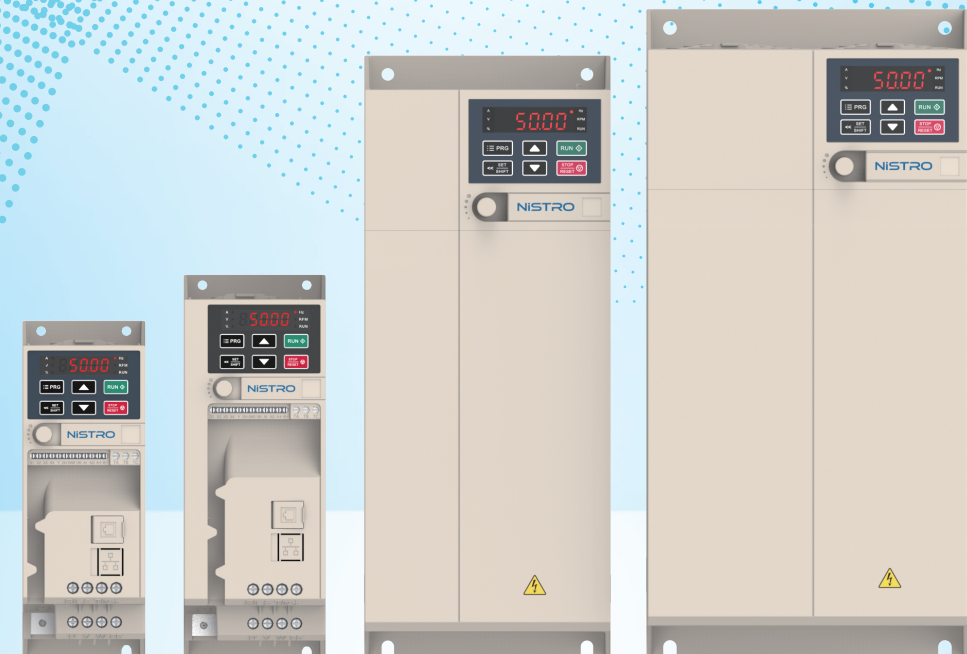


NISTRO

GA20-Series General-purpose AC Drive

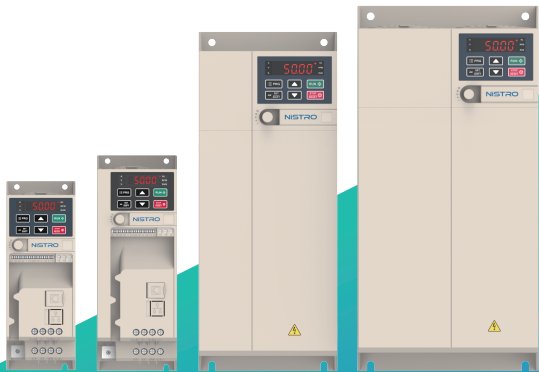










GA20 General-purpose AC Drive

GA20 series AC drives represent the newest technology from NISTRO's research, featuring their small size but high reliability and cost performance in the light of current market needs.

