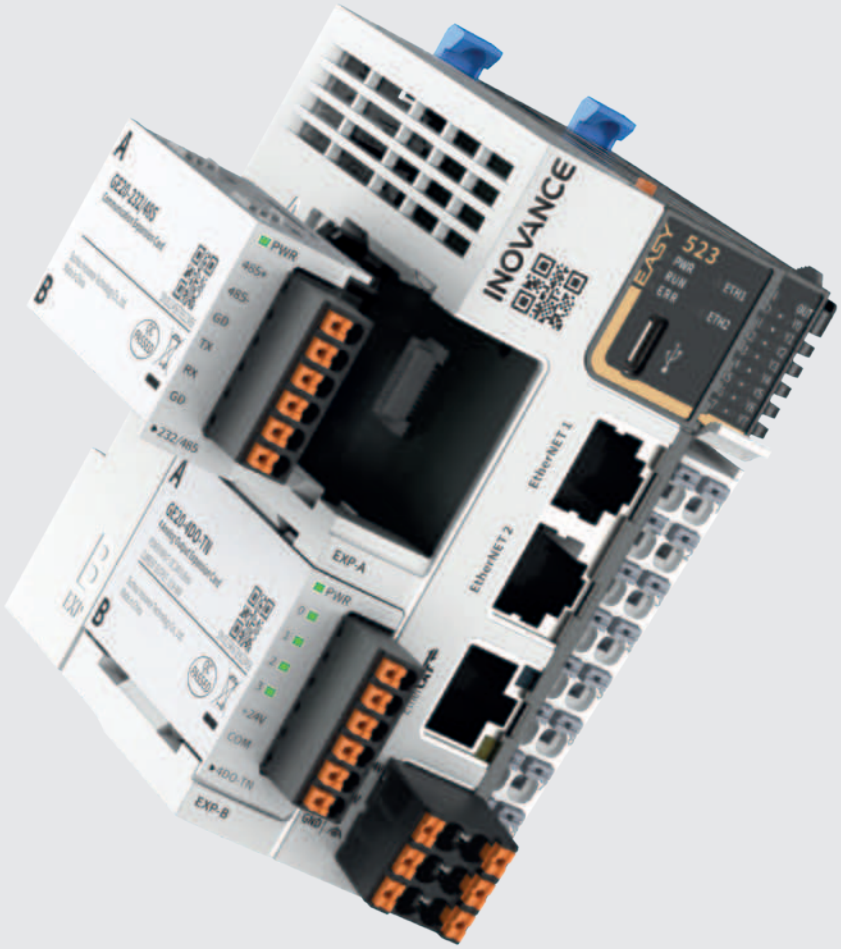

ST programming
Axis commissioning tool
Trace

Expansion capability

GE20 Expansion cards

Expansion slot A ⟷

Expansion slot B ⟷



Communications capabilities

- RS485 connection - up to 31 slaves
- CANopen - up to 62 slaves
- CANlink - up to 62 slaves
- Modbus TCP - up to 32 slaves (working as client/master)
- Modbus TCP - up to 16 masters (working as server/slave)
- Up to 3 serial ports (RS232/485) - 1 onboard and 2 GE20 expansion cards

Please note: GE20 expansion cards are not applicable to Easy301 CPU.

Product appearance	Expansion card	Product code	Description	Slot A	Slot B
	GE20-4DO-TN	01480033	4 channel sink outputs	✓	✓
	GE20-4DI	01480032	4 channel source/sink inputs	✓	✓
	GE20-2AD1DA-I	01480027	2 analog inputs and 1 analog current output	✓	✓
	GE20-2AD1DA-V	01480028	2 analog inputs and 1 analog voltage output	✓	✓
	GE20-232/485-RTC	01480035	RS232/485 expansion card with RTC		✓
	GE20-232/485	01480029	RS232/485 expansion card	✓	✓
	GE20-CAN-485	01480034	CAN/RS485 expansion card with RJ45 interface	✓	
	GE20-RTC	01480031	RTC expansion card		✓
	GE20-TF	01480030	TF expansion card		✓

Expansion card size: 54*30*1.2 (mm)

Expansion capability

GE20 Expansion cards

Digital expansion card

Material code	01480033	Material code	01480032
Appearance		Appearance	
Model	GE20-4DO-TN	Model	GE20-4DI
Description	4 channel output module	Description	4 channel input module
Slot	A/B	Slot	A/B
IP level	IP20	IP level	IP20
Operational temperature	-20 °C ～ 55 °C	Operational temperature	-20 °C ～ 55 °C
Output type	Digital transistor	Input type	Digital transistor
Source/sink (PNP/NPN)	Sink (NPN)	Source/sink (PNP/NPN)	Source/sink
Channels	4	Channels	4
Output voltage	24 V DC (20.4 V DC ～ 26.4 V DC)	Input voltage	24 V DC ± 10% (21.6 V DC ～ 26.4 V DC)
Output (resistance load)	0.5 A/point, 1 A/common point	Input resistance	5.6 kΩ
Output (inductance load)	6 w/24 V DC (in total)	ON current	＞3.5 mA
Output (lamp load)	1 w/24 V DC (in total)	OFF current	＜1.5 mA
Hardware ON/OFF response	Within 100 us	Input response	≈15 ms (hardware RC filter)
Leakage current (ON->OFF)	10 uA below	ON voltage	⩾15 V DC
Frequency	Resistance load: 100 Hz, inductance load: 0.5 Hz, lamp load: 10 Hz	OFF voltage	⩽5 V DC
Isolation	Opto-isolation	Software filter	NOT support
Protection function	Surge suppression	Isolation	Opto-isolation

Analog expansion card

Material code	01480028		
Appearance			
Model	GE20-2AD1DA-V		
Description	2 channel analog inputs plus 1 channel analog input, voltage type		
Slot	A/B		
IP level	IP20		
Operational temperature	-20 °C～55 °C		
Input type	Analog input	Output type	Analog output
Input mode	Current/voltage	Output mode	Voltage
Input channels	2	Output channel	1
Resolution	12 bit	Resolution	12 bit
Conversion time	6 ms/channel	Conversion time	1 ms/channel
Input range	0 ~ 10 v/0 mA ～ 20 mA	Output range	0 ~ 10 v
Current input resistance	250 Ω	Voltage output resistance	＞2 KΩ
Input accuracy (25 °C)	Voltage ±1%, Current±1% (full range)	Output accuracy (25 °C)	±1% (full range)
Input accuracy (-20 °C ～ 55 °C)	Voltage ±3%, Current±3% (full range)	Output accuracy (-20 °C ～ 55 °C)	±5% (full range)
Digital input range	0 ～ 20,000	Digital output range	0 ～ 20,000

Material code	01480027		
Appearance			
Model	GE20-2AD1DA-I		
Description	2 channel analog inputs plus 1 channel analog input, current type		
Slot	A/B		
IP level	IP20		
Operational temperature	-20 °C ～ 55 °C		
Input type	Analog input	Output type	Analog output
Input mode	Current/ voltage	Output mode	Current
Input channels	2	Output channel	1
Resolution	12 bit	Resolution	12 bit
Conversion time	6ms/ channel	Conversion time	1 ms/channel
Input range	0 ~ 10 v/ 0 mA ～ 20 mA	Output range	0 mA ～ 20 mA
Current input resistance	250 Ω	Current output resistance	0 Ω ～ 500 Ω
Input accuracy (25 °C)	Voltage ±1%, Current ±1% (full range)	Output accuracy (25 °C)	±1% (full range)
Input accuracy (-20 °C ～ 55 °C)	Voltage ±3%, Current ±3% (full range)	Output accuracy (-20 °C ～ 55 °C)	±5% (full range)
Digital input range	0 ～ 20,000	Digital output range	0 ～ 20,000

Expansion capability

GE20 Expansion cards

Communication expansion card

Material code	01480035	01480029	01480034
Appearance			
Model	GE20-232/485-RTC	GE20-232/485	GE20-CAN-485
Description	RS232/RS485 communications card with RTC	RS232/ RS485 communications card	CAN/RS485 communications card
Slot	B	A/B	A
IP level	IP20	IP20	IP20
Operational temperature	-20 °C ~ 55 °C	-20 °C ~ 55 °C	-20 °C ~ 55 °C
RS485/RS232	1	1	1
Terminal resistor	Set via DIP switch	Set via DIP switch	NO terminal resistor for RS485 Built-in terminal resistor for CAN
Communications ability	Up to 31 slaves Distance between adjacent slaves not over 3m	Up to 31 slaves Distance between adjacent slaves not over 3 m	Up to 31 slaves(RS485) Distance between adjacent slaves not over 3 m Up to 63 slaves (CAN)
Baud rate of RS485/RS232	9600/19200/38400/ 57600/115200 bit/s	9600/19200/38400/ 57600/115200 bit/s	9600/19200/38400/ 57600/115200 bit/s
Baud rate of CAN	/	/	1 Mbit/s: distance < 20 m 500 kbit/s: distance < 80 m 250 kbit/s: distance < 150 m 125 kbit/s: distance < 300 m 100 kbit/s: distance < 500 m 50 kbit/s: distance < 1,000 m
RTC accuracy	120 sec/ month	/	/
RTC format	YYYY/MM/DD/HH/MM/SS	/	/
In-built lithium battery	CR2302, 3 year life cycle, removable	/	/

RTC expansion card

Material code	01480031
Appearance	
Model	GE20-RTC
Description	RTC extension card
Slot	B
IP level	IP20
Operational temperature	-20 °C ～ 55 °C
RTC accuracy	120 sec/month
RTC format	YYYY/MM/DD/HH/MM/SS
In-built lithium battery	CR2302, 3 year life cycle, removable

TF card expansion card

Material code	01480030
Appearance	
Model	GE20-TF
Description	TF card extension card
Slot	B
IP level	IP20
Operational temperature	-20 °C ～ 55 °C
SD card capacity	NOT over 32 G
SD card type	TransFlash (Micro SD)

Expansion capability

GL20 expansion modules

Great performance with ultra fast respor

Microsecond level response | Synchronous control

Compact size and wiring without tools

Compact size | Fast installation | Fast replacement

Stable and reliable design

Stable connection | Gold plating process | Safety an

Many variants to suit different systems

Multiple protocols | Many variants

Applicable to either bus coupler or CPU

nse

d reliability

NEW generation distributed I/O system

GL20 slim and compact I/O modules

DESIGN AWARD 2022

Expansion capability

GL20 expansion modules

Compact Size

Saves 2/3 of the space in the cabinet compared to the previous generation product – GL10

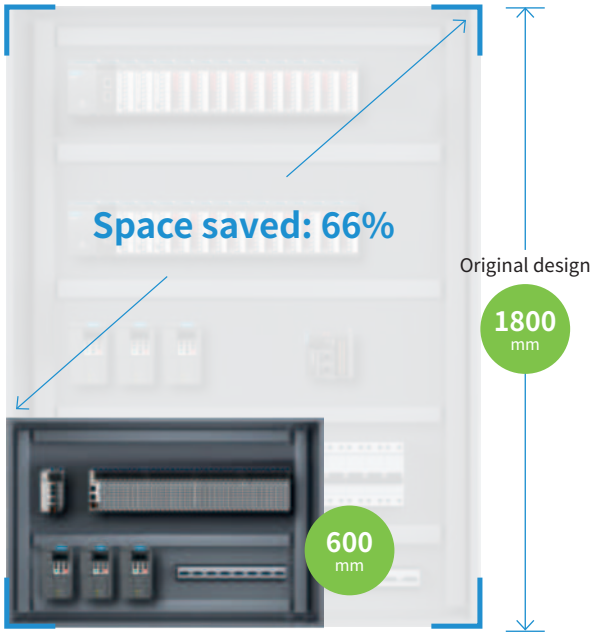
GL20 Series

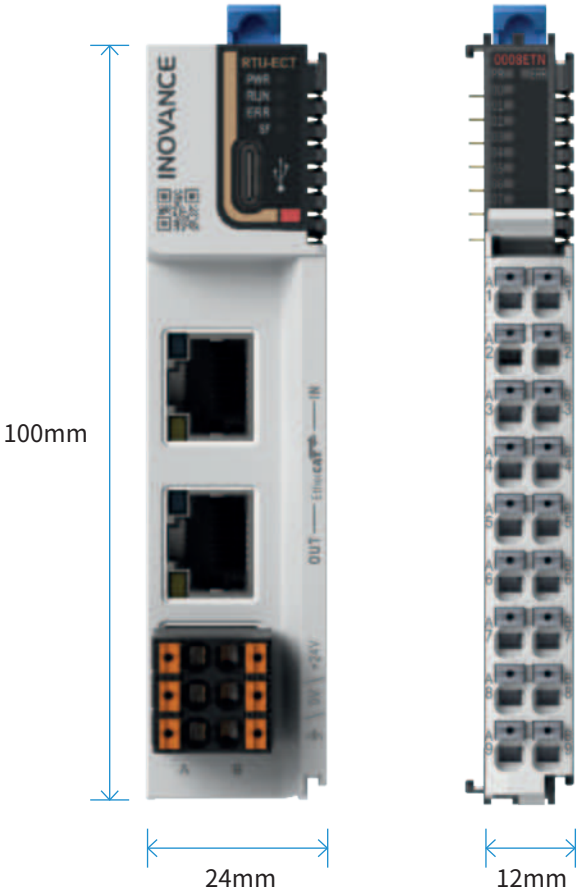
Designed for compact cabinets

Thickness reduced to **12mm**

2/3 cabinet space saved

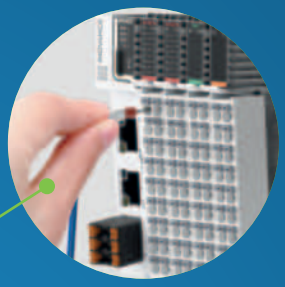
Space utilisation maximised





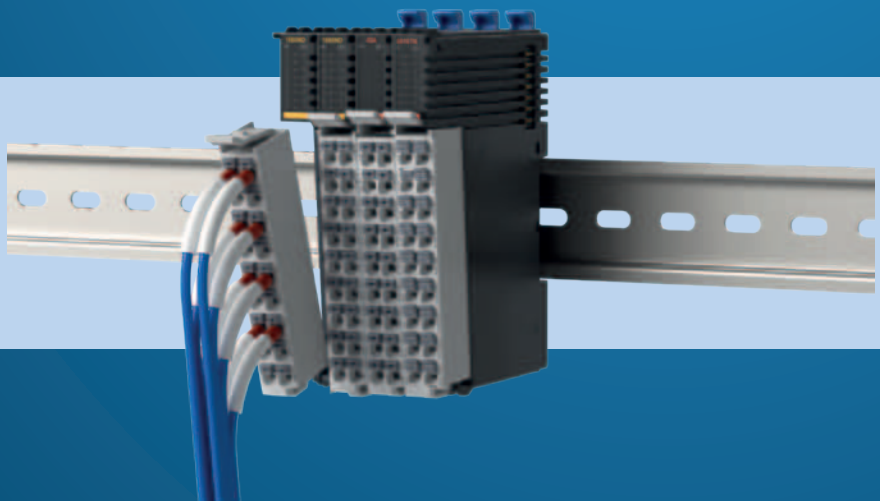
Compact design and tool-free wiring

Simple lever system allows easy removal of individual modules from the DIN rail



Easy wiring with spring-type terminals, with large 1.5mm² apertures

Easy module removal



Removable terminals
minimizes installation errors

Expansion capability

GL20 modules – EtherCAT bus coupler

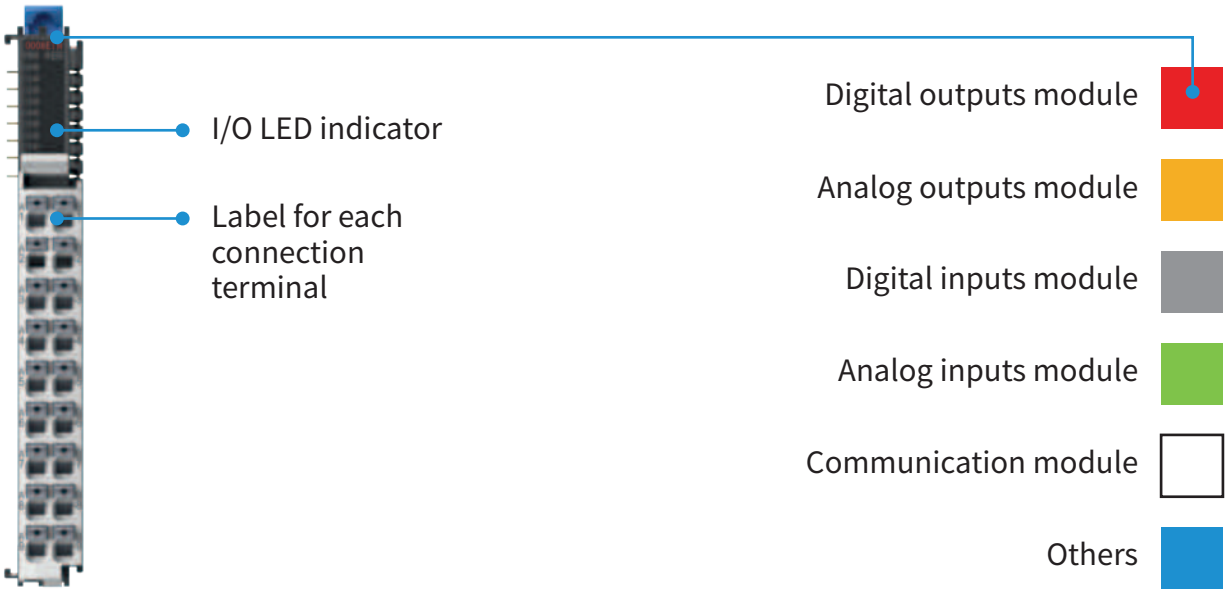
EtherCAT®

- Min. cycle time of 125 microseconds
- Allows EtherCAT alias configuration
- USB-C port for firmware upgrade

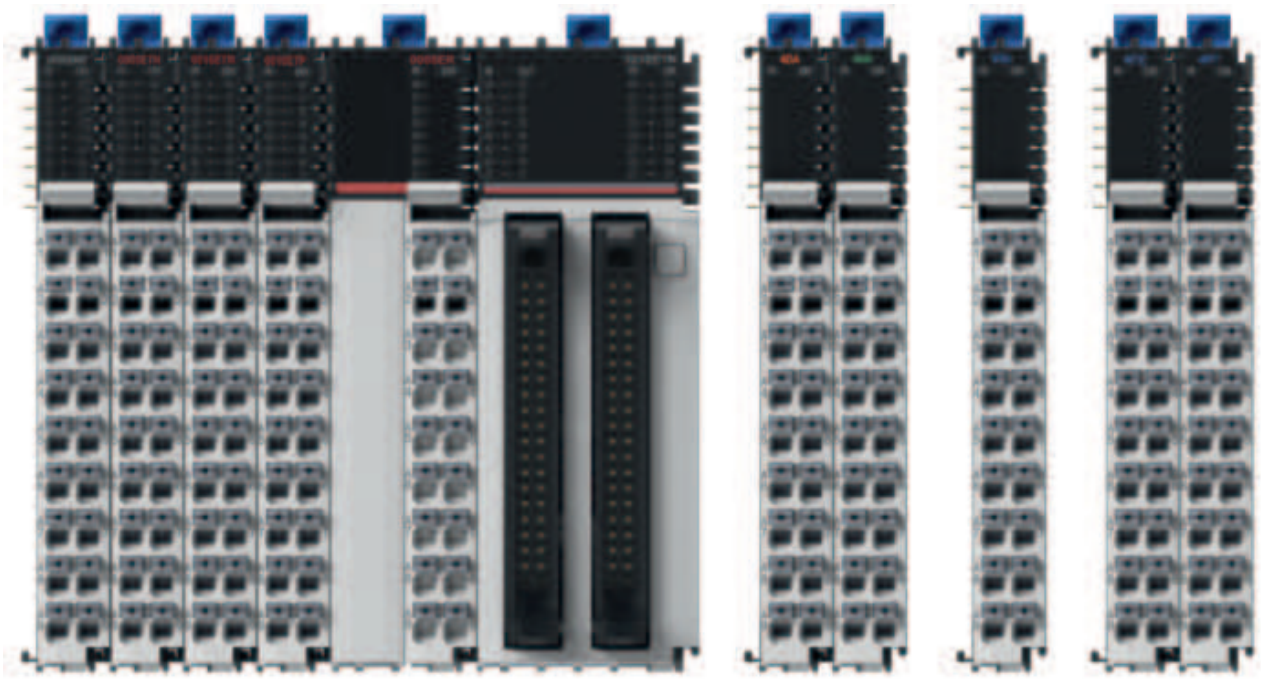
Specification	Description
Dimensions (WxHxD:mm)	24×100×83
Max. number of expansion modules	16
Protection	Over current/ reverse connection protection
Operating ambient temperature	-20~55°C
Operating ambient humidity	Less than 95% and no condensation
IP rating	IP20
Power supply	+24 VDC
Process data	Up to 1,024 input bytes and 1,024 output bytes
Mailbox size	Up to 256 input bytes and 256 output bytes
Alias	It admits the configuration of EtherCAT aliases through the master. Expansion modules connected behind ECT do not support alias access and configuration. Range: 1~65535
EtherCAT cycle	Min. cycle time of 125 microseconds
EtherCAT port	2 x RJ45
Communication rate	100 M, full duplex
Transmission distance	100 meters
Firmware update port	USB-C port for firmware upgrade

Expansion capability

GL20 expansion modules



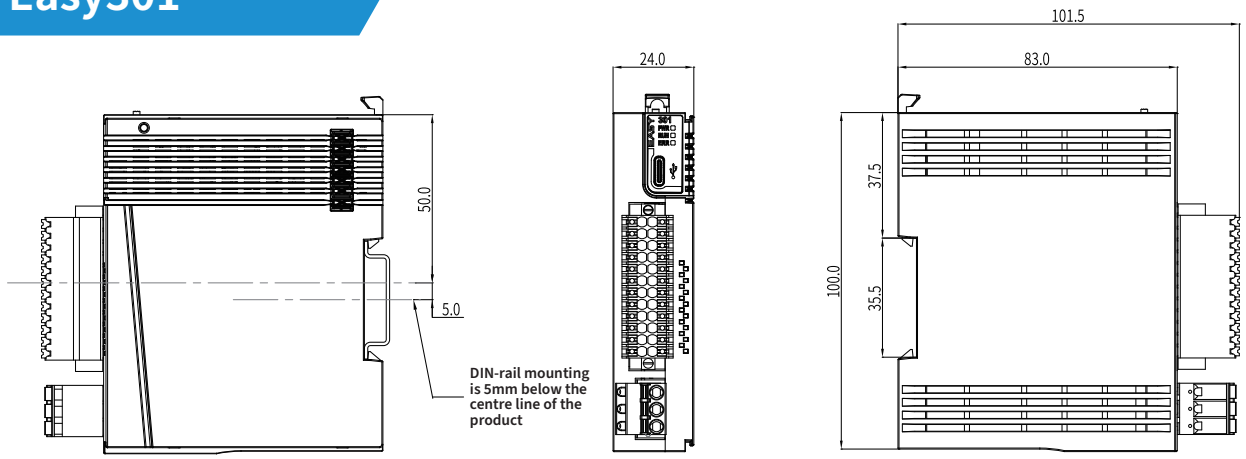
Please note: the colour codes specify the module type



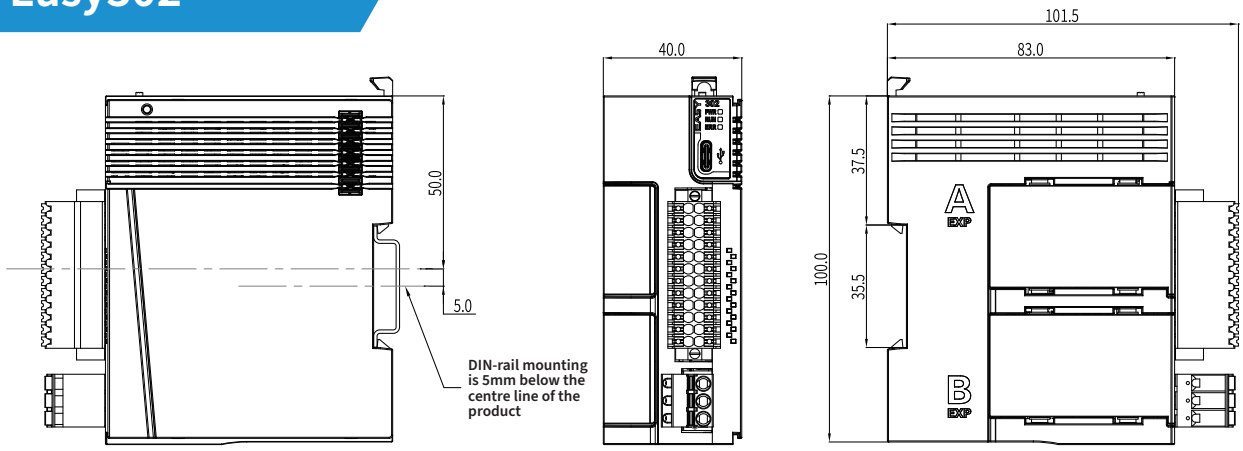
Type of module	Model	Product code	Description
Bus coupler	GL20-RTU-ECT	1440286	EtherCAT slave bus coupler. Up to 16 expansion modules can be added
	GL20-RTU-PN	1440289	PROFINET slave bus coupler. Up to 16 expansion modules can be added
Digital inputs	GL20-1600END	1440291	16 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms
	GL20-0800END	1440381	8 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms
	GL20-3200END-M	1440378	32 x source (PNP)/sink (NPN) digital inputs module. Input filter from 0.25 ms to 32 ms
Digital outputs	GL20-0008ETP	1440380	8 x source (PNP) transistor outputs module. Response time 100 µs
	GL20-0008ETN	1440379	8 x sink (NPN) transistor outputs module. Response time 100 µs
	GL20-0016ETP	1440292	16 x source (PNP) transistor outputs module. Response time 100 µs
	GL20-0016ETN	1440293	16 x sink (NPN) transistor outputs module. Response time 100 µs
	GL20-0032ETN-M	1440377	32 x sink (NPN) transistor outputs module. Response time 100 µs
Relay outputs	GL20-0008ER	1440334	8 x relay outputs module. Response time 15 ms
Digital I/Os	GL20-0808ETN	1440339	8 x source (PNP)/sink (NPN) digital inputs and 8 x sink (NPN) transistor outputs module. Response time 100 µs. Input filter from 0.25 ms to 32 ms
	GL20-3232ETN-M	1440290	32 x source (PNP)/sink (NPN) digital inputs and 32 x sink (NPN) transistor outputs module. Response time 100 µs. Input filter from 0.25 ms to 32 ms
Analog inputs	GL20-4AD	1440288	4 x analog inputs module (resolution 16 bits, sampling time 250 µs)
Analog outputs	GL20-4DA	1440287	4 x analog outputs module (resolution 16 bits, sampling time 250 µs)
Temperature detection	GL20-4PT	1440337	4 x channel thermal resistance inputs temperature detection module (Pt100, Pt500, Pt1000, Cu100, KTY84, NTC5K, NTC10K)
	GL20-4TC	1440338	4 x channel thermocouple inputs temperature detection module (thermocouple type: B,E,N,J,K,R,S,T)
Accessories	XA3210A-40-L0.5M-01	15310167	I/O extension cable - 0.5 m length with 2 FCN connectors (required for GL20-3200END/ GL20-0032ETN-M/GL20-3232ETN)
	XA3210A-40-L2M-01	15310166	I/O extension cable - 2 m length with 2 FCN connectors (required for GL20-3200END/ GL20-0032ETN-M/GL20-3232ETN)
	T024-K	15020452	40PIN MIL screw terminal block (Required for GL20-3200END/GL20-0032ETN-M/GL20-3232ETN)

Dimensions

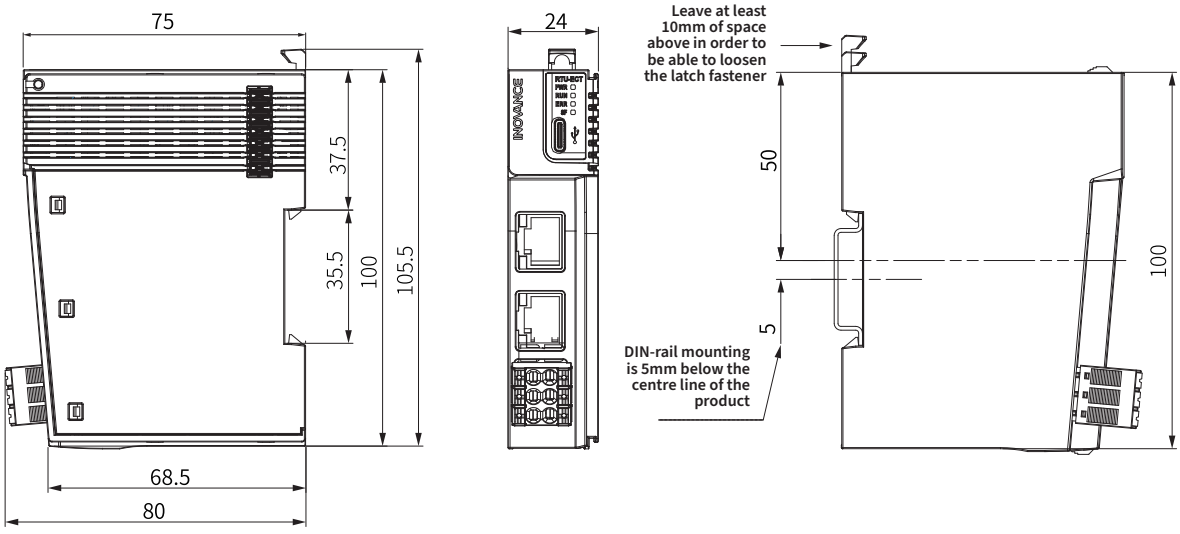
Easy301



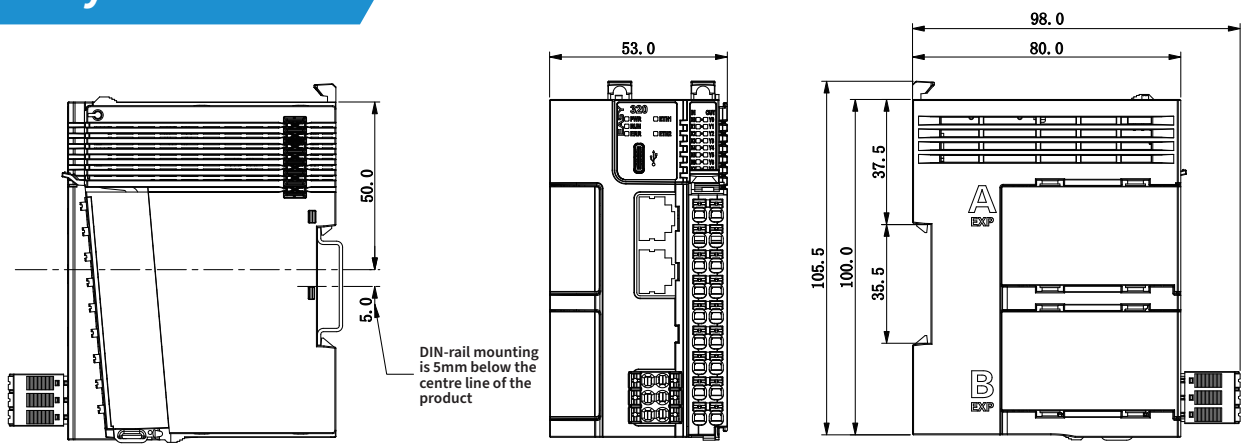
Easy302



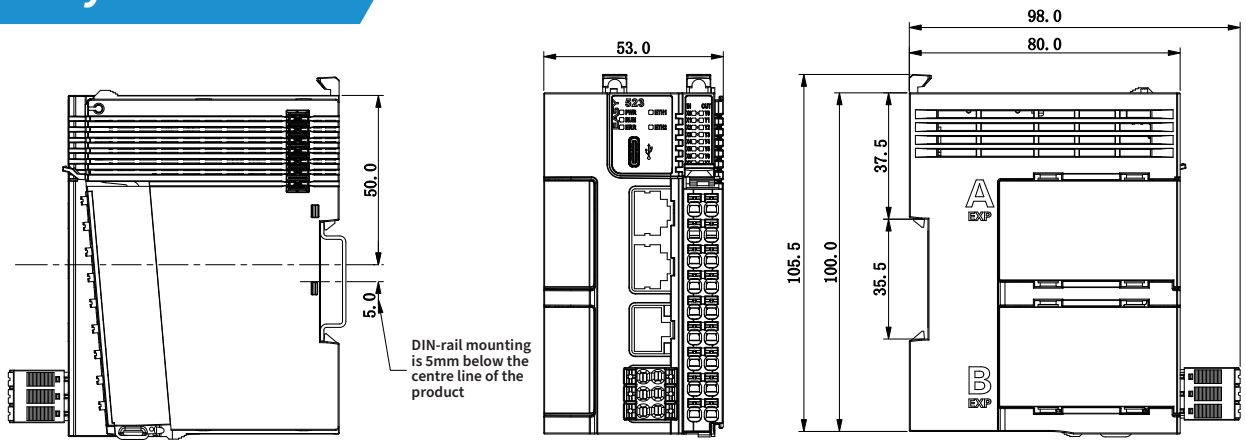
GL20-RTU-ECT



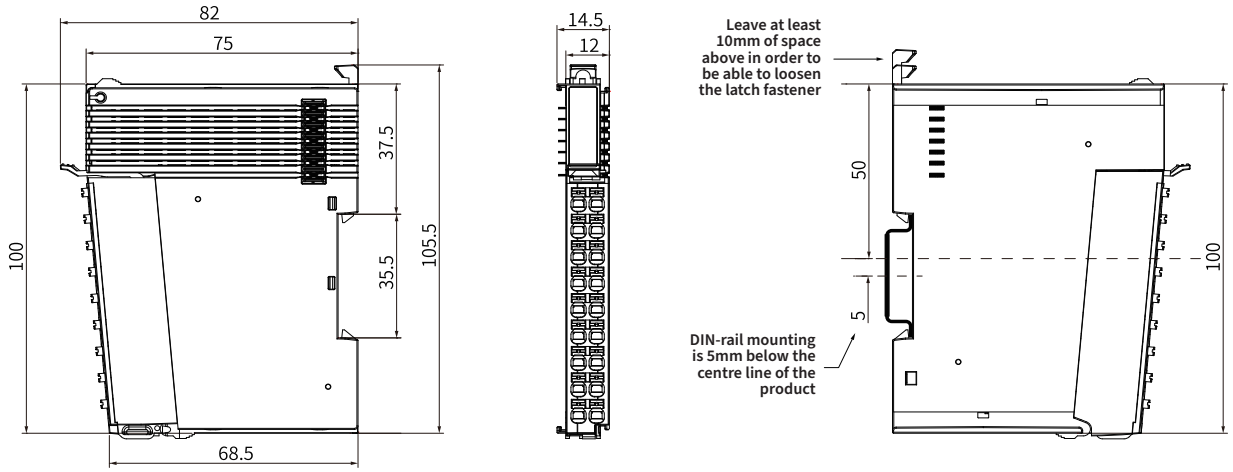
Easy320



Easy502 & 523



GL20-1600END, GL20-0800END, GL20-0008ETP, GL20-0016ETP, GL20-0016ETN, GL20-0808ETN, GL20-4AD, GL20-4DA, GL20-4PT, GL20-4TC



Please note: GL20-008ER, GL20-3200END, GL20-0032ETN-M, GL20-3232ETN are a larger size. Details are available in the separate GL20 brochure.

