

CCM 1010/RS232

Unidirectional digital contact closure multiplexer system

USER MANUAL

1. General description

The CCM 1010 contact closure multiplexer system can transmit eight independent contact closure signals unidirectionally over a serial data link (RS-232) [note: the optical/serial CCM 1010 has a sampled data link, whereas the /RS232 model described here uses transmission frames, targeted at UART-controlled interfaces].

Front panel LEDs indicate DC power good, correct signal content framing and correct receiver synchronization.

CCM 1010 equipment comes in the form of rack-mountable 7TE modules to be slotted into TKH Security MC 11 or similar power supply cabinets, or as stand-alone units (option /SA) needing separate power supplies PSA 12 DC.

2. Indications and connectors

The CCM's front panel indications and connectors are listed in table 1 below.



CCM TX	
 8xCC (37-pin conn.)	CC inputs, data out
Indicator LEDs	
*DC	DC power good
*FR	CC signal framing OK
CCM RX	
 8xCC (37-pin conn.)	CC outputs, data in
Indicator LEDs	
*DC	DC power good
*SYNC	input signal sync OK

Table 1. CCM front panel features

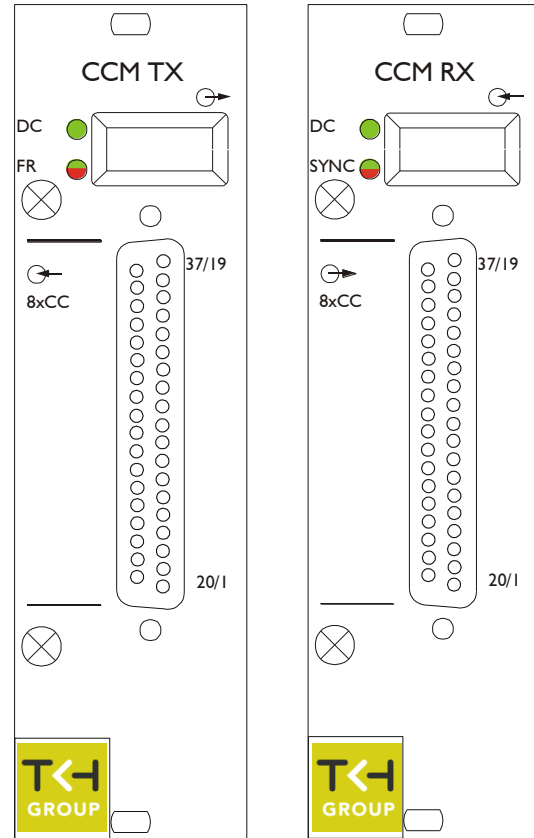


Figure 1. Front panel features of the CCM 1010/RS-232 TX (left) and RX (right)

3. Installation instructions

3.1. General

- Insert the units into appropriate MC 11 or similar power supply cabinets (and/or connect stand-alone units to their power supplies) and connect appropriate cabling. Pin assignments are listed in section 5.

- After switching on the system, check whether all LEDs glow green. If the FR LED on the CCM TX is red, that unit is faulty. If the SYNC LED on the RX lights red while the FR LED glows green, check the RS-232 link first.

3.2. Dip Switch Settings

Important: This unit does not work if the default settings, described in Table 2, have been changed. To access these switches, in the event they have been changed, remove the front panel Phillips head screws shown in figure 1 and slide out the front panel/circuit board assembly. Dip switches S1/S2 select between autodetect, the serial link and the optical link (see figure 2 and table 2).

S2	S1	function
OFF	OFF	autodetect (default)

Table 2. Dip switch settings for link type selection

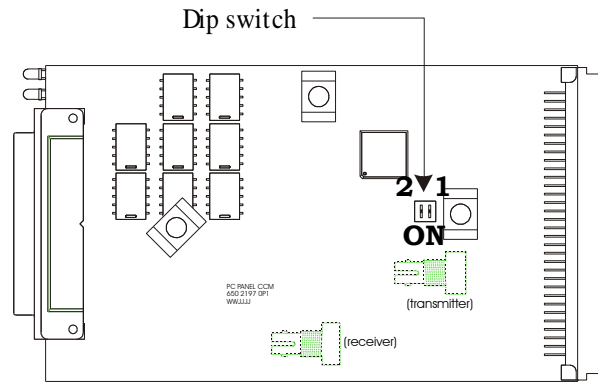


Figure 2. CCM TX/RX circuit board with dip switch described in section 3.2.

3.2. Serial data framing

Set the serial data framing of serial digital transmission equipment connected to the CCM RS-232 ports to the correct values:

- 1 start bit
- 8 data bytes
- 1 stop bit
- no parity
- speed 2k4 bits/s.

4. Care and maintenance

For reliable operation of the system, observe the following precautions:

- prevent dust from collecting on the equipment
- protect the equipment against moisture
- maintain sufficient free space around the equipment for cooling.

General safety and EMC information is found in the final section of this document.

5. Pin assignments of the 37-pin connector

CCM 1010 D-37 connector pin assignments are listed in table 3 below, combined for TX and RX units; they are rendered graphically in figure 3.

Pin no.	Assignment	Pin no.	Assignment
1	CC1 in	20	GND
2	CC2 in	21	GND
3	CC3 in	22	GND
4	CC4 in	23	GND
5	CC5 in	24	GND
6	CC6 in	25	GND
7	CC7 in	26	GND
8	CC8 in	27	GND
9	RS-232 out (CCM TX)	28	RS-232 in (CCM RX)
10	GND	29	GND
11	CC8 out A	30	CC8 out B
12	CC7 out A	31	CC7 out B
13	CC6 out A	32	CC6 out B
14	CC5 out A	33	CC5 out B
15	CC4 out A	34	CC4 out B
16	CC3 out A	35	CC3 out B
17	CC2 out A	36	CC2 out B
18	CC1 out A	37	CC1 out B
19	not used		

Table 3. D37 pin assignments of CCM 1010 TX (pins 1-9) and RX (pins 11-37). GND pins are the same for both.

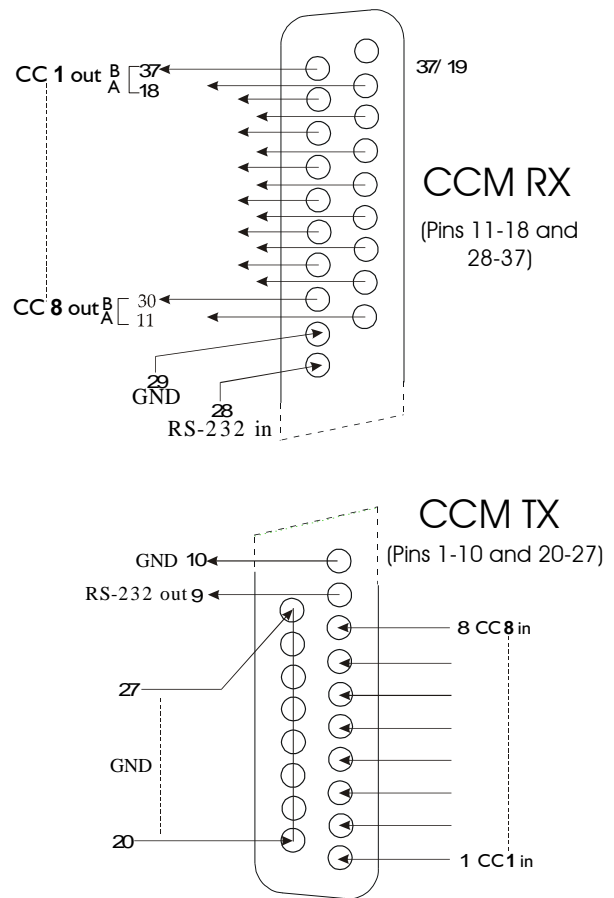


Figure 3. CCM 1000 RX (top) and TX (bottom) pin assignments. GND pins indicated are on both units.

6. Technical specifications

The technical specifications of the CCM 1010 system are listed in table 4 below.

