



Operating panel series GSt-A043





In addition to being equipped with modern technology and a low-reflection display that is easy to read in daylight, the operating device with its 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. Display brightness and key illumination can be adjusted by software. The flat, functional design fits perfectly into all booths and its customized look also makes a strong statement for the machine manufacturer.

- Specially developed for use in mobile machines
- Robust yet lightweight aluminum die-cast housing for outdoor use
- Installation via clamping bracket or assembly with a standard ball holder
- Display easy to read even in direct sunlight
- Very wide reading angle in all directions
- Short stroke keys with tactile feedback
- Key illumination in RGB
- Free programming with GSe-VISU®

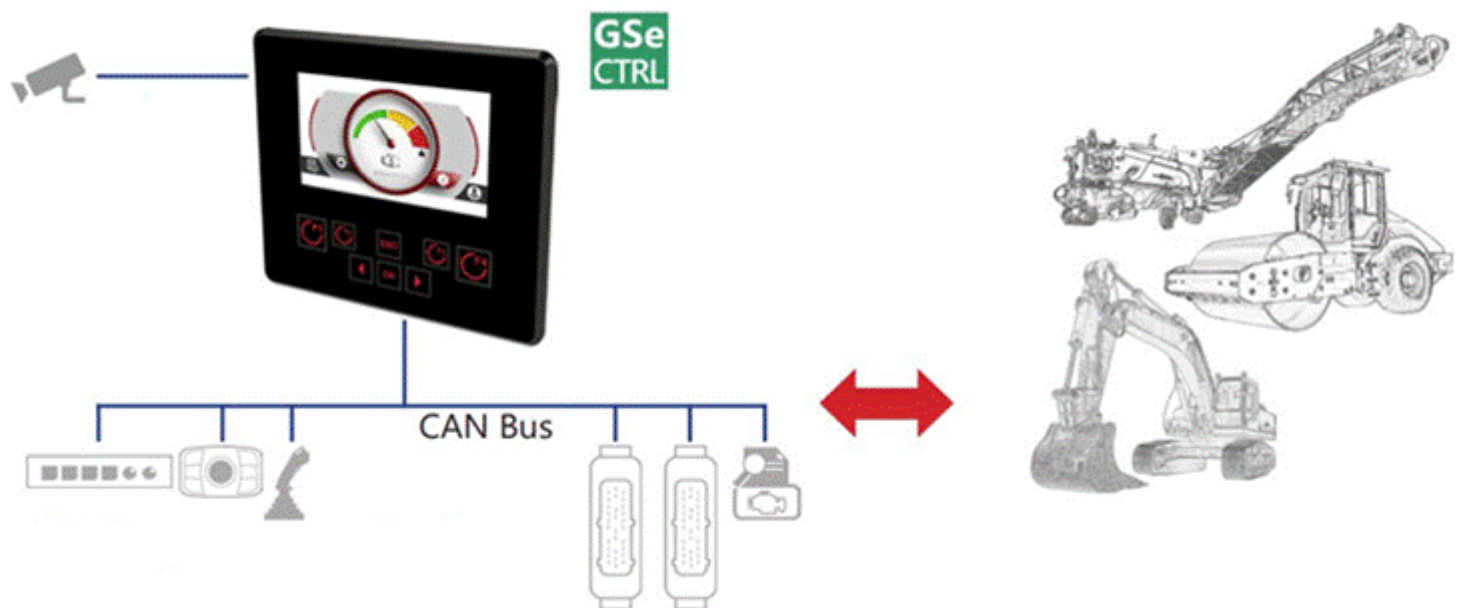


GSt-A043-101 Side view:
Extra slim housing design



GSt-A043-101 Rear view:
Flexible RAM® Mounting (Accessories)

Application example



Technical Specifications

Display and input media

| | |
|------------------|---|
| Display | Colour-TFT |
| Format | 16:9 (WQVGA), approx. 95 x 54 mm, 4,3" diagonal |
| Resolution | 480 x 272 pixel |
| Backlight | 1000 cd/m ² (typical) |
| Contrast ratio | 800:1 (typical) |
| Viewing angle | 85°, 85°, 85°, 85° (Θ _{y+} , Θ _{y-} , Θ _{x+} , Θ _{x-}) |
| Cover lens | Mineral clear glass |
| Keys | 8 tactile illuminated keys |
| Key illumination | LED, RGB, individually controllable and dimmable |

