



MSystem

MICRO PANEL

GS2

Device description

GS2

micro  innovation

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All data specified in this document does not represent guaranteed specifications in the legal sense.

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1 INTRODUCTION

The MICRO PANEL GS-2 is a visualisation unit that is provided with touch zone functions for low to medium complexity automation equipment. It meets all the requirements placed on a modern visualisation unit.

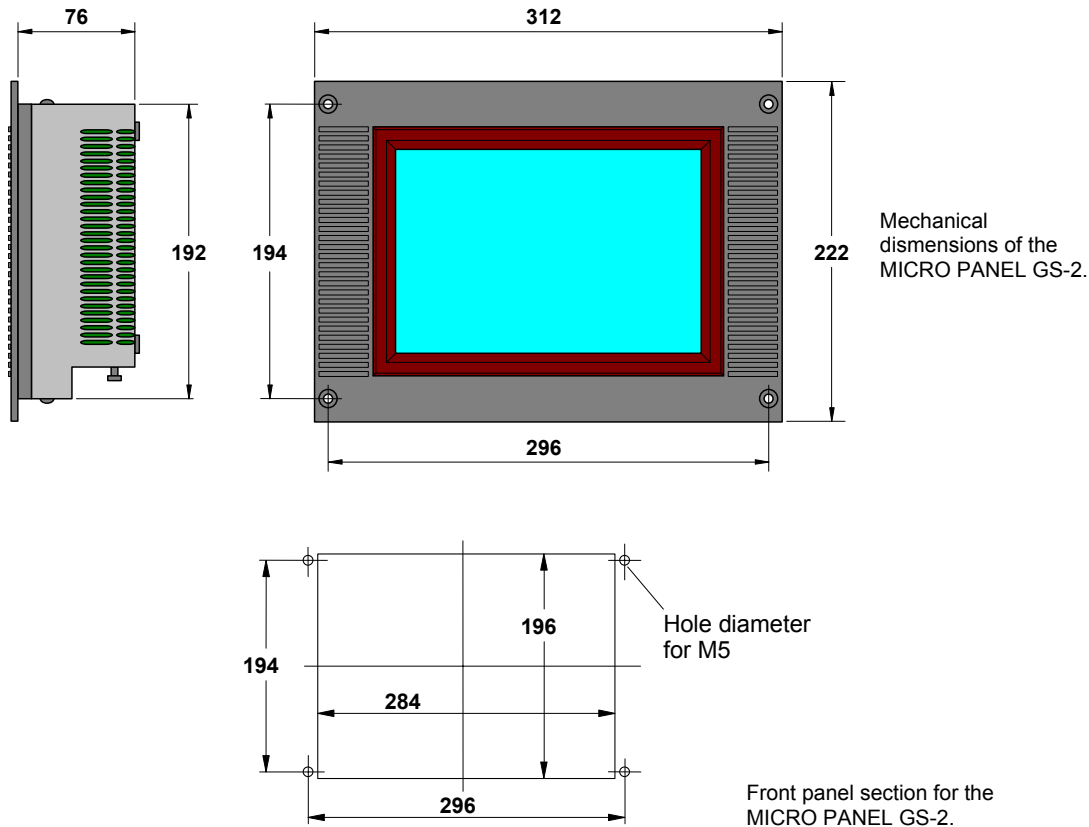
The MICRO PANEL GS-2 is always used in conjunction with an SMM system memory module (→ Section 6) and a communications card. This is a plug-in card that handles the connection to the automation equipment. The communications card is not described in this document. Information on the communications card is provided in the relevant card description.

The MICRO PANEL GS-2 must be provided with the necessary project data before it can be used. The PDT (Panel Design Tool) software is used for creating and loading project data into the Touch Panel.

This device description is a reference for technical data, information on installing, terminals, commissioning and operating the MICRO PANEL GS-2 with the SMM system memory module.

2 INSTALLATION

2.1 DEVICE DIMENSIONS AND FRONT SECTION



2.2 INSTALLATION NOTES

When installing the MICRO PANEL GS-2, a minimum distance of 5 cm must be ensured between the sides top, bottom and rear of the device and any other components, so that the cooling of the system is not impaired. The cooling slits must not be covered by cables or other objects.

