

Goodrive350-21 Series

Dual-VFD Integrated System for Air Compressor





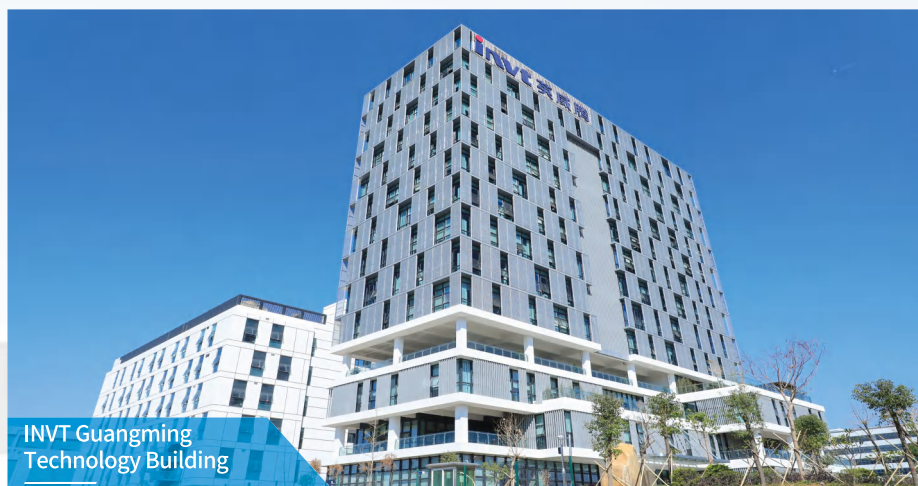
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INVT (Shenzhen INVT Electric Co., Ltd) has been concentrating on industry automation and energy power since its foundation in 2002 and is committed to "Providing the best product and service to allow customers more competitiveness". INVT goes public in 2010 and is the first A-share listed company (002334) in Shenzhen Stock Exchange in the industry. At present, INVT owns 15 subsidiaries and more than 4500 employees, over 40 branches, forming a sales network covering more than 100 overseas countries and regions.

INVT has been awarded as the Key High-tech Enterprise of National Torch Plan based on mastering of key technologies in power electronics, auto control and IT. With business covering industry automation, electric vehicle, network power and rail transit, INVT has established 10 R&D centers nationwide, boasts more than 1400 patents and owns the first lab in the industry awarded ACT qualification from TÜV SÜD, UL-WTDP and CNAS National Lab. The industrial parks in Shenzhen and Suzhou aim to provide customers with advanced integrated product development design management, comprehensive product R&D test and auto informational production. The worldwide INVT branches and warranty service centers are ready to offer customers all-around back-ups including professional solutions, technical trainings and service support.

In the next decade, INVT will continue to take "Sincere Virtuous, Professional Aspiring" as our business philosophy, enhance core business sectors including industrial automation, electric vehicle, network power and rail transit based on the three major technologies in industry automation and energy power fields, and strive to become a leading, responsible and harmonic international professional group armed with proper product structure, leading technologies, efficient management, robust profitability and superior competitiveness.





Product introduction

The GD350-21 series is a dedicated dual-VFD integrated system developed for air compressors with synchronous or asynchronous motors. It provides dual-VFD control for both the air compressor main motor and the fan. Used together with INVT HMI and other HMIs, it enables comprehensive drive control and management of air compressors.

