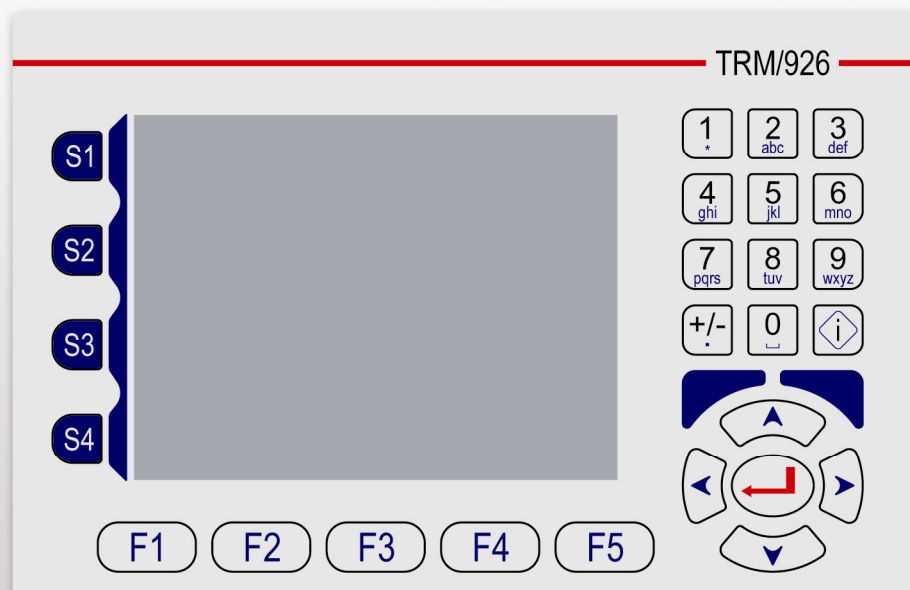


TRM/926

Board Revision 1.0

Hardware Reference



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1 INTRODUCTION

This document describes the hardware components of the TRM/926.

1.1 Safety Guidelines

Please read the following safety guidelines carefully! In case of property or personal damage by not paying attention to this document and/or by incorrect handling, we do not assume liability. In such cases any warranty claim expires.



ATTENTION: Observe precautions for handling – electrostatic sensitive device!

- Discharge yourself before you work with the device, e.g. by touching a heater of metal, to avoid damages.
- Stay grounded while working with the device to avoid damage through electrostatic discharge.

1.2 Conventions

Convention	Usage
bold	Important terms
<i>italic</i>	Filenames, user inputs and command lines
monospace	Pathnames, internet addresses and program code

Table 1: Conventions used in this Document

1.3 Features and Technical Data

- Computer-on-Module eSOM/2586 with Vortex86DX 32-bit x86 SoC @600 MHz
- Base board BB926/eSOM
- PC-compatible AMI BIOS
- 128 MB DDR2 SDRAM @300 MHz bus speed
- 1024 MB NAND Flash
- 64 MB video RAM with DDR2 interface
- 1x 5.7" TFT LCD with VGA resolution (640 x 480 pixels)
- 1x PC/104 ISA bus interface (8/16 bit)
- 1x 10/100 Mbps Ethernet LAN Interface
- 2x RS232 interface
- 1x RS422/485 interface
- 1x USB host port with HS, FS and LS support
- 1x CAN interface (SJA1000 with FullCAN and BasicCAN support)
- 1x CompactFlash socket
- 1x RTC with external battery backup (3 V lithium CR1225)
- 1x Watchdog
- 1x Power supervisor
- 1x LAN activity LED
- Power supply 12 – 24 VDC
- Power consumption typ. 6 W (500 mA, 12 VDC)
- Operating temperature -10 °C – +60 °C
- Size (W x L x H) 143 x 222 x 39 mm
- RoHS-compliant

