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SYSTEM/PROJECT/PRODUCT : TC12 OTU

HANDBOOK FOR THE TC12 OTU SERIAL ENVIRONMENTAL MONITOR SENSOR INTERFACE

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ISSUE STATE

Note : Source of documents is shown under Type as below.

1=Paper, 2=VAX, 3=Microfilm, 4=CALTEXT Disc, 5=DECmate Disc, 6=Paper Insert, 7=MAC Disc, 8=LIFESPAN, 9=SUN, 10=AMW.

The document comprises the following components :-

Pages	Current Issue	Type	Part ID
1 to 11	01.00	10	667/HB/26228/000

1	SAFETY WARNING	4
2	INTRODUCTION	5
2.1	<u>Purpose</u>	5
2.2	<u>Issue Status</u>	5
2.3	<u>Reference Documents</u>	5
3	GENERAL DESCRIPTION	5
4	INSTALLATION INSTRUCTIONS	6
5	COMMISSIONING	7
6	HANDSET COMMANDS	8
7	FIG 1 - ENVIRONMENTAL INTERFACE BLOCK DIAGRAM	9
8	FIG 2 - INSTALLATION	10
9	FIG 3 - RS232/RS485 SWITCH POSITIONS	11

1

SAFETY WARNING

In the interests of health and safety, when using this equipment the following instructions must be noted and adhered to:

- (i) Only skilled or instructed personnel with relevant technical knowledge and experience, who are also familiar with the safety procedures required when dealing with modern electrical/electronic equipment are to be allowed to use and/or work on the equipment. All work shall be performed in accordance with the Electricity at Work Regulations 1989.
- (ii) Such personnel must take heed of all relevant notes, cautions and warnings in this handbook, the TC12 General Handbook (666/HB/43100/000), the TC12 Installation, Commissioning and Maintenance Handbook (666/HE/43100/000) and any other document or handbook associated with the equipment.
 - (a) The equipment must be correctly connected to the specified incoming power supply (if applicable).
 - (b) The equipment must be disconnected/isolated from the incoming power supply before removing protective covers or working on any part from which protective covers have been removed.

2 INTRODUCTION

2.1 Purpose

This document is a guide for professional installation and maintenance personnel. It describes how to install, commission and maintain the TC12 OTU Serial Environmental Sensor Interface, for use with an installed TC12 OTU.

2.2 Issue Status

Issue 01.00a First draft for review.
Issue 01.00b Up-issue following review
Issue 01.00c Correction to Fig 3 - Switch now shown set to 'DTE' position.
Issue 1 First issue

2.3 Reference Documents

TC12 General Handbook 666/HB/43100/000
TC12 Installation, Commissioning and Maintenance Handbook 666/HE/43100/000
Roadside Pollution Monitor T500P Enclosure Installation Instructions 611/HE/32730/100

3 GENERAL DESCRIPTION

The purpose of the Serial Environmental Sensor Interface is to allow a Free Standing TC12 OTU or a T400 with Integral OTU, to be connected to a Roadside Pollution Monitoring Unit (RPM). Environmental information measured by the RPM is sent via an armoured cable carrying RS485 signals to a TC12 OTU or a T400 with Integral OTU. The end of this cable is connected to the Serial Environmental Sensor Interface. The other end of the Interface connects to the handset port of the TC12 OTU or the handset port of the T400. The OTU then sends the measured values back to the UTC Instation.

This Serial Environmental Sensor Interface facility is provided by a kit of parts 667/1/26804/000 which consists of:

RS232 to RS485 Converter
RS232 to RS232 interface cable with low profile right angle connectors
Cable ties

See Fig 1, Fig 2 and Fig 3 for installation details.

Note: If the UTC 'Remote Handset' facility is being used on the UTC system (part of the UTC Upload/Download facility), then this uses the 'handset interface' software of the OTU. The input from the Serial Environmental Monitor also uses the 'handset interface' software of the OTU. Whichever facility first accesses the 'handset interface' on the OTU (or Controller), will lockout the other facility while the first facility maintains its connection with the 'handset interface'. Therefore once the RPM has started sending information to the Instation, the UTC 'Remote Handset' will not be able to access the OTU (or controller, in the case of an Integral OTU)

4 INSTALLATION INSTRUCTIONS

Fig 1 shows a diagrammatic representation of the interface.