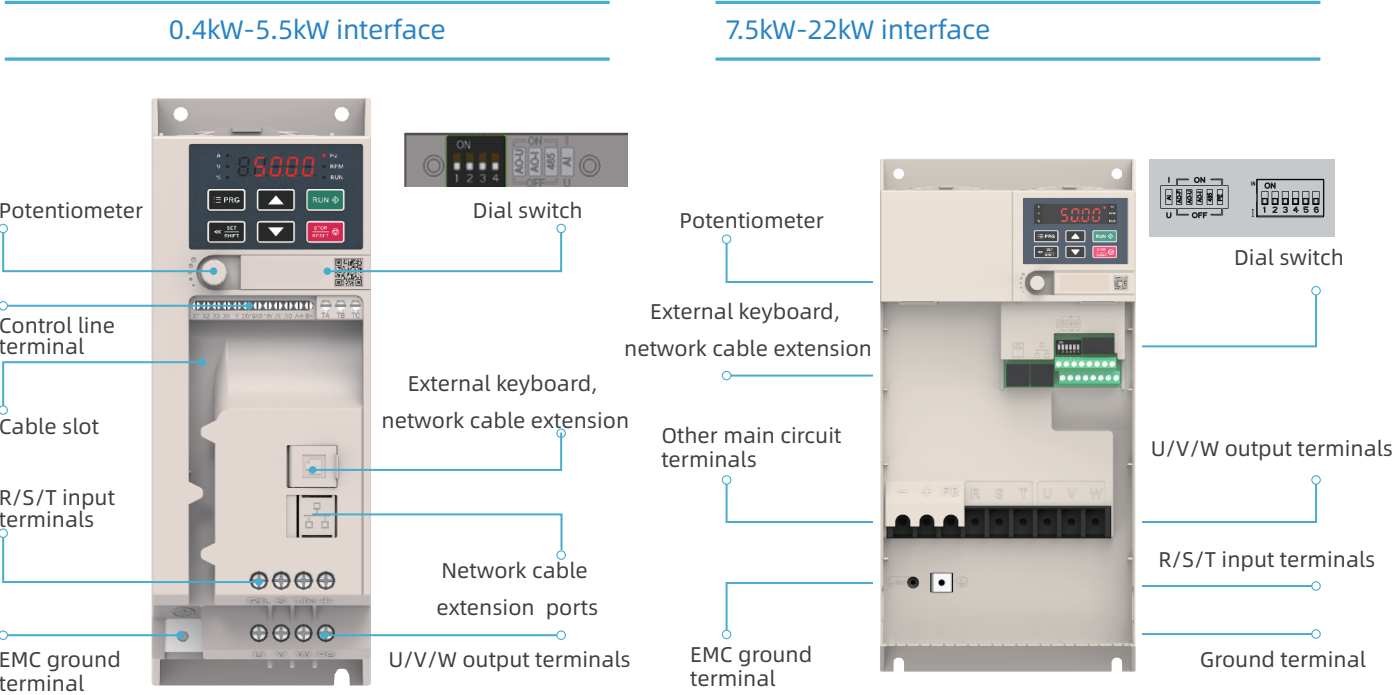
As a vector AC drive with book-like design, GA20 boasts easy installation, small volume, low temperature rise, high protection and favorable software performance among all of the other advantages.

With the advanced PLM R&D management system applied during the whole process, hardware, software, structure and testing process are all guaranteed since all the steps are three-dimensional, systematical and traceable. Every detail is meticulously developed thus our products are rigorous and refined.



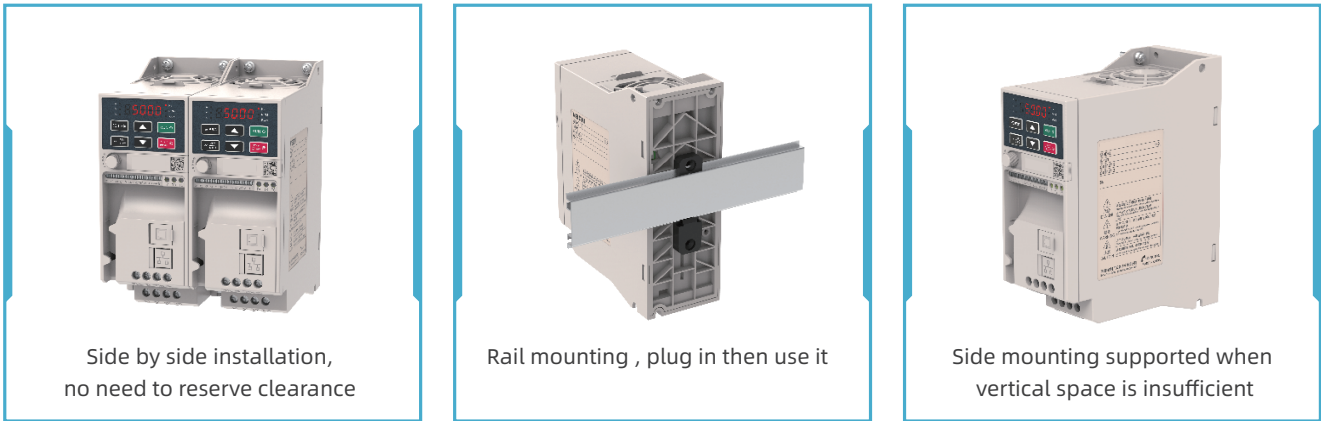
 Book-type design	 Various installation methods	 No derating while ambient temperature is up to 50°C	 Hidden wires for easy routes
 Isolated air ducts for both device heat dissipation and dust protection	 Over voltage & over current suppression protection and wave-by-wave current limit protection	 Convenient group network expansion	 Smaller size for more functions

