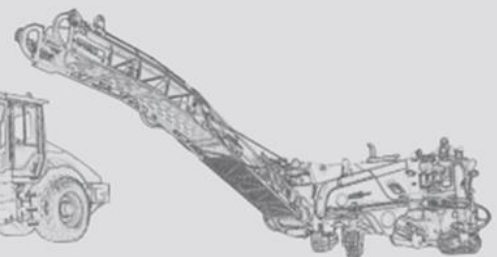


# GRAF YTECO<sup>®</sup>



## GSt-A123 operator panel series

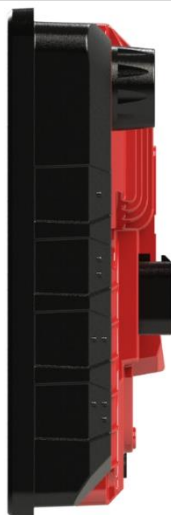




The original housing color may differ from the illustration shown here.

In addition to being equipped with modern technology and a low-reflection display that is easy to read in daylight, the control unit's eye-catching color design emphasizes the contrast to the harsh environment of a construction machine in outdoor use. The intuitive operation of the navigation keys focuses on the optimal realization of the human-machine interface. The display brightness and key illumination can be adjusted via software settings. The flat, functional design fits perfectly into all cabs and also makes a strong statement for the machine manufacturer with its customized look.

- 🔴 Specially developed for use in mobile machines
- 🔴 Rugged yet lightweight die-cast aluminum housing for outdoor use
- 🔴 Installation via clamping bracket and assembly with a standard ball mount possible
- 🔴 Display optimally readable even in direct sunlight
- 🔴 Very wide reading angle in all directions
- 🔴 Short-travel keys with tactile feedback
- 🔴 Key illumination in RGB
- 🔴 I/O's and interfaces
- 🔴 Free programming with GSe-VISU®

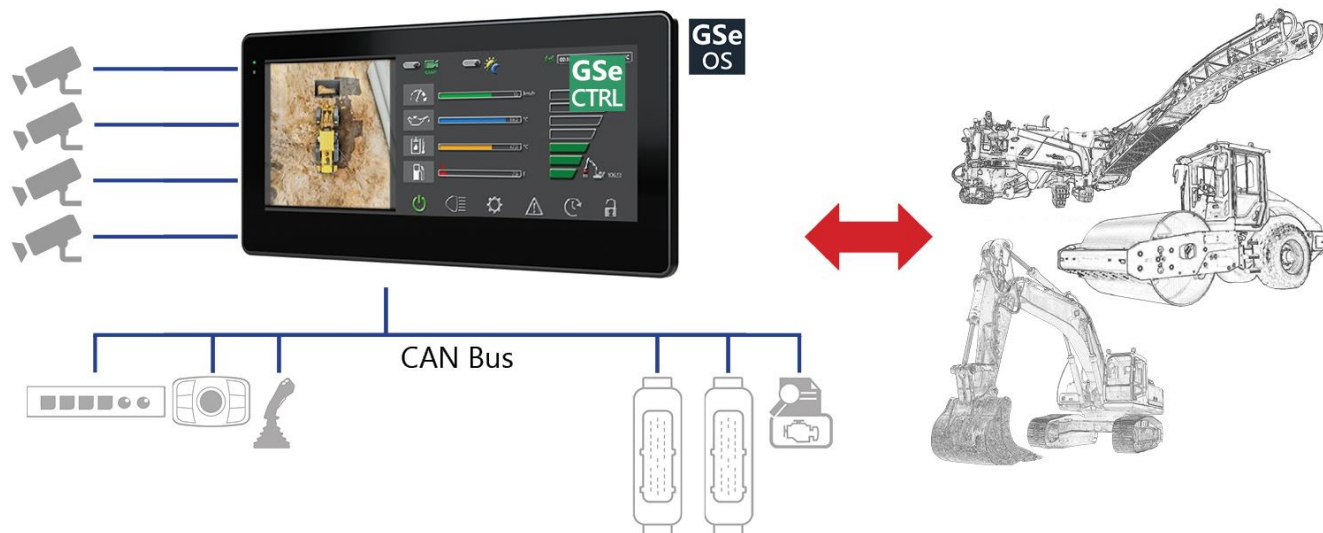


GSt-A123 side view:  
Extra slim housing design



GSt-A123 rear view:  
Flexible RAM® mount (accessories)

