



Frequency inverter **GD350A Series**

For Power Rating from 1,5 - 500 kW
Protection class IP20



esco – Your strong partner for electric drive system solutions

- Competent consulting and engineering
- Approved and future-proof technology
- Complete drive projects with products offering highest quality and best performance
- Europe-wide pre and after-sales service
- Extensive stock

A future-oriented partnership at the service of the customer

esco antriebstechnik gmbh stands for modern concepts of electrical and mechanical drive technology. The future-oriented company is part of the **esco** group, which operates throughout the world.

The esco delivery program:

Electric drive technology

Frequency inverter
Soft Starter

Automation and Control technology:

Touch panel and panel PCs
PLC
SCARA robots

Mechanical drive technology

Service, consulting and system solutions



Efficient - multifunctional - expandable

esco presents the new frequency inverter series GD350A from INVT.

The GD350A is a dual-rated, high performance frequency inverter series in the power range from 1.5 kW to 500 kW. The GD350A series integrates speed, torque and positioning control and includes features for IoT functionality.

The inverter has a dual-channel STO function (SIL2) and a multi-line, multi-language LCD control panel. With a variety of option cards the series is easily expandable.

The GD350A is widely used throughout mechanical and plant engineering, building automation, environmental engineering and water/wastewater applications.

The GD350A series of frequency inverters takes advantage of fast response speeds of the latest processor technology to solve your drive task. As a result, it optimizes your application's availability (IoT functionality), performance (precise torque control, perfect speed accuracy, extensive positioning functions) and ease of use (WiFi, EtherNet communication, Bluetooth optional).

In addition, the GD350A supports your task with an optional, freely programmable PLC functionality.

The GD350A series combines versatile capabilities in one device to operate different types of motors and meet different requirements.



Power supply	Recommended motor rating (kW)																			
	ND	2,2	3	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90	110	132	160	185	200
3ph-400V	HD	1,5	2,2	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90	110	132	160	185
3ph-400V (IP54)																				

ND= Normal Duty HD= Heavy Duty

Main features

- ✓ Dual Rating function
- ✓ Standard built-in dual-channel STO function
- ✓ Integrated DC choke from 18,5 kW (HD) to 132 kW (ND)
- ✓ Fire Mode
- ✓ Integrated brake chopper up to 45 kW
- ✓ Supports speed, torque, position control and positioning
- ✓ Drive of different motors (Permanent Magnet Synchronous motor, asynchronous motor, servo motor, spindle motor)
- ✓ Latest processor technology
- ✓ Internet of Things - IoT
- ✓ Versatile expandability (Optional PLC card, I/O cards, communication cards, feedback cards)
- ✓ Modbus RTU® on board as standard
- ✓ Bluetooth or WiFi - mobile app access via optional modules for programming and monitoring
- ✓ Standard USB interface
- ✓ IP55 models with main switch

High Performance

The GD350A supports you in the operation of synchronous permanent magnet motors, asynchronous motors or external rotor direct drives PMSM and offers rich application possibilities for your tasks.

The frequency inverter is perfectly suited for the simultaneous control of asynchronous motors in applications with low speed and high torque.



2 HDI inputs as standard (fast counter inputs)

These inputs can be used as setpoint or actual value inputs. They support incremental A & B tracks or pulse setpoint presets with rotation direction information (2-phase square pulse presets). This provides servo functionality with precise speed and position control, providing you with a simple and cost-effective closed-loop system solution with closed loop control.



LCD control panel

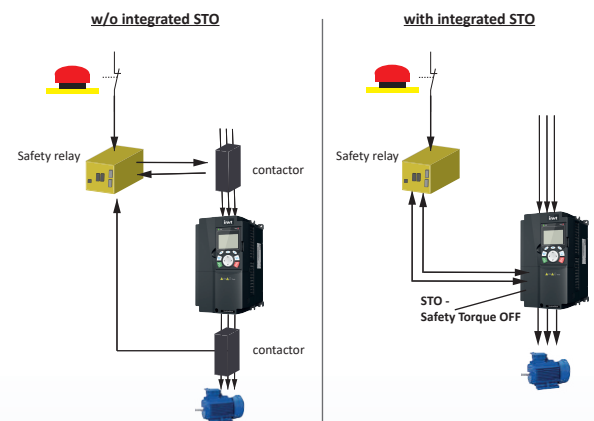
The GD350A LCD control panel features a multi-line, multi-language display. It offers simple intuitive commissioning without the use of the operating manual. The display is structured according to a directory index scheme. The monitor display can be arranged individually on request.



STO - Safety Torque Off

With the integrated STO (Safe Torque Off) function the IEC 61800-1/ SIL2 / IEC 62061 / ISO 13849-1 / PL "d" standards. The motor is safely set to the torque-free state by switching off the power output stages. The reliability and safety of your plant is thus guaranteed.

The STO of the GD350A enables a 2-channel safe shutdown.



Integrated:

Brake chopper in the power range 1.5 kW to 37 kW and DC choke installed as standard on units from 18.5 kW to 132 kW.