Power range

AC 3PH 380V(-15%)~440V(+10%): 15-90kW
AC 3PH 220V(-15%)~240V(+10%): 7.5-45kW



Motor control



Air compressor control

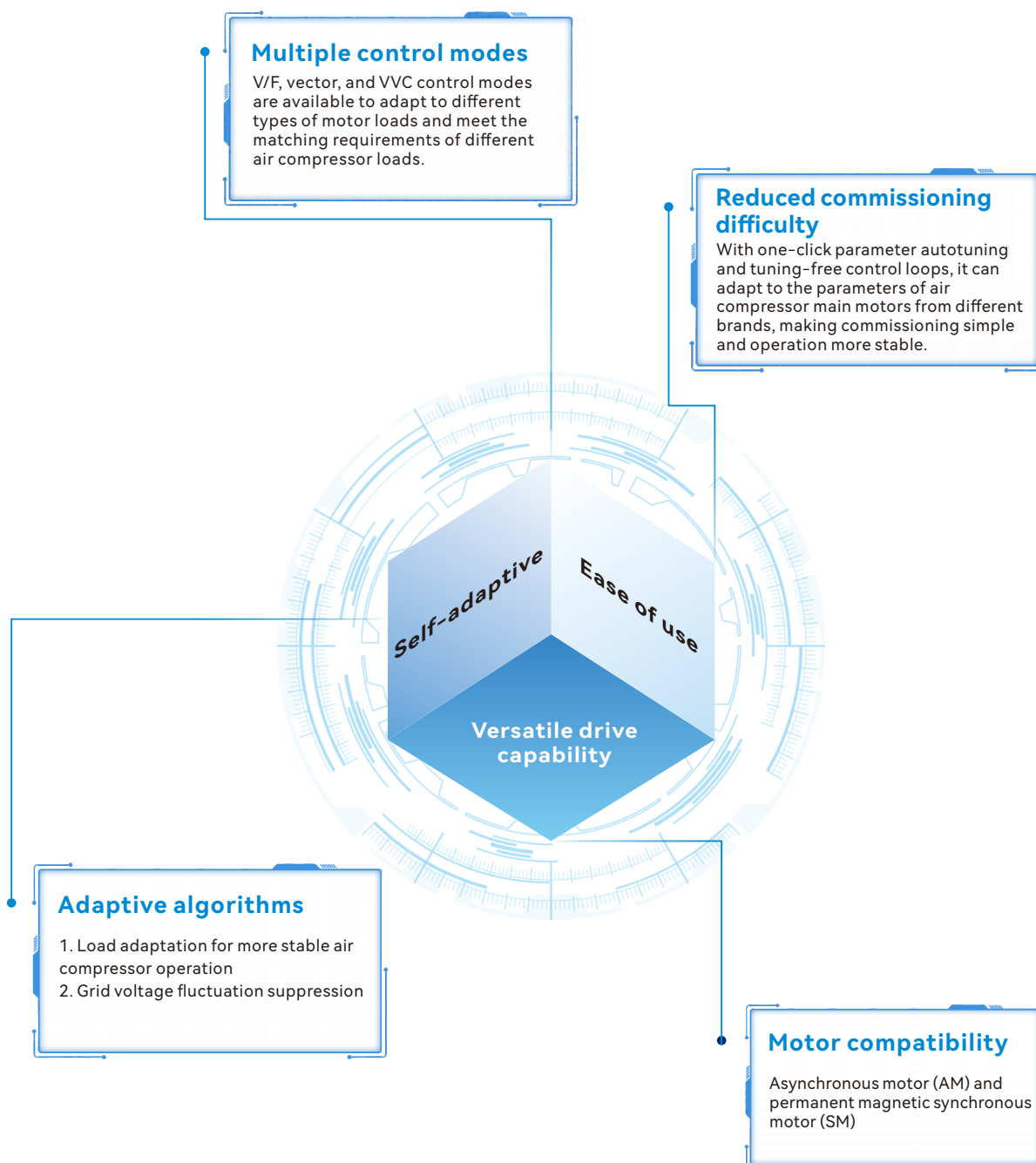


Reliable design



Product features

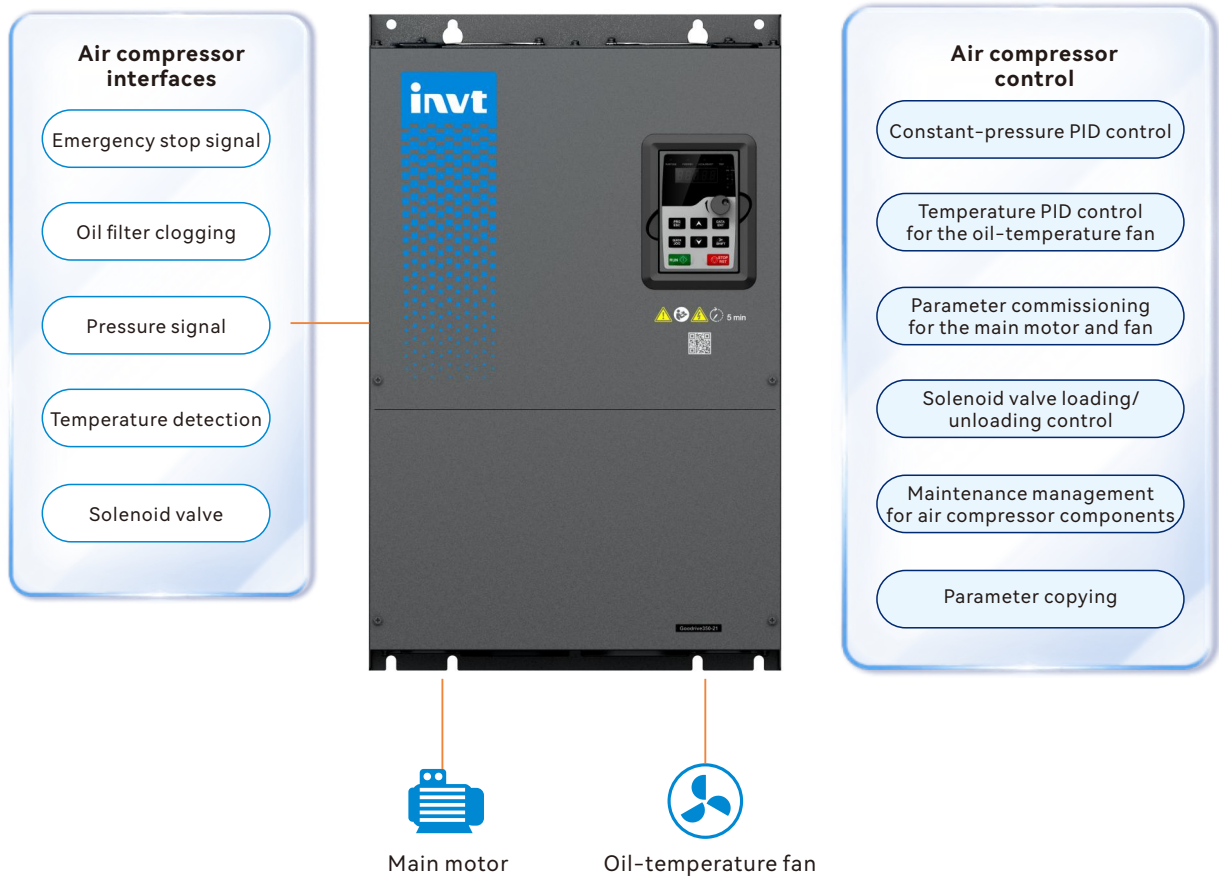
Motor control



Air compressor control

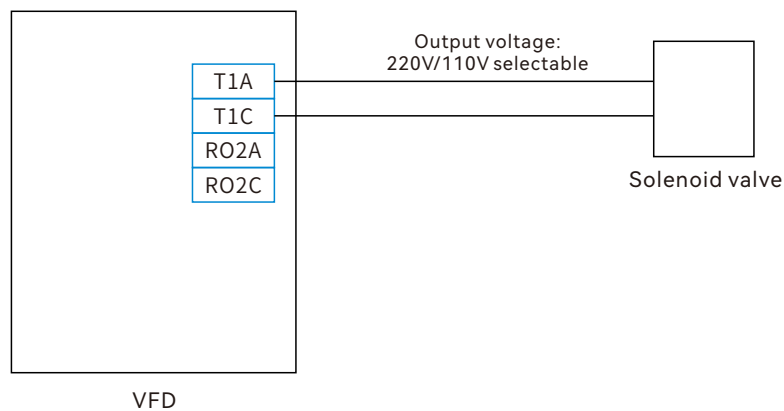
Dual-VFD control

Dual-VFD control for the air compressor main motor and oil-temperature fan eliminates the need for a PLC, controller, and electrical control panel, improving assembly efficiency, saving installation space, and reducing system cost.



Solenoid valve control

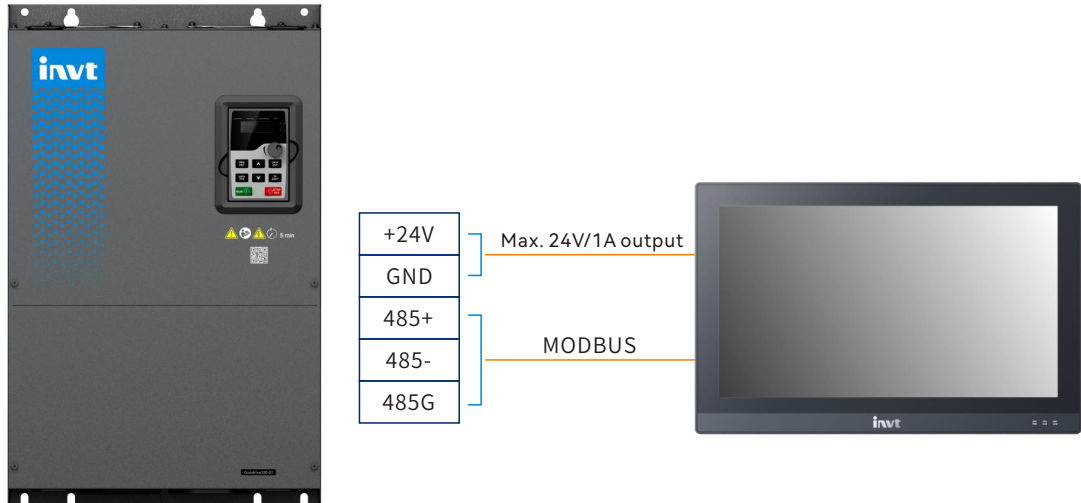
With a built-in 110V/220V power-frequency transformer, the dedicated relay interface for the solenoid valve can directly drive the air compressor solenoid valve.



Reliable design

High-capacity 24V power supply

Supports 24V/1A power output to meet the power supply requirements of the air compressor touch screen, controller, and other devices.

