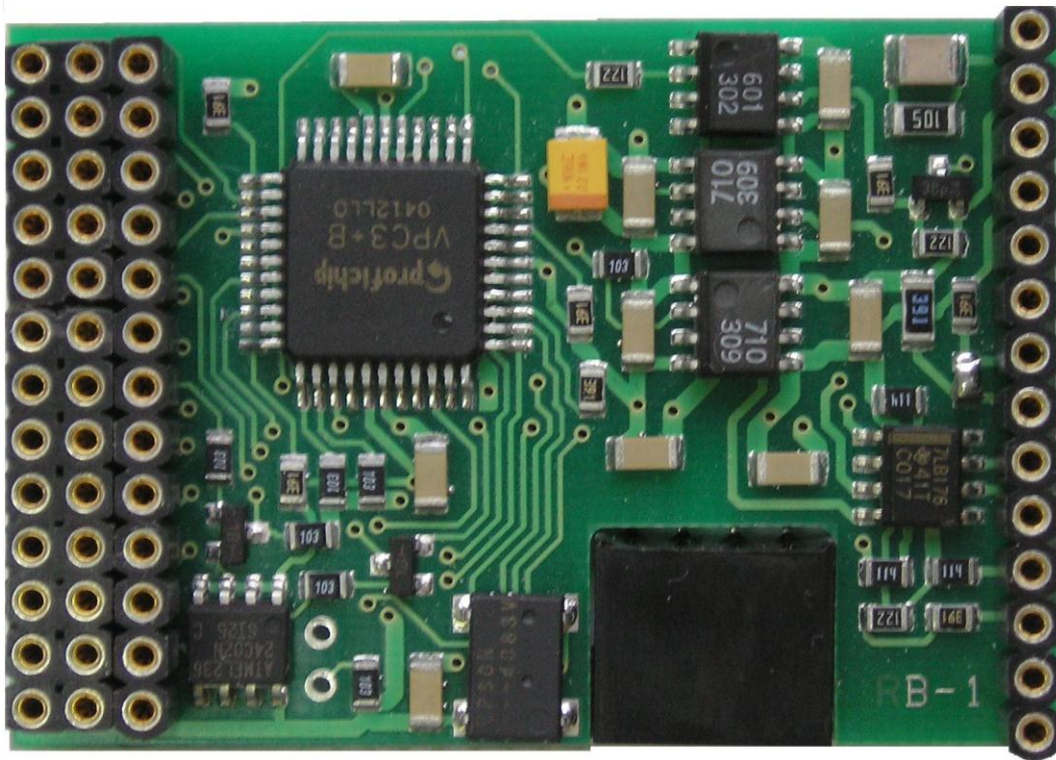




OVERVIEW OF TECOMAT SUB-MODULES

6rd issue - may 2012

Overview of TECOMAT sub-modules

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Terminal connection in the control systems in relation to sub-module pins:

Older types of sub-modules, mostly without galvanic isolation

Overview of sub-module pin assignment:

Sub-modules with serial interface: MR-01, MR-0104, MR-0114, MR-0124, MR-0158

Sub-modules with parallel interface: MR-0150, MR-0151, MR-0160, MR-0161, MR-0152, MR-0154

Special sub-modules with parallel interface PX-7811, PX-7812, MX-0301

Double-size sub-modules with serial interface: MR-0155, MR-0156

For better understanding there are stated block schemes of sub-modules and pin assignments for terminal blocks of TC700, TC650, Foxtrot and Tempo systems.

Note: Some Foxtrot systems have 9 terminals (eg. CP-10x4, CP10x5, ...), some Foxtrot systems have 5 terminals only (eg. CP-10x6, 10x8, CP, ...).

Submodules

pin	submod	20 mA	RS232	RS485	RS422	M-Bus master	CAN	CAN	Profibus DP slave	Bus TCL2 I/O TC700	Inputs	Inputs / Outputs	Wiegand	FSK modem	pin	TC700	Tempo	Foxtrot 9	Foxtrot 5
		MR-01	MR-0104	MR-0114	MR-0124	MR-0158	MR-0150	MR-0151	MR-0152	MR-0154	PX-7811	PX-7812	MX-0301	MR-0155	MR-0156				
1																1	14	-	-
2		-I	(+5 V)	(+5 V)	(+5 V)		(+5 V)	(+5 V)	(+5 V)	(+5 V)	+24 V	+24 V	+5 V	DCDA		2	7	1	-
3																3	13	-	-
4		+I	GND	GND	GND		GND	GND	GND	GND	0 V	0 V	0 V	GNDA		4	6	2	1
5																5	12	-	-
6																6	5	-	-
7		RxD+	RTS	BT-	CTS -	-M-Bus	BT1-	BT1-	BT-	BT-	In0	In0	DA	SA		7	2	11	3
8				BT+	CTS +	-M-Bus	BT1+	BT1+	BT+	BT+	In1	In1	Horn	SS		8	7	4	4
9		RxD-	CTS	TxRx-	RxD-	-M-Bus	TxRx1-	TxRx1-	TxRx-	TxRx-	In2	In2	D1			9	3	10	5
10		TxD-		TxRx+	RxD+		TxRx1+	TxRx1+	TxRx+	TxRx+	In3	In3	R			10	8	3	6
11			RxD		RTS +	+M-Bus	BT2-	BT2-	RTS -	RTS -	In4	Out0	D0	TL1B		11	4	9	7
12		TxD +			RTS +		BT2+	BT2+	RTS +	RTS +	In5	Out1	R/G	TL1A		12	9	2	-
13		TxD +	TxD	TxRx-	TxD-	-M-Bus	TxRx2-	TxRx1-	TxRx-	TxRx-	In6	Out2	In6	RL1B		13	5	8	8
14		RxD+		TxRx+	TxD +	+M-Bus	TxRx2+	TxRx1+	TxRx+	TxRx+	In7	Out3	Out	RL1A		14	10	1	9

Note: All submodules except for MX-0301 are galvanic separated

The signals with identical names are interconnected

The signals in the parenthesis don't join commonly. They are designated for specific use!

