

Goodrive300-01A Series Inverter for Air Compressor

Trustworthy Solution Provider for Industrial Control and Energy Efficiency



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|------------------------|----------------------|---------------------------|---------------------------------------|------------------|
| Industrial Automation: | • Inverter | • Server & Motion Control | • Motor & Electric Spindle | • PLC |
| | • HMI | • Intelligent Control | • Intelligent Elevator Control System | • Traction Drive |
| Energy Power: | • SVG | • Solar Inverter | • Online Energy Management System | • UPS |
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Y8/1-11(V1.1)





Introduction

Based on air compressor application characteristic, INVT launches Goodrive300-01A series inverters for air compressors, which achieve excellent control on asynchronous and synchronous air compressors.

Goodrive300-01A series inverters highlight:



- Industrial-function integration
- Improved function and performance design
- Powerful extension ability
- Enhanced protection functions

- Introduction..... 2
- Features..... 3
- Industrial-function integration..... 4
- Improved function and performance design..... 4
- Powerful extension ability..... 5
- Enhanced protection functions..... 5
- AIO solution.....6
- Type designation.....7
- Goodrive300-01A inverter for air compressor..... 7
- VT6070E touch screen..... 11
- ICA201-01N-24 IoT communication adapter..... 12



Features



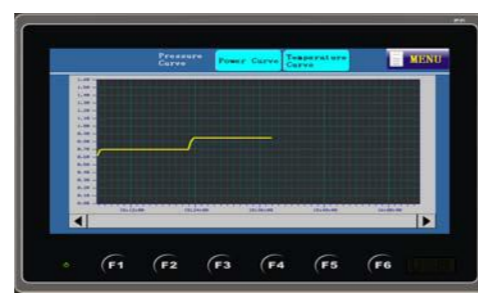
Industrial-function integration

All logic control and protection mechanisms are implemented through the cooperation between the touch screen and inverter, without the use of the PLC. The system is more simple and highly integrated.

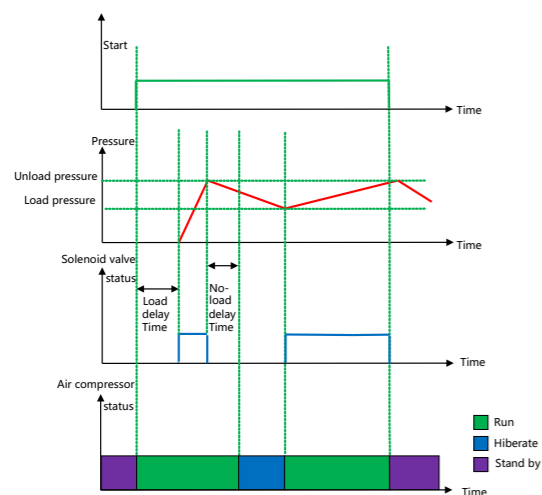


The special touch screen implements visual operations on the air compressor, which are more direct and easy.

Excellent pressure and temperature PID adjustments enable the air compressor to run in good conditions with stable voltage and temperature.



Intelligent hibernation and wakeup improve energy efficiency and smartness.



The ability to drive both asynchronous and synchronous motors makes procurement and stock-up easy.



AM: asynchronous motor
SM: synchronous motor

Improved function and performance design

Built-in DC reactor

DC reactors can be built in the models of 7.5KW-110KW. This reduces installation space and improves the inverter input power factor, which can reach 0.9 or higher.



Integration with special terminals

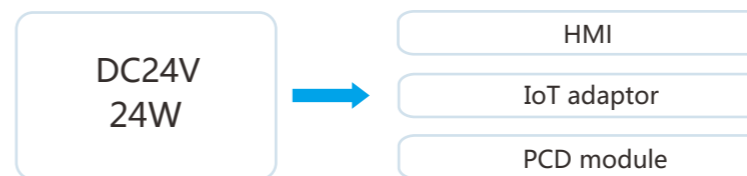
The inverter provides two temperature input terminals and two pressure input terminals. Temperature and pressure signals can be connected without the use of transmitter. The application is more simple and easy.

Two temperature analog input terminals

Two pressure analog input terminals

Optimized 24V power output

The built-in 24V power supply reaches 24W, which meets the powering requirements by optionals such as the touch screen, IoT adaptor, and power consumption detection (PCD) module. No other 24V power module is needed.



