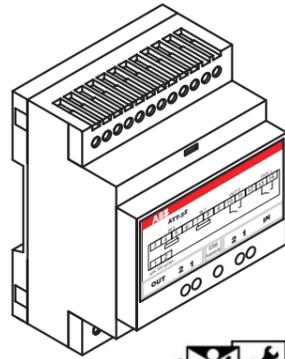


ATT-22

GSM/GPRS REMOTE CONTROL



EN USER GUIDE

2CSM322000R1371 **ATT-22** EMBEDDED ANTENNA
 2CSM208345R1371 **ATT-22E** EXTERNAL ANTENNA

NOTE
 At reason of the evolution of standards and products, the company reserves to modify in every time the features of the product described in this document, that it's necessary to verify preventively.
 The liability of the producer for damage caused by defect of the product "can be reduced or deleted (...) when the damage is caused joint by a defect of product or for blame of the damaged or a person of which the damaged is responsible" (Article 8, 85/374/CEE).

ABB SACE S.p.A.
 Apparecchi Modulari
 Viale dell' industria, 18
 20010 Vittuone (MI) Italy
 Tel.: 02.9034.1 Telefax: 02.9034.7609

<http://bol.it.abb.com>

SAFETY INFORMATION

- Do not install this unit near medical devices like pacemakers or hearing aids. This unit may interfere with the operation of these devices.
- Switch off this unit when flying. Secure it so that it cannot be switched on inadvertently.
- Do not install this unit near petrol stations, fuel depots, chemical plants or blasting operations when this unit can disturb the operation of technical equipment.
- Interference can occur if this unit is used near televisions, radios or personal computers.
- If the device has been stored in a cold environment, then condensation can occur. Before starting operations, the device must be absolutely dry. Thus, an acclimatization period of at least three hours must be observed.
- In order to avoid possible damage, we recommend that you only use the specified accessories. These have been tested and shown to work well with this unit.

This device should be installed only by qualified personnel. Carefully read the instruction manual in its entirety and keep it safe for future reference. It is essential to know the information and comply with the instructions given in the manual to ensure the fitting is installed, used and serviced correctly and safely.

This RF unit is not designed for and intended to be used in portable applications (within 20 cm or 8 inches of the body of the user) and such uses are strictly prohibited.

This unit is not authorised for use as critical component in life-support devices or systems unless a specific written agreement has been given.

If incorrectly installed in a vehicle, the operation of GSM device could interfere with the correct functioning of vehicle electronics. Verification of the protection of vehicle electronics should form a part of the installation. Regulations must be considered to operate a vehicle's light or horn on public roads.

No complex software or hardware system is perfect. Bugs are always present in a system of any size.

In order to prevent danger to life or property, it is the responsibility of the system designer to incorporate redundant protective mechanism appropriate to the risk involved.

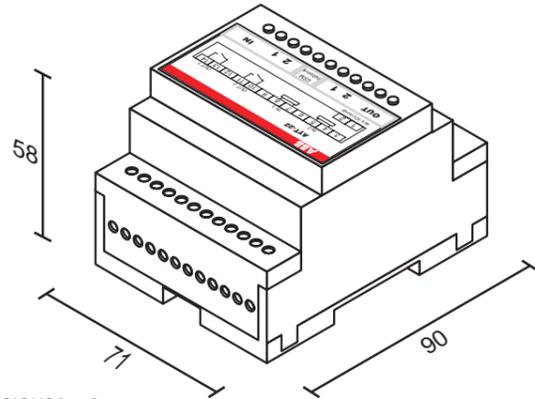
All units are 100% functionally tested. Specifications are based on characterisation of tested sample units rather than testing over temperature and voltage each unit.

Contrive disclaims all liability for damage to the fitting or to other property or persons deriving from installation, use and maintenance that have not been carried out in conformity with this instruction manual, which must always accompany the fitting.

PRODUCT DESCRIPTION

The ATT-22 is an industrial DIN rail GSM modem for the supervision and control of remote inputs and outputs by means of enhanced features available through GSM network.

Industrial standard interface and an integrated SIM card reader mean it can be used rapidly, easily and universally to quickly implement new applications in telemetry, telematics and remote control. All interfaces are integrated in the housing. The connections are suitable for use in domestic and industrial environments.