Structural Features



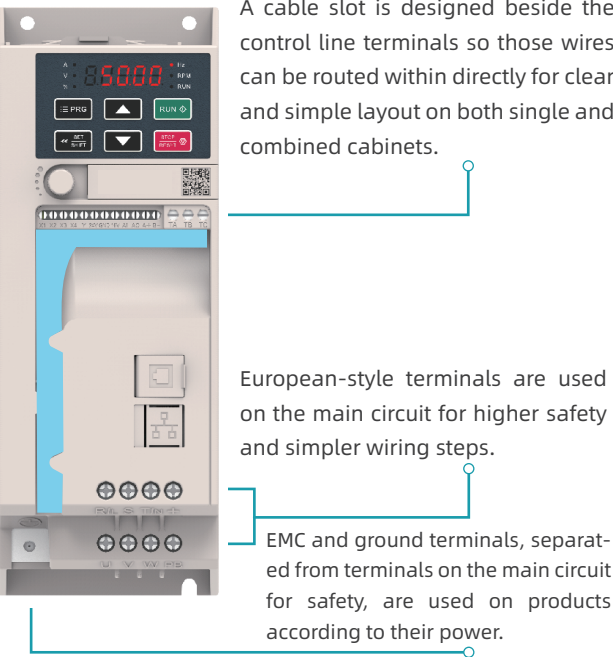
Installation methods

Support penetration installation (wall installation, embedded installation); Adapt to various installation environments



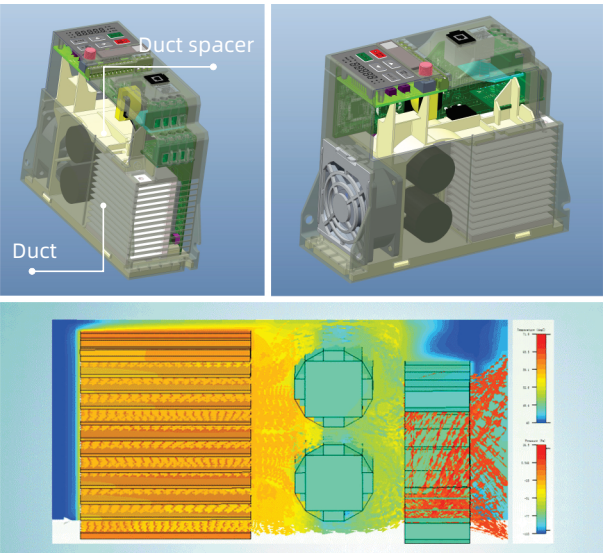
Wiring terminals

The terminal layout of GA20 VFD is simple and beautiful, with a deep sense of craftsmanship.