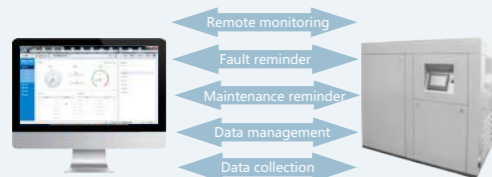
Improved terminal design

1. The improved terminal design implements terminal layout according to user wiring preference. This makes wiring more aligned and easy.
2. The use of pluggable terminals improves wiring efficiency.



Powerful extension ability

The cooperation with the IoT communication adaptor implements the IoT solution special for air compressors. It implements data interchange and remote control for air compressors, and facilitates management and maintenance.



The optional PCD module can accurately collect air compressor power consumption. The power consumption state and energy-saving effect are visible.

电能信息					
三相电压	0	V	总有功功率P	0.000	Kw
单相电压	0	V	无功功率Q	0.000	KVar
C相电压	0	V	总视在功率S	0.000	KVA
A相电流	0	A	高功率因数	0.000	
单相电流	0	A	累计电量	0.00	Kw·h
C相电流	0	A	电网频率	0.00	Hz

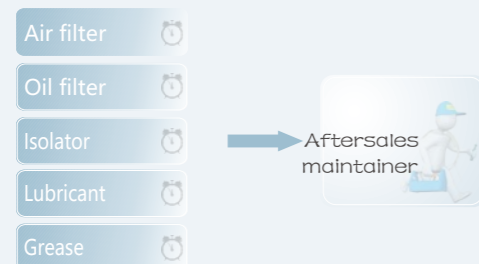
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Enhanced protection functions

More than 30 protection functions include OC protection (OCP), OV protection (OVP), UV protection (UVP), and OT protection (OTP). Especially, the phase sequence detection (PSD), hardware phase loss detection (HPLD), and fan current imbalance protection (FCIP) ensure the proper running of air compressor.



The air compressor maintenance reminder provides reliable guaranty for the maintenance. Maintainers receive messages through the touch screen or IoT fault reminder in real time, ensuring timely service.



With accurate fault rating, faults are classified into Alarm, Stop and Continue by fault severity. The response to air compressor fault is smart. The air compressor work is less impacted.



Real-time fault reminding enables aftersales engineers to receive fault data through the touch screen or IoT platform in real time and handle the faults timely.



AIO solution

The all-in-one (AIO) solution is applicable to GD300-01A 7.5kW-15kW models. In this solution, the inverter is embedded with the air compressor fan contactor and transformer modules.

- The fan contactor module supports power frequency output. No more accessories such as the contactor are needed. The application is easier.
- The built-in power frequency transformer of AC220V/110V powers the solenoid valve of the air compressor. No more power-frequency transformer is needed.



Goodrive300-01A-CT schematic diagram

Type designation

Goodrive300-01A inverter for air compressor

Type designation key

Goodrive300-01A – 022 G – 4 -CT

① ② ③ ④ ⑤

Key	Serial No.	Description	Example
Abbreviation	①	Product series abbreviation	Goodrive300-01A: inverter for air compressor
Rated power	②	Power level	022: 22kW
Load type	③	Load type	G: constant torque load
Voltage degree	④	Voltage degree	4: A C 3PH 380V(-15%)–40V(+10%).
Power frequency fan/built-in transformer	⑤	Power frequency fan/built-in transformer	AIO for air compressors C: built-in contactor module, which supports power frequency fan output T: built-in power-frequency transformer, which can provide the 220V/110V power

Specifications

Category	Function	Specifications
Power input	Input voltage (V)	3PH 380V(-15%)–440V(+10%)
	Rated input current (A)	See the Goodrive300-01A model list.
	Rated input frequency (Hz)	50Hz or 60Hz, ranging from 47Hz to 63Hz
	Efficiency	> 97%
	Power factor	0.9
Variable-frequency power output	Output voltage (V)	Equal to the input voltage, tolerance < 5%
	Rated output current (A)	See the Goodrive300-01A model list.
	Rated output power (kW)	See the Goodrive300-01A model list.
	Output frequency (Hz)	0–400Hz
Fan output (AIO)	Output voltage (V)	Equal to the input voltage, tolerance < 1%
	Rated output current (A)	See the Goodrive300-01A model list.
	Rated output power (kW)	See the Goodrive300-01A model list.
	Output frequency (Hz)	Equal to the input frequency, tolerance < 1%
Power output	+24VDC power supply	24W
Running control	220VAC/110VAC	15W (for 1PH AIO)
	Control mode	Open-loop vector or space voltage vector
	Adjustable speed ratio	1:200 (SVC) for AM or 1:20 (SVC) for SM
	Speed control accuracy	±0.2% (SVC)
	Speed fluctuation	±0.3% (SVC)
	Torque response	<20ms (SVC)
	Starting torque	0.25Hz 150% (SVC) for AM or 2.5Hz 150% (SVC) for SM