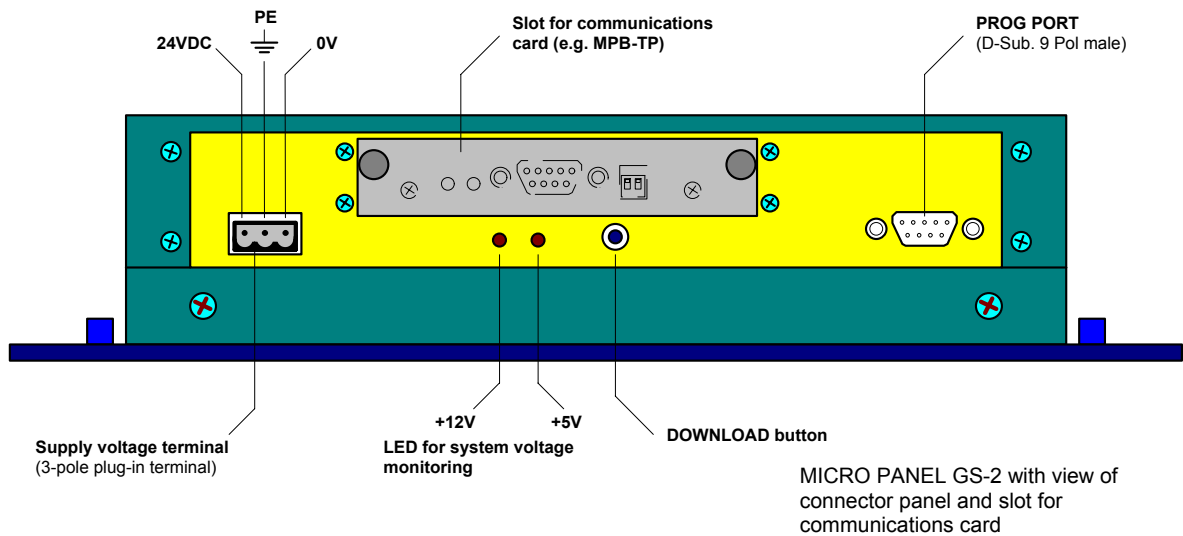
The specified operating temperature (→ Section 3) is based on a vertical mounting with unhindered air convection and a location of no more than 2000 m above sea level.

2.3 INSTALLATION ACCORDING TO DEGREE OF PROTECTION IP65

A mounting kit is available for installations complying with degree of protection IP65. This consists of a conter frame that is mounted on the rear of the device so that the required pressure on the seal is ensured even when fitting to a thin panel.

The mounting kit for installations complying with degree of protection IP65 is not included in the scope of delivery and must be ordered separately.

3 CONNECTION ASSIGNMENT AND OPERATING ELEMENTS



3.1 DOWNLOAD BUTTON

Pressing the **DOWNLOAD** button activates the Download mask (→ Section 8.2). The Download mask provides the functions for transferring the project data to the GS-2 (upload and download) and for setting the system clock.

3.2 FUNCTION AND ASSIGNMENT OF THE PROGRAMMING PORT (PROG PORT)

The programming port (**PROG PORT**) is used to load project data to the SMM system memory module. When using the GS-2 in conjunction with the SMM-2 system memory module, a printer with a serial interface can be connected on the programming port for printing log data.

Pin-Nr.	PROG PORT
1	---
2	TxD
3	RxD
4	DSR
5	Gnd
6	DTR
7	---
8	---
9	(+5V)
Case	Shield

The RS 232 interface of the programming port (**PROG PORT**) is isolated and non-earthed.

Pin 9 of the **PROG PORT** can be used for supplying the voltage for external additional hardware. This, however, is only possible in conjunction with original GS-2 additional hardware. Using this power supply for other products is not permissible.

3.3 DOWNLOAD CABLE

The Download cable is used to connect the MICRO PANEL to the PC in order to transfer project data. The Download cable is provided at both ends with a Sub-D subminiature (female) plug connector (DIN 41652). Connections 2 to 6 must be wired 1:1 (→ Section 7.2 and 7.4).

4 SMM SYSTEM MEMORY MODULE

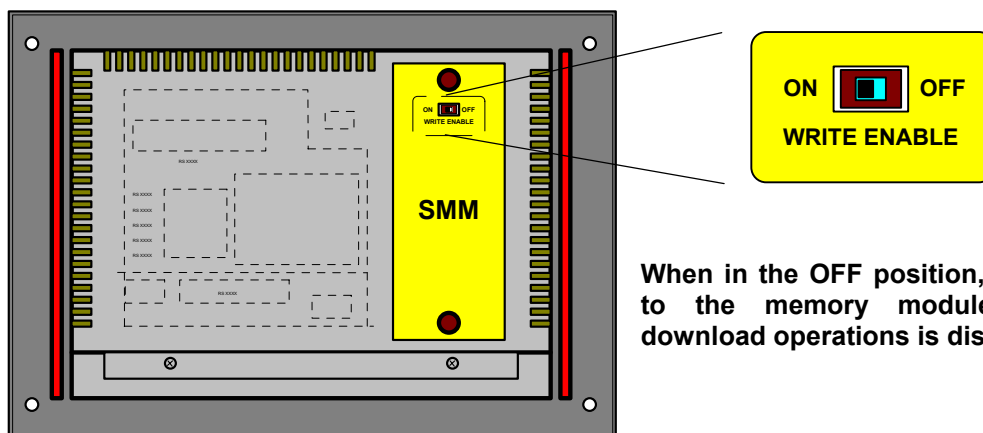
The MICRO PANEL GS-2 always works in conjunction with an **(SMM) System Memory Modul**, That is located as a self-contained unit on the rear of the device. It can be removed simply and without any tools by loosening the two knurled screws. The system memory module contains the memory module (EPROM) for the operating system (POS) and the memory modules (Flash EPROM) for the project data (Download data).