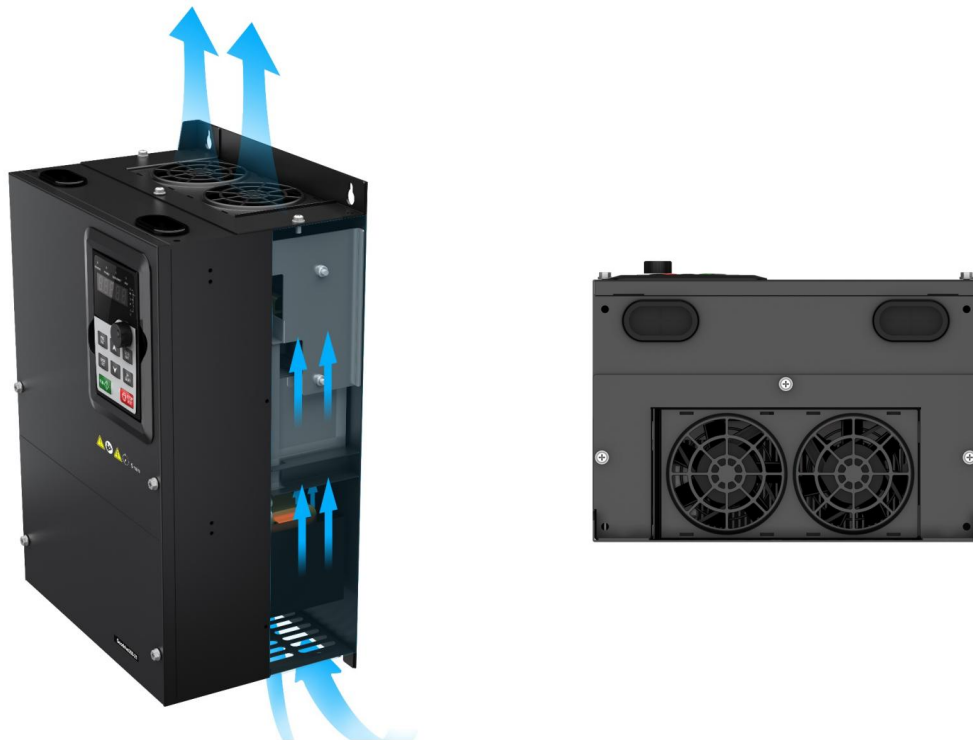


Environmentally adaptive design

Independent air duct design for efficient heat dissipation and effective protection.

Conformal coating for dust, moisture, and corrosion protection, enhancing environmental adaptability.

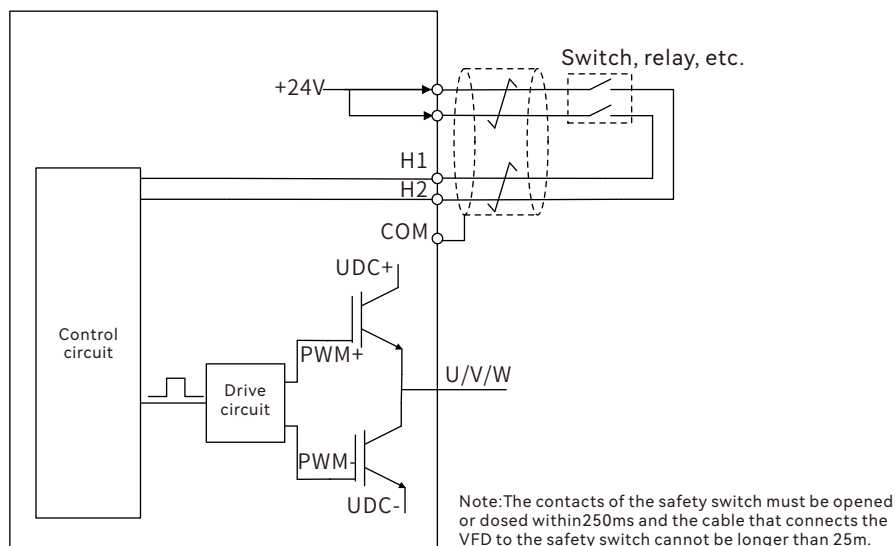
Cooling fans with high-protection vacuum-coated design, significantly reducing fan failure rate and improving system reliability.



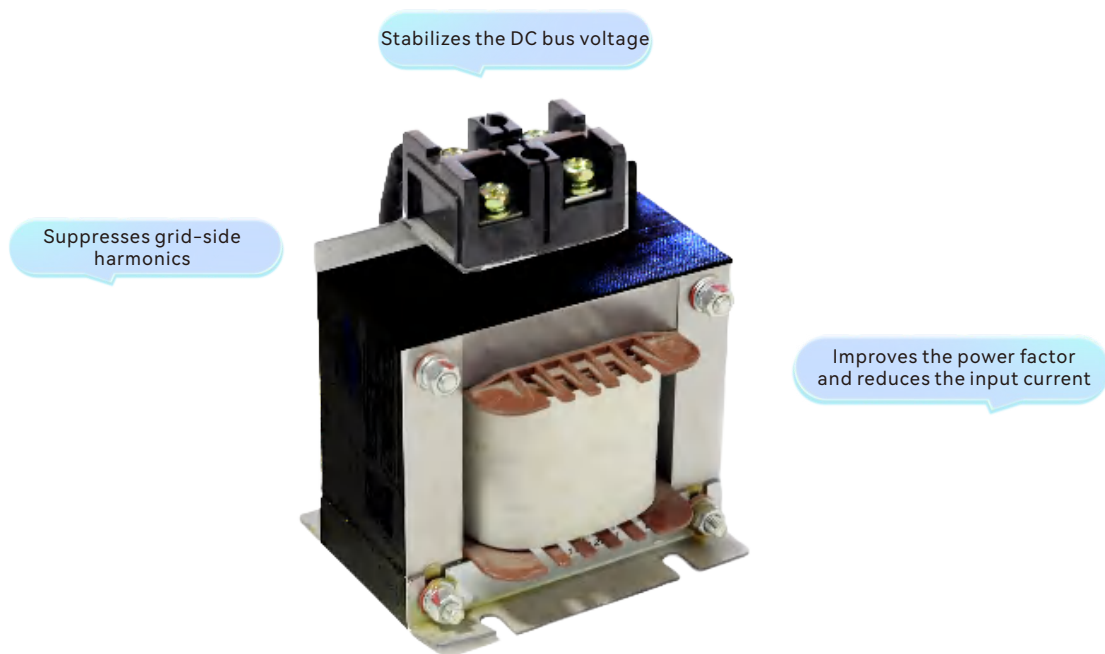
Safe Torque Off (STO) function

The VFD is integrated with the STO function and conforms to the IEC 61508, IEC 61800-5-2, IEC62061, and ISO13849-1 standards.

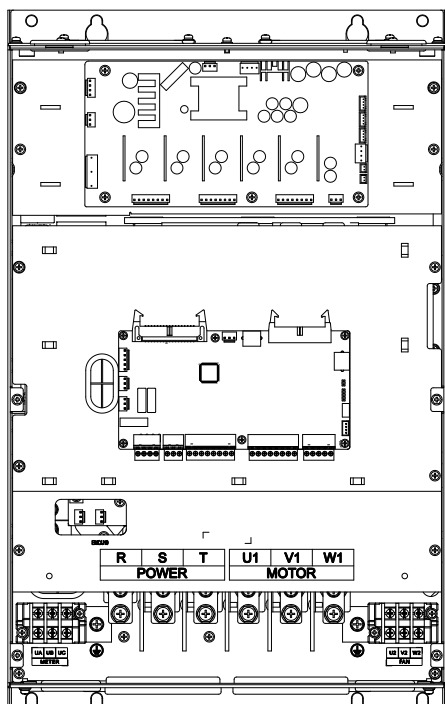
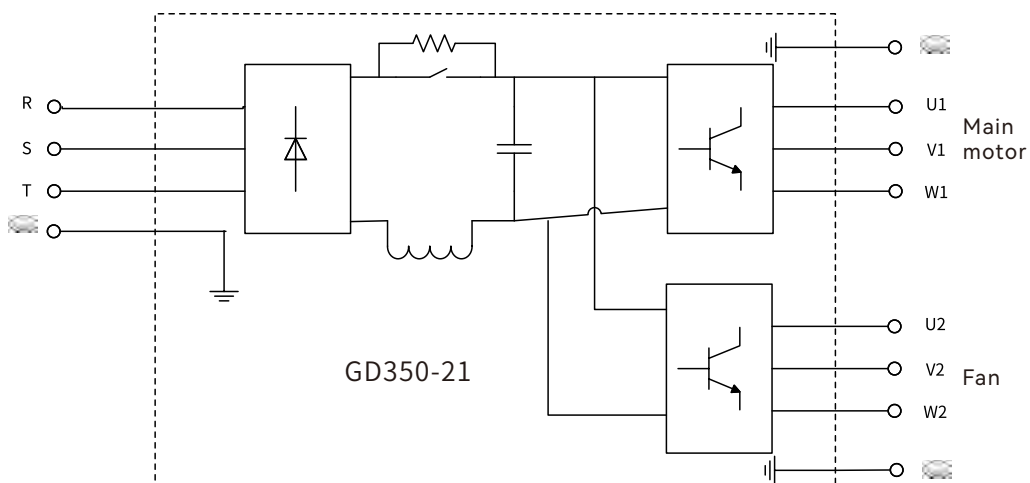
Description: The STO function turns off the drive output by shutting down the drive signal, cutting off the electrical power supply to the motor and thus stopping the outward torque output. When STO is activated, this function prevents unexpected motor startup if the motor is in static state.