Category	Function	Specifications
Run-ning control	Frequency set by	PID control; Modbus communication; P1- and P2- analog input; keypad
	OL capacity	150% 1min
	Special	Hiberation/wakeup; constant pressure/temperature control, care, PSD, and fan OLP
	Pressure AI	Two 4–20mA/0–1.6MPa input
	Temperature AI	Two inputs. Resolution: 1°C; range: -20°C–150°C; tolerance: 3°C
	Digital input	Five common inputs. Max. frequency: 1kHz
	Digital output	Two relay outputs (NO): 250VAC/3A; one 1 convertible relay output: 250VAC/3A
	Fault protection	Over 30 functions (OC, OV, UV, OT, OL, fan current imbalance protection and so on)
	Fan protection	Fan OL rate and time: 120% for 1 min; 130% for 48s; 150% for 24s; 160% for 8s; 200% for 5s; 300% for 1s Fan current imbalance protection (fan stopped within 5s if current difference between any two phases reaches 60%–75%)
	RS485	One RS485 communication interface with three terminals
Other	Mounting mode	Wall mounting
	Temperature	-10°C–50°C. Derating for 40°C or higher. 1% of derating for each escalation of 1°C
	IP rating	IP20
	Cooling mode	Forced air cooling
	DC reactor	Optional: built in 7.5–15kW and external to 132kW–200kW; built in 15–110kW
	EMC filter	C3 filter built in, but not effective by default. To take effect, connect J10. For details about J10, see sections 3.1.3 and 3.1.4 in the operation manual. An external filter is optional, which meets IEC61800-3 C2.

Goodrive300-01A model list

Model	Output power (kW)	Input current (A)	Output current (A)
GD300-01A-7R5G-4	7.5	25	18.5
GD300-01A-011G-4	11	32	25
GD300-01A-015G-4	15	32	32
GD300-01A-018G-4	18.5	37	38
GD300-01A-022G-4	22	44	45
GD300-01A-030G-4	30	58	60
GD300-01A-037G-4	37	72	75
GD300-01A-045G-4	45	87	92
GD300-01A-055G-4	55	106	115
GD300-01A-075G-4	75	140	150
GD300-01A-090G-4	90	170	180
GD300-01A-110G-4	110	202	215
GD300-01A-132G-4	132	265	260
GD300-01A-160G-4	160	310	305
GD300-01A-185G-4	185	345	340
GD300-01A-200G-4	200	385	380

Note:

- The rated input current is the result of an actual test using the 380V input voltage. The results 7.5kW–11kW and 132kW–200kW correspond to the tests without using DC reactors, while 15kW–110kW correspond to those using DC reactors.
- The rated output current is the output current that corresponds to the 380V output voltage.

Goodrive300-01A-CT AIO model list

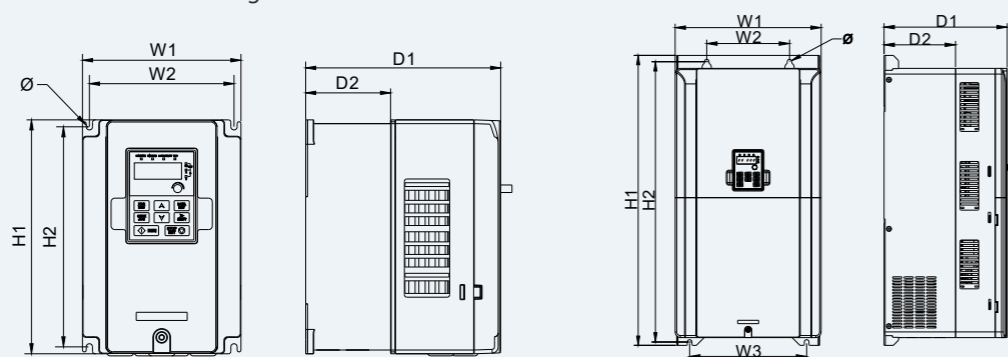
Model	AIO rated input current (A)	Master motor VF		Fan power frequency	
		Rated output power (kW)	Rated output current (A)	Rated output power (kW)	Rated output current (A)
GD300-01A-7R5G-4-CT	28	7.5	18.5	0.75	2.5
GD300-01A-011G-4-CT	35	11	25	0.75	2.5
GD300-01A-015G-4-CT	34	15	32	0.75	2.5

Note:

1. The rated input current is the result of an actual test using the 380V input voltage but without using DC reactors.
2. The rated output current is the output current that corresponds to the 380V output voltage.