The SMM is available in two versions and determines the range of functions for the MICRO PANELS GS-2.

- **SMM-1** Standard version (Standard)
Supports all basic functions.
- **SMM-2** Enhanced version (Enhanced)
The SMM2 provides the following additional functions :
 - Multi-language operation
 - Additional image and text memory
 - Printer connection to the programming port (**PROG PORT**) for data logging.

Functional overview of the GS-2 (with SMM-1/SMM-2) can be ordered separately.

The system memory module is fitted with the **WRITE ENABLE** switch for the project data memory.



IMPORTANT NOTE !

The **WRITE ENABLE** switch on the SMM should always be in the **OFF** position for operation!
Observe the following points in order to prevent any damage to the SMM or the MICRO PANEL GS-2 :

- Only fit or remove the system memory module when the power supply of the device is switched off !
- Ensure that the system memory module is fitted and fastened correctly before operating the MICRO PANEL GS-2!
- Never touch the contacts on the system memory module or the MICRO PANEL GS-2 with fingers or any conductive objects (this may cause damage through ESD)!

5 CABLE PREPARATION

The preparation of the interface cables on the GS-2 (**PROG PORT**) and the communications card fitted is an important factor in the electromagnetic compatibility (EMC) of the MICRO PANEL GS-2, both in terms of interference immunity and emission.

The EMC values stated in the technical data can only be guaranteed if the cables are prepared according to the following specifications.

5.1 CONNECTION CABLE FOR THE COMMUNICATIONS CARD

The communications cable on the communications card fitted (e.g. Multi Protocol Board MPB-TP) must be shielded. The cable shield must be made from copper braid. Use a metal or metallised connector casing and Sub-D connectors with a tin plated surface (not galvanized or yellow-passivated) and shield connection.

Connect the cable shield directly to the connector casing on the panel (→ Section 7.4). This ensures that the cable screen is properly connected to the housing of the MICRO PANEL GS-2 via the screws and the protective metal shroud of the plug connector.

Refer to the relevant operating instructions of the PLC manufacturer for the correct connection procedure for the cable shield to the PLC. Unless otherwise stated, connect the cable shield to the connector casing on the PLC.

Avoid routing the communications cable via terminals. The shield connection via terminals cannot be made properly and with the same quality due to design reasons.

If a separation point is required, use a D-subminiature plug connector with a metal or metallised connector casings or a connector system with similar EMC characteristics.

Provide a potential equalisation cable with a suitable cross-section between control cabinets if the MICRO PANEL GS-2 and PLC are installed in different control cabinets and the cable shield is directly or indirectly connected to the protective earth at the PLC end. This will prevent the occurrence of excessive compensation currents on the shield and shield connections, as may occur in the event of a possible shorting of a device on the protective earth system.

5.2 DOWNLOAD CABLE

The download cable can be unshielded if it is only to stay connected to the MICRO PANEL GS-2 (**PROG PORT**) during a download (i.e. for commissioning, servicing, testing).

A shielded cable is necessary, however, if the Download cable is also connected to the MICRO PANELS GS-2 during the normal operation of the controller. This also applies if the cable is disconnected at the other end. The cable shield must be made from copper braid and connected with the housing of the MICRO PANEL GS-2 via a metal or metallised connector casing.

5.3 PRINTER CABLE

Use a shielded cable with copper braid for connecting a printer via the **PROG PORT** (GS-2 with SMM-2). The cable shield is connected to the Panel housing via a metal or metallised connector casing.

Unless otherwise specified by the printer manufacturer, also connect the cable shield to the printer via a metal or metallised connector casing.

Avoid routing the cable via terminals (→ Section 7.1).

