Compact frequency inverters for railway applications

PRODUCT OVERVIEW

swiss drives
develops solutions

The frequency inverters are suitable for a wide range of applications. We will be happy to advise you and also offer completely individual customer-specific solutions.

» Table of contents

SwissDrives Engineering

Intelligent Railway Drive Technology

SwissDrives focuses on intelligent solutions and products of the highest quality and reliability. We develop tailor-made drive and control solutions for the railway technology. Our frequency inverters for railway applications meet selected requirements of the EN50155:2017 standard. Depending on the product they are temperature, shock, vibration, humidity, fire protection and EMC tested.

Preventive maintenance for railway inverters
Due to the higher demands on railway inverters, the maintenance intervals have been shortened accordingly. We offer you the maintenance of the due devices inhouse SwissDrives. Components that show signs of aging and other wearing parts such as fans are replaced. Thus, the devices are ready for another cycle and the outage and repair costs are reduced to a minimum close to zero.

Engineering according to customer requirements

Are you looking for a specific solution, adapted to your requirements?
We are experts in mechanical and electrical engineering in drive technology. Whatever your requirement or issue, we will find an efficient and practical solution. Furthermore we support you with the design, parameterisation and commissioning of frequency inverters and electric motors.

The Giruno from SBB has been in service on the Basel – Zurich – Milan route since the end of 2019

Customized applications

With SwissDrives through the longest railway tunnel in the world

Since the end of 2019, SBB has been using Giruno passenger trains on the Basel – Zurich – Milan route. These trains are highly comfortable, single-deck high-speed trains that can reach speeds of up to 250 km/h. SwissDrives know how is also on board for each of these journeys. On their journey to and from Italy, the trains pass through the Gotthard tunnel, which is over 50 km long. Thus, reliability is just as important for these trains as their performance – no one wants to experience a technical defect in a tunnel.

To make this train journey a wonderful experience, SwissDrives frequency inverters are installed in the train roofs to save space. Thanks to our frequency inverters, which can be used to operate various auxiliary units, the cooling fans of the transformers are able to keep them reliably and energy-efficiently in the ideal operating temperature range.

Passengers enjoy technically advanced, comfortable and punctual trains without outage or delays. And SwissDrives is also a good partner for the SBB, as our solutions in drive technology contribute to a long service life of the trains with low operating costs.

GA500 K-line

THE SIMPLE ONE WITH RAILWAY APPROVAL

ADVANTAGES

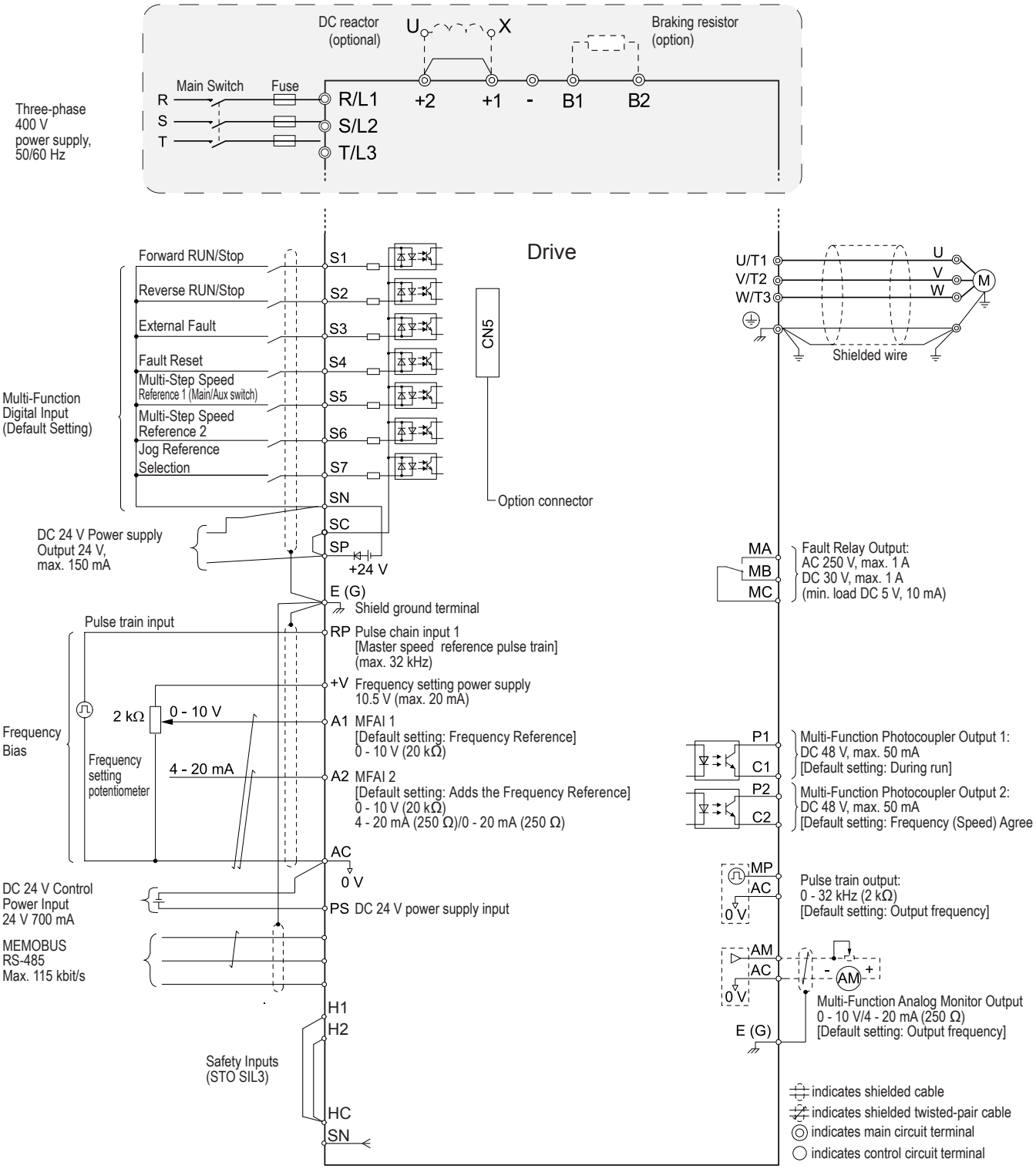
- Cost effective, industry oriented plastic casing
- Meets temperature, humidity and vibration standards
- Rated power range: from 2.5 to 22 kW
- Protection class IP20 for control cabinet mounting
- Simple symbol-based graphic programming interface on the PC

- **Frequency inverter** according to **EN50155, Level OT1**
- **Temperature shock** according to **EN60068**
- **Humidity** according to **EN50155**
- **Vibration** according to **EN61373,** Cat. 1/class B
- **Designed** for 7 years maintenance-free operation

Technical data

GA50C40 ..... ABPK	09	18	23	31	38	44	60
Input voltage	3 x 380 ... 480 VAC – 15 % +10 %; 50/60 Hz						
Max. motor power (kW)	2.5	5.0	7.0	10.0	12.0	15.0	22.0
Nominal current (A)	5.8	11.4	15.2	20.0	24.7	28.6	39.5
Power Loss (W)	62	139	236	279	313	369	501
Output frequency	0 – 50 Hz (max. 590 Hz)						
Input / Output options	7 x digital input / 2 x analog input / 2 x digital output / 1 x analog output / 1 x relay output						
Recommended Line Filter FS41785-	5-07	15-07		25-07		40-53	
Protection class	IP20						
Width (mm)	108	140	140	180	180	190	190
Height (mm)	128	260	260	300	300	350	350
Depth (mm)	154	140	140	143	143	204	204
Weight (kg)	1.5	3.0	3.2	4.6	4.8	6.5	6.5

» Circuit diagram



Technical approvals, conformities »