DIMENSIONS [mm]

PRODUCT FEATURES

Dual band EGSM900 and GSM1800 for data, sms, fax and voice applications
 Full Type Approved and compliant with ETSI GSM Phase 2+

Output power: Class 4 (2W @ 900 MHz)
 Class 1 (1W @ 1800 MHz)

Temperature: operating -20 to 55°C
 storage and transport -30 to 85°C

Relative humidity: operating 5 to 95% non-condensing
 storage & transport 5 to 95% condensation allowed outside

Enclosure: EN-50022 rail 4 modules, polycarbonate, UL94 -V0

Overall dimensions: mm 71 x 90 x 58 (W x H x D)

Weight: 200 g

Degree of protection: IP 40 (EN-60529 / IEC 529) properly fitted

CARE AND MAINTENANCE

Your ATT-22 is the product of advanced engineering, design and craftsmanship and should be treated with care. The suggestion below will help you to enjoy this product for many years.

- Do not expose the unit to any extreme environment where the temperature or humidity are out of operating range.
- Do not use or store the unit in dusty or dirty areas. Its moving parts (SIM holder for example) can be damaged.
- Do not use chemical cleaning agent on the unit or the SIM card.
- Do not attempt to disassemble the unit or remove any part or label. There are no user serviceable parts inside.
- Do not expose the unit to water, rain or spilt beverages. It is not waterproof.
- Do not abuse the unit by dropping, knocking or violently shaking it. Rough handling can damage it.
- Do not place the unit alongside computer discs, credit or travel cards or other magnetic media. The information contained on these devices may be affected.
- This unit is under your responsibility. Please treat it with care respecting all local regulations. It is not a toy. Therefore, keep it in a safe place at all times and out of the reach of children.
- Treat the SIM card with the same care as your credit card: do not bend or scratch or expose it to static electricity.
- Try to remember your unlock and PIN codes. Become familiar with and use the security features to block unauthorised use and theft.

Both fixed and mobile applications are allowed, as defined below:

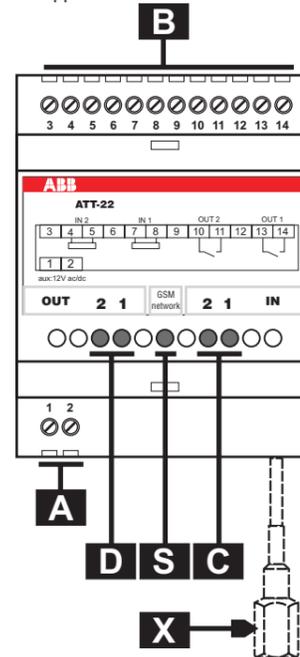
Fixed means that the device is physically secured at one location and is not able to be easily moved to another location.

Mobile means that the device is designed to be used in other than fixed locations and generally in such a way that a separation distance of at least 20 cm (8 inches) is normally maintained between the transmitter's antenna and the body of the user or nearby persons.

Do contact an authorized service center in the unlikely event of a fault in the unit.

INSTALLATION

This unit can be installed on any standard EN-50022 rail by simple snap-in. A minimum protection degree IP40 must be guaranteed, raised to IP54 for open-air application.



- A. Power Supply input
2 x 2,5mm² (AWG14)
- B. Input and output terminals
14 x 2,5mm² (AWG14)
- C. Input red led status indicators
- D. Output green led status indicators
- X. External antenna (type ATT-22E)
RG174 + FME male jack
- S. GSM operation LED indicator
 - OFF
No power supply
 - ON
PERMANENTLY
Module switched ON
Not registered on the network, missing SIM or invalid PIN
 - SLOW FLASH
200ms ON / 2s OFF
Module switched ON
Registered on the network
 - QUICK FLASH
200ms ON / 600ms OFF
Module switched ON
Registered on the network
Communication in progress

POWER SUPPLY

- Features:
- 12 V DC ±20% polarity independent
 - 12 V AC ±20%
 - < 30 mA @ 12 V DC in standby mode
 - < 100 mA @ 12 V DC in standby mode, relays ON
 - < 200 mA @ 12 V DC in communication mode
 - < 1 A @ 12 V DC max peak current
 - 2 x 2.5 mm² (AWG14) screw connector

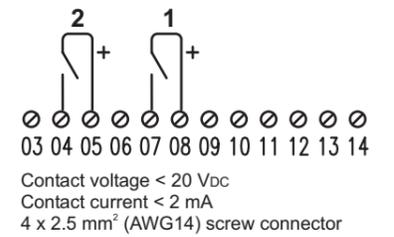
This unit can be supplied either by alternating or direct current, polarity independent. Power supply connection on terminal 1 and 2, bottom left side. The power supply unit must meet the demands placed on SELV [1] circuits in accordance with EN60950.
 The power supply must not be shared with other equipment: suggested power supply source is a simple 12VAC / 5VA transformer.
 The maximum permissible connection length between device and supply source is 3 m. Overvoltages are suppressed by internal varistor.

