

REMOTE DUAL BAND GSM MODEM

C ←BUS

GSM 822 Eng.



- Uses GSM 900/1800 MHz digital telecommunication networks
- Communicates with central desk-top modems (e.g. MCV 711 & GSM 712)

1.APPLICATION

GSM 822 modem is used in "TELECOSTER " telemanagement systems, installed at remote sites (e.g. boiler plants) for communicating data to and from the central site.

2.FUNCTIONS

GSM 822 modem is an E-GSM dual band (900/1800MHz) modem with a configurable transmission speed of 2400 to 14,400 bps both in non-transparent (with error correction) and transparent (without error correction) modes.

The minimum communication speed over the network is 2400 bps so it cannot be called up by a modem that supports lower network rates, as, for example, COSTER MCT 710 desktop modem.

Supports AT+ commands in conformity with standard ETSI GSM 07.05 & 07.07 & V.25ter.
The digital interface conforms to Recommendations ITU-TV.24 & V.28.
It is equipped with a self-diagnostic function that indicates when GSM carrier detected.

3.REFERENCE STANDARDS

The protocol specifications are based on the following standards:

- ETSI GSM 07.07 : European digital cellular telecommunication system (Phase 2). At command set for GSM Mobile Equipment.
- ETSI GSM 07.05 : European digital cellular telecommunication system (Phase 2). Use of DTE/DCE interface for Short Message service and cell broadcast service.
- ITU-T V.25ter : "serial asynchronous automatic dialing and control".

4.MODEM ACCESSORIES

Code	Description
APA 812	5 m cable for extending antenna modems GSM 712 and GSM 822
ACM 822	
ALM 688	
	Serial cable for direct connection to PC
	Back-up power supply

5. TECHNICAL DATA

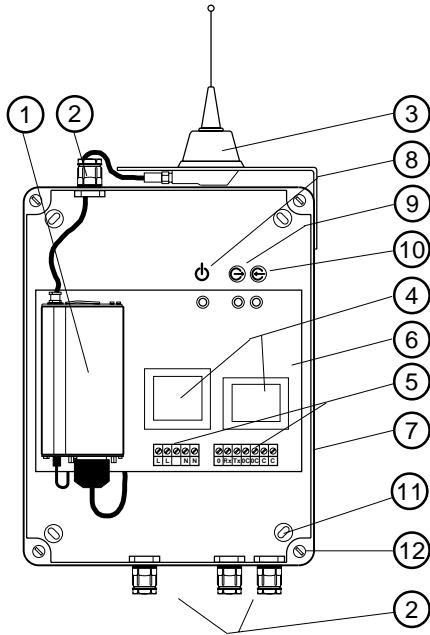
• Transmission data:

Data format	asynchronous start-stop
Character format	8 data bits, 1 stop bit, parity odd/even/none
Transmission speed	2400 ... 14400 bps
Transmission standard	V.24, V.25
Transmission mode	full duplex
Interface speed	300 bps ... 115.2 Kbps
DTE interface	conforms ITU-T V.24/V.28 tested on female connector 15 pins SUB D
Traffic control	RTS/CTS
Power RF output (max)	33 dBm ± 2 dB (900) 30 dBm ± 2 dB (1800)
Antenna RF	SMA connector

• Electrical & mechanical

Power supply	230 V ~ ± 10 %
Frequency	50 ... 60 Hz
Consumption	5 VA
Protection excess voltage	self-reset fuse
Electrical protection	IP 54
Construction standards	Italian Electrotech. Committee (CEI)
Ambient temperature:	
- operation	- 20 ... + 55 °C
- storage	- 25 ... + 70 °C
Dimensions	195 x 97 x 250 mm (W x D x H)
Weight	1.40 kg

