graf syteco



Operating panel series GSt-A07C





Housing color may differ in the original from the image 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 man-machine interface. The display brightness and key illumination can be adjusted via software settings. The flat, functional design fits perfectly into all cabs, 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
- Individually programmable with GSe-VISU®

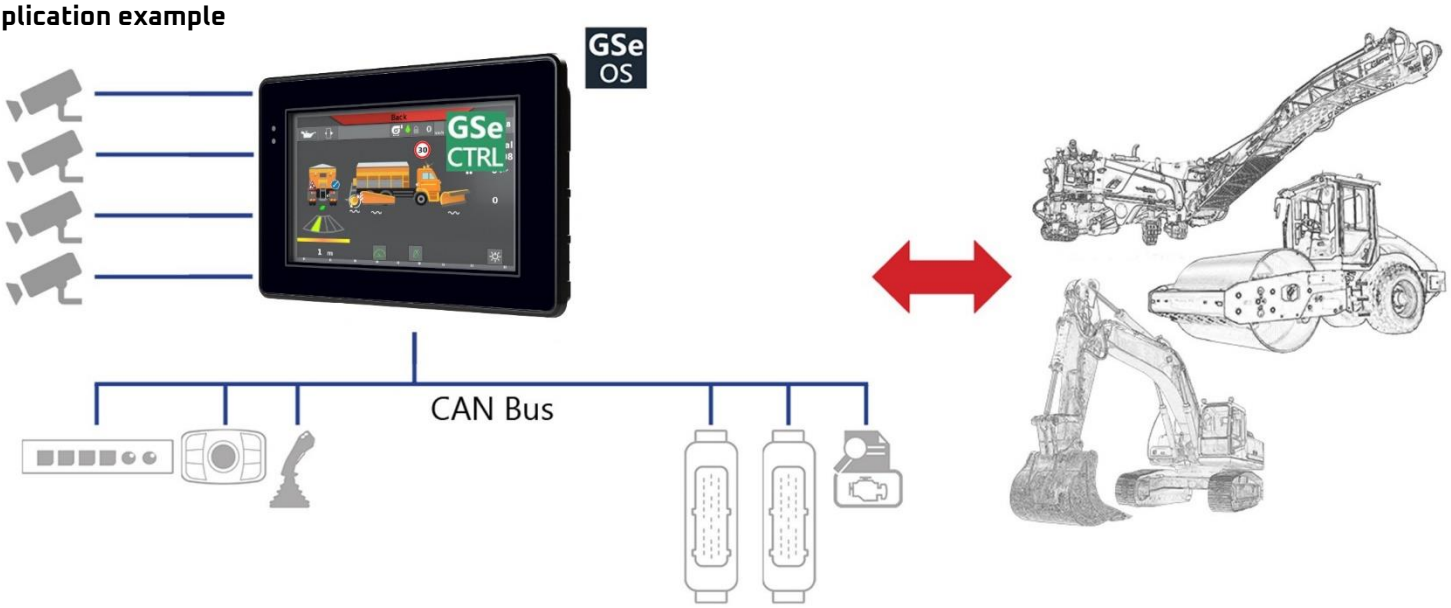


GSt-A07C Side view:
Extra slim housing design



GSt-A07C Rear view:
Flexible RAM® mount (accessories)

Application example



Technical data

Display and input media

Display	Color TFT
Format	17:10 (WSVGA), approx. 154.2 x 85.9 mm, 7" diagonal
Resolution	1024 x 600 Pixel
Backlight	1000 cd/m² (typical)
Contrast ratio	800:1 (typical)
Viewpoint	85°, 85°, 85°, 85° (Θ_{y+}, Θ_{y-}, Θ_{x+}, Θ)$_{x-}$
Front glass	Mineral clear glass
Optical Bonding	yes
Keys	3 tactile illuminated short-travel keys (opt)
Key illumination	LED, RGB, individually controllable and brightness adjustable (opt)
Encoder	1 Rotary-push encoder (opt)
Touchscreen	Projected capacitive (PCAP)