Mechanical data

| | |
|---------------------------------|--|
| Faceplate material | Aluminum, black anodized |
| Housing material | Aluminum die-cast, powder-coated |
| Dimensions (W x H x D) | ca. 147 x 128 x 28 mm |
| Installation dimensions (W x H) | 121 x 140 mm |
| Weight | Approx. 500 g |
| Assembly | Surface mounting with RAM®-Mount Panel mounting with clamping bracket |
| Protection class | IP65 + IP67 |
| Operating temperature | -30°C ... 70°C |
| Storage temperature | -30°C ... 80°C |

Electrical data

| | |
|-------------------|--|
| Supply voltage | VCC 8... 32 VDC |
| Power consumption | ≤5W |
| Fuse | self resetting Fuse value 2.5 A |
| Processor | ARM® Cortex® A7 |
| Memory | 256 MB RAM 64 MB Flash 8 kB FRAM |
| Interfaces | CAN Version 2.0 A/B, 125 kBit/s up to 1 MBit/s acc. ISO 11898:2003 Others: See product variants |

Other equipment

| | |
|---------------------------|---|
| Temperature monitoring | Integrated sensor for measuring the device temperature |
| Supply voltage monitoring | Measuring circuit for monitoring the supply voltage |
| Brightness adjustment | Ambient light sensor in front panel for brightness adjustment of display and keys |
| Clock / battery | Real time clock (RTC), battery buffered (Year, month, day, week day, hour, minute, second) |

Other equipment

| | |
|-------------|---|
| Wake-On-Key | When not in use (e.g. in the outdoor area of a machine), the operating device can be set to a sleep mode. Pressing any key for approx. 3s or rising edge at IGNITION input restarts the unit. |
|-------------|---|

Software / Programming

| | |
|-------------------------|---|
| Operating System | GSe-OS® Linux based, fast boot operating system |
| Development Environment | C-programmable via GSe-VISU® Software |

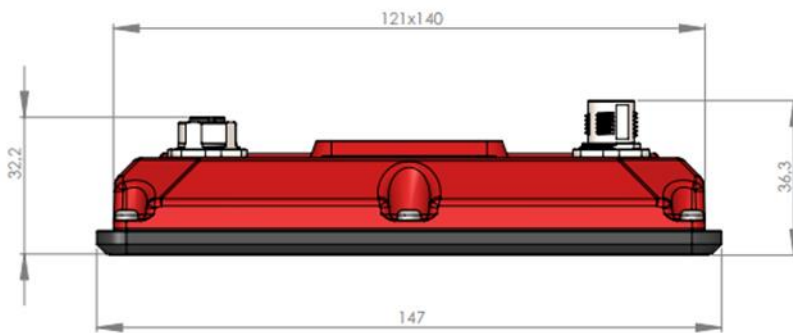
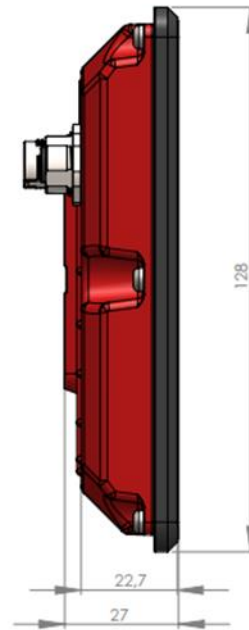
Test standards / Certification