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2. Automation & Control Solutions

2.2 Brochures / Catalogues:

2.2.2 H5U PLC

INOVANCE

H5U Series

High performance, compact, EtherCAT-enabled PLC

- Compact footprint
- PLCopen-compliant axis control
- Simulation mode for offline debugging
- Real-time fieldbus

EtherCAT®

c UL us LISTED E467465 IND.CONT.EQ

CE

H5U: high performance PLC

Programming

- Supports function block and function for encapsulation, code reusability, and scalability
- Efficient and easy-to-use ladder diagram programming, supporting graphic block instructions
- User-defined variable programming with intuitive programming input assistant

Motion control

- EtherCAT: 32-axis PTP motion control
- PLCopen-compliant axis control
- Local pulse and EtherCAT axis share the same motion control instructions
- Axis group for lineal and circular interpolation
- CAM tables functionality
- 4 x high speed pulse output channels, to control stepper motors
- Able to control servo drive via CANopen

Communications

- Supports 72 EtherCAT slaves
- 1 CAN interface: CANopen and CANlink master/slave
- 1 RS485 interface: Modbus RTU master/slave
- 1 Ethernet connection supports Modbus TCP and socket programming instructions

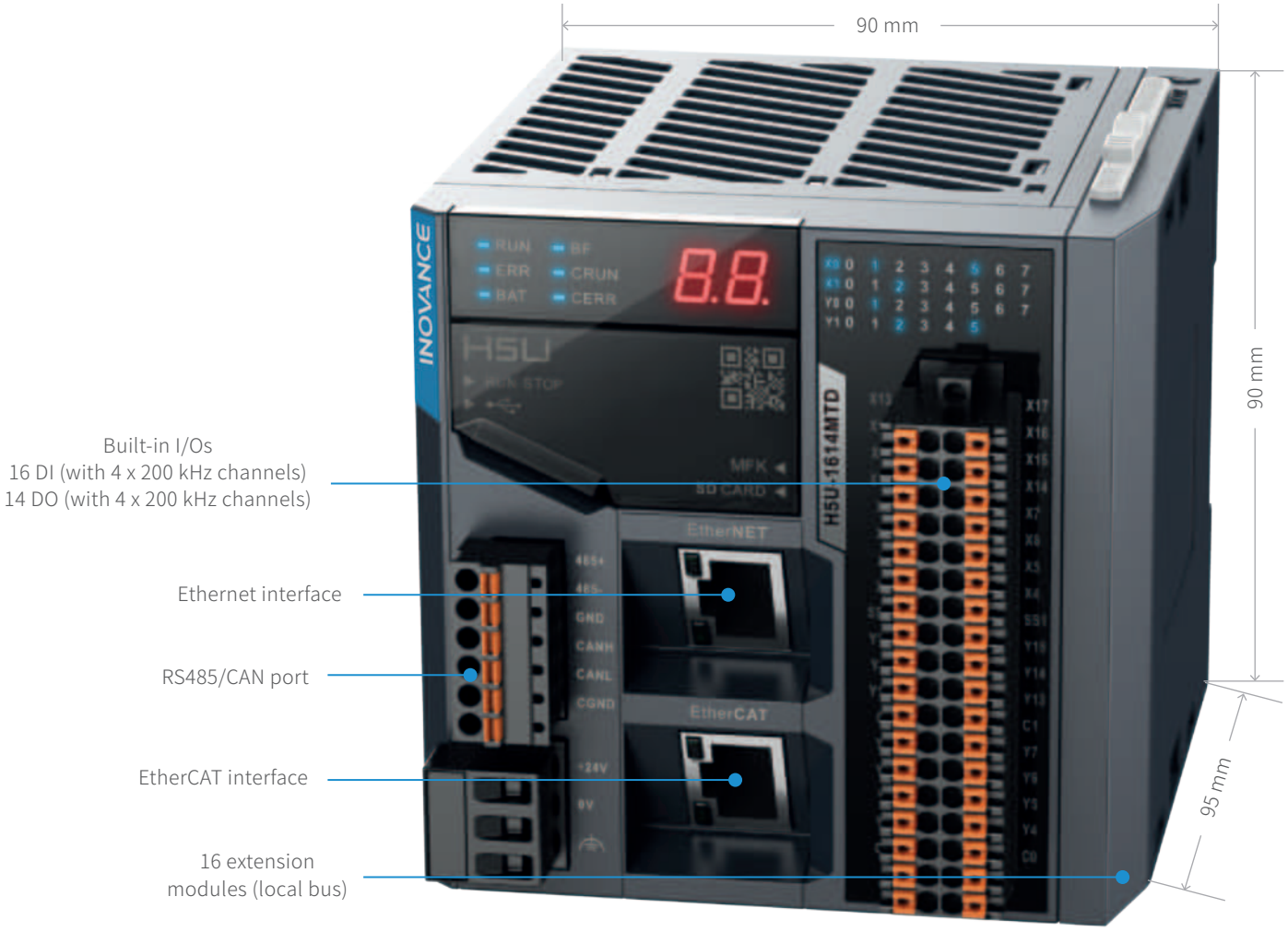
I/O configuration

- Main unit with 16 inputs and 14 outputs, including high-speed I/Os
- Supports up to 16 GL10 (AM600 series) local expansion modules
- Remote GR10 I/O modules can be connected as EtherCAT slaves

  Please note: refer to AM600 catalogue for more detail about our remote I/O modules

Commissioning

- Simulation mode
  - PLC programs
  - Axis control
  - Local I/O
  - Serial and Ethernet comms
- High-resolution trace tool
- Program upload/download and firmware upgrade (only available with SD card)
- Axis interface for easy test and monitoring

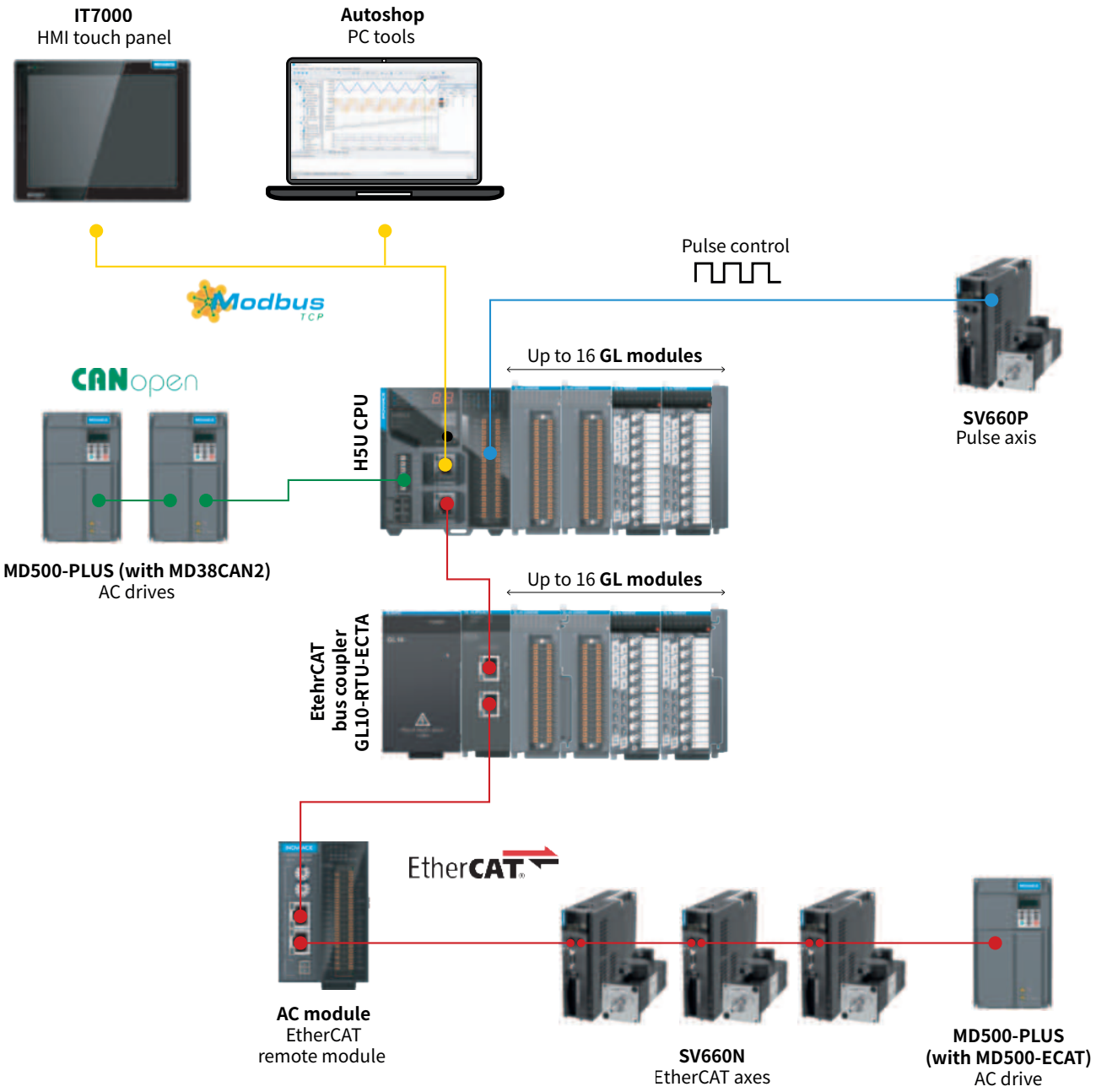


This image is illustrated in its actual size: W 90 mm x H 90 mm x D 95 mm

Model	H5U-1614MTD
Axis capacity	A total of 32 synchronised axes is possible. This can be a max. of 32 EtherCAT axes[1], or a combination that includes a max. of four pulse control axes
Communication specifications	EtherCAT: max. 72 EtherCAT slaves[2] (including synchronised axes)
	Ethernet: Modbus TCP, socket programming
	CAN: supports CANlink and CANopen (only supports CANopen for axis control)
	RS485: Modbus RTU and free communication protocol
Program capacity	200 K-step user program
Data capacity	2 MB user-defined variables, of which 256 KB supports power failure retention
	Approx. 150 KB soft elements, of which 145 KB supports power failure retention
Programming language	LD, SFC, supporting function block/ function (LD)
High-speed I/Os	4 x 200 kHz high-speed inputs (2 encoder counting)
	8 x 200 kHz high-speed outputs (4-axes pulse output)
General I/Os	16 sink (NPN)/ source (PNP) inputs and 14 sink (NPN) outputs (including high-speed I/Os)
Module expansion	16 local modules, remote modules can be connected as EtherCAT slaves
Power input	+24 VDC
Other interfaces	USB SD card
Dimensions	L x W x H = 83 mm x 95 mm x 90 mm
Ordering code	01440087

[1]Synchronised axes
[2]EtherCAT slaves include I/Os and synchronised and non-synchronised axes

H5U - application topology



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2. Automation & Control Solutions

2.2 Brochures / Catalogues:

2.2.3 HMI

INOVANCE

Advancing industrial technology,
for a better world

IT7000 Series HMI

Selection Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code PS00002787B01

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Disclaimer of Liability

Due to continuous updates and improvements of products and technologies, the content of this documentation may not fully match the actual products. In the event of any discrepancies, the actual products shall prevail.

The contents are subject to change without notice due to product upgrade.

Waste Disposal

The storage, use, and disposal of this product (including optional accessories) must comply with local laws and regulations.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel can identify the risks of the product/system and prevent possible dangers.

Proper Use of the Product

Proper transportation, storage, assembly, installation, commissioning, operation, and maintenance are required to ensure the safe operation of the product without any problems. The required ambient conditions must be met. All operations must follow the guidelines provided in this documentation.

Preface

Introduction

The IT7000 series HMI adopts high-performance processor for high-speed data processing and response. With an Android style Linux system, the product provides user-friendly interactive experience. It features: Custom styles, VNC remote desktop, vector format icons, and scripting; Connection to a PC through USB or Ethernet; Automatic and efficient PLC communication with Modbus protocol; Firmware, screen program and recipe data update through a USB drive. To facilitate HMI program and system commissioning, this product also supports offline and online programming simulation.

This guide describes the product model selection, including model, dimensions, specifications, and accessories.

Note

- The drawings in the user guide are shown for illustration only and may be different from the product. Actual products may vary.
- The user guide is subject to change due to product upgrade, specification modification as well as efforts to improve the accuracy and convenience of the guide.

More data

Data Name	Code	Description
IT7150E HMI User Guide	19010960	Introduces the technical specifications, installation dimensions, installation method, and commissioning of IT7000 series 15-inch products.
IT7043 HMI User Guide	PS00003449	Introduces the technical specifications, installation dimensions, installation method, and commissioning of IT7000 series 4.3-inch products.
IT7100 HMI User Guide	19011116	Introduces the technical specifications, installation dimensions, installation method, and commissioning of IT7000 series 10.1-inch products.
IT7070 HMI User Guide	19011117	Introduces the technical specifications, installation dimensions, installation method, and commissioning of IT7000 series 7-inch products.
IT7000 Series HMI Application Cases	PS00003206	Introduces the application cases of InoTouchPad, including project management, controls, alarm, communication, tags, reporting, script functions, and recipes to guide users to customize project configuration.
IT7000 Series HMI Quick Start	PS00002905	Introduces the quick commissioning, and basic operations of the product.
InoTouchPad User Guide	PS00002706	Introduces the installation, basic operations, project configuration, and function applications of InoTouchPad.

Data Name	Code	Description
IT7000 Series HMI User Guide	PS00005849	Introduces the specifications, installation dimensions, and terminal assignment of the IT7000 series products.
IT7000 Series HMI Selection Guide (This guide)	PS00002787	Introduces the technical specifications and dimensions of the IT7000 series products, as well as the specifications and selection of accessories (including installation accessories, cables, and so on).

Revision history

Date	Version	Revision
September 2025	B01	Added *"4.3 Dongle" on page 20*.
March 2025	B00	• Added descriptions of the IT7150P model. • Updated *"2.1 Naming Rules" on page 9*. • Updated *"3.2 Hardware Interface" on page 12*. • *"4.2 Power Supply Terminal and Snap-fit Joint" on page 19*Added descriptions of accessories in
October 2024	A02	• Updated *"3.2 Hardware Interface" on page 12*. • Updated the address of Suzhou Inovance Technology Co., Ltd.
December 2023	A01	Added descriptions of the IT7043T-F01 and IT7043E-F01 models.
July 2021	A00	Initial release.

Access to the guide

This guide is not delivered with the product. You can obtain the PDF version in the following ways

- Do keyword search under Service and Support at *www.inovance.com*.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install My Inovance app, where you can search for and download user guides.

Warranty disclaimer

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. You will be charged for any repair work after the warranty period expires.

Within the warranty period, maintenance fee will be charged for the following damage:

- Damage caused by operations not following the instructions in the user guide
- Damage caused by fire, flood, or unusual voltage
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product

- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see Product Warranty Card.

1 Safety Precautions

1.1 Fundamental Safety Instructions

Safety disclaimer

1. Read and follow the safety instructions when installing, operating, and maintaining the equipment.
2. To ensure your safety and prevent damage to the equipment, follow the marks on the equipment and all the safety instructions in this guide.
3. "CAUTION", "WARNING", and "DANGER" items in this guide do not indicate all safety precautions that need to be followed; instead, they just supplement the safety precautions.
4. Use this equipment according to the designated environment requirements; otherwise, a fault may occur. Malfunction or damage caused by improper use is not covered by warranty.
5. Inovance shall take no responsibility for any personal injury or property damage caused by improper use.

Safety levels and definition

: "DANGER" indicates that failure to comply with the notice can result in severe personal injury or even death.

: "WARNING" indicates that failure to comply with the notice may result in severe personal injury or even death.

: "CAUTION" indicates that failure to comply with the notice may result in minor or moderate personal injury or equipment damage. Keep this user guide properly for future use and deliver it to the end user.

Control system design
 • Set interlock circuits and other circuits (such as emergency stop, conventional protection, forward and reverse rotation) outside the product. Set devices for preventing equipment damage (such as up, down and reciprocating movement limit) outside the product. • Set a fault protection circuit outside the product to prevent unintended mechanical movements, such as those arising from faults in undetectable I/O control areas. • Design a user program to inform users of faults concerning the display, control, communication, power supply and so on, ensuring safety of the user system. • Avoid malfunction, personal injury, and equipment damage caused by communication faults between the product and the master controller. • Do not bring live parts into contact with the metal enclosure of the product.
 • Do not set switches that may result in operator injury or equipment damage on the touch screen. Use independent switches for critical operations. Failure to comply may result in accidents caused by wrong outputs or faults. • Do not set switches for equipment safety operations on the touch screen, such as the emergency stop switch. Use independent hardware switches for safety operations. Failure to comply may result in severe personal injury or equipment damage. • Do not use this product for critical alarms that may result in severe personal injury, equipment damage or system shutdowns. Use independent hardware and/or mechanical interlocks for critical alarms and the related control/triggering devices.

Installation
 • Install the product properly in indoor environments complying with the related specifications. • Install the product in environments free from strong magnetic field, direct sunlight, high temperature, inflammable gases, vapors, and dust. Failure to comply may result in explosion. • Use the product in environments without drastic temperature changes or high humidity. Failure to comply may result in water condensation inside the product, leading to equipment damage. • Securely connect all cables to the product. Loose connection may result in wrong I/O signals.
 • Install the product in environments with recommended storage temperature. Failure to comply may result in display faults of the LCD screen.

Wiring

DANGER

- Before wiring, cut off all power supplies. Failure to comply may result in electric shock or damage to the circuit.
- Connect the DC power supply to the dedicated terminals specified in this guide.
- Prevent metal chippings or cable terminals from falling into the HMI during screw hole machining and wiring. Failure to comply may result in faults, fire, and component damage.
- After wiring, perform a meticulous inspection to ensure the operating voltage is correctly connected to the corresponding terminals. Failure to comply may result in fire or accident.

CAUTION

- To avoid electric shock, cut off the power supply before connecting the product to the power supply.
- The input power supply of this product must be 24 VDC. Power supplies outside ±20% of 24 VDC can cause severe damage to the product. Therefore, check whether the DC power supply provided by the switching-mode power supply is stable at a regular interval.

Operation and maintenance

CAUTION

- During use, touch the HMI panel with hands only. Failure to comply may result in panel damage, which is not covered by warranty.
- Retired lithium batteries, LCD screens, capacitors and other objects that may contain ingredients hazardous to health and environment must be disposed of as industrial waste.

Safety recommendations

- In the position where the operator directly touches the machinery part, for example, where a machinery tool is loaded/unloaded, or where a machine runs automatically, the on-site manual operating devices and any other alternative means must be carefully arranged and designed so that they are independent of the PLC and can start or terminate the automatic running of the system.
- If modification on the program is needed during system operation, use the lock function or other protective measures. Ensure that only authorized personnel can make the necessary modifications.

Battery use

WARNING

- The battery model must be correct.
- Do not throw batteries into fire or hot ovens. Do not crush or cut batteries.
- Do not expose batteries to extremely high temperatures.
- Do not swallow batteries. Failure to comply can result in chemical burns.
- This product contains button batteries. If a button battery is swallowed by accident, severe internal burns may occur within two hours, which may result in death.

CAUTION

- Keep new and used batteries away from children.
- If the battery compartment cannot be shut tight, stop using the product and keep it away from children.
- If you suspect that a battery may have been swallowed or entered the body, seek medical help immediately.

Disposal
CAUTION . Treat the scrapped product as industrial waste. Dispose of the battery according to local laws and regulations.

1.2 Industrial Information Security

The product provides interfaces to connect to the network and transmit data through the network interfaces. In order to protect factories, systems, machines and networks from network attacks and ensure their safe operation, implement appropriate industrial information security protection mechanisms.

The customer is responsible for providing and continuously ensuring a secure connection between the product and the network to prevent unauthorized access to its factories, systems, machines and networks. The system can only be connected to the corporate network or the Internet if it is connected securely and appropriate security measures are in place (for example, using anti-virus software and a firewall).

Inovance continuously develops and improves products and solutions to improve safety. It is strongly recommended that you update the product promptly and always use the latest version.

Caution

Tampering with software (such as viruses, Trojans, and Worms) can lead to unsafe drive state, which can put the device in an unsafe operation state. This may result in death, serious injury, and property damage. Observe the following strictly.

- Always use the latest software version. If the product version is no longer supported or the latest version of the program is not applied, customers are at increased risk of cyber-attacks.
- Take proper protection measures (including but not limited to deploying anti-virus software, firewall, WAF, IPS/IDS, situational awareness system, ID verification, and data encryption) to prevent files in the mobile storage device from being damaged by malware and protect products, networks, systems, and interfaces from unauthorized access, disturbance, intrusion, data disclosure, or information theft.
- Check all safety-related interfaces and settings after commissioning.

Table of Contents

2 Model

2.1 Naming Rules

The naming rules of the IT7000 series HMI are shown below.

IT ① 7 ② 070 ③ T ④ - F01 ⑤

①	**Product Type** IT: General-purpose Inovance HMI	②	**Product Series** 7: 7000 series	③	**Screen Dimensions** 043: 4.3" 070: 7" 100: 10.1" 150: 15"
④	**Performance Type** S: Standard performance T: Template E: Enhanced performance P: Professional performance	⑤	**Function Configuration** Null: None F01: Conformal coating protection model F03: High protection dedicated model	-	

2.2 Product Model

Table 2–1 IT7000 series HMI models

Model	IT7043T-F01 IT7043E-F01	IT7070S IT7070S-F03	IT7070T IT7070E IT7070E-F03	IT7100S IT7100E	IT7150E IT7150P
Dimensions	4.3"	7"	7"	10.1"	15"
Appearance					
Performance and function	T: Template performance E: Enhanced performance F01: Conformal coating protection model	S: Standard performance F03: High protection dedicated model	T: Template performance E: Enhanced performance F03: High protection dedicated model	S: Standard performance E: Enhanced performance	E: Enhanced performance P: Professional performance

2.3 Appearance

The appearances of IT7000 series products are shown below.

Figure 2-1 IT7043T-F01/IT7043E-F01

Figure 2-2 IT7070S/IT7070S-F03 series PLC

Figure 2-3 IT7070T/IT7070E/IT7070E-F03/IT7100S/IT7100E

Figure 2-4 IT7150E/IT7150P

3 Product Specifications

3.1 Screen and Processor

Model	IT7043T-F01	IT7043E-F01	IT7070S*1	IT7070T	IT7070E*2	IT7100S	IT7100E	IT7150E	IT7150P
Screen dimensions	4.3"		7"			10.1"		15"	
Resolution	480*272		800*480			1024*600		1024*768	
Brightness (cd/m²)	400		250			250		350	
Color depth	24-bit true color								
Click lifetime	1,000,000 clicks								
Backlight lifetime (h)	30000		35000			30000		50000	
Processor	Single-core Cortex A8 600 MHz					Single-core Cortex A8 1 GHz			Quad-core Cortex A7 1.2 GHz
Memory	128 M DDR3						256 M DDR3		512 M DDR3
Flash	128 M						256 M		512 M
Dongle	Supported								
Model code	01450127	01450126	01450038	01450030	01450039	01450037	01450036	01450028	01450247

Note

*1: IT7070S-F03: model with high IP rating and same processor configurations as IT7070S, model code: 01450081

*2: IT7070E-F03: model with high IP rating and same processor configurations as IT7070E, model code: 01450079

3.2 Hardware Interface

Interface	IT7043T-F01	IT7043E-F01	IT7070S*1	IT7070T	IT7070E*2	IT7100S	IT7100E	IT7150E	IT7150P
Power supply interface	Input voltage: 24 VDC ±20%; Rated current: 200 mA		Input voltage: 24 VDC±20%; Rated current: 250 mA			Input voltage: 24 VDC ±20%; Rated current: 300 mA		Input voltage: 24 VDC ±20%; Rated current: 800 mA	
USB interface	/		USB 2.0 interface*1						
USB down-load interface	USB type-B interface	/	Mini USB interface*1 (for downloading user programs)						
SD card interface	/				MicroSD inter-face*1 (with a maximum capacity of 64 GB)	/	MicroSD interface*1 (with a maximum capacity of 64 GB)		

Interface	IT7043T-F01	IT7043E-F01	IT7070S*1	IT7070T	IT7070E*2	IT7100S	IT7100E	IT7150E	IT7150P
RS232	COM2 DB9 female connector		/	COM2 DB9 male connector		/	COM2 DB9 male connector		
RS485/ RS422	COM1 DB9 female connector (RS422/RS485) COM3 DB9 female connector (RS485)		COM1 DB9 male connector (RS422/RS485)		COM1 DB9 male connector (RS422/ RS485) COM3 DB9 male connector (RS485)	COM1 DB9 male connector (RS422/ RS485)	COM1 DB9 male connector (RS422/RS485) COM3 DB9 male connector (RS485)		
Ethernet interface	/	RJ45 Ethernet inter-face*1	/		10/100M adaptive RJ45 Ethernet interface*1 (for downloading user programs)				
Model code	01450127	01450126	01450038	01450030	01450039	01450037	01450036	01450028	01450247

Note

*1: IT7070S-F03: model with high IP rating and same external hardware interface as IT7070S, model code: 01450081

*2: IT7070E-F03: model with high IP rating and same external hardware interface as IT7070E, model code: 01450079

3.3 Mechanical Specifications

Model	IT7043T-F01	IT7043E-F01	IT7070S*1	IT7070T	IT7070E*2	IT7100S	IT7100E	IT7150E	IT7150P
Overall dimen-sions (mm)	128×102×35		200×146×35			271×213×36		367.8×294.8×53	
Cut-out dimen-sions (mm)	119×93		193×139			260×202		352×279	
Enclosure color	Metal grey		Front and rear covers: Black	Front and rear cover: Silver		Front and rear cover: Silver		Front and rear cover: Silver	
Hard-ware interface location	Back of the rear cover							Below the rear cover	
Mechani-cal structure	Engineering plastics							Aluminum alloy border	
Model code	01450127	01450126	01450038	01450030	01450039	01450037	01450036	01450028	01450247

Note

*1: IT7070S-F03: model with high IP rating and same mechanical design specifications as IT7070S, model code: 01450081

*2: IT7070E-F03: model with high IP rating and same mechanical design specifications as IT7070E, model code: 01450079

3.4 Environmental Specifications

Model	IT7043T-F01	IT7043E-F01	IT7070S*1	IT7070T	IT7070E*2	IT7100S	IT7100E	IT7150E	IT7150P
Panel IP rating	Front panel: IP65; Rear cover: IP20								
Operating temperature	0°C to +50°C			-10°C to +55°C				0°C to +50°C	-10°C to +55°C
Operating humidity	10% RH to 90% RH, without condensation								
Storage temperature	-20°C to +70°C								
Ultraviolet (UV) protection	Avoid prolonged use in environments with strong UV radiation, such as outdoors under direct sunlight.								
Vibration resistance	Testing conditions: sine vibration; 3.5 mm displacement from 5 Hz to 8.4 Hz; 1 g acceleration from 8.4 Hz to 150 Hz; 10 times in each of X, Y and Z directions								
Shock resistance	Testing conditions: impact shock; 15 g gravitational acceleration; 11 ms duration; 3 times in each of X, Y, and Z directions								
Electromagnetic compatibility	Compliant with EN 61131-2:2007 standards and CE certification standards								
Model code	01450127	01450126	01450038	01450030	01450039	01450037	01450036	01450028	01450247

Note

*1: IT7070S-F03: model with high IP rating and resistance against greasy dirt and UV, model code: 01450081

*2: IT7070E-F03: model with high IP rating and resistance against greasy dirt and UV, model code: 01450079

3.5 Product Dimensions

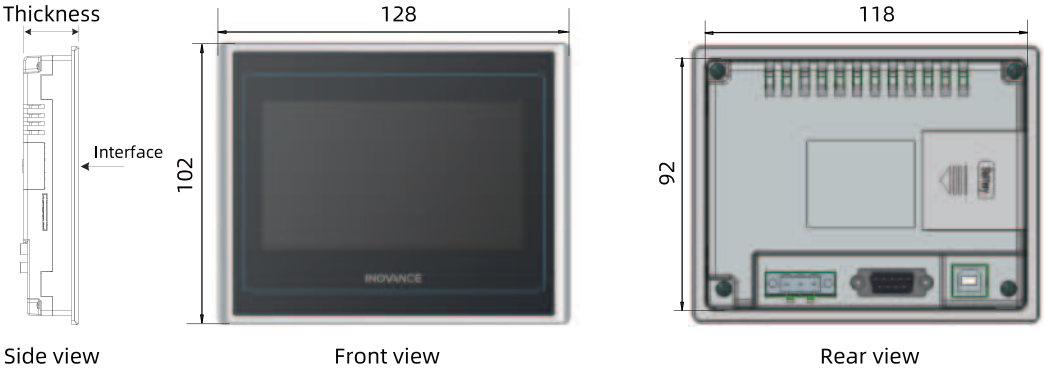


Figure 3-1 4.3-inch product dimensions

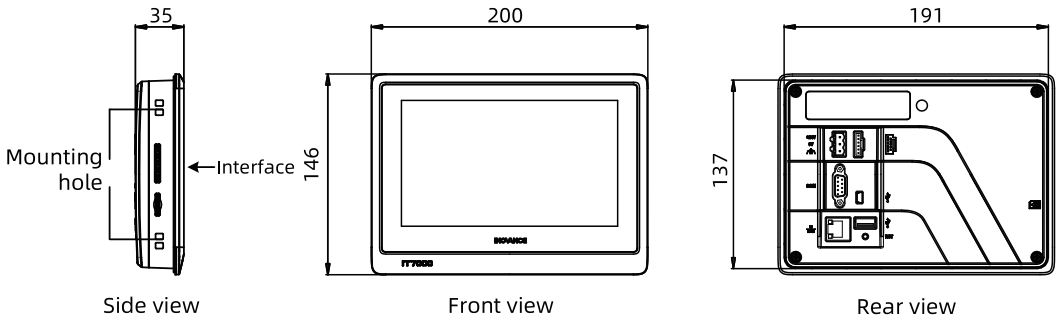


Figure 3-2 7-inch product dimensions

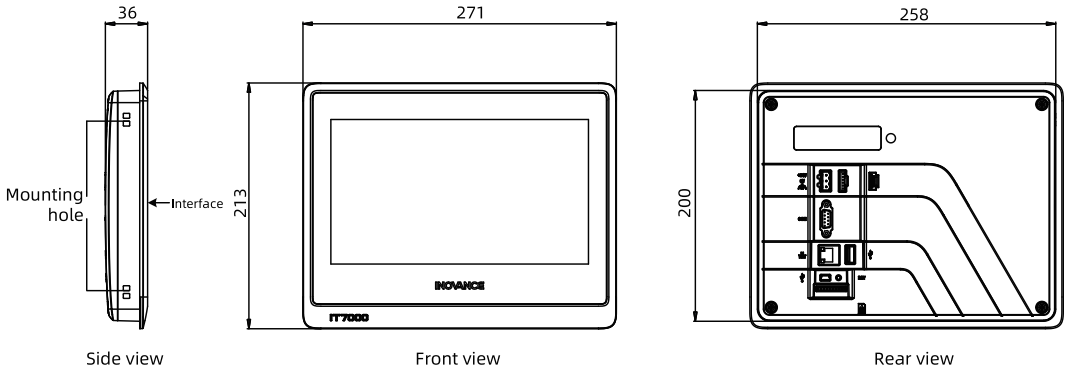


Figure 3-3 10.1-inch product dimensions

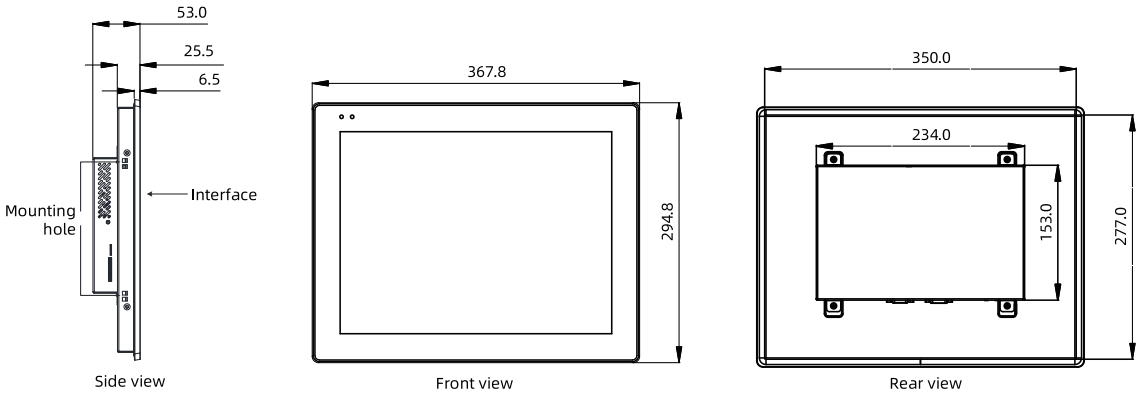


Figure 3-4 15-inch product dimensions

Model	Display Dimension (inch)	Outline Dimension (W x H x D) (mm)	Recessed Installation Dimension (W x H) (mm)	Cut-out Dimension (W + 2) (mm)	Cut-out Dimension (H + 2) (mm)
IT7043T-F01	4.3	128×102×35	118 x 92	119 Cut-out dimension: W + 1	93 Cut-out dimension: H + 1
IT7043E-F01					
IT7070S	7	200×146×35	191×137	193	139
IT7070T					
IT7070E					
IT7100E	10.1	271×213×36	258x200	260	202
IT7100S					
IT7150E	15	367.8×294.8×53	350×277	352	279
IT7150P					

4 Accessory

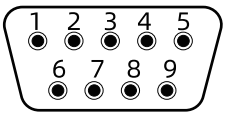
4.1 Program Download and Communication Cable

Cable Code	Cable Model	Applicable HMI	Cable Interface	Applicable PLC	Precaution
15041140	IT5-H2U-CAB	IT6000: Models that support RS232 communication interfaces IT7000: IT7043TF-01/IT7043EF-01/ IT7150E/IT7150P	Purpose: Straight-through communication cable HMI end - DB9 male head (RS422); PLC end - MD8 circular male head (RS422)	1. Inovance H1U/ H2U/H3U - connected to RS422 circular communication interface 2. Mitsubishi FX1N/ 2N/3U/3G - connected to RS422 circular communication interface	This cable is used to connect the COM1 interface (with RS422 pinout) of the IT6000 series HMI to the RS422 communication interface of the Inovance H1U/H2U/ H3U and Mitsubishi FX1N/2N/3U/3G PLC. This cable is incompatible with other models of the IT7000 series HMI, because: 1. The COM1 interface of the IT7000 series HMI is male, which cannot be directly connected to the male head of this cable. 2. The pinout of the COM1 interface of the IT7000 series HMI is different from that of the IT6000.
1504AX53	IT7-H3U-CAB	IT6000: All models IT7000: IT7070S/ IT7070T/IT7070E/ IT7100S/IT7100E	Purpose: Straight-through communication cable HMI end - DB9 female head (RS422); PLC end - MD8 circular male head (RS422).	1. Inovance H1U/ H2U/H3U - connected to RS422 circular communication interface 2. Mitsubishi FX1N/ 2N/3U/3G - connected to RS422 circular communication interface	It is recommended to use this communication cable.

Cable Code	Cable Model	Applicable HMI	Cable Interface	Applicable PLC	Precaution
15042148	H2U-232-CAB	IT7000: IT7070T/ IT7070E/IT7100E/ IT7150E/IT7150P	Purpose: RS232 to RS422 communication cable HMI end - DB9 female head (RS232); PLC end - MD8 circular male head (RS422)	1. Inovance H1U/ H2U/H3U - connected to RS422 circular communication interface 2. Mitsubishi FX1N/ 2N/3U/3G - connected to RS422 circular communication interface	This cable is not recommended. You can use a customized RS232 to RS422 cable with pins assigned properly according to this guide. 1. If you are currently using this cable, it is recommended to switch to IT7-H3U-CAB and change the communication scheme of the HMI. 2. This cable connects to the COM2 interface (with RS232 pinout) of the IT7000 series HMI. IT7-H3U-CAB connects to the COM1 interface (with RS422 pinout) of the IT7000 series HMI. Note this distinction when changing the cable.
15310234	IT7-Easy-CAB	IT7000: IT7070T/ IT7070S/IT7070E/ IT7100S/IT7100E/ IT7150E/IT7150P	Purpose: Straight-through communication cable HMI end - DB9 female head (RS232/RS485); PLC end - communication interface (RS232/RS485)	Inovance Easy300/ Easy500 - connected to RS232/RS485 communication interface	It is recommended to use this communication cable.
15041200	H2U-USB-CAB	IT7000: All models	Purpose: USB download cable (Mini USB) PC end - USB 2.0/3.0 interface; HMI end - Mini USB interface	/	This cable is used to upload/download user programs for the IT7000 series HMI on a PC. The Mini USB interface of this cable is incompatible with the USB type B interface of the IT6000 series HMI.

DB9 male connector

The IT7000 series HMI provides one DB9 communication interface (DB9 male connector) and one to three built-in serial communication interface(s) for connecting the PLC, AC drive, printer, or other intelligent devices. The product is built-in with multiple communication protocols and usually acts as the communication master to access the data in external devices. The following figure shows the pinout and silk printing of the DB9 male connector.



COM1 [RS485 2/4W]
COM2 [RS232]
COM3 [RS485]
DB9 male connector
(ejector-type signal slot)

The DB9 male connector is built-in with three serial communication interfaces – COM1, COM2, and COM3. The pins are described in the following table.

No.	Signal			
	COM1[RS485] 2 Wires	COM1[RS485] 4 Wires	COM2[RS232]	COM3[RS485]
1	–	–	–	RS485-
2	–	–	RS232 RXD (for data reception)	–
3	–	–	RS232 TXD (for data transmission)	–
4	–	TX+ (transmit positive)	–	–
5	GND (signal ground)			
6	–	–	–	RS485+
7	RS485-	RX- (receive negative)	–	–
8	RS485+	RX+ (receive positive)	–	–
9	–	TX- (transmit negative)	–	–

Note

COM1 [RS485] port with four wires is equivalent to COM1 [RS422] port.

4.2 Power Supply Terminal and Snap-fit Joint

Inovance provides a full set of accessories for the power interface and installation of the product. The specific types and quantities are shown in the table below.

Type	Number
Power supply terminal	1
Metal snap-fit joint (with screw)	4 or 8
Packing bag	1

Note

The accessories of the 4.3-inch, 7-inch, and 10.1-inch IT series screens include four metal snap-fit joints with screws (ordering number: 98050285).

The accessories of the 15-inch IT series screen include eight metal snap-fit joints with screws (ordering number: 80240085).

4.3 Dongle

The InoTouchPad software supports deployment and operation on PC. It provides a 30-minute evaluation mode by default and will exit automatically upon timeout. 7x24 non-stop operation can be unlocked via:

- **Hardware dongle**: Insert the authorized USB device to remove the restriction.
- **Software authorization**: Activate a digital certificate for permanent use.

Note

Users need to purchase the hardware dongle themselves, which will occupy one USB interface of the PC. Therefore, software authorization is recommended for unlocking.

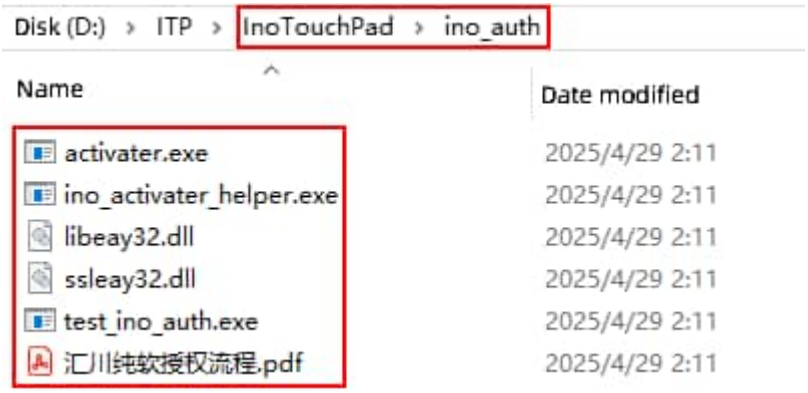
Hardware dongle

1. Purchase the hardware dongle (product model: SJK1149-E-61010; material code: 72030015). The product appearance is shown below.

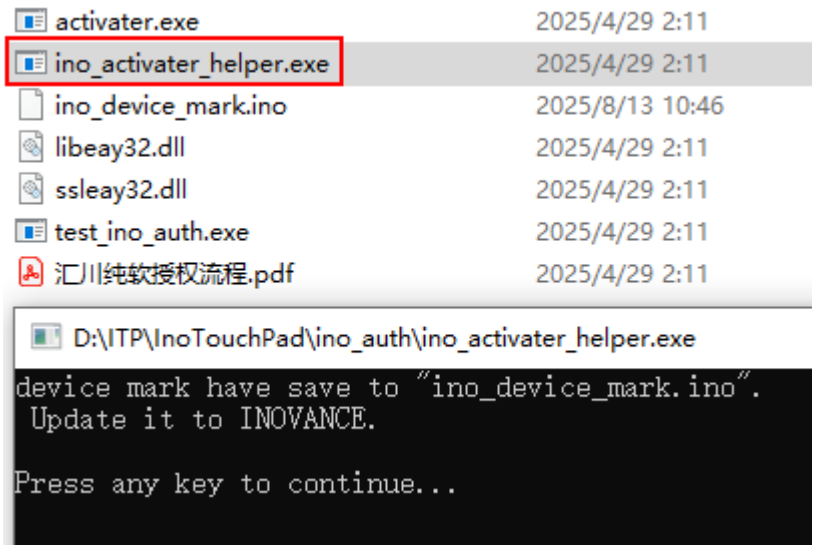
2. Insert the hardware dongle into the USB interface of the PC.

Software authorization

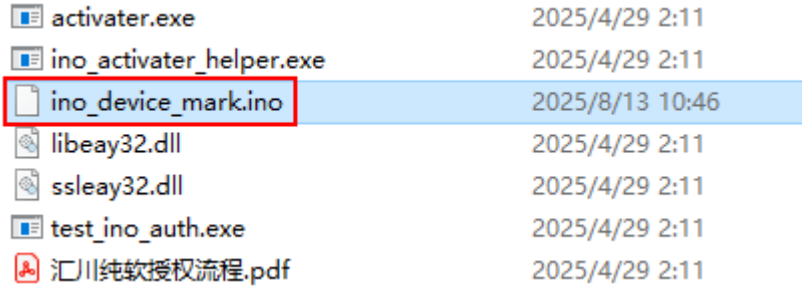
After installing the InoTouchPad software, you can obtain the software authorization files and user guide in the "ino_auth" folder, as shown below.