1.4 Block Diagram

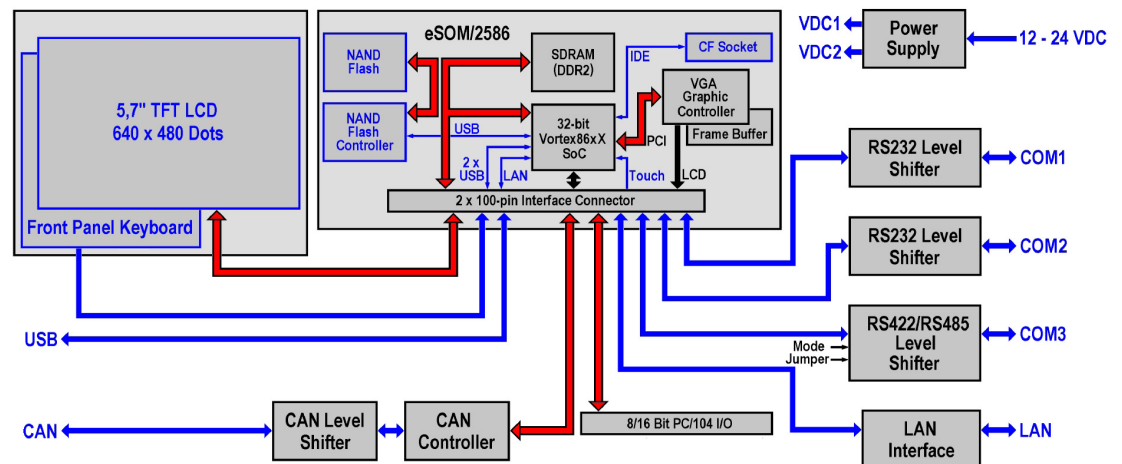
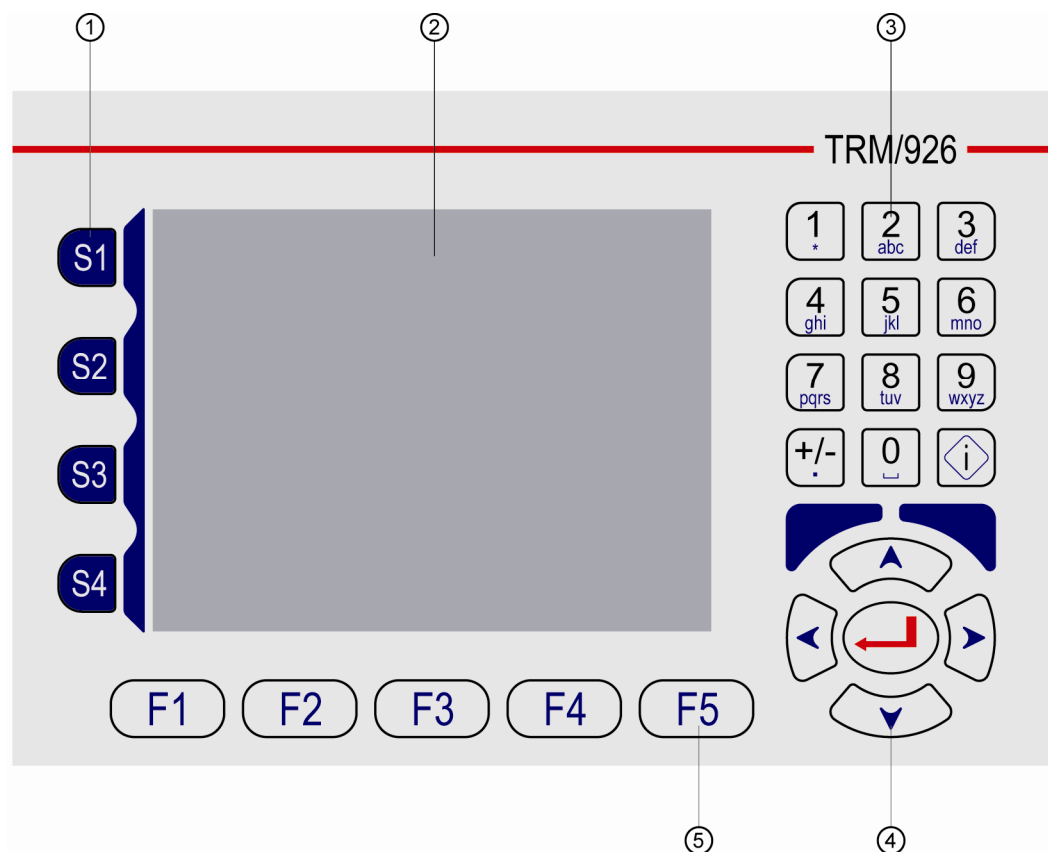