dimensions in mm

35,6x47

35,6x52

76x52

Serial connection to CPU by 1x11 pins

Parallel connection to CPU by 3x11 pins

Serial connection to CPU by 1x11 pins

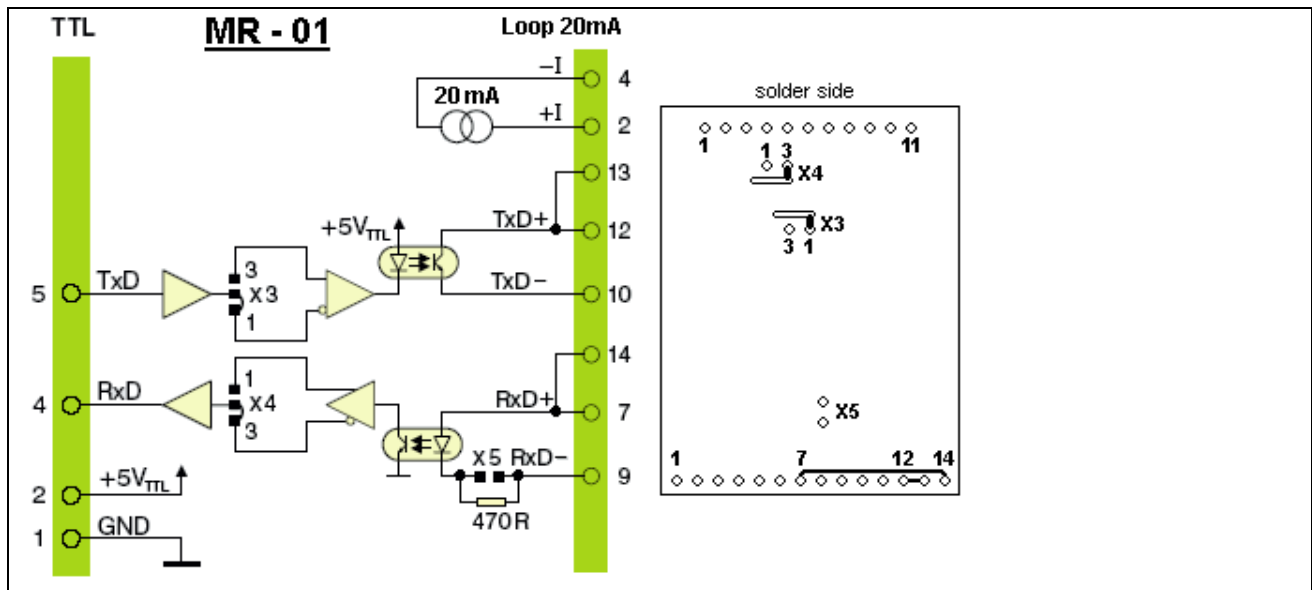
Submodules -II

pin	submod	RS232	RS485	RS485	pin	Foxtrot 9	Foxtrot 5
		MR-0105	MR-0106	MR-0115			
1					1	-	-
2					2	1	-
3					3	-	-
4		GND	GND	GND	4	2	1
5					5	-	-
6					6	-	-
7		TxD4	TxRx4-	TxRx4-	7	3	2
8		RxD4	TxRx4+	TxRx4+	8	4	3
9		TxRx3-	TxRx3-	TxRx3-	9	5	-
10		TxRx3+	TxRx3+	TxRx3+	10	6	-
11					11	7	-
12					12	-	-
13		TxD2	TxD2	TxRx2-	13	8	5
14		RxD2	RxD2	TxRx2+	14	9	4

Sub-modules with serial interface – Loop 20 mA

Sub- module MR-01 (Loop 20mA)

(Supported modes of the channel CHx : UNI, PC, MPC, MDB)



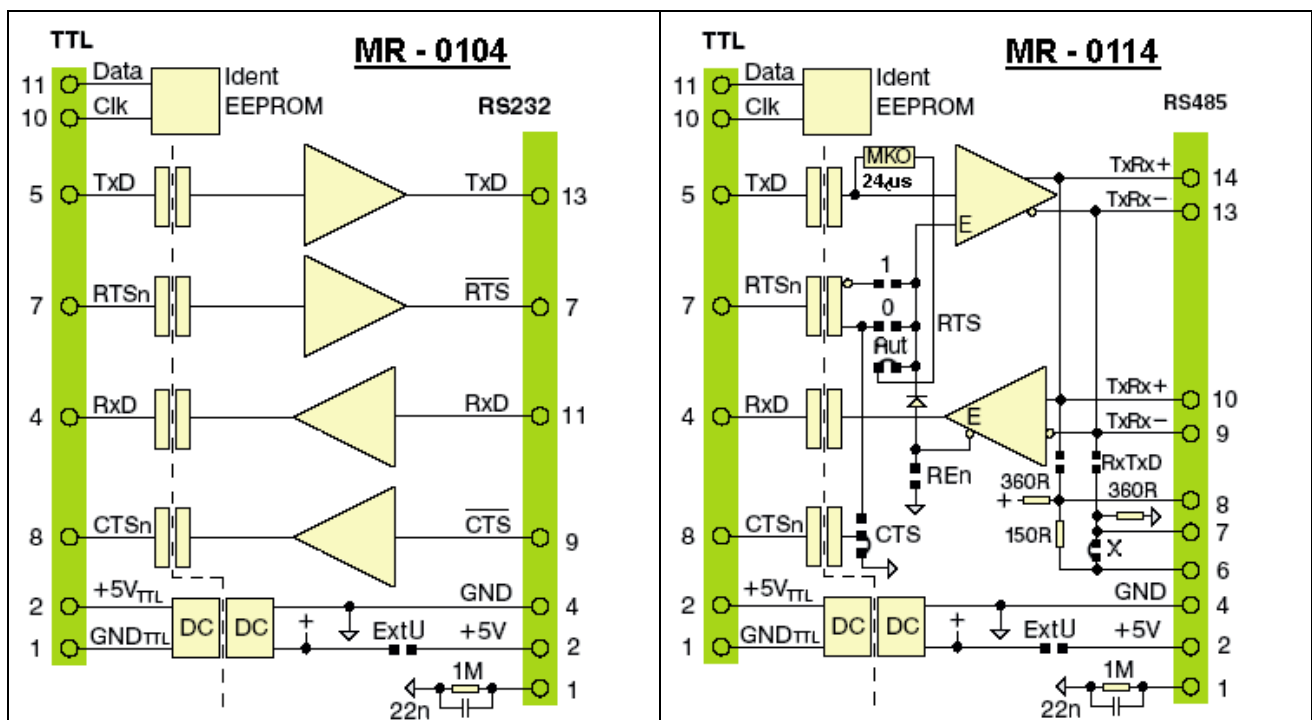
Sub-modules with serial interface - RS-232, RS-485

Sub-module MR-0104 (RS-232)

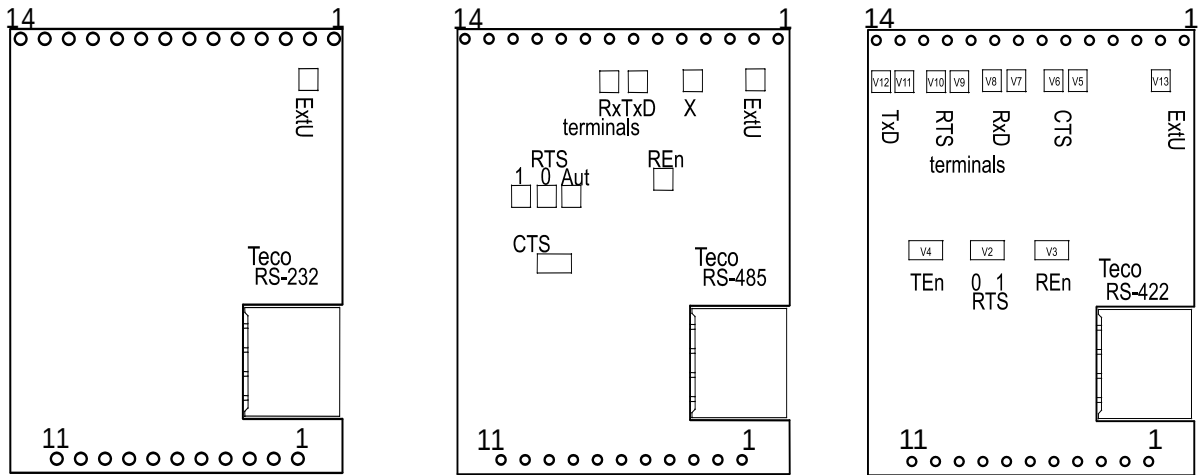
(Supported modes of the channel CHx : UNI, PC, PLC, MPC, MDB)

Sub-module MR-0114 (RS-485)

(Supported modes of the channel CHx : UNI, PC, PLC, MPC, MDB, PFB)



Overview of TECOMAT sub-modules



View on jumpers on sub-modules MR-0104, MR-0114 and MR-0124

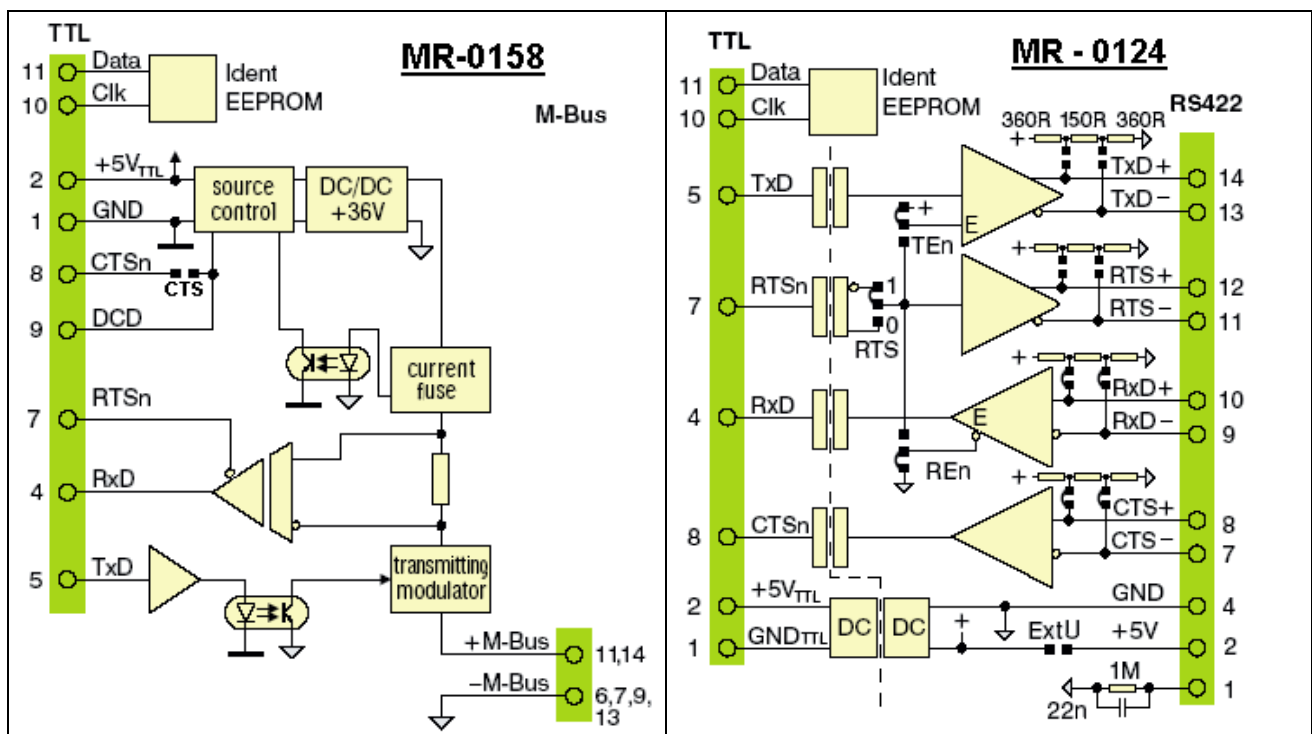
Sub-modules with serial interface - RS-422, M-Bus

Sub-module MR-0124 (RS-422)

(Supported modes of the channel CHx : UNI, PC, PLC, MPC, MDB)

Sub-module MR-0158 (M-Bus)

(Supported mode of the channel CHx : UNI)