Built-in DC reactor across the entire series



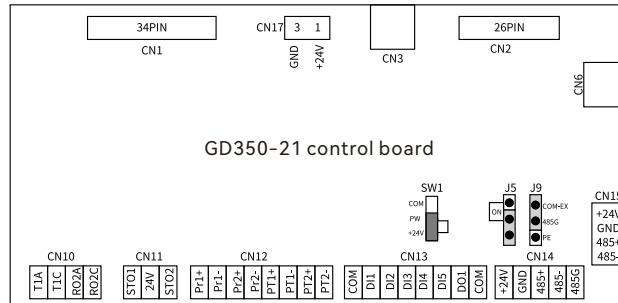
Main circuit diagram



Terminal symbol	Description
UA, UB, UC	Used when the optional C3 filter board is installed
R, S, T	3PH AC input terminals, connected to the grid
U1, V1, W1	3PH AC output terminal, connected to main motor of air compressor
U2, V2, W2	3PH AC output terminal, connected to the fan
	Grounding terminal of safety protection. Each machine must be grounded.

*Example: AC 380V 45–75kW

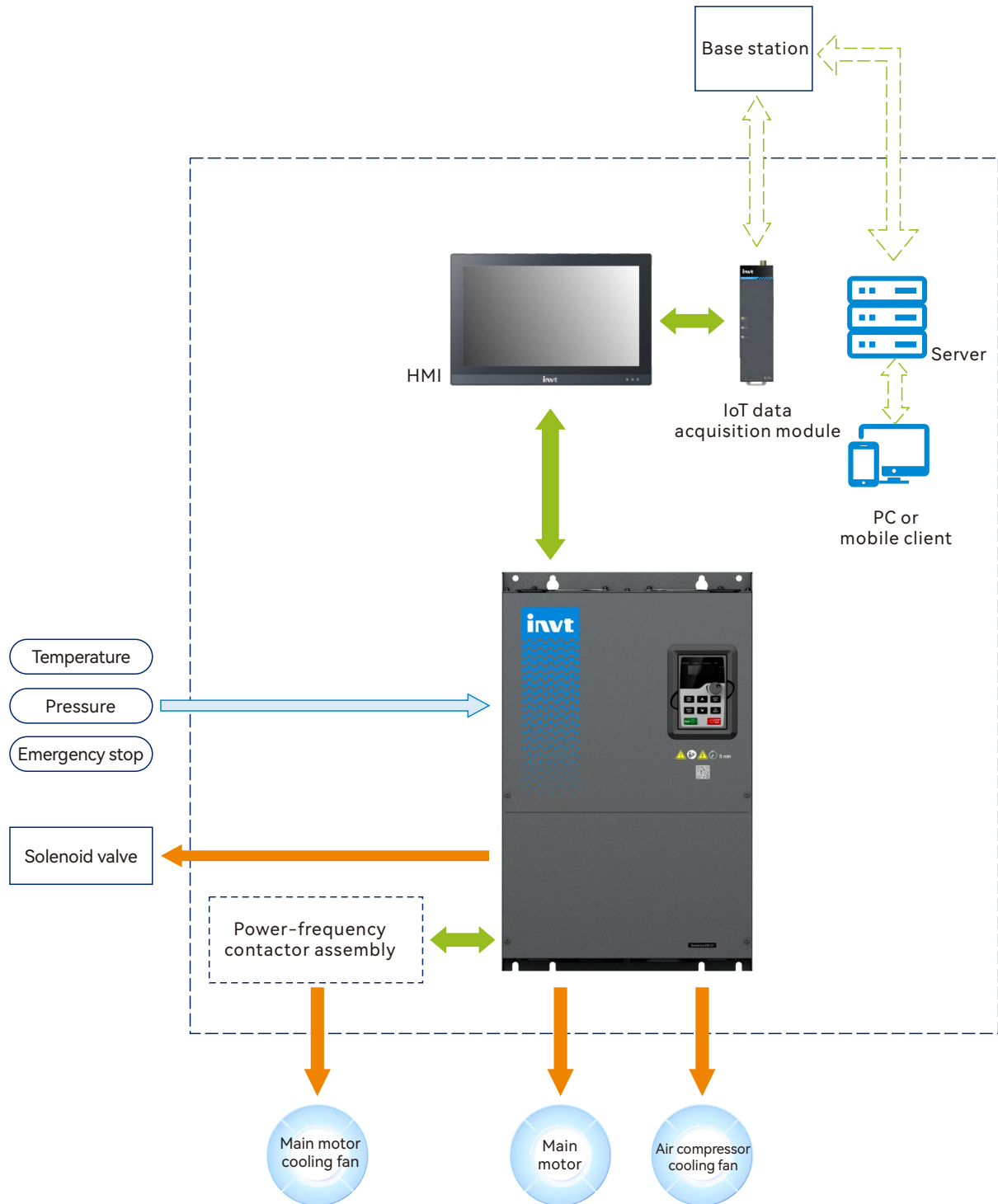
Control circuit terminals



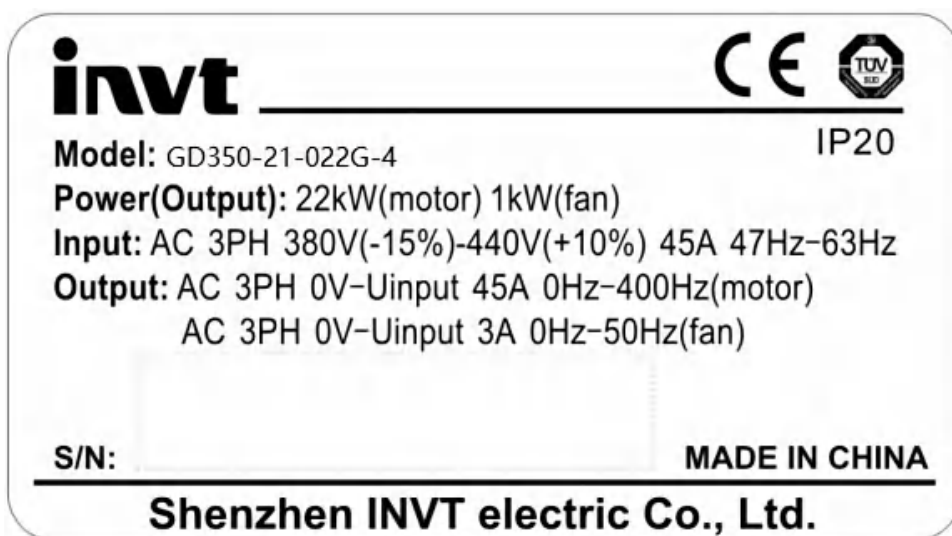
Category	Terminal symbol	Terminal name	Description
Solenoid valve	T1A	Solenoid valve coil	Provides AC 220V or 110V voltage, with a maximum load power of 30W
	T1C		
Relay output	RO2A	Relay output	Contact capacity: 3A/AC 250V, 1A/DC 30V Note: Cannot be used as high-frequency switch output.
	RO2C		
STO input	STO1	STO input	STO input STO redundant input, connected to the external NC contact. When the contact opens, STO acts and the VFD stops output. Safety input signal wires use shielded wires whose length is within 25m. The STO1 and STO2 terminals are short connected to 24V by default. Remove the short connectors from the terminals before using STO function.
	24V		
	STO2		
Analog input of pressure	Pr1+	Pressure analog input channel 1	1. Input range: Current and voltage are available for selection, 0–20mA/0–10V 2. Input impedance: 30kΩ for voltage input or 500Ω for current input 3. Resolution: Min. 5mV 4. Accuracy: ±1%, 25°C Note: When Pr1 and Pr2 are used as analog inputs, connect them to Pr1–, GND/Pr2–, and GND terminals.
	Pr1–		
	Pr2+	Pressure analog input channel 2	
	Pr2–		
Analog input of temperature	PT1+	PT100 temperature analog input channel 1	1. Resolution: 1°C 2. Range: –40°C–+200°C 3. Detection precision: 3°C
	PT1–	PT100 temperature analog input channel 2	
	PT2+		
	PT2–		
Digital input	DI1	Digital input 1	Internal impedance: 3.3kΩ 12–30V voltage input is acceptable Max. input frequency: 1kHz
	DI2	Digital input 2	
	DI3	Digital input 3	
	DI4	Digital input 4	
	DI5	Digital input 5	
Digital output	DO1	Digital output 1	Capacity: 50mA/30V Max. output frequency: 1kHz
	COM	Common ground of internal 24V power	Common ground of internal 24V power
Power supply	+24V	+24V power supply	Used to externally provide +24V (±10%) DC power supply Max. output current: 1A Used to power the touch screen
	GND	Common ground of external +24V power	Common ground of external +24V power
Communication	485+	RS485 communication+	RS485 communication terminals, using the Modbus protocol Isolated 485 circuits are used by default.
	485–	RS485 communication–	
	485G	RS485 communication shield ground	