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)	207 x 133 x 46 mm
Installation dimensions (W x H)	197 ± 0.5 x 123 ± 0.5 mm
Weight	960 g
Mounting	Surface mounting with RAM® holder Installation with clamping jaws
Protection class	IP65[1] IP67 (only variant without 26p connector)
Operating temperature	-30°C ... 70°C
Storage temperature	-30°C ... 80°C

[1] Only valid with correctly screwed on connectors or protective caps

Electrical data

Supply voltage	VCC 8 ... 32 VDC
Rated voltage	24 VDC
Power consumption	≤10 W (without external load) ≤20 mW in standby
Fuse	external, fuse value 4 A
Processor	i.MX 6SoloX ARM®Cortex®-A9 + Cortex-M4 | 32 Bit | 792 MHz
Memory	512 MB RAM | 8 GB Flash | 8 kB FRAM
Interfaces	3x CAN 1x Ethernet 1x USB 4x video inputs 1x Audio output 4x RS485 (option) 1x RS232 (option) Possible interface configurations see product variants
I/O's	4x multifunctional Inputs (option) 1x ignition input (KL15) 2x digital output (option)

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), battery buffered (year, month, day, weekday, hour, minute, second)
Wake-On-Key	When not in use (e.g. when used outdoors on a vehicle), the HMI can be set to sleep mode. Pressing any key on the keypad for 3s or a rising edge at the ignition input restarts the device.

Software / Programming

Operating system	GSe-OS® Fastboot operating system based on Linux
Development environment	C/C++ programmable via GSe-VISU® software, optional CODESYS 3.5

Interfaces

Interface	**Protocols and specifications**	
CAN0 ... 2	CAN Interface, CAN ISO 11898 Version 2.0 A/B, 125 KBit/s ... 1 Mbit/s	
	Layer 2, GS-CAN, J1939, CANopen Slave, openSYDE	
	An external bus termination of 120 Ohm is recommended.	
ETH	100BASE-TX IEEE 802.3u	
	Data rate 10/100 Mbit/s	
	Protocols: TCP/IP, UDP/IP, DHCP, OPC-UA, Modbus TCP, openSYDE, HTTP, FTP, MQTT, SSL	
USB	USB 2.0 Hi-Speed, data rate up to 480 Mbit/s	
	USB Host	
	USB power supply 5 Volt	
	Specification also valid for USB C connector	
	Output current per interface ≤ 500 mA	
$Video_{IN}$ 0 ... 3	4 FBAS inputs, 1 Vpp, 75 Ω (inputs switchable, two video inputs can be displayed)	
	supported video standards: PAL and NTSC	
IGN	Ignition input, digital input	
	Input resistance	53 kOhm
	Switch-on level	~7.4 Volt
	Switch-off level	definable by software
MF_{IN}0 ... 3	Multi functional Inputs	
	Digital Inputs	
	Input resistance	1 MOhm
	Switchable input resistance	10 kOhm
	Input frequency	< 1 kHz
	Switch on level	4 Volt
	Switch off level	3 Volt
	Voltage range	0 ... U_B
	Voltage input	
	Input resistance	1 MOhm
	Switchable input resistance	10 kOhm
	Input frequency	< 1 kHz
	Voltage range	0 ... 10 VDC
	Precision	+/- 3 % FS
	Resolution	7 mV

Interfaces

	Current input	
	Input resistance	345 Ohm
	Input frequency	< 1 kHz
	Current range	0 ... 20 mA
	Precision	+/- 3 % FS
	Resolution	26 µA
	Further equipment per multifunctional entrance	
	Switchable Pull Up	1 kOhm at ~11 Volt Spannungsversorgung
D_{OUT} 0 ... 1	Digital output, high-side driver for camera supply	
	Voltage supply via U_{B_DOUT}	6A external fuse
	Switching voltage U_{B_DOUT}	8 ... 32 VDC
	Switching current	0 ... 3 A
	Protective circuit for inductive loads	integrated
	Switchable pull up resistance	100 kOhm
	Current readback	integrated
	Protective device	End of course party
	Main switch for both digital outputs	integrated
RS232 (opt)	300 Bd up to 115,2 kBd	
RS485 0 ... 3 (opt)	300 Bd up to 115,2 kBd Modbus RTU	
Audio output	Speaker output, mono, <1W, (optional line out stereo)	

