



High-performance
Multi-function Inverter

VF 350 Series

ALLSAI



Product Introduction

ALLSAI VF 350 is a brand new high-performance inverter. It is highly extensible and flexible with PG card, PLC card, communication card and IO card, meeting the demands of various industries. It's oriented for mid-high-end OEM equipment markets, mainly covering the applications of printing , packaging, winding, etc.

Features

- 1.Supports SVC and VC(Closed loop) control for both asynchronous and synchronous motors.
- 2.Enables high precision of speed, position, torque control and fast speed response.
- 3.Supports optional Field bus communication cards, including Profibus-DP, CANopen, and Ethernet, etc.
- 4.Supports optional PG cards for encoders like incremental encoder, rotary transformer encoder and so on.
- 5.Accepts plug-in of three expansion cards simultaneously (only two cards \leq 7.5kW(10HP)).
- 6.Integrates safety function-STO(Safe Torque OFF, SIL2).
- 7.Unique I/F control and online transition with other control modes are very suitable for the situation where the asynchronous motor has low speed with high torque and the speed accuracy is not high.
- 8.Provides intuitive LCD keyboard with maximum 16 lines text display as well as graphical display, Wizard Mode to set parameters much easier.
- 9.Supports optional Bluetooth card to achieve convenience and security, and supports WiFi card to realize wireless communication.



Product specification

| Function description | | Specification |
|-------------------------------|---------------------------------------|---|
| Power input | Input voltage (V) | AC 3PH 380V (-15%)-440V (+10%) rated voltage: 380V AC 3PH 520V (-15%)-690V (+10%) rated voltage: 660V |
| | Input current (A) | Refer to Rated value |
| | Input frequency (Hz) | 50Hz or 60Hz, allowable range: 47–63Hz |
| Power output | Output voltage (V) | 0–input voltage |
| | Output current (A) | Refer to Rated value |
| | Output power (kW) | Refer to Rated value |
| | Output frequency (Hz) | 0–400Hz |
| Technical control performance | Control mode | SVPWM control, SVC, VC |
| | Motor type | Asynchronous motor, permanent-magnet synchronous motor |
| | Speed regulation ratio | Asynchronous motor 1: 200 (SVC); Synchronous motor 1 20 (SVC), 1:1000 (VC) |
| | Speed control precision | ±0.2% (SVC), ±0.02% (VC) |
| | Speed fluctuation | ± 0.3% (SVC) |
| | Torque response | <20ms SVC) , <10ms (VC) |
| | Torque control precision | 10% (SVC) , 5% (VC) |
| | Starting torque | Asynchronous motor: 0.25Hz/150% (SVC) Synchronous motor: 2.5 Hz/150% (SVC) 0Hz/200% (VC) |
| | Overload capacity | 150% of rated current: 1min; 180% of rated current: 10s; 200% of rated current: 1s; |
| Running control performance | Frequency setup mode | Digital, analog, pulse frequency, multi-step speed Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc |
| | Automatic voltage regulation function | Keep the output voltage constant when grid voltage changes. |
| | Fault protection function | Fault protection function Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc |
| | Speed tracking restart function | Realize impact-free starting of the motor in rotating Note: This function is available for 4kW and above models |
| Peripheral Interface | Terminal analog input resolution | No more than 20mV |
| | Terminal digital input resolution | No more than 2ms |
| | Analog input | 2 inputs, AI1: 0–10V/0–20mA; AI2: -10–10V |
| | Analog output | 1 output, AO1: 0–10V /0–20mA |
| | Digital input | Four regular inputs; max. frequency: 1kHz; internal impedance: 3.3k Two high-speed inputs; max. frequency: 50kHz; supports quadrature encoder input; with speed measurement function |
| | Digital output | One high-speed pulse output; max. frequency: 50kHz One Y terminal open collector output |
| | Relay output | Two programmable relay outputs RO1A NO, RO1B NC, RO1C common port RO2A NO, RO2B NC, RO2C common port Contact capacity: 3A/AC250V, 1A/DC30V |
| | Extension interface | Three extension interfaces: SLOT1, SLOT2, SLOT3 Expandable PG card, programmable extension card, communication card, I/O card, etc |