Switch or jumper pin header	SW1	Digital input common terminal PW selection	PW is shorted to 24V by default.
	J9	RS485 communication–wire shielding layer grounding selection	The shielding layer is connected to the isolated power ground by default.
	J5	RS485 communication terminal matching resistor selection	The terminal matching resistor (OFF) is disconnected by default.
Keypad	CN3	Fan keypad interface	Connected to the main motor keypad by default
	CN6	Main motor keypad interface	

/ System solutions

Dual-VFD integrated system for air compressor



/ Model description



GD350-21-015G-4

Description	Example
Product series abbreviation	GD350-21: Goodrive350-21 dual-VFD integrated system for air compressor
Power class + Load type	015: 15kW G: Constant torque load
Voltage class	2: 3PH AC 220V (-15%)-240V (+10%) 4: 3PH AC 380V (-15%)-440V (+10%)

/ Product ratings

Model	Rated input current of the integrated system (A)	Main motor VFD			Fan VFD		
		Rated output power (kW)	Rated output current (A)	Carrier frequency (kHz)	Rated output power (kW)	Rated output current (A)	Carrier frequency (kHz)
GD350-21-7R5G-2	35	7.5	32	2~12(4)	1	4.2	2
GD350-21-011G-2	48	11	45	2~12(4)	1	4.2	2
GD350-21-015G-2	60	15	60	2~12(4)	1	4.2	2
GD350-21-018G-2	75	18.5	75	2~12(4)	1	4.2	2
GD350-21-022G-2	90	22	92	2~12(4)	1.5	7.5	2
GD350-21-030G-2	120	30	115	2~12(4)	1.5	7.5	2
GD350-21-037G-2	145	37	150	2~12(4)	1.5	7.5	2
GD350-21-045G-2	175	45	180	2~12(4)	3	11	2
GD350-21-015G-4	33	15	32	2~12(4)	1	3	2
GD350-21-018G-4	38	18.5	38	2~12(4)	1	3	2
GD350-21-022G-4	45	22	45	2~12(4)	1	3	2
GD350-21-030G-4	60	30	60	2~12(4)	1.5	3.7	2
GD350-21-037G-4	75	37	75	2~12(4)	1.5	3.7	2
GD350-21-045G-4	93	45	92	2~12(4)	3	6.8	2
GD350-21-055G-4	112	55	115	2~12(4)	3	6.8	2
GD350-21-075G-4	146	75	150	2~12(4)	3	6.8	2
GD350-21-090G-4	175	90	180	2~12(4)	4	9.5	2

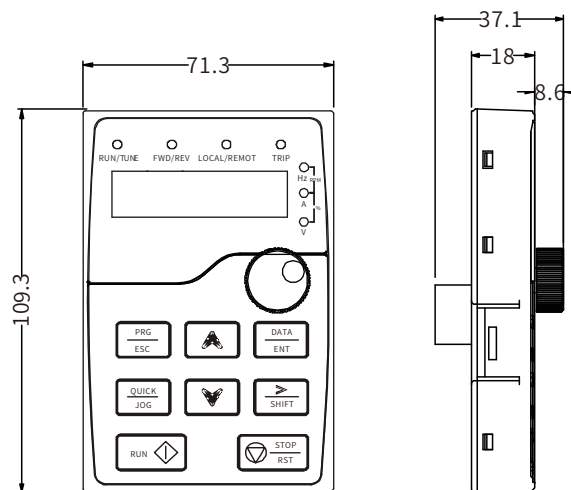
/ Product heat dissipation

Product model	Entire machine full load power dissipation (W)	Entire machine standby power dissipation (W)	Heat dissipation (BTU/hr)	Air rate (m ³ /h)	Air rate (CFM) (ft ³ /min)
GD350-21-7R5G-2	550	60	1887	137	81
GD350-21-011G-2	650	60	2218	137	81
GD350-21-015G-2	800	100	2730	241	142
GD350-21-018G-2	1050	100	3584	241	142
GD350-21-022G-2	1150	150	3925	273	161
GD350-21-030G-2	1450	150	4949	342	201
GD350-21-037G-2	2050	150	6997	336	198
GD350-21-045G-2	2400	180	8191	394	232
GD350-21-015G-4	550	60	1887	137	81
GD350-21-018G-4	600	60	2048	137	81
GD350-21-022G-4	650	60	2218	137	81
GD350-21-030G-4	800	100	2730	241	142
GD350-21-037G-4	1050	100	3584	241	142
GD350-21-045G-4	1150	150	3925	273	161
GD350-21-055G-4	1450	150	4949	342	201
GD350-21-075G-4	2050	150	6997	336	198
GD350-21-090G-4	2400	180	8191	394	232