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	Interference immunity for industrial areas
	EN 61000-6-3:2011-09	Interference emission for residential areas
	EN 61000-4-2:2009-12	Interference immunity ESD, level 4
	EN 61000-4-4:2013-04	Noise immunity transients (burst), level 4
	EN 61000-4-5:2019-03	Interference immunity Surge voltage, level 3
Load Dump	ISO 16750-2:2012-11	Load Dump Without Suppression Test A 24V
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 -25°C / 2h
Dry heat	EN 60068-2-2:2008-05	Test temperature 70°C / 2h
Termperature change	EN 60068-2-14:2010-04	Test temperature -25°C ... +70°C: 20 cycles a 300min
Termperature shock	EN 60068-2-14:2010-04	Test temperature -25°C ... +70°C: 5 cycles a 120min
Damp heat	EN 60068-2-38:2010-06	Test Z/AD Test temperature 65°C / 93%RH with -10°C cold phase / 21 days
E1 sign	UN/ECE-R10	

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

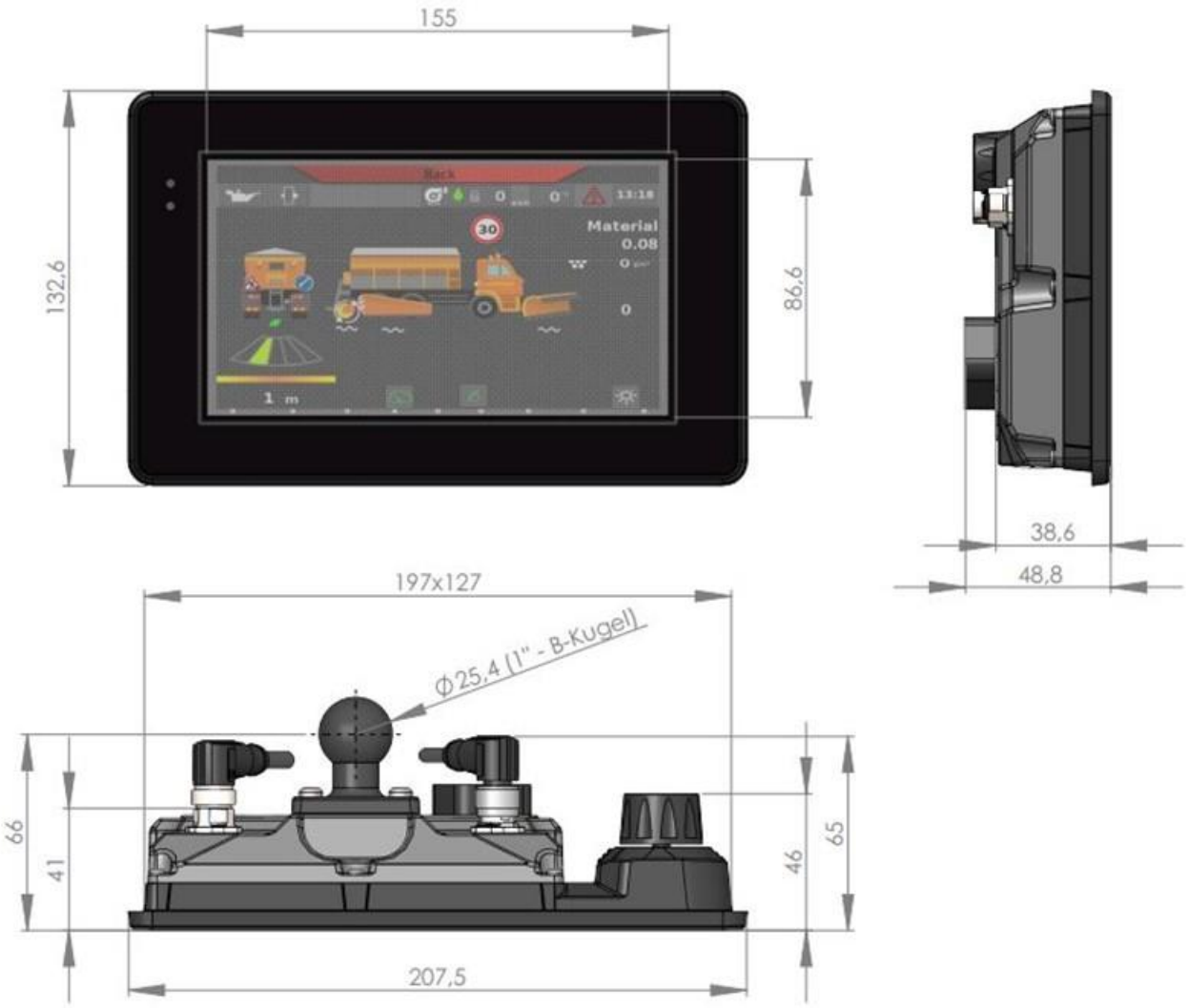
Item number	Designation
180456	Surface mounting set with RAM holder®
190154	Installation kit with clamping bracket
185320	GSe-VISU® software for application creation