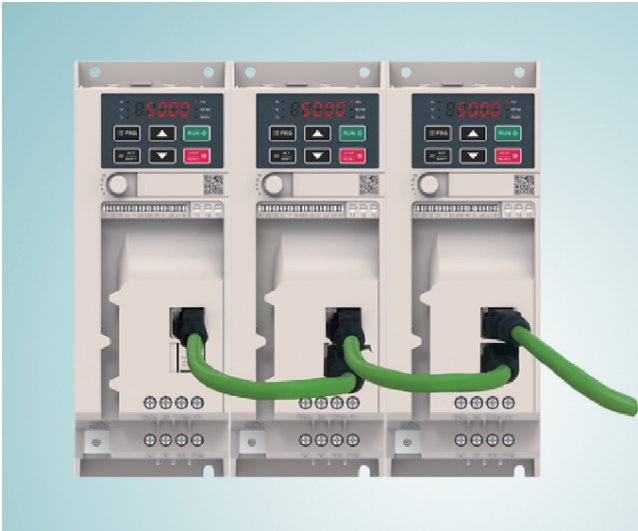
Protective designs

High protection:completely independent air ducts and scientific layout inside to meet the requirements of heat dissipation of high-power consumption components and dust proof of sensitive components;
High temperature resistance: scientific design of air ducts to quicken heat dissipation and slower temperature rise enabling usage under ambient temperature 50 °C without capacity reduction.



Communication extensions

RS485 (standard) and CAN communication (OPT) are supported through the extension ports so customers can simply connect cables to them. All is convenient and clean.

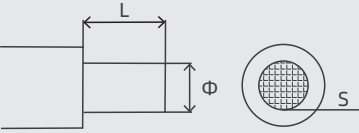


Control terminal wiring specifications

Rational parameters	Power range	Strip length (mm)	Wire gauge (AWG)	Screw
Specification	0.4kW~5.5kW	4-5	20~14	M2
	7.5kW~22kW	6-7	26~14	M3

Main circuit terminal wiring specifications

Power range: 0.4kW ~ 5.5kW

	GA20 power level	Wire diameter (mm)	Wire cross-sectional area (mm²)	Strip length (mm)
Main circuit terminal	0.4kW-2.2kW	0.25-2.5	0.05-5.2	7-8
	4kW-5.5kW	0.5-2.5	0.2-5.2	6-8
Wire stripping diagram				

Power range: 7.5kW~22kW

Model	Main circuit terminal screw specifications (mm)	Recommended fixed torque (N·m)	Recommended copper core cable specifications mm² (AWG)
GA20-T3-7R5G-B	M4	1.2 ~ 1.5	6mm²(9)
GA20-T3-011G-B	M4	1.2 ~ 1.5	10mm²(7)
GA20-T3-015G-B	M5	2 ~ 3	10mm²(7)
GA20-T3-018G-B	M5	2 ~ 3	16mm²(5)
GA20-T3-022G-B	M5	2 ~ 3	16mm²(5)

Performance Characteristics

Over-voltage Suppression

When the bus voltage reaches or exceeds the bus overvoltage suppression point during the running , it will automatically adjust the operating frequency to suppress the bus voltage rise, thus ensuring that the AC drive does not cause over-voltage protection.

Keyboard operation

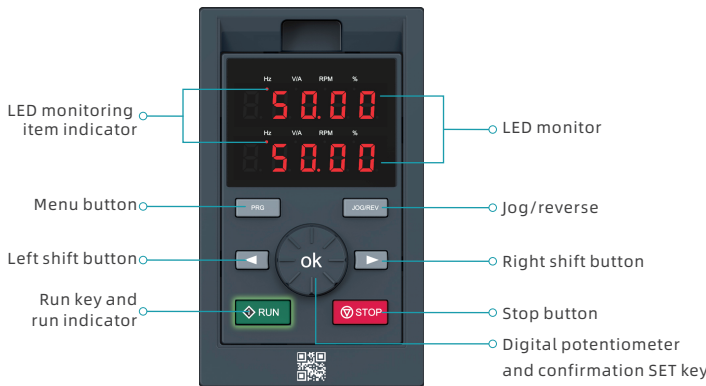
Keyboard operations of GA310 are still adopted here for quick start. External keyboards are applicable too to GA310-series products.



All-in-one keyboard



One-line display external keyboard
(Single keypad opening size: 60*36mm)



Dual-line display external keyboard
(Opening size: 119*70mm)

Under-voltage suppression

When the AC drive suddenly loses power during running, it will automatically adjust the operating frequency after the bus voltage drops to the under-voltage suppression point, thus ensuring that the drive will not report under-voltage faults due to the low bus voltage in a short time. When the power supply is restored within the valid period of under-voltage suppression, this drive can continue to operate normally .