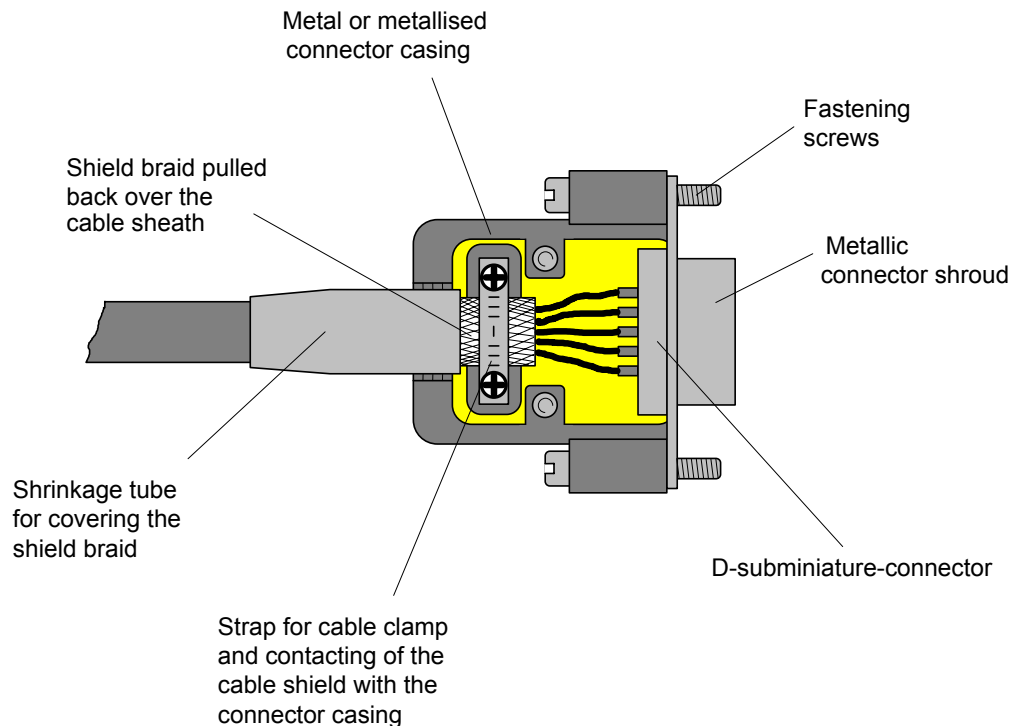
If the printer end of the cable shield is connected directly or indirectly to the protective earth, the printer power supply (protective earth) must be fed from outside of the control cabinet in which the MICRO PANEL GS-2 is installed. This will prevent excessive compensation currents occurring via the cable shield and the shield terminals.

5.4 SHIELD CONNECTION

Only use metal or metallised connector casings with a cable clamp for strain relief fastened on one side of the connector. This ensures an optimum contact area and low impedance connection with the connector casing.

The following procedure is recommended for connecting the cable shield:

1. Strip the cable.
2. Shorten the exposed shield braid by approx. 3 cm.
3. Turn back the braid over the cable sheath
4. Use a shrinkage tube or insulation tape to cover the exposed cable sheath with the folded back screen braid so that 5 to 8 mm of exposed cable shield is left at the sheath end and is cleanly covered at the back.
5. Fit the connector.
6. The cable is then fastened at the exposed shield braid and the cable sheath below it directly underneath the cable clamp strap of the connector casing.