The incoming armoured cable should be fixed to the cabinet earth bar using the same method as employed for the other incoming armoured cables, ensuring that the armouring is earthed. The armouring should be stripped back sufficiently to enable connection to the RS232/RS485 Converter. The Converter should be placed in a convenient position near the bottom of the cabinet revealing 2, two pair cables. These are labelled Pair 1 and Pair 2.

Details of the RS232/RS485 Converter are contained in the manufacturer's instruction book. The cover of the RS232/RS485 Converter is removed by placing a screw driver under the cover at the 25 way socket end of the device and twisting to force the cover off. The switches in the RS232/RS485 Converter should be set to the positions shown in Fig 3. The 2 wires as identified in Fig 3 are stripped and screwed into the terminal block in the Converter as shown. The two part strain relief collar is then fitted around the wires and the groove in the collar fitted into one half of the Converter cover. The collar is then gripped to allow the other cover to be slid into the grooves on the other side of the collar. The two covers are then squeezed together until they click, and are then joined together. Care should be taken with the orientation of the two wires as they pass through the collar as this will make assembly easier.

The RS232 Cable can now be connected to the handset socket on the Free Standing OTU, or the handset socket on the Main Processor board in the case of a T400 controller with an Integral OTU. The other end of the cable is connected to the 25 way socket on the RS232/RS485 Converter. The RS232/RS485 Converter should then be fixed to a convenient place to support its weight using an appropriate cable tie(s). The RS232 Cable should also be secured in appropriate positions to support its weight such that it does not place any strain on the handset socket or the Converter to which it is connected.

Fig 2 shows the equipment installed in a typical controller cabinet.

5 COMMISSIONING

Plug the handset into the handset port on the TC12 OTU, or the handset port on the T400 Main Processor board in the case of an Integral OTU. Enter the Write Access Enable command for the OTU. Refer to the TC12 Installation, Commissioning and Maintenance Handbook for details.

Check that the Serial Environmental Interface is enabled on the OTU by entering GEI. GEI:0 should be displayed indicating that the facility is enabled.

Use the GEC command to set up the channel numbers required. See the Handset Command section for details.

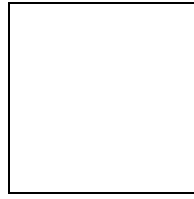
Use the GRL handset command to set up the bits and the bytes of the UTC Reply message to be used for sending the Environmental Monitoring data back to the UTC centre.

To confirm that the OTU has been set up correctly, plug in a TC12 Instation Test Set into the OTU. Use the GED handset command to confirm that the Environmental Sensor data is in fact sent back on the required UTC Reply bytes and bits. e.g. enter GED 1 = 65. Check on the Instation Test Set that the most significant 5 bits of the 2 Reply bytes selected by the GRL command show the channel number (1 in this example) and that least significant 10 bits of the 2 bytes show the value (65 decimal in this example which is 0001000001 in binary).

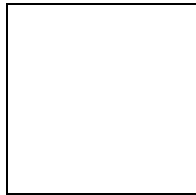
Disconnect the handset and connect the Environmental Sensor Interface Cable in its place. Check using the Instation Test Set that the top 5 bits of the 2 selected Reply bytes are displaying the sensor channel numbers as output by the RPM and that data is being displayed in the lower 10 bits which corresponds to the value being output byte RPM for that channel.

6 HANDSET COMMANDS

Mne- monic	1st Index	2nd Index	Data	Access Level	Description
GEC	1 to 23	-	0 or 1	2	Value = 0, The LMU Input channel number as selected by the handset command index, is NOT selected for Environmental Monitoring. Value = 1, the LMU input channel number, as selected by the handset command index, IS selected for Environmental Monitoring.
GRL	0 to 13	0 to 7	0 to 255	2	To allocate the pair of bytes to be used for the Environmental Monitor data, set the first index number to the lower byte number of the pair, set the second index to the first bit 0, this indexes in that byte. Set the value equal to 57 to specify use for Environmental Monitoring data. e.g. GRL2 0=57 selects bytes 2 and 3 for the Environmental Monitor reply.
GED	0 to 23	-	0 to 1023	1	The Roadside Pollution Monitor outputs data using this command. e.g. GED1=xxxx GED2=xxxx where the number following channel number. GED is the xxxx is a decimal value in the range 1 to 1023. The value 0 is discarded.
GEI	-	-	0 or 1	2	GEI=0 enables the Serial Environmental Interface method of operation for sending environmental information to the UTC centre. This is the default value. GEI=1 enables the use of the Environmental Interface PCB which inputs 4 to 20mA analogue currents from an RPM and inputs them into the OTU's LMU inputs.