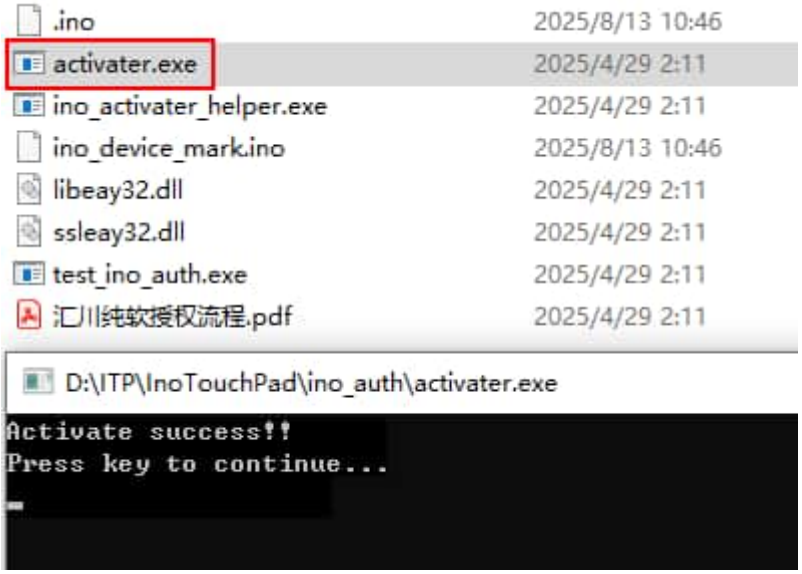
1. Run the "ino_activate_helper.exe" file to generate the "ino_device_mark.ino" file in the current directory.



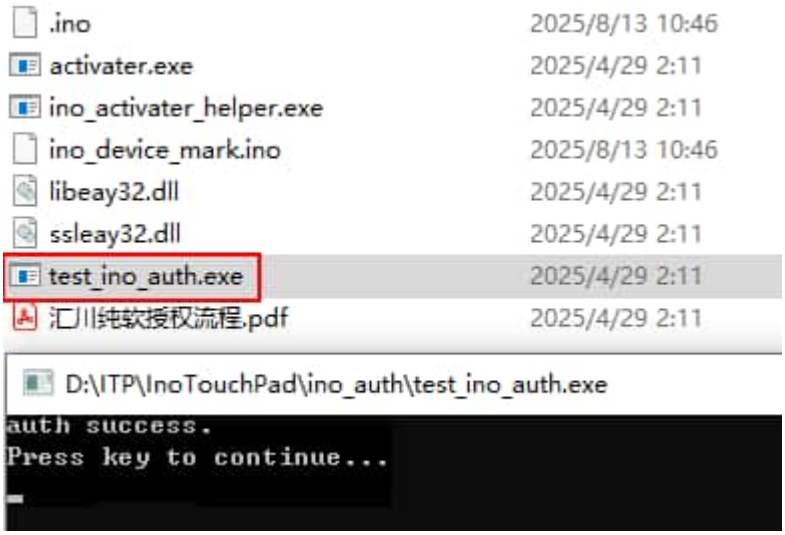
2. Send the "ino_device_mark.ino" file to Inovance technicians, who will upload it to the encrypted authorization server and provide a "license" file.



3. Run the "activater.exe" file and specify the name of the "license" file downloaded from the server. After completing the activation, an ".ino" authorization file will be generated.



4. Run the "test_ino_auth.exe" file to verify the validity of the ".ino "authorization file in the current directory.



5. Once verified, copy the ".ino" file to the same directory as "HMIRuntime.exe" (default is the root installation directory of InoTouchPad).

Note

- Authorization is applicable to the PC rather than the InoTouchPad software. A PC only needs to be universally compatible with different versions of InoTouchPad.
- When HMIRuntime is running, restart it after unlocking with a hardware dongle or software authorization.

Service and Support

Should you encounter a safety accident during the use or operation of the product, or face challenges in operating and maintaining the equipment, which remain unresolved after the relevant documentation is consulted, we provide multiple channels to ensure prompt resolution:

- Channel #1: Contact service@inovance.com.
- Channel #2: Visit https://www.inovance.com/global to access document downloads, after-sales support, spare parts ordering, repair applications, and authenticity verification services.
- Channel #3: Download My Inovance app (https://zshc-eu.inovance.com/download-pc/) where you can access products info and documentation, and query product parameters.

We are committed to providing you with quick and professional technical support, and we look forward to your satisfaction and trust.

PS00002787B01

Shenzhen Inovance Technology Co., Ltd.

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Suzhou City, Jiangsu Province, P.R. China

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2. Automation & Control Solutions

2.2 Brochures / Catalogues:

2.2.4 SCADA

SOLISCADA Complete Features & Licensing Guide

Software Overview

SOLISCADA is a free SCADA software designed for industrial data monitoring and control. It supports up to 50,000 tags at zero cost and offers unlimited scalability, revolutionizing industrial automation. Trusted by industries such as municipal services, oil & gas, Water, and manufacturing, SOLISCADA delivers unparalleled efficiency and intelligence for modern industrial operations.

Core Features & Licensing

Feature Module	Free?	Licensing Details
Data Collection (Protocol Drivers)	√	Built-in, Self-service activitation
Real-time Database	√	
Graphics Visualization	√	
Historian	√	
Data Reports	√	
Alarm Management	√	
Recipe Management	√	
User Permissions	√	
Operation Grouping	√	
Redundancy Architecture	√	
Multi-user Configuration	√	
Data Backup & Restoration	√	
Object Modeling	√	
Custom Structures	√	
VBScript	√	
Relational Database Integration	√	
Email Alerts	√	
MQTT Data Forwarding	√	
OPC UA/DA Data Forwarding	√	
Websocket API	√	

Add-On Modules

Feature Module	Free?	Licensing Details
3D Visualization	√	Download 3D Editor from the website; Email us for license activation.
Tag-linked Model Visualization	√	
3D Trajectory Roaming	√	
Multi-model Format Compatibility	√	
Web Access (10 Concurrent Clients)	√	Download Web Server from the website; Email us for license activation.
Data Reports（Web）	√	Download CSReport from the website; Email us for license activation.
Relational Data Reports	√	
Graphic-based Data Visualization	√	
Camera Monitoring & Control	Email soliscada@supcon.com for more details	
Video Recording & Screenshot Features		

License Key Management

- Unlimited license: Users can generate license keys infinitely.
- One license per device: Each host requires a unique license key.

Technical Specifications

Operating System Compatibility
Windows 11 Enterprise Chinese/English 32/64-bit
Windows 10 IOT Enterprise Chinese/English 32/64-bit
Windows Server 2019 Chinese/English 64-bit
Windows Server 2016 Standard Chinese/English 64-bit
Windows Server 2008 R2 Chinese/English 32/64-bit

www.soliscada.com
soliscada@supcon.com

Technical Specifications

Hardware Specifications	
CPU	i5 2.5GHz
Hard Drive	512GB or more
Memory	8GB or more
Network Card	2-3 pieces 10M/100M network cards

Supported Databases
Microsoft® SQL Server
Oracle
MySQL
VX Historian

Supported Browsers
Chrome
Edge
Firefox

Support & Resources

- Free support: Online documentation, video tutorials, discord community, remote technical support etc.
- Paid services: On-site deployment & training. Contact soliscada@supcon.com

GET STARTED TODAY!

3. Drives & Motion Control

3.1 – Offering Overview

3.1.1 – LV VSDs

Inovance's AC drives deliver reliable, high-performance motor control across a wide range of industrial applications.

With scalable power options, advanced control algorithms, and broad connectivity, the portfolio supports everything from compact machinery to demanding continuous-process systems.

Designed for efficiency, diagnostics, and seamless integration, these drives offer consistent engineering performance and simplified commissioning for OEMs and end users alike.

Drive Model	MD290 – General Purpose	MD520 – High Performance Universal	MD630 – Advanced Compact	MD880 – Multi-Drive High Performance
Voltage & Power Range	0.4kW – 630 kW Single and three phase	200–480 V, up to 500 kW	0.4–30 kW; Three Phase	400 V & 690 V, 3.7–5600 kW
Control Method	Asynchronous machine: VF	Asynchronous machine (VF/SVC/FVC) Synchronous machine (PMVVC/SVC/FVC)	V/f, sensorless vector, and feedback vector control for induction motors, PM synchronous motors, and reluctance motors.	High-performance vector control in single-drive and multi-drive topologies for asynchronous and synchronous motors in high-power applications.
Applications	Fans, pumps, textiles, packaging, paper, machine tools	General-purpose industrial use	Compact machinery, high-connectivity systems	Metallurgy, papermaking, ships, drilling rigs, cranes, W&WW
Communications	Modbus-RTU, Profibus-DP, CANlink, CANopen, Profinet, EtherCAT	Standard: None Optional: Modbus-RTU, Modbus-ASCII, Profibus-DP, Profinet, CANopen, CANLink, EtherCAT, Ethernet/IP, Modbus-TCP/IP	PROFINET, EtherCAT, EtherNet/IP, Modbus TCP (plus standard serial protocols for parameter access).	PROFINET, EtherCAT, CANopen, Modbus-RTU (and other high-speed fieldbuses depending on configuration)
Reliability & Features	Simplified commissioning	STO SIL3 PL e, built-in DC reactor, conformal coated PCBs	Operates up to 60°C, predictive maintenance, blackbox fault recording	Modular structure, high power density
Key Strengths	Cost-effective, versatile	High efficiency, robust motor control	Compact, diagnostic-rich, encoder support	Benchmark for large-scale production




3.1.2 – MV VSDs

Hiconics MV Drives – Medium Voltage

Hiconics MV drives deliver premium-grade performance with high efficiency, low harmonics, and rock-solid reliability. Their modular design, intelligent diagnostics, and smooth motor control make them a standout choice for demanding industrial environments—offering exceptional uptime and long-term value without the premium price tag.

Engineered for continuous uptime and long service life, Hiconics MV drives consistently outperform traditional MV solutions in efficiency, maintainability, and total cost of ownership—giving operators a smarter, cleaner, and more resilient way to run critical processes.

• Voltage: 3.3–13.8 kV (custom options)
• Power: 315 kW – 25,000 kW
• Cooling: Air or water cooled, cabinet options (compact, flameproof, outdoor)
• Control: Vector control, grid feedback, synchronous & asynchronous motors
• Compliance: IEEE 519 harmonic standards, THD < 5%
• Strength: Heavy-duty MV solutions for large industrial sectors, high efficiency, reduced harmonics

3. Drives & Motion Control

3.1 Offering Overview’s

3.1.1 LV VSDs

3.1.1.1 MD 290

INOVANCE

MD290 AC Drive

Open loop general purpose drive

Wide operating voltage
Three-phase 380 to 480 Vac
0.4 to 450 kW
Three phase 200 to 240 Vac

Operation in high ambient temperature 50°C
Please note: If operating above 40°C derating is required

Built-in DC reactor
(400V: 18.5 kW and above;
200V: 11 kW and above)

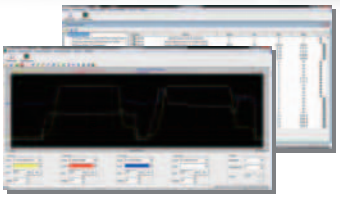
CE

c UL us
LISTED
E467465
IND. CONT. EQ.*1

Enhanced reliability

Dual rated
(G type and P type)

Conformally coated PCBs suitable for 3S2 and 3C3 environments
(acc. to IEC 60721-3-3)



PC-based software: simplified start up & backup*2

Through-hole mounting options (0.4 to 160 kW)

Features & functions

- Open loop control
- Communication options:
  - Modbus-RTU
  - PROFIBUS-DP
  - CANopen
  - CANlink
  - PROFINET
  - EtherCAT
- Automatic torque boost
- Slip compensation
- Simplified parameters for easy start up
- 4 independent S-ramps
- Flexible programmable I/Os
- User programmable functions
- Variable DC-injection braking
- Comprehensive trip diagnostics
- Output frequency: 500 Hz
- Built-in dynamic braking unit

*1 cUL is available for 380-480 Vac models. For other voltages, please consult with your local Inovance representative.
*2 PC comms kit is required (optional accessory)

General specifications

Voltage class		Three-phase 380 to 480 Vac										
MD290TxxxG/yyyPB-INT		0.4G/0.7PB	0.7G/1.1PB	1.1G/1.5PB	1.5G/2.2PB	2.2G/3.0PB	3.0G/3.7PB	3.7G/5.5PB	5.5G/7.5PB	7.5G/11PB	11G/15PB	15G/18.5PB
Frame size		T1*1						T2		T3		T4
Drive input	Rated input voltage	Three-phase 380 to 480 Vac -15% to +10%										
	Rated input current [A]	1.8/2.5	2.4/3.7	3.7/4.6	4.6/6.4	6.3/9.1	9.0/11.3	11.4/15.9	16.7/22.4	21.9/32.9	32.2/39.7	41.3/44
	Power capacity [kVA]	2.3	3.4	4.2	5.9	8.3	10.4	15.5	20.5	30.2	38.2	44.4
	Rated input frequency	50/60 Hz ±5%										
Drive output	Applicable motor [kW]	0.4/0.7	0.7/1.1	1.1/1.5	1.5/2.2	2.2/3.0	3.0/3.7	3.7/5.5	5.5/7.5	7.5/11	11/15	15/18.5
	Output current [A]*2	1.5/2.1	2.1/3.1	3.1/3.8	3.8/5.1	5.1/7.2	7.2/9.0	9.0/13	13/17	17/25	25/32	32/37
	Default carrier frequency [kHz]	6	6	6	6	6	6	6	6	6	6	6
	Overload capacity	150% for G type and 110% for P type for 60 s										
	Max. output voltage	Three-phase 380 to 480 Vac (proportional to input voltage)										
	Max. output frequency	500 Hz										
Braking resistor	Recommended power [kW]	0.08	0.14	0.22	0.3	0.44	0.6	0.74	1.1	1.5	2.2	3
	Minimum resistance [Ω]	96	96	96	96	64	64	32	32	32	24	24
Braking unit		Built-in										
Enclosure		IP 20										

Voltage class		Three-phase 380 to 480 Vac										
MD290TxxxG/xxxP-INT		18.5G/22P	22G/30P	30G/37P	37G/45P	45G/55P	55G/75P	75G/90P	90G/110P	110G/132P	132G/160P	160G/200P
Frame size		T5		T6		T7		T8			T9	
Drive input	Rated input voltage	Three-phase 380 to 480 Vac -15% to +10%										
	Rated input current [A]	43.4/51.3	51.3/65.8	57/71	69/86	89/111	106/143	139/167	164/198	196/239	240/295	287/359
	Power capacity [kVA]	54	60	65	79	102	131	153	181	219	270	328
	Rated input frequency	50/60 Hz ±5%										
Drive output	Applicable motor [kW]	18.5/22	22/30	30/37	37/45	45/55	55/75	75/90	90/110	110/132	132/160	160/200
	Output current [A]*2	37/45	45/60	60/75	75/91	91/112	112/150	150/176	176/210	210/253	253/304	304/377
	Default carrier frequency [kHz]	6	6	6	5	5	4	3	3	3	3	3
	Overload capacity	150% for G type and 110% for P type for 60 s										
	Max. output voltage	Three-phase 380 to 480 Vac (proportional to input voltage)										
	Max. output frequency	500 Hz										
Braking resistor	Recommended power [kW]	4	4.5	6	7	9	11	15	18	22	26	32
	Minimum resistance [Ω]	24	24	19.2	14.8	12.8	9.6	6.8	11.4x2*3	7.7x2*3	7.7x2*3	7.7x2*3
Braking unit		Built-in as option (for models MD290TxxxG/yyyPB-INT)							MDBUN-60-5T x2	MDBUN-90-5T x2		
Enclosure		IP 20										

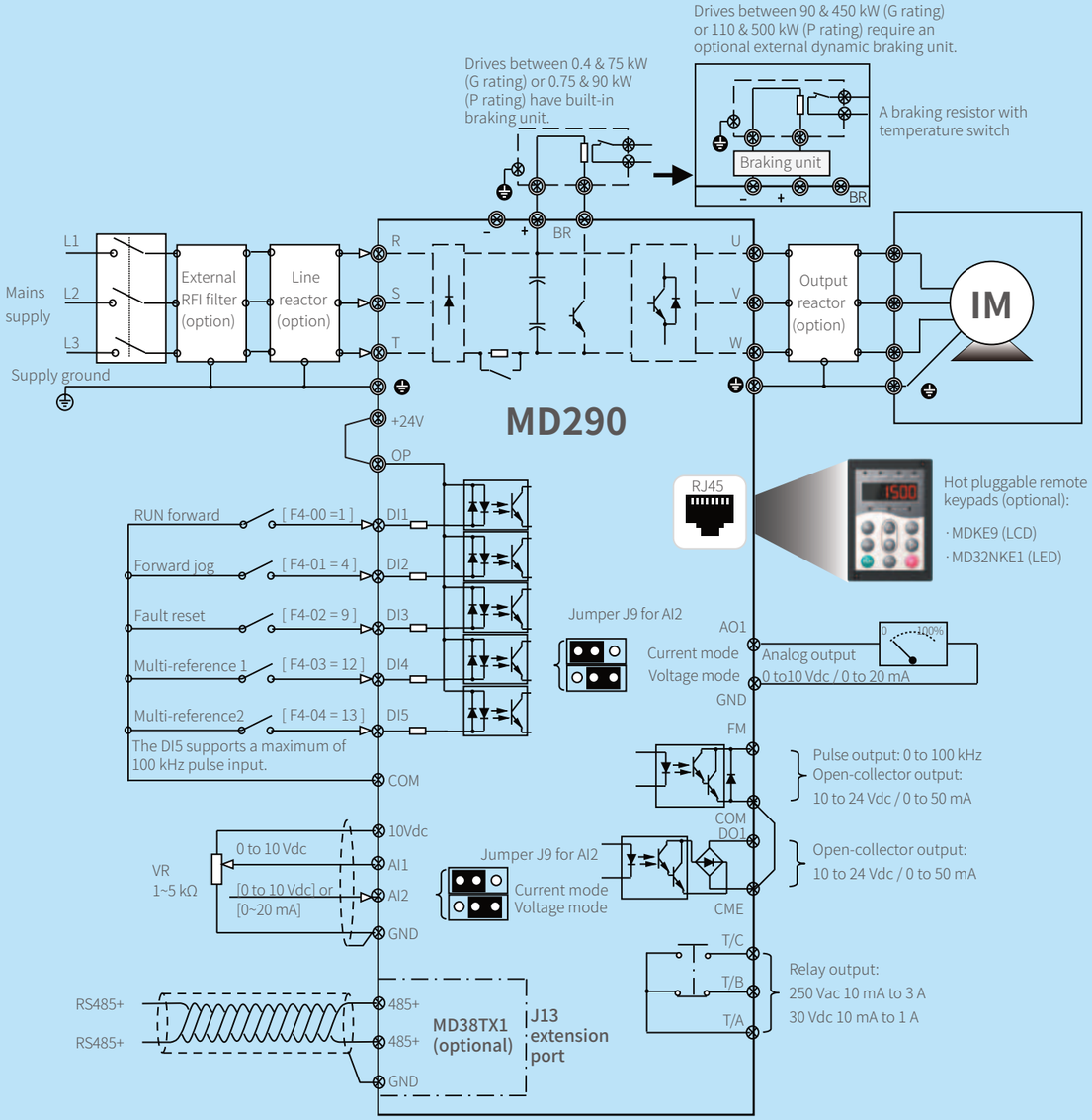
*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.
*2 Rated output current at default carrier frequency.
*3 Minimum value of the resistance for each braking unit.

Voltage class		Three-phase 380 to 480 Vac															
MD290Txxxx-INT*4		200G	220P	220G	250P	280P	250G	280G	315P	355P	315G	355G	400P	400G	450P	450G	500P
Frame size		T10					T11				T12						
Drive input	Rated input voltage	Three-phase 380 to 480 Vac -15% to +10%															
	Rated input current [A]	365	410	410	456	507	441	495	559	624	565	617	708	687	782	782	840
	Power capacity [kVA]	334	375	375	417	464	404	453	511	571	517	565	647	629	715	716	768
	Rated input frequency	50/60 Hz ±5%															
Drive output	Applicable motor [kW]	200	220	220	250	280	250	280	315	355	315	355	400	400	450	450	500
	Output current [A]*2	377	426	426	465	520	465	520	585	650	585	650	725	725	820	820	880
	Default carrier frequency [kHz]	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Overload capacity	150% for G type and 110% for P type for 60 s (130% for MD290T450G (-L))															
	Max. output voltage	Three-phase 380 to 480 Vac (proportional to input voltage)															
	Max. output frequency	500 Hz															
Braking resistor	Recommended power [kW]	38	38	42	42	48	48	54	54	60	60	69	69	78	78	87	87
	Minimum resistance [Ω]	2.8 x2 *3	2.8 x2 *3	2.8 x2 *3	2.8 x2 *3	2.8 x2 *3	2.8 x2 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3	2.8 x3 *3
Braking unit		MDBUN-200-5T x2					MDBUN-200-5T x3										
Enclosure		IP 00															

Voltage class		Three-phase 200 to 240 Vac														
MD290-2TxxxG/yyyP(B)-INT		0.4G/0.7PB	0.7G/1.1PB	1.1G/1.5PB	1.5G/2.2PB	2.2G/3.7PB	3.7G/5.5PB	5.5G/7.5PB	7.5G/11PB	11G/15P	15G/18.5P	18.5G/22P	22G/30P	30G/37P	37G/45P	45G/55P	55G/75P
Frame size		T1*1				T2		T3	T4	T5	T6		T7		T8		
Drive input	Rated input voltage	Three-phase 200 to 240 Vac -15% to +10%															
	Rated input current [A]	2.4/3.7	4.6/6.4	6.3/9.1	9/11.3	11.4/15.9	16.7/22.4	32.2/39.7	41.3/44	51.3/65.8	57/71	69/86	89/111	106/143	139/167	164/198	196/239
	Rated input frequency	50/60 Hz ±5%															
Drive output	Applicable motor [kW]	0.4/0.75	0.75/1.1	1.1/1.5	1.5/2.2	2.2/3.7	3.7/5.5	5.5/7.5	7.5/11	11/15	15/18.5	18.5/22	22/30	30/37	37/45	45/55	55/75
	Output current [A]*2	2.1/3.1	3.8/5.1	5.1/7.2	7.2/9	9/13	13/17	25/32	32/37	45/60	60/75	75/91	91/112	112/150	150/176	176/210	210/253
	Default carrier frequency [kHz]	6	6	6	6	6	6	6	6	6	6	5	5	5	4	3	3
	Overload capacity	150% for G type & 110% for P type for 60 s															
	Max. output voltage	Three phase 200 to 240 Vac (proportional to input voltage)															
	Max. output frequency	500 Hz															
Braking resistor	Recommended power [kW]	90	160	250	340	500	800	1300	1700	2300	3000	3900	4600	5500	6800	5000x2	6000x2
	Minimum resistance [Ω]	48	48	32	32	16	16	12	12	12	9	7	6	5	4	5.5 x2 *3	3.7 x2 *3
Braking unit		Built-in								Built-in as option (for models MD290-2TxxxG/yyyPB-INT)						MDBUN-60-2T x2	MDBUN-90-2T x2
Enclosure		IP20															

*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.
*2 Rated output current at default carrier frequency.
*3 Minimum value of the resistance for each braking unit.
*4 For the standard AC drive, motor cable length should be <100m. Where it is >100m, we recommend the "L" option with 1% voltage drop output reactors to overcome the effects of voltage reflections on the motor windings (e.g. drive model M290T200G-L-INT). To discuss your application, consult your local Inovance representative.

General wiring diagram



Note: This wiring diagram shows the digital inputs used in NPN (SINK) configuration. They can be used also as PNP (SOURCE) configuration.

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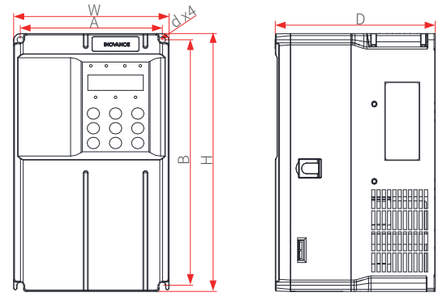
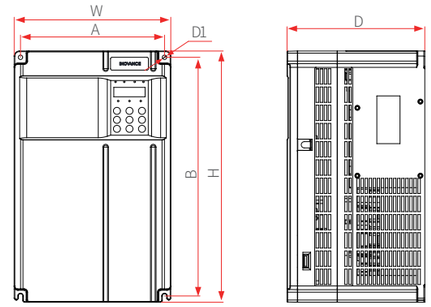
Dimensions

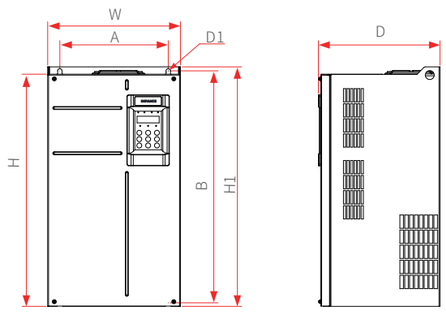
MD290T0.4G/0.7PB-INT to MD290T15G/18.5PB-INT
MD290-2T0.4G/0.7PB-INT to MD290-2T7.5G/11PB-INT



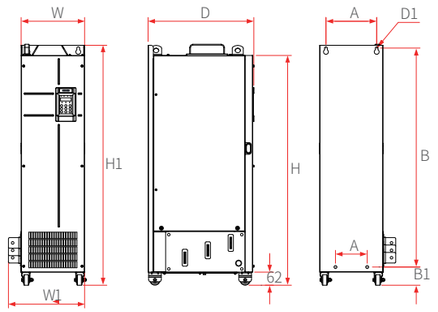
MD290T18.5G/22P(B)-INT to MD290T37G/45P(B)-INT
MD290-2T11G/15P(B)-INT to MD290-2T18.5G/22P(B)-INT



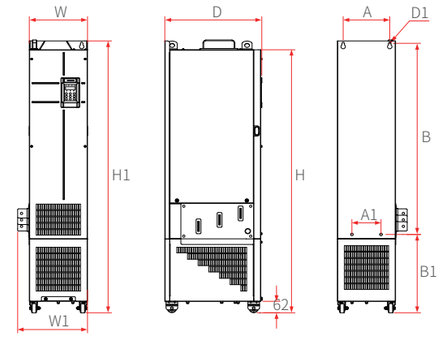
MD290T45G/55P(B)-INT to MD290T160G/200P-INT
MD290-2T22G/30P(B)-INT to MD290-2T55G/75P-INT



MD290T200G-INT to MD290T450G-INT
MD290T220P-INT to MD290T500P-INT

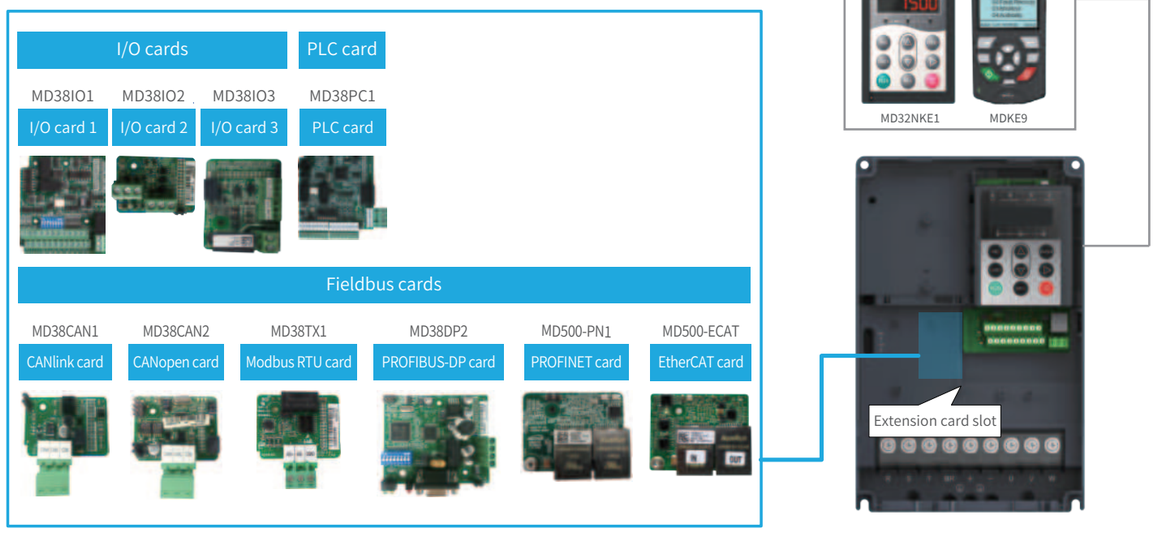


MD290T200G-L-INT to MD290T450G-L-INT
MD290T220P-L-INT to MD290T500P-L-INT



MD290 model	Frame size	Dimensions (mm)										Mass (kg)
		A	A1	B	B1	H	H1	W	W1	D	D1	
MD290T0.4G/0.7PB-INT, MD290T0.7G/1.1PB-INT, MD290T1.1G/1.5PB-INT MD290T1.5G/2.2PB-INT, MD290T2.2G/3.0PB-INT, MD290T3.0G/3.7PB-INT MD290-2T0.4G/0.7PB-INT, MD290-2T0.7G/1.1PB-INT, MD290-2T1.1G/1.5PB-INT, MD290-2T1.5G/2.2PB-INT	T1	119	/	189	/	**200**	/	**130**	/	**152**	Ø5	1.6
MD290T3.7G/5.5PB-INT, MD290T5.5G/7.5PB-INT MD290-2T2.2G/3.7PB-INT, MD290-2T3.7G/5.5PB-INT	T2	119	/	189	/	**200**	/	**130**	/	**162**	Ø5	2.0
MD290T7.5G/11PB-INT, MD290T11G/15PB-INT, MD290-2T5.5G/7.5PB-INT	T3	128	/	238	/	**250**	/	**140**	/	**170**	Ø6	3.3
MD290T15G/18.5PB-INT, MD290-2T7.5G/11PB-INT	T4	166	/	266	/	**280**	/	**180**	/	**170**	Ø6	4.3
MD290T18.5G/22P(B)-INT, MD290T22G/30P(B)-INT, MD290-2T11G/15P(B)-INT	T5	195	/	335	/	**350**	/	**210**	/	**192**	Ø6	10
MD290T30G/37P(B)-INT, MD290T37G/45P(B)-INT MD290-2T15G/18.5P(B)-INT, MD290-2T18.5G/22P(B)-INT	T6	230	/	380	/	**400**	/	**250**	/	**220**	Ø7	17.5
MD290T45G/55P(B)-INT, MD290T55G/75P(B)-INT MD290-2T22G/30P(B)-INT, MD290-2T30G/37P(B)-INT	T7	245	/	523	/	525	**542**	**300**	/	**275**	Ø10	35
MD290T75G/90P(B)-INT, MD290T90G/110P-INT, MD290T110G/132P-INT MD290-2T37G/45P(B)-INT, MD290-2T45G/55P-INT, MD290-2T55G/75P-INT	T8	270	/	560	/	554	**580**	**338**	/	**315**	Ø10	51.5
MD290T132G/160P-INT, MD290T160G/200P-INT	T9	320	/	890	/	874	**915**	**400**	/	**320**	Ø10	85
MD290T200G-INT, MD290T220P-INT, MD290T220G-INT, MD290T250P-INT MD290T280P-INT	T10	240	150	1,035	86	1,086	**1,134**	300	**360**	**500**	Ø13	110
MD290T200G-L-INT, MD290T220P-L-INT, MD290T220G-L-INT, MD290T250P-L-INT, MD290T280P-L-INT		240	150	1,035	424	1,424	**1,472**	300	**360**	500	Ø13	160
MD290T250G-INT, MD290T280G-INT, MD290T315P-INT, MD290T355P-INT		225	185	1,175	97	1,248	**1,284**	330	**390**	**545**	Ø13	155
MD290T250G-L-INT, MD290T280G-L-INT, MD290T315P-L-INT, MD290T355P-L-INT	T11	225	185	1,175	435	1,586	**1,622**	330	**390**	**545**	Ø13	215
MD290T315G-INT, MD290T355G-INT, MD290T400P-INT, MD290T400G-INT, MD290T450P-INT, MD290T450G-INT, MD290T500P-INT		240	200	1,280	101	1,355	**1,405**	340	**400**	**545**	Ø16	185
MD290T315G-L-INT, MD290T355G-L-INT, MD290T400P-L-INT, MD290T400G-L-INT, MD290T450P-L-INT, MD290T450G-L-INT, MD290T500P-L-INT	T12	240	200	1,280	432	1,683	**1,733**	340	**400**	**545**	Ø16	245

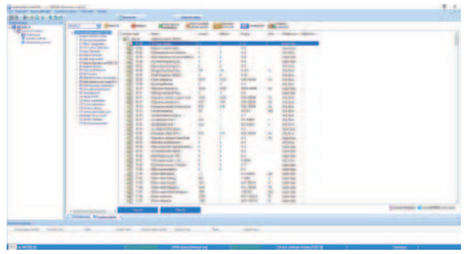
Extension cards and mounting position



PC software tools

InoDriveShop

InoDriveShop is Inovance's PC-based software offering. It is based on a familiar Windows interface. InoDriveShop can upload and download drive parameters, and features a variety of other functions, such as a real-time oscilloscope



Parameter uploading/downloading

Multi-drive, multi-channel oscilloscope

Accessories list

Category	Model	Function description	Suitable for
External braking units	MDBUN-60-2T	External braking unit, rated current 60 A, for supply input voltage 200 to 240 Vac AC drives.	2T models: 45G - 55G
	MDBUN-200-5T	External braking unit, rated current 200 A, for supply input voltage 380 to 480 Vac AC drives.	T models: 200G - 450G
	MDBUN-60-5T	External braking unit, rated current 60 A, for supply input voltage 380 to 480 Vac AC drives.	T models: 90G - 110G
	MDBUN-90-5T	External braking unit, rated current 90 A, for supply input voltage 380 to 480 Vac AC drives.	T models: 132G - 160G
Keypads	MD32NKE1	Remote LED keypad. Includes MDCAB cable.	All
	MDKE9	Remote LCD keypad. For parameter programming and monitoring, data copy (for various MD series). Includes MDCAB cable.	All
	MDCAB	3 meter connection cable for remote keypad.	All
	MDCAB-1.5	1.5 meter connection cable for remote keypad.	All
I/O cards	MD38IO1	I/O extension card 1, provides: 5x DI, 1x AI, 1x relay output, 1x DO, 1x AO, Modbus-RTU and CANlink.	Frame sizes T4-T12
	MD38IO2	I/O extension card 2, provides 3x extra DI terminals.	All
	MD38IO3	I/O extension card 3, provides 3x DI, 1x relay output, Modbus-RTU interface.	All
PLC card	MD38PC1	PLC card, compatible with Inovance PLC.	Frame sizes T4-T12
Fieldbus cards	MD500-ECAT	EtherCAT communication card.	All
	MD38CAN1	CANlink communication card, supports only CANlink.	All
	MD38CAN2	CANopen communication card, supports only CANopen.	All
	MD38TX1	Modbus-RTU communication card.	All
	MD38DP2	PROFIBUS-DP communication card.	Frame sizes T4-T12
	MD500-PN1	PROFINET communication card.	All
PC comms kit	MDPCKIT02	Kit for connection with a personal computer, to be used with PC software tools.	All
Mounting brackets	MD500-AZJ-A1T1	Through hole mounting bracket - MD290/MD500 for frame T1.	Frame size T1
	MD500-AZJ-A1T2	Through hole mounting bracket - MD290/MD500 for frame T2.	Frame size T2
	MD500-AZJ-A1T3	Through hole mounting bracket - MD290/MD500 for frame T3.	Frame size T3
	MD500-AZJ-A1T4	Through hole mounting bracket - MD290/MD500 for frame T4.	Frame size T4
	MD500-AZJ-A1T5	Through hole mounting bracket - MD290/MD500 for frame T5.	Frame size T5
	MD500-AZJ-A1T6	Through hole mounting bracket - MD290/MD500 for frame T6.	Frame size T6
	MD500-AZJ-A1T7	Through hole mounting bracket - MD290/MD500 for frame T7.	Frame size T7
	MD500-AZJ-A1T8	Through hole mounting bracket - MD290/MD500 for frame T8.	Frame size T8
	MD500-AZJ-A1T9	Through hole mounting bracket - MD290/MD500 for frame T9.	Frame size T9
Guide Rails	MD500-AZJ-A3T10	Guide rails for inserting in/ extracting from the cabinet - frame sizes T10 to T12.	Frame sizes T10-T12

Driven by Technology

AC Drives

AC MultiDrives

MV Drives

Single-Axis Servos

Multi-Axis Servos

Robotics & Motion Controllers

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Data code: L6210106 V1.2.3

3. Drives & Motion Control

3.1 Offering Overview’s

3.1.1 LV VSDs

3.1.1.2 MD 520

INOVANCE

MD520 AC Drive

High performance universal AC drive

IE2 CE cULus LISTED E467465 IND. CONT. EQ. STO SIL3

- Unified AC asynchronous, PM synchronous and synchronous reluctance motors control
- Wide operating voltage and product range:
  - 3 ph 380-480 Vac: 0.4 to 500 kW
  - 3 ph 200-240 Vac: 0.4 to 75 kW
  - 1 ph 200-240 Vac: 0.4 to 2.2 kW
- STO SIL 3 PL e
- Built-in DC reactor (400 V: 18.5 kW and above; 200 V: 11 kW and above) complying to IEC 61000-3-12
- Enhanced reliability: conformal coated PCBs compliant to 3S2 and 3C3 environments
- Complies to efficiency level IE2 as defined in IEC 61800-9-2
- Through-hole mounting options (0.4 to 160 kW)

MD520 - features & functions

- AC asynchronous, PM synchronous and synchronous reluctance motors control:
  - Open loop V/F (induction motors only) and SVC
  - Closed loop FVC
- Dual rated: heavy duty (overload: 150%/ 1 min) and normal duty (overload: 110%/ 1 min)
- Starting torque
  - 150% at 0.25 Hz for SVC
  - 180% at 0 Hz for FVC
- Communication options:
  - Modbus-RTU
  - Modbus-TCP
  - PROFIBUS-DP
  - CANopen
  - CANlink
  - PROFINET
  - EtherCAT
  - Ethernet/IP
- Category C2 compliance with external RFI filter. Ratings with built-in filter comply with Category C3*1
- Built-in dynamic braking unit, up to/including 75 kW (400 V) or 37 kW (200 V)
- Operation in ambient temperature of up to 50°C (with de-rating above 40°C)*2
- Bipolar analog input as standard (-10 to +10 V)
- PTC input as standard
- Simplified parameters for easy start up
- 4 independent S-ramps
- Flexible programmable I/Os
- User programmable logic
- Variable DC-injection braking
- Comprehensive trip diagnostics
- Output frequency: 599 Hz
- Application dedicated functions:
  - Master-slave function (torque, speed)
  - Textile wobble control
- Brake control logic
- 4 motor parameter sets
- Automatic torque boost
- PC-based software: simplified start up & backup*3

*1 For detailed EMC compliance information, consult your local Inovance representative

*2 For operation in higher ambient temperatures, consult your local Inovance representative

*3 USB to RS485 adapter required. MDKE-10 or SOP-20 keypads can be used for this purpose

NEW: built-in colour LED keypad

- The clearest possible information display
- Displays multiple pieces of information simultaneously (e.g. drive status and operating information)
- User friendly with additional keys

INOVANCE

Product ordering code

MD520 - 4T 220 B S -L -INT
① ② ③ ④ ⑤ ⑥ ⑦

① **Drive series:**
MD520 series

② **Voltage level:**
4T: three phase 380 V - 480 V
2T: three phase 200 V - 240 V
2S: single phase 200 V - 240 V

③ **Power rating for heavy duty (kW):**
0.4: 0.4
400: 400

④ **Braking unit:**
None: without braking unit
B: with braking unit

⑤ **STO:**
None: STO not supported
S: STO supported

⑥ **Reactor:**
None: without reactor
-T: with DC reactor; applicable to T5 models
-L: with AC output reactor; applicable to T10 to T12 models

⑦ **Version:**
INT: International variant

General specifications

Voltage class		1 Phase 200 - 240Vac			
Drive model: MD520-2SxxxB(S)-INT		0.4	0.7	1.5	2.2
Frame size		T2			
Drive Input	Rated input voltage	1 Phase 200 to 240Vac, -15% to +10%			
	Rated input current (A)	5.4	8.2	14	20
	Power capacity (kVA)	1.4	2.2	3.7	6
	Rated input frequency	50/60 Hz, ±5%			
Drive Output	Applicable motor (kW)	0.4	0.7	1.5	2.2
	Output current (A)*2	2.3	4.0	7.0	9.6
	Default carrier frequency (kHz)	6	6	6	6
	Overload capacity	150% for 60 s			
	Max. output voltage	Three Phase 200Vac to 240Vac (Proportional to input voltage)			
	Max. output frequency	599 Hz			
Braking Resistor	Recommended power (W)	80	80	100	100
	Minimum resistance (Ω)	64	64	32	32
Braking unit		Built-in			
Enclosure		IP 20			

*2 Rated output current at default carrier frequency.