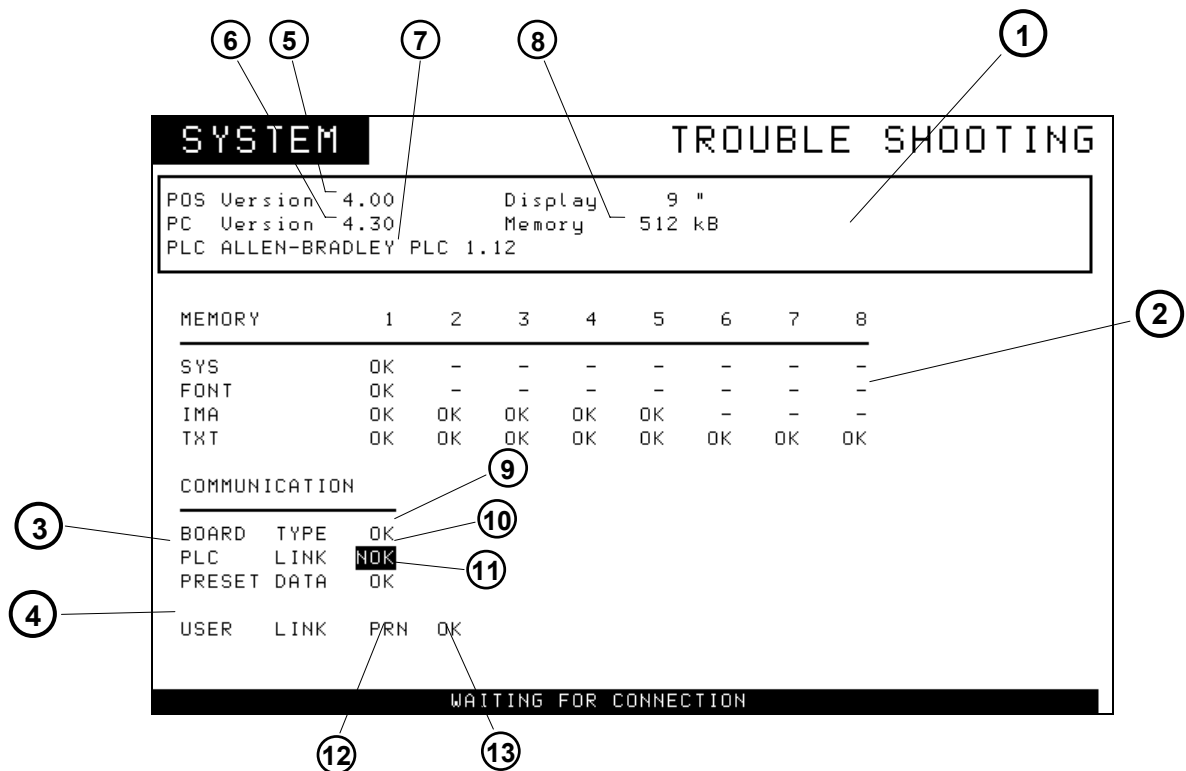
6 THE SYSTEM MASKS

6.1 STATUS MASK (TROUBLE SHOOTING)

The Status mask (**TROUBLE SHOOTING**) is activated by the operating system in the event of system faults, for example if the communication to the PLC cannot be established during the startup of the panel or is interrupted during operation.

The Status mask provides information on the operating status of the MICRO PANEL GS-2 and shows some of the system configurations of the hardware and software.

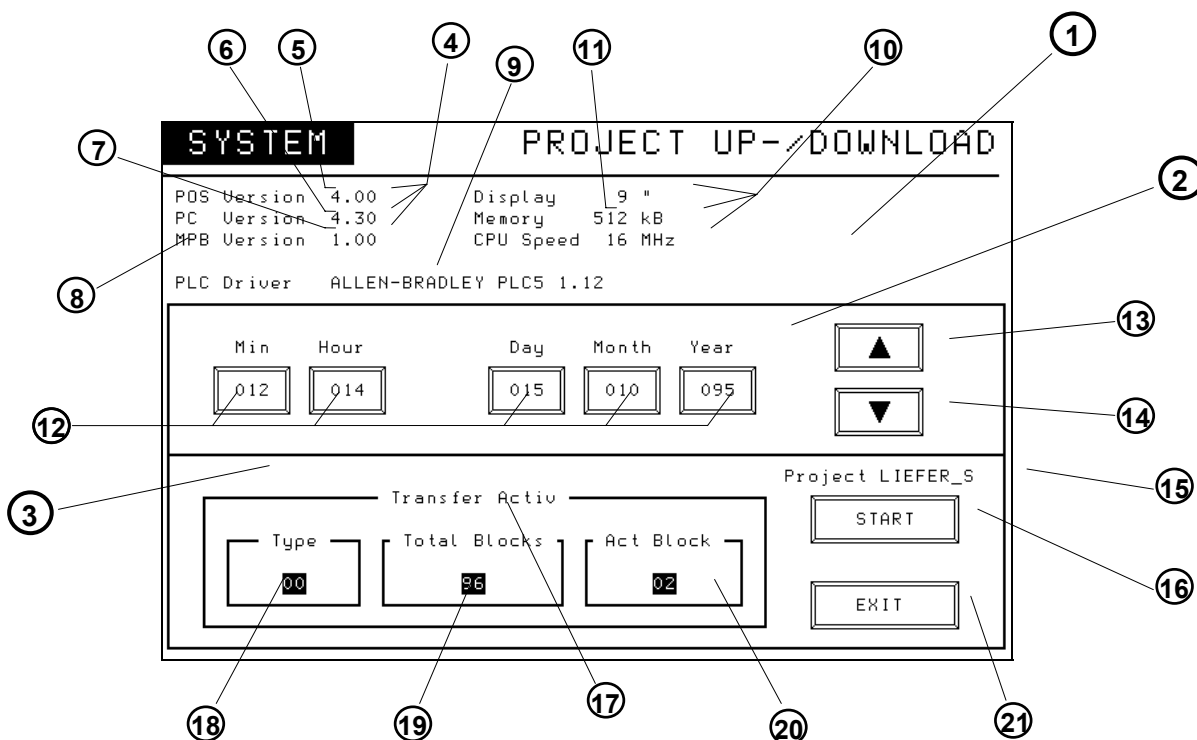
Touching the screen causes the GS-2 to return to normal operating status and carry out the presetting.