Figure 1: Block diagram of TRM/926

2 TRM/926 LAYOUT

2.1 Front Panel



- ① Soft keys S1 to S4
- ② TFT display
- ③ Numeric keys 1 to 0 with alphanumeric keys A to Z (similar to a mobile phone)
- ④ Cursor keys Up, Down, Left, Right for scroll menus and Enter
- ⑤ Function keys F1 to F5

Figure 2: Layout front panel of TRM/926

2.2 Back Side

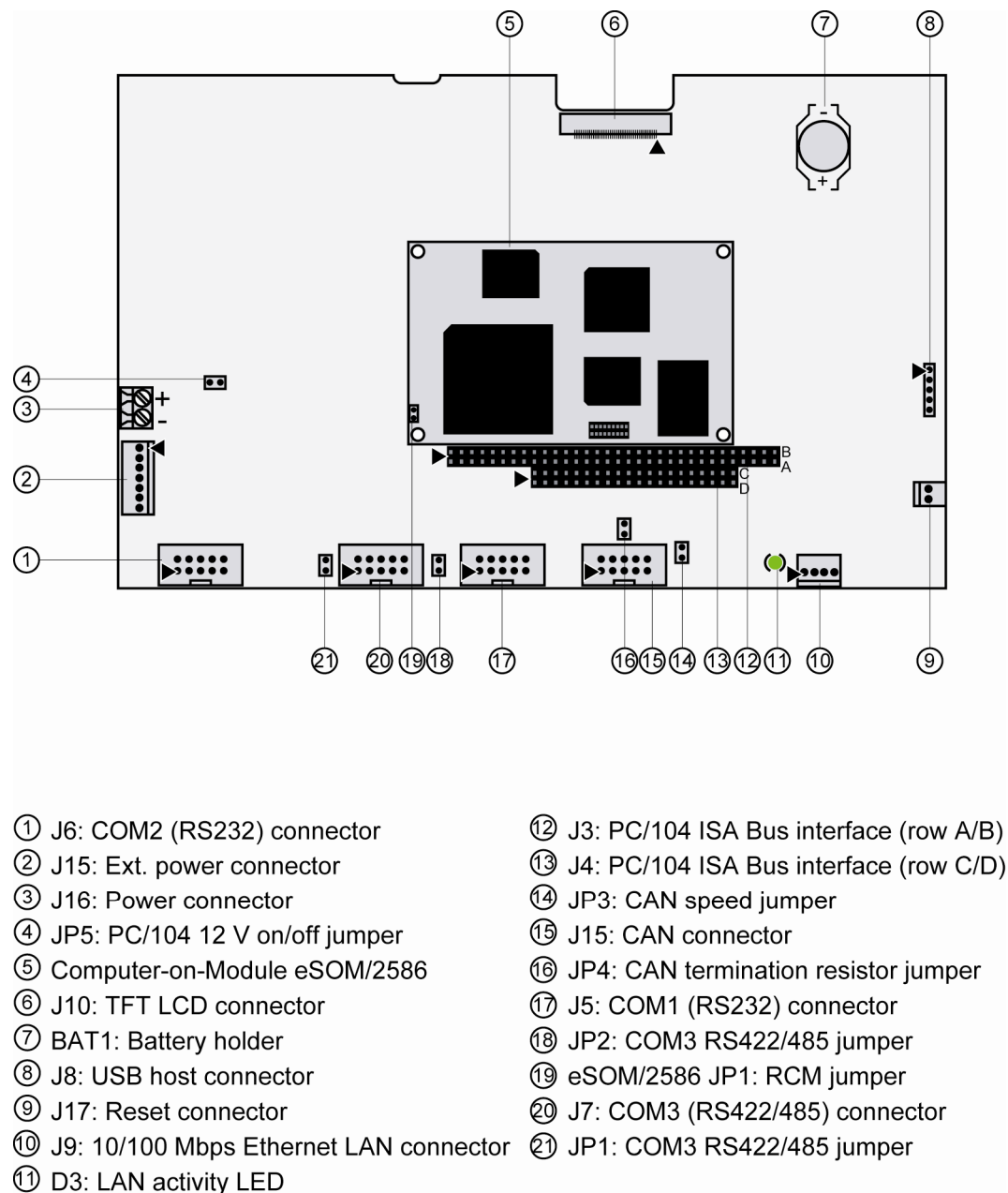


Figure 3: Layout back side of TRM/926 (base board BB926/eSOM with eSOM/2586)

3 FRONT PANEL KEY CODES

The TRM/926 keyboard is PC compatible, which means there is no difference between the key codes of the TRM/926 and your PC keyboard. (This is important for your own application!)

Key	Primary Function	Secondary Function
S1	ESC	ESC
S2	Backspace	Backspace
S3	TAB	TAB
S4	F7	F7
1	1	*
2	2	a b c
3	3	d e f
4	4	g h i
5	5	j k l
6	6	m n o
7	7	p q r s
8	8	t u v
9	9	w x y z
0	0	Space
+/-.	.	: + - _
F1	F1	F1
F2	F2	F2
F3	F3	F3
F4	F4	F4
F5	F5	F5
UP	UP	UP
DOWN	DOWN	DOWN
ENTER	ENTER	ENTER
LEFT	LEFT	LEFT
RIGHT	RIGHT	RIGHT
"i"	F8	F8

Table 2: Key codes of TRM/926 front panel

4 PINOUTS

3.1 PC/104 ISA Bus Interface – J3 (Row A)

Pin	Name	Function
1	A1	Not Connected (1K PU VCC5)