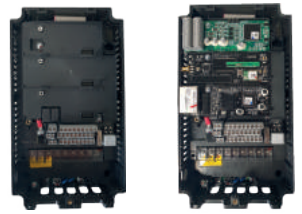
Dual-Rating function (ND/HD)

Reduce the cost of your drive with dual rating:
When limiting the permissible overload to 120% for 60 sec, you can use a motor of the next higher performance class.



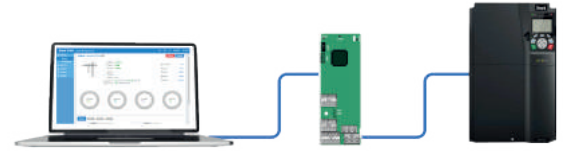
Great expandability

The optional PLC card, I/O cards, communication cards, feedback cards, etc. cover many different tasks. The size of the expansion cards is identical. Up to three option card slots are available.



Functional developments

The optional integrable PLC card with 128kB program memory, 6 digital inputs, 2 relay outputs, 1 analog input and 1 analog output offers you further possibilities for optimization and can replace your external PLC to realize your system at a reasonable price. The PC software "INVT-Auto Station" offers you a modern development environment for programming the optional PLC card via ladder diagram, function plan or instruction list according to EN 61131-3.



Option and communication cards

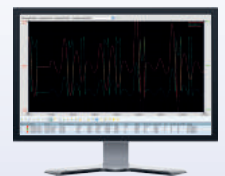
The GD350A can be extended in its functionality with different option and communication cards. In addition to standard Modbus RTU® communication, optional fieldbus interfaces like Profibus®, EtherNet/IP®, Profinet®, EtherCAT®, CANopen®, Modbus TCP®, BACnet MS/TP®, MQTT via GPRS are available. Optional feedback cards are available for open-collector, HTL, TTL encoders as well as for resolver and Sin/Cos systems.



Versatile access options

PC software

The PC software "INVT-Workshop" connects you via USB-RS485 adapter (Modbus®), via Ethernet® or remote (UDP via cloud system, MQTT via cloud system) with your GD350A.



Bluetooth/WiFi - APP

Access to the GD350A is simplified by using the Bluetooth or WiFi communication cards in a particularly modern and contemporary way. The "INVT-Workshop" APP allows you to set parameters and monitor the operating status of the inverter via Bluetooth. The maximum communication distance in open environments is 30 m.



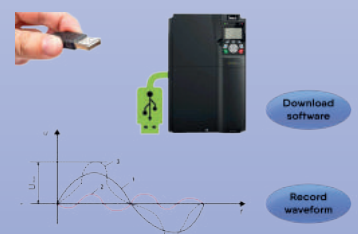
Internet of Things - IoT

Through its optional communication modules (Profinet®, EtherNet/IP®, EtherCAT®, ModbusTCP®, EtherNet® (UDP), GPRS (MQTT), Wifi, Bluetooth) the GD350A meets the highest requirements of modern automation.



Standard USB interface

Via the USB interface, data of the frequency inverter can be downloaded conveniently and quickly on a USB stick. The operating curves of the application can be recorded and serve your maintenance and analysis.



High Performance für unterschiedliche Anwendungsbereiche

Matched to the individual requirements of your application or your projects, esco offers you the right solution. The frequency inverter series GD350A from INVT is exactly the right choice for many application areas.



- High starting torque due to strong Vector Control
- Various fieldbus systems for remote maintenance
- Mains failure bridging (Power Ride Through)



- Closed-Loop-Vector Control
- Extended function for controlling ext. brakes
- Drooping



- Fire Mode
- Extended energy saving characteristics
- Motor catch function



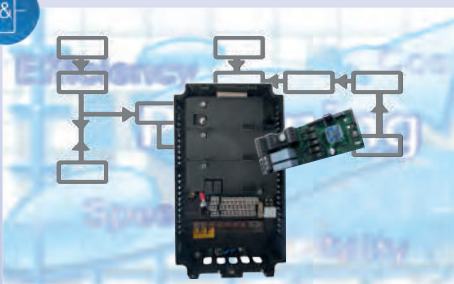
- Integrated positioning control
- Different motor types selectable
- Two-channel STO (PL "d"/ SIL2)



- Real torque control
- Master-slave, guided ramp-down in case of power failure
- Best torque at low frequency



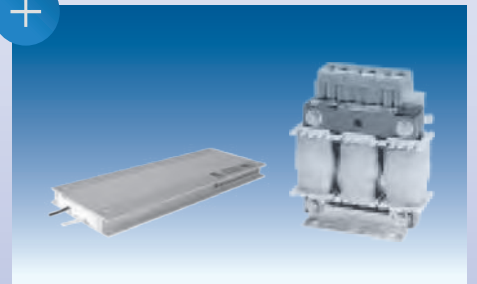
- Various real-time Ethernet connections
- Optional cloud solution for remote maintenance
- Extensive mobile app



- Plug-in PLC card EC-PC502
- PLC card with 128 kB program memory
- Programming with PC software (IL/LD/FP) according to EN 61131-3 (IEC61131)



- IP55 up to 110 kW
- Main switch integrated
- All functions of the IP20 included