| | |
|--------------------|--|
| CE mark | Acc. EMC directive 2014/30/EU Acc. RoHS directive 2011/65/EU |
| EMC | EN 61000-6-2:2005 (EMC-Radio immunity) EN 61000-6-3:2007 (EMC- Interference emission) EN 61000-4-2:2009 ESD, Level 4: 15 kV EN 61000-4-4:2012: Immunity against burst, Level4: 4 kV EN 61000-4-5:2014: Immunity against surge, Level 3: 1 kV |
| Load Dump | ISO 16750 pulse 5b Level 3 |
| Vibration | IEC 60068-2-64:2008 random 8h per axis 10 ... 299 Hz 1g 300 ... 499 Hz 0,05g 500 ... 2000 Hz 2g |
| Shock | EN 60068-2-27:2009 30g / 18ms; 5 shocks |
| Cold | EN 60068-2-1:2007 Test temperature -25°C / 2h |
| Dry heat | EN 60068-2-2:2007 Test temperature 70°C / 2h |
| Temperature change | EN 60068-2-30:2009 Upper temperature 70°C, lower temperature -25 °C, 20 cycles à 300 min. |
| Temperature shock | EN 60068-2-30:2009 Upper temperature 70°C, lower temperature -25 °C, 5 cycles à 120 min. |
| Damp heat | EN 60068-2-30:2005 Test temperature 65°C, 93% RH with cold phase -10°C, 10 cycles à 24h |
| E1 mark | UN/ECE-R10 |

General accessories (not included)

| Article Number | Description |
|----------------|---|
| 190111 | Surface mounting set with RAM® ball holder |
| 190112 | Panel mounting set with clamping brackets |
| 185321 | GSe-OS® operating system for operating and control devices |
| 185320 | GSe-VISU® Software development environment for applications |







Mechanical dimensions



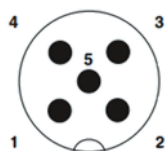
All dimensions are given in [mm].

Housing color (here: Ruby Red RAL3003) and number of connectors may differ from the drawing shown here.

Product variants

| Article Number | GSt-A043 Version | Housing color | Connectors | CAN interfaces | Ethernet interface | USB interface | Video interface | RS485 interface | Optical Bonding |
|----------------|------------------|--|------------------------|---|---------------------------|---------------|---|-----------------|-----------------|
| 160515 | -100 |  Basalt Grey RAL7012 | 1x M12 5p | ✓ (1x) J1939 CANopen openSYDE | ✗ | ✗ | ✗ | ✗ | ✓ |
| 160516 | -101 |  Basalt Grey RAL7012 | 1x M12 5p 1x M12 8p | ✓ (1x) J1939 CANopen openSYDE | ✓ Modbus TCP OPC-UA | ✓ | ✗ | ✗ | ✓ |
| 160532 | -111 |  Ruby Red RAL3003 | 1x M12 5p 1x M12 8p | ✓ (1x) J1939 CANopen openSYDE | ✓ Modbus TCP OPC-UA | ✓ | ✗ | ✗ | ✓ |
| 160517 | -102 |  Basalt Grey RAL7012 | 1x M12 5p 1x M12 8p | ✓ (2x) J1939 CANopen openSYDE | ✗ | ✗ | ✓ 4 in 1 with camera supply | ✗ | ✓ |
| 160525 | -103 |  Basalt Grey RAL7012 | 1x M12 5p 1x M12 8p | ✓ (2x) J1939 CANopen openSYDE | ✗ | ✓ | ✓ 2 in 1 without camera supply | ✗ | ✓ |
| 160530 | -901 |  Basalt Grey RAL7012 | 1x M12 5p 1x M12 8p | ✓ (1x) J1939 CANopen openSYDE | ✓ Modbus TCP OPC-UA | ✓ | ✗ | ✗ | ✗ |

Pin assignment main connector (all variants)



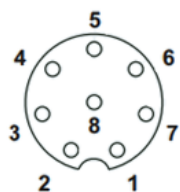
M12 A-coded 5 pin, male

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

Cable accessories for main connector

| Article Number | Description |
|----------------|--|
| 190113 | CAN Cable / Ub, 5p M12 -> open end 3m |
| 190122 | Y-Cable CAN / Ub 5p M12 -> 5p M12 + open end, 3m |