» See technical table page 14

GA500 M-line

THE ROBUST ONE WITH FIRE PROTECTION

Advantages

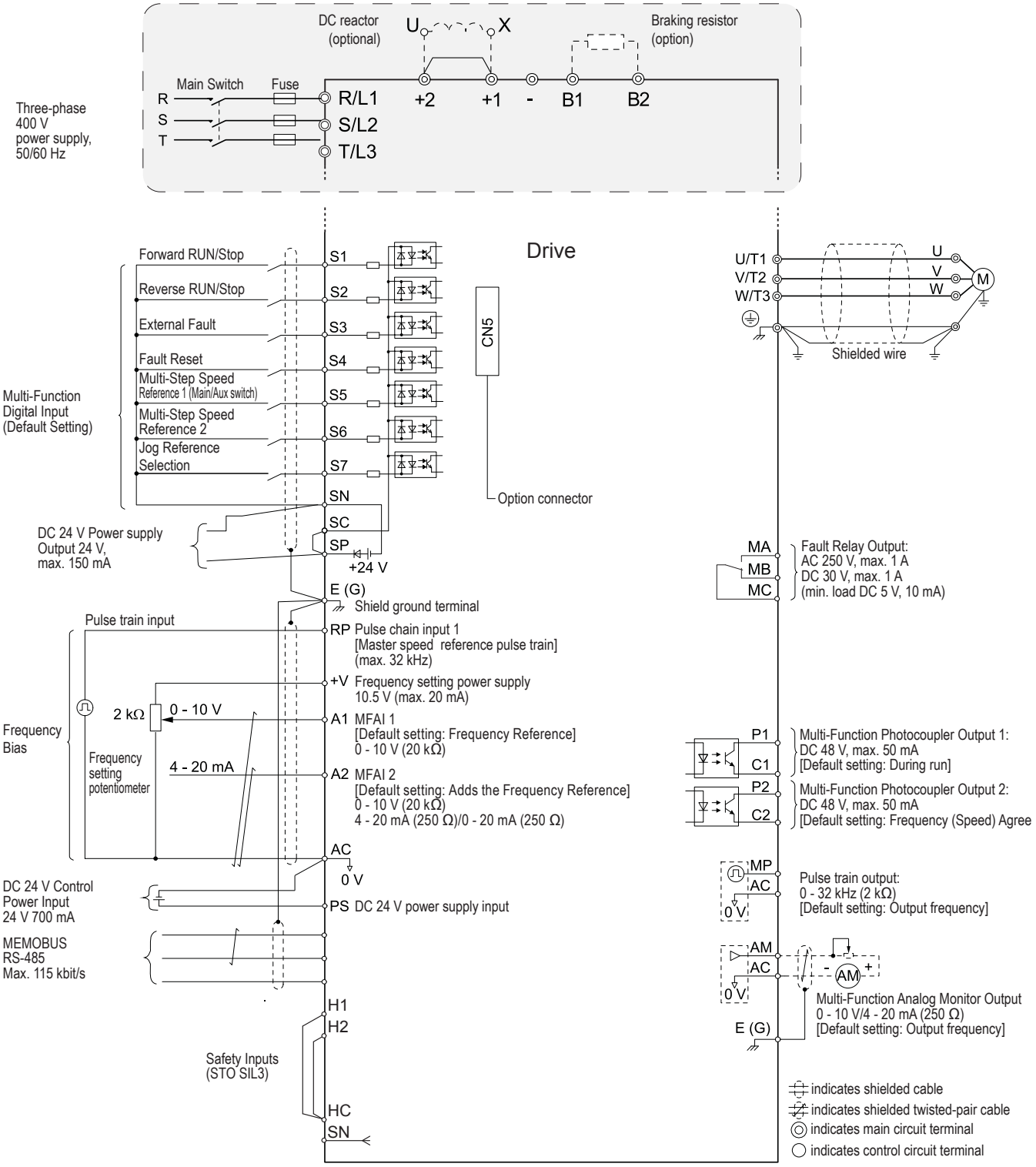
- Metal casing to reduce fire load and EMC emissions
- Protection class IP20/NEMA1 for control cabinet mounting
- Fulfils the most important railway standards
- Simple, symbol-based, graphic programming interface on the PC

- **Frequency inverter** according to **EN50155, Level OT1**
- **Temperature shock** according to **EN60068**
- **Humidity** according to **EN50155**
- **Vibration** according to **EN61373,** Cat. 1/class B
- **Fire Protection** according to **EN45545-1-2, HL3**
- with application of a filter, **EMC** according to **EN50121-3-2**
- **Designed** for 7 years maintenance-free operation

Technical data

GA50C40 ..... ABPM	09	18	23	31	38	44	60
Input voltage	3 x 380 ... 480 VAC – 15 % +10 %; 50/60 Hz						
Max. motor power (kW)	2.5	5.0	7.0	10.0	12.0	15.0	22.0
Nominal current (A)	5.8	11.4	15.2	20.0	24.7	28.6	39.5
Power Loss (W)	62	139	236	279	313	369	501
Output frequency	0 – 50 Hz (max. 590 Hz)						
Input / Output options	7 x digital input / 1 x relay output / 2 x digital output / 2 x analog input / 1 x analog output						
Recommended Line Filter FS41785-	5-07	15-07		25-07		40-53	
Protection class	IP20/NEMA1						
Width (mm)	108	140	140	180	180	190	190
Height (mm)	186	300	300	340	340	400	400
Depth (mm)	186	145	145	155	155	211	211
Weight (kg)	3	4.5	4.7	6.6	6.6	9	9

» Circuit diagram



Technical approvals, conformities »