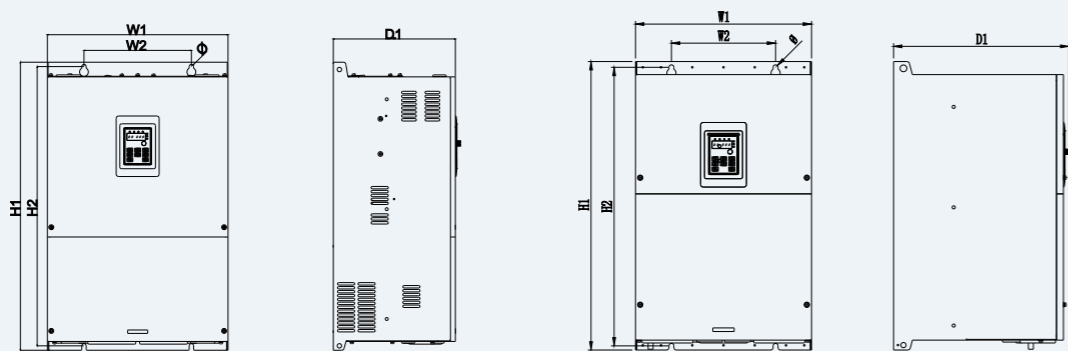
Mounting dimensions

Dimensions for wall mounting



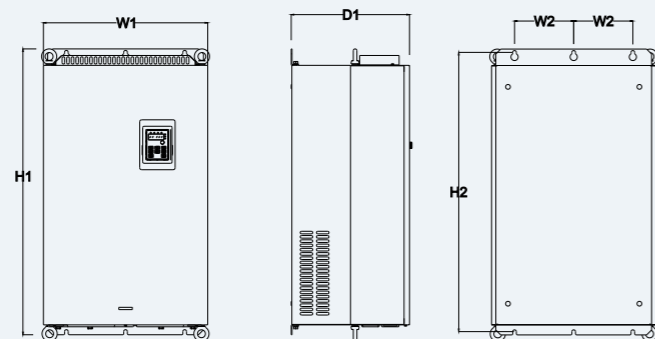
Wall mounting diagram for 7.5kW-37kW models

Wall mounting diagram for 45kW-55kW models



Wall mounting diagram for the 75kW model

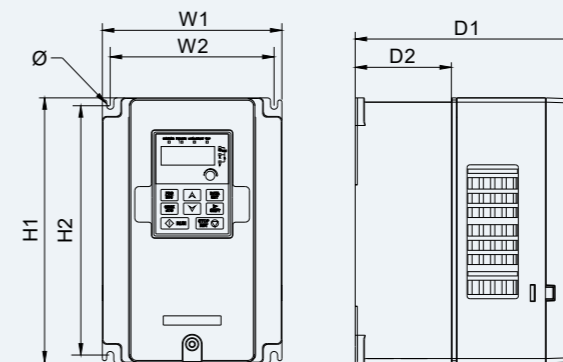
Wall mounting diagram for 90kW-110kW models



Wall mounting diagram for 132kW-200kW models

Power	W1	W2	W3	H1	H2	D1	D2	Mount hole diameter
7.5kW	170	151	—	320	303.5	196.5	113	6
11kW-22kW	200	185	—	340.5	328.5	184.5	104.5	6
30kW-37kW	250	230	—	400	380	202	123.5	6
45kW-55kW	282	160	226.0	560	542	238	138	9
75kW	370	220	—	590	572	250	—	9
90kW-110kW	338	200	—	554	535	337	—	9.5
132kW-200kW	500	180	—	870	850	360	—	11

Goodrive300-01A inverter mounting dimensions (in mm)



Wall mounting diagram for 7.5kW-15kW AIO

Power	W1	W2	H1	H2	D1	D2	Mount hole diameter
7.5kW-15kW	200	185	340.5	328.5	184.5	104.5	6

7.5kW-15kW AIO wall-mounting dimensions (in mm)

VT6070E touch screen

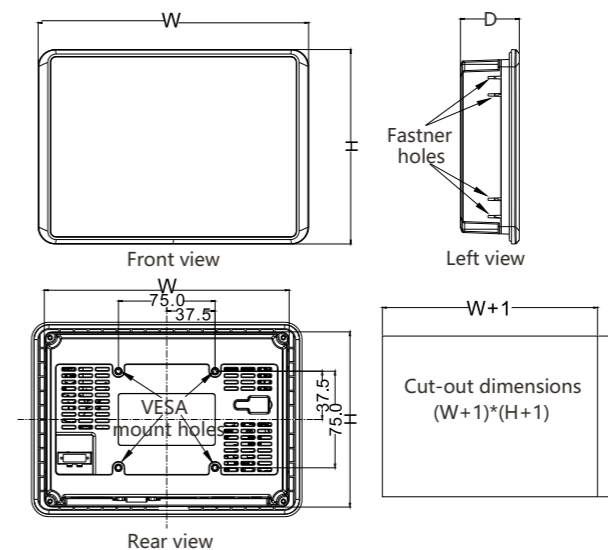


Specifications

Model	VT6070E						
Hardware specifications							
Display settings	Size	Resolution	Colors	Brightness cd/m ²	Backlight source	Backlight life	Brightness adjustable
	7.0"	800*480	1677216	200	LED	30000 hrs	Yes
CPU	32 bit RISC 600MHz						
DRAM	256MB DDR II						
Flash	128MB						
Interface	SD card	USB host	USB client	Ethernet	Keypad		
	√	√	√	Optional	Optional		
	COM1 RS485	COM2 RS485	COM3 RS485	RTC √			
Electrical specifications							
Input voltage	24VDC±20%						
Rated current	200mA						
Structural specifications							
Housing color	Steel gray						
Housing material	Engineering plastics						
Cut-out dimensions (mm)	191*137						
Common specifications							
Work temperature	0°C-55°C						
Work humidity	10%-90%RH (without condensation)						
Storage temperature	-20°C-70°C						
Cooling mode	Natural air cooling						
EMC	EN 55022: 2006 + A1: 2007						
	EN 55024: 1998 + A1: 2001 + A2: 2003						
	EN 61000-3-2: 2006						
	EN 61000-3-3: 1995 + A1: 2001 + A2:2005						

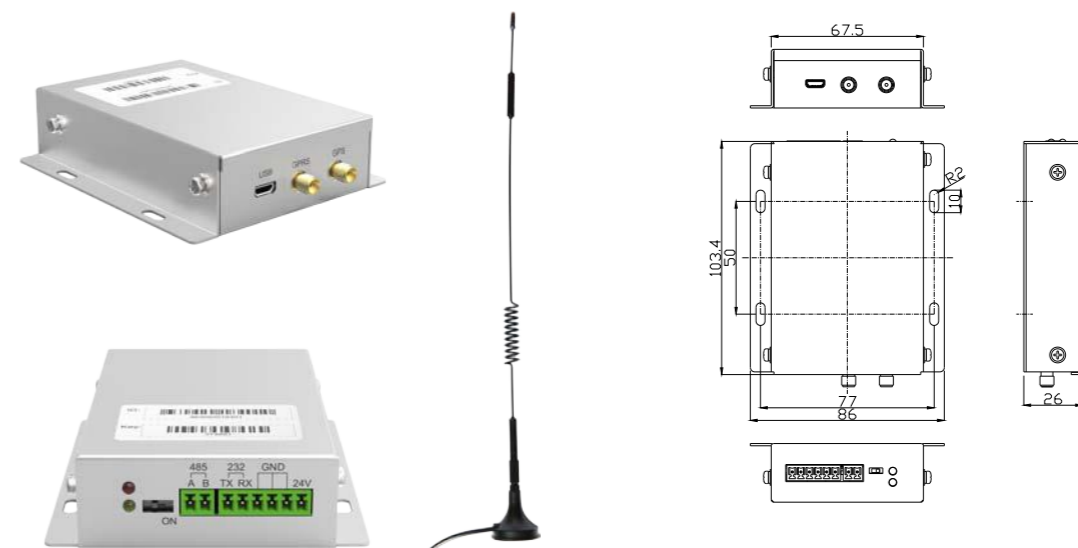
Mounting dimensions

Product dimensions (mm)		Suggested cut-out dimensions (mm)	
Overall dimensions Width(W)*Height(H)*Depth(D)	W*H for mounting MEMA-4	W+1	H+1
210*151*45.5	190*136	191	137