- | | |
|---|--|
| <p>1 Information field of the system configuration</p> <p>2 Status and expansion of the system memory</p> <p>3 Status of communications card (e.g. MPB-TP)</p> <p>4 Status of the programming port (e.g. printer)</p> <p>5 Version of the operating system (POS) on the system memory module (SMM)</p> <p>6 Version of the (PDT) panel design tool software which created the project-data</p> <p>7 Initialised communications driver on the communications card</p> <p>8 Total capacity of the project data memory (Flash) on the system memory module
SMM-1 128 kB
SMM-2 512 kB</p> | <p>9 Status of the communications card
OK → Comm. card initialised</p> <p>10 Status of the communication with PLC
OK → Communication active</p> <p>11 Status of the Preset data (→ Section 8)
OK → Presetting successfully carried out</p> <p>12 Installed application on PROG PORT
e.g. PRN → Printer</p> <p>13 Status of PROG PORT (Printer)
(only in conjunction with SMM-2)</p> |
|---|--|

6.2 DOWNLOAD MASK (PROJECT UP-/DOWNLOAD)

The Download mask (**PROJECT UP-/DOWNLOAD**) provides the system functions for transferring project data between the PC and the GS-2 as well as for setting the system clock. It also shows the system configuration of hardware and software.



- | | |
|---|--|
| <p>1 Information field for system configuration</p> <p>2 Setting and display of system clock</p> <p>3 System functions for upload and download</p> <p>4 Display field for software version</p> <p>5 Operating system (POS) version on system memory module (SMM)</p> <p>6 Panel design tool (PDT) software version with which the project data was created</p> <p>7 Firmware version on the communication card fitted (e.g. MBP-TP)</p> <p>8 Identification of the communication card fitted</p> <p>9 Initialised communication drive on the communications card</p> <p>10 Hardware configuration of the system</p> <p>11 Total capacity of the project data memory (Flash) on the system memory module
SMM-1 128 kB
SMM-2 512 kB</p> | <p>12 Selection zone and display for setting parameters of the system clock.
The zone symbol of the selected parameters is inverted.</p> <p>13 Increment touch zone for the selected system clock parameter.</p> <p>14 Decrement touch zone for the selected system clock parameter.</p> <p>15 Project name of the project loaded on the system memory module.</p> <p>16 Touch zone for starting the data transfer from or to the PC (in conjunction with the PDT)</p> <p>17 Display of the transfer status.
As long as Transfer Active is flashing, the data transfer from the PC can be started</p> <p>18 Display of the data blocks of the data type displayed.</p> <p>19 Total number of the data blocks of the data type displayed.</p> <p>20 Current number of transferred data blocks of the data type displayed.</p> <p>21 Exit touch zone for exiting the Download mask.</p> |
|---|--|

7 COMMISSIONING

1. Ensure that the **WRITE ENABLE** switch on the SMM is set to the **OFF** position.
2. Check whether the fitted communications card has been correctly configured. For this refer to the appropriate description of the communications card.
3. Connect the power supply terminals of the GS-2 (→ Section 5) to the 24V power supply which must still be switched off. Do not yet connect the cable to the PLC.
4. Switch on the supply voltage.
5. Check whether the system test **SYSTEM CHECK & STARTUP** is being run (indicated on screen) followed by the display of a project mask on screen. The GS-2 is supplied with a loaded demo project.
6. After a few seconds the **TROUBLE SHOOTING** status mask will appear since the communication to the PLC cannot yet be established (→ Section 8.1).

Supply voltage range: +20,4...+28.8VDC eff. (absolute value with ripple +18.5...+30.2V)
 Typical current consumption: 0.9 A

This mask shows the operating states of the MICRO PANELs GS-2. The system memory range **MEMORY** must all indicate **OK** (or –).

The following communication status should be present :

COMMUNICATION

BOARD	TYPE	OK
PLC	LINK	NOK
PRESET	DATA	NOK

Touch the screen in order to leave the **TROUBLE SHOOTING** mask and return to the project mask.