Feature	Value	Unit
Optical		
Fiber type	1x MM (62.5 μm)	
Output wavelength	850	nm
System link budget	25	dBm
Link length	8*	km
Minimum link loss	0	dBm
Output power	>-20	dBm
Input sensitivity	-45	dBm
Connector type	ST	
<i>*Range may be limited by fiber bandwidth</i>		
System I/O		
Contact closure I/O		
Number of channels	8 (simplex)	
Input	+5 V pull-up, 10 kΩ	
Input sink (max)	2.5	mA
Activation threshold	0.75 (<1.5 kΩ)	V
Output (potent.-free)	normally open, fail-safe	
Output switch rating	2 A @ 30 Vdc (per switch)	
System response time	<2	ms
Interface detect poll	400	ms
Electrical		
Data link interface	RS-232	
Data framing	1 start bit, 1 stop bit, no parity	
Data rate	2.4	kb/s
Management		
LED status indicators		
*DC	power-on indication (green)	
(TX) *FR	signal framing okay	
(RX) *SYNC	input synchronised	
Environmental and safety		
Operating temp. range	-40 to +74	°C
Relative humidity	<95 (no condensation)	%
MTBF	>100,000 hrs	
Sinusoidal vibration	IEC69-2-6, Test Fc: 10-100Hz@9.8m/s ²	
Drop and topple	IEC68-2-31, Test Ec	
Electrical safety	AL / IEC / EN 60950-1	
UL recognition file	E242498	
EMC immunity	EN 55024, EN 50130-4, EN 61000-6-2	
EMC emission	EN 55022 (Class B) FCC 47 CFR 15 (Class B)	
Electrical		
Supply voltages	11-15 (/SA)	Vdc
Power consumption	1.2	W
Mechanical		
I/O connector	D37, female	
Serial connector	2 (TX), 2 (RX) pins on D37	
Housing	Eurocassette or SA	
Dimensions (HxWxD)	128 x 35 x 190	mm
Weight	450	g

Table 4. CCM 1010/RS232 technical specifications

7. Safety, EMC, ESD

General

The safety information contained in this section, and on other pages of this manual, must be observed whenever this unit is operated, serviced, or repaired. Failure to comply with any precaution, warning, or instruction noted in the manual is in violation of the standards of design, manufacture, and intended use of the unit.

Installation, adjustment, maintenance and repair of this equipment are to be performed by trained personnel aware of the hazards involved. For correct and safe use of the equipment and in order to keep the equipment in a safe condition, it is essential that both operating and servicing personnel follow standard safety procedures in addition to the safety precautions and warnings specified in this manual, and that this unit be installed in locations accessible to trained service personnel only.

Siquira assumes no liability for the customer's failure to comply with any of these safety requirements.

UL/IEC/EN 60950-1: General safety requirements

The equipment described in this manual has been designed and tested according to the UL/IEC/EN 60950-1 safety requirements.

If there is any doubt regarding the safety of the equipment, do not put it into operation. This might be the case when the equipment shows physical damage or is stressed beyond tolerable limits (e.g. during storage and transportation).

Before opening the equipment, disconnect it from all power sources. The equipment must be powered by a SELV^{*)} power supply. When this unit is operated in extremely elevated temperature conditions, it is possible for internal and external metal surfaces to become extremely hot.

^{*)} SELV: conforming to IEC 60950-1, <60 Vdc output, output voltage galvanically isolated from mains. All power supplies or power supply cabinets available from Siquira comply with these SELV requirements.

EMC

Warning: Operation of this equipment in a residential environment could cause radio interference.

This device has been tested and found to meet the CE regulations relating to EMC and complies with the limits for a Class A device, pursuant to Part 15 of the FCC rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against interference to radio communications in any installation. The equipment generates, uses, and can radiate radio frequency energy; improper use or special circumstances may cause interference to other equipment or a performance decrease due to interference radiated by other equipment. In such cases, the user will have to take appropriate measures to reduce such interactions between this and other equipment.

Note that the warning above does not apply to TKH Security products which comply with the limits for a Class B device. For product-specific details, refer to the EU Declaration of Conformity.

Any interruption of the shielding inside or outside the equipment could make the equipment more prone to fail EMC requirements.

To ensure EMC compliance of the equipment, use shielded cables for all signal cables including Ethernet, such as CAT5E SF/UTP or better, as defined in ISO IEC 11801. For power cables, unshielded three wire cable (2p + PE) is acceptable. Ensure that *all* electrically connected components are carefully earthed and protected against surges (high voltage transients caused by switching or lightning)

ESD

Electrostatic discharge (ESD) can damage or destroy electronic components. Proper precautions should be taken against ESD when opening the equipment.

8. Product disposal



Recycling

The unit contains valuable materials which qualify for recycling. In the interest of protecting the natural environment, properly recycling the unit at the end of its service life is imperative.

9. EU Declaration of Conformity

The EU Declaration of Conformity for this product is available at <http://www.tkhsecurity.com/support-files>.