## Application example



## Technical data

### Display and input media

Display	Color TFT
Format	8:3 approx. 292 x 109.5 mm, 12.3" diagonal
Resolution	1920 x 720 pixel
Backlight	1000 cd/m2 (typical)
Contrast ratio	1100:1 (typical)
Viewpoint	85°, 85°, 85°, 85° (Θy+, Θy-, Θx+, Θx-)
Cover lens	Mineral clear glass
Optical Bonding	yes
Keys	4 tactile illuminated short-travel keys on right rear side with numbering in braille for better location (optional without keys)
Key illumination	LED, RGB, individually controllable and brightness adjustable
Touchscreen	Projected capacitive (PCAP)
Encoder	1 rotary-push encoder (Opt)

### Mechanical data

Front panel material	Die cast aluminum, powder coated black
Housing material	Die-cast aluminum, powder-coated basalt gray or customer-specific color
Dimensions (W x H x D)	341 x 166 x 52.2 mm
Installation dimensions (W x H)	326 ± 0.5 x 158 ± 0.5 mm
Weight	Approx. 2100 g
Mounting	Surface mounting with RAM® holder Installation with clamping jaws
Protection class	IP65 <sup>1</sup>
Operating temperature	-30°C ... 70°C
Storage temperature	-30°C ... 80°C

### Electrical data

Supply voltage	VCC 9...32 VDC
Rated voltage	24 VDC
Power consumption	≤25W (without external load)
Fuse	external, fuse value 4 A
Processor	i. MX 8X (4x A35 + 1x M4) @ 900 MHz
Memory	1 GB RAM   8 GB Flash   8 kB FRAM
Interfaces	3x CAN-FD 1x Ethernet up to 1 GBit/s 2x USB Host 2.0 Video IN, 4 in 4, analog FBAS PAL/NTSC 1x Speaker-Out (mono)   1,5W

<sup>1</sup> Only valid with correctly screwed on connectors or protective caps

**Electrical data**

	1x RS485 (option)
	1x RS232 (option)
	Possible interface configurations see product variants
I/O's	4x multifunctional inputs (digital   analog 0...10VDC   analog 0...20mA)
	1x Ignition (KL15)
	2x digital outputs (9...32VDC   I <sub>max</sub> =3A   diagnosable)

**More equipment**

Temperature monitoring	Integrated temperature sensor for measuring the internal device temperature
Supply voltage monitoring	Measuring circuit for monitoring the supply voltage
Brightness adjustment	Ambient light sensor in the front for brightness adjustment of the display and key illumination
Status LED	RGB LED in front panel for freely programmable status display
Clock / Battery	Real time clock (RTC), Batteriegepuffert (year, month, day, weekday, hour, minute, second)

**Software / Programming**

Operating system	GSe-OS® Fastboot operating system based on Linux
Development environment	C/C++ programmable via GSe-VISU® software

**Data logs**

Interface	Protocols
CAN	J1939, CANopen, openSYDE
Ethernet	OPC-UA, Modbus TCP, openSYDE
RS485	Modbus RTU

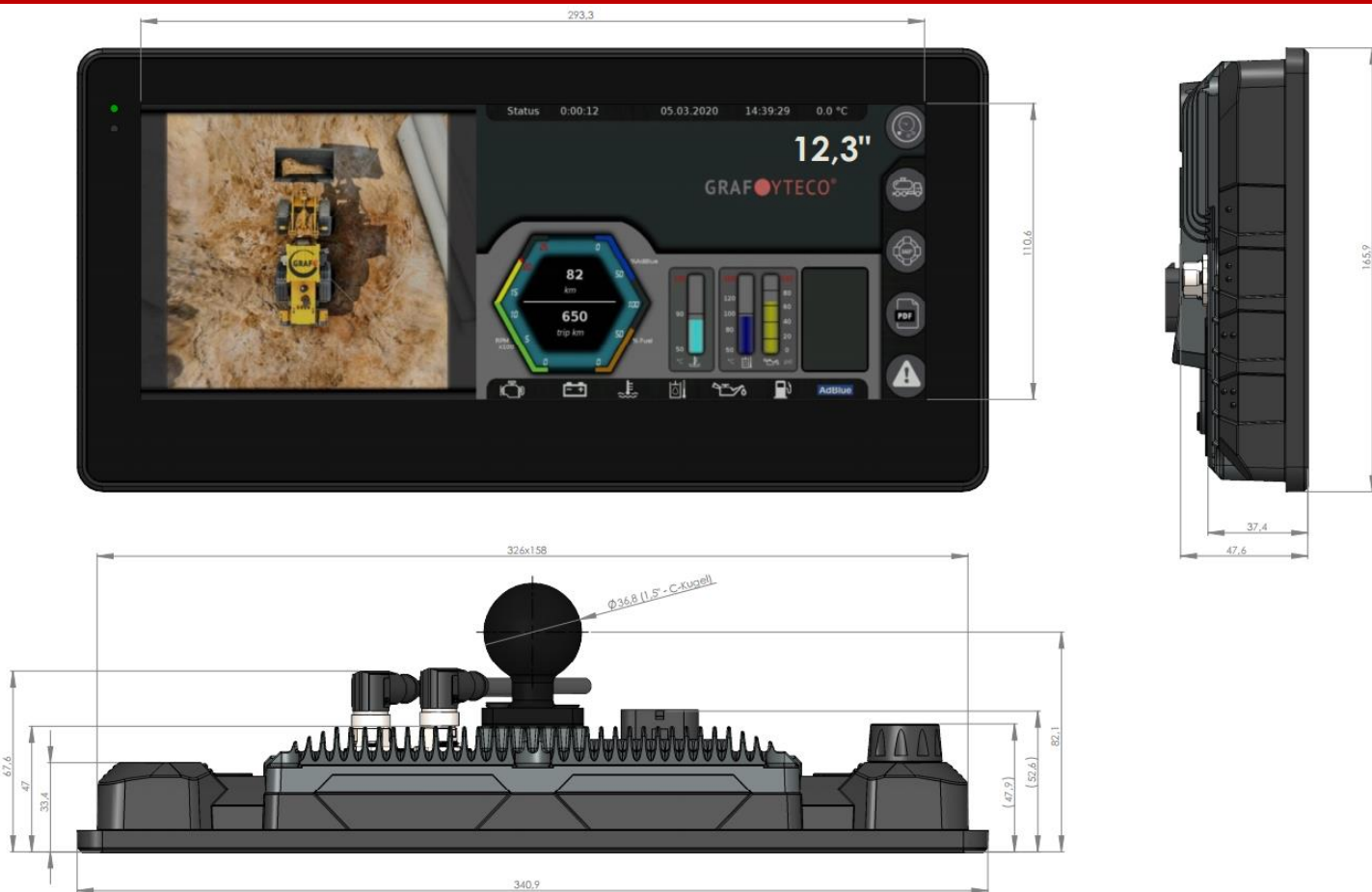
**Test standards / Certification**

CE mark	According to EMC Directive 2014/30/EU according to RoHS Directive 2011/65/EU
EMC	EN 61000-6-2:2019-11   Immunity for industrial environments EN 61000-6-3:2011-09   Emitted interference for residential areas EN 61000-4-2:2009-12 ESD, Level 4: 15 kV EN 61000-4-4:2013-04: Immunity transients (burst), level 4: 4kV EN 61000-4-5:2019-03:   Surge immunity, level 3: 1kV
Load Dump	ISO 16750   Pulse 5b Level 3
Vibration	EN 60068-2-64:2020-09   random   8h per axis 10 ... 299 Hz: 1g 300 ... 499 Hz: 0.05g 500 ... 2000 Hz: 2g
Shock	EN 60068-2-27:2010-02   30g / 18ms: 5 shocks
Cold	EN 60068-2-1:2008-01   Test temperature -30°C / 2h
Dry heat	EN 60068-2-2:2008-05   Test temperature 70°C / 2h
Temperature change	EN 60068-2-14:2010-04   Test temperature -30°C ... +70°C: 20 cycles a 300min
Temperature shock	EN 60068-2-14:2010-04   Test temperature -30°C ... +70°C: 5 cycles a 120min
Damp heat	EN 60068-2-38:2010-06   Test Z/AD Test temperature 40°C/ 93%RH / 21 days

**General accessories (not included in the scope of delivery of the device)**

Item number	Designation
180456	Surface mounting set with RAM® holder
190140	Installation kit with clamping bracket
190143	GSt-A070/A123 connection cable 26p -> open end 3m
190144	GSt-A070/A123 GBit Ethernet cable, 8p M12x -> RJ45
185321	GSe-OS® operating system for operating and control devices
185320	GSe-VISU® software for application creation

## Mechanical dimensions



For intuitive finding of a key for a specific function, these keys are numbered with symbols in Braille to the left and right of the key. This makes it easier to operate the keys blindly, since they are not visible to the user on the back of the device

All dimensions are in [mm].  
Housing color (here: basalt grey RAL7012) and number of connectors differs from the illustration shown here depending on the variant.