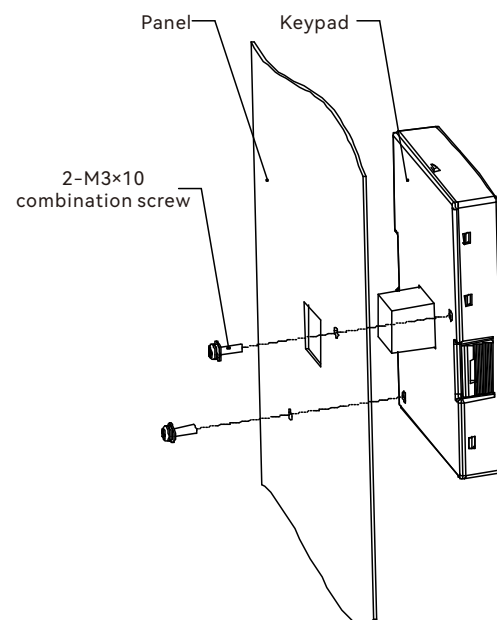
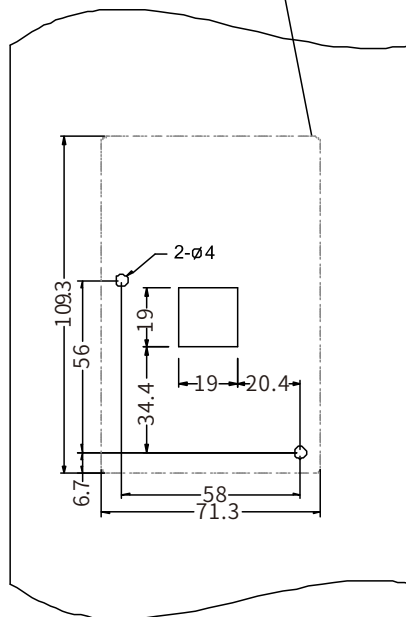
Product dimensions

Keypad dimensions

Opening dimensions and diagram for keypad mounting without a bracket

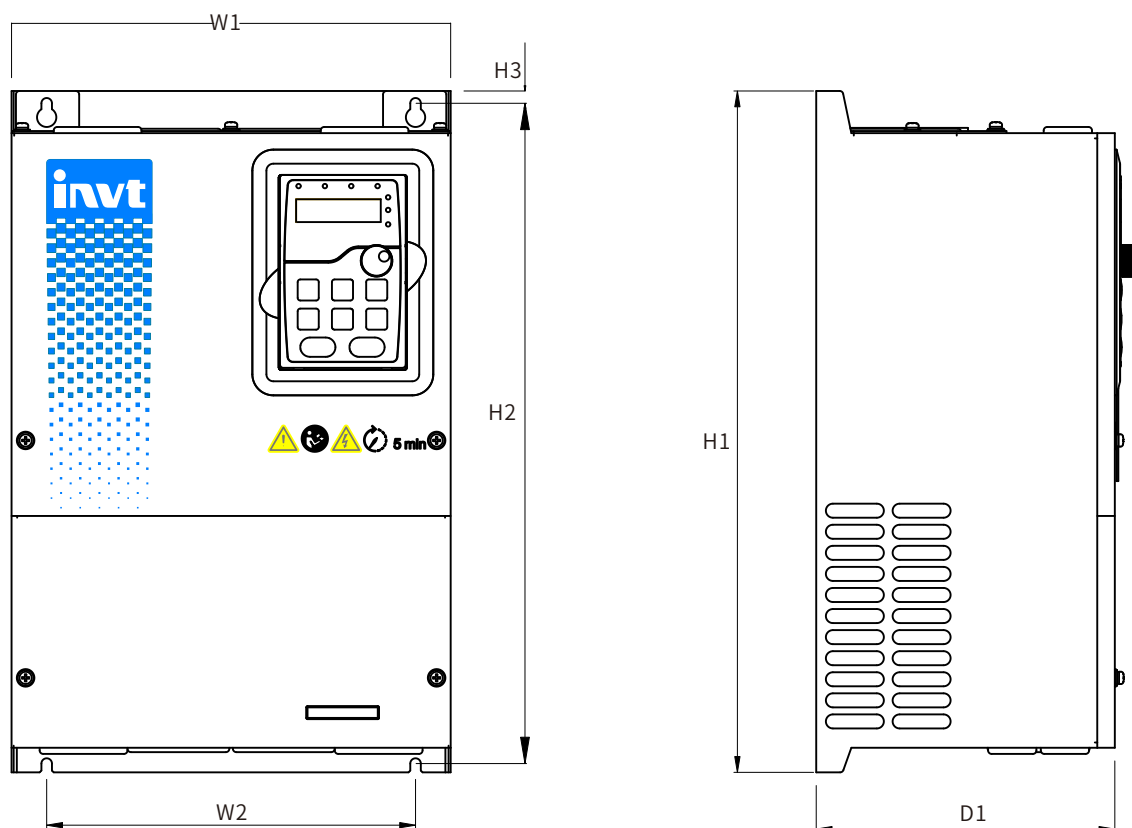


The dashed outline indicates the outer contour of the keypad.



Wall-mounting dimensions

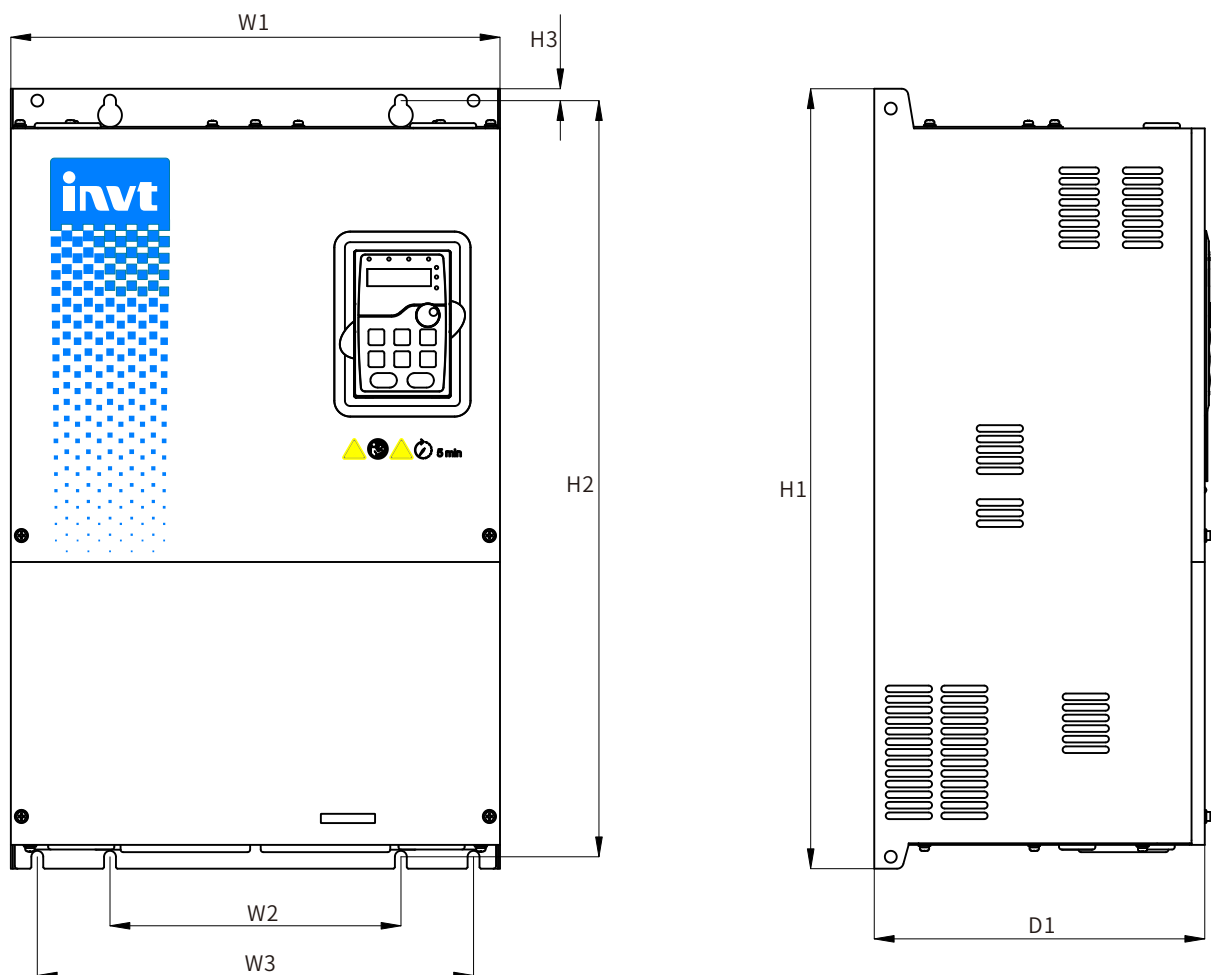
Wall-mounting diagram for AC 220V 7.5–18.5kW/AC 380V 15–37kW