2	A2	SD7
3	A3	SD6
4	A4	SD5
5	A5	SD4
6	A6	SD3
7	A7	SD2
8	A8	SD1
9	A9	SD0
10	A10	Not Connected (1K PU VCC5)
11	A11	Not Connected (1K PD GND)
12	A12	SA19
13	A13	SA18
14	A14	SA17
15	A15	SA16
16	A16	SA15
17	A17	SA14
18	A18	SA13
19	A19	SA12
20	A20	SA11
21	A21	SA10
22	A22	SA9
23	A23	SA8
24	A24	SA7
25	A25	SA6
26	A26	SA5
27	A27	SA4
28	A28	SA3
29	A29	SA2
30	A30	SA1
31	A31	SA0
32	A32	GND

Table 3: Pinout ISA bus interface – row A



3.2 PC/104 ISA Bus Interface – J3 (Row B)

Pin	Name	Function
1	B1	GND
2	B2	RSTDRV
3	B3	VCC5
4	B4	Not Connected (10K PU VCC5)
5	B5	VCC5-
6	B6	Not Connected
7	B7	VCC12-
8	B8	Not Connected
9	B9	VCC12
10	B10	GND
11	B11	MEMW# **
12	B12	MEMR# **
13	B13	IOW# *
14	B14	IOR# *
15	B15	Not Connected (10K PU VCC5)
16	B16	Not Connected
17	B17	Not Connected (10K PU VCC5)
18	B18	Not Connected
19	B19	Not Connected (1K PD GND)
20	B20	SYSCLK
21	B21	Not Connected (10K PU VCC5)
22	B22	IRQ6
23	B23	Not Connected (10K PU VCC5)
24	B24	Not Connected (10K PU VCC5)
25	B25	Not Connected (10K PU VCC5)
26	B26	Not Connected (10K PU VCC5)
27	B27	Not Connected (1K PU VCC5)
28	B28	Not Connected (1K PD GND)
29	B29	VCC
30	B30	OSC
31	B31	GND
32	B32	GND