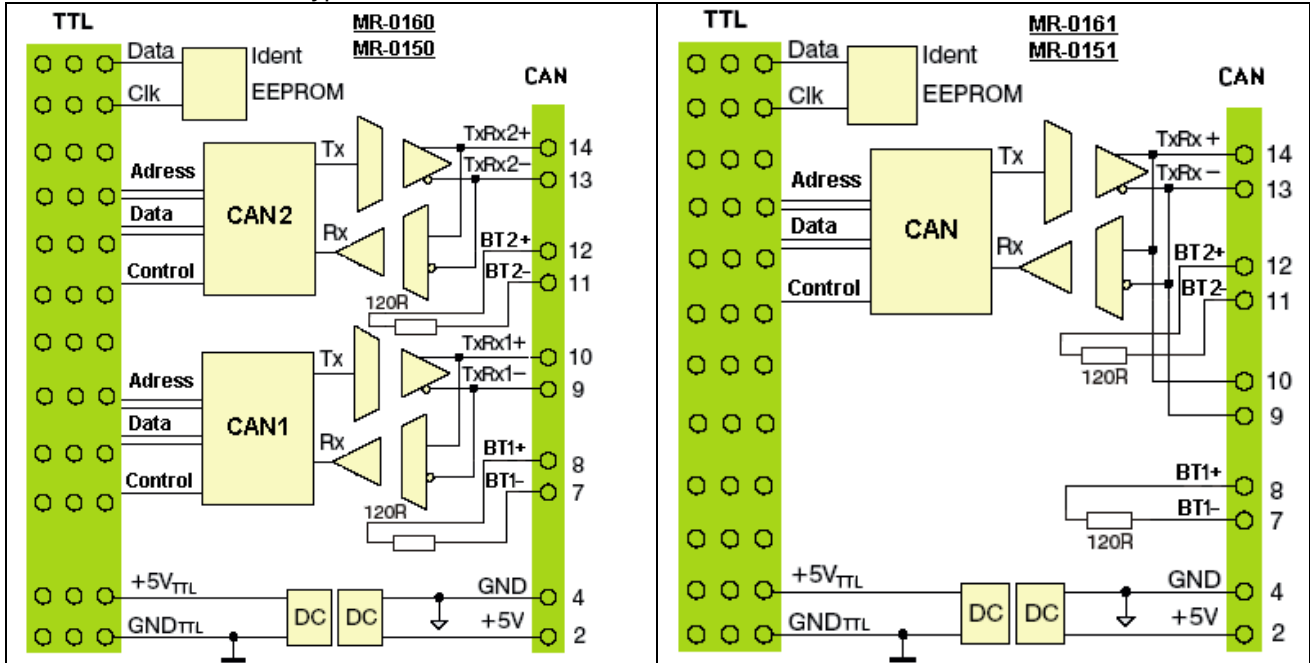


Sub-modules with parallel interface - CAN

Sub-modules MR-0160 (2xCAN) and MR-0161 (CAN) equipped with Philips SJA1000 microcontrollers.
(Supported mode of the channel CHx : CSJ)

Sub-modules MR-0150 (2xCAN) and MR-0151 (CAN) equipped with Intel AS82527F8 microcontrollers.
(Supported modes of the channel CHx : CAN, CAS, CAB)

Block schemes of these types of microcontrollers are the same:



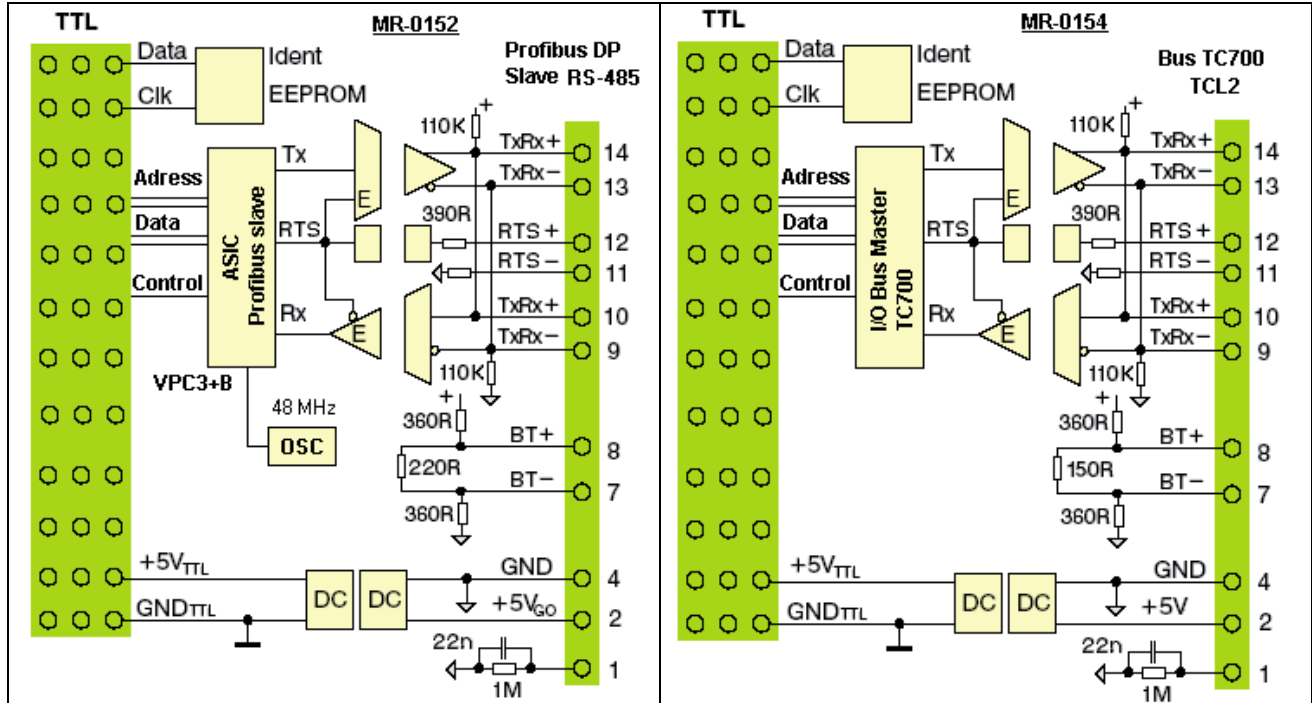
Sub-modules with parallel interface - Profibus DP slave, TC700 I/O bus TCL2

Sub-module MR-0152 (Profibus DP slave)

(Supported mode of the channel CHx : DPS)