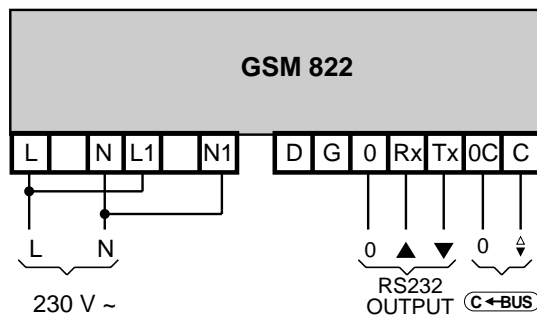
6. FRONT PANEL



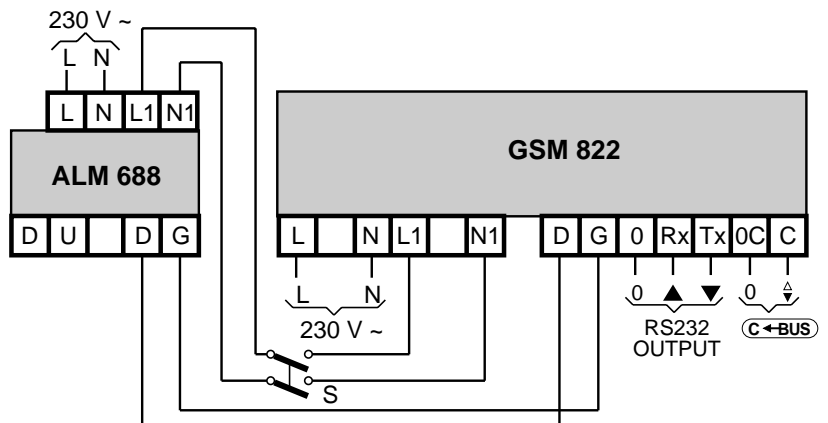
- 1 - GSM dual band modem
- 2 - PG 7 type cable entry gland
- 3 - external antenna
- 4 - transformers
- 5 - terminal block for electrical connections
- 6 - PCB supporting modem power supply circuits and RS232/C-Bus interface
- 7 - IP 54 case
- 8 - mains power LED
- 9 - transmission data LED
- 10 - reception data LED
- 11 - holes for wall installation
- 12 - cover securing screws

7. WIRING DIAGRAMS

• Without back-up power supply



• With ALM 688 back-up power supply



- L - N** - mains electric power supply (230 V~)
- L1 - N1** - electric power supply from mains or back-up power supply (230 V~)
- D - G** - direct current from back-up power supply (18 V~)
- S** - double pole isolation switch (recommended)
- RS232** - RS232 serial output for connection to Coster devices having RS232 serial input.
- C-BUS** - parallel output for connection with Coster devices having C-Bus parallel input.

8. INSTALLATION & CONNECTIONS

The modem must be sited in a dry space with a temperature not above 55°C and protected from any possible water leaks.

It must be mounted on a wall with the antenna sited in a zone covered by the telephone network provider chosen:

- Ensure that the wall where the modem is to be mounted is in a zone covered by the chosen network provider. This can be checked by locating a phone in the proposed position & checking the on screen display for signal strength. Should there be no signal, try mounting the modem on another wall, or arrange for the antenna to be installed in a different place from the modem using a suitable extension.
- Unscrew the four screws (6.12) that secure the cover to the base and separate the two parts.
- Fix the modem to the wall using the holes provided (6.11).
- Carry out the electrical connections strictly in accordance with the wiring diagrams given above and with the regulations in force, using PG7 cable entry glands (6.2).
- It is advisable not to insert more than two cables in a single terminal of the modem.
- For the power supply connections to the modem the use of stranded copper cables of at least 1.5 mm² cross section is recommended.
- For the communication ring (C-Bus) use a normal twin-core cable of at least 1mm² cross section; it is important to respect the polarities and to this end it is advisable to use wires having different colours.
- Check with a multimeter that there are no short circuits or breaks in the power wiring or C-Bus circuit.
- Power up (230V-) and check with a multimeter across terminals L - N and L1- N1.
- Remove power, replace cover on base and secure it with the four screws (6.12).

9. SIM CARD

WARNING: when ordering the GSM 822 modem the name of the telephone network provider to be used should be specified so that the modem is configured correctly on delivery.

• Purchase of SIM card

It is advisable to purchase your SIM card from your chosen GSM network service providers' agent.

When purchasing it is indispensable to:

- ask for a card enabled for the transmission and reception of data and fax. Usually, the telephone operator will supply a SIM card with three telephone numbers:
 - a VOICE number to be used for voice telephone calls.
 - a FAX number to be used for fax communication.
 - a DATA number to be used for telemanagement.
- ask for the following modes for communication data:
 - Asynchronous - "TRANSPARENT" (error correction disabled).
 - Asynchronous - "NON TRANSPARENT" (error correction enabled)

Note : It may be possible to obtain a SIM card with one number (only data services enabled). Contact your network provider for details.

• Inserting the SIM card in GSM 822

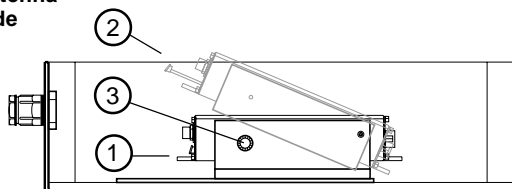
WARNING : Before inserting the SIM card in GSM 822 modem it is indispensable to disable the PIN code of the card.

