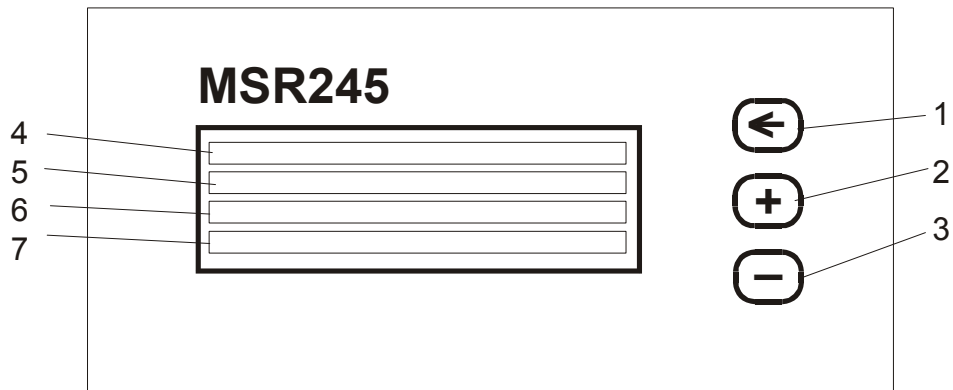




Operating and Programming Instructions

The MSR245 Display Module is connected to an MSR200 Safety System to provide a local display of operational status and functioning of the system. The MSR245 is connected via an RS-232 serial interface to an MSR240 Communication Module integrated with the System. The Module has a 4-line x 20-character LCD display. Using its 3 function key-switches, the configuration of external circuits and the operating conditions of the System can read conveniently. The MSR245 requires 24V DC (+10%, -20%) supply voltage. The power supply and RS-232 connections are made through a terminal block.

The Module's LCD display has LED back-lighting, which is automatically switched on whenever a key-switch is activated, and also automatically switched off after 5 minutes if there is no operator interaction during that time. The RS-232 interface is electrically isolated from the power supply circuit, with an isolation rating of 2 KV. The RS-232 interface has a fixed data rate of 4800 baud, and uses a serial communication protocol compatible with the MSR240.



Front panel MSR245

1. Key-switch: display-reset
2. Key-switch: forward
3. Key switch: backward
4. Display line1
5. Display line2
6. Display line3
7. Displayline4

Key-switches 2 and 3 are used to select the various display menus. After the System is switched on, and the MSR245 receives valid data from the MSR240, the Display Module shows the following information:

- Line 1: Automatic re-set (or) Manual re-set
- Line 2: Output active (or) Output deactivated
- Line 3: System ready (or) Monitoring active (or) EDM circuit open
- Line 4: Dynamic EDM (or) Static EDM

This is the default menu, to which the MSR245 can be re-set at any time by pressing “←” (key-switch 1). Press “+” (key-switch 2) to step to the next menu option, or “-” (key-switch 3) to step to the previous menu option



The following menu display indicates the type and insertion position of the input modules included in the MSR200 System at the time (Note: only input modules are indicated):

- Line 1: Basic Module or Input Module
1.....10
- Line 2: MSR210 Emergency Stop (or)
MSR211
Light Curtain (or) MSR220
Emergency Stop Module (or)
MSR221 Light Curtain
- Line 3: Input 1: 1-, 2-, or 3-channel
- Line 4: Input 2: 1-, 2-, or 3-channel

If an input to the MSR200 System is interrupted the displayed menu changes automatically, to show the following:

- Line 1: Basic Module or Input Module
1.....10
- Line 2: Input 1 or Input 2 (standard text)
- Line 3: Output tripped (standard text)
- Line 4: Output active or output deactivated

If tripping occurs due to a mat safety switch or a cross-fault, the following text is displayed:

- Line 1: Mat safety switch (or)
- Line 2: Cross-fault
- Line 3: Tripped
- Line 4: Output active or output deactivated

After tripping occurs, “←” (key-switch 1) must be pressed to revert to normal operating condition.

Note: the display always shows information relating to the most recent tripping occurrence, over-writing that of any previous tripping occurrence.



In addition to those described up to this point, the following additional diagnostic menu options will also be displayed when such conditions occur:

<u>Condition</u>	<u>Displayed text</u>
Received data missing	Receiving no data
Fault in an output module	EDM circuit fault
Modules configuration changed during system operation	Y40 circuit fault
MSR200 system internal fault	Internal fault

Every fault occurrence indicated by the MSR245 must be acknowledged by pressing “←” (key-switch 1).