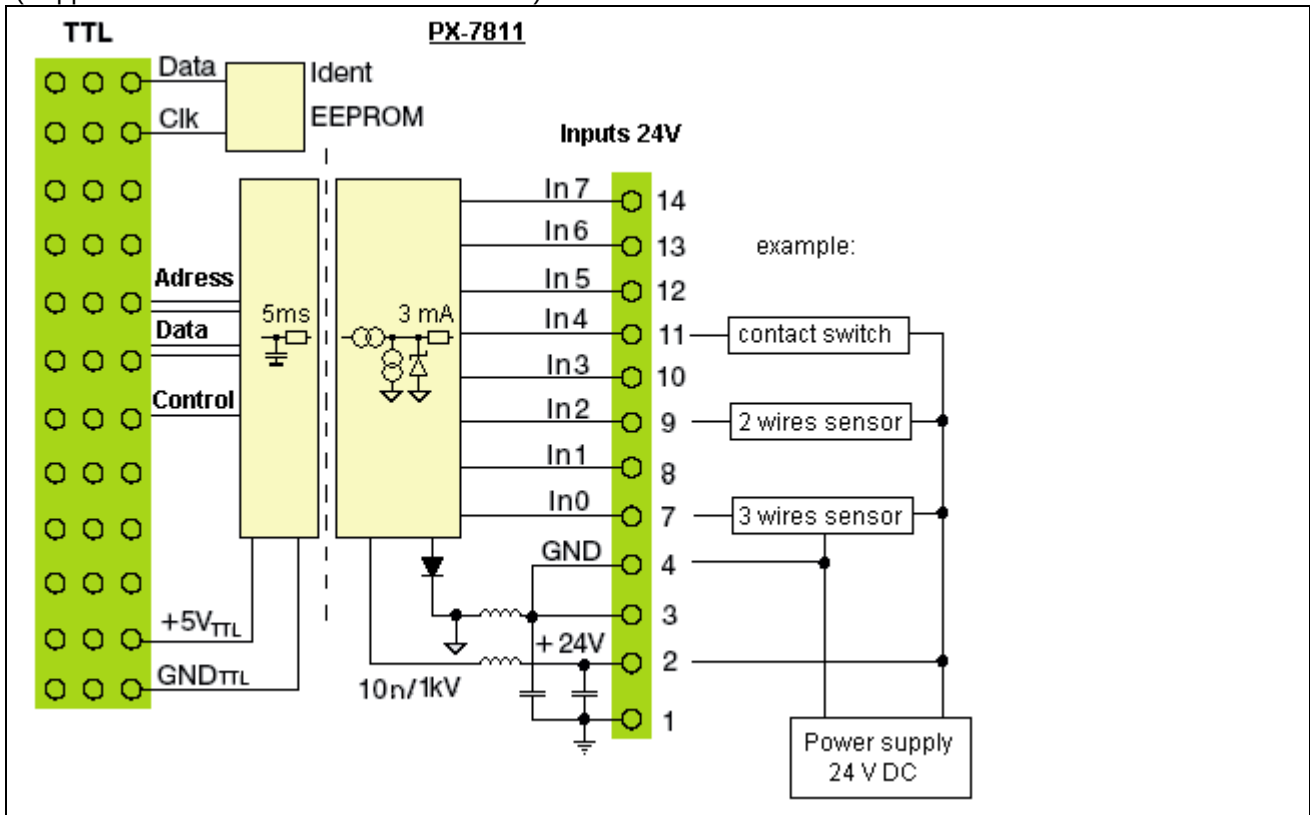
Sub-module MR-0154 (TC700 I/O bus TCL2)

(Supported mode of the channel CHx : EIO)

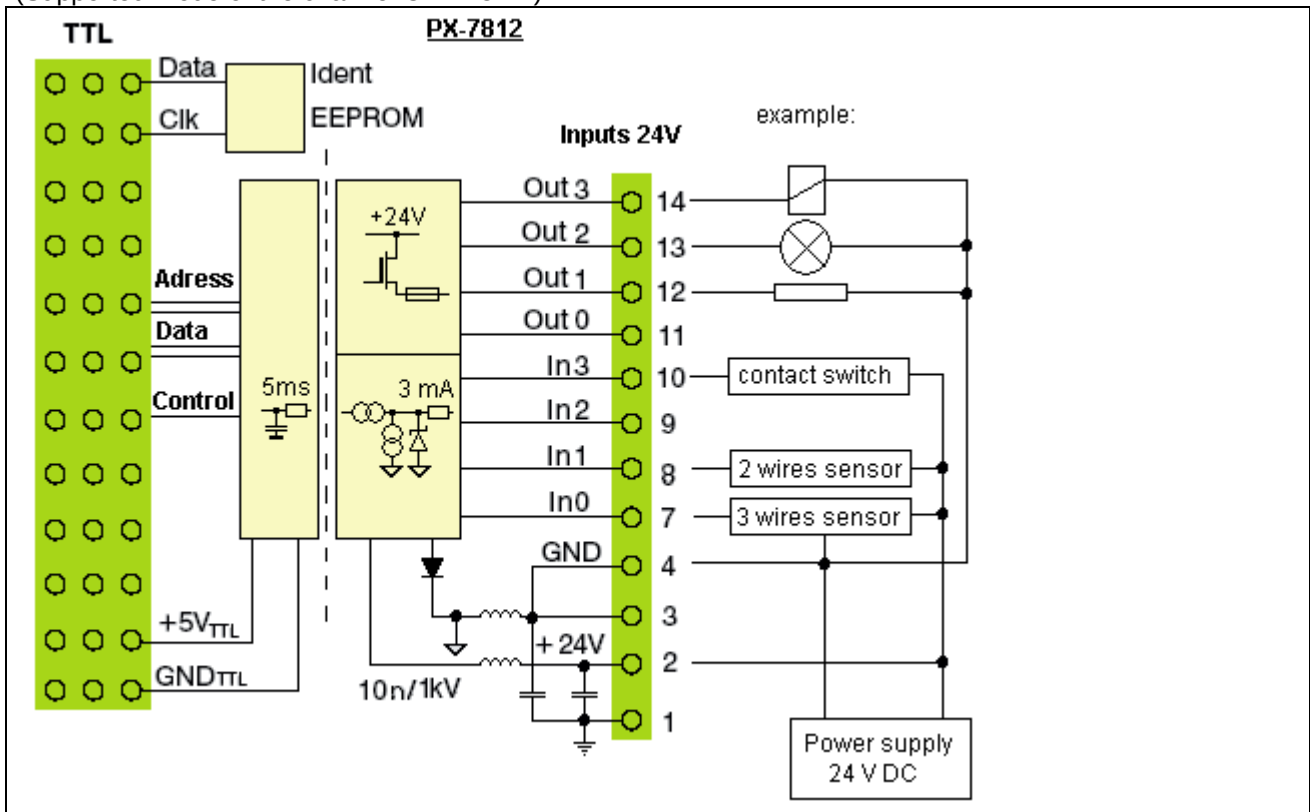


Sub-modules with parallel interface - binary inputs/outputs

Sub-module PX-7811 (binary inputs 8×DI_24 V DC)
(Supported mode of the channel CHx : UPD)