IoT communication adapter

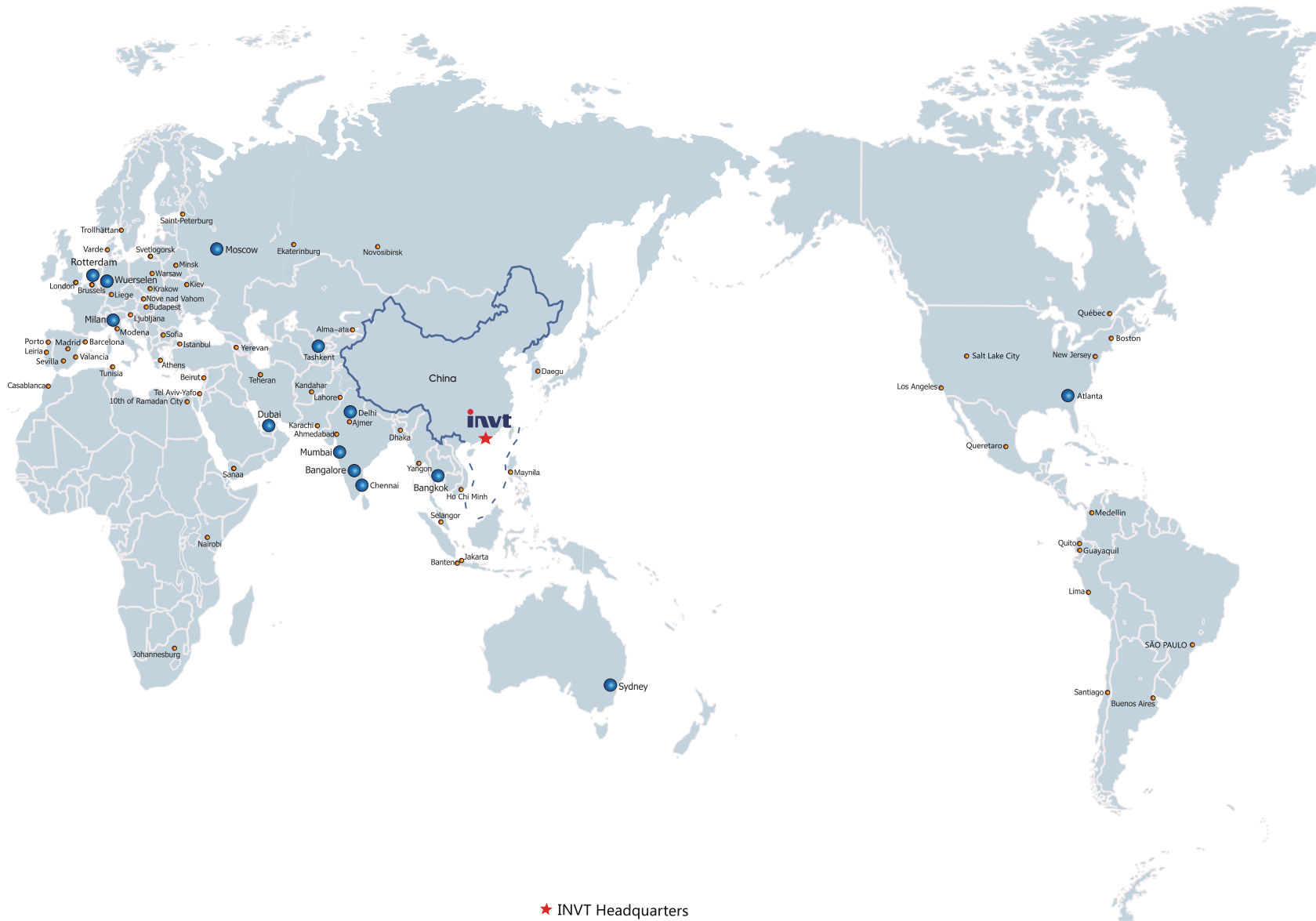
ICA201-01N-24



Drawing of mounting dimensions (in mm)

Model

The IoT communication adapter ICA201-01N-24 (with the metal housing) can be used with Goodrive300-01A. The antenna is connected externally.



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