Fault Indication Text Programming

For the indication of fault conditions, text of up to 3 lines x 20 characters for each input can be programmed by the user. Any characters can be used for such text. This text is stored in an internal EEPROM, which can be re-written up to 1 million times, and can retain stored data for at least 40 years. A software package supplied with the MSR245 makes it easy to enter and edit the fault indication text on a PC, and upload it to the Module.

Fault Indication Text Programming Software

The fault indication text of the MSR245 is programmed using a PC connected to it via the RS-232 serial interface. The MSR240 has to be disconnected for this procedure.

PC system requirements:

- Windows 95 / 98 / ME or Windows NT / 2000 / XP
- An uncommitted RS-232 serial port

Installing the software:

- Create a new folder on the hard disk drive
- Copy the program files (MSR245_P12.EXE and MSR245PROG.INI) from the supplied diskette / CDROM to this new folder

The programmed settings are stored in the initialization file MSR245PROG.INI, and automatically loaded when the program (MSR245_P1*.EXE) next executed.

The programming software makes it easy to select the settings and enter / edit the display text through dialog boxes and tabbed panes within them:

- Through the main dialog box:
 - Text to be displayed by the MSR245 can be entered, saved on the PC's hard disk drive, and printed
 - The COM port and display text language (English or German) can be selected
 - Programming data can be sent through the serial interface to the MSR245, which is then set to execute the new program.



- Through the smaller dialog box on the side:
 - Display text for each of the individual inputs can be edited by selecting the corresponding tabbed pane
 - The display text can be reviewed, after it is entered and edited

Programming and Editing the Display Text

- Run the programming software (MSR245_P1*.EXE)
- Select the language setting (English or German). The standard text in the selected language will appear automatically on the screen. If the language of the standard text is to be changed, in the dialog box *File / New* select the new language. The standard text blocks will now appear in the individual text boxes, and can be edited as the user wants. The selection of the language of the standard text is important because the text that cannot be edited (e.g., “Auto-start”, “Output active”, etc.) will appear in the selected language during normal operation of the MSR245.

NOTE: Confirm the standard text before editing, otherwise that which has already been entered will be deleted
- After the editing is all done, the text can be reviewed by scrolling through the text box. The text can now be saved, giving it the file-name extension “.txt”. This file can be opened at a later time for uploading to the MSR245. In such a case, the display text blocks from this file are used without further editing.
- The MSR245 can be programmed after all the display text blocks are edited and confirmed. In the *Settings* dialog box, select the COM port to be used for the serial interface to the MSR245.
- Press the “←” and “-” key-switches (1 and 3). This will cause the text “Program-Mode” to appear on the display, indicating that the MSR245 is now ready for programming. Pressing “←” alone at any time after this will cause the MSR245 to exit the programming mode.
- The display is programmed through the menu option “*Download / Start*”. This causes the data to be uploaded from the PC to the MSR245. A progress monitoring display indicates the programming process status. When the data transfer is finished, the MSR245 automatically reverts to its default display mode, and indicates “Receiving no data”.
- The text to be displayed by the MSR245 can be checked before the Module is put into actual operation. To do this, click on the “*Download*” button or the “*Download/Start*” menu option. This causes the PC to send data to the MSR245, simulating an MSR200 Emergency Stop System. After a short delay, this data appears on the MSR245 display.
- The buttons on the right of the “*Check*” tabbed pane can be used to simulate operating conditions: Auto Start / Manual Start, EDM active / EDM deactivated, etc. On the left side, click no interrupt. On the right side, click the different alarm / fault conditions. Some alarms show (←) after its name. The display reset switch must be pressed after de-selecting the alarm.
- The test mode can be terminated by clicking on the “*Download / Cancel*” menu option.



Specifications

Supply voltage:	24 V _{DC}
Power consumption:	Approximately 500 mW
Operating temperature:	- 5 °C to + 55 °C
Storage temperature:	-25 °C to + 70 °C
Protection class (per DIN VDE 0470-1):	Terminals: IP20. Housing: IP40
Terminals	Terminal box with wire protection
Wire cross section	2.5 mm ²
Serial data interface:	RS-232, 4800 baud