| Function description | | Specification |
|----------------------|------------------------------------|---|
| Others | Installation mode | Support wall-mounting, floor-mounting and flange-mounting |
| | Temperature of running environment | -10–50°C, derating is required if the ambient temperature exceeds 40°C |
| | Protection level | IP20 |
| | Pollution level | Level 2 |
| | Cooling mode | Air cooling |
| | Brake unit | Built-in brake unit for 380V 37kW and below models; Optional built-in brake unit for 380V 45kW–110kW(inclusive) models; Optional external brake unit for 660V models; |
| | EMC filter | 380V models fulfill the requirements of IEC61800-3 C3 Optional external filter should meet the requirements of IEC61800-3 C2 |

Guide for model selection

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(1) (2) (3)

Fig 3.6 Type designation key

| Field | Sign | Description | Contents |
|--------------------------------|------|-------------------------|--|
| Abbreviation of product series | (1) | Abbreviation of product | VF350: ALLSAI VF350 high-performance multi-function inverter series |
| Rated power | (2) | Power range + Load type | 5R5-5.5kW G—Constant torque load |
| Voltage level | (3) | Voltage level | 4: AC 3PH 380V (-15%)–440V (+10%) Rated voltage: 380V 6: AC 3PH 520V (-15%)–690V (+10%) Rated voltage: 660V |

AC 3PH 380V(-15%)~440V(+10%) rated value

| Product model | Output power (kW) | Input current (A) | Output current (A) | Carrier frequency (kHz) |
|---------------|-------------------|-------------------|--------------------|-------------------------|
| VF350-1R5G-4 | 1.5 | 5.0 | 3.7 | 1-15(8) |
| VF350-2R2G-4 | 2.2 | 5.8 | 5 | 1-15(8) |
| VF 350-004G-4 | 4 | 13.5 | 9.5 | 1-15(8) |
| VF 350-5R5G-4 | 5.5 | 19.5 | 14 | 1-15(8) |
| VF 350-7R5G-4 | 7.5 | 25 | 18.5 | 1-15(8) |
| VF 350-011G-4 | 11 | 32 | 25 | 1-15(8) |
| VF 350-015G-4 | 15 | 40 | 32 | 1-15(4) |

| Product model | Output power (kW) | Input current (A) | Output current (A) | Carrier frequency (kHz) |
|---------------|-------------------|-------------------|--------------------|-------------------------|
| VF 350-018G-4 | 18.5 | 47 | 38 | 1-15(4) |
| VF 350-022G-4 | 22 | 51 | 45 | 1-15(4) |
| VF 350-030G-4 | 30 | 70 | 60 | 1-15(4) |
| VF 350-037G-4 | 37 | 80 | 75 | 1-15(4) |
| VF 350-045G-4 | 45 | 98 | 92 | 1-15(4) |
| VF 350-055G-4 | 55 | 128 | 115 | 1-15(4) |
| VF 350-075G-4 | 75 | 139 | 150 | 1-15(2) |
| VF 350-090G-4 | 90 | 168 | 180 | 1-15(2) |
| VF 350-110G-4 | 110 | 201 | 215 | 1-15(2) |
| VF 350-132G-4 | 132 | 265 | 260 | 1-15(2) |
| VF 350-160G-4 | 160 | 310 | 305 | 1-15(2) |
| VF 350-185G-4 | 185 | 345 | 340 | 1-15(2) |
| VF 350-200G-4 | 200 | 385 | 380 | 1-15(2) |
| VF 350-220G-4 | 220 | 430 | 425 | 1-15(2) |
| VF 350-250G-4 | 250 | 460 | 480 | 1-15(2) |
| VF 350-280G-4 | 280 | 500 | 530 | 1-15(2) |
| VF 350-315G-4 | 315 | 580 | 600 | 1-15(2) |
| VF 350-350G-4 | 350 | 625 | 650 | 1-15(2) |
| VF 350-400G-4 | 400 | 715 | 720 | 1-15(2) |
| VF 350-500G-4 | 500 | 890 | 860 | 1-15(2) |