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General specifications

Heavy duty ratings , 150% overload

Voltage class		Three Phase 380 - 480Vac																												
Drive model: MD520-4Txxx(B)(S)(-T)(-L)-INT*3*5		0.4B(S)	0.7B(S)	1.1B(S)	1.5B(S)	2.2B(S)	3.0B(S)	3.7B(S)	5.5B(S)	7.5B(S)	11B(S)	15B(S)	18.5(B)(S)(-T)	22(B)(S)(-T)	30(B)(S)	37(B)(S)	45(B)(S)	55(B)(S)	75(B)(S)	90(S)	110(S)	132(S)	160(S)	200(S)(-L)	220(S)(-L)	250(S)(-L)	280(S)(-L)	315(S)(-L)	355(S)(-L)	400(S)(-L)
Frame size		T1*1						T2		T3		T4	T5		T6		T7		T8			T9		T10		T11		T12		
Drive Input	Rated input voltage	Three Phase 380 to 480Vac, -15% to +10%																												
	Rated input current **(A)**	1.8	2.4	3.7	4.6	6.3	9.0	11.4	16.7	21.9	32.2	41.3	43.4	51.3	57	69	89	106	139	164	196	240	287	365	410	441	495	565	617	687
	Power capacity **(kVA)**	2	2.8	4.1	5.0	6.7	9.5	12	17.5	22.8	33.4	42.8	45	54	52	63	81	97	127	150	179	220	263	334	375	404	453	517	565	629
	Rated input frequency	50/60 Hz, ±5%																												
Drive Output	Applicable motor **(kW)**	0.4	0.7	1.1	1.5	2.2	3.0	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	220	250	280	315	355	400
	Output current **(A)***2	1.5	2.1	3.1	3.8	5.1	7.2	9.0	13.0	17.0	25.0	32.0	37	45	60	75	91	112	150	176	210	253	304	377	426	465	520	585	650	725
	Default carrier frequency **(kHz)**	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	3	3	3	3	3	3	3	3	3	3	3
	Overload capacity	150% for 60 s																												
	Max. output voltage	Three Phase 380Vac to 480Vac (Proportional to input voltage)																												
	Max. output frequency	599 Hz																												
Braking Resistor	Recommended power **(W)**	0.08	0.14	0.22	0.3	0.44	0.6	0.74	1.1	1.5	2.2	3	4	4.5	6	7	9	11	15	18	22	26	32	38	42	48	54	60	69	78
	Minimum resistance **(Ω)**	96	96	96	96	64	64	32	32	32	24	24	24	24	19.2	14.8	12.8	9.6	6.8	11.4 x2*4	7.7 x2*4	7.7 x2*4	7.7 x2*4	2.8 x2*4	2.8 x2*4	2.8 x3*4	2.8 x3*4	2.8 x3*4	2.8 x3*4	2.8 x3*4
Braking unit		Built-in																		MDBUN-60-5T x2	MDBUN-90-5T x2			MDBUN-200-5T x2		MDBUN-200-5T x3				
Enclosure		IP20																						IP00						

Normal duty ratings, 110% overload

Voltage class		Three Phase 380 - 480Vac																												
Drive model: MD520-4Txxx(B)(S)(-T)(-L)-INT*3*5		0.4B(S)	0.7B(S)	1.1B(S)	1.5B(S)	2.2B(S)	3.0B(S)	3.7B(S)	5.5B(S)	7.5B(S)	11B(S)	15B(S)	18.5(B)(S)(-T)	22(B)(S)(-T)	30(B)(S)	37(B)(S)	45(B)(S)	55(B)(S)	75(B)(S)	90(S)	110(S)	132(S)	160(S)	200(S)(-L)	220(S)(-L)	250(S)(-L)	280(S)(-L)	315(S)(-L)	355(S)(-L)	400(S)(-L)
Frame size		T1*1						T2		T3		T4	T5		T6		T7		T8			T9		T10		T11		T12		
Drive Input	Rated input voltage	Three Phase 380 to 480Vac, -15% to +10%																												
	Rated input current **(A)**	2.5	3.7	4.6	6.4	9.1	11.3	15.9	22.4	32.9	39.7	44.0	51.3	65.8	71	86	111	143	167	198	239	295	359	456	507	559	624	708	782	840
	Power capacity **(kVA)**	2.3	3.4	4.2	5.9	8.3	10.4	15.5	20.5	30.2	38.2	44.4	54	60	65	79	102	131	153	181	219	270	328	417	464	511	571	647	715	768
	Rated input frequency	50/60 Hz, ±5%																												
Drive Output	Applicable motor **(kW)**	0.75	1.1	1.5	2.2	3.7	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250	280	315	355	400	450	500
	Output current **(A)***2	2.1	3.1	3.8	5.1	7.2	9.0	13.0	17.0	25.0	32.0	37.0	45	60	75	91	112	150	176	210	253	304	377	465	520	585	650	725	820	880
	Default carrier frequency **(kHz)**	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	3	3	3	3	3	3	3	3	3	3	3	3
	Overload capacity	110% for 60 s																												
	Max. output voltage	Three Phase 380Vac to 480Vac (Proportional to input voltage)																												
	Max. output frequency	599 Hz																												
Braking Resistor	Recommended power **(W)**	0.08	0.14	0.22	0.3	0.44	0.6	0.74	1.1	1.5	2.2	3	4	4.5	6	7	9	11	15	18	22	26	32	38	42	48	54	60	69	78
	Minimum resistance **(Ω)**	96	96	96	96	64	64	32	32	32	24	24	24	24	19.2	14.8	12.8	9.6	6.8	11.4 x2*4	7.7 x2*4	7.7 x2*4	2.8 x2*4	2.8 x2*4	2.8 x2*4	2.8 x3*4	2.8 x3*4	2.8 x3*4	2.8 x3*4	2.8 x3*4
Braking unit		Built-in																		MDBUN-60-5T x2	MDBUN-90-5T x2		MDBUN-200-5T x2	MDBUN-200-5T x2		MDBUN-200-5T x3				
Enclosure		IP20																						IP00						

*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.

*2 Rated output current at default carrier frequency.

*3 -T in the type code of 18.5B and 22B models indicates built-in DC reactor.

*4 Minimum value of the resistance for each braking unit.

*5 For the standard AC drive, we recommend motor cable lengths to be <100 m. Where your installation exceeds 100 m, the " L" version is an option with a built-in AC output reactor (1% voltage drop) which can help to overcome the effects of long cable installations. To discuss your application, contact your local Inovance representative.

*6 If bigger ratings than 400 kW (HD)/500 kW (ND) are required, please get in touch with your local Inovance representative.

INOVANCE

General specifications

Heavy duty ratings , 150% overload

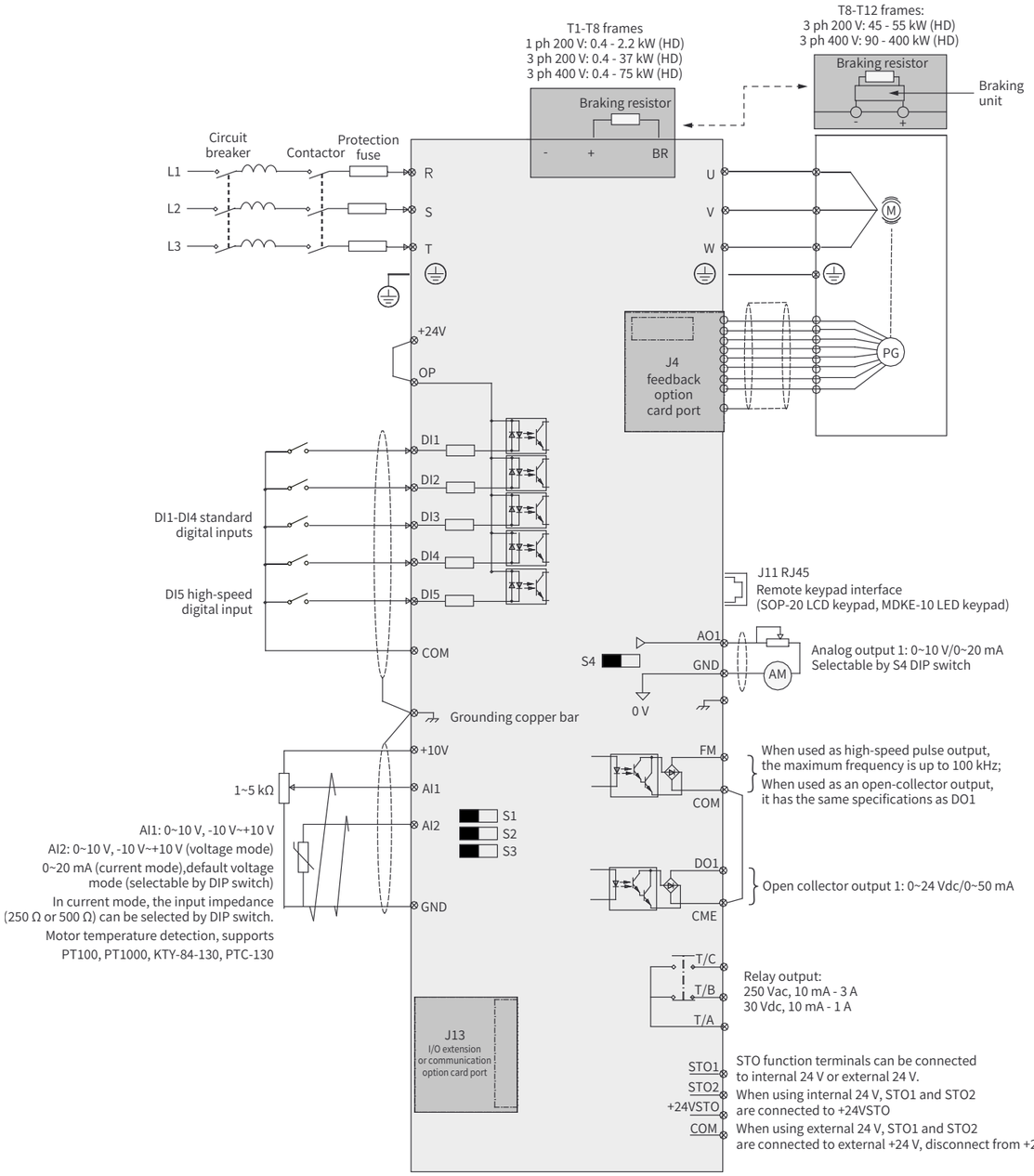
Voltage class		Three Phase 200 - 240Vac																				
Drive model: MD520-2Txxx(B)(S)-INT		0.4B(S)	0.7B(S)	1.1B(S)	1.5B(S)	2.2B(S)	3.7B(S)	5.5B(S)	7.5B(S)	11(B)(S)	15(B)(S)	18.5(B)(S)	22(B)(S)	30(B)(S)	37(B)(S)	45(S)	55(S)	75(S)	90(S)	110(S)	132(S)	160(S)	200(S)
Frame size		T1[*1]				T2		T3	T4	T5	T6		T7		T8			T9	T10		T11	T12	
Drive Input	Rated input voltage	Three Phase 200 to 240Vac, -15% to +10%																				
	Rated input current **(A)**	2.4	4.6	6.3	9.0	11.4	16.7	32.2	41.3	51.3	57	69/86	89	106	139	164	196	287	365	410	441	565	687
	Power capacity **(kVA)**	1.1	2.1	2.9	4.1	5.2	7.6	14.7	18.9	27	26.1	31.6	40.7	48.5	63.6	75	89.6	1.1	2.1	2.9	4.1	5.2	7.6
	Rated input frequency	50/60 Hz, ±5%																				
Drive Output	Applicable motor **(kW)**	0.4	0.75	1.1	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200
	Output current **(A)**[*2]	2.1	3.8	5.1	7.2	9.0	13	25	32	45	60	75	91	112	150	176	210	304	377	426	465	585	725
	Default carrier frequency **(kHz)**	6	6	6	6	6	6	6	6	6	6	5	5	4	3	3	3	3	3	3	3	3	3
	Overload capacity	150% for 60 s																				
	Max. output voltage	Three Phase 200Vac to 240Vac (Proportional to input voltage)																				
	Max. output frequency	599 Hz																				
Braking Resistor	Recommended power **(W)**	0.09	0.16	0.25	0.34	0.5	0.8	1.3	1.7	2.3	3.0	3.9	4.6	5.5	6.8	5.0 x2	6.0 x2	7.5 x2	6 x3	7.5 x3	7.0 x4	6.5 x5	7.0 x6
	Minimum resistance **(Ω)**	48	48	0.26	32	16	16	12	12	12	9	7	6	5	4	5.5 x2[*3]	3.7 x2[*3]	3.7 x2[*3]	3.7 x3[*3]	3.7 x3[*3]	3.7 x4[*3]	3.7 x5[*3]	3.7 x6[*3]
Braking unit		Built-in														MDBUN-60-2T x2	MDBUN-90-2T x2	MDBUN-90-2T x2	MDBUN-90-2T x3	MDBUN-90-2T x3	MDBUN-90-2T x4	MDBUN-90-2T x5	MDBUN-90-2T x6
Enclosure		IP20																	IP00				

Normal duty ratings, 110% overload

Voltage class		Three Phase 200 - 240Vac																				
Drive model: MD520-2Txxx(B)(S)-INT		0.4B(S)	0.7B(S)	1.1B(S)	1.5B(S)	2.2B(S)	3.7B(S)	5.5B(S)	7.5B(S)	11(B)(S)	15(B)(S)	18.5(B)(S)	22(B)(S)	30(B)(S)	37(B)(S)	45(S)	55(S)	75(S)	90(S)	110(S)	132(S)	160(S)	200(S)
Frame size		T1[*1]				T2		T3	T4	T5	T6		T7		T8			T9	T10		T11	T12	
Drive Input	Rated input voltage	Three Phase 200 to 240Vac, -15% to +10%																				
	Rated input current **(A)**	3.7	6.4	9.1	11.3	15.9	22.4	39.7	44	65.8	71	86	111	143	167	198	239	359	456	507	559	708	840
	Power capacity **(kVA)**	1.7	2.9	4.2	5.2	7.3	10.2	18.2	20.1	30.1	32.5	39.3	50.8	65.4	76.4	90.5	109.3	1.7	2.9	4.2	5.2	7.3	10.2
	Rated input frequency	50/60 Hz, ±5%																				
Drive Output	Applicable motor **(kW)**	0.75	1.1	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	220
	Output current **(A)**[*2]	3.1	5.1	7.2	9.0	13	17	32	37	60	75	91	112	150	176	210	253	377	465	520	585	725	880
	Default carrier frequency **(kHz)**	6	6	6	6	6	6	6	6	6	6	5	5	4	3	3	3	3	3	3	3	3	3
	Overload capacity	110% for 60 s																				
	Max. output voltage	Three Phase 200Vac to 240Vac (Proportional to input voltage)																				
	Max. output frequency	599 Hz																				
Braking Resistor	Recommended power **(W)**	0.09	0.16	0.25	0.34	0.5	0.8	1.3	1.7	2.3	3.0	3.9	4.6	5.5	6.8	5.0 x2	6.0 x2	6 x3	7.5 x3	7.0 x4	6.5 x5	7.0 x6	7.0 x7
	Minimum resistance **(Ω)**	48	48	32	32	16	16	12	12	12	9	7	6	5	4	5.5 x2[*3]	3.7 x2[*3]	3.7 x3[*3]	3.7 x3[*3]	3.7 x4[*3]	3.7 x5[*3]	3.7 x6[*3]	3.7 x7[*3]
Braking unit		Built-in														MDBUN-60-2T x2	MDBUN-90-2T x2	MDBUN-90-2T x3	MDBUN-90-2T x3	MDBUN-90-2T x4	MDBUN-90-2T x5	MDBUN-90-2T x6	MDBUN-90-2T x7
Enclosure		IP20																	IP00				

*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.
*2 Rated output current at default carrier frequency.
*3 Minimum value of the resistance for each braking unit.

General wiring diagram



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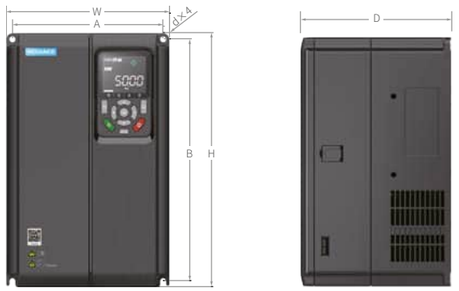
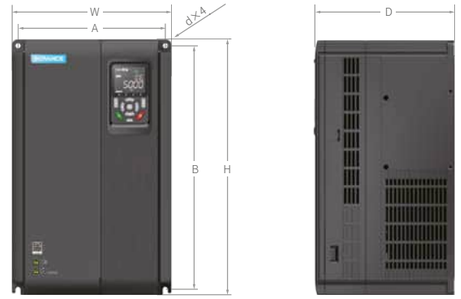
Dimensions

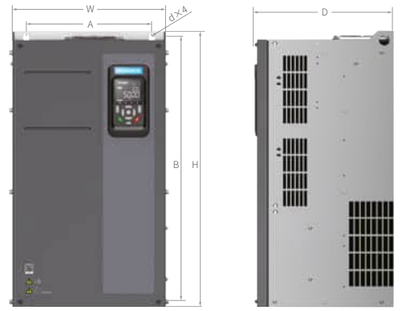
MD520-4T0.4B(S)-INT to MD520-4T15B(S)-INT
MD520-2T0.4B(S)-INT to MD520-2T7.5B(S)-INT
MD520-2S0.4B(S)-INT to MD520-2S2.2B(S)-INT



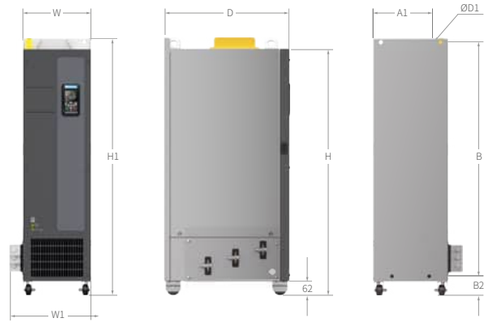
MD520-4T18.5B(S)-INT to MD520-4T37B(S)-INT
MD520-2T11B(S)-INT to MD520-2T18.5B(S)-INT



MD520-4T45B(S)-INT to MD520-4T160(S)-INT
MD520-2T22B(S)-INT to MD520-2T55(S)-INT



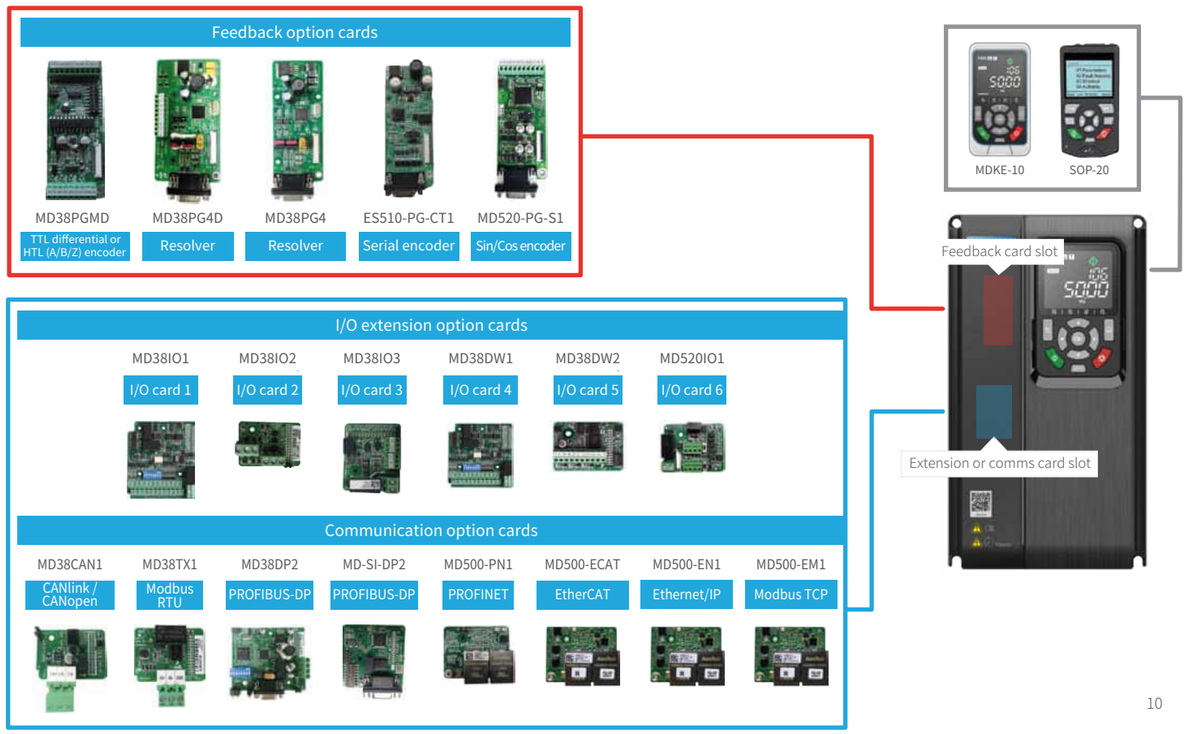
MD520-4T200(S)-INT to MD520-4T400(S)-INT



MD520-4T200(S)-L-INT to MD520-4T400(S)-L-INT

MD520 Model	Frame size	Dimensions (mm)										Mass (kg)
		A	A1	B	B2	H	H1	W	W1	D	D1	
MD520-4T0.4B(S)-INT, MD520-4T0.7B(S)-INT, MD520-4T1.1B(S)-INT MD520-4T1.5B(S)-INT, MD520-4T2.2B(S)-INT, MD520-4T3.0B(S)-INT, MD520-2T0.4B(S)-INT, MD520-2T0.7B(S)-INT MD520-2T1.1B(S)-INT, MD520-2T1.5B(S)-INT	T1	119	/	189	/	200	/	130	/	152	Ø5	1.6
MD520-4T3.7B(S)-INT, MD520-4T5.5B(S)-INT MD520-2S0.4B(S)-INT to MD520-2S2.2B(S)-INT MD520-2T2.2B(S)-INT, MD520-2T3.7B(S)-INT	T2	119	/	189	/	200	/	130	/	162	Ø5	2.0
MD520-4T7.5B(S)-INT, MD520-4T11B(S)-INT, MD520-2T5.5B(S)-INT	T3	128	/	238	/	250	/	140	/	170	Ø6	3.3
MD520-4T15B(S)-INT, MD520-2T7.5B(S)-INT	T4	166	/	266	/	280	/	180	/	170	Ø6	4.3
MD520-4T18.5B(S)-INT, MD520-4T22B(S)-INT, MD520-2T11B(S)-INT	T5	195	/	335	/	350	/	210	/	192	Ø6	10
MD520-4T30B(S)-INT, MD520-4T37B(S)-INT MD520-2T15B(S)-INT, MD520-2T18.5B(S)-INT	T6	230	/	380	/	400	/	250	/	220	Ø7	17.5
MD520-4T45B(S)-INT, MD520-4T55B(S)-INT MD520-2T22B(S)-INT, MD520-2T30B(S)-INT	T7	245	/	523	/	542	/	300	/	275	Ø10	35
MD520-4T75B(S)-INT, MD520-4T90(S)-INT, MD520-4T110(S)-INT MD520-2T37B(S)-INT, MD520-2T45(S)-INT, MD520-2T55(S)-INT	T8	270	/	560	/	580	/	338	/	315	Ø10	51.5
MD520-4T132(S)-INT, MD520-4T160(S)-INT	T9	320	/	890	/	915	/	400	/	320	Ø10	85
MD520-4T200(S)-INT MD520-4T220(S)-INT MD520-4T200(S)-L-INT MD520-4T220(S)-L-INT	T10	240 240	150 150	1,035 1,035	86 424	1,086 1,424	1,134 1,472	300 300	360 360	500 500	Ø13 Ø13	110 160
MD520-4T250(S)-INT, MD520-4T280(S)-INT MD520-4T250(S)-L-INT MD520-4T280(S)-L-INT	T11	225 225	185 185	1,175 1,175	97 435	1,248 1,586	1,284 1,622	330 330	390 390	545 545	Ø13 Ø13	155 215
MD520-4T315(S)-INT, MD520-4T355(S)-INT, MD520-4T400(S)-INT MD520-4T315(S)-L-INT, MD520-4T355(S)-L-INT MD520-4T400(S)-L-INT	T12	240 240	200 200	1,280 1,280	101 432	1,355 1,683	1,405 1,733	340 340	400 400	545 545	Ø16 Ø16	185 245

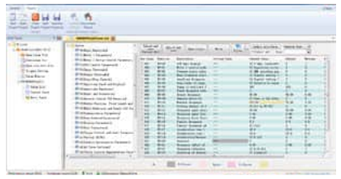
Option cards and mounting position



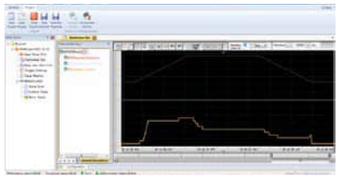
PC software tools

InoDriverShop

InoDriverShop is Inovance's free of charge PC-based software offering. It is based on a familiar Windows interface. InoDriverShop can upload and download drive parameters, and features a variety of other functions, such as a real-time oscilloscope.
For the connection with the PC a standard USB to RS485 adapter can be used. MDKE-10 or SOP-20 keypads can also be used for this purpose.



Parameter uploading/downloading



Multi channel oscilloscope

Accessories list

Category	Model	Function description	Suitable for
External braking units	MDBUN-60-5T	External braking unit, rated current 60 A, for supply input voltage 380 to 480 Vac AC drives.	4T models: 90G
	MDBUN-90-5T	External braking unit, rated current 90 A, for supply input voltage 380 to 480 Vac AC drives.	4T models: 110G - 132G
	MDBUN-200-5T	External braking unit, rated current 200 A, for supply input voltage 380 to 480 Vac AC drives.	4T models: 160G -450G
	MDBUN-60-2T	External braking unit, rated current 60 A, for supply input voltage 200 to 240 Vac AC drives.	2T models: 45G
	MDBUN-90-2T	External braking unit, rated current 90 A, for supply input voltage 200 to 240 VAC AC drives.	2T models: 55G
Keypads	MDKE-10	Remote LED keypad. Can be used as USB to RS485 adapter for the connection to the PC. Includes MDCAB cable.	All
	SOP-20	Remote multi-language LCD keypad. For parameter programming and monitoring, data copy. Keypad can be used as USB to RS485 adapter for the connection to the PC. Includes MDCAB cable.	All
	MDCAB	3 meter connection cable for remote keypad.	All
	MDCAB-1.5	1.5 meter connection cable for remote keypad.	All
	CP600-BASE1	Panel mounting base (only) for SOP-20 keypad. IP20 rating.	All
	SOP20-MP-IP20	Panel mounting base for SOP-20 keypad, including adapting metal plate and PCB protection plate. IP20 rating.	All
	SOP20-MP-IP54	Panel mounting base for SOP-20 keypad, including PCB protection plate and rubber seals. IP54 rating.	All
	MD580-AZJ1	Panel mounting base for MDKE-10. IP20 rating.	All
I/O extension cards	MD38IO1	I/O extension card 1, provides: 5x DI, 1x AI, 1x relay output, 1x DO, 1x AO, RS485 (Modbus-RTU) and CAN (CANlink) ports.	Frame sizes T4-T12
	MD38IO2	I/O extension card 2, provides 3x extra DI terminals.	All
	MD38IO3	I/O extension card 3, provides 3x DI, 1x relay output, Modbus-RTU interface.	All
	MD38DW1	I/O extension card 4, provides 5x DI, 1x AI, 1x AO, 1x DO, 1x relay output , RS485 (Modbus-RTU) and CAN (CANlink) ports, TTL differential encoder input.	Frame sizes T4-T12
	MD38DW2	I/O extension card 5, provides RS485 (Modbus-RTU) port and TTL differential encoder input.	All
	MD520IO1	I/O extension card 6, provides 3x DI, 1x relay output, 1x AO, Modbus-RTU interface.	All
Fieldbus cards	MD38CAN1	CANlink/CANopen option card.	All
	MD38TX1	Modbus RTU option card.	All
	MD38DP2	PROFIBUS DP option card.	Frame sizes T4-T12
	MD-SI-DP2	PROFIBUS DP option card (designed to cover small frames).	All
	MD500-PN1	PROFINET option card.	All
	MD500-ECAT	EtherCAT option card.	All
	MD500-EN1	Ethernet/IP option card.	All
	MD500-EM1	Modbus TCP option card.	All
PG cards	MD38PGMD	Multifunctional encoder option card, compatible with differential, open-collector and push-pull encoder types. Supports differential output and open-collector output.	All
	MD38PG4D	Option card for resolver (10 kHz excitation) with selectable ratio simulated encoder output (TTL differential).	Frame sizes T4, T7-T12
	MD38PG4	Option card for resolver (10 kHz excitation).	All
	ES510-PG-CT1	23-bit serial encoder card.	All
	MD520-PG-S1	Sin/Cos encoder option card with selectable ratio simulated encoder output (TTL differential and HTL).	All
Mounting brackets	MD500-AZJ-A1T1	Through hole mounting bracket for frame T1.	Frame size T1
	MD500-AZJ-A1T2	Through hole mounting bracket for frame T2.	Frame size T2
	MD500-AZJ-A1T3	Through hole mounting bracket for frame T3.	Frame size T3
	MD500-AZJ-A1T4	Through hole mounting bracket for frame T4.	Frame size T4
	MD500-AZJ-A1T5	Through hole mounting bracket for frame T5.	Frame size T5
	MD500-AZJ-A1T6	Through hole mounting bracket for frame T6.	Frame size T6
	MD500-AZJ-A1T7	Through hole mounting bracket for frame T7.	Frame size T7
	MD500-AZJ-A1T8	Through hole mounting bracket for frame T8.	Frame size T8
	MD500-AZJ-A1T9	Through hole mounting bracket for frame T9.	Frame size T9
Cable brackets	MD500-AZJ-A2T1	Cable shield grounding bracket for frame T1.	Frame size T1
	MD500-AZJ-A2T2	Cable shield grounding bracket for frame T2.	Frame size T2
	MD500-AZJ-A2T3	Cable shield grounding bracket for frame T3.	Frame size T3
	MD500-AZJ-A2T4	Cable shield grounding bracket for frame T4.	Frame size T4
	MD500-AZJ-A2T5	Cable shield grounding bracket for frame T5.	Frame size T5
	MD500-AZJ-A2T6	Cable shield grounding bracket for frame T6.	Frame size T6
	MD500-AZJ-A2T7	Cable shield grounding bracket for frame T7.	Frame size T7
	MD500-AZJ-A2T8	Cable shield grounding bracket for frame T8.	Frame size T8
	MD500-AZJ-A2T9	Cable shield grounding bracket for frame T9.	Frame size T9
Guide rails	MD500-AZJ-A3T10	Guide rails for inserting in/extracting from the cabinet for frame sizes T10 to T12.	Frame sizes T10-T12

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3. Drives & Motion Control

3.1 Offering Overview’s

3.1.1 LV VSDs

3.1.1.3 MD 630

INOVANCE

MD630 General-Purpose Compact AC Drive

High Functionaliy & Flexibility

-20°C to 60°C
Harsh Environments

4-in-One Bus

Predictive Maintenance

Open & closed loop motor control supported

CE cULus LISTED STO SIL3 REACH RoHS

EtherCAT PROFINET EtherNet/IP Modbus

Features & Functions

4-in-One Fieldbus Onboard

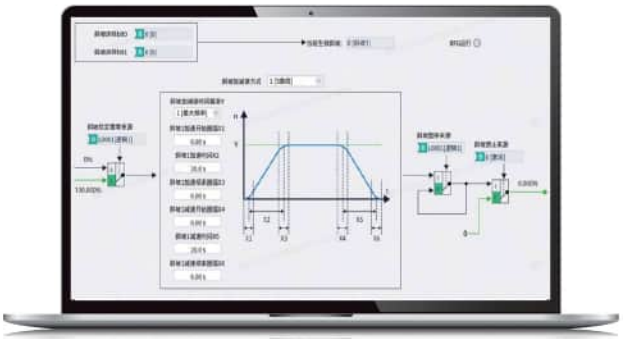
- The MD630N supports 4-in-one fieldbus: EtherCAT, PROFINET, EtherNet/IP and Modubs TCP.

Life-time estimation for predictive maintenance

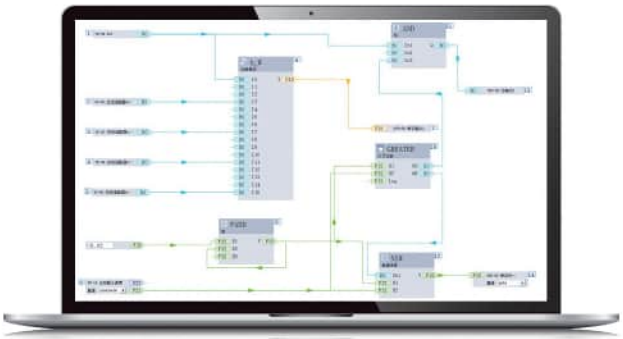
- Life-time prediction for the key components of the AC drive, such as fan, IGBT, capacitor.

INOVANCE's new commissioning software platform iFA Drive

- New software platform common for AC Drives and Servo Drives.



Function diagram guided debugging



Graphical free programming

Features & Functions

MD630N - Ethernet communication model

MD630S - serial communication model

Control Interfaces

+24 VDC auxiliary control supply

I/Os: 2x DI, 2x AI, 1x DO, 1x RO

1x Ethernet port: EtherCAT, PROFINET and EtherNet/IP Modbus TCP communication

Common Features

Human-machine interface

Easy to read colour LED keypad (5-bit digital display)
USB Type-C commissoning port
1×RS485 commissioning port
(for PC or external keypad connection)

Control functions

Induction, PM synchronous and synchronous reluctance motor in open loop and closed loop

Interface expansion

1x Option card slot
(motor feedback interface, I/O expansion)

Complete functionality

STO SIL 3 PL e
Built-in braking transistor

Environmental features

IP20 rating
Operating ambient temperature: -20 to +60°C
Built-in EMC filter (C3 for 10 m)

Control Interfaces

I/Os: 7x DI, 2x AI, 1x DO, 1x RO, 1x AO, 1x PO

1x RS485 serial port: Modbus RTU protocole

Design for reliable and stable operation

Advanced functionality cooling fan

Auto-speed regulation based on actual temperature, without tihe need of additional settings (the cooling fan starts automatically when the drive is in operation or the heatsink temperature is above 40°C). An alarm will be triggered when the fan stops rotating unexpectedly. MD630 can estirnate fan life, operate the fan in forward and reverse rotation to clean thhe air duct, preventing far blockage and drive shutdown in dusty enviironments

Built-in EMC filter

Ensure stable operation, for application with high EMC requirements.

Up to 60°C operation temperture

Maximum operating ambient temperature 60°C, with derating above 50°C.

Various accessories for harsh environments

Junction box protection kit, for preventing ingress of dust

Cable shield bracket, enhance electromagnetic compatibility

Vibration damping moun support, increase vibrati resistance

Designed for compact installation

- MD630 AC Drive supports side-by-side installation.
- Taking the 1.5kW model as an example:
  When installing the MD630 drives side-by-side*, the volume is reduced by 34%, and the footprint is reduced by 41%, compared with MD520 drive.

* Note: When installing side-by-side,drive's output current should be de-rated above 40°C ambient temperature.

Ordering code

MD630 S - 4T 2R1 B S - INT
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category:** MD630 Series AC Drive	④ **Rated output current*** 1R5: 1.5A 2R1: 2.1A 3R8: 3.8A ... 9R0: 9.0A ... 045: 45A	⑤ **Braking unit** B: with braking unit
② **Model type:** S: Serial communication N: Ethernet communication		⑥ **Version:** S: with STO function
③ **Voltage class** 4T: three-phase 380V to 480V		⑦ **Variant:** INT: International variant

* Note: the value indicates the rated output current for heavy duty, with two digits and the letter R that represents the decimal point, or with three digits.

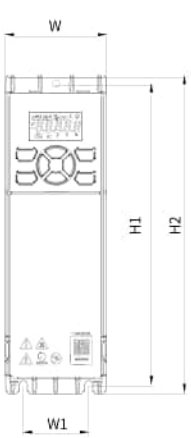
Accessories

Frame size	Description	Model
T1-T5	Multifunctional IO expansion card for MD6X0	MD-IO-M1
T1-T5	Digital encoder expansion card for MD6X0[1]	MD-PG-AU1
T1-T5	Resolver expansion card for MD6X0	MD-PG-R1
T1-T5	SinCos encoder expansion card for MD6X0	MD-PG-S1
T1-T2	DIN rail mounting bracket for MD630 frames T1 and T2	MD630-AZJ-A4T1
T4	Mounting bracket for MD630 frame T4	MD630-AZJ-A1T4
T5	Mounting bracket for MD630 frame T5	MD630-AZJ-A1T5
T1-T3	Vibration damping mounting support for MD630 frames T1-T3	MD630-AZJ-A2T1
T4-T5	Vibration damping mounting support for MD630 frames T4 & T5	MD630-AZJ-A2T4
T1-T2	Junction box protection kit for MD630 frames T1 and T2	MD630-JXH-A5T1
T3	Junction box protection kit for MD630 frame T3	MD630-JXH-A5T3
T4	Junction box protection kit for MD630 frame T4	MD630-JXH-A5T4
T5	Junction box protection kit for MD630 frame T5	MD630-JXH-A5T5
T1-T2	Shield bracket for MD630 frames T1 & T2	MD630-AZJ-A3T1
T3	Shield bracket for MD630 frame T3	MD630-AZJ-A3T3
T4	Shield bracket for MD630 frame T4	MD630-AZJ-A3T4
T5	Shield bracket for MD630 frame T5	MD630-AZJ-A3T5

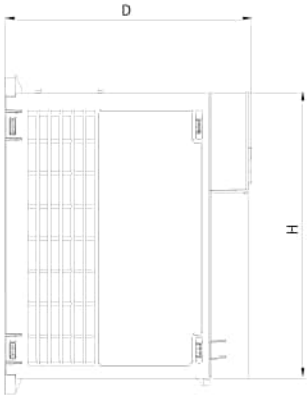
Note: [1] Including ABZ incremental encoder,INOVANCE 23 bit encoder, SSI encoder, ENDAT encoder, BISS encoder.