- EMC filter
- Input / output / compensation filters
- Reactors, braking resistors

Technical Data GD350A (Protection class IP20) 400V class																															
Model			GD350A-	1R5G/ 2R2P-4	2R2G/ 003P-4	004G/ 5R5P-4	5R5G/ 7R5P-4	7R5G/ 011P-4	011G/ 015P-4	015G/ 018P-4	018G/ 022P-4	022G/ 030P-4	030G/ 037P-4	037G/ 045P-4	045G/ 055P-4	055G/ 075P-4	075G/ 090P-4	090G/ 110P-4	110G/ 132P-4	132G/ 160P-4	160G/ 185P-4	185G/ 200P-4	200G/ 220P-4	220G/ 250P-4	250G/ 280P-4	280G/ 315P-4	315G/ 355P-4	355G/ 400P-4	400G/ 450P-4	450G/ 500P-4	500G-4
P (ND)	Power rating	[kW]		2,2	3	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90	110	132	160	185	200	220	250	280	315	355	400	450	500	
	Output current	[A]		5	7	12,5	17	23	32	38	45	60	75	92	115	150	170	215	260	305	340	380	425	480	530	600	650	720	820	860	
G (HD)	Power rating	[kW]		1,5	2,2	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90	110	132	160	185	200	220	250	280	315	355	400	450	500
	Output current	[A]		3,7	5	9,5	14	18,5	25	32	38	45	60	75	92	115	150	180	215	260	305	340	380	425	480	530	600	650	720	820	860
Main voltage, frequency			AC 3-ph. 380 V ... 440 V (-15% ... +10%), 50 Hz/60 Hz (± 5%)																												
Output voltage			3-ph. 0 V ... 440 V (max. input voltage)																												
Overload capacity			150% for 60s at setting G (Heavy Duty), 120% for 60s at setting P (Normal Duty)																												
Output frequency			0 ... 400 Hz																												
Inputs			Analog: 2 inputs (AI1: 0 ... 10 V / 0(4) ... 20 mA; AI2: -10 ... 10 V), optionally expandable																												
			Digital: 6 programmable inputs, including 2 high-speed inputs (50 kHz) for speed setpoint or actual value via incremental or pulse encoder, optionally expandable																												
Outputs			Analog: 1 programmable output 0 ... 10 V / 0(4) ... 20 mA																												
			Digital: 2 programmable outputs, one of them high-speed (50 kHz), potential-free, optionally expandable																												
			Relay: 2 programmable change-over contacts (NO/NC), optionally expandable																												
Extended interfaces			RS485 (terminals) as standard, up to 3 freely equippable option interfaces for communication modules, terminal extensions, feedbacks and PLC cards																												
Braking unit			integrated													optional															
EMC filter			integrated IEC61800-3 C3; IEC61800-3 C1 & C2 optional																												
DC reactor			-									integrated										optional									
Safety functions			two-channel (Safe Torque Off) (IEC61800-5-2, SIL2, PL "d")																												
Protection class			IP20, optional IP55																												
Ambient conditions			-10 °C ... +50 °C; power reduction required if ambient temperature exceeds +40 °C, air cooling																												
Conformance			CE, TÜV																												

* P = Normal Duty: 120% for 60s G = Heavy Duty: 150% for 60s

Dimension and Weight

Model GD350A-	Power rating (kW) G (HD) / P (ND)		Dimension (mm) W x H x D*			Weight (kg)
400V-class, 3-ph.						
1R5G/ 2R2P-4	1,5	2,2	126	186	185	3
2R2G/ 003P-4	2,2	3	126	186	185	3
004G/ 5R5P-4	4	5,5	126	186	201	3,5
5R5G/ 7R5P-4	5,5	7,5	126	186	201	3,5
7R5G/ 011P-4	7,5	11	146	256	192	4
011G/ 015P-4	11	15	170	320	220	7
015G/ 018P-4	15	18,5	170	320	220	7
018G/ 022P-4	18,5	22	200	340,6	208	10,5
022G/ 030P-4	22	30	200	340,6	208	10,5
030G/ 037P-4	30	37	250	400	223	17
037G/ 045P-4	37	45	250	400	223	17
045G/ 055P-4	45	55	282	560	256	29
055G/ 075P-4	55	75	282	560	256	29
075G/ 090P-4	75	90	282	560	256	29
090G/ 110P-4	90	110	338	554	330	52
110G/ 132P-4	110	132	338	554	330	52
132G/ 160P-4	132	160	500	870	360	101
160G/ 185P-4	160	185	500	870	360	101
185G/ 200P-4	185	200	500	870	360	101
200G/ 220P-4	200	220	500	870	360	101
220G/ 250P-4	220	250	680	960	380	165
250G/ 280P-4	250	280	680	960	380	165
280G/ 315P-4	280	315	680	960	380	165
315G/ 355P-4	315	355	680	960	380	165
355G/ 400P-4	355	400	620	1700	580	407
400G/ 450P-4	400	450	620	1700	580	407
450G/ 500P-4	450	500	620	1700	580	407
500G-4	500	-	620	1700	580	407

Wiring diagram example (depending on model)