Wall-mounting dimensions for AC 220V 7.5–18.5kW/AC 380V 15–37kW (unit: mm)

VFD model	W1	W2	H1	H2	H3	D1	Hole diameter	Screw specification
AC 220V 7.5–11kW AC 380V 15–22kW	250	210	388	377	7	170	Ø6	M5
AC 220V 15–18.5kW AC 380V 30–37kW	300	210	438	426	8	180	Ø6	M5

Wall-mounting diagram for AC 220V 22–45kW/AC 380V 45–90kW



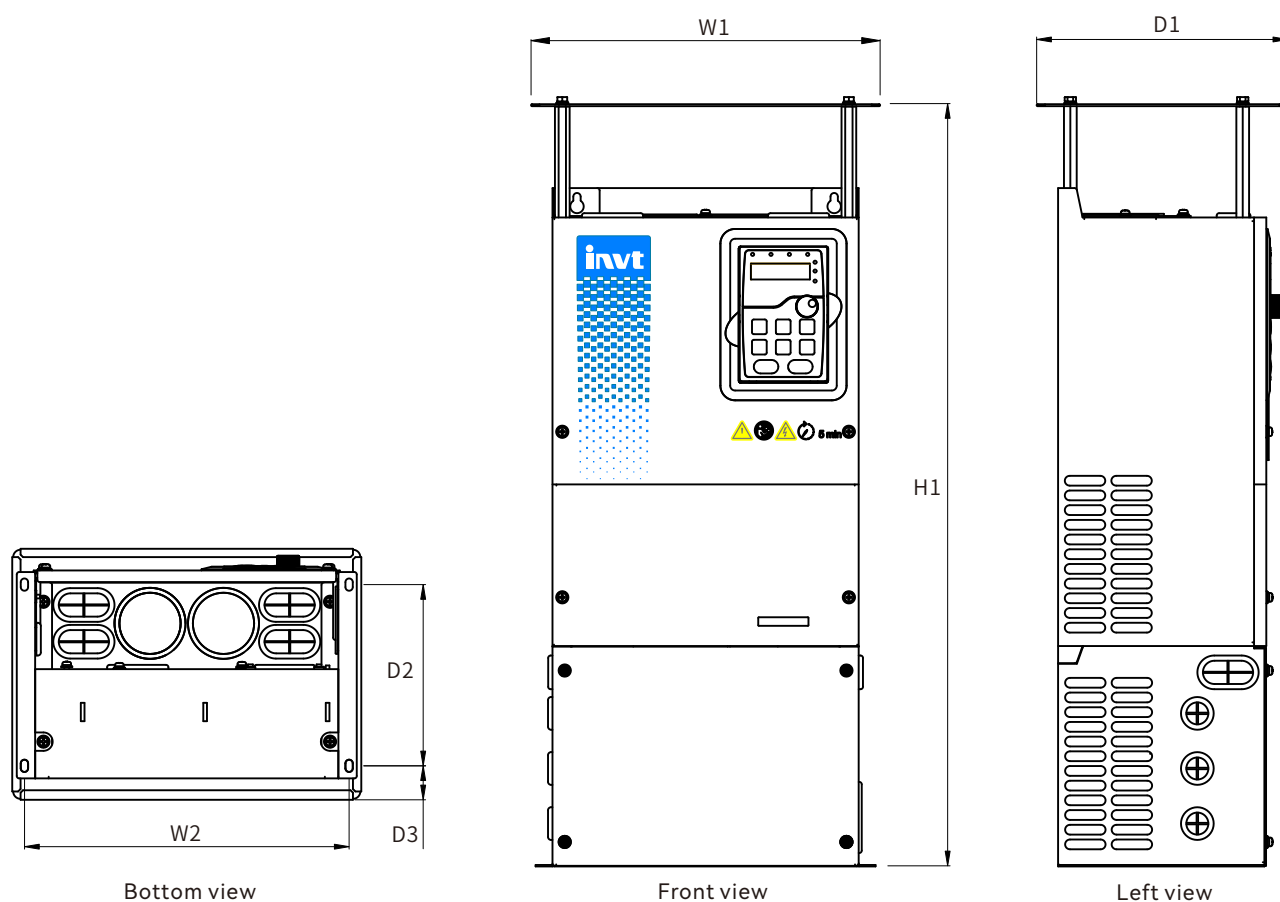
Wall-mounting dimensions for AC 220V 22–45kW/AC 380V 45–90kW (unit: mm)

VFD model	W1	W2	H1	H2	H3	D1	Hole diameter	Screw specification
AC 220V 22–45kW AC 380V 45–90kW	370	220	330	590	9	250	Ø9	M8

Note: When using the reserved holes 6-S-M6-ZC, the screw engagement depth must be ≤ 10 mm.

Floor-mounting dimensions (with top cover)