To carry out this operation use a GSM cellular telephone: insert the SIM card concerned in the cellular telephone and then, following the instructions for this telephone, disable the PIN code of the SIM card.

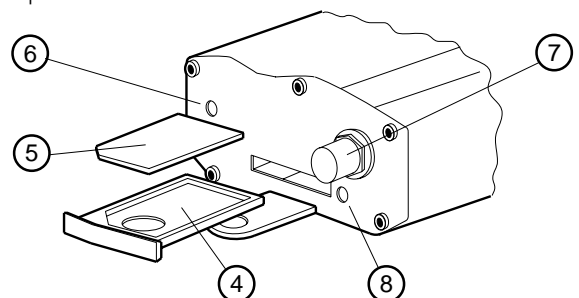
The operations to be carried out to install the SIM card in GSM 822 are:

- **ensure that the GSM 822 modem is switched off. UNDER NO CIRCUMSTANCES MUST THE SIM CARD BE INSERTED OR REMOVED WHILST THE MODEM IS SWITCHED ON. THESE OPERATIONS MUST BE CARRIED OUT WITH THE MODEM SWITCHED OFF.**
- remove the transparent cover by first unscrewing the four screws (6.12) that secure it to the base and separate the two parts.
- loosen the securing screw (9.3) and, using the finger of one hand, lift up the modem so as to be able to access the front panel of the device (as shown in 9.1 and 9.2).
- using a pointed object, press the yellow button (9.8) in order to extract the holder for the SIM card.
- insert the SIM card in the holder provided making sure that the card is the correct way up.
- re-insert the card holder in the modem and switch on the power.

antenna side



- 1 - normal position of GSM 822
- 2 - raised position of GSM 822
- 3 - modem securing screws
- 4 - holder for SIM card
- 5 - SIM card



- 6 - red LED indicates when GSM carrier detected
- 7 - antenna connector
- 8 - yellow button for extracting SIM card holder

• GSM network field strength indicator

The red LED on the front panel of GSM 822 (9.6) indicates the status of GSM 822 modem:

- LED unlit (Off) : modem not ready
- LED lit (On) : carrier detected
- LED flashing slowly : searching for carrier
- LED flashing rapidly : modem transmitting

To know exactly the network field strength you must:

- connect GSM 822 to a computer (with SIM inserted and powered up) and
- by means of a communication program or using SWC 701 telemanagement program, send to modem the command "**AT+CSQ**";
- then read the reply from GSM 822:
 - reply: from **14 to 31** = the signal should be sufficient.
 - reply: from **0 to 13** and **+99** = the signal unlikely be sufficient.

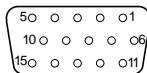
10. CONFIGURATION MODEM

If essential it is possible to re-initialise the modem so as to reconfigure it completely, for example, when you change telephone network provider and, as a consequence, you have to change the data transmission mode (from "Transparent" to "Not transparent" or vice versa).

- Disconnect the serial port connection of the GSM dual band modem (6.1) from the interface base (6.6);
- Connect to the serial port of the modem (now free) a computer on which is installed with the SWC 701 telemanagement program using an ACM822 serial cable ;
- Go to "SETTINGS - RS232" of SWC 701 program, configure correctly the serial port used, the type of modem connected (in this case select "GSM 822") and the correction of errors according to the data transmission mode used (9600 bps transparent or 9600 bps not transparent);
- Press the "SAVE" key; at the end of the operations the modem will be correctly configured for "TELECOSTER" telemanagement.
- Restore the original connections.

11. SERIAL 15 PINS SUB D CONNECTOR

The serial connector used in GSM 822 is of the 15 pins SUB D type. The connections of each pin are given in the following table:



	PIN	USE	DESCRIPTION
SERIAL RS-232	1	DCD	Data Carrier Detect
	2	TX	Trasmission Data
	6	RX	Receive Data
	7	DSR	Data Set Ready
	8	DTR	Data Terminal Ready
	9	GND	Signal Ground
	11	CTS	Clear to Send
	12	RTS	Request to Send
AUDIO	13	RI	Ring Indicator
	4	MICROPHONE (+)	
	5	MICROPHONE (-)	
	10	SPEAKER (+)	
	15	SPEAKER (-)	
	14	RESET	
	3	RESERVED	