Comprehensive fault protection

The GA20 fault protection is more comprehensive and detailed, and it can find the problem more quickly and accurately in the event of an error.

System fault	Drive overload	Non-zero sum of three phases	Parameter copy fault	Brake unit fault	Parameter setting fault
Over current	CBC continuous occurs	Excessive U/V/W phase zero drift	Three phase output phase loss	Self-tuning fault	CPU timeout
Over voltage	Rectifier module overheat	Short circuit to ground	U/V/W phase output phase loss	Load protection	Parameter storage fault
Under voltage	Inverter module overheat	Fan short circuit	Input phase loss	Excessive speed deviation	Communication fault
Motor overload	Terminal start-up protection	PID feedback disconnection	External fault	Stall protection

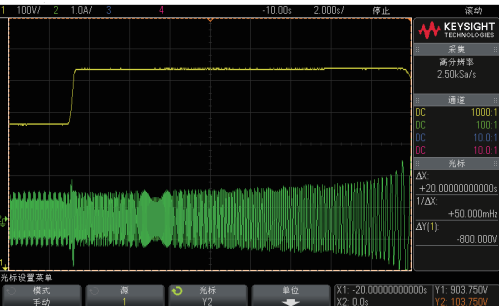
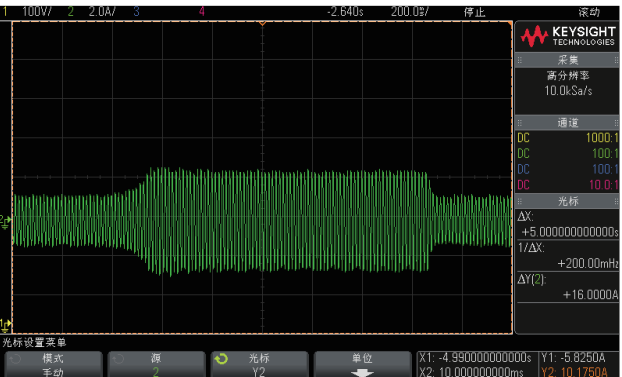
Excellent control performance

The GA20 is a high-performance AC drive that supports PG-free vector control in addition to the universal V/F control mode. It has excellent control performance and can adapt to more complex operating conditions.

Motor type	Asynchronous motors, synchronous motors
Motor control method	No PG V/F control, no PG vector control
Modulation method	Optimized space vector PWM modulation
Speed control range	No PG vector control, rated load 1:100
Steady-state speed accuracy	No PG vector control:≤2% Rated synchronous speed
Starting torque	No PG vector control : 150% rated torque at 0.5Hz
Torque response	No PG vector control : < 20ms
Frequency accuracy	Digital setting: Max. frequency×±0.1%; Analog setting: Max. frequency×±0.2%
Frequency resolution	Digital setting 0.01Hz; Analog setting:Max.frequency×0.05%

Over-current suppression

The overcurrent suppression function is to real-time monitor and automatically limit the load current during operation, it does not exceed the overcurrent suppression point, thus to prevent the fault trip caused by excessive current. This function is especially used for some loads with large inertia or severe changes. The setting is only valid under V/F control, and the overcurrent suppression function under the vector control is always valid.



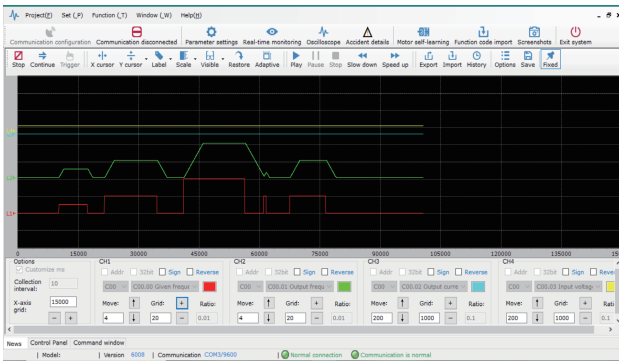
Wave-by-Wave current limit

The wave-by-wave current limit could limit the rise of current to a certain extent through the hardware protection, so that the current does not exceed the protection value of the AC drive to avoid any stopping due to over current fault.