[1] Safety Extremely Low Voltage

INPUTS / OUTPUTS

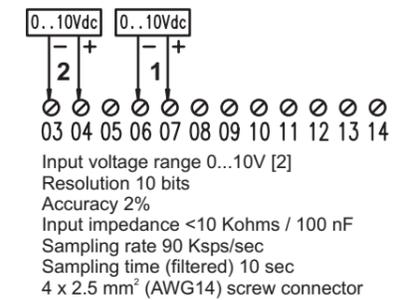
DIGITAL INPUTS

SPST contacts can be connected between terminals 4-5 and 7-8, power supply for contacts is provided by ATT-22. Using electronic switches, terminal 5 and 8 are the positive legs. In order to avoid false triggering, contacts will be considered closed or open after 10+20 seconds from stable condition.



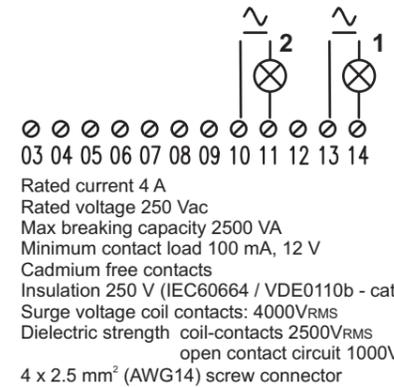
ANALOG INPUTS

Analog signal can be connected to terminals 4 and 7 both are referenced to common ground terminals 3 and 6.
 Analog signal circuits must meet the demands placed on SELV [1] circuits in accordance with EN60950.
 Using analog inputs, front panel red led indicators [C] doesn't work.



OUTPUTS

Process or appliance can be controlled by means of 2 SPST relay contacts available between terminals 10-11 and 13-14.



[1] Safety Extremely Low Voltage
 [2] Use 500 ohm resistor to convert between 0-10 V to 0-20mA analog signal.

ANTENNA

ATT-22 with embedded antenna

The embedded antenna is located under the front panel. This omnidirectional antenna can work properly if the front side of the device is not shielded by metallic frames (i.e.: the ATT-22 is installed inside a metal cabinet).

ATT-22 X with external antenna

An external dual-band antenna must be connected to the RF interface, implemented as a 50 FME male coaxial jack at the end of a short RG174 cable stub exiting from the top side of the device. The antenna must fulfil the requirements given below:

Frequency TX	880 to 915 MHz	1710 to 1785 MHz
Frequency RX	925 to 960 MHz	1805 to 1880 MHz
Impedance	50 ohms	
VSWR	RX max	1.5 : 1
	TX max	1.5 : 1
Polarization	Linear	
Typical gain	0 dBi in one direction at Least	

We recommend a VSWR max of 1.5:1 although a VSWR max of 2:1 can be accepted without affecting performance and certification.
 The DC impedance is floating but there is no problem when using antennas that present a short to ground.

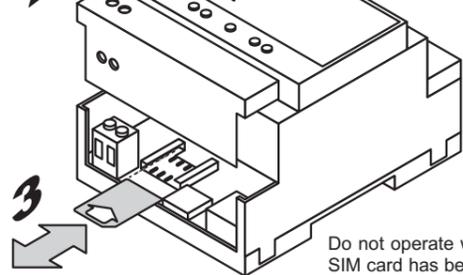
SIM CARD

The SIM card receptacle is intended for 3V SIM cards [GSM 11.12 phase 2+]. The SIM card must be inserted in the cardholder to put the unit into operation.

Make sure that there is no voltage applied to ATT-22.