Dimensions

T1~T3 frames

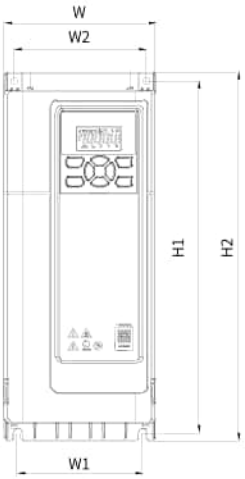


Front view

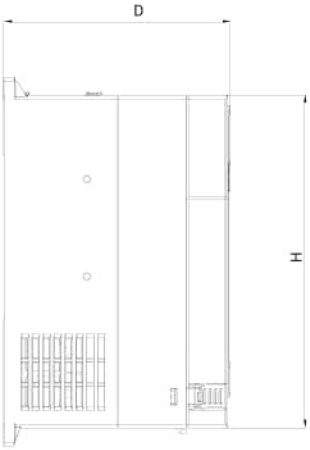


Side view

T4~T5 frames

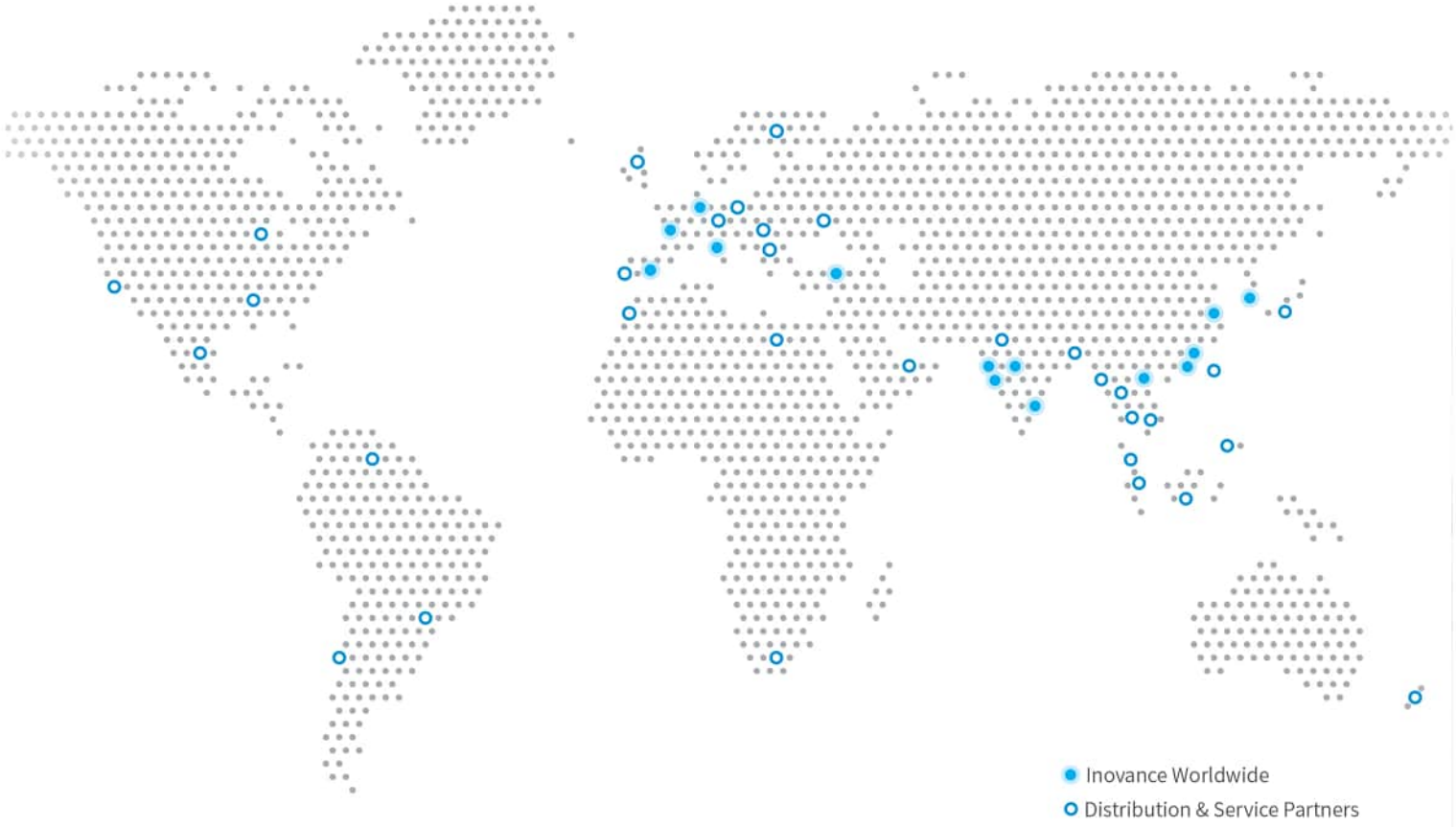


Front view



Side view

MD630S-4T □□□ BS-INT		1R5	2R1	3R8	5R1	7R2	9R0	013	017	025	032	037	045
MD630N-4T □□□ BS-INT		1R5	2R1	3R8	5R1	7R2	9R0	013	017	025	032	037	045
Supply Voltage		3 phase 400 VAC (380~480V, -15%~10%), 50Hz/60Hz (±5%)											
Rated power(kW)	Heavy duty	0.37	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11.0	15.0	18.5	22.0
	Normal duty	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0
Rated input current (A)	Heavy duty	1.7	2.4	4.6	6.3	8.9	11.4	16.8	22.0	32.4	41.6	48.7	58.5
	Normal duty	2.4	4.6	6.4	9.0	11.4	17.0	22.7	33.4	42.1	49.1	60.1	71.6
Rated output current(A)	Heavy duty	1.5	2.1	3.8	5.1	7.2	9.0	13.0	17.0	25.0	32.0	37.0	45.0
	Normal duty	2.1	3.8	5.1	7.2	9.0	13.0	17.0	25.0	32.0	37.0	45.0	60.0
Frame		T1			T2			T3		T4		T5	
W × H2 × D (mm)		70 × 217 × 169.5			75 × 217 × 169.5			90 × 262 × 190		125 × 303 × 186		165 × 330 × 200	
Mass (kg)		1.25			1.36			2.08		4.01		5.94	
Minimum braking resistance (Ohm)		96	96	96	64	64	32	32	32	24	24	24	24
RFI filter (category C2)		FN 3287-10-44	FN 3287-10-44	FN 3287-10-44	FN 3287-10-44	FN 3287-10-44	FN 3287-16-44	FN 3287-25-33	FN 3287-40-33	FN 3287-50-33	FN 3287-50-33	FN 3287-63-53	FN 3287-80-53
Grounding shield bracket	Part no.	01040316			01040316			01040318		01040310		01040309	
	Model	MD630-AZJ-A3T1			MD630-AZJ-A3T1			MD630-AZJ-A3T3		MD630-AZJ-A3T4		MD630-AZJ-A3T5	



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3. Drives & Motion Control

3.1 Offering Overview’s

3.1.1 LV VSDs

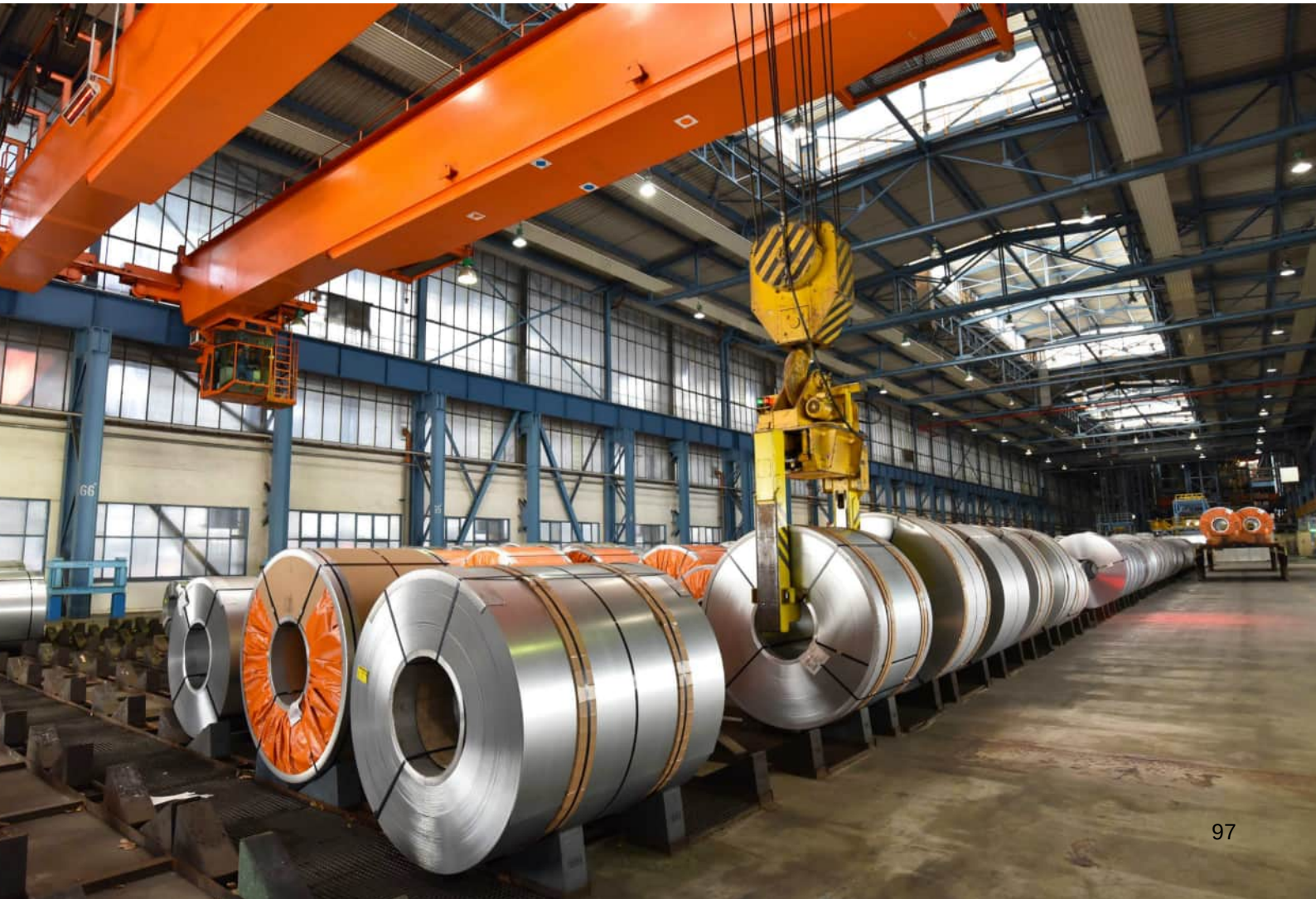
3.1.1.4 MD 880

INOVANCE

MD880 AC Drive

High-Performance AC Drive

- Wide operating voltage and product range:
  3 ph 380–415 VAC, 3.7 to 2800 kW
  3 ph 525–690 VAC; 55 to 5400 kW
- Rectifier type: basic rectifier, feedback rectifier, active front end
- AC asynchronous and PM synchronous motor control
- Excellent dynamic response
- Outstanding motor control performance
- Enhanced reliability: conformal coated PCBs compliant to 3S2 and 3C3 environments
- STO SIL 3



Structure and features of MD880 multi-drive system

Power supply module

Incoming line cabinet

Auxiliary cabinet

Instruments

- Voltmeter, ammeter
- Switch-on button, switch-off button, fault indicator
- Reset button, emergency stop button, remote/local switchover button

SOP-20-880 operating panel

Air circuit-breaker

- Max. breaking capacity reaching 100 kA, with comprehensive protective functions, easy installation, and high reliability

Bridging cabinet

- Used to connect two groups of cabinets with over-long width to realize common DC bus.

Drive cabinet

- High power density, covering 3.7 kW to 5600 kW

Fuse-type disconnector Option

- Integrated with isolative and protective functions to support online maintenance of drive cabinet
- Adopting quick-acting fuse to trigger safety protector quickly and improve reliability

Power module

- Modular structure to maximize space utilization and reduce footprint
- Floor-mounting for high-power modules for easy maintenance

Note: We can provide well-assembled cabinets or standard power units as needed.

MD880 series products

Product ordering code

MD880 - 50M - XXXX - 4 - SG - N
① ② ③ ④ ⑤ ⑥

① MD880 AC drive series MD880: Air-cooled MD880LC: Water-cooled	② 20M: Basic power supply module 30M: Regenerative power supply module 40M: Active power supply module 50M: Drive module 60M: 3-PH braking module 61M: 1-PH braking module 80M: DCDC module	30F: Regenerative power supply filter module 40F: Active power supply filter module 30K: Regenerative power supply frame 40K: Active power supply frame 40D: Low-power active power supply (with filter system) 80D: DCDC (with output filter system)
③ XXXX : Rated current (Rated power for 60M/61M series)	④ 4: 400 V 5: 500 V 7: 690 V	
⑤ SG: 2nd generation of controller	⑥ N: H8A module without quick-plug structure or output reactor	

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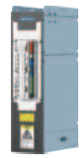
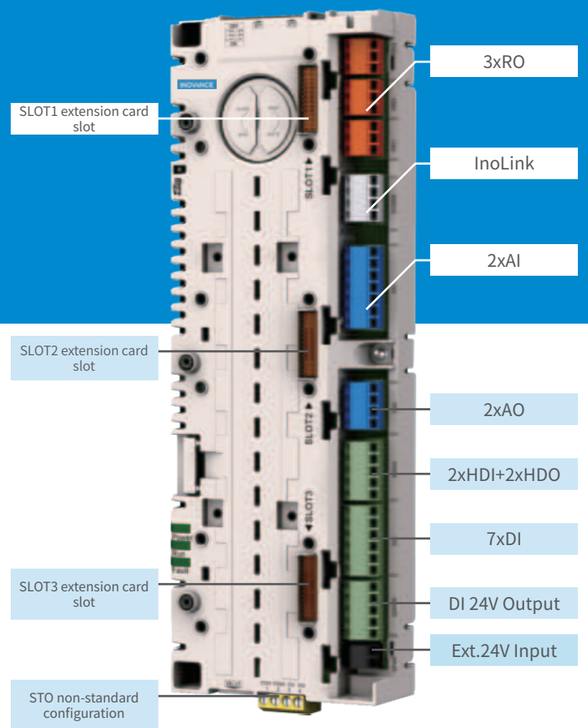
MD880 multi-drive series power module

Item	Inverter module						Basic power supply module
Photo							
Frame size	H1-H3	H4	H6	H7	H8	H8A	T2
Power rating	380–415 V: H1: 3.7–11 kW H2: 15–22 kW H3: 30–45 kW	380–415 V: 55–90 kW	380–415 V: 110–132 kW 525–690 V: 55–160 kW	380-415 V: 160-200 kW 380–500 V: 250 kW 525-690 V: 200-250 kW	380–415 V: 250–500 kW 525–690 V: 315–710 kW	380–15 V: 250–500 kW 380–500 V: 400–560 kW 525–690 V: 315–710 kW	380–415 V: 475–649 kW 525–690 V: 650–929 kW
Function type	DC/AC drive module	DC/AC drive module	DC/AC drive module	DC/AC drive module	DC/AC drive module	DC/AC drive module	AC/DC drive module
Max. weight (kg)	11	20	35	45	130	80	188
Dimensions in mm (WxDxH)	100 x 413 x 415	200 x 413 x 415	180 x 438 x 770	180 x 463 x920	230 x 582 x 1395	230 x 582 x 939	230 x 602 x 1393

Item	Active power supply frame units		Regenerative power supply frame units	
Photo				
Frame size	BLCL+H8	BLCL+2 x H8	L+H8	L+2 x H8
Power rating	380–415 V: 394–556 kW 380–500 V: 463–694 kW 525–690 V: 437–639 kW	380–415 V: 749–1056 kW 380–500 V: 880 kW 525–690 V: 829–1214 kW	380–415 V: 423–595 kW 525–690 V: 684–1026 kW	380–415 V: 787–1106 kW 525–690 V: 1272–1909 kW
Function type	AC/DC power supply module	AC/DC power supply module	AC/DC power supply module	AC/DC power supply module
Max. weight (kg)	460	650	320	480
Dimensions in mm (WxDxH)	631 x 624 x 1450	874 x 624 x 1450	631 x 624 x 1450	874 x 624 x 1450



The HCU control module, the master controller developed for MD880 series drives with single-drive or multi-drive systems, is mainly used to control basic power supply modules, regenerative power supply modules, active power supply modules, drive modules, and DCDC power modules. It features powerful functions, a compact structure, high extendability, high reliability, flexible networking, and excellent control algorithms. For use with drive units, the HCU control module supports synchronous and asynchronous motor control, V/f control, sensorless vector control, and feedback vector control. For use with DCDC modules, the HCU control module supports voltage control, current control, power control, and switchover among different control modes.

High performance

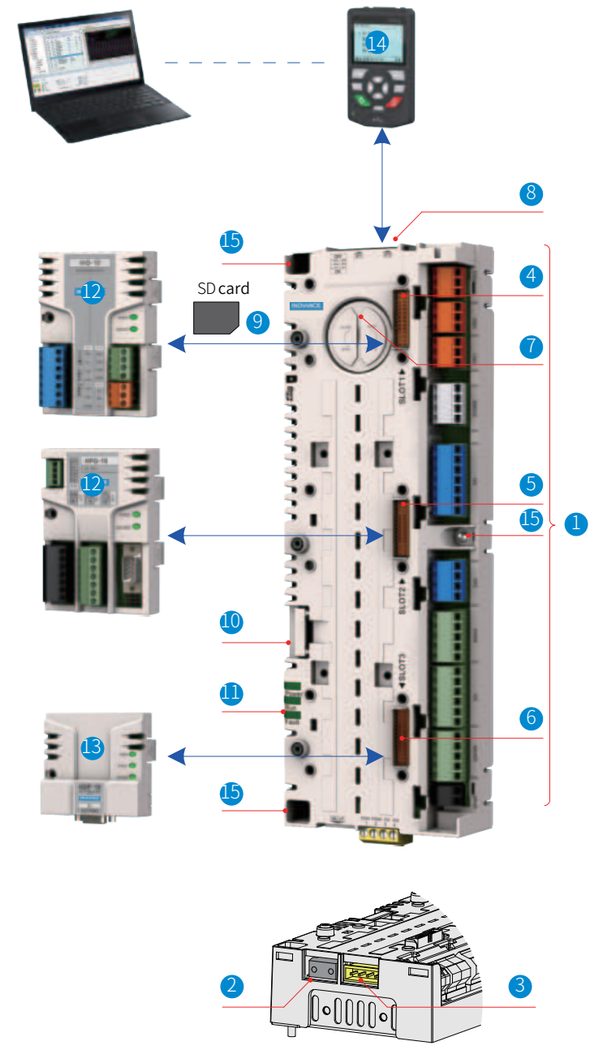
High reliability

HCU extension modules

Item	I/O extension modules	Encoder detection modules	Bus adapter modules
Photo			
Type	1. I/O extension module (2xDIO+2xAI+2xAO+1RO)	1. HTL incremental encoder detection module 2. Resolver detection module 3. TTL incremental encoder detection module 4. Sin/Cos encoder detection module	Fieldbus adapter modules 1. PROFIBUS-DP 2. CANopen 3. Modbus RTU Industrial Ethernet modules 1. PROFINET IO 2. Modbus TCP 3. EtherCAT Ethernet commissioning module 1. Ethernet commissioning module

Components of HCU control module

No.	Name	Description
1	User terminal	User I/O terminals are included as standard.
2	Communication optical fiber	Used as the optical fiber communication interface between HCU and power module.
3	STO terminal	Safe torque off (STO)
4	Slot 1	Extension module interface
5	Slot 2	Extension module interface
6	Slot 3	Extension module interface
7	Battery cover	RTC backup battery cover
8	Operating panel terminal	Two RJ45 terminals with the same assignment for easy cascading
9	SD card	Used as the standard memory of HCU, which can be inserted flexibly
10	Safety module slot	Used as the dedicated slot for functional safety module
11	Indicator	Indicates the state of the power supply, operation, and fault
12	Function module SIZE1	105 x 73 x 24 (mm)
13	Function module SIZE2	75 x 73 x 24 (mm)
14	Intelligent operating panel	SOP-20-880
15	Fixing hole	Three fixing holes for HCU



MD880 series products

Control system and function module options

No.	Name	Model	Description
1	Control module	HCU-20	Basic power supply control module
		HCU-30	Regenerative power supply control module
		HCU-40	Active power supply control module
		HCU-50S	2nd generation of drive control module
		HCU-60	Three-phase braking control module
		HCU-80	DC chopper control module
2	Paralleled-module control module	HPCU-40	2 to 4 paralleled modules supported
		HPCU-60	2 to 6 paralleled modules supported
		HPCU-A0	2 to 10 paralleled modules supported
3	Function extension module	HESD-10	Extension of 1 slot supported
4	Voltage/Current detection module	HSVM-10	Three-phase AC input voltage detection
		HSVM-20	Voltage/Current detection module (1-channel voltage and 2-channel current supported)
		HSVM-30	Voltage/Current detection module (2-channel voltage and 2-channel current supported)
5	Encoder detection module	HPG-10	HTL incremental differential, single-ended, OC or OE encoder detection, frequency-division output
		HPG-30	Sin/Cos encoder detection module
		HPG-40	Resolver detection
		HPG-50	TTL incremental OC or differential encoder detection, frequency-division output
6	Inobus optical fiber extension module	HOFM-10	1 pair of 50 M optical fiber extension module
		HOFM-30	3 pairs of 50 M optical fiber extension module
7	Intelligent operating panel	SOP-20-880	Operating panel for commissioning and monitoring
8	Fieldbus adapter module	HCAN-10	CANopen fieldbus adapter
		HMBA-10	Modbus RTU fieldbus adapter
		HDP-10	PROFIBUS-DP fieldbus adapter
9	Industrial Ethernet module	HPFN-10	PROFINET IO industrial Ethernet
		HMBT-10	Modbus TCP industrial Ethernet
		HETC-10	EtherCAT industrial Ethernet
10	Ethernet commissioning module	HETN-10	Ethernet commissioning module
11	Optical fiber router module	HOFR-50	Information exchange of 2 to 5 HCU controllers (master/slave communication achieved through optical fibers)
12	I/O extension module	HIO-10	2 AIs; 2 AO2; 2 DIOs; 1 relay output
13	Process data collection module	HIBA-10	PDA collection module
14	Remote service gateway	HGW-10	Centralized monitoring module

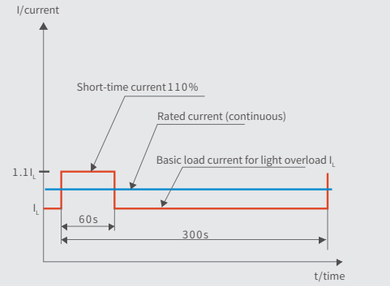
INOVANCE

Comprehensive technical data for MD880

Item		Description
Basic power supply module	Input voltage	4: 380–415 VAC, 7: 525–690 VAC; -10% to +10% (-15%, < 1 min)
	Input frequency range	47–63 Hz
	Output voltage	4: 540–590 VDC, 7: 740–975 VDC
	Overload capacity	Light overload: Continuous operation of 1 min allowed for 110% x rated load every 5 min; Heavy overload: Continuous operation of 1 min allowed for 150% x rated load every 5 min
	Operating efficiency	Higher than 98%
	Fundamental power factor	Higher than 0.95 (full load at rated values)
Regenerative power supply module	Input voltage	4: 380–415 VAC; 7: 525–690 VAC; -10% to +10% (-15%, < 1 min)
	Input frequency range	47–63 Hz
	Output voltage	4: 540–590 VDC; 7: 740–975 VDC
	Overload capacity	Light overload: Continuous operation of 1 min allowed for 110% x rated load every 5 min; Heavy overload: Continuous operation of 1 min allowed for 150% x rated load every 5 min
	Operating efficiency	Higher than 98%
	Fundamental power factor	Higher than 0.95 (full load at rated values)
Active power supply module	Input voltage	4: 380–415 VAC; 5: 380–500 VAC; 7: 525–690 VAC; -10% to +10% (-15%, < 1 min)
	Input frequency range	47–63 Hz
	Output voltage	4: 540–720 VDC; 5: 570–750 VDC; 7: 740–975 VDC
	Overload capacity	Light overload: Continuous operation of 1 min allowed for 110% x rated load every 5 min; Heavy overload: Continuous operation of 1 min allowed for 150% x rated load every 5 min
	Operating efficiency	Higher than 97%
	Fundamental power factor	Higher than 0.99 (full load at rated values)
	Input harmonic current	THDI < 5% (rated power); THDU < 5% (Rzc > 20)
Drive module/ Single-drive	Input voltage	Multi-drive: 4: 540–720 VDC; 5: 540–750 VDC; 7: 740–975 VDC Single-drive: 4: 380–480 VAC; 7: 525–690 VAC
	Output voltage	Multi-drive: 4: 0–415 VAC; 5: 0–500 VAC; 7: 0–690 VAC; Single-drive: 4: 0–480 VAC; 7: 0–690 VAC
	Output frequency	0–300 Hz (Contact Inovance for frequencies higher than 300 Hz.)
	Operating efficiency	Higher than 98%
	Motor control mode	V/f, SVC, FVC
	Speed regulation range	V/f: 1:50; SVC: 1:200; FVC: 1:1000
	Speed control precision	SVC: ±10%; Fs (slip rate); FVC: ±0.01%
	Torque response	Open-loop: 5 ms; closed-loop: 3 ms
	Torque control mode	Sensorless vector control; feedback vector control
	Starting torque	0.5 Hz/150% (SVC); 0 Hz/200% (FVC)
	Overload capacity	Light overload: Continuous operation of 1 min allowed for 110% x rated load every 5 min; Heavy overload: Continuous operation of 1 min allowed for 150% x rated load every 5 min

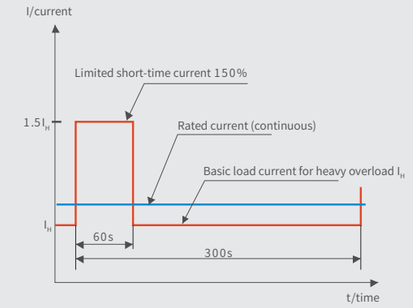
Item		Description
DCDC	Voltage on high voltage side	4: 540–720 V; 5: 540–850 V; 7: 740–1050 V
	Voltage on the low voltage side	4: 24–670 V; 5: 24–800 V; 7: 24–1000 V
	Voltage accuracy	Low-voltage side ⩽ 0.1% Fs; High-voltage side ⩽ 1% Fs
	Current accuracy	⩽ 1% Fs
	Response time	⩽ 3 ms (response time for increasing from 10% to 90% of rated current)
	Switchover time	⩽ 6 ms (response time for changing from +90% to -90% of rated current)
	Overall efficiency	⩾ 97%
	Overload capacity	Quick overload: 200% I_{fast} 10s overload for every 60s Heavy-overload: a minute of operation at 150% of rated current (150%I_H) allowed every 5 minutes
Connection	Analog input	Two AIs: -10 V to +10 V or -20 mA to +20 mA (selected through jumper)
	Analog output	Two AOs: 0 V to 10 V or 0 mA to 20 mA (selected through jumper)
	Digital input	Seven DIs: NPN/PNP; "0" < 5; "1" > 15, Rin: 2 kΩ
	High-speed digital input	Two high-speed DIs: NPN/PNP; "0" < 5; "1" > 15; Rin: 2 kΩ 24 V logic level, input frequency < 100 kHz
	High-speed digital output	Two high-speed DOs: OC; max. input voltage: 30 VDC; 24 V logic level, output frequency < 100 kHz
	Relay output	Three relay outputs; NO or NC output; 250 VAC/30 VDC, 2 A
	Intelligent operating panel or PC	Interface mode: Dual-RJ45 interface; physical layer: EIA-485; master-slave mode; max. communication rate: 4 Mbps
	Safety function	Safe torque off (optional)
	Inolink communication	Physical layer: EIA-485; max. communication rate: 5 Mbps
Ambient condition	Ambient temperature	-10°C to +40°C (non-frosting); derating required for temperatures between 40°C and 50°C
	Ambient humidity	5% to 95% (without condensation)
	Mounting altitude	Derating is not required for altitudes not higher than 1000 m. For altitudes higher than 1000 m, derate 1% for every additional 100 m. The maximum altitude is 4000 m. An isolation transformer is needed on the input side for altitudes higher than 2000 m.
Mechanical data	Vibration resistance	Compliant with Class 3M4 in GB/T4798.3
	IP rating	Module: IP00; Cabinet: IP21 IP23 and IP43 are optional.
	Safety performance	Compliant with EN 61800-5-1
	Cooling mode	AF (forced air cooling) compliant with EN 60146

Light-overload curve



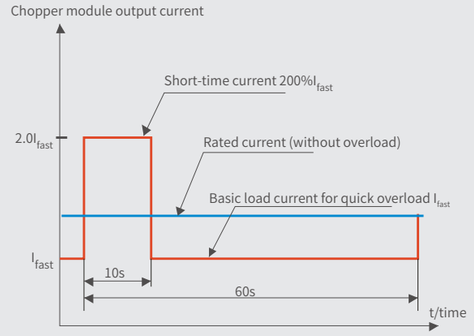
The basic load current (I_L) for light-overload mode is kept 60s cyclically per 110% load.

Heavy-overload curve



The basic load current (I_H) for heavy-overload mode is kept 60s cyclically per 150% load.

DCDC quick overload curve



Technical data of MD880 series multi-drive products

MD880-20 series basic power supply module

UN = 400 V (380–415 V), ±10% (-15%, < 1 min) at 400 V rated power											
Model MD880-20...	Normal duty without overload					Light-overload application		Heavy-overload application		Power loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
6 pulse waves											
0718-4	718	879	1142	497	475	844	456	659	356	3.52	T2
0982-4	982	1202	1562	680	649	1154	623	901	487	5.12	T2
1336-4	1336	1635	2126	926	883	1570	848	1226	662	7.04	2 x T2
1826-4	1826	2235	2905	1265	1207	2146	1159	1676	905	10.24	2 x T2
2739-4	2739	3352	4358	1898	1810	3218	1738	2514	1358	15.36	3 x T2
3651-4	3651	4469	5809	2529	2413	4290	2317	3351	1810	20.48	4 x T2
4564-4	4564	5586	7262	3162	3016	5363	2896	4190	2262	25.6	5 x T2
5477-4	5477	6704	8715	3794	3620	6435	3475	5028	2715	30.72	6 x T2
12 pulse waves											
1336-4	1336	1635	2126	926	883	1570	848	1226	662	7.04	2 x T2
1826-4	1826	2235	2905	1265	1207	2146	1159	1676	905	10.24	2 x T2
2674-4	2674	3273	4255	1853	1767	3142	1697	2455	1325	14.08	4 x T2
3651-4	3651	4469	5809	2529	2413	4290	2317	3351	1810	20.48	4 x T2
4008-4	4008	4906	6377	2777	2649	4709	2543	3679	1987	21.12	6 x T2
5477-4	5477	6704	8715	3794	3620	6435	3475	5028	2715	30.72	6 x T2

UN = 690 V (525–690 V), ±10% (-15%, < 1 min) at 690 V rated power											
Model MD880-20...	Normal duty without overload					Light-overload application		Heavy-overload application		Power loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
6 pulse waves											
0570-7	570	698	907	681	650	670	624	523	487	2.96	T2
0815-7	815	998	1297	974	929	958	892	748	697	4.32	T2
1061-7	1061	1299	1688	1268	1210	1247	1161	974	907	5.92	2 x T2
1515-7	1515	1854	2411	1811	1727	1780	1658	1391	1295	8.64	2 x T2
2273-7	2273	2782	3617	2716	2591	2671	2488	2087	1944	12.96	3 x T2
3031-7	3031	3710	4823	3622	3456	3561	3317	2782	2592	17.28	4 x T2
3788-7	3788	4636	6027	4527	4319	4451	4146	3477	3239	21.6	5 x T2
4546-7	4546	5564	7233	5433	5183	5341	4976	4173	3887	25.92	6 x T2
12 pulse waves											
1061-7	1061	1299	1688	1268	1210	1247	1161	974	907	5.92	2 x T2
1515-7	1515	1854	2411	1811	1727	1780	1658	1391	1295	8.64	2 x T2
2122-7	2122	2597	3376	2536	2419	2493	2323	1948	1814	11.84	4 x T2
3031-7	3031	3710	4823	3622	3456	3561	3317	2782	2592	17.28	4 x T2
4546-7	4546	5564	7233	5433	5183	5341	4976	4173	3887	25.92	6 x T2

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Technical data of MD880 series multi-drive products

MD880-30 series regenerative power supply module

UN = 400 V (380–415 V), ±10% (-15%, < 1 min) at 400 V rated power											
Model MD880-30...	Normal duty without overload					Light-overload application		Heavy-overload application		Power loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
0640-4	640	783	1018	443	423	752	406	587	317	7.9	L+H8
0900-4	900	1102	1432	624	595	1057	571	826	446	12	L+H8
1190-4	1190	1457	1894	825	787	1399	755	1093	590	14.1	L+2 x H8
1674-4	1674	2049	2664	1160	1106	1967	1062	1537	830	22.4	L+2 x H8
2380-4	2380	2913	3787	1649	1573	2796	1510	2185	1180	28.2	2 x (L+2 x H8)
3348-4	3348	4098	5327	2319	2213	3934	2124	3073	1660	44.8	2 x (L+2 x H8)
5022-4	5022	6147	7991	3479	3319	5901	3186	4610	2489	67.2	3 x (L+2 x H8)

UN = 690 V (525–690 V), ±10% (-15%, < 1 min) at 690 V rated power											
Model MD880-30...	Normal duty without overload					Light-overload application		Heavy-overload application		Power loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
0600-7	0600	734	955	717	684	705	657	551	513	9.2	L+H8
0900-7	0900	1102	1432	1076	1026	1057	985	826	770	13.1	L+H8
1116-7	1116	1366	1776	1334	1272	1311	1221	1024	954	16.5	L+2 x H8
1674-7	1674	2049	2664	2001	1909	1967	1832	1537	1431	24.4	L+2 x H8
2232-7	2232	2732	3551	2667	2545	2623	2443	2049	1909	33	2 x (L+2 x H8)
3348-7	3348	4098	5327	4001	3817	3934	3664	3073	2863	48.8	2 x (L+2 x H8)
5022-7	5022	6147	7991	6002	5726	5901	5497	4610	4294	73.2	3 x (L+2 x H8)

※Note: Data in the preceding table are for reference only.

Technical data of MD880 series multi-drive products

MD880-40 series active power supply module

UN = 400 V (380–415 V), ±10% (-15%, <1min) at 400 V rated power											
Model MD880-40...	Normal duty without overload					Light-overload application		Heavy-overload application		Power loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
0094-4	94	107	140	65	64	103	62	81	48	1.6	LCL+H3
0149-4	149	170	221	103	102	164	98	128	77	2.55	LCL+H4
0183-4	183	209	272	127	126	201	120	157	94	3.15	LCL+H4
0299-4	299	342	444	207	205	328	197	256	154	5.12	LCL+H6
0395-4	395	452	587	274	271	433	260	339	203	6.77	LCL+H7
0575-4	575	657	854	398	394	631	379	493	296	10.7	BLCL+H8
0810-4	810	926	1204	561	556	889	533	694	417	15.5	BLCL+H8
1092-4	1092	1248	1623	757	749	1198	719	936	562	20.3	BLCL+2 x H8
1539-4	1539	1759	2287	1066	1056	1689	1013	1319	792	29.5	BLCL+2 x H8
2185-4	2185	2498	3247	1514	1499	2398	1439	1873	1124	40.6	2 x (BLCL+2 x H8)
3078-4	3078	3519	4574	2132	2111	3378	2027	2639	1583	58.9	2 x (BLCL+2 x H8)
4617-4	4617	5278	6861	3199	3167	5067	3040	3958	2375	88.4	3 x (BLCL+2 x H8)

UN = 500 V (380–500 V), ±10% (-15%, < 1 min) at 500 rated power										
Model MD880-40···	Normal duty without overload					Light-overload application		Heavy-overload application		Outline dimensions
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}	
	A (AC)	A (DC)	A (DC)	kVA	kW	A(DC)	kW(DC)	A(DC)	kW(DC)	
0540-5	540	617	802	468	463	593	444	463	347	BLCL+H8
0810-5	810	926	1204	701	694	889	667	694	521	BLCL+H8
1026-5	1026	1172	1524	889	880	1127	844	879	659	BLCL+2H8

UN = 690 V (525–690 V), ±10% (-15%, < 1 min) at 690 V rated power											
Model MD880-40...	Normal duty without overload					Light-overload application		Heavy-overload application		Power Loss (kW)	Frame size
	I_N	I_N	I_{Max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(DC)	A(DC)	kVA	kW(DC)	A(DC)	kW(DC)	A(DC)	kW(DC)		
0369-7	0369	422	548	441	437	405	419	316	327	12.4	BLCL+H8
0540-7	0540	617	802	645	639	593	613	463	479	16.5	BLCL+H8
0701-7	0701	801	1042	838	829	769	796	601	622	23.6	BLCL+2 x H8
1026-7	1026	1173	1525	1226	1214	1126	1165	880	910	31.4	BLCL+2 x H8
1402-7	1402	1603	2083	1676	1659	1539	1592	1202	1244	47.2	2 x (BLCL+2 x H8)
2052-7	2052	2346	3049	2452	2428	2252	2331	1759	1821	62.8	2 x (BLCL+2 x H8)
3078-7	3078	3519	4574	3678	3642	3378	3496	2639	2731	94.2	3 x (BLCL+2 x H8)
4104-7	4104	4691	6099	4905	4856	4504	4661	3519	3642	126	4 x (BLCL+2 x H8)
5130-7	5130	5864	7632	6131	6069	5630	5827	4398	4552	157	5 x (BLCL+2 x H8)

※Note: Data in the preceding table are for reference only.