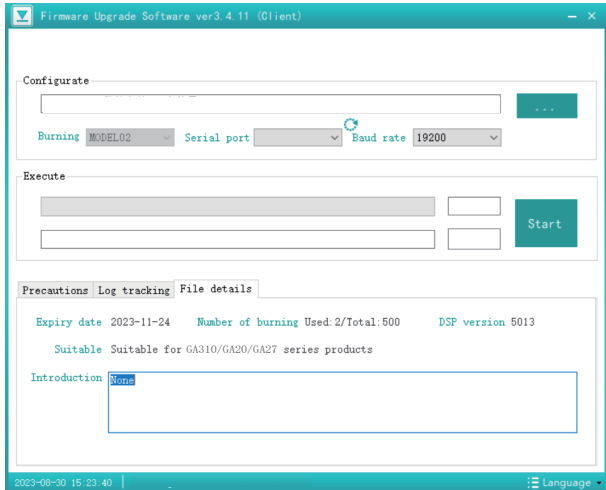
Virtual oscilloscope

The GA20 has virtual oscilloscope software that can monitor four parameters at the same time. Users can monitor the operating parameters in real time on the computer through the virtual oscilloscope, which makes monitoring, debugging and troubleshooting more flexible.



Firmware field upgrade

NISTRO firmware upgrade software provides great convenience for the field upgrade of GA20 firmware.



Model Description

GA20 model naming rules

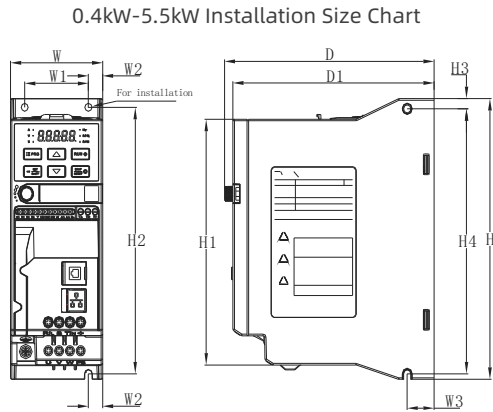
GA20-T 3-1R5 G-B

- Machine series: GA20 Series
- Voltage type: T: Three-phase, S: Single-phase
- Voltage rating: 2: 220V, 3: 380V
- Adaptable motor power: R75: 0.75kW, 1R5: 1.5kW, 2R2: 2.2kW, 004: 4kW
- Load type: G: Heavy duty type
- Accessory type: B: Brake unit

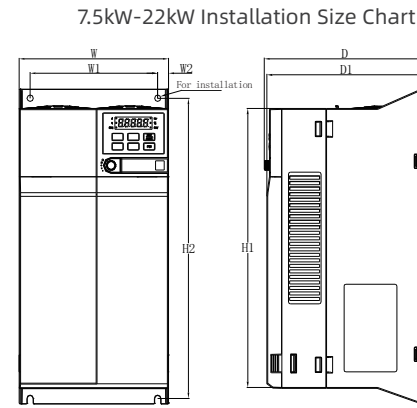
Rated Output Current

Voltage	220V	380V
Power (kW)	Rated output current(A)	
0.4	2.5	—
0.75	4	3
1.5	7	4
2.2	10	5
4	—	9.5
5.5	—	13
7.5	—	17
11	—	25
15	—	32
18.5	—	38
22	—	45

Installation Size



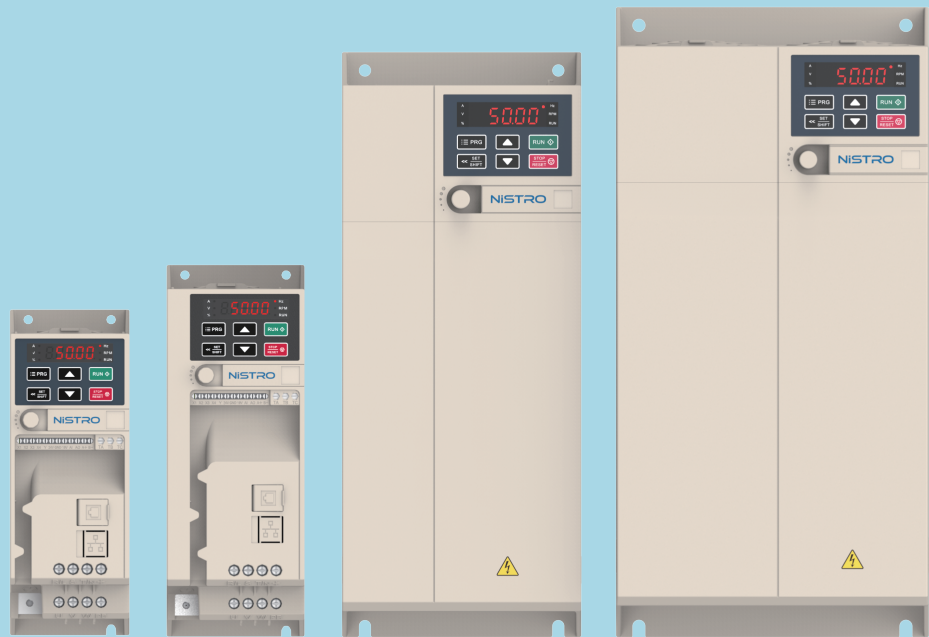
Drive model	Dimension(mm)					Mounting dimensions (mm)						Mounting aperture
	W	H	H1	D	D1	W1	W2	H2	W3	H3	H4	
GA20-T/S2-R40G-B	65	177	155	148	142	45	10	168	19	6.5	167	3-M4
GA20-T/S2-R75G-B												
GA20-T/S2-1R5G-B	75	202	180	163	157	55	10	193	19	6.5	192	3-M4
GA20-T/S2-2R2G-B												
GA20-T3-R75G-B	65	177	155	148	142	45	10	168	19	6.5	167	3-M4
GA20-T3-1R5G-B												
GA20-T3-2R2G-B												
GA20-T3-004G-B	75	202	180	163	157	55	10	193	19	6.5	192	3-M4
GA20-T3-5R5G-B												