Notice:

The accessories listed here are not included in the scope of delivery of the device and must be ordered separately if required, depending on the type of installation.

Due to different variants, the possible cable accessories are located in the description of the pin assignment

Mechanical dimensions



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

Product variants

GSt- A 07C - 1 0 3 C

Series designation
A-Series

Display size
07C = 7 inch, Compact

Device version
1 = with optical bonding, GSe-OS
A-Z = customized variant

Case color and keyboard
0 = Basalt gray RAL7012 with keypad and rotary encoder
2 = basalt gray RAL7012 without keypad and rotary encoder

Interface configuration
0 = 2xM12 5p: 1x CAN + 8p: Ethernet (100 Mbit/s) + USB
1 = 2xM12 5p: 1x CAN + 8p: Ethernet (100 Mbit/s) + USB + 26p I/O-Connector
2 = 1x 26p I/O-Connector
3 = 1x M12 5p: 1x CAN

Software
Without=GSe-OS
C = CODESYS

		5p M12-A	8p M12-A		26p AMP												
Device-name	Article-number	CAN0	Ethernet 100	8p USB0	26p CAN1	26p CAN2	26p USB1	26p Video In	26p Audio Out	26p Digital Out	26p MF In	Keyboard Encoder	Codesys	Bonding	E1	E1-Nr.	Housing
GSt-A07C-100	160547	✓	✓	✓	·	·	·	·	·	·	·	✓	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-101	160550	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-101C	160564	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-102	160562	·	·	·	✓	✓	✓	✓	✓	✓	✓	✓	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-103	160563	✓	·	·	·	·	·	·	·	·	·	✓	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-120	160565	✓	✓	✓	·	·	·	·	·	·	·	·	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-121	160566	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	·	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-121C	160569	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	·	✓	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-122	160567	·	·	·	✓	✓	✓	✓	✓	✓	✓	·	·	✓	✓	E1 10R-0610364	Grey RAL7012
GSt-A07C-123	160568	✓	·	·	·	·	·	·	·	·	·	·	·	✓	✓	E1 10R-0610364	Grey RAL7012

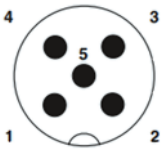
Pin assignment



X1 Main connector
X2 Interfaces Connector I
X3 Interfaces connector II

Note: The availability of the connectors depend on the device variant (see variant table)

X1 Pin assignment main connector



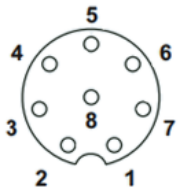
M12 A-coded 5 pin, male

Pin	Signal	Description
1	IGN	Ignition input (terminal 15)
2	U_B	Power supply (terminal 30)
3	GND	Ground (terminal 31)
4	CAN0_H	CAN0 High
5	CAN0_L	CAN0 Low