Table 4: Pinout ISA bus interface – row B



* IOW# and IOR# are decoded at 0x300-0x31f

** MEMW# and MEMR# are decoded at 0xC8000-0xCBFFF

3.3 PC/104 ISA Bus Interface – J4 (Row C)

Pin	Name	Function
0	C0	GND
1	C1	Not Connected (10K PD GND)
2	C2	SA23
3	C3	SA22
4	C4	SA21
5	C5	SA20
6	C6	SA19
7	C7	SA18
8	C8	SA17
9	C9	MEMR# *
10	C10	MEMW# *
11	C11	SD8
12	C12	SD9
13	C13	SD10
14	C14	SD11
15	C15	SD12
16	C16	SD13
17	C17	SD14
18	C18	SD15
19	C19	GND

Table 5: Pinout ISA bus interface – row C



3.4 PC/104 ISA Bus Interface – J4 (Row D)

Pin	Name	Function
0	D0	GND
1	D1	Not Connected (1K PU VCC5)
2	D2	Not Connected (1K PU VCC5)
3	D3	Not Connected (10K PU VCC5)
4	D4	Not Connected (10K PU VCC5)
5	D5	IRQ12
6	D6	Not Connected (10K PU VCC5)
7	D7	Not Connected (10K PU VCC5)
8	D8	Not Connected (10K PU VCC5)
9	D9	Not Connected
10	D10	Not Connected (10K PU VCC5)
11	D11	Not Connected
12	D12	Not Connected (10K PU VCC5)
13	D13	Not Connected
14	D14	Not Connected (10K PU VCC5)
15	D15	Not Connected
16	D16	VCC5
17	D17	Not Connected (1K PU VCC5)
18	D18	GND
19	D19	GND

Table 6: Pinout ISA bus interface – row D

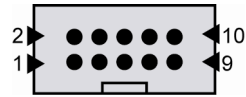


* MEMW# and MEMR# are decoded at 0xC8000-0xCBFFF

3.5 COM1 (RS232) Connector – J5

Pin	Name	Function
1	DCD1	COM1 RS232 Serial Port, DCD Pin
2	DSR1	COM1 RS232 Serial Port, DSR Pin
3	RXD1	COM1 RS232 Serial Port, RXD Pin
4	RTS1	COM1 RS232 Serial Port, RTS Pin
5	TXD11	COM1 RS232 Serial Port, TXD Pin
6	CTS1	COM1 RS232 Serial Port, CTS Pin
7	DTR1	COM1 RS232 Serial Port, DTR Pin (opt. VCC5)
8	RI1	COM1 RS232 Serial Port, RI Pin
9	GND	Ground
10	---	Not Connected

Table 7: Pinout COM1 connector



3.6 COM2 (RS232) Connector – J6

Pin	Name	Function
1	---	Not Connected
2	---	Not Connected
3	RXD2	COM2 RS232 Serial Port, RXD Pin
4	RTS2	COM2 RS232 Serial Port, RTS Pin
5	TXD2	COM2 RS232 Serial Port, TXD Pin
6	CTS2	COM2 RS232 Serial Port, CTS Pin
7	---	Not Connected (opt. VCC5)
8	---	Not Connected
9	GND	Ground
10	---	Not Connected

Table 8: Pinout COM2 connector

3.7 COM3 (RS422/485) Connector– J7

Pin	Name	Function
1	---	Not Connected
2	RXTX3_422+	COM3 RS422 Serial Port, RX/TX+ Pin
3	RXTX3_485+	COM3 RS485 Serial Port, RX/TX+ Pin
4	RXTX3_422-	COM3 RS422 Serial Port, RX/TX- Pin
5	RXTX3_485-	COM3 RS485 Serial Port, RX/TX- Pin
6	---	Not Connected
7	---	Not Connected
8	---	Not Connected
9	---	Not Connected
10	---	Not Connected