» See technical table page 14

GA500 S-line

THE COMPLETE ONE HIGHEST QUALITY WITHOUT RESTRICTIONS

Advantages

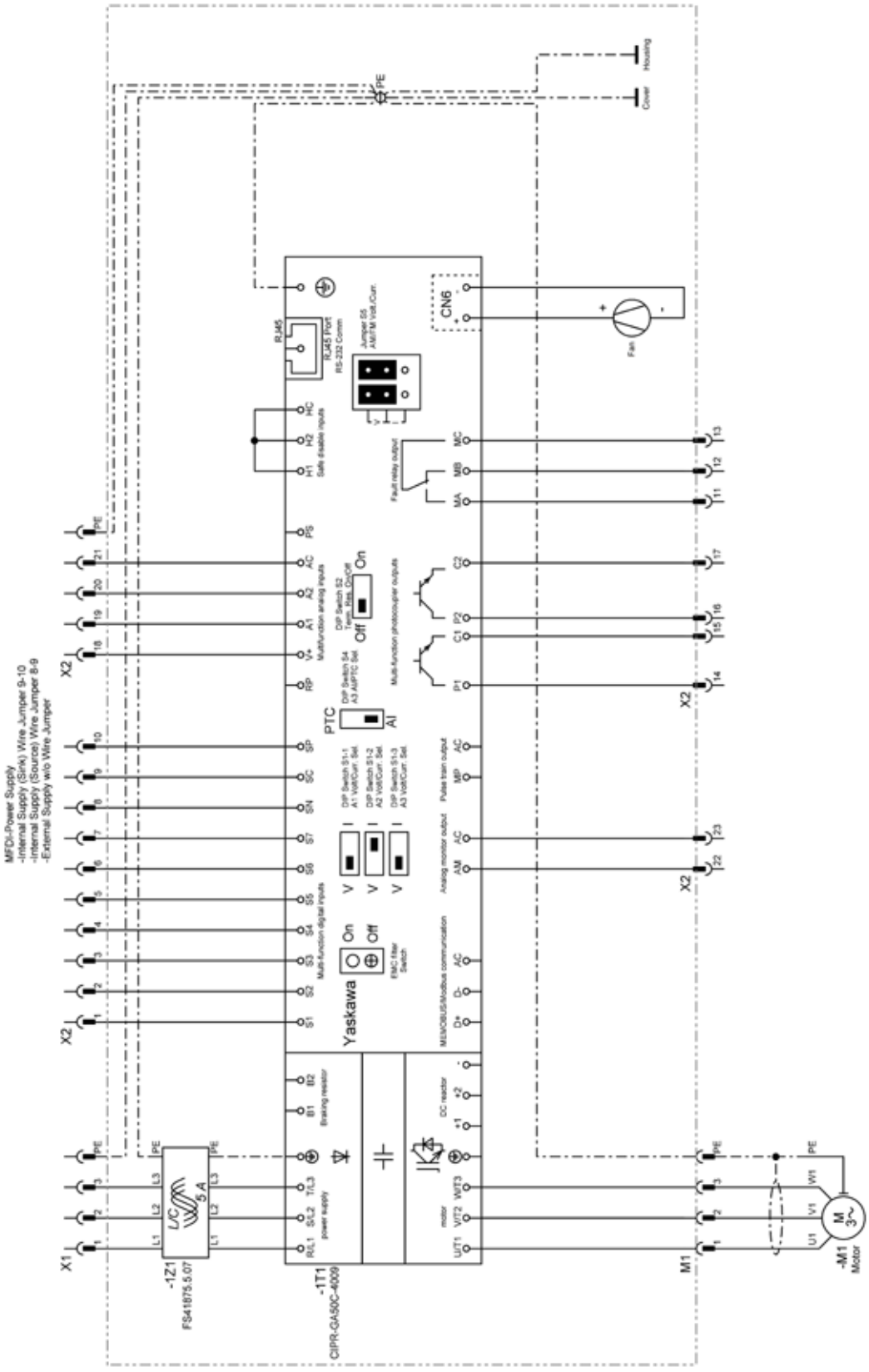
- **Hermetically sealed casing for optimal fire protection and as a stand-alone solution**
- Motor power 2.5 kW (others in development)
- Protection class IP66
- Built-in line filter (EMC improvement)
- Easy to install due to plug-in connections
- Simple, symbol-based, graphic programming interface on the PC

- **Frequency inverter** according to **EN50155, Level OT1**
- **Temperature shock** according to **EN60068**
- **Humidity** according to **EN50155**
- **Vibration** according to **EN61373,** Cat. 1/class B
- **Fire Protection** according to **EN45545-1-2 OC4/HL3**
- **EMC** according to **EN50121-3-2**
- **Designed** for 7 years maintenance-free operation