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Technical data of MD880 series multi-drive products

MD880-50 series drive module

UN = 400 V (380–415 V), ±10% (-15%, < 1 min) at 400 V rated power									
Model MD880-50...	Normal duty without overload			Light-overload application		Heavy-overload application		Power loss (W)	Frame size
	I_N	I_{Max}	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(AC)	kW(AC)	A(AC)	kW(AC)	A(AC)	kW(AC)		
0009-4-SG	9	11	3.7	9	3.7	5.1	2.2	100.0	H1
0013-4-SG	13	15.6	5.5	13	5.5	9	3.7	136.0	H1
0017-4-SG	17	21	7.5	17	7.5	13	5.5	168.0	H1
0023-4-SG	23	27	11	22	11	17	7.5	190.0	H1
0033-4-SG	33	40	15	32	15	25	11	290	H2
0038-4-SG	38	51	18.5	37	18.5	32	15	308	H2
0048-4-SG	48	59	22	45	22	37	18.5	401	H2
0060-4-SG	60	72	30	58	30	45	22	502	H3
0078-4-SG	78	96	37	75	37	60	30	592	H3
0094-4-SG	94	120	45	91	45	75	37	735	H3
0116-4-SG	116	146	55	112	55	91	45	762	H4
0149-4-SG	149	179	75	143	75	112	55	1150	H4
0183-4-SG	183	240	90	176	90	150	75	1468	H4
0245-4-SG	245	294	110	236	110	184	90	1758	H6
0299-4-SG	299	358	132	287	132	224	110	2104	H6
0349-4-SG	349	419	160	335	160	262	132	2587	H7
0395-4-SG	395	486	200	380	200	296	160	3203	H7
0516-4-SG-(N)	516	619	250	495	250	387	200	4921	H8（H8A）
0639-4-SG-(N)	639	766	355	613	315	479	250	6701	H8（H8A）
0757-4-SG-(N)	757	909	400	727	400	568	315	7960	H8（H8A）
0900-4-SG-(N)	900	1080	500	864	450	675	355	10133	H8（H8A）
1213-4-SG-(N)	1213	1456	630	1165	630	910	500	13402	2 x H8（2 x H8A）
1439-4-SG-(N)	1439	1727	800	1381	800	1079	630	15920	2 x H8（2 x H8A）
1710-4-SG-(N)	1710	2052	1000	1642	900	1283	710	20266	2 x H8（2 x H8A）
2158-4-SG-(N)	2158	2590	1200	2072	1200	1619	900	23880	3 x H8（3 x H8A）
2565-4-SG-(N)	2565	3078	1400	2072	1400	1924	1000	30399	3 x H8（3 x H8A）
3420-4-SG-(N)	3420	4104	1800	3283	1800	2565	1400	40532	4 x H8（4 x H8A）
4275-4-SG-(N)	4275	5130	2400	4104	2000	3206	1800	50665	5 x H8（5 x H8A）
5130-4-SG-(N)	5130	6156	2800	4925	2400	3848	2000	60798	6 x H8（6 x H8A）

UN = 500 V (380–500 V), ±10% (-15%, < 1 min) at 500 V rated power									
Model MD880-50···	Normal duty without overload				Light-overload application		Heavy-overload application		Outline dimensions
	I_N	I_N	I_{max}	P_N	I_{Ld}	P_{Ld}	I_{Ld}	P_{Ld}	
	A (AC)	A (DC)	A (DC)	kW(DC)	A(AC)	kW(AC)	A(AC)	kW(AC)	
0349-5-SG	349	386	454	250	335	200	262	160	H7
0590-5-SG-(N)	590	653	767	400	566	355	443	250	H8A
0810-5-SG-(N)	810	886	1053	560	778	500	608	400	H8A

Technical data of MD880 series multi-drive products

MD880-50 series drive module

UN: Three-phase 690 VAC (range: 525–690 VAC)									
Model MD880-50...	Rated value			Light-overload application		Heavy-overload application		Power loss (W)	Frame size
	I_N	I_{Max}	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
	A(AC)	A(AC)	kW(AC)	A(AC)	kW(AC)	A(AC)	kW(AC)		
0062-7-SG	62	74	55	60	55	46	45	798	H6
0082-7-SG	82	98	75	79	75	61	55	1163	H6
0099-7-SG	99	119	90	95	90	74	75	1321	H6
0125-7-SG	125	150	110	120	110	94	90	1494	H6
0144-7-SG	144	173	132	138	132	108	110	1788	H6
0192-7-SG	192	230	160	184	160	144	132	2436	H6
0217-7-SG	217	260	200	215	200	162	160	2724	H7
0270-7-SG	270	324	250	260	250	202	200	3342	H7
0340-7-SG-(N)	340	408	315	326	315	255	250	5109	H8(H8A)
0410-7-SG-(N)	410	492	400	394	355	308	315	6143	H8(H8A)
0530-7-SG-(N)	530	636	500	509	450	398	355	7912	H8(H8A)
0600-7-SG-(N)	600	720	560	576	560	450	400	9086	H8(H8A)
0650-7-SG-(N)	650	780	630	624	560	488	450	10080	H8(H8A)
0721-7-SG-(N)	721	865	710	692	630	541	560	11000	H8(H8A)
0779-7-SG-(N)	779	935	800	748	710	584	560	12286	2 x H8（2 x H8A)
1007-7-SG-(N)	1007	1208	1000	967	900	755	710	15824	2 x H8（2 x H8A)
1140-7-SG-(N)	1140	1368	1100	1094	1000	855	800	18172	2 x H8（2 x H8A)
1235-7-SG-(N)	1235	1482	1200	1186	1100	926	900	20160	2 x H8（2 x H8A)
1370-7-SG-(N)	1370	1644	1300	1315	1200	1027	1000	22000	2 x H8（2 x H8A)
1510-7-SG-(N)	1510	1812	1400	1450	1400	1133	1100	23736	3 x H8（3 x H8A)
1710-7-SG-(N)	1710	2052	1600	1642	1600	1283	1200	27258	3 x H8（3 x H8A)
1853-7-SG-(N)	1853	2223	1800	1778	1700	1389	1300	30240	3 x H8（3 x H8A)
2055-7-SG-(N)	2055	2466	2000	1973	1900	1541	1500	33000	3 x H8（3 x H8A)
2280-7-SG-(N)	2280	2736	2000	2189	2000	1710	1600	36344	4 x H8（4 x H8A)
2470-7-SG-(N)	2470	2964	2400	2371	2300	1853	1800	40320	4 x H8（4 x H8A)
2740-7-SG-(N)	2740	3288	2700	2630	2600	2055	2000	44000	4 x H8（4 x H8A)
3088-7-SG-(N)	3088	3705	3000	2964	2900	2316	2300	50400	5 x H8（5 x H8A)
3425-7-SG-(N)	3425	4110	3400	3288	3200	2569	2500	55000	5 x H8（5 x H8A)
3705-7-SG-(N)	3705	4446	3600	3557	3500	2779	2700	60480	6 x H8（6 x H8A)
4110-7-SG-(N)	4110	4932	4000	3945	3900	3082	3000	66000	6 x H8（6 x H8A)
4323-7-SG-(N)	4323	5187	4300	4150	4100	3242	3200	70560	7 x H8（7 x H8A)
4795-7-SG-(N)	4795	5754	4700	4603	4500	3596	3500	77000	7 x H8（7 x H8A)
4940-7-SG-(N)	4940	5928	4900	4742	4700	3705	3600	80640	8 x H8（8 x H8A)
5480-7-SG-(N)	5480	6576	5400	5260	5200	4110	4000	88000	8 x H8（8 x H8A)

INOVANCE

Technical data of MD880 series multi-drive products

MD880-60 series three-phase braking module

Model MD880-60...	Resistance of braking unit (Single-phase)		Braking threshold Ubr	Without overload			Cyclic overload (1 min/5 min)		
				I_{dc}	I_{rms}	P	I_{dc}	I_{rms}	P
	Ω		V	A(DC)	A(AC)	kW	A(DC)	A(AC)	kW
0500-4	R_{min}	1.7	653	781	310	500	999	351	640
	R_{max}	2.1		781	282	500	827	291	530
0750-4	R_{min}	1.2		1171	465	750	1499	527	960
	R_{max}	1.4		1171	424	750	1241	436	800
0870-7	R_{min}	3.0	1126	781	310	870	999	351	1110
	R_{max}	3.6		781	283	870	833	293	920
1300-7	R_{min}	2.0		1171	465	1300	1499	527	1660
	R_{max}	2.4		1171	425	1300	1249	439	1390

MD880-61M single-phase braking module

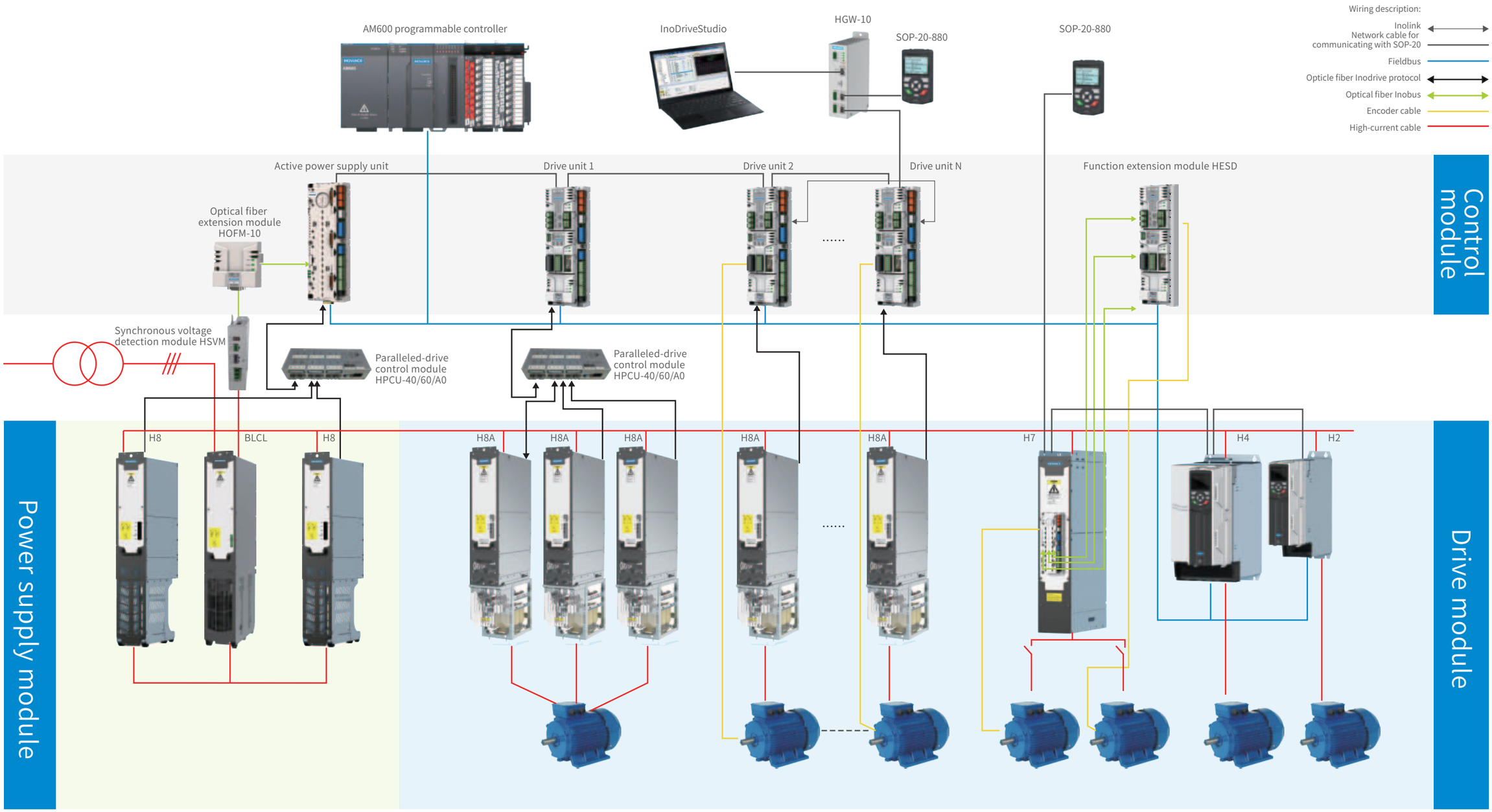
Model MD880-61...	Resistance of braking unit (Single-phase)		Braking threshold Ubr	Without overload		Cyclic overload (1 min/5 min)		Quick overload (10s/60s)	
				I_{rms}	P_{cont}	I_{rms}	P_{br}	I_{rms}	P_{br}
	Ω		V	A(AC)	kW	A(AC)	kW	A(AC)	kW
0400-7	R_{min}	2.72	1126	131	147	267	298	361	404

MD880-80 series DCDC

Model MD880-80···	Voltage			Rated value		Quick overload (10s/60s)			Heavy-overload application (1 min/5 min)		Power loss (W)	Frame size
	VI	VO	VO_{nom}	I_N	P_N	I_{fast}	I_{max}	P_{fast}	I_{Hd}	P_{Hd}		
	V(DC)	V(DC)	V(DC)	A(DC)	kW	A(DC)	A(DC)	kW	A(DC)	kW		
0100-4	540–720	24–670	500	100	50	75	150	38	85	43	592	H3+LC
0200-4	540–720	24–670	500	200	100	150	300	75	170	85	762	H4+LC
0300-4	540–720	24–670	500	300	150	225	450	113	255	128	1468	H4+LC
0400-4	540–720	24–670	500	400	200	300	600	150	340	170	2104	H6+LC
0500-4	540–720	24–670	500	500	250	375	750	188	425	213	2587	H7+LC
0600-4	540–720	24–670	500	600	300	450	900	225	510	255	3203	H7+LC
0800-4	540–720	24–670	500	800	400	600	1200	300	680	340	4921	H8A+LC
1000-4	540–720	24–670	500	1000	500	750	1500	375	850	425	6701	H8A+LC
0600-5	540–850	24–800	500	600	300	450	900	225	510	255	3203	H7+LC
0100-7	740–1050	24–1000	1000	100	100	75	150	75	85	85	1321	H6+LC
0200-7	740–1050	24–1000	1000	200	200	150	300	150	170	170	2436	H6+LC
0300-7	740–1050	24–1000	1000	300	300	225	450	225	255	255	5109	H8A+LC
0400-7	740–1050	24–1000	1000	400	400	300	600	300	340	340	6143	H8A+LC
0500-7	740–1050	24–1000	1000	500	500	375	750	375	425	425	7912	H8A+LC
0600-7	740–1050	24–1000	1000	600	600	450	900	450	510	510	9086	H8A+LC

INOVANCE

Topology of MD880 multi-drive system



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V0.1

3. Drives & Motion Control

3.1 Offering Overview’s

3.1.2 MV VSDs

HICONICS

Midea Industrial Technology

HICONICS
Medium Voltage AC Drive Comprehensive Manual

HC1000 Series

HC1000S Series

HC1000W Series

HC2000 Series

To become a global leading provider of products in the fields of new energy and energy-saving industrial control

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Version No.: V2.0-202508

HICONICS

HICONICS - Leader in Green Energy

HC1000 Series　HC1000W Series

HC1000S Series　HC2000 Series

CONTENTS

Contents

All-Rounder

HC1000 General Series Medium Voltage AC Drive

Flexible Load · Wide Application

The power input of the HC1000 series medium voltage AC drive complies with IEEE STD 519-2014 and GB/T 14549-1993 standards. There is no need to install an input filter separately, which saves the cost of harmonics governance for users. Moreover, the system has a high power factor and does not require a power factor compensation device, effectively reducing reactive power input and lowering the input capacity. The input of the AC drive is transferred to the secondary side through a phase-shifting transformer and then phase-shifted. After that, multi-pulse diode rectification is adopted to provide isolated power for power cells, eliminating most of the harmonic currents caused by individual power cells.

HC1000

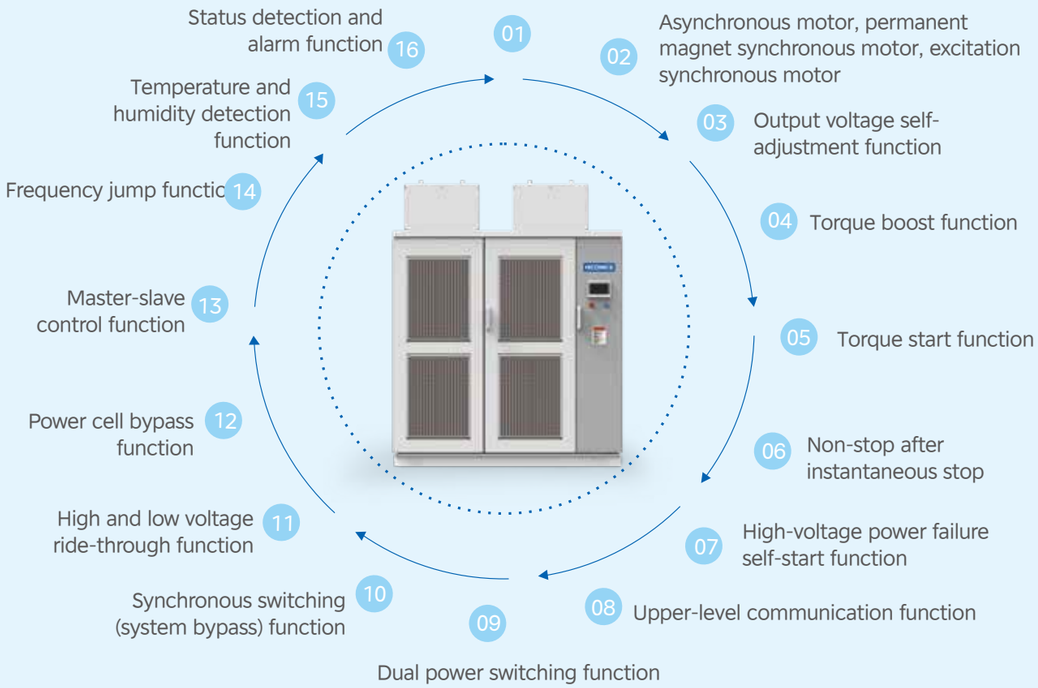
98.5%
Inverter efficiency

50%
Reduced common-mode voltage

35%
Reduced VTHD

Full working conditions
No overvoltage operation

V/f control, open-loop vector control, closed-loop vector control



HC1000S

Single-sided Maintenance Medium Voltage AC Drive

First single-sided maintenance AC drive in China

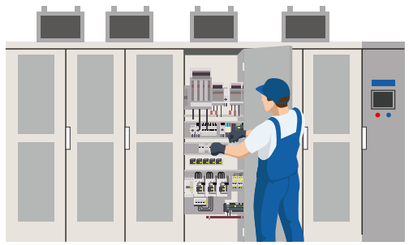
Designed specifically for narrow and complex working conditions

Opening a new chapter in industrial drive

The HC1000S series AC drives by HICONICS subvert the maintenance mode of traditional AC drives. They feature a small maintenance space, stable operation, and an easy-to-operate interface. They can easily handle various complex working conditions, making them highly suitable for installation and use in space-constrained areas. The power input of HC1000S complies with IEEE STD 519-2014 and GB/T 14549-1993 standards. There is no need to install an input filter separately, which saves users the cost of harmonic governance. Moreover, the system has a high power factor and does not require a power factor compensation device, effectively reducing reactive power input and lowering the input capacity.

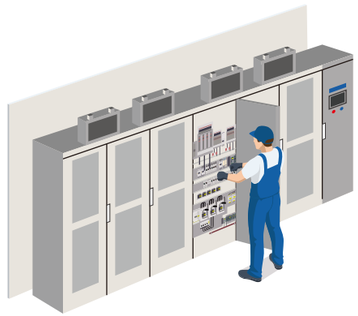
Choose HC1000S

Choose an intelligent and efficient future



First single-sided maintenance in China

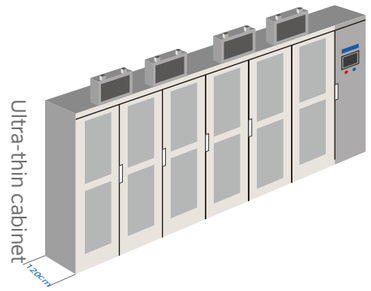
The HC1000S series AC drives completely subvert the traditional double-sided maintenance mode, greatly improving maintenance efficiency and safety, and leading new industry standards.



Flexible adaptation to various working conditions

The design of the HC1000S series AC drives fully considers the requirements of various industrial environments. It can be installed against the wall, enabling you to achieve the optimal layout under any spatial conditions and ensuring the efficient and orderly operation of the production process.

HICONICS



Ultra-thin cabinet design

The internal structure of the AC drive is reasonably arranged, and the components are placed in an orderly manner. The cabinet size is thinner than that of double-sided maintenance cabinets, which brings great convenience to transportation and installation, making it more adaptable to space-constrained environments.

Equipment can be connected to a digital cloud platform

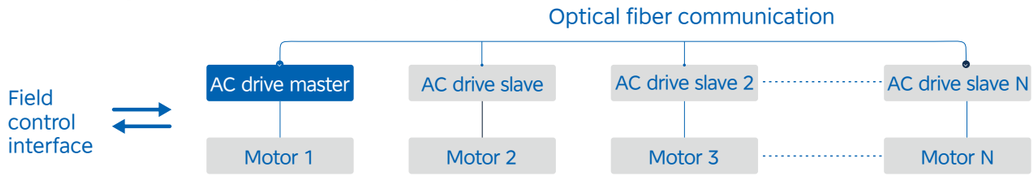
The HC1000S series AC drives can be remotely operated and managed via mobile APP and PC, enabling remote monitoring, inspection management, data analysis, fault diagnosis, abnormal alarms, maintenance management, and equipment repair.

HC1000S / HC1000

Product Advantages

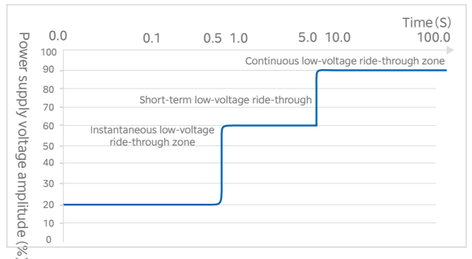
1 Master-slave control function

It has the function of dual-machine or multi-machine linkage, which can ensure that the load is evenly distributed among various motors, enabling the motors to operate efficiently and stably.



2 Low-voltage ride-through

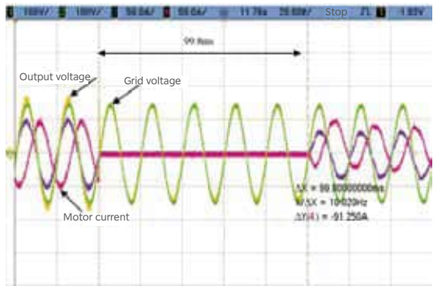
The output voltage has a self-adjusting function. When the input voltage fluctuates (-10%~+10%), the AC drive has the ability to output a rated voltage.



AC drive low-voltage ride-through diagram

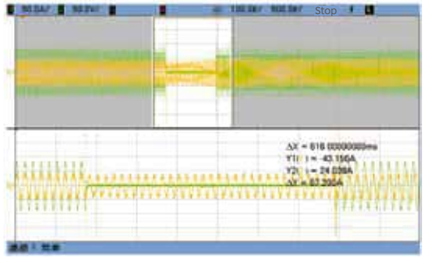
3 Synchronous switching

It realizes soft-start and precise control of multiple motors, ensuring seamless smooth transition of the load between the variable frequency and the power frequency. It can adapt to industrial environments where operating states need to be switched frequently, effectively reducing the impact on the power grid and mechanical equipment.



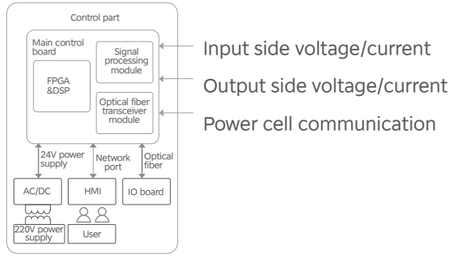
4 Non-stop after instantaneous stop

When the power grid is unstable and causes momentary power outages, the HC1000 can control the motor to decelerate, maintain the stability of the bus capacitor voltage, and keep the system running normally. If the power is not restored within the specified time, and the high-voltage power loss causes the drive to trip, a high-voltage power loss fault will be reported.



5 FPGA+DSP dual-core control architecture

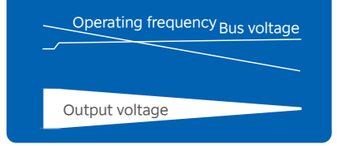
The logic and algorithms run on separate cores. The DSP controls the algorithms, while the FPGA is responsible for processing external signals such as I/O, buses, and encoders. This makes the program operation more stable, the control accuracy higher, and the event response faster.



6 Smooth bus voltage control ensures stable acceleration, deceleration, and reliable operation

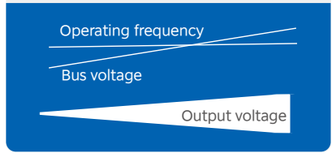
Decelerated stop

Normal stop without overvoltage according to set time (5~6000 seconds)



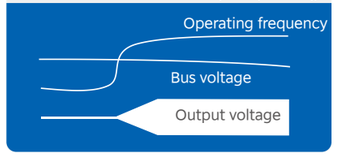
Accelerated start

Normal start without overcurrent according to set time (5~6000 seconds)



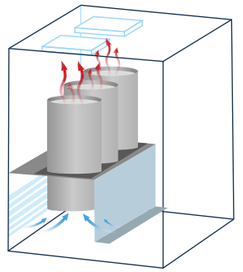
Flying start

Smooth start across the full frequency range with forward and reverse frequency locking



7 Innovative air-cooled heat dissipation

Parallel air path system: **20%** increase in cooling efficiency



8 Neutral point drift technology

When a Power cell fails and is bypassed, other power units maintain normal voltage output; change the phase of the three-phase output voltage to keep the load running in a high-efficiency state.

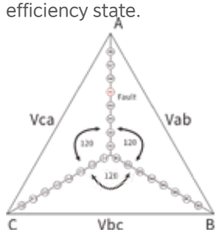


Diagram of 8-level AC drive Power cell without bypass

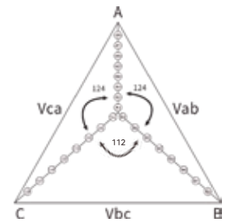
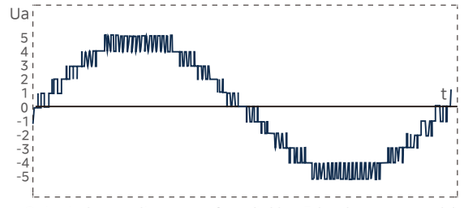


Diagram of neutral point drift output after A5 Power cell bypass

9 Adopt Power cell series H-bridge multi-level wave stacking technology

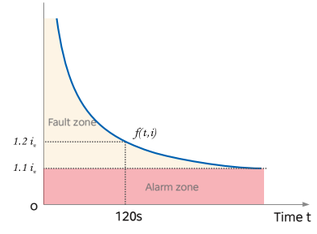
Low output harmonic content, with nearly perfect sine wave



Output phase voltage waveform (taking 5-level as an example)

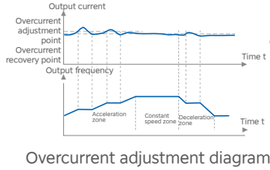
10 Innovative design of motor thermal overload model

Prevent the motor from being damaged by long-term operation under heavy-load overcurrent conditions

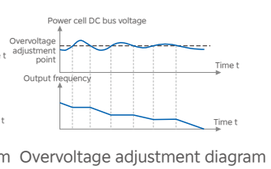


11 Stall prevention

Ensure continuous and stable operation of the motor



Overcurrent adjustment diagram



Overvoltage adjustment diagram

12 Intelligent self-start

Quickly restore stable operation of the production line

Users can freely choose whether the AC drive reports a major fault when high voltage power loss occurs, and whether the AC drive automatically runs when power is restored.

- High voltage power loss trip
- Power loss shielding delay
- High voltage power loss self-start

HC1000S / HC1000

Product Selection

Naming rules

HC ******* _*** / ****

HC: HICONICS AC drive

Series number:
1000: General series
2000: Four-quadrant series
4000: IGCT/HV-IGBT General series

Default: General series
S: Single-sided cabinet series;
W: Water-cooled series...

Rated capacity (kVA):
00400: 400kVA, 02250: 2250kVA...

Rated output voltage (V):
060: 6kV, 100: 10kV...

Rated input voltage (V): 060: 6kV, 100: 10kV
(Omitted when consistent with output voltage)...

Technical parameter table

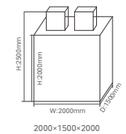
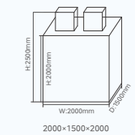
The HC1000S single-sided medium voltage AC drive currently has standard products with voltage levels of 11kV, 10kV, 6.6kV, 6kV, 4.16kV, and 3.3kV. It can also be customized to other voltage-level products according to user requirements.

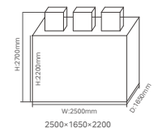
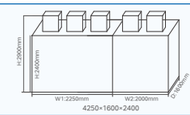
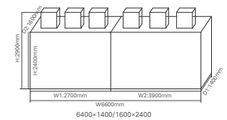
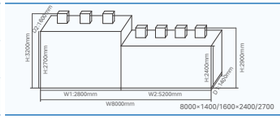
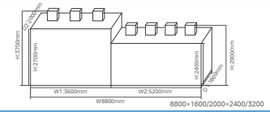
The HC1000 series general medium voltage AC drives currently have standard products with voltage levels of 10kV and 6kV. They can also be customized to other voltage-level products according to user requirements.

* Please consult our company if it exceeds the scope.
* In case of any changes to the equipment dimensions, no further notice will be given, and the specific dimensions are subject to the technical agreement.

Item	Parameters
Rated capacity of the AC drive	HC1000: 315~14200 kVA※ HC1000S: 210~4650kVA ※
Rated voltage	10kV, 6kV(-10%~+10%)※
Rated frequency	50Hz/60Hz (-10%~+10%)※
Control power supply	380VAC, 30kVA (depending on capacity, subject to electrical drawings)
Rated input power factor	> 0.96
Inversion efficiency	≥98.5%
Output frequency range	0~120Hz※
Instantaneous overcurrent protection	150% (customizable according to user requirements)
Overload capacity	120% load, 60s
Torque limit	10%~150%
Analog input	4 channels 4~20mA
Analog output	4 channels 4~20mA
Upper communication	Isolated RS485 interface, ModBus RTU (ModBus TCP, Profinet, Profibus DP, Ethernet customizable)
Acceleration and deceleration time	5s~6000s (related to load)
On-off input and output	24 inputs 16 outputs (8 outputs can be defined)
Operating temperature	-5~+40℃ ※
Storage/transport temperature	-25~+55℃ ※
Cooling method	Forced air cooling/water cooling
Ambient humidity	< 95%, no condensation ※
Installation altitude	≤1000m ※
Dust	Non-conductive, non-corrosive, < 6.5mg/dm3 ※
IP rating	IP30/IP41※
Cabinet color	RAL7035+RAL7042/RAL7032 (customizable as needed)
Maintenance method	Front and rear maintenance/front maintenance (single-sided maintenance for HC1000S series medium voltage AC drives)

10kV AC drive double-sided cabinet (HC1000)

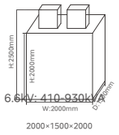
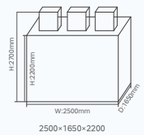
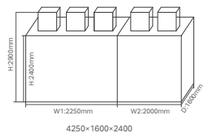
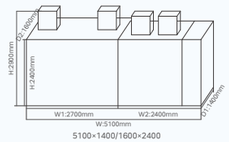
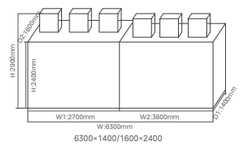
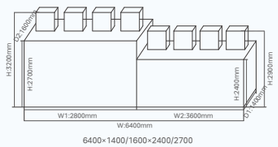
Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Transf. Capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 ML1.1 (8-level) (Aluminum)	315	400	560	HC1000-100/00400-A8D1/035*A	HPU10/A1M1*A	2433	 2000×1500×2000
	355	450		HC1000-100/00450-A8D1/035*A			
	400	500		HC1000-100/00500-A8D1/035*A			
	450	560		HC1000-100/00560-A8D1/035*A			
	500	630	800	HC1000-100/00630-A8D1/042*A	HPU10/A2M1*A	2593	
	560	700		HC1000-100/00700-A8D1/042*A			
	630	800		HC1000-100/00800-A8D1/047*A	HPU10/A3M1*A	2719	
	710	900	1000	HC1000-100/00900-A8D1/053*A		2875	
	800	1000		HC1000-100/01000-A8D1/060*A	HPU10/A4M1*A	3062	
	900	1150	1250	HC1000-100/01150-A8D1/072*A	HPU10/A5M1*A	3258	
	1000	1250		HC1000-100/01250-A8D1/072*A			
	1120	1400	1400	HC1000-100/01400-A8D1/081*A	HPU10/A6M1*A	3409	
Frame #1 ML1.1(8-level) (Hybrid、Copper)	315	400	400	HC1000-100/00400-A8D1/025*A	HPU10/A1M1*A	2356	 2000×1500×2000
	355	450	450	HC1000-100/00450-A8D1/027*A		2386	
	400	500	500	HC1000-100/00500-A8D1/031*A		2428	
	450	560	560	HC1000-100/00560-A8D1/035*A		2478	
	500	630	630	HC1000-100/00630-A8D1/038*A	HPU10/A2M1*A	2538	
	560	700	700	HC1000-100/00700-A8D1/042*A		2648	
	630	800	800	HC1000-100/00800-A8D1/047*A	HPU10/A3M1*A	2799	
	710	900	900	HC1000-100/00900-A8D1/053*A		2960	
	800	1000	1000	HC1000-100/01000-A8D1/060*A	HPU10/A4M1*A	3147	
	900	1150	1150	HC1000-100/01150-A8D1/065*A	HPU10/A5M1*A	3287	
	1000	1250	1250	HC1000-100/01250-A8D1/072*A		3360	
	1120	1400	1400	HC1000-100/01400-A8D1/081*A	HPU10/A6M1*A	3505	

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #2 ML2.1(8-level)	1250	1600	HC1000-100/01600-A8D1/091*A	HPU10/B1M1*A	4390	 2500×1650×2200
	1400	1800	HC1000-100/01800-A8D1/107*A	HPU10/B2M1*A	4648	
	1600	2000	HC1000-100/02000-A8D1/116*A	HPU10/B3M1*A	4948	
	1800	2250	HC1000-100/02250-A8D1/135*A	HPU10/B4M1*A	5270	
	2000	2500	HC1000-100/02500-A8D1/153*A	HPU10/B5M1*A	5604	
	2250	2800	HC1000-100/02800-A8D1/163*A	HPU10/B6M1*A	5916	
	2500	3150	HC1000-100/03150-A8D1/180*A	HPU10/C1D1*A	7678	
Frame #3 ML3.1(8-level)	2800	3500	HC1000-100/03500-A8D1/202*A	HPU10/C2D1*A	8188	 4250×1600×2400
	3150	4000	HC1000-100/04000-A8D1/226*A	HPU10/C3D1*A	8958	
	3550	4500	HC1000-100/04500-A8D1/255*A	HPU10/C4D1*A	9308	
Frame #4 ML4.2(8-level)	4000	5000	HC1000-100/05000-A8D1/285*A	HPU10/D1D1*A	11297	 6400×1400/1600×2400
	4500	5650	HC1000-100/05650-A8D1/320*A	HPU10/D2D1*A	11897	
	5000	6300	HC1000-100/06300-A8D1/355*A	HPU10/D3D1*A	12797	
	5600	7000	HC1000-100/07000-A8D1/395*A	HPU10/D4D1*A	13697	
Frame #5 ML5.1(8-level)	6300	7500	HC1000-100/07500-A8D1/433*A	HPU10/E1D1*A	15277	 8000×1400/1600×2400/2700
	7100	8500	HC1000-100/08500-A8D1/491*A	HPU10/E2D1*A	16017	
	8000	9500	HC1000-100/09500-A8D1/548*A	HPU10/E2D1*A	16257	
Frame #6 ML6.1(8-level)	9000	10700	HC1000-100/10700-A8D1/618*A	HPU10/F1D1*A	19700	 8800×1600/2000×2400/3200
	10000	11800	HC1000-100/11800-A8D1/681*A	HPU10/F1D1*A	20400	
	11200	13300	HC1000-100/13300-A8D1/768*A	HPU10/F2D1*A	22000	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

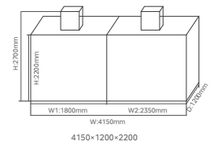
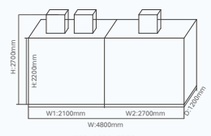
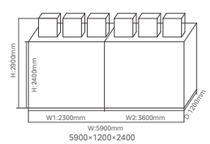
6kV AC drive double-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MA1.1(5-level)	250	315	HC1000-060/00315-A5D1/032*A	HPU10/A1M1*A	1969	 2000×1500×2000
	315	400	HC1000-060/00400-A5D1/040*A	HPU10/A2M1*A	2094	
	400	500	HC1000-060/00500-A5D1/050*A	HPU10/A3M1*A	2154	
	450	560	HC1000-060/00560-A5D1/056*A	HPU10/A4M1*A	2269	
	500	630	HC1000-060/00630-A5D1/062*A		2349	
	560	700	HC1000-060/00700-A5D1/068*A	HPU10/A5M1*A	2424	
	630	800	HC1000-060/00800-A5D1/077*A	HPU10/A6M1*A	2464	
Frame #2 MA2.1(5-level)	710	900	HC1000-060/00900-A5D1/086*A	HPU10/B1M1*A	3550	 2500×1650×2200
	800	1000	HC1000-060/01000-A5D1/097*A	HPU10/B2M1*A	3678	
	900	1150	HC1000-060/01150-A5D1/109*A	HPU10/B3M1*A	3758	
	1000	1250	HC1000-060/01250-A5D1/130*A	HPU10/B4M1*A	3880	
	1120	1400	HC1000-060/01400-A5D1/135*A		4084	
	1250	1600	HC1000-060/01600-A5D1/153*A	HPU10/B5M1*A	4396	
Frame #3 MA3.1(5-level)	1400	1800	HC1000-060/01800-A5D1/173*A	HPU10/C1D1*A	5595	 4250×1600×2400
	1600	2000	HC1000-060/02000-A5D1/192*A	HPU10/C2D1*A	5755	
	1800	2250	HC1000-060/02250-A5D1/220*A	HPU10/C3D1*A	5975	
	2000	2500	HC1000-060/02500-A5D1/243*A	HPU10/C4D1*A	6140	
Frame #4 MA4.2(5-level)	2250	2800	HC1000-060/02800-A5D1/275*A	HPU10/D1D1*A	8297	 5100×1400/1600×2400
	2500	3200	HC1000-060/03200-A5D1/304*A	HPU10/D2D1*A	8897	
	2800	3500	HC1000-060/03500-A5D1/340*A	HPU10/D3D1*A	9797	
	3150	4000	HC1000-060/04000-A5D1/395*A	HPU10/D4D1*A	10697	
Frame #5 MA5.1(5-level)	3550	4500	HC1000-060/04500-A5D1/433*A	HPU10/E1D1*A	10985	 6300×1400/1600×2400
	4000	5000	HC1000-060/05000-A5D1/480*A	HPU10/E1D1*A	11285	
	4500	5600	HC1000-060/05600-A5D1/539*A	HPU10/E2D1*A	12245	
Frame #6 MA6.1(5-level)	5000	6300	HC1000-060/06300-A5D1/606*A	HPU10/F1D1*A	13200	 6400×1400/1600×2400/2700
	5600	7000	HC1000-060/07000-A5D1/674*A	HPU10/F1D1*A	14900	
	6300	7500	HC1000-060/07500-A5D1/722*A	HPU10/F2D1*A	15200	
	7100	8500	HC1000-060/08500-A5D1/818*A	HPU10/F2D1*A	15800	

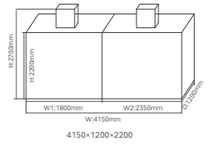
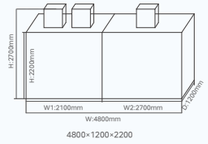
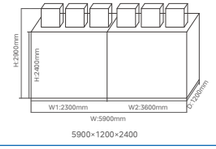
*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

11kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MB1.1S (9-level)	540	670	HC1000S-110/00670-A9S1/035*A	HPU10/A1M1*A	3639	 4150×1200×2200
	690	860	HC1000S-110/00860-A9S1/045*A	HPU10/A2M1*A	3839	
	830	1030	HC1000S-110/01030-A9S1/054*A	HPU10/A3M1*A	4089	
	950	1190	HC1000S-110/01190-A9S1/062*A	HPU10/A4M1*A	4239	
	1100	1380	HC1000S-110/01380-A9S1/072*A	HPU10/A5M1*A	4539	
	1240	1550	HC1000S-110/01550-A9S1/081*A	HPU10/A6M1*A	4689	
Frame #2 MB2.1S (9-level)	1390	1740	HC1000S-110/01740-A9S1/091*A	HPU10/B1M1*A	5024	 4800×1200×2200
	1640	2040	HC1000S-110/02040-A9S1/107*A	HPU10/B2M1*A	5274	
	1770	2220	HC1000S-110/02220-A9S1/116*A	HPU10/B3M1*A	5445	
	2060	2580	HC1000S-110/02580-A9S1/135*A	HPU10/B4M1*A	5806	
	2340	2920	HC1000S-110/02920-A9S1/153*A	HPU10/B5M1*A	6198	
Frame #3 MB3.1S (9-level)	2750	3430	HC1000S-110/03430-A9S1/180*A	HPU10/C1D1*A	7866	 5900×1200×2400
	3080	3850	HC1000S-110/03850-A9S1/202*A	HPU10/C2D1*A	8266	
	3510	4390	HC1000S-110/04390-A9S1/230*A	HPU10/C3D1*A	8916	
	3700	4650	HC1000S-110/04650-A9S1/243*A	HPU10/C4D1*A	9166	

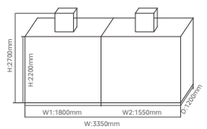
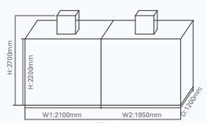
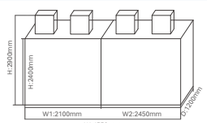
10kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 ML1.1S (8-level)	315	400	HC1000S-100/00400-A8S1/025*A	HPU10/A1M1*A	3413	 4150×1200×2200
	355	450	HC1000S-100/00450-A8S1/027*A		3463	
	400	500	HC1000S-100/00500-A8S1/031*A		3513	
	450	560	HC1000S-100/00560-A8S1/035*A		3563	
	500	630	HC1000S-100/00630-A8S1/038*A	HPU10/A2M1*A	3663	
	560	700	HC1000S-100/00700-A8S1/042*A		3713	
	630	800	HC1000S-100/00800-A8S1/047*A	HPU10/A3M1*A	3813	
	710	900	HC1000S-100/00900-A8S1/053*A		3913	
	800	1000	HC1000S-100/01000-A8S1/060*A	HPU10/A4M1*A	4013	
	900	1150	HC1000S-100/01150-A8S1/065*A	HPU10/A5M1*A	4163	
	1000	1250	HC1000S-100/01250-A8S1/072*A		4313	
	1120	1400	HC1000S-100/01400-A8S1/081*A	HPU10/A6M1*A	4513	
Frame #2 ML2.1S (8-level)	1250	1600	HC1000S-100/01600-A8S1/091*A	HPU10/B1M1*A	4923	 4800×1200×2200
	1400	1800	HC1000S-100/01800-A8S1/107*A	HPU10/B2M1*A	5033	
	1600	2000	HC1000S-100/02000-A8S1/116*A	HPU10/B3M1*A	5352	
	1800	2250	HC1000S-100/02250-A8S1/135*A	HPU10/B4M1*A	5662	
	2000	2500	HC1000S-100/02500-A8S1/153*A	HPU10/B5M1*A	5986	
	2250	2800	HC1000S-100/02800-A8S1/163*A	HPU10/B6M1*A	6291	
Frame #3 ML3.1S (8-level)	2500	3150	HC1000S-100/03150-A8S1/180*A	HPU10/C1D1*A	7513	 5900×1200×2400
	2800	3500	HC1000S-100/03500-A8S1/202*A		7913	
	3150	4000	HC1000S-100/04000-A8S1/226*A		8413	
	3550	4500	HC1000S-100/04500-A8S1/255*A		8913	

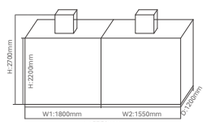
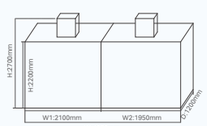
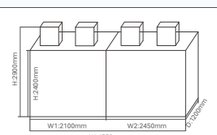
*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

6.6kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MC1.1S (6-level)	330	410	HC1000S-066/00410-A6S1/035*A	HPU10/A1M1*A	2792	 3350×1200×2200
	420	520	HC1000S-066/00520-A6S1/045*A	HPU10/A2M1*A	2892	
	500	620	HC1000S-066/00620-A6S1/054*A	HPU10/A3M1*A	3042	
	570	710	HC1000S-066/00710-A6S1/062*A	HPU10/A4M1*A	3142	
	660	830	HC1000S-066/00830-A6S1/072*A	HPU10/A5M1*A	3192	
	750	930	HC1000S-066/00930-A6S1/081*A	HPU10/A6M1*A	3292	
Frame #2 MC2.1S (6-level)	840	1050	HC1000S-066/01050-A6S1/091*A	HPU10/B1M1*A	3508	 4050×1200×2200
	980	1230	HC1000S-066/01230-A6S1/107*A	HPU10/B2M1*A	3861	
	1070	1330	HC1000S-066/01330-A6S1/116*A	HPU10/B3M1*A	3915	
	1240	1550	HC1000S-066/01550-A6S1/135*A	HPU10/B4M1*A	4018	
	1400	1750	HC1000S-066/01750-A6S1/153*A	HPU10/B5M1*A	4224	
	1500	1870	HC1000S-066/01870-A6S1/163*A	HPU10/B6M1*A	4425	
Frame #3 MB3.1S (6-level)	1650	2060	HC1000S-066/02060-A6S1/180*A	HPU10/C1D1*A	5364	 4550×1200×2400
	1850	2310	HC1000S-066/02310-A6S1/202*A	HPU10/C2D1*A	5664	
	2110	2630	HC1000S-066/02630-A6S1/230*A	HPU10/C3D1*A	6014	
	2250	2800	HC1000S-066/02800-A6S1/243*A	HPU10/C4D1*A	6064	

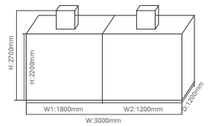
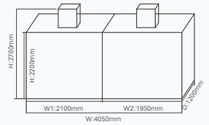
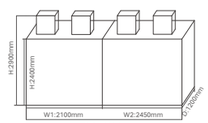
6kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MC1.1S (5-level)	250	315	HC1000S-060/00315-A5S1/032*A	HPU10/A1M1*A	2667	 3350×1200×2200
	315	400	HC1000S-060/00400-A5S1/040*A	HPU10/A2M1*A	2767	
	400	500	HC1000S-060/00500-A5S1/050*A	HPU10/A3M1*A	2867	
	450	560	HC1000S-060/00560-A5S1/056*A	HPU10/A4M1*A	2917	
	500	630	HC1000S-060/00630-A5S1/062*A	HPU10/A4M1*A	3067	
	560	700	HC1000S-060/00700-A5S1/068*A	HPU10/A5M1*A	3117	
	630	800	HC1000S-060/00800-A5S1/077*A	HPU10/A6M1*A	3217	
Frame #2 MC2.1S (5-level)	710	900	HC1000S-060/00900-A5S1/086*A	HPU10/B1M1*A	3611	 4050×1200×2200
	800	1000	HC1000S-060/01000-A5S1/097*A	HPU10/B2M1*A	3713	
	900	1150	HC1000S-060/01150-A5S1/109*A	HPU10/B3M1*A	3917	
	1000	1250	HC1000S-060/01250-A5S1/130*A	HPU10/B4M1*A	4019	
	1120	1400	HC1000S-060/01400-A5S1/135*A	HPU10/B4M1*A	4219	
	1250	1600	HC1000S-060/01600-A5S1/153*A	HPU10/B5M1*A	4424	
Frame #3 MB3.1S (5-level)	1400	1800	HC1000S-060/01800-A5S1/173*A	HPU10/C1D1*A	4954	 4550×1200×2400
	1600	2000	HC1000S-060/02000-A5S1/192*A	HPU10/C2D1*A	5154	
	1800	2250	HC1000S-060/02250-A5S1/220*A	HPU10/C3D1*A	5354	
	2000	2500	HC1000S-060/02500-A5S1/243*A	HPU10/C4D1*A	5654	

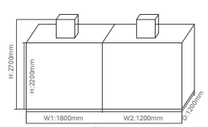
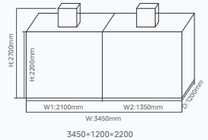
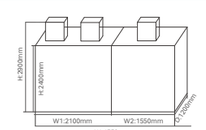
*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

4.16kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MJ1.1S (4-level)	210	260	HC1000S-416/00260-A4S1/035*A	HPU10/A1M1*A	2331	 3000×1200×2200
	260	330	HC1000S-416/00330-A4S1/045*A	HPU10/A2M1*A	2411	
	320	390	HC1000S-416/00390-A4S1/054*A	HPU10/A3M1*A	2511	
	360	450	HC1000S-416/00450-A4S1/062*A	HPU10/A4M1*A	2581	
	420	520	HC1000S-416/00520-A4S1/072*A	HPU10/A5M1*A	2611	
	470	590	HC1000S-416/00590-A4S1/081*A	HPU10/A6M1*A	2661	
Frame #2 MJ2.1S (4-level)	530	660	HC1000S-416/00660-A4S1/091*A	HPU10/B1M1*A	2952	 4050×1200×2200
	620	780	HC1000S-416/00780-A4S1/107*A	HPU10/B2M1*A	3084	
	670	840	HC1000S-416/00840-A4S1/116*A	HPU10/B3M1*A	3187	
	780	980	HC1000S-416/00980-A4S1/135*A	HPU10/B4M1*A	3228	
	890	1110	HC1000S-416/01110-A4S1/153*A	HPU10/B5M1*A	3392	
	940	1180	HC1000S-416/01180-A4S1/163*A	HPU10/B6M1*A	3493	
Frame #3 MJ3.1S (4-level)	1040	1300	HC1000S-416/01300-A4S1/180*A	HPU10/C1D1*A	4082	 4550×1200×2400
	1170	1460	HC1000S-416/01460-A4S1/202*A	HPU10/C2D1*A	4282	
	1330	1660	HC1000S-416/01660-A4S1/230*A	HPU10/C3D1*A	4432	
	1490	1860	HC1000S-416/01860-A4S1/258*A	HPU10/C4D1*A	4632	

3.3kV AC drive single-sided cabinet (HC1000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MD1.1S (3-level)	170	210	HC1000S-033/00210-A3S1/035*A	HPU10/A1M1*A	2236	 3000×1200×2200
	210	260	HC1000S-033/00260-A3S1/045*A	HPU10/A2M1*A	2286	
	250	310	HC1000S-033/00310-A3S1/054*A	HPU10/A3M1*A	2386	
	290	360	HC1000S-033/00360-A3S1/062*A	HPU10/A4M1*A	2456	
	330	420	HC1000S-033/00420-A3S1/072*A	HPU10/A5M1*A	2486	
	380	470	HC1000S-033/00470-A3S1/081*A	HPU10/A6M1*A	2556	
Frame #2 MD2.1S (3-level)	420	530	HC1000S-033/00530-A3S1/091*A	HPU10/B1M1*A	3114	 3450×1200×2200
	490	620	HC1000S-033/00620-A3S1/107*A	HPU10/B2M1*A	3186	
	540	670	HC1000S-033/00670-A3S1/116*A	HPU10/B3M1*A	3228	
	620	780	HC1000S-033/00780-A3S1/135*A	HPU10/B4M1*A	3439	
	700	880	HC1000S-033/00880-A3S1/153*A	HPU10/B5M1*A	3472	
	750	940	HC1000S-033/00940-A3S1/163*A	HPU10/B6M1*A	3543	
Frame #3 MD3.1S (3-level)	830	1030	HC1000S-033/01030-A3S1/180*A	HPU10/C1D1*A	3510	 3650×1200×2400
	930	1160	HC1000S-033/01160-A3S1/202*A	HPU10/C2D1*A	3660	
	1060	1320	HC1000S-033/01320-A3S1/230*A	HPU10/C3D1*A	3930	
	1180	1480	HC1000S-033/01480-A3S1/258*A	HPU10/C4D1*A	3980	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

HC1000W

High-power Water-cooled Medium Voltage AC Drive

The HC1000W series is a water-cooled medium voltage AC drive designed specifically for ultra-high-power loads, capable of achieving a powerful output of up to 27700kW. It integrates long-life components with redundancy and fault tolerance technology, using film capacitors and low voltage ride-through designs to comprehensively enhance reliability, providing a trustworthy high-voltage variable frequency drive solution for equipment in the 5000-27700kW range.

5000-27700kW
power range

100 times
heat exchange efficiency

78000h
ultra-long lifespan

01 Water-cooled air conditioning cabinet

Strong corrosion resistance
Easy maintenance
Remote monitoring
Early warning protection

02 Transformer cabinet

Airtight circulation of air in the transformer cabinet
High efficiency, perfectly solving the heat dissipation problem of the secondary winding

03 Power cell cabinet

Compact structure
Strong pressure resistance
Easy replacement
Reliable performance
Extended lifespan

04 Control cabinet

Control of the AC drive
Temperature control and protection of the transformer
Control and protection of the water-cooled cabinet

05 Water-cooled cabinet

Constant temperature control
Condensation control
Leakage protection
Ion purification
Automatic water replenishment
Anti-freeze setting

HC1000W

Functional advantages of each cabinet in the water-cooled series

Core advantages

High protection level

The transformer cabinet is fully enclosed, and the protection level can reach IP42, providing dust-proof and anti-corrosion functions.

Long service **life**

Reduce the junction temperature of power devices
and extends the service life.

Strong adaptability

The AC drive can operate in a closed room
and adapt to various complex and harsh environments.

Heat exchange efficiency increased by 100 times

The heat exchange efficiency of water is 100 times greater than that of air.
The airtight circulation in the transformer cabinet has a high usage efficiency,
perfectly solving the heat dissipation problem of the secondary winding.

Almost **zero** maintenance

The power of the cooling Power cell is low, and the internal loss of the frequency conversion system is small;
There is very little maintenance required (the equipment is basically maintenance-free,
only requiring regular inspection or cleaning of the water filter screen).

1 Water-cooled air conditioning cabinet + transformer cabinet

Parameter display

Install instruments in the pipeline through which the cold source water flows:
Monitor the temperature and flow parameters of the circulating water

Environmental monitoring

Install temperature transmitters at the inlet of the fan
and the outlet of the heat exchanger respectively:
Monitor the temperature of the transformer's operating environment in real time

Drainage to prevent freeze cracking

Install an air vent at the highest point of the top of the heat exchanger
and a drain valve at the lowest point of the bottom:
Drain the circulating water completely to prevent freeze cracking

Temperature monitoring

Install PT100 temperature sensors in the winding air ducts of the phase-shifting transformer's primary winding and secondary winding:
Monitor the temperature inside the transformer winding air ducts in real time

2 Power cell + control room

Adopt centralized control, including:

Control of the AC drive | Temperature control and protection of the transformer | Control and protection of the water-cooled cabinet

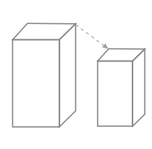
Heat dissipation design
Mainly water cooling
Supplemented by air cooling

Pipeline design
Parallel pipelines
Uniform water flow

Insulation design
Stainless steel and rubber materials
Ensure Power cell insulation

Connector design
Tooth-ring tensile type pipeline connector
Easy and effective installation

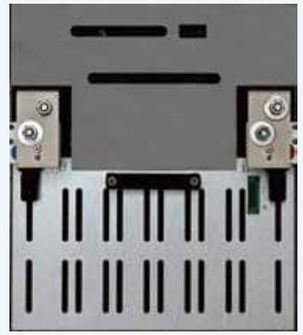
Structural advantages of Power cell

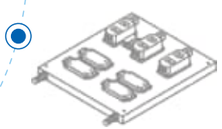


Compact Power cell structure
Its volume is 30% smaller than that of air-cooled units.

Extended lifespan
The water-cooled radiator has strong heat exchange capacity, and the small temperature fluctuation effectively ensures the service life and reliability of components.

Strong pressure resistance
After pressure holding tests, the pressure resistant capacity reaches 1MPa.





Reliable performance
Connected by laminated busbars, it has low parasitic inductance and more reliable product performance.

Easy replacement
The inlet and outlet of cooling water adopt
double shut-off quick-connect fittings, which facilitates the replacement of power units.

2 Water-cooled cabinet

All devices in the pipeline loop are made of stainless steel materials.

The main circulation pump adopts a redundant design and can be replaced and repaired online.

An independent PLC monitoring system enables remote monitoring.

It has comprehensive early warning protection functions for real-time monitoring.

Functions of the water-cooled cabinet

Constant temperature control

Based on the deviation between the actual temperature of the water in the frequency converter group and the set value, PID logic control is carried out on the electric three-way valve to adjust the flow of the cold-source water, thus ensuring a constant water temperature.

Condensation control

The temperature and humidity transmitter can display the ambient temperature, humidity and corresponding dew-point temperature in the cabinet in real time. When the temperature and humidity are higher than or close to the dew-point temperature, the electric heater will be automatically turned on.

Leakage protection

There is a leakage detection device inside the water-cooled cabinet. When there is water leakage in the cabinet, the PLC will generate an alarm signal.

Ion purification

An ion-exchange resin is used to remove trace ions, preventing leakage current in a high voltage environment. The conductivity meter can monitor the quality changes of the circulating water in real time and issue an alarm.

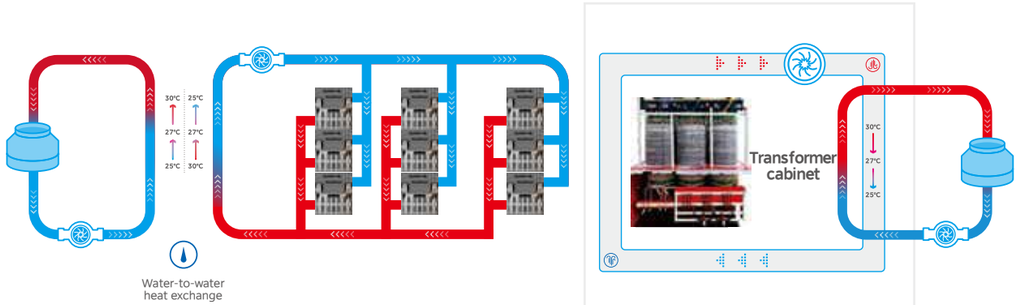
Automatic water replenishment

When the water outlet pressure of the frequency converter group is low, the system can automatically open the water-replenishing electromagnetic valve, and the water-replenishing pump starts to supply water. It stops when the water-replenishing pressure is reached.

Anti-freeze setting

The internal circulating water is a mixture of deionized water and ethylene glycol. The concentration of ethylene glycol needs to be determined according to the lowest ambient temperature at the installation site. See the table on the right for details.

Innovative water-cooling heat dissipation design



Water-cooled cabinet | Power cabinet | Air-to-water cooling

Ambient temperature	Glycol mass concentration %
0	0
-5	13
-10	22
-15	29.5
-20	36
-25	41.2
-30	45.8
-35	48.7
-40	52.9
-45	55.7
-50	58

Correlation diagram of temperature and concentration

External water circulation system for water-cooled AC drive

Depending on the cooling capacity and on-site environmental conditions, the system can use various secondary heat exchange forms such as water-to-water or water-to-air to release heat into the environment. There are three options for providing external water on-site:

Option 1

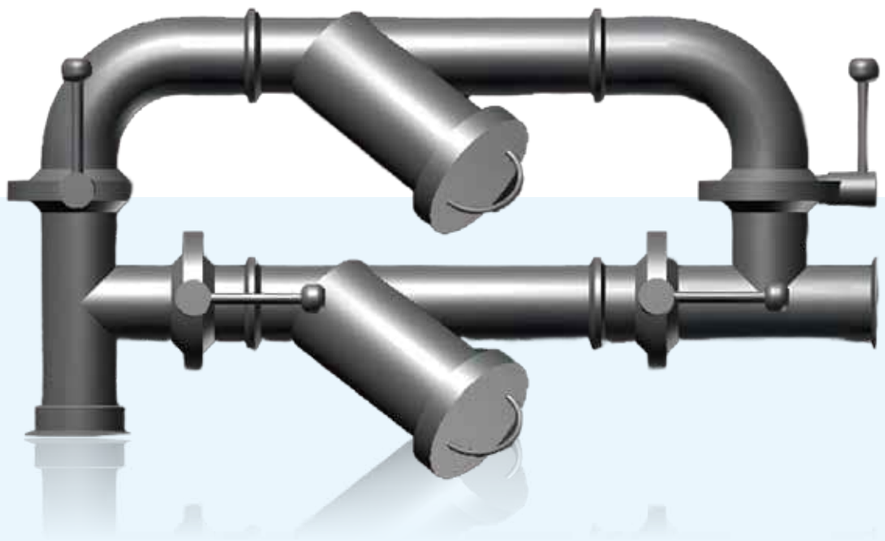
On-site supply of external water meeting the requirements

The requirements for the water quality and temperature of external water are shown in the following table:

If the quality of on-site external water is turbid, a filter needs to be added before the external water inlet valve, as shown in the figure below. The filter has a precision of 200 μm (80 mesh) and a bypass function.

According to the on-site water quality conditions, the filter for the external water pipeline needs to be cleaned regularly.

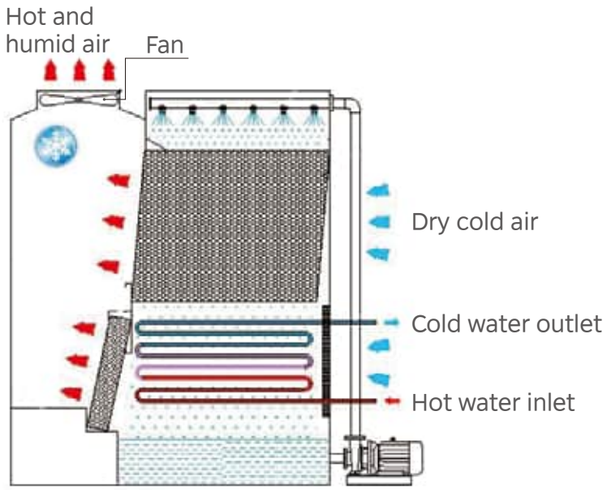
Sr No.	Name	Parameters	Power cell
1	Total dissolved solids	⩽ 1000	mg/L
2	PH value	6.5-8.5	
3	Hardness (calculated as CaCO3)	⩽ 450	mg/L
4	Chloride	⩽ 250	mg/L
5	Sulfate	⩽ 250	mg/L
6	Suspended substances	⩽ 30	mg/L
7	Water pressure	2.5-6	Bar
8	Solid particle size	⩽ 200	μm
9	Water cooling cabinet external water flow		t/h
10	Transformer cabinet external water flow		t/h
11	External water inlet temperature (T1)	5-32	℃
12	External water outlet temperature	T1+5	℃



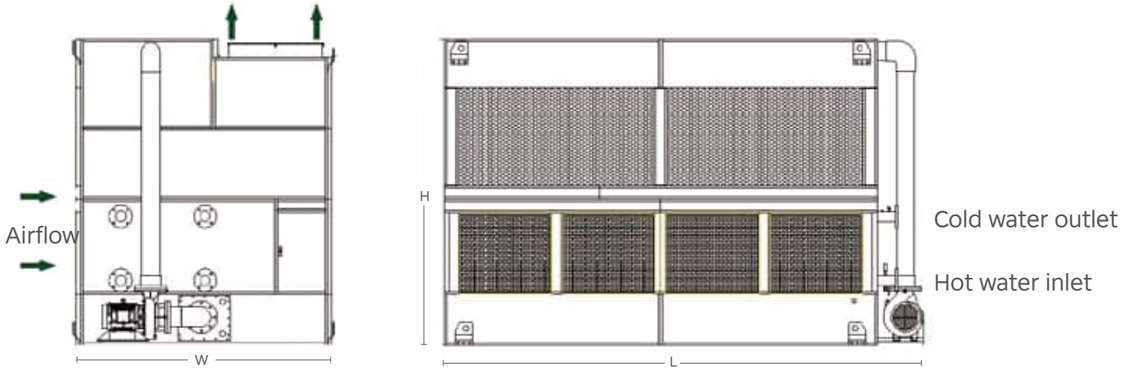
Option 2

Closed cooling tower

System working principle: As illustrated in the figure, the working fluid (pure water) circulates in the coils of the closed cooling tower. The heat of the working fluid is transferred to the water flowing through the coils. Meanwhile, the air outside the Power cell enters through the air inlet grille on the side, perpendicular to the water flow direction. A small portion of the water flowing across the coils evaporates and absorbs heat, and the hot and humid air is expelled into the atmosphere by the ventilation fan at the top of the cooling tower. The remaining water falls into the bottom water pan and is recirculated by the water pump to the water distribution system, passes through the pre-cooling packing, and then flows back to the coils.



Working principle diagram of closed cooling tower

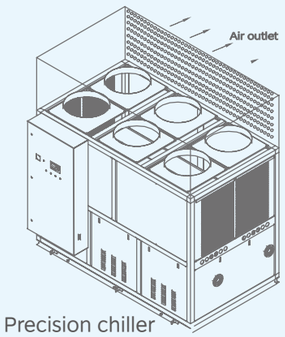


Appearance diagram of closed cooling tower

Option 3

Precision chiller

System working principle: As shown in the figure, the cooling system mainly consists of a compressor, a condenser, an expansion valve, a plate heat exchanger, a cooling fan, a water tank, an internal water circulation system, and an external water circulation system, etc. On one hand, the cold water in the water tank is pumped by the circulation pump into the external water inlet pipe of the water-cooled cabinet. After heat exchange in the plate heat exchanger inside the water-cooled cabinet, it flows back to the water tank, reducing the water temperature in the water-cooled cabinet. On the other hand, the hot water flowing back to the water tank exchanges heat with the low-temperature refrigerant in the plate heat exchanger of the refrigeration system to lower its temperature, thus maintaining the water temperature in the water tank. The high-temperature refrigerant after heat absorption exchanges heat with the surrounding environment through the cooling fan to cool down.



Precision chiller

Naming rules

HC ******* _***/****

HC: HICONICS AC drive

Series number:
1000: General series
2000: Four-quadrant series
4000: IGCT/HV-IGBT General series

Default: General series
S: Single-sided cabinet series
W: Water-cooled series...

Rated input voltage (V): 060: 6kV, 100: 10kV
(Omitted when consistent with output voltage)...

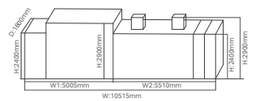
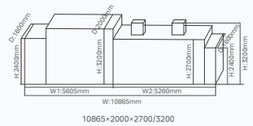
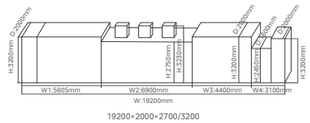
Rated output voltage (V):
060: 6kV, 100: 10kV...

Rated capacity (kVA):
00400: 400kVA, 02250: 2250kVA?

Item	Parameters
Rated capacity of the AC drive	8500-21000kVA/14000-35000kVA ※
Rated input voltage	Three-phase input 6kV/10kV (-10% ~ +10%) full load operation, (-25% ~ -10%) long-term derated operation allowed
Rated input frequency	50Hz/60Hz (-10%~+10%) ※
Control power supply	380VAC, 30kVA (depending on capacity, subject to electrical drawings)
Rated input power factor	> 0.96
Inversion efficiency	≥98.5%
Output frequency range	0~120Hz ※
Drive quadrant	Two quadrants
Instantaneous overcurrent protection	150% (customizable according to user requirements)
Overload capacity	120% load, 60s
Torque limit	10%~150%
Analog input	4 channels 4~20mA
Analog output	4 channels 4~20mA
Upper communication	Isolated RS485 interface, ModBus RTU (ModBus TCP, Profinet, Profibus DP, Ethernet customizable)
Acceleration and deceleration time	5s~6000s (related to load)
On-off input and output	24 inputs 16 outputs (8 outputs can be defined)
Operating temperature	-5~+40°C
Storage/transport temperature	-25~+55℃※
Cooling method	Water cooling (AFWF)
Ambient humidity	< 95%, no condensation ※
Installation altitude	≤1000m (contact manufacturer for heights above 1000m)
Dust	Non-conductive, non-corrosive, <6.5mg/dm3 ※
IP rating	IP41 ※
Cabinet color	RAL7035+RAL7042/RAL7032 (customizable according to user requirements)
Cable incoming and outgoing method	Bottom incoming and outgoing (contact manufacturer for other methods)
Maintenance method	Front and rear maintenance

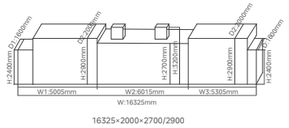
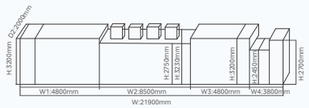
*Water-cooled AC drives can be customized according to project requirements. For product size selection and other information, please contact our company for consultation.

6kV Water-cooled AC Drive (HC1000W)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #6 MCW6.1 (6-level)	5000	6300	HC1000W-060/06300-A6D1/606*W	HPU10/F1D1*W	16596	 10500×1600×2400/2900
	5600	7000	HC1000W-060/07000-A6D1/674*W	HPU10/F2D1*W	17096	
Frame #7 MAW7.1 (5-level)	7500	9000	HC1000W-060/09000-A5D1/866*W	HPU10/G1D1*W	20100	 10865×2000×2700/3200
	8000	9500	HC1000W-060/09500-A5D1/914*W	HPU10/G1D1*W	20600	
	9000	10700	HC1000W-060/10700-A5D1/1030*W	HPU10/G2D1*W	22100	
	10400	12370	HC1000W-060/12370-A5D1/1190*W	HPU10/G2D1*W	24100	
Frame #9 MAW9.1 (5-level)	15700	18700	HC1000W-060/18700-A5D1/1800*W	HPU10/J1D1*W	54516	 19200×2000×2700/3200
	17500	20800	HC1000W-060/20800-A5D1/2000*W	HPU10/J1D1*W	56516	

The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

10kV Water-cooled AC Drive (HC1000W)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #7 MLW7.1 (8-level)	12500	15000	HC1000W-100/15000-A8D1/866*W	HPU10/G1D1*W	31359	 16325×2000×2700/2900
	14000	16520	HC1000W-100/16520-A8D1/954*W	HPU10/G1D1*W	34359	
	16000	18880	HC1000W-100/18880-A8D1/1090*W	HPU10/G2D1*W	36359	
	17600	20780	HC1000W-100/20780-A8D1/1200*W	HPU10/G2D1*W	39359	
Frame #9 MLW9.1 (8-level)	26000	31500	HC1000W-100/31500-A8D1/1800*W	HPU10/J1D1*W	67275	 21900×2000×2700/3200
	29000	34600	HC1000W-100/34600-A8D1/2000*W	HPU10/J1D1*W	70275	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

HC2000

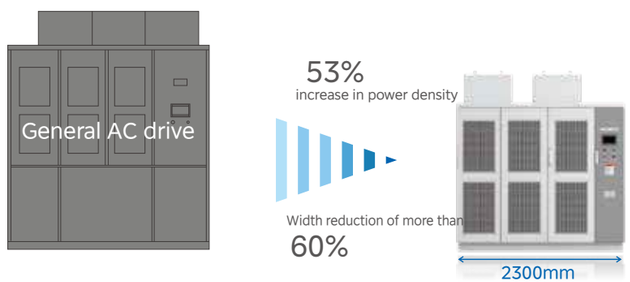
Four-quadrant Medium Voltage AC Drive

HC2000

Advantages of four-quadrant medium voltage AC drive products

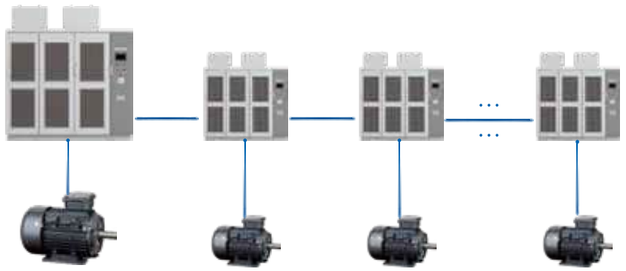
Compact size, high power

The power density is increased by 53%, and the width is reduced by more than 60%



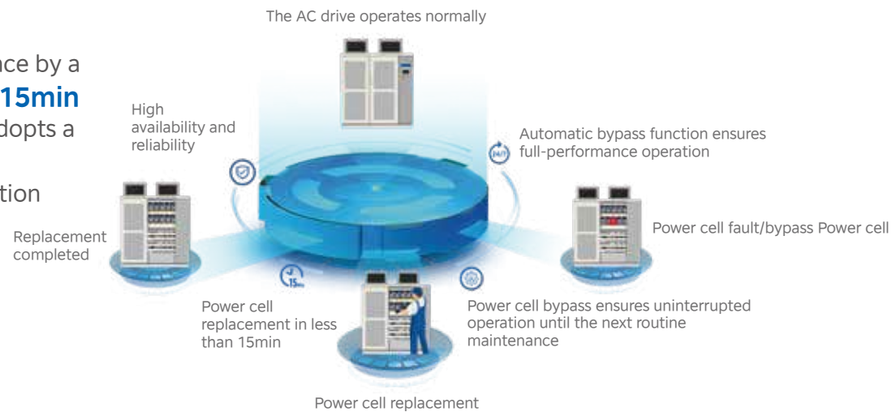
Multi-Power cell interlocking

It has the function of dual-Power cell or multi-Power cell interlocking, which can ensure that the load is evenly distributed to each motor, achieving efficient and stable operation.



High integration, more convenience

Quick maintenance by a single person in **15min**
The Power cell adopts a reactor-free rectification solution

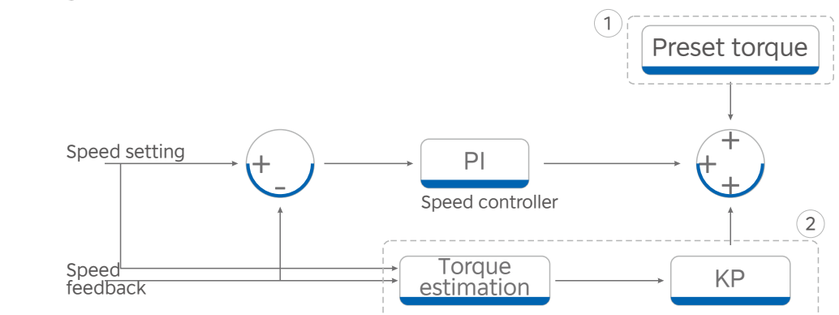


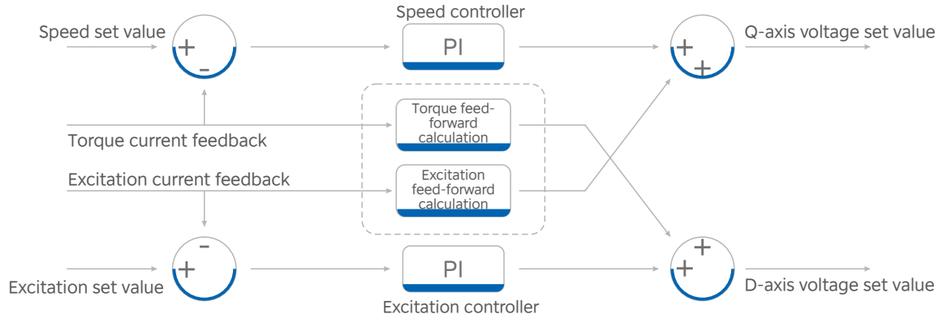
Zero-speed hovering

Zero-speed hovering, relentless pursuit of stability and safety

Torque predictive control | Feed-forward compensation

Zero-speed hovering, also known as brake (braking) failure protection function. The HC2000 medium voltage AC drive continuously monitors the feedback signals from the encoder in real time through its built-in high-precision interface. The zero-speed hovering function is achieved through Torque Predictive Control (TPC) and Feed-Forward Compensation (FFC) technologies.





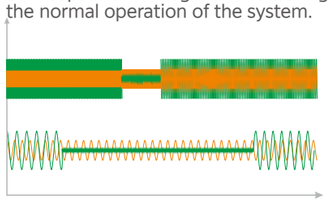
Extend the service life of mechanical parts
Safe and reliable
Dual protection 4
High precision control
Core advantages

Strong voltage adaptability

Three core control strategies ensure the stable and reliable voltage on the grid side

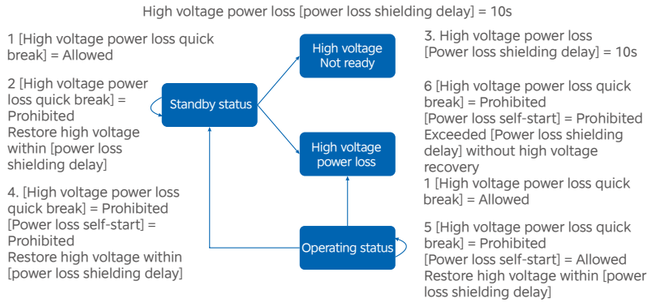
Non-stop after instantaneous stop

Within the time of instantaneous power failure, the AC drive controls the motor to decelerate and run, maintaining the basic stability of the bus capacitor voltage and ensuring the normal operation of the system.



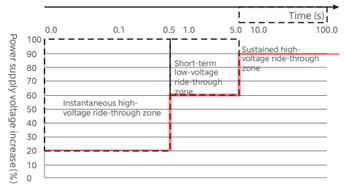
High voltage power loss self-start

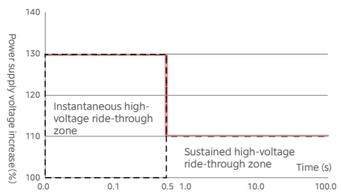
By setting parameters such as high voltage power loss quick break, automatic restart on high voltage power loss, and power loss shielding delay, users can choose whether the AC drive reports a major fault when high voltage power loss occurs, and whether the AC drive automatically runs when the power is restored.



Low-voltage ride-through function

It complies with the Technical Specification for High and Low Voltage Ride-Through of Auxiliary AC Drives in Power Plants and Substations (DL/T 1648-2016) in the power industry.





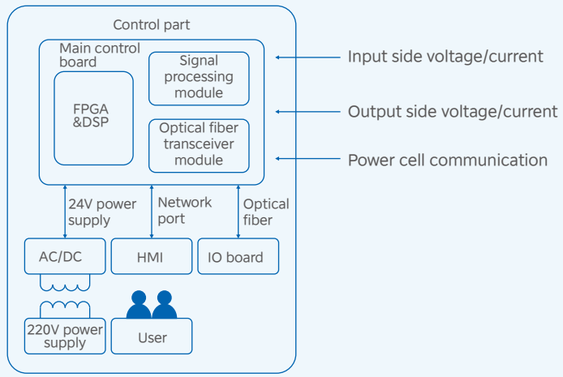
Efficiency improvement

The product's control response speed is improved, and the dynamic response time is shortened.