## Product variants

GSt- A 123 - 1 0 1

**Series designation**

A-Series

**Display size**

123 = 12.3 inch

**Device version**

1 = Standard version with i.MX8X processor

**Housing color**

0 = Basalt gray RAL7012

1 = Ruby red RAL3003

**Interface configuration**

0 = 2x M12: 1x CAN + Ethernet

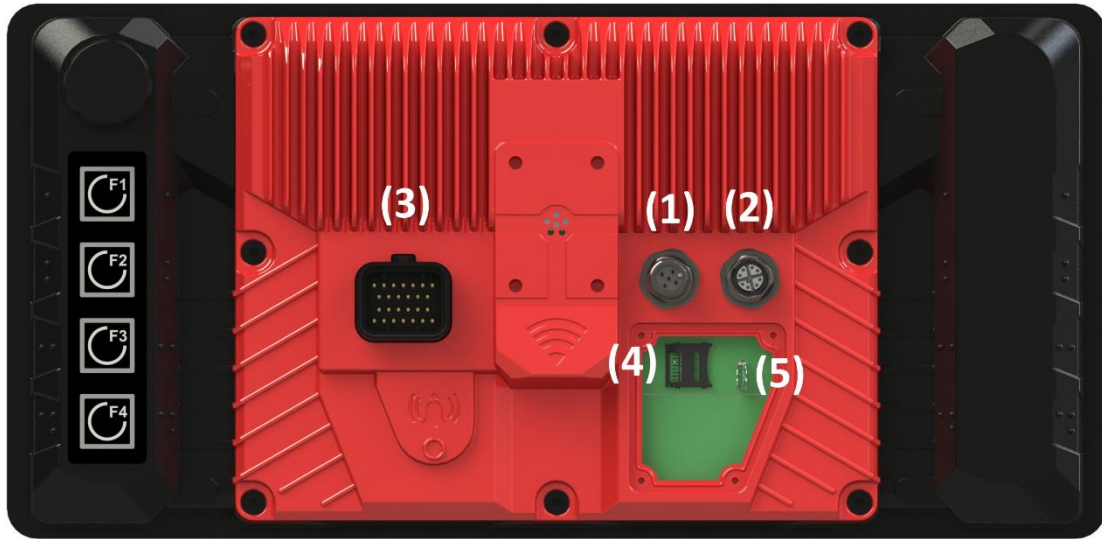
1 = 2x M12: 1x CAN + Ethernet + 26p interface connector + USB-C + μSD card holder + Keys + Encoder

2 = 2x M12: 1x CAN + Ethernet + 26p interface connector + USB-C + μSD card holder

Standard-variants	Article-number	CAN 0	CAN 1	CAN 2	Ethernet	USB 0	USB 1 (USB-C)	Video	I/O's	Memory card slot	Keys Encoder
GSt-A123-100	160519	✓			✓						
GSt-A123-101	160542	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GSt-A123-102	160546	✓	✓	✓	✓	✓	✓	✓	✓	✓	

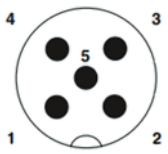


# Pin assignment



- (1) Main connector
- (2) Interfaces Connector I
- (3) Interfaces Connector II
- (4) Micro SD card holder
- (5) USB-C connector

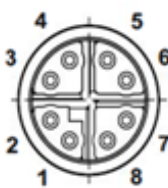
## Pin assignment main connector (all variants)



M12 A-coded 5 pin, male

Pin	Signal	Description
1	Ignition 8...32 VDC	Ignition input (KL15)
2	UB 8...32 VDC	Power supply (KL30)
3	GND	Ground
4	CAN_H	CAN0 High
5	CAN_L	CAN0 Low