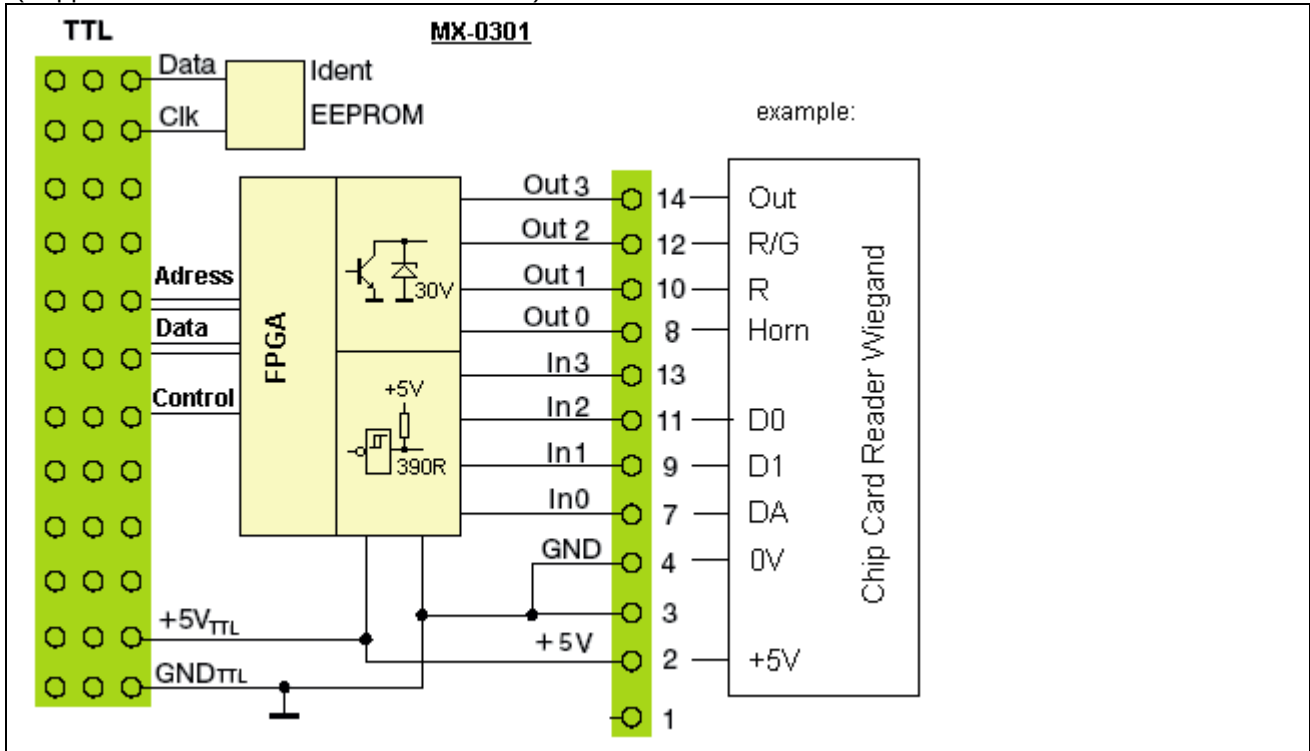
Sub-module PX-7812 (binary inputs and outputs 4×DI 24 V DC, 4×DO 24V/0,5 A DC)
(Supported mode of the channel CHx : UPD)



Special sub-module with parallel interface - Wiegand

Sub-module MX-0301 (Wiegand chip card reader connection)

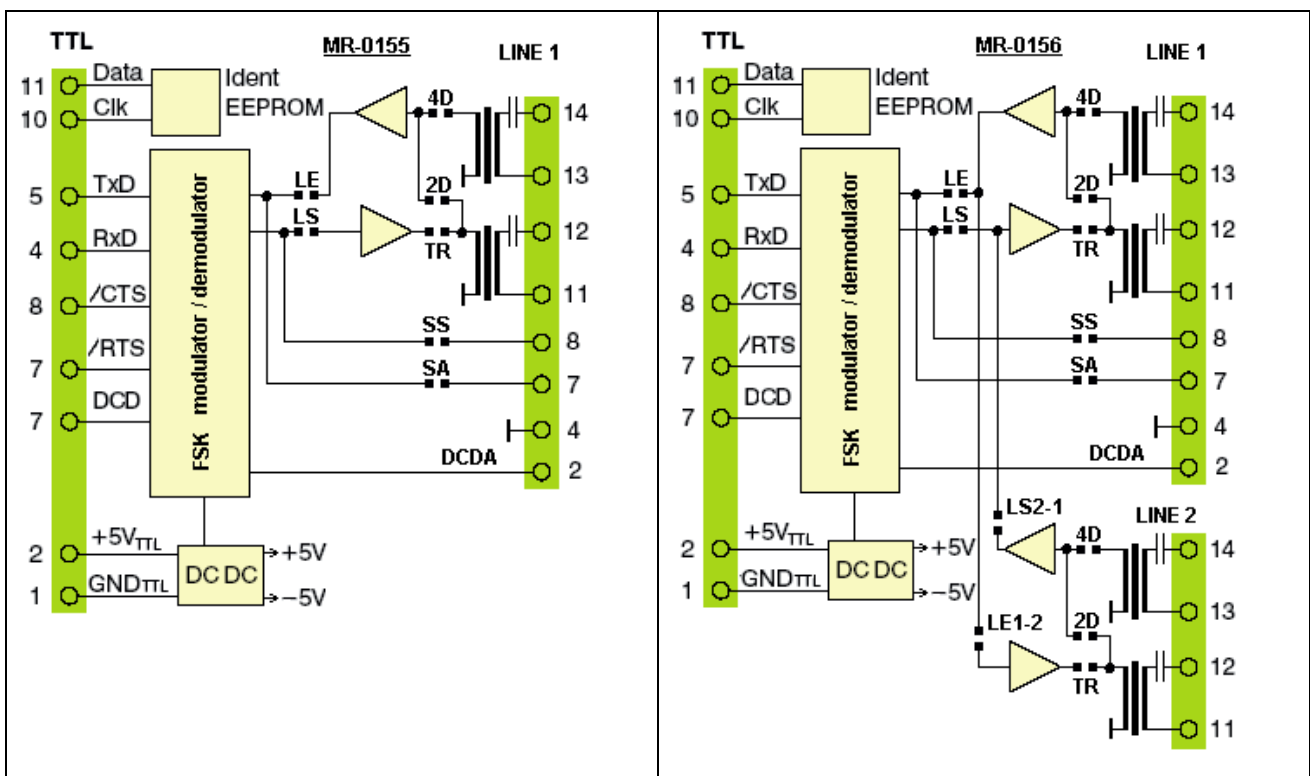
(Supported mode of the channel CHx : UPD)



Double-sized sub-modules with serial interface - FSK modem

Sub-module MR-0155 (FSK modem) a MR-0156 (FSK modem + line amplifier)

(Supported mode of the channel CHx : UNI)



Overview of TECOMAT sub-modules

Terminal connection in the control systems in relation to sub-module pins:

Note: Some Foxtrot systems have 9 terminals (eg. CP-10x4, CP10x5, ...), some Foxtrot systems have 5 terminals only (eg. CP-10x6, 10x8, CP, ...).