AC 3PH 520V(-15%)~690V(+10%) rated value

| Product model | Output power (kW) | Input current (A) | Output current (A) | Carrier frequency (kHz) |
|---------------|-------------------|-------------------|--------------------|-------------------------|
| VF 350-022G-6 | 22 | 35 | 27 | 1-15(4) |
| VF 350-030G-6 | 30 | 40 | 34 | 1-15(4) |
| VF 350-370G-6 | 37 | 47 | 42 | 1-15(4) |
| VF 350-045G-6 | 45 | 52 | 54 | 1-15(4) |
| VF 350-055G-6 | 55 | 65 | 62 | 1-15(4) |
| VF 350-075G-6 | 75 | 85 | 86 | 1-15(2) |
| VF 350-090G-6 | 90 | 95 | 95 | 1-15(2) |

| Product model | Output power (kW) | Input current (A) | Output current (A) | Carrier frequency (kHz) |
|---------------|-------------------|-------------------|--------------------|-------------------------|
| VF 350-110G-6 | 110 | 118 | 131 | 1-15(2) |
| VF 350-132G-6 | 132 | 145 | 147 | 1-15(2) |
| VF 350-160G-6 | 160 | 165 | 163 | 1-15(2) |
| VF 350-185G-6 | 185 | 190 | 198 | 1-15(2) |
| VF 350-200G-6 | 200 | 210 | 216 | 1-15(2) |
| VF 350-220G-6 | 220 | 230 | 240 | 1-15(2) |
| VF 350-250G-6 | 250 | 255 | 274 | 1-15(2) |
| VF 350-280G-6 | 280 | 286 | 300 | 1-15(2) |
| VF 350-315G-6 | 315 | 334 | 328 | 1-15(2) |
| VF 350-350G-6 | 350 | 360 | 380 | 1-15(2) |
| VF 350-400G-6 | 400 | 411 | 426 | 1-15(2) |
| VF 350-500G-6 | 500 | 518 | 540 | 1-15(2) |
| VF 350-560G-6 | 560 | 578 | 600 | 1-15(2) |
| VF 350-630G-6 | 630 | 655 | 680 | 1-15(2) |

Extension cards selection

| Type | Name | model | Specification |
|--------------------|------------------------------------|--------------------------|--|
| I/O card | IO extension card | EC-IO501-00 | 4 channels switch input、1 channel switch output、1 channel analog input、1 channel analog output and 2 channels relay output. |
| PLC card | Programmable extension card | EC-PC501-00 | 6 channels switch input、2 channels switch output and 2 channels relay output. |
| Communication card | Bluetooth communication card | EC-TX501-1 EC-TX501-2 | PCB antenna type or external sucker antenna. Effective communication distance is 30m. |
| | CANopen communication card | EC-TX505 | Supporting CAN 2.0 protocol and CANopen protocol. |
| | PROFIBUS-DP communication card | EC-TX503 | Supporting PZB to control data exchange. Supporting PZW to access inverter parameters. Baud rate supports up to 12Mbps. |
| PG card | Multi-function incremental PG card | EC-PG505-12 | Encoder interface: 5V/12V incremental encoder differential, push-pull, open collector open ABZ signal, up to 200kHz. Pulse given and frequency division: support pulse + direction given, up to 200kHz, support 5V differential signal 1-255 frequency division output. |
| | UVW incremental PG card | EC-PG503-05 | Encoder interface: 5V incremental differential ABZ(UVW) encoder, maximum 400kHz. Pulse given and frequency division: support + directional differential input of pulse, up to 200kHz. Support 5V differential signal 1-255 frequency division output . |
| | Resolver PG card | EC-PG504-00 | Rotary transformer encoder. support / directional differential input of pulse. support 5V differential signal 1-255 frequency division output, up to 200kHz |

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|--|--|---|--|
|  |  |  |  |
| IO extension Card | Programmable extension card | Bluetooth communication card | CANopen communication card |
| EC-IO501-00 | EC-PC501-00 | EC-TX501 | EX-TX504 |
|  |  |  |  |
| PROFIBUS-DP Communication card | Multi-function incremental PG card | UVW incremental PG card | Resolver PG card |
| EC-TX503 | EC-PG505-12 | EC-PG503-05 | EC-PG504-00 |

Extension cards selection



Product Introduction

ALLSAI VF 350 IP54 series inverters are the latest branches of the ALLSAI VF 350 series. They provide the same control methods and extended functions as ALLSAI VF 350 inverters. Some models can be configured with optional built-in DC reactors as required by customers. The full-sheet metal structure is adopted, supporting wall-mounting and flange installation. LCD keypads are the standard configuration. They are especially applicable in scenarios with harsh dust and water vapor conditions, such as those with HVAC, fans and pumps, stone, and wood.