Technical data

GA50C40 ..... ABPS	09
Input voltage	3 x 380 ... 480 VAC – 15 % +10 %; 50/60 Hz
Max. motor power (kW)	2.5
Nominal current (A)	5.8
Power Loss gesamt (W)	62
Output frequency	0 – 50 Hz (max. 590 Hz)
Input / Output options	7 x digital input / 2 x analog input / 2 x digital output / 1 x analog output / 1 x relay output
Protection class	IP66
Width (mm)	233
Height (mm)	386
Depth (mm)	229
Weight (kg)	11

» Circuit diagram



Technical approvals, conformities »

» See technical table page 14

Line filter FS

Suitable for GA500 inverters

» Meets major railway standards
» Protection class IP20 for control cabinet mounting
» Spring-loaded terminals up to 25 A

» **Line filter** according to **EN50155, Level OT1**

» **Temperature shock** according to **EN60068**

» **Humidity** according to **EN50155**

» **Vibration** according to **EN61373,** Cat. 1/class B

» **Fire Protection** according to **EN45545**

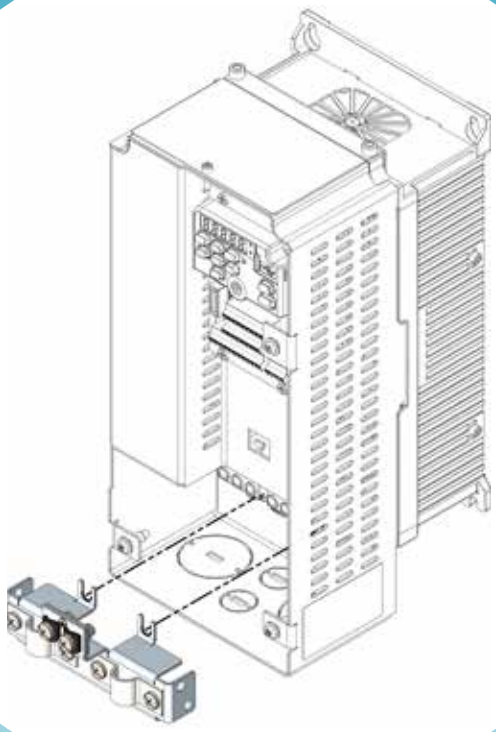
» **EMC** according to **EN50121-3-2** and **EN 61800-3** in combination with the corresponding frequency inverter

FS41785-...	5-07	15-07	25-07	40-53
Max. Current (EN50155, Level OT3)	5 A, 3 x 400 VAC	15 A, 3 x 400 VAC	25 A, 3 x 400 VAC	40 A, 3 x 400 VAC
Mountable as substructure	✓	✓	✓	✗
Width (mm)	114	137	175	65
Length (mm)	169	304	340	255
Height (mm)	45	56	65	180
Weight (kg)	0.8	1.0	2.7	3.5

Shield connection

Suitable for GA500

- Effective shield connection for best possible electromagnetic compatibility
- Easy installation
- Easy wiring
- Available for the K-line and M-line



External operator

Suitable for GA500

- Read and modify inverter paramenter setting
- Back up, restore and verify inverters parameters
- Operate and stop the inverter
- Monitor inverter operation status

“If you would like more information about the options, please contact us.”

Overview normative data

Technical approvals, conformities

Standard	Description	GA500 K-line	GA500 M-line	GA500 S-line	Option: Line filter
EN 50155	Temperature and climate level	OT1	OT1	OT1	OT1
	Low storage temperature	-40 °C	-40 °C	-40 °C	-40 °C
EN 60068	Temperature shock	✓	✓	✓	✓
EN 61373	Shock and vibration protection	Cat.1 / Class B	Cat.1 / Class B	Cat.1 / Class B	Cat.1 / Class B
EN 50121	EMC (railway)	✗	(✓)[1]	✓	✓
	• Conducted and radiated emissions	✗	(✓)[1]	✓	✓
	• Immunity to conducted and radiated emissions	✗	(✓)[1]	✓	✓
	• Immunity to overvoltage and transients	✗	(✓)[1]	✓	✓
EN 61800-3	EMC (industry)	(C1) [1]	(C1) [1]	C1	C1
EN 45545	Fire protection (hazard level)	✗	HL3[2]	OC4, HL3[2]	HL3

Legend:

[1] **In combination with a suitable FS line filter**

[2] **Taking into consideration the mounting situation according to the installation instructions**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