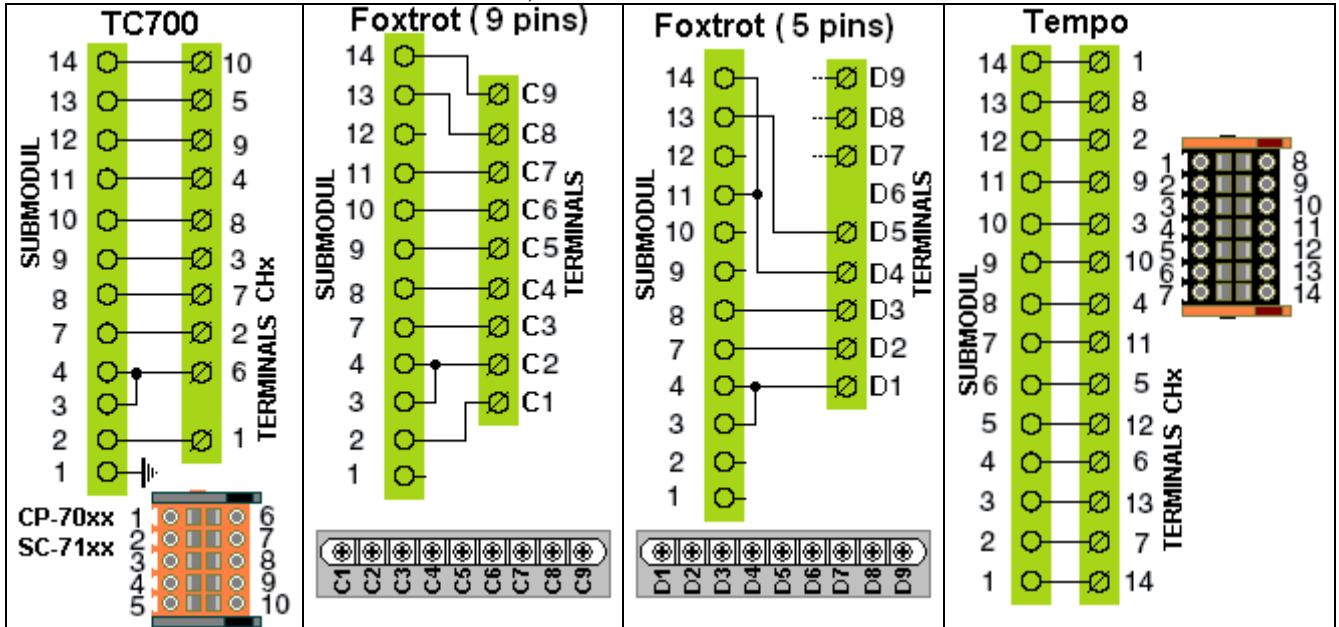
Sub-modules

with serial interface: MR-01, MR-0104, MR-0114, MR-0124, MR-0158

with parallel interface: MR-0150, MR-0151, MR-0160, MR-0161, MR-0152, MR-0154

special with parallel interface: PX-7811, PX-7812, MX-0301

double-sized with serial interface: MR-0155, MR-0156



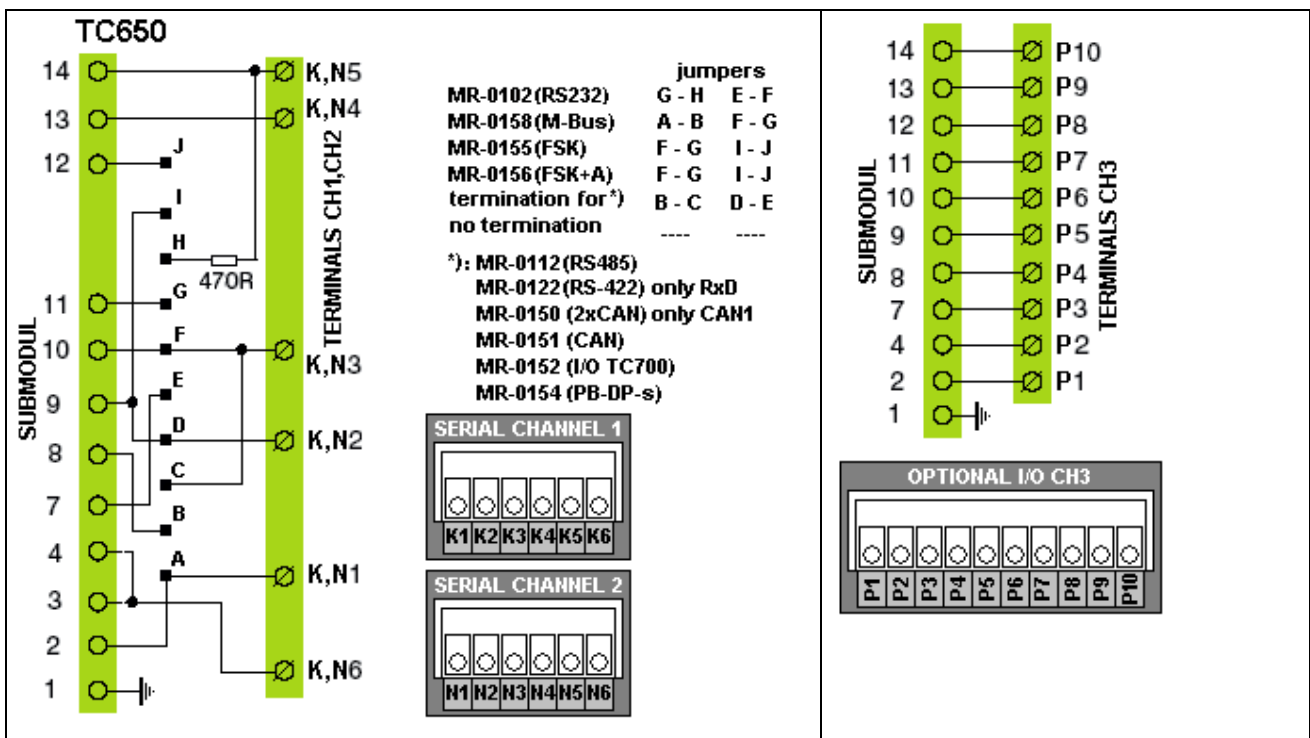
TC650

Connection of pins of any sub-module fitted in TC650 to the terminals of CH1 and CH2 channels is shown on the left scheme, connection of CH3 channel is equal to connection in TC700 systems:

Jumpers A to J has to be fitted for individual types of sub-modules according to the table besides scheme. If it is necessary to terminate the serial line by impedance, it can be done by jumpers B-C and D-E for sub-modules mentioned in the note *).

It is not possible to fit sub-modules with parallel interface MR-0150, MR-0151, MR-0152, MR-0154 a double-sized sub-modules MR-0155, MR-0156 in CH3 of TC650.