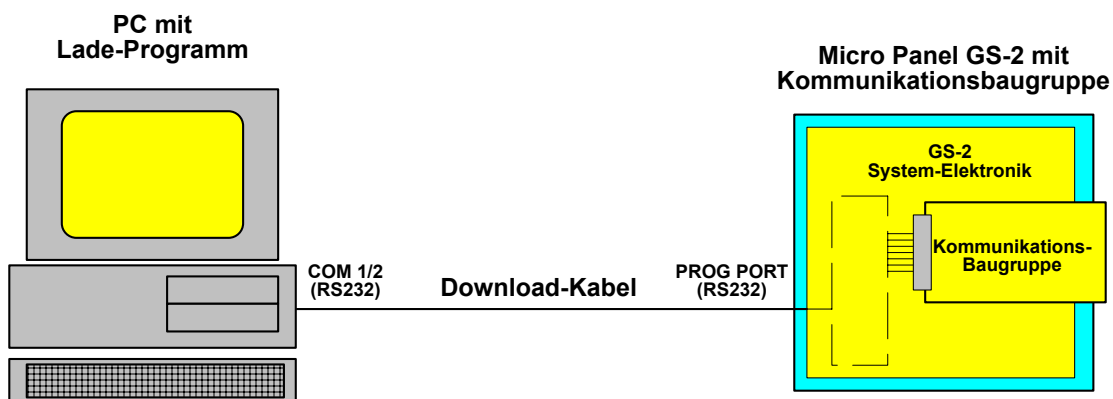
7. Press the **DOWNLOAD** button to enter the Download mask (**PROJECT UP-/DOWNLOAD** → Section 8.2).
 8. Switch the **WRITE ENABLE** switch on the SMM to the **ON** position in order to load your project.
 9. Connect the Download cable (→ Section 5.3) to the **PROG PORT** of the GS-2 and the serial interface of the PC (COM1 or COM2).
 10. Press the **START** button in the Download mask. This will activate the flashing **Transfer Activ** message. When this message is flashing, it is possible to transfer a project to the MICRO PANEL GS-2.
 Further information on Download operations is given in the PDT design software manual, chapter 7.1.
 11. Once the Download has been successfully completed, the GS-2 is automatically restarted and displays the first project mask after the system test (**SYSTEM CHECK & STARTUP**). A few seconds later the GS-2 returns to the **TROUBLE SHOOTING** mask since communication to the PLC has not yet been established.
 12. Return the **WRITE ENABLE** switch on the SMM to the **OFF** position !
 13. Connect the communications cable to the communications card of the MICRO PANEL GS-2 and the communications port of the PLC. The GS-2 will automatically establish communication with the PLC. The **PLC LINK** system message switches from **NOK** to **OK** as soon as communication is running.
- If communication cannot be established check the configuration of the communications card and whether the correct communications driver was initialised.
14. Touch the screen. The GS-2 will then run through the first Presetting operation (→ Section 9, Presetting) and will then activate operation.
 15. End of commissioning.

Troubleshooting : If the GS-2 does not respond in the way described, refer to section 10.3 (Trouble shooting) in the PDT design software manual.

8 COMBOARD LOADER

The firmware of some communication cards for the MICRO PANEL GS and GF series is stored in a retentive (flash) memory. From operating system version POS 5.01, the MICRO PANEL GS-2 features a function for loading the firmware onto the communication card, thus allowing user-friendly updating of the communication driver. Refer to the relevant device description to see whether your communication card supports this function.

The firmware is loaded from a PC via the programming port (**PROG PORT**) of the GS-2. A jumper on the communication card is used to activate Load operating mode. This Load mode is detected by the operating system of the GS-2 which thus switches the GS-2 into Load mode and calls up the **COMBOARD LOADER** system mask. In Load mode, the GS-2 manages the data transfer from the **PROG PORT** to the communication card.



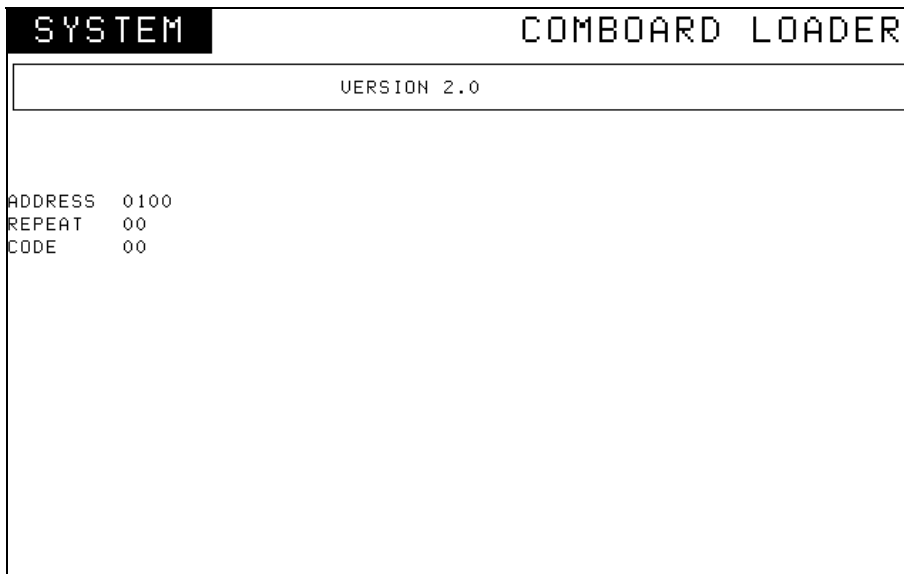
Schematic display for loading the firmware to a communication card in the MICRO PANEL GS-2.