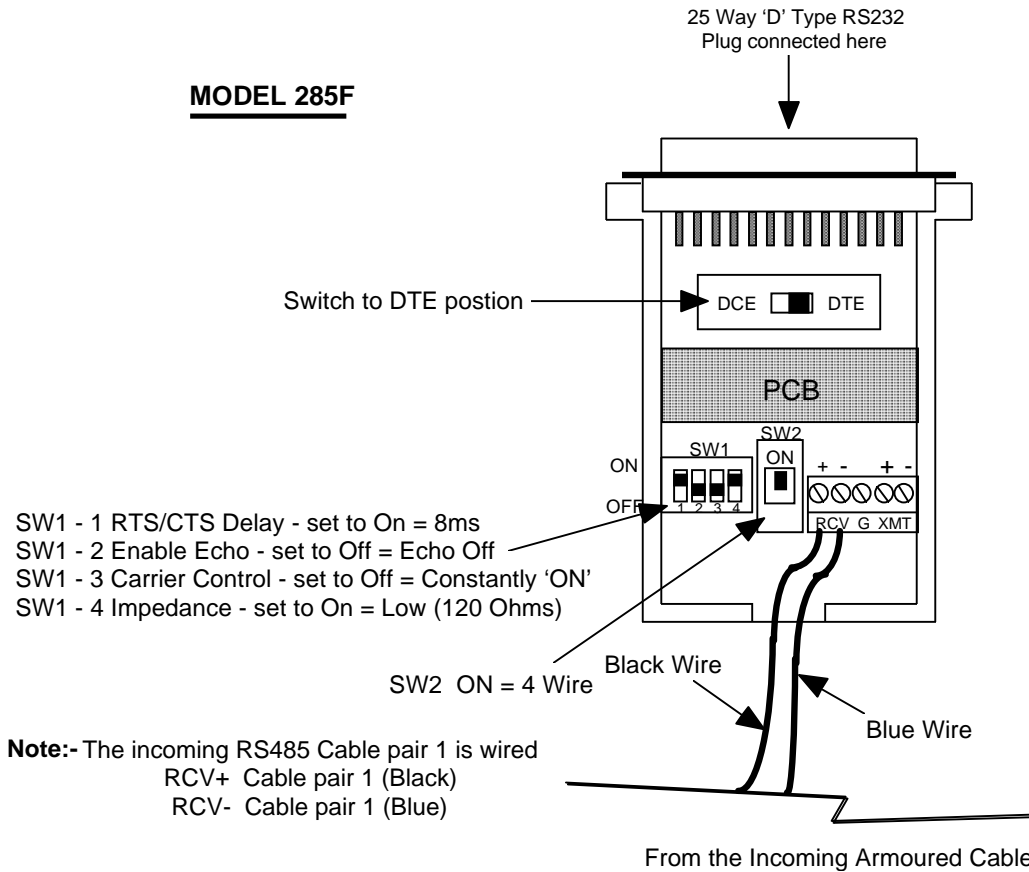
8 FIG 2 - INSTALLATION



9 FIG 3 - RS232/RS485 SWITCH POSITIONS

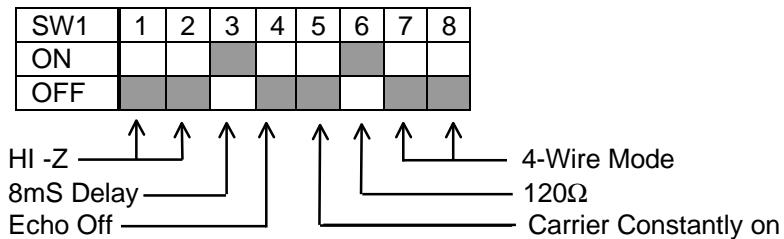
The switches on the RS232/RS485 converter should be set to the positions shown.

RS232/RS485 CONVERTER



The Model 285 was superceded by the Model 2085. The switch settings for this model are shown below:-

SWITCH 1



The required setting is shown shaded.

The RS485 Cable connects in exactly the same way as the Model 285.