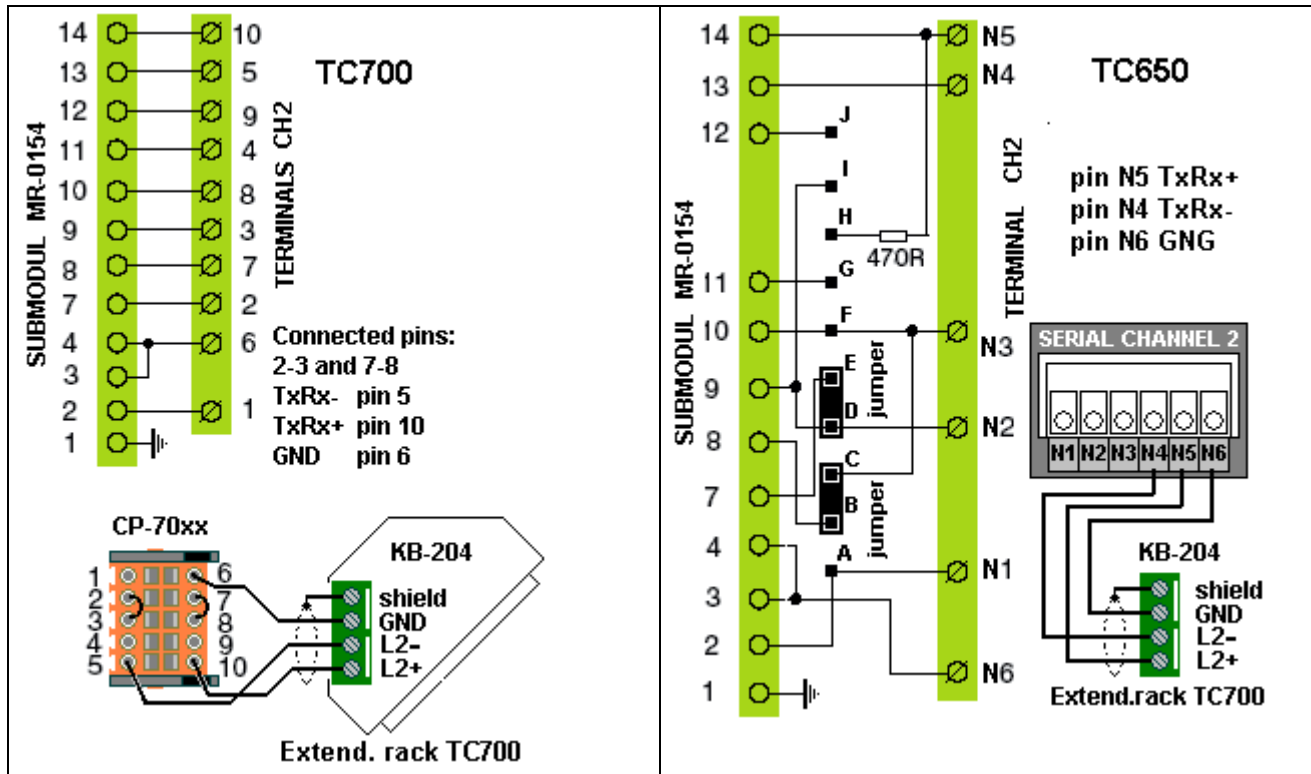
Sub-modules MR-0155 and MR-0156 always occupy both two channels (for example CH1 and CH2 too).



Overview of TECOMAT sub-modules

TC700 I/O Bus TCL2

Cable connection connecting TC700 expansion racks using sub-module MR-0154 in TC700 or TC650 PLCs.
(You can find the detailed information in the manuals TXV 004 02 and TXV 138 22.)



Overview of TECOMAT sub-modules

X

Older types of sub-modules, mostly without galvanic isolation

We do not recommend them for new PLC series!

pin submod	RS232 MR-02	RS422 MR-03	RS485 MR-04	RS485 GO MR-09	RS422 MR-17	RS422 GO MR-05	M-Bus master old MR-0158	pin submod	TC700	Foxtrot
1		TxD +						1	kostra	
2		RTS -		5V ext.		+5 V		2	1	1
3	GND	DTR -					(+5 V)	3	6	-
4		RTS +	GND	GND	GND	GND	(+5 V)	4	6	2
5		DTR +					(+5 V)	5	-	-
6		CTS -					-M-Bus	6	-	-
7	RTS	DCD -				CTS -	-M-Bus	7	2	3
8		CTS +				CTS +	(+36Vext)	8	7	4
9	CTS	DCD +	TxRx -	TxRx -	TxD -	RxD -	-M-Bus	9	3	5
10		RxD -	TxRx +	TxRx +	TxD +	RxD +	+M-Bus	10	8	6
11	RxD	CEX +			RxD +	RTS -	+M-Bus	11	4	7
12	DTR(5V)	RxD +				RTS +		12	9	-
13	TxD	CEX -	TxRx -	TxRx -	RxD -	TxD -	-M-Bus	13	5	8
14		TxD -	TxRx +	TxRx +		TxD +	+M-Bus	14	10	9

The MR-03 cannot be used in TC400, TC600 TC700 and Foxtrot

Note: The signals with identical names are interconnected

TC400, TR050	TC600, TR300	TC700	NS950	TEMPO
1 2 3 4 5 6 7 8 9 10 11 12 13 14 submodul (konektor na straně I/O) konektor (do technologie) N5 N2 N1 N4 N3	1 2 3 4 5 6 7 8 9 10 11 12 13 14 submodul (konektor na straně I/O) konektor (do technologie) N6 N3 N2 N5 N4 N1 - stínění	1 2 3 4 5 6 7 8 9 10 11 12 13 14 submodul (konektor na straně I/O) konektor (do technologie) A1 A6 A2 A7 A3 A8 A9 A4 A5 A10	1 2 3 4 5 6 7 8 9 10 11 12 13 14 submodul (konektor na straně I/O) konektor (do technologie) 8 15 7 14 6 13 5 12 4 11 3 10 2 9 1 - NC	1 2 3 4 5 6 7 8 9 10 11 12 13 14 submodul (konektor na straně I/O) konektor (do technologie) 14 7 13 6 12 5 11 4 10 3 9 2 8 1

Note:

You can use **MR-17** in the **TC650** with the jumper G-H in the series with transceiver 470 Ω but it is better to **connect pins 11 and 14 by wire** directly on MR-17. In both cases there are the following signals on TC650 terminals:

TxD- = 2, TxD+ = 3, RxD- = 4, RxD+ = 5, GND = 6

Note:

When you use RS-232 sub-module **MR-0104** in replace of MR-02 in **NS-950** PLC, it is necessary to **connect pin 4** (GND signal) **to pin 3** on the sub-module MR-0104 so that it works properly with commonly used cable TXK 0645 68.

Note::

The following types of serial interface sub-modules were replaced by newer ones with the same design but lower price.

RS-232 : MR-0102 => **MR-0104** , RS=485: MR-0112 => **MR-0114** , RS422: MR-0122 => **MR-0124**