Cable accessories for main connector

Item number	Designation
190113	Cable U_B / CAN, 5p M12 -> open end 3m

X2 Pin assignment Interface connector



M12 A-codiert 8 pin, Buchse für

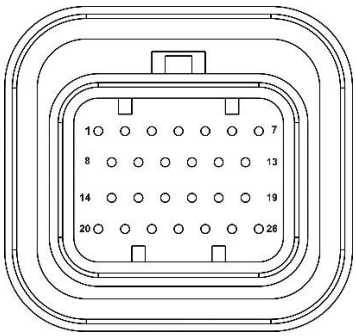
Pin	Signal	Beschreibung
1	USB_D-	USB Data -
2	USB_VBUS	USB Spannungsversorgung
3	GND	Masse USB
4	ETH TX-	Ethernet Transmit -
5	ETH RX+	Ethernet Receive +
6	ETH TX+	Ethernet Transmit +
7	USB_D+	USB Data +
8	ETH RX-	Ethernet Receive -

X2 Cable accessories for interface connector

Item number	Designation
190114	GSt-A043 Y-cable Ethernet / USB, 8p M12 -> RJ45/USB-A, 1.5m
190117	GSt-A043 Ethernet cable, 8p M12 -> RJ45, 1.5m
190118	GSt-A043 USB cable, 8p M12 -> USB-A 1.5m
190122	GSt-A043 Universal cable 8p M12 -> open end 3m

X3 Pin assignment Interface connector II

(3) Interface connector II



TE Connectivity SUPERSEAL 1.0, 26 pin, Male

Pin	Signal	Option
1	CAN2_H	CAN2 High (RS485_0_A / RS232_RX on request*)
2	CAN2_L	CAN2 Low (RS485_0_B / RS232_TX on request*)
3	GND	Ground (Terminal 31)
4	CAN1_H	CAN1 High (RS485_1_A on request*)
5	CAN1_L	CAN1 Low (RS485_1_B on request*)
6	GND	Ground (Terminal 31)
7	IGN	Ignition input (Terminal 15)
8	U_B_D_{OUT}	Power supply for digital outputs
9	D_{OUT}0 (3A)	Digital Out 0
10	D_{OUT}1 (3A)	Digital Out 1
11	Speaker –	Audio Out – (on request audio out left)
12	Speaker +	Audio Out + (on request audio out right)
13	GND	Ground (Termional 31)
14	USB 5V	USB Power supply out
15	GND	Ground (Termional 31)
16	MF_{IN}0	Multifunctional input 0
17	MF_{IN}1	Multifunctional input 1
18	$Video_{IN}$0	Analog Video input 0 (RS485_2_A on request*)
19	U_B	Power supply (Terminal 30)
20	USB D+	USB Data High (auf Anfrage / nur ohne separate USB C-Buchse)
21	USB D-	USB Data Low
22	MF_{IN}2	Multifunctional input 2
23	MF_{IN}3	Multifunctional input 3
24	$Video_{IN}$1	Analog Video input 1 (RS485_2_B on request*)
25	$Video_{IN}$2	Analog Video input 2 (RS485_3_A on request*)
26	$Video_{IN}$3	Analog Video input 3 (RS485_3_B on request*)

on request* = technically possible by alternatively board assembly. This is only possible in projects with a volume of 500+ per year

X2 Cable accessories for interface connector II

Article number	Designation
190143	GSt-A070/A123 Interface cable 26p -> open end 3m

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 that you 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. A damaged device should be returned in the original packaging if possible.
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

Observe the relevant EN, DIN and VDE standards when installing the device!



Danger to life due to incorrect entries or incorrect operation

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-Syteco 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-syteco.de
URL: www.graf-syteco.de

Technical support	Tel:	+49 (0) 7464 98 66 255
	Mail:	support@graf-syteco.de
Order processing	Tel:	+49 (0) 7464 98 66 222
Data sheet version	1.2	created on 07-25-2024