- The interrupt sampling interval is reduced by 70%
- The CPU operation rate is increased by 100%
- The fiber optic communication rate between the main control Power cell and power units is increased by 150%
- The communication speed of the I/O board is increased by 400%

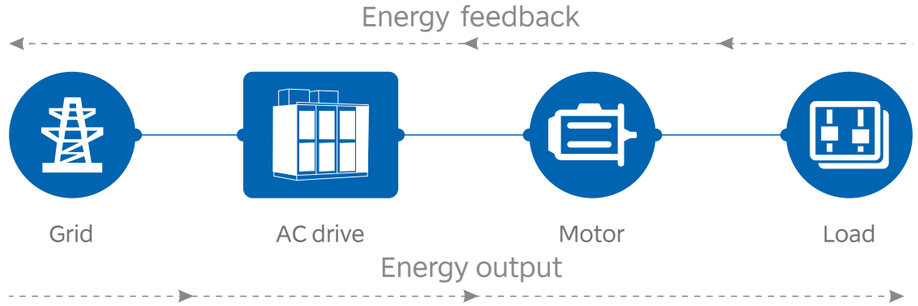
Performance upgrade

The new control architecture of FPGA+DSP comprehensively manages logic processing and master control algorithms, achieving carrier phase-shifting and third-harmonic injection to enhance the load-carrying capacity.



Full-load power feedback

The HC2000 four-quadrant medium voltage AC drive uses a phase-shifting transformer on the input side to form an SLM rectification method. The input and output harmonics meet the requirements of IEEE519-2014 and GB14549. Meanwhile, it realizes full-load power feedback, resulting in significant energy savings.



More stable and reliable

Neutral point drift technology

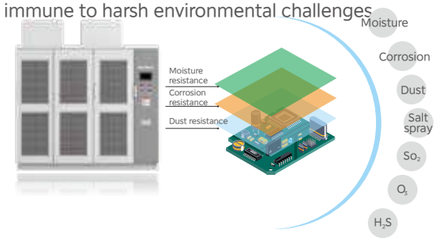
When a Power cell fails and is bypassed, other power units maintain normal voltage output; change the phase of the three-phase output voltage to keep the load running in a high-efficiency state.

Stable and reliable Power cell

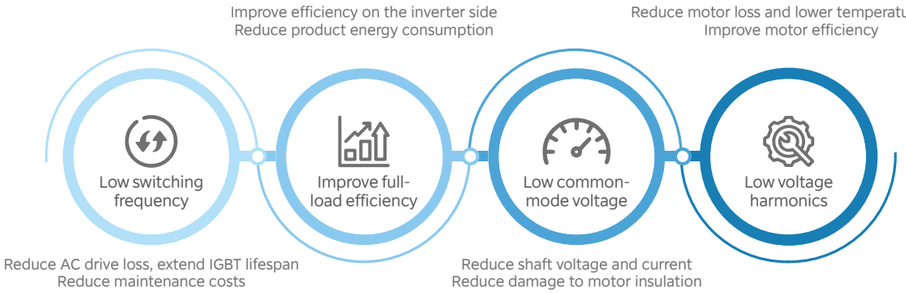
1. Low inductance busbar design
2. Integrated PCBA design
3. Long-life film capacitor
4. Multi-point temperature sampling of Power cell
5. AC and DC voltage and current detection
6. Input current protection

PCBA coating

The PCBA coating technology is adopted to improve the electrical insulation strength, ensuring the stable operation of the system and making it immune to harsh environmental challenges



More friendly, less damage



Digital cloud platform, zero-distance smart management

365-day real-time monitoring | Timely prevention | Quick resolution | Intelligent energy saving | Data traceability

Quick and convenient fault repair

Maintenance and inspection work orders are fully streamlined online, reducing information communication barriers and improving processing efficiency. Manual and automatic work order reporting is flexible and convenient, and the spare parts application process is efficient and smooth. Quick-response linkage for equipment repair significantly shortens the fault repair time, enabling faster resumption of production.

Centralized management of multiple equipment

Say goodbye to the "information silo phenomenon" of equipment. The digital cloud platform uses the information network as a link to closely connect multiple dispersed equipment, achieving centralized and unified management.

Smart energy saving, industrial upgrading

Combining big data analysis, the platform can accurately analyze energy efficiency status, flexibly adjust management strategies based on user habits and climate characteristics, optimize process curves, achieve energy saving and emission reduction goals, and assist customers in industrial upgrades.

Remote monitoring anytime, anywhere

The digital cloud platform enables real-time monitoring of equipment operation. It automatically analyzes key data and generates various reports, providing intelligent analysis and management decision-making support for enterprises It breaks the boundaries of management and further improves efficiency.

Data traceability, smart management

The fault knowledge base can search for historical faults, and the document knowledge base provides detailed equipment information, establishing a full-life-cycle management system for equipment. Historical data is clear at a glance, and fault handling has a basis, providing precise guidance for equipment maintenance and inspection. Use a large amount of data to optimize control strategies, improving the operation efficiency and service life of equipment.

Real-time alarm information delivery

The graphical interface makes the equipment operation status clear at a glance. The platform automatically monitors key data such as electrical parameters and environmental indicators. Once an anomaly is detected, an immediate alarm is issued to ensure early detection and early handling of equipment faults. Minor faults are addressed proactively, and major faults are responded to promptly, effectively reducing unplanned downtime and ensuring production safety.

Core applications of HC2000

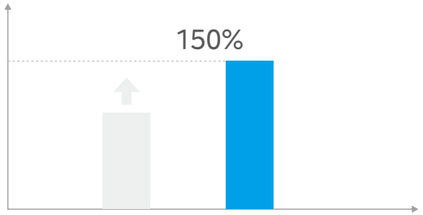
Hoist

The hoist is a key piece of equipment used for vertical or inclined material lifting in the mining industry. It usually undertakes the vertical transportation of heavy-load materials, requiring high stability, safety, and efficiency. The HC2000 four-quadrant medium voltage AC drive adapts to the control algorithms for hoist applications and supports control modes such as differential machine vector control, permanent-magnet machine vector control, and electro-magnetic motor vector control. Through torque predictive control and feed-forward compensation technologies, it achieves the zero-speed hovering function, extending the service life of mechanical components. The online switching function between encoder open loop and closed loop ensures reliable continuous operation and realizes low-frequency and high-torque output, guaranteeing the stable start and stop of the hoist.

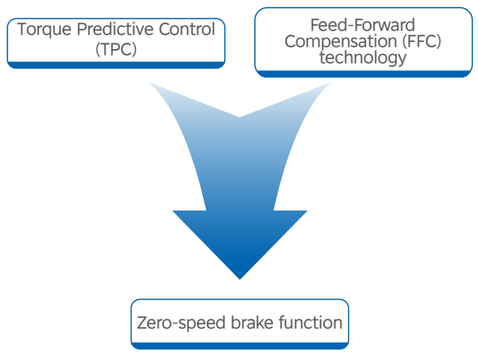
Application advantages of HC2000

Application advantages of HC2000

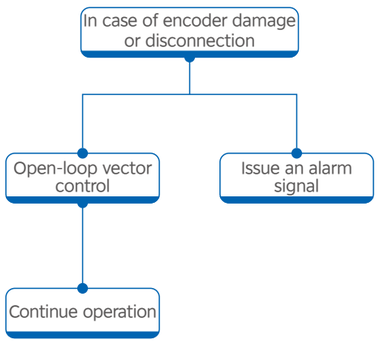
Ensure that the hoist still has sufficient torque output during low-speed operation, preventing problems such as failure to start, rope slippage, and sudden braking.



Zero-speed hovering



Online switching between open and closed loops

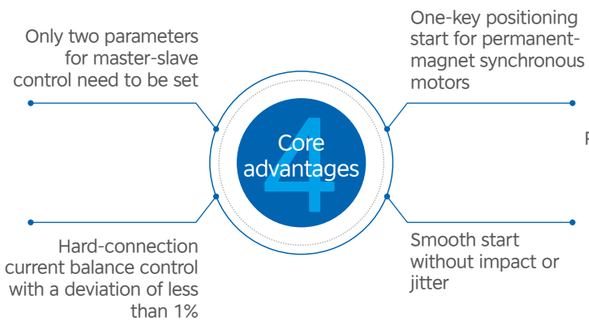


Core applications of HC2000

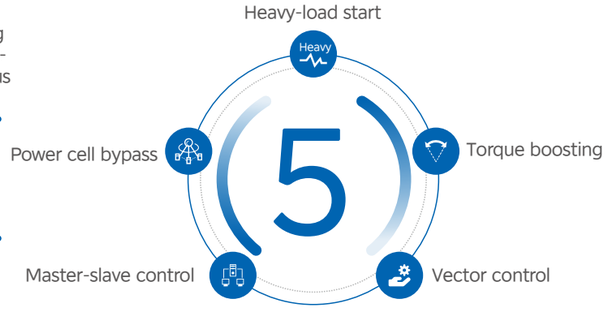
Downward-running belt conveyor

As an important equipment for material transportation in industries such as mining, ports, building materials, and logistics, the downward-running belt conveyor generally features a long conveying distance and a large starting torque. In recent years, with the development of the "carbon peaking and carbon neutrality" policy, there is a clear trend towards the permanent magnetization of motors. The HC2000 four-quadrant medium voltage AC drive is suitable for the drive application of belt conveyors. Its control algorithms support control modes such as differential machine vector control and permanent-magnet machine vector control. The built-in master-slave control function in multi-drive belt applications realizes load balancing control and torque boosting function, meeting the working conditions of heavy-load starting of belt conveyors with materials. It also has full-power energy feedback, meeting the application requirements of downward-running belt conveyors.

Application advantages of HC2000

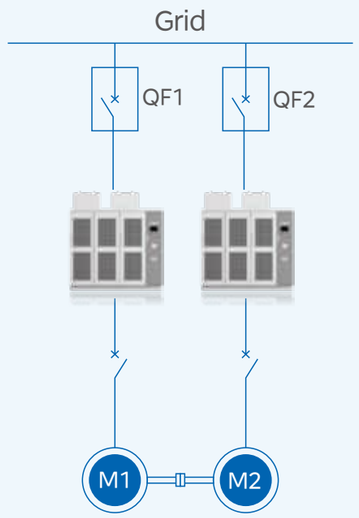


Five core control strategies



Motor test platform

1. The motor test bench is mainly used for motor type tests, factory tests, and energy efficiency evaluations. It is mainly composed of a test power supply, a test system, and an operation console, etc.
2. The HC2000 four-quadrant medium voltage AC drive has flexible expansion capabilities and supports applications on motor test platforms.
3. Support the input of parameters for multiple motors.
4. Drive multiple motor types: induction motors, permanent-magnet synchronous motors, and electrically-excited synchronous motors
5. Multiple control mode parameters are available: V/F control, open-loop vector control, and closed-loop vector control
6. Easy-to-operate background debugging software - HC DriveSight.
7. Support multiple communication types



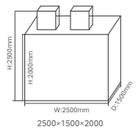
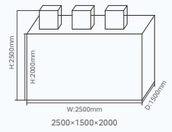
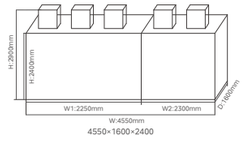
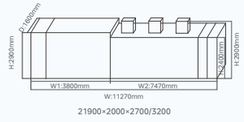
Naming rules

HC ******* _***/****

- HC: HICONICS AC drive
- Series number:
  1000: General series
  2000: Four-quadrant series
  4000: IGCT/HV-IGBT General series
- Default: General series
  S: Single-sided cabinet series W: Water-cooled series…
- Rated capacity (kVA):
  00400: 400kVA, 02250: 2250kVA…
- Rated output voltage (V):
  060: 6kV, 100: 10kV…
- Rated input voltage (V): 060: 6kV, 100: 10kV
  (Omitted when consistent with output voltage)…

Item	Parameters
Rated capacity of the AC drive	250~7700kVA ※
Rated input voltage	Three-phase input 3.3kV-11kV (-10% ~ +10%) full load operation, (-25% ~ -10%) long-term derated operation allowed
Rated input frequency	50Hz/60Hz (-10%~+10%) ※
Control power supply	380VAC, 30kVA (depending on capacity, subject to electrical drawings)
Rated input power factor	> 0.96
Inversion efficiency	≥98.5%
Output frequency range	0~120Hz ※
Drive quadrant	Four quadrants
Instantaneous overcurrent protection	150% (customizable according to user requirements)
Overload capacity	120% load, 60s
Torque limit	10%~150%
Analog input	4 channels 4~20mA
Analog output	4 channels 4~20mA
Upper communication	Isolated RS485 interface, ModBus RTU (ModBus TCP, Profinet, Profibus DP, Ethernet customizable)
Acceleration and deceleration time	5s~6000s (related to load)
On-off input and output	24 inputs 16 outputs (8 outputs can be defined)
Operating temperature	-5~+40°C
Storage/transport temperature	-25~+55°C ※
Cooling method	Forced air cooling
Ambient humidity	< 95%, no condensation ※
Installation altitude	≤1000m ※
Dust	Non-conductive, non-corrosive, < 6.5mg/dm3 ※
IP rating	IP41 ※
Cabinet color	RAL7035+RAL7042/RAL7032 (customizable according to user requirements)
Cable incoming and outgoing method	Bottom incoming and outgoing (contact manufacturer for other methods)
Maintenance method	Front and rear maintenance

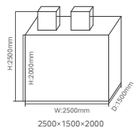
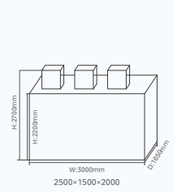
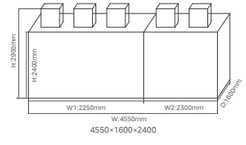
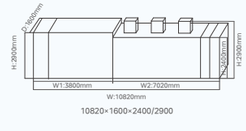
10kV AC drive (HC2000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MFB1.1(9-level)	315	400	HC2000-100/00400-A9D1/025*A	HPU20/A1D1*A	2618	 2500×1500×2000
	355	450	HC2000-100/00450-A9D1/027*A		2648	
	400	500	HC2000-100/00500-A9D1/031*A		2695	
	450	560	HC2000-100/00560-A9D1/035*A		2745	
	500	630	HC2000-100/00630-A9D1/038*A	HPU20/A2D1*A	2795	
	560	700	HC2000-100/00700-A9D1/042*A		2905	
	630	800	HC2000-100/00800-A9D1/047*A	HPU20/A3D1*A	3052	
	710	900	HC2000-100/00900-A9D1/053*A		3202	
	800	1000	HC2000-100/01000-A9D1/060*A	HPU20/A4D1*A	3342	
	900	1150	HC2000-100/01150-A9D1/065*A	HPU20/A5D1*A	3499	
	1000	1250	HC2000-100/01250-A9D1/072*A		3589	
	1120	1400	HC2000-100/01400-A9D1/081*A	HPU20/A6D1*A	3756	
Frame #2 MFB2.1(9-level)	1250	1600	HC2000-100/01600-A9D1/091*A	HPU20/B1D1*A	5224	 2500×1500×2000
	1400	1800	HC2000-100/01800-A9D1/107*A	HPU20/B2D1*A	5458	
	1600	2000	HC2000-100/02000-A9D1/116*A	HPU20/B3D1*A	5785	
	1800	2250	HC2000-100/02250-A9D1/135*A	HPU20/B4D1*A	6128	
	2000	2500	HC2000-100/02500-A9D1/153*A	HPU20/B5D1*A	6475	
	2250	2800	HC2000-100/02800-A9D1/163*A	HPU20/B6D1*A	6832	
Frame #3 MFB3.1(9-level)	2500	3150	HC2000-100/03150-A9D1/180*A	HPU20/C1D1*A	8674	 4550×1600×2400
	2800	3500	HC2000-100/03500-A9D1/202*A	HPU20/C2D1*A	9236	
	3150	4000	HC2000-100/04000-A9D1/226*A	HPU20/C3D1*A	10054	
	3550	4500	HC2000-100/04500-A9D1/255*A	HPU20/C4D1*A	10446	
Frame #5 MFBW5.1 (9-level)	6300	7500	HC2000W-100/07500-A9D1/433*A	HPU20/E1D1*W	19459	 21900×2000×2700/3200
	7100	8500	HC2000W-100/08500-A9D1/491*A	HPU20/E1D1*W	21959	
	8000	9500	HC2000W-100/09500-A9D1/548*A	HPU20/E1D1*W	23559	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

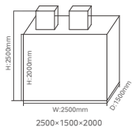
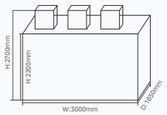
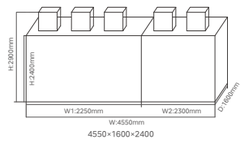
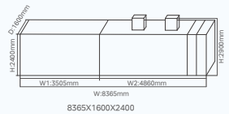
10kV AC drive (HC2000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MFL1.1(8-level)	315	400	HC2000-100/00400-A8D1/025*A	HPU20/A1D1*A	2562	 2500×1500×2000
	355	450	HC2000-100/00450-A8D1/027*A		2592	
	400	500	HC2000-100/00500-A8D1/031*A		2636	
	450	560	HC2000-100/00560-A8D1/035*A		2686	
	500	630	HC2000-100/00630-A8D1/038*A	HPU20/A2D1*A	2736	
	560	700	HC2000-100/00700-A8D1/042*A		2846	
	630	800	HC2000-100/00800-A8D1/047*A	HPU20/A3D1*A	2990	
	710	900	HC2000-100/00900-A8D1/053*A		3140	
	800	1000	HC2000-100/01000-A8D1/060*A	HPU20/A4D1*A	3280	
	900	1150	HC2000-100/01150-A8D1/065*A	HPU20/A5D1*A	3434	
	1000	1250	HC2000-100/01250-A8D1/072*A		3524	
	1120	1400	HC2000-100/01400-A8D1/081*A	HPU20/A6D1*A	3693	
Frame #2 MFB2.1(9-level)	1250	1250	HC2000-100/01600-A8D1/091*A	HPU20/B1D1*A	5102	 2500×1500×2000
	1400	1400	HC2000-100/01800-A8D1/107*A	HPU20/B2D1*A	5334	
	1600	1600	HC2000-100/02000-A8D1/116*A	HPU20/B3D1*A	5658	
	1800	1800	HC2000-100/02250-A8D1/135*A	HPU20/B4D1*A	6000	
	2000	2000	HC2000-100/02500-A8D1/153*A	HPU20/B5D1*A	6334	
	2250	2250	HC2000-100/02800-A8D1/163*A	HPU20/B6D1*A	6658	
Frame #3 MFL3.1(8-level)	2500	3150	HC2000-100/03150-A8D1/180*A	HPU20/C1D1*A	8455	 4550×1600×2400
	2800	3500	HC2000-100/03500-A8D1/202*A	HPU20/C2D1*A	9003	
	3150	4000	HC2000-100/04000-A8D1/226*A	HPU20/C3D1*A	9802	
	3550	4500	HC2000-100/04500-A8D1/255*A	HPU20/C4D1*A	10181	
Frame #5 MFLW5.1 (8-level)	6300	7500	HC2000W-100/07500-A8D1/433*A	HPU20/E1D1*W	18806	 10820×1600×2400/2900
	7100	8500	HC2000W-100/08500-A8D1/491*A	HPU20/E1D1*W	21206	
	8000	9500	HC2000W-100/09500-A8D1/548*A	HPU20/E1D1*W	22706	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

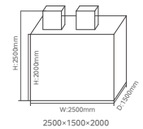
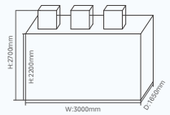
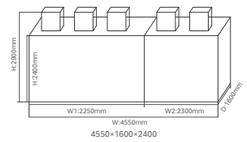
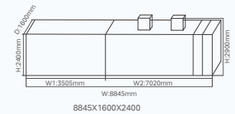
6kV AC drive (HC2000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MFA1.1(5-level)	250	315	HC2000-060/00315-A5D1/032*A	HPU20/A1D1*A	2139	 2500×1500×2000
	315	400	HC2000-060/00400-A5D1/040*A	HPU20/A2D1*A	2259	
	400	500	HC2000-060/00500-A5D1/050*A	HPU20/A3D1*A	2334	
	450	560	HC2000-060/00560-A5D1/056*A	HPU20/A4D1*A	2444	
	500	630	HC2000-060/00630-A5D1/062*A		2539	
	560	700	HC2000-060/00700-A5D1/068*A	HPU20/A5D1*A	2609	
	630	800	HC2000-060/00800-A5D1/077*A	HPU20/A6D1*A	2664	
Frame #2 MFA2.1(5-level)	710	900	HC2000-060/00900-A5D1/086*A	HPU20/B1D1*A	4036	 2500×1500×2000
	800	1000	HC2000-060/01000-A5D1/097*A	HPU20/B2D1*A	4124	
	900	1150	HC2000-060/01150-A5D1/109*A	HPU20/B3D1*A	4219	
	1000	1250	HC2000-060/01250-A5D1/130*A	HPU20/B4D1*A	4336	
	1120	1400	HC2000-060/01400-A5D1/135*A		4526	
	1250	1600	HC2000-060/01600-A5D1/153*A	HPU20/B5D1*A	4841	
Frame #3 MFA3.1(5-level)	1400	1800	HC2000-060/01800-A5D1/173*A	HPU20/C1D1*A	6385	 4550×1600×2400
	1600	2000	HC2000-060/02000-A5D1/192*A	HPU20/C2D1*A	6563	
	1800	2250	HC2000-060/02250-A5D1/220*A	HPU20/C3D1*A	6801	
	2000	2500	HC2000-060/02500-A5D1/243*A	HPU20/C4D1*A	6984	
Frame #5 MFAW5.1 (5-level)	3550	4500	HC2000W-060/04500-A5D1/433*A	HPU20/E1D1*W	13584	 8365X1600X2400
	4000	5000	HC2000W-060/05000-A5D1/480*A	HPU20/E1D1*W	14184	
	4500	5600	HC2000W-060/05600-A5D1/539*A	HPU20/E1D1*W	14584	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

6kV AC drive (HC2000)

Frame Code	Adapted motor power (kW)	AC drive capacity (kVA)	Model	Power cell model	Weight (kg)	Frame dimensions W×D×H(mm)
Frame #1 MFC1.1(6-level)	250	315	HC2000-060/00315-A6D1/032*A	HPU20/A1D1*A	2198	 2500×1500×2000
	315	400	HC2000-060/00400-A6D1/040*A	HPU20/A2D1*A	2318	
	400	500	HC2000-060/00500-A6D1/050*A	HPU20/A3D1*A	2396	
	450	560	HC2000-060/00560-A6D1/056*A	HPU20/A4D1*A	2506	
	500	630	HC2000-060/00630-A6D1/062*A		2604	
	560	700	HC2000-060/00700-A6D1/068*A	HPU20/A5D1*A	2674	
	630	800	HC2000-060/00800-A6D1/077*A	HPU20/A6D1*A	2732	
Frame #2 MFC2.1(6-level)	710	900	HC2000-060/00900-A6D1/086*A	HPU20/B1D1*A	4138	 3000×1650×2200
	800	1000	HC2000-060/01000-A6D1/097*A	HPU20/B2D1*A	4227	
	900	1150	HC2000-060/01150-A6D1/109*A	HPU20/B3D1*A	4325	
	1000	1250	HC2000-060/01250-A6D1/130*A	HPU20/B4D1*A	4444	
	1120	1400	HC2000-060/01400-A6D1/135*A		4644	
	1250	1600	HC2000-060/01600-A6D1/153*A	HPU20/B5D1*A	4962	
Frame #3 MFC3.1(6-level)	1400	1800	HC2000-060/01800-A6D1/173*A	HPU20/C1D1*A	6565	 4550×1600×2400
	1600	2000	HC2000-060/02000-A6D1/192*A	HPU20/C2D1*A	6757	
	1800	2250	HC2000-060/02250-A6D1/220*A	HPU20/C3D1*A	6998	
	2000	2500	HC2000-060/02500-A6D1/243*A	HPU20/C4D1*A	7190	
Frame #5 MFCW5.1 (6-level)	3550	4500	HC2000W-060/04500-A6D1/433*A	HPU20/E1D1*W	14189	 8845X1600X2400
	4000	5000	HC2000W-060/05000-A6D1/480*A	HPU20/E1D1*W	14789	
	4500	5600	HC2000W-060/05600-A6D1/539*A	HPU20/E1D1*W	15189	

*In case that there is not remarks for materials of transformer under the column of "Frame Code",that means this frame is suitable for materials of Aluminum, Hybrid, copper.

*The number of fans shown in the diagram represents the maximum number of fans for the frame type. The actual number of fans shall be determined by the final frame layout drawings for the project.

Reliability assurance

Comprehensive upgrade of hardware and software stability

Optimal structure of main loop

Strong electromagnetic compatibility

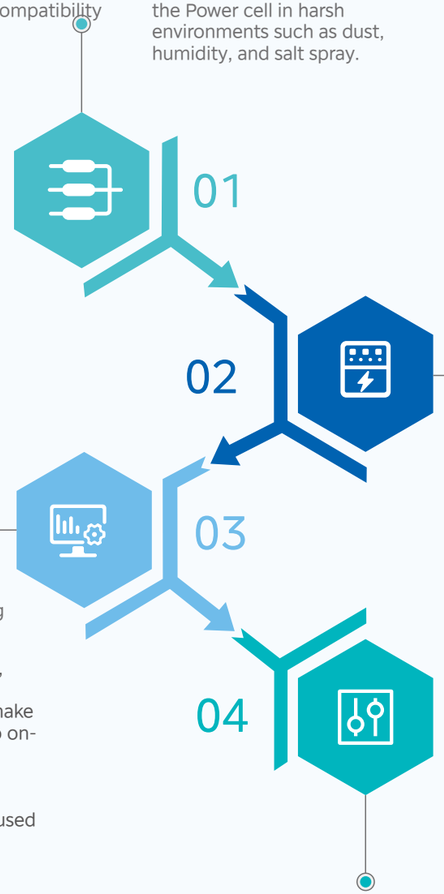
Optimization of the main circuit DC bus to reduce stray inductance in the DC bus circuit and improve the electromagnetic compatibility of the Power cell.

Stable operation in harsh environments

Optimization of the creepage distance and electrical clearance of the main circuit to ensure stable operation of the Power cell in harsh environments such as dust, humidity, and salt spray.

Long-life film capacitors

The main circuit electrolytic capacitors use film capacitors to improve capacitor life and reduce system losses.



Power device drive Reliability optimization design

Drive reliability

Optimization of power device drive power supply and isolation to ensure the reliability of power device drive.

Reliable high-Power cell

Optimization of the parallel drive synchronization of high-Power cell power devices to ensure that the drive signal is not affected by the temperature effect of the device, improving the reliability of the high-Power cell.

High-performance control algorithms and software

Strong adaptability to working conditions | Reduce failures

For loads such as fans, pumps, and compressors, the control algorithms are optimized to make the system more adaptable to on-site working conditions. This reduces overvoltage and overcurrent failures in the variable-frequency system caused by sudden changes in load.

Control system reliability assurance

Fast computing speed | High control precision | Clearer interface

A standard shielded chassis and a control system that has passed strict EMC testing and verification improve anti-interference ability and ensure the reliable operation of the system.

The hardware architecture of a multi-core processor enables decoupled control of multiple tasks, improving the system's computing speed and reliability;

A 32-Bit floating-point arithmetic controller offers a high control rate and control precision;

The control technology of multiple buses and Ethernet buses enhances the system's data interaction rate;

The LinuX system interactive interface makes operations more flexible and convenient.

Stable choice, energy-saving pioneer

With its excellent environmental adaptability, operational stability, and safety performance, HICONICS' AC drives provide a solid guarantee for the continuous and stable operation of products. Even in various harsh working conditions, they can maintain long-term stable operation.

Environmental stability | Stable operation | Safety assurance

Environmental Stability - Customized design for diverse complex environments

HICONICS' AC drives can be customized according to the usage scenarios of customers in different fields, and are capable of meeting harsh usage environments such as extreme temperatures, dusty conditions, high altitudes, and high salt spray environments.

High and low temperatures

Dust

High salt spray

High corrosion

High altitude

Stable operation - Easily cope with various harsh working condition changes

Strong grid adaptability

It can easily cope with grid fluctuations, frequency changes, and load variations during product operation, ensuring stable voltage output.

Power cell bypass design, continuous operation in case of faults

When a Power cell fails and cannot continue to operate, the bypass contactor is activated, and a bypass alarm is issued to ensure the continuous operation of the AC drive.

Safety assurance - Intelligent protection, stable drive

HICONICS' AC drives are equipped with two types of alarm functions: minor faults and major faults:

Minor fault alarms: Intervention in advance to eliminate potential risks.

Major fault alarms: Quick response to ensure production safety and minimize losses.

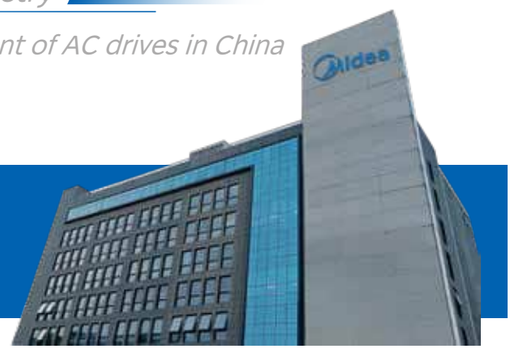
Equipped with a digital cloud platform: It enables remote monitoring, inspection management, data analysis, fault diagnosis, abnormal alarm, maintenance management, equipment repair reporting, etc. through the mobile APP and PC.

01 Enterprise Profile

Standing at the pinnacle of the industry

Leading the development of AC drives in China

2 million units shipped | Joined Midea Group in **2020** | **5000+** service customers | **1000+** employees



HICONICS ECO-ENERGY TECHNOLOGY CO., LTD. was established in 2003 and successfully listed in 2010. In 2020, it joined Midea Group, one of the Fortune Global 500 companies, and became the R&D center and production base for medium and low voltage AC drives of Midea Group. As an outstanding representative enterprise under Midea Group Co., Ltd., HICONICS enjoys a good reputation in the industry with its quality and services and leads the development of the industry with innovative technologies, and has grown into a core supplier of full-range AC drives after more than 20 years of deep cultivation.

Full power range product coverage

As of now, the shipment volume of HICONICS' medium voltage AC drives has reached over 2 million units. As early as 2013, HICONICS successfully developed the first "water-cooled medium voltage AC drive" in China, filling the domestic gap in water-cooled medium voltage AC drives and breaking the foreign monopoly.

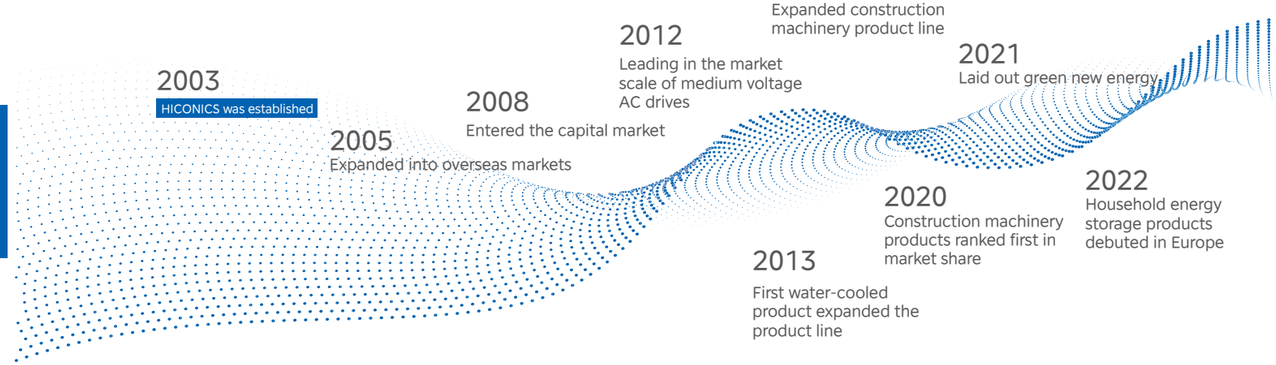
With its strong R&D capabilities and quality assurance, HICONICS has successively launched more than a dozen series of medium voltage AC drive products.

Medium voltage products

HC1000 Series | HC1000S Series | HC2000 four-quadrant series | HC1000W water-cooled series

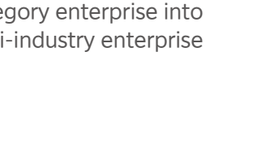
02 Development Course

Transform from a single-category enterprise into a multi-category and multi-industry enterprise



2003 Initial stage of entrepreneurship **2006** Listing stage **2012** Diversified industrial layout **2020** New journey **2024**

03 Research and Create the Future



Supported by cutting-edge technology research and a rich talent pool, HICONICS took the lead in launching high-performance water-cooled AC drives in the domestic market at the beginning of its establishment, and pioneered the establishment of the industry's first back-to-back test and complete medium voltage AC drive test platform. Meanwhile, with the help of Midea Group's global R&D network and production capabilities, the product delivery efficiency and quality have been further improved, consolidating its leading position in the new energy and industrial control industries.

RMB 200 million
annual R&D funding

300+
R&D personnel, 25% with master's or doctoral degrees

200+
authorized patents

04 AC Drives

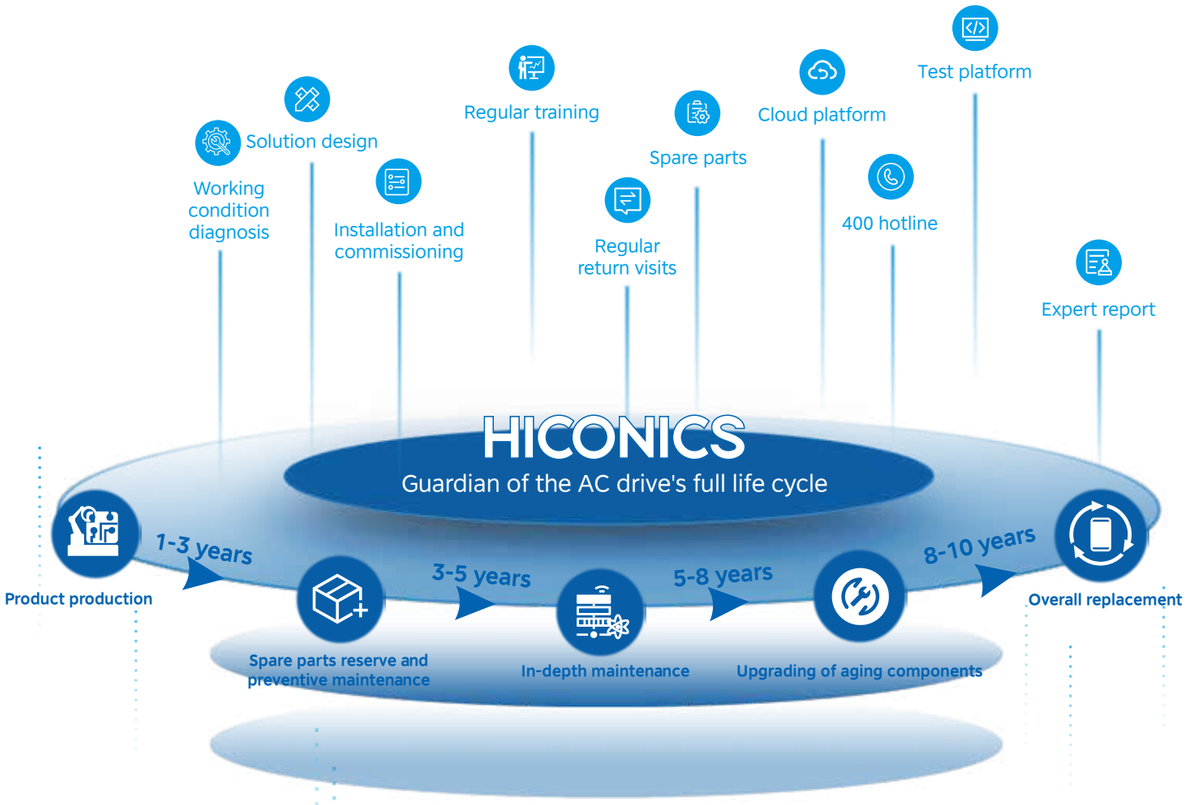
Guardian of full life cycle

HICONICS - dedicated to becoming your trusted full life cycle guardian of equipment

We deeply understand the practical needs of users for stable efficiency improvement.

We provide five major types of full life cycle management services for AC drives, including "spare parts reserve", "preventive maintenance", "in-depth maintenance", "upgrading of aging components", and "overall replacement", to meet the personalized needs of customers.

From the moment the equipment is sold, we will provide full escort to ensure the efficient operation of the equipment throughout its life cycle and help you reduce costs and increase efficiency!



Full Life Cycle Quality Control

Walk with excellence and jointly create a low-carbon, safe and economical production environment

Software and hardware quality control

Striving for perfection in every detail, all for providing customers with a more excellent user experience

Comprehensive project inspection: covering key aspects such as product appearance inspection, function verification, comprehensive electrical performance test, and efficiency evaluation. Independently develop printed circuit board assembly (PCBA) to fundamentally control product quality.

Rigorous software testing: All kinds of software in HICONICS' AC drives have undergone in-depth testing, and the accuracy of their algorithms has been verified.

Finished product quality control

Strict testing procedures to ensure the long-term reliable operation of AC drives

HICONICS is equipped with a cutting-edge product testing platform, comprehensively covering all key performance tests of AC drives, such as load testing, efficiency evaluation, temperature rise monitoring, long-term stability assessment, aging simulation, etc.

Production process control

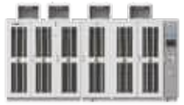
Meticulous craftsmanship, creating excellent quality

HICONICS' production process control covers multiple aspects, including raw material warehousing, processing, SMT soldering,
pin-in-hole and wave soldering, and finally the complete machine assembly, testing, and packaging. It ensures that every step from the source to the finished product meets high standards.

05 Digital Factory

Base in Beijing
Production base for medium voltage AC drives

3600+ units/year
Medium voltage AC drives



Automated testing 13 sets of fully automated testing platforms

Digital factory

Comprehensive application of Midea's digital capabilities, including PLM, APS, and MES

Quality system

13 sets of automated testing platforms with high-level professional production testing capabilities

Automated testing

Full value chain quality control system QMS system

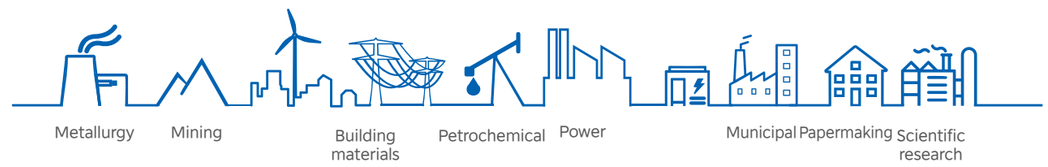
Intelligent manufacturing demonstration award

China Automation and Intelligent Manufacturing Service Annual Conference

06 Customer Domain

5,000+
strategic partners

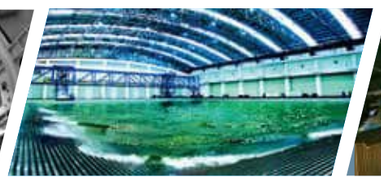
In product design and development, HICONICS has in-depth insights into the actual needs of the industry. It uses innovative technologies and practical applications to address pain points. From applications in extreme environments, long-term stable operation, energy conservation and consumption reduction, safety protection to intelligent operation and maintenance, it comprehensively customizes medium voltage AC drive products for users. As of now, it has served more than 5,000 customers in total. The application scenarios cover hundreds of industries such as cement, petrochemical, mining, power, light industry, metallurgy, and municipal engineering,



Widely used in major projects

"Artificial Sun" Experiment

Assisting the ITER project in nuclear fusion plasma research



"Marine Deep Water" Test Pool

Assisting China's deep-sea scientific research

"South-to-North Water Diversion" Project

(Eastern Route, Middle Route)
Assisting the national water diversion "artery"

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