# MCM302/10ET MORSE Router

RACOM s. r. o. Nové Město na Moravě Czech Republic

October 31, 2003

# 1. MORSE Router MCM302/10ET

# 1.1. Description

The MCM302/10ET scalable router serves as an expander of communication units and number of ports on one point of MORSE network. MCM302/10ET works as a router which arranges the communication by Ethernet line for other MORSE network members. It is rack mountable using a 19" rack.

The option card is called either as MCM302ET or ECO (Ethernet Controller) card, see description below. Each card has three SCCs with RS232 interface. Maximum allowable card slots in the MCM302/10ET is ten (10), thus making the total number of available SCC ports is thirty (30).



Port expander MCM302/10ET



ECO card

## 1.2. Overall arrangement

Power to the router is supplied from an in-built power supply. Each card is supplied separately through supplying cable and is connected through RJ45 connector to internal HUB. The MCM302/10ET router must be completed by required number of separately booked cards MCM302ET.

All the connectors, power-supply switch and supply lead are placed on the front panel. Besides the above mentioned components, there are also four RJ45 connectors ready to be connected to other components of MORSE system or LAN.

Communication between cards is handled through standard Ethernet interface with speed of 10 Mbps.

# 1.3. Basic technical and mechanical parameters of MCM302/10ET

Nominal supply voltage	230 V / 50 Hz
In-built fusible cut-out	T0.5A
Guaranteed oper. temperature range	-25 to $+55$ °C
Humidity range	10–90 %
Dimensions	$431 \times 132 \times 450 \text{ mm}$
Weight with 10 cards assembled	6 kg

## 1.4. ECO card

ECO card is an assembled PCB which can also be used independently in its own housing as stand-alone MORSE unit. The card is assembled with aluminium surface treated front end. At the front end of the card are three standard 9-pin CANON connectors placed together with indicators of TX, RX and 3,5 mm JACK meant for configuration of the card using a service terminal. All three SCCs labeled with numbers are configured through one service connector. On the rear side of the card are both supply connector and RJ connector for direct connection to Ethernet.



Figure 1.1.: The front panel of ECO card





Figure 1.2.: The rear panel of ECO card

#### 1.4.1. Configuration

Initial configuration is done using the service terminal Setr which is connected by a service cable to the RS232 interface. The next configuration of SCC channels can then be done over the Ethernet or MORSE network. Configuration options and parameters are described in the book *MORSE Firmware Documentation*. You can obtain the book and software on the Internet site www.racom.cz.



#### Technical and mechanical parameters of ECO card:

Nominal supply voltage13.8 VNumber of SCCs (RS232)3Maximum speed on SCC115 200 kbpsWay of connection to EthernetRJ-45Type of communication10 BASE-TGuaranteed oper. temp. range-25 to +55 °CHumidity range10–90 %

 $\begin{array}{ll} \text{Dimensions (with housing)} & 25 \times 128 \times 124 \text{ mm} \\ \text{Weight} & 0.2 \text{ kg} \end{array}$ 

### 1.5. Ethernet cable wiring

The wiring of the TP (twisted pair) cable with *RJ*-45 plugs for Ethernet 10BaseT and 100BaseT is based on the EIA TIA T-568B standard.

This standard specifies the colour designation of the cable and its wiring. Each pair of wires is composed of a colour wire and a wire with the same colour in combination with white.

The straight cable is used for connecting to the Ethernet by a hub (repeater) or switch-hub (router). A cross-over cable is used for interlinking between two devices – MR25ET $\leftrightarrow$ MR25ET, MR25ET $\leftrightarrow$ PC and the like.

The table below shows wiring of the connector and colour designation of wires. The cross-over cable has the same designation as the straight cable on one side.

Pin	Signal	Straight cable	Cross-over cable
1	TX+	white-orange	white-green
2	TX-	orange	green
3	RX+	white-green	white-orange
4		blue	blue
5		white-blue	white-blue
6	RX-	green	orange
7	—	white-brown	white-brown
8	—	brown	brown

#### Patch cable

MR25ET		HUB
1	$\rightarrow$	1
2	$\rightarrow$	2
3	$\leftarrow$	3
6	$\leftarrow$	6

#### Cross-over cable

MR25ET		MR25ET/PC
1	$\rightarrow$	3
2	$\rightarrow$	6
3	$\leftarrow$	1
6	$\leftarrow$	2



Figure 1.3.: The wire order of RJ-45 connector