Table 9: Pinout COM3 connector

3.8 USB Host Connector – J8

Pin	Name	Function
1	VCC5	5 VDC Power Output
2	DATA-	USB Host -
3	DATA+	USB Host +
4	GND	Ground
5	---	Not Connected

Table 10: Pinout USB host connector



3.9 10/100 Mbps Ethernet LAN Connector – J9

Pin	Name	Function
1	RX-	10/100 Mbps LAN1, RX- Pin
2	RX+	10/100 Mbps LAN1, RX+ Pin
3	TX-	10/100 Mbps LAN1, TX- Pin
4	TX+	10/100 Mbps LAN1, TX+ Pin

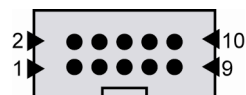
Table 11: Pinout Ethernet LAN connector



3.10 CAN Connector – J15

Pin	Name	Function
1	---	Not Connected
2	GND	Ground
3	CAN_L	CAN Low Level
4	CAN_H	CAN High Level
5	GND	Ground
6	---	Not Connected
7	---	Not Connected
8	---	Not Connected (opt. CAN_VCC)
9	---	Not Connected
10	---	Not Connected

Table 12: Pinout CAN connector



3.11 Ext. Power Connector – J15

Pin	Name	Function
1	VCC5	+5 VDC Power Output
2	VCC5	+5 VDC Power Output
3	VCC12-	-12 VDC Power Output
4	VCC	+12 VDC Power Output
5	VCC5	-5 VDC Power Output
6	GND	Ground
7	GND	Ground

Table 13: Pinout ext. power connector



3.12 Power Connector – J16

Pin	Name	Function
1	VCC	12..24 VDC Power Input
2	GND	Ground

Table 14: Pinout power connector

3.13 COM3 RS422/485 Jumper – JP1 + JP2

Jumper	Function
JP1 + JP2 SET	RS485 mode only (line termination active)
JP1 + JP2 NOT SET (default)	RS422 mode only (line termination on RX line only active)

Table 15: COM3 RS422/485 jumper settings

3.14 CAN Speed Jumper – JP3

Jumper	Function
SET	CAN slew rate maximum
NOT SET (default)	CAN slew rate 8V/us

Table 16: CAN speed jumper settings

3.15 CAN Termination Jumper – JP4

Jumper	Function
SET	CAN termination active
NOT SET (default)	no CAN termination

Table 17: CAN Termination jumper settings

3.16 PC/104 12 V Jumper – JP5

Please note: Set JP5 only if $V_{in} = 12 \text{ VDC}$!

Jumper	Function
SET	VCC12 at PC/104 connected to VCCin main supply
NOT SET (default)	no VCC12 at PC/104

Table 18: PC/104 12 V jumper settings

3.17 RCM Jumper – JP1 (on eSOM/2586)

The **RCM (Remote Console Mode)** offers the possibility to control the eSOM/2586 via a terminal emulation program over the UART-based serial port COM1 (serial-based CLI = Command Line Interface).

Please note: The default setting of the RCM jumper is set (Enable Remote Console Mode). This mode is checked by the AMI Basic I/O System (BIOS). With RCM jumper set, it is possible to control a DOS O/S over COM1. DOS I/O goes direct over the AMI BIOS I/O functions.

To disable RCM remove the jumper cap of the RCM jumper. This frees UART based serial port COM1 for application usage.

Jumper	Function
SET (default)	Enable Remote Console Mode
NOT SET	Disable Remote Console Mode

Table 19: RCM jumper settings

5 HELPFUL LITERATURE

- Computer-on-Module eSOM/2586 hardware reference manual

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Revision	Date	Remarks	Name
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