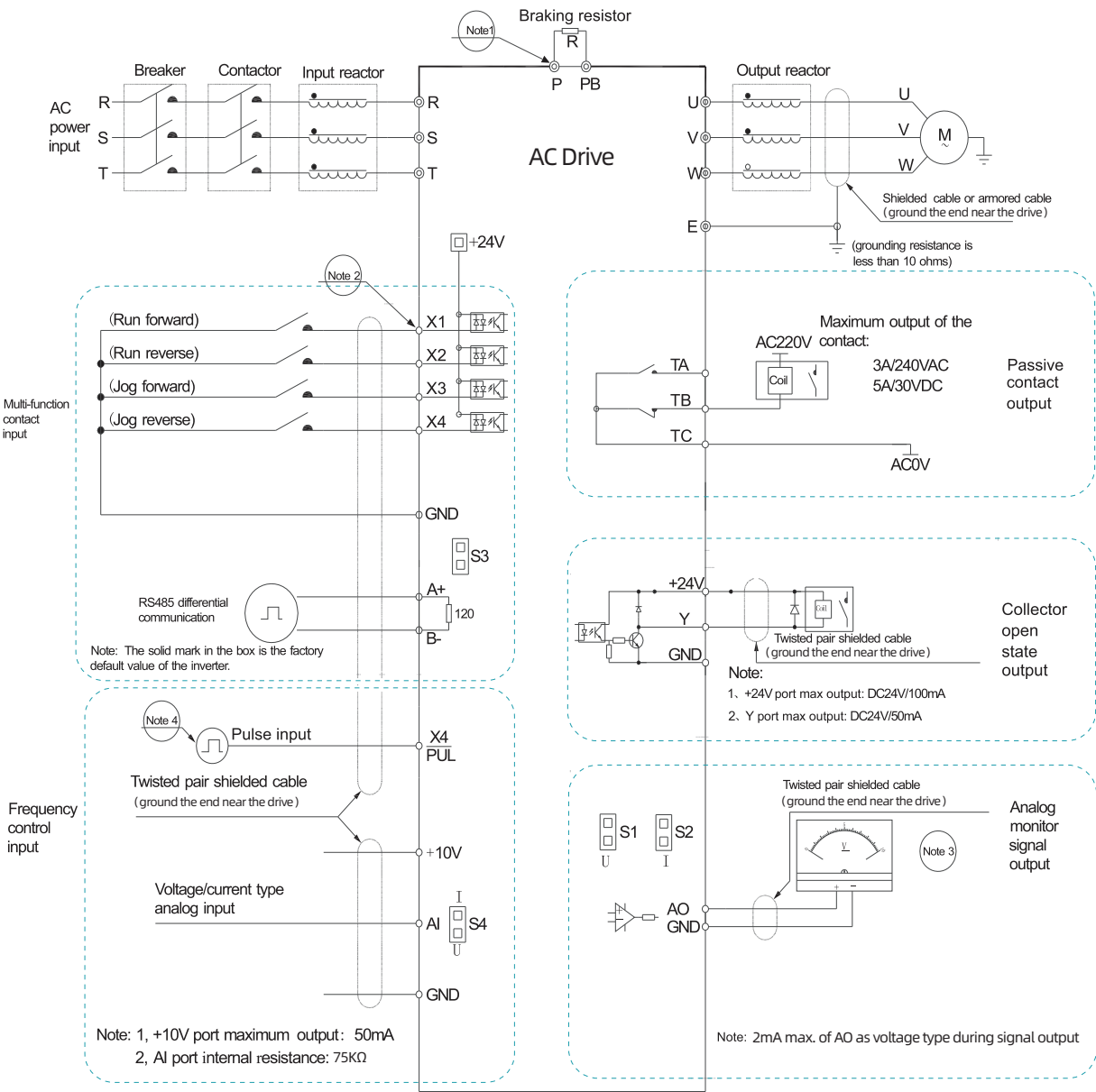
Drive model	Dimension(mm)					Mounting dimensions (mm)						Mounting aperture
	W	H	H1	D	D1	W1	W2	H2	W3	H3	H4	
GA20-T3-7R5G-B	130	320	286	161	158	105	12.5	302	-	-	-	M5
GA20-T3-011G-B												
GA20-T3-015G-B	170	342.5	303.5	183	180	145	12.5	326.5	-	-	-	M5
GA20-T3-018G-B												
GA20-T3-022G-B												

Control Terminal Parameters

	Type	Terminal symbol	Maximum input/output capacity
Control line terminals	Power terminals	+10V-GND	DC10V, 50mA
		+24V -GND (0.4kW-5.5kW power range) +24V -COM (7.5kW- 22kW power range)	DC24V, 100mA
	Analog input	AI-GND	1. DC0V~10V 2. 0mA~20mA
	Digital input	X1~X4-GND (0.4kW-5.5kW power range) X1~X4-COM (7.5kW- 22kW power range)	1.High level: 10~30V 2.Low Level: 0~5V 3.X4 (PUL) : 100KHz
	Analog output	AO-GND	1.DC 0V~10V 2.DC 0mA~20mA
	Digital output	Y - GND (0.75kW-5.5kW) Y - COM (7.5kW-22kW)	Open collector output 1.DC 0V~30V 2.DC 0mA~50mA
	Relay normally open terminals	TA-TC	Contact drive capability 1.240VAC, 3A 2.30VDC, 5A
	Relay normally closed terminals	TB-TC	
	RS485 communication terminals	A+ B-	RS485 communication interface: Select by dipswitch whether to connect terminal resistor



Terminal Wiring



*For GA20 series, 0.4kW~5.5kW AC drives, COM and GND terminals are integrated and combined as GND terminals externally;
For 7.5kW~22kW AC drives, COM and GND terminals are both present.

Applications

Fans & Pumps

Automated production line

Woodworking machinery

Smart logistics

Food packaging line