Features

1. Ingress protection rating of IP54, applicable to working environments with harsh dust and water vapor conditions (Same as 3S in NAME)
2. Supporting both heavy and light loads, integrated G and P types
3. Reserving interfaces for implementing the real-time clock function
4. Supporting optional built-in DC reactors (30–110 kW)
5. Built-in brake resistors (4–37 kW)

Guide for model selection

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(1) (2) (3) (4)

| Field | Sign | Description | Contents |
|--------------------------------|------|-------------------------|--|
| Abbreviation of product series | (1) | Abbreviation of product | VF350: ALLSAI VF 350 high-performance multi-function inverter series |
| Rated power | (2) | Power range + Load type | 022: 22kW G—Constant torque load P—Special for fans and pumps |
| Voltage level | (3) | Voltage level | 4: AC 3PH 380V(-15%)—440V(+10%) |
| IP level | (4) | IP level | 5: IP54 |

Product specification

| Function description | | Specification |
|-------------------------------|--------------------------|--|
| Technical control performance | Control mode | SVPWM control, SVC, VC |
| | Motor type | Asynchronous motor, permanent-magnet synchronous motor |
| | Speed regulation ratio | Asynchronous motor 1: 200 (SVC); Synchronous motor 1:20 (SVC) , 1:1000 (VC) |
| | Speed control precision | ±0.2% (SVC), ±0.02% (VC) |
| | Speed fluctuation | ± 0.3% (SVC) |
| | Torque response | <20ms SVC) , <10ms (VC) |
| | Torque control precision | 10% (SVC) , 5% (VC) |
| | Starting torque | Asynchronous motor: 0.25Hz/150% (SVC) Synchronous motor: 2.5 Hz/150% (SVC) 0Hz/200% (VC) |
| | Overload capacity | 150% of rated current: 1min;180% of rated current: 10s;200% of rated current: 1s |

| Function description | | Specification |
|-----------------------------|---------------------------------------|--|
| Running control performance | Frequency setup mode | Digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, MODBUS communication, PROFIBUS communication, etc.; Realize switch-over between the set combination and the set channel |
| | Automatic voltage Regulation function | Keep the output voltage constant when grid voltage changes |
| | Fault protection function | Fault protection function Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc |
| | Speed tracking restart function | Realize impact-free starting of the motor in rotating Note: This function is available for 4kW and above models |
| Peripheral interface | Terminal analog input resolution | No more than 20mV |
| | Terminal digital input resolution | No more than 2ms |
| | Analog input | 2 inputs, AI1: 0–10V/0–20mA; AI2: -10–10V |
| | Analog output | 1 output, AO1: 0–10V /0–20mA |
| | Digital input | Four regular inputs; max. frequency: 1kHz; internal impedance: 3.3k Ω Two high-speed inputs; max. frequency: 50kHz; supports quadrature encoder input; with speed measurement function |
| | Digital output | One high-speed pulse output; max. frequency: 50kHz One Y terminal open collector output |
| | Relay output | Two programmable relay outputs RO1A NO, RO1B NC, RO1C common port RO2A NO, RO2B NC, RO2C common port Contact capacity: 3A/AC250V, 1A/DC30V |
| | Extension interface | Three extension interfaces: SLOT1, SLOT2, SLOT3 Expandable PG card, programmable extension card, communication card, I/O card, etc |
| Others | Installation mode | Support wall-mounting and flange-mounting |
| | Temperature of running environment | -10–50°C, derating is required if the ambient temperature exceeds 40°C |
| | Protection level | IP54(3S in NAME) |
| | Pollution level | Level 3 |
| | Cooling mode | Air cooling |
| | Brake unit | Built-in brake unit for 380V 4kW—37kW |
| | DC reactor | Bulit-in options in 30kW-110kW |
| | EMC filter | 380V models fulfill the requirements of IEC61800-3 C3 Optional external filter should meet the requirements of IEC61800-3 C2 |