Floor-mounting (with top cover) diagram for AC 220V 7.5–45kW/AC 380V 15–90kW



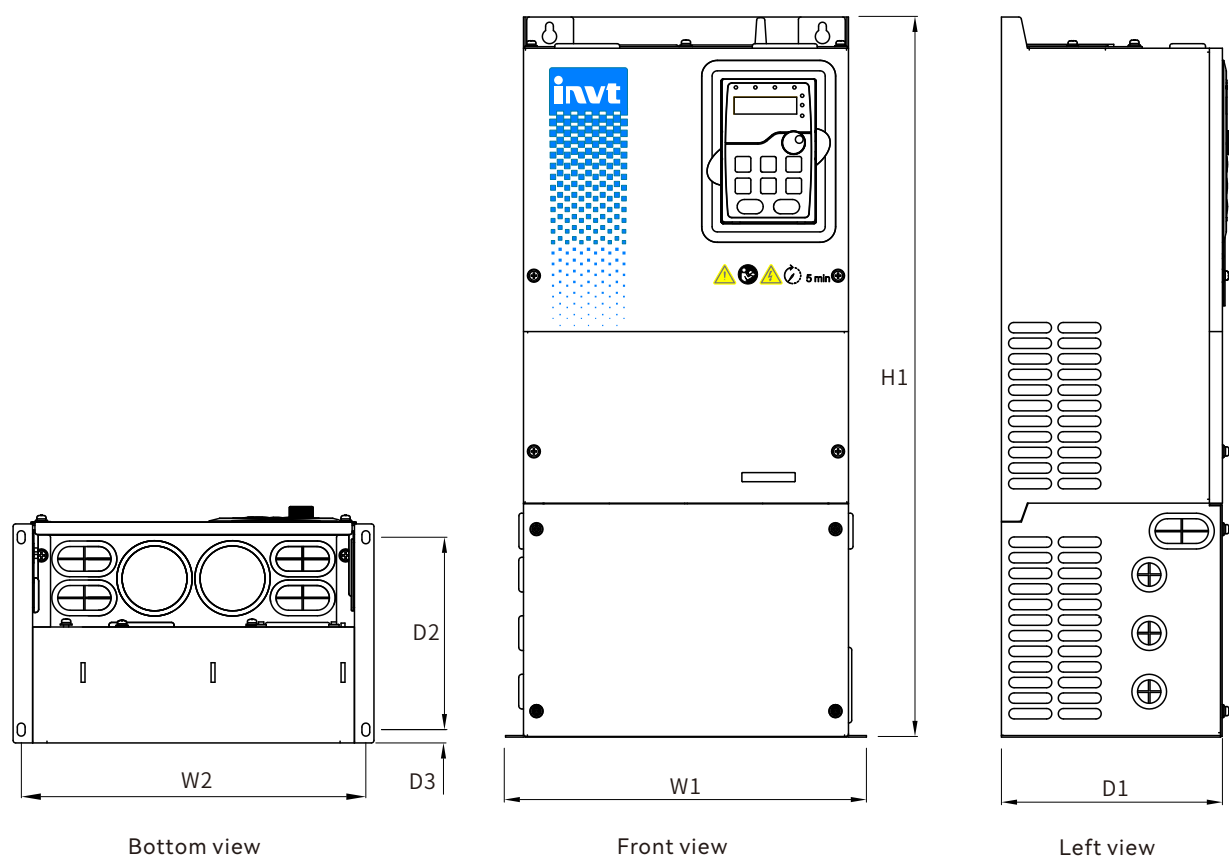
Floor-mounting (with top cover) dimensions for AC 220V 7.5–45kW/AC 380V 15–90kW (unit: mm)

VFD model	W1	W2	H1	D1	D2	D3	Hole diameter	Screw specification
AC 220V 7.5–11kW AC 380V 15–22kW	285	265	623	205	148	28	Ø6	M5
AC 220V 15–18.5kW AC 380V 30–37kW	335	315	682	225	158	33	Ø6	M5
AC 220V 22–45kW AC 380V 45–90kW	405	388	884	285	160	65	Ø9	M8

Note: When selecting the optional top cover, the pedestal must also be selected for floor-mounting with a top cover. Wall-mounting is not supported when the top cover is installed.

Floor-mounting dimensions (without top cover)

Floor-mounting (without top cover) diagram for AC 220V 7.5–45kW/AC 380V 15–90kW



Floor-mounting (without top cover) dimensions for AC 220V 7.5–45kW/AC 380V 15–90kW (unit: mm)

VFD model	W1	W2	H1	D1	D2	D3	Hole diameter	Screw specification
AC 220V 7.5–11kW AC 380V 15–22kW	278	265	555	180	148	10	Ø6	M5
AC 220V 15–18.5kW AC 380V 30–37kW	328	315	604	190	158	15	Ø6	M5
AC 220V 22–45kW AC 380V 45–90kW	404	388	812	250	160	44	Ø9	M8

Note: When selecting the optional top cover, the pedestal must also be selected for floor-mounting with a top cover. Wall-mounting is not supported when the top cover is installed.

Product weight and packaging dimensions

Product weight	Net weight (kg)	Gross weight (kg)	Packaging dimensions (mm)
AC 220V 7.5–11kW (integrated system) AC 380V 15–22kW (integrated system)	15	16.39	515×385×320
AC 220V 15–18.5kW (integrated system) AC 380V 30–37kW (integrated system)	21.5	23.18	585×435×340
AC 220V 22–37kW (integrated system) AC 380V 45–75kW (integrated system)	37	38.81	725×490×410
AC 220V 45kW (integrated system) AC 380V 90kW (integrated system)	42	44	725×490×41
AC 220V 7.5–11kW (top cover) AC 380V 15–22kW (top cover)	0.7	1	310×220×35
AC 220V 15–18.5kW (top cover) AC 380V 30–37kW (top cover)	1	2	360×240×40
AC 220V 22–45kW (top cover) AC 380V 45–90kW (top cover)	1.5	2.5	430×295×35
AC 220V 7.5–11kW (pedestal) AC 380V 15–22kW (pedestal)	1.8	3	370×245×290
AC 220V 15–18.5kW (pedestal) AC 380V 30–37kW (pedestal)	2	3	420×265×270
AC 220V 22–45kW (pedestal) AC 380V 45–90kW (pedestal)	4	5.5	520×360×370

Note: The weight listed in the above table may vary within a reasonable tolerance of ±3%. The exact weight shall be subject to the delivered product.

Optional accessories



7-inch

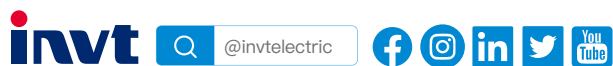
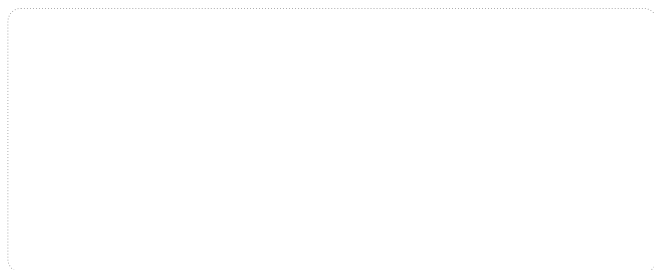


10.2-inch

Ordering code	Model	Specifications	Brightness (cd/m ²)	Opening dimensions (mm)
11026-00032	VS-070QC	7-inch, 800×480, 24-bit color, 1 serial port, no Ethernet port; RoHS; built-in standard compressor program; dedicated to compressors; PCB conformal coating	450	192×138
91012-06908	VS-070QE	7-inch, 800×480, 24-bit color, 3 serial ports, no Ethernet port; RoHS; built-in standard compressor program; dedicated to compressors; PCB conformal coating	450	192×138
91012-06907	VS-070QS-G	7-inch, 800×480, 24-bit color, 3 serial ports, 1 Ethernet port, supports IoT expansion; RoHS; dedicated to compressors; PCB conformal coating	450	192×138
91012-05655	VS-102QS-G	10.2-inch, 1024×600, 24-bit color, 3 serial ports, 1 Ethernet port, supports IoT expansion; RoHS; dedicated to compressors; PCB conformal coating	450	259×201
11095-00023	VS-Q-WIFI	Wi-Fi module, supporting IEEE 802.11b, IEEE 802.11g, and IEEE 802.11n network standards; must be used together with an IoT HMI; enclosed module	/	/
11095-00024	VS-Q-4G	4G module, supporting full-network compatibility with China Mobile, China Unicom, and China Telecom; must be used together with an IoT HMI; enclosed module	/	/
11095-00013	1GB data SIM card	Communication card and memory card; 1GB/month data allowance; 4G plug-in IoT SIM card; RoHS	/	/

*The communication cable for the touch screen must be ordered separately.

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