## Pin assignment interfaces connector I (all variants)



M12 X-coded 8 pin, socket for

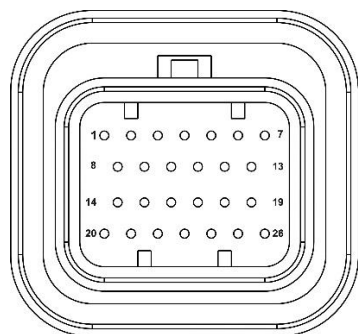
Pin	Signal	Description
1	MDX0+	Gigabit Ethernet MDX0+
2	MDX0-	Gigabit Ethernet MDX0-
3	MDX1+	Gigabit Ethernet MDX1+
4	MDX1-	Gigabit Ethernet MDX1-
5	MDX3+	Gigabit Ethernet MDX3+
6	MDX3-	Gigabit Ethernet MDX3-
7	MDX2-	Gigabit Ethernet MDX2-
8	MDX2+	Gigabit Ethernet MDX2+

## Cable accessories for main connector (all variants)

Item number	Designation
190113	Cable CAN / Ub, 5p M12 -> open end 3m
190144	GSt-A070/A123 GBit Ethernetkabel, 8p M12x -> RJ45
190143	GSt-A070/A123 Anschlusskabel 26p -> offenes Ende 3m

## Pin assignment interfaces connector II

(3) Interface connector II



TE Connectivity SUPERSEAL 1.0, 26 pin, Male

Pin	Signal	Option
1	CAN2-FD_H	CAN2-FD High (Optional RS485_A / RS232_RX)
2	CAN2-FD_L	CAN2-FD Low (Optional RS485_B / RS232_TX)
3	GND	Ground
4	CAN1-FD_H	CAN1-FD High
5	CAN1-FD_L	CAN1-FD Low
6	GND	Ground
7	Ignition (KL15)	Ignition input (terminal 15)
8	UB_DOUT (6A external fuse protection)	Power supply 9...32 VDC for digital outputs
9	DOUT0 (3A)	Digital output 0
10	DOUT1 (3A)	Digital output 1
11	Speaker -	Loudspeaker - (Optional LineOut l)
12	Speaker +	Speaker + (Optional LineOut r)
13	GND	Ground
14	USB 5V	USB_VBUS (+5 VDC $I_{max}=500\text{ mA}$ )
15	GND	Ground
16	MFIN0	Multifunction input 0
17	MFIN1	Multifunction input 1
18	VideoIN0	Analog video input 0
19	UB	Power supply 9...32 VDC
20	USB D+	USB Data+
21	USB D-	USB Data-
22	MFIN2	Multifunction input 2
23	MFIN3	Multifunction input 3
24	VideoIN1	Analog video input 0
25	VideoIN2	Analog video input 0
26	VideoIN3	Analog video input 0



# Support and contact

## Notes and warnings

Incoming goods inspection

This product has been produced, tested and packed with the greatest possible care. Nevertheless, we ask you to check the device including accessories immediately after receipt for any transport damage and defects. Please refer to the delivery bill for the exact scope of delivery. If possible, a damaged device should be returned in the original packaging.

The following information must be included with the device:

- A detailed description of the defect,
- Your name as well as your address.

Danger to life from electric shock



Ensure that the device is only commissioned by trained and qualified personnel. The qualified personnel must have sufficient knowledge in the following areas:

- Automation technology
- Control technology
- Control engineering

Danger to life due to incorrect entries or incorrect operation



Observe the relevant EN, DIN and VDE standards when installing the device!  
Our operator interfaces are exclusively suitable for operating, monitoring, controlling and regulating processes. In order to prevent dangerous conditions on machines or plants after incorrect entries via the HMI device, in case of malfunction or failure of the HMI device, suitable measures must be taken by programming or designing the HMI device.

Caution! Malfunction due to interference



Before commissioning, make sure that supply and data lines are protected against EMC influences.

**The technical specification may be changed at any time without notice. Errors and misprints are always reserved.**



## Contact

Graf-Sytec GmbH & Co KG  
New meadows 12  
D-78609 Tuningen

Tel: +49 (0) 7464 98 66 0  
Fax: +49 (0) 7464 98 66 770  
Mail: [info@graf-sytec.de](mailto:info@graf-sytec.de)  
URL: [www.graf-sytec.de](http://www.graf-sytec.de)

Technical support

Tel: +49 (0) 7464 98 66 255  
Mail: [support@graf-sytec.de](mailto:support@graf-sytec.de)

Order processing

Tel: +49 (0) 7464 98 66 222

Data sheet version

1.4