The following accessories are required for loading the firmware:

- Download cable, as used for the project download. (Sub-D 9-pole female - Sub-D 9-pole female, pins 2 to 6 are wired 1:1)
- PC with serial interface (COM1 or COM2)
- Load program (COMLOAD.EXE)
- Firmware for loading, driver (binary file)

9 PROCEDURE FOR LOADING

1. Switch off the GS-2 and then remove the communication card.
2. Switch the operating mode jumper on the communication card (normally J7) from the **RUN** position to the **PRG** position (Load mode).
3. Refit the communication card in the GS-2 slot.
4. Use the download cable to connect the serial interface of the PC (COM1 or COM2) with the programming port (**PROG PORT**) of the GS-2.
5. Switch on the power supply of the GS-2. The red LED (**ERROR**) on the communication card must be lit and the green LED (**ACTIV**) must flash 4 times, once every second. When both LEDs then go out, the communication card is then ready for programming. The **COMBOARD LOADER** should appear on the GS-2:



6. Start the load program on the PC. Refer to the documentation of the load program for the relevant operating instructions. The data is transferred in small data packets, and the green LED (**ACTIV**) should light intermittently (flash) to acknowledge successful transfer of these data packets.
7. The green LED (**ACTIV**) should go out and remain off once the data transfer has been successfully completed. The red LED (**ERROR**) on the communication card should not light up.
8. Switch off the GS-2 and then remove the communication card.
9. Switch the operating mode jumper on the communication card from the **PRG** position back to **RUN** (normal operating mode).
10. Refit the communication card back in the GS-2 slot.

This therefore completes the loading of the firmware. You can view the currently loaded driver or driver group and the current version in the Download mask (System mask **SYSTEM UP-/DNLOAD**). Enter the Download mask by pressing the Download button.

10 EU CONFORMITY

The **MICRO PANEL GS-2** meets the requirements specified by the Directives of the EU Council for harmonizing the regulations of EU member states relating to electromagnetic compatibility (**89/336/EWG**) and electrical safety (low-voltage directive **73/23/EC**).

The following basic standards were used to assess the electromagnetic compatibility of the MICRO PANEL GS-2 :

EN 50081-2 (Emission)

EN 50082-2 (Interference immunity)

The following standard was used to assess the electrical safety of the MICRO PANEL GS-2 :

EN 60950



1995

Manufacturer : Micro Innovation AG
Manufacturer address : Spinnereistrasse 8-14
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Switzerland

11 TECHNICAL DATA

Display	Technology	Electroluminescent (EL, yellow on black)
	Type	640 x 400 pixels 71 x 25 characters
	Display area	194 x 122 mm, 9"
	Scan rate	70 Hz
	View angle	>160° conical
Operation	TCL Touch control logic 39 x 25 Infrared channels 77 x 49 logical resolution	
Supply voltage	+24 VDC, acc. DIN 19240 +20.4...28.8 VDC effective Absolute value with ripple +18.5...30.5 V	
Current consumption	Normally 0.9 A	
Starting current	0.6 A ² s maximum	
Interfaces	Slot for communications card in conjunction with the MPB-TP 9 Pol D-Sub female - TTY, current loop - RS 232 - RS 422 (Point-to-point or multi-point) - RS 485	
Programming port	RS 232, isolated and non-earthed max. connection length 20 m 9 Pol D-Sub. male	
Printer port	On the programming port RS 232, isolated and non-earthed 1200, 2400, 4800, 9600 baud max. connection length 20 m 9 Pol D-Sub. male	
Ambient conditions	Operating climate	0...55°C, 20...80% rel. air humidity
	Storage climate	-40...75°C, 5...95% rel. air humidity
	Mech. Shock	IEC 68-2-27 (10 shocks, half-sinus 15g/11ms)
	Vibration	IEC 68-2-6 (10...57Hz/0.15mm, 57...150Hz/2g)
	EMC	IEC 1000-4-2, EN 61000-4-2, 6 kV / 8 kV IEC 1000-4-3, ENV 50140, 10 V/m IEC 1000-4-4, EN 61000-4-4, 2 kV IEC 801-5, 0.5 kV / 2 kV IEC 801-6 Draft, ENV 50141, 10 VEMF IEC 1000-4-8, EN 61000-4-8, 10 A/m
	Radio interference	CISPR 11, EN 55011, class B
	Radiated interference	CISPR 11, EN 55011, class A
	Degree of protection (front)	IP 65 (NEMA 12), acc. EN 60529 Degree of protection IP65 only with additional mounting kit! (→ Section 4.3)
Weight	GS-2 with SMM	approx. 3.5 kg
Outer dimensions	312 x 222 x 82 mm	

All data specified does not represent guaranteed specifications in the legal sense.

12 REVISION HISTORY

Index	Date / Visum	Alteration
01	15.12.03 / RA	Included in DokV

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