



ROHDE & SCHWARZ

SERVICE INSTRUCTIONS

Autorun Control/Printer Interface

Option CM-B5

803.3314.02

Contents

Page

5	<u>Service Manual for Autorun Control/ Printer Interface Option CM-B5</u>	5.1
5.1	Function Description	5.1
5.1.1	Interface	5.3
5.1.2	RAM	5.3
5.1.3	EPROM	5.3
5.1.4	Centronics Interface	5.4
5.1.5	Relay Interface	5.4
5.1.6	Battery Supply	5.5
5.2	Testing and Adjustment	5.5

Component lists
Circuit diagrams
Component layout diagrams

5.1 Function Description

When used in conjunction with the CMT, the option enables the following functions:

- Recording of programs and data for complex programmable routines.
- Setup of a Centronics interface.
- Setup of relay contacts which can be directly set by the user via the instrument keyboard.

The module can be divided into the following functional units (see Fig. 5-1):

- RAM
- EPROM
- Internal interface
- Centronics interface
- Relay group
- Battery supply

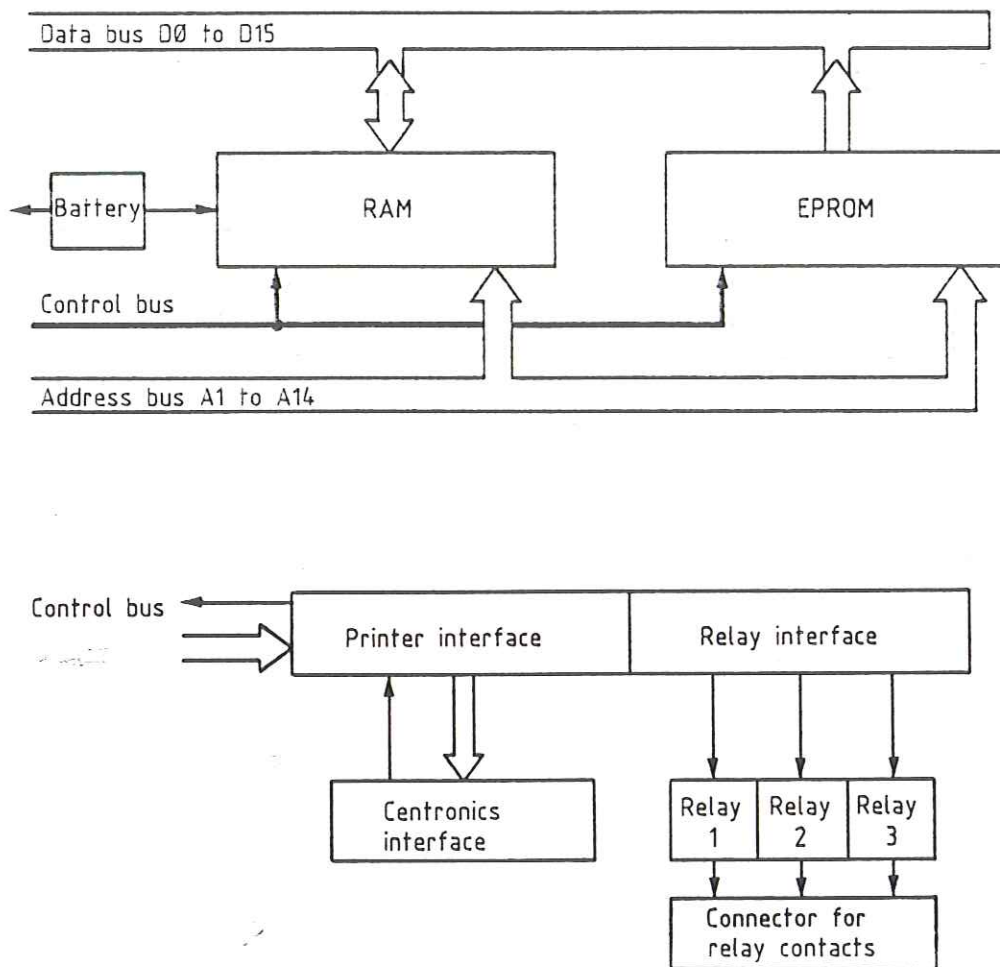


Fig. 5-1 Block diagram of the complete autorun control

5.1.1 Interface

The interface between the autorun control and the CMT comprises the following signal groups:

16-bit wide data bus	]	For the memory
14-bit wide address bus		
7-bit wide control bus		
6-bit wide control bus	]	For the internal interface
3 power supply lines		
1 line to measure the battery voltage		

The data and address busses enable communication between the memory on the autorun control and the controller of the CMT. The same applies to the control bus which supplies the memory control signals. This bus also contains special selection lines which are exclusively used for the memory ICs of the autorun control.

The control bus enables the controller to address the Centronics interface and the relays via the internal interface. A printer can also transmit a BUSY signal to the controller via this bus.

The three supply lines are used for +5 V, ground and the instrument battery voltage.

The battery voltage of the autorun control can be checked by the instrument via a special line.

5.1.2 RAM

The total storage capacity of the RAMs is 16 Kbyte. The circuitry used means that 8K words at 16 bit each are available for the controller. The RAMs are addressed via special chip select lines. The RAMs on the autorun control have a battery back-up.

5.1.3 EPROM

The storage capacity of the EPROMs is 32 Kbyte. As far as the controller is concerned, this memory comprises 16K words at 16 bit each. The EPROMs are addressed via special chip select lines.

5.1.4 Centronics Interface

This interface is addressed by the controller via a 2-byte serial-to-parallel converter (shift register). One byte provides the data for the printer. The controller uses one special line to inform the printer of the data validity (CENSTR). The BUSY signal of the printer is converted in the internal interface circuit into an interrupt signal for the controller and stored. The CENSTR signal resets this interrupt signal again.

Fig. 5-2 shows the assignment of the individual bits following serial-to-parallel conversion. The following signals are used for this conversion:

CPS-S	Clock
DO-S	Data
ABL	Strobe pulse

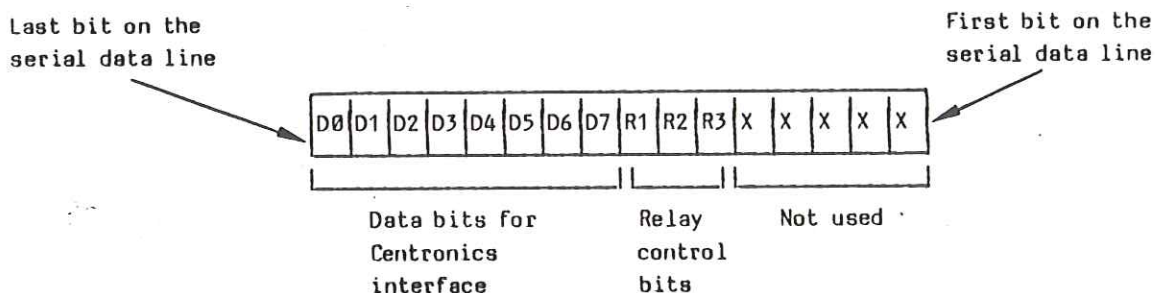


Fig. 5-2 Data at the output of the serial-to-parallel interface

5.1.5 Relay Interface

As can be seen in Fig. 5-2, the control bits for the 3 relays originate in the same shift register which also carries out the serial-to-parallel conversion of the data for the printer interface. Thus the clock, data and strobe are also identical with the signals in Section 5.1.4. The first 5 bits transmitted on the data line are not evaluated.

5.1.6 Battery Supply

A built-in battery buffers the CMOS-RAMs if the module is separated from the instrument. When connected to the instrument, the RAMs of the autorun control are fed by the power pack. With the instrument switched off, backup of the instrument and the autorun control CMOS-RAMs is handled either by the internal battery or the autorun control battery depending on which of the two batteries has a higher charge. Both batteries are used equally if the autorun control is left in the instrument.

5.2 Testing and Adjustment

Adjustment of the module is not necessary. All tests should be carried out using Section 3.