Pin assignment interface connector variant -xx1



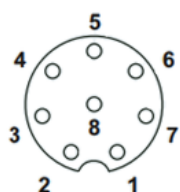
M12 A-coded, 8 pin, female

| Pin | Signal | Description |
|-----|-------------------|---|
| 1 | USB_D- | USB Data- |
| 2 | USB_VBUS (+5V DC) | USB power supply out, $I_{max} = 500mA$ |
| 3 | GND | (USB) Ground |
| 4 | Ethernet TPO_N | Ethernet Transmit - |
| 5 | Ethernet TPI_P | Ethernet Receive+ |
| 6 | Ethernet TPO_P | Ethernet Transmit + |
| 7 | USB_D+ | USB Data+ |
| 8 | Ethernet TPI_N | Ethernet Receive - |

Cable accessories for interface connector variant -xx1

| Article Number | Description |
|----------------|---|
| 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 |

Pin assignment interface connector variant -xx2



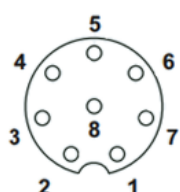
M12 A-coded, 8 pin, female

| Pin | Signal | Description |
|-----|------------|--|
| 1 | CVBS1 | Video input 1 analog FBAS 1Vpp PAL(NTSC) |
| 2 | CVBS2 | Video input 2 analog FBAS 1Vpp PAL(NTSC) |
| 3 | GND | Ground |
| 4 | CAN1_H | CAN1 High |
| 5 | CVBS3 | Video input 3 analog FBAS 1Vpp PAL(NTSC) |
| 6 | CAN1_L | CAN1 Low |
| 7 | DOU_T_UCam | Camera supply U_B out / $I_{max} = 1A$ |
| 8 | CVBS4 | Video input 4 analog FBAS 1Vpp PAL(NTSC) |

Cable accessories for interface connector variant -xx2

| Article Number | Description |
|----------------|--|
| 190119 | GSt-A043 Video cable incl. Ub Cam, 8p M12 -> 4p Mini-DIN 1.5m |
| 190120 | GSt-A043 Y-cable Video/CAN incl. Ub Cam, 8p M12 -> p Mini-DIN / 5p M12, 1.5m |
| 190121 | GSt-A043 CAN cable, 8p M12 -> 8p M12 1.5m |
| 190122 | GSt-A043 universal cable 8p M12 -> open end 3m |

Pin assignment for interface connector variant -xx3



M12 A-codes, 8 pin, female

| Pin | Signal | Description |
|-----|-------------------|--|
| 1 | USB_D- | USB Data- |
| 2 | USB_VBUS (+5V DC) | USB power supply out, $I_{max} = 500mA$ |
| 3 | GND | Ground |
| 4 | CAN1_H | CAN1 High |
| 5 | CVBS3 | Video input 3 analog FBAS 1Vpp PAL(NTSC) |
| 6 | CAN1_L | CAN1 Low |
| 7 | USB_D+ | USB Data+ |
| 8 | CVBS4 | Video input 4 analog FBAS 1Vpp PAL(NTSC) |

Cable accessories for interface connector variant -xx3

| Article Number | Description |
|----------------|--|
| 190121 | GSt-A043 CAN Cable, 8p M12 -> 8p M12 1.5m |
| 190122 | GSt-A043 Universal cable 8p M12 -> open end 3m |

Support and Contact

Notes and warnings

Incoming goods inspection

This product has been produced, tested and packed with the utmost care. Nevertheless, we ask you to check the device and accessories immediately after receipt for possible transport damage and defects. The exact scope of delivery can be found on the delivery note. A damaged device should, if possible, be returned in its original packaging.

The following information must be attached to the device:

- a detailed description of the defect,
- your name and address

Electrical shock hazard

Make sure that the device is put into operation only by trained specialist personnel. The qualified personnel must have sufficient knowledge of the following areas:

- Automation technology
- Control Technology
- Control Engineering

When installing the device, comply with the relevant EN, DIN and VDE standards!

Danger to life due to incorrect input or incorrect operation

Our operator panels are only suitable for operating, monitoring and controlling processes. In order to prevent dangerous conditions on machines or systems after incorrect entries via the HMI device, malfunction or failure of the HMI device, suitable measures must be taken by programming or designing the HMI device.

Caution! Malfunction due to interferences

Before connection, make sure that the supply and data cables are protected against EMC influences.



We reserve the right to make technical changes without prior notice. Printing errors and changes are reserved.



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Data Sheet Version

1.0