Disconnect also the backup battery, if any. Following the figure below:

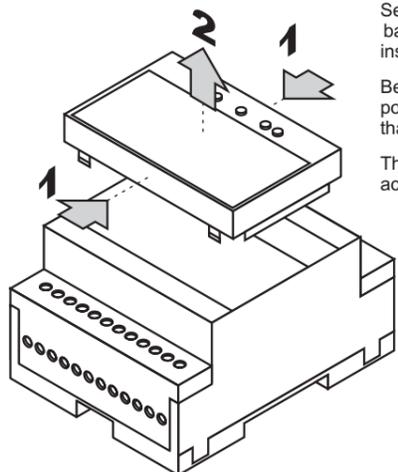
1. Unlock the top cover using a small screwdriver.
2. Slide up the top lid.
3. Insert the SIM card in the receptacle, contacts must be on the bottom side.



To remove the SIM card repeat operations 1 and 2, gently pull the SIM card out.

Do not operate without top cover, once the SIM card has been inserted replace the top lid and then connect power supply.

ACCESS INSIDE



Serial communication port and backup battery are located inside the unit.

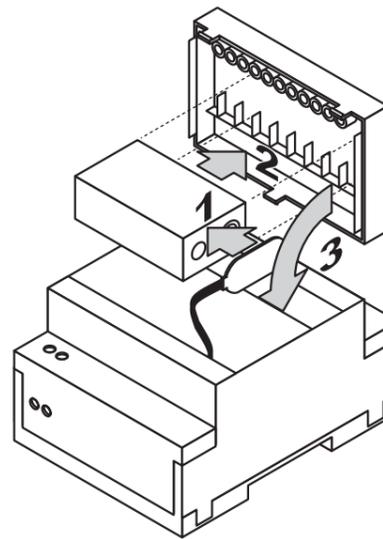
Before opening the unit disconnect power supply and all live circuits that may be connected.

The front cover must be removed to access the inside of the unit :

1. Push with two fingers on top and bottom sides of front cover to release it.
2. Pull the front cover and keep it in a safe place.

The newer NiMH batteries are less harmful to the environment, have a longer life, and contain recyclable materials. Recycling options available in your local area should be considered when disposing of this product. Do not dispose of in fire.

BACKUP BATTERY



ATT-81 is provided with a backup battery installed to keep the device working even during power failures. Once the front cover has been removed:

1. Clip the battery to available connector. This connector must be isolated when operating without backup battery.
2. Push the battery into retainer lids located under front cover.
3. Replace the front cover to close the unit.

WHEN USING BATTERIES AND ACCUMULATORS ADHERE TO RELEVANT REGULATIONS

Use only NiMH rechargeable batteries 8.4V or 9.6V type.

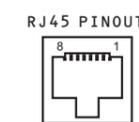
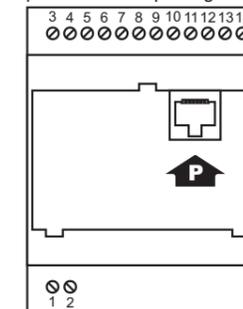
COM PORT

ADVANCED CONFIGURATION, LOCAL CONTROL, TRACING AND OTHER FEATURES ARE AVAILABLE THROUGH SERIAL COMMUNICATION LINK

Specific literature and software **ATT-tool** for PC running Microsoft® Windows® are available in miniCD present in the package

Remove the front cover following the instructions to access the RJ45 8 pin modular jack serial interface [P].

Link cable is provided in the package.



- | | |
|---------|-------|
| 1. GND | DB9-5 |
| 2. RTS | DB9-7 |
| 3. GND | |
| 4. CTS | DB9-8 |
| 5. GND | |
| 6. Tx D | DB9-3 |
| 7. GND | |
| 8. Rx D | DB9-2 |

Communication: RS-232 (DCE)
300 ... 115200 bit/s
7/8 data bits, 1/2 stop bits, 1 parity bit, 10/11 bit char length
Software handshake, Hardware handshake

SIM PIN



Operating without SIM PIN

The simplest way is to put your SIM card into a cellular phone and program it so it won't ask for the PIN. The SIM card is 'open' and someone could steal the SIM card, use it and read the information inside.



Enter default SIM PIN

ATT-22 comes with a default PIN = 0000 (four zeroes).

Put your SIM card into a cellular phone and program the PIN using the given number.



Change default SIM PIN

Using com port and **ATT-tool** running on Microsoft® Windows® PC you can modify the default PIN on both ATT-22 and SIM card.



WARNING

If you insert a SIM card that asks for a PIN number different from that stored into ATT-22, the device will not operate.

If you enter the PIN 3 times incorrectly, SIM card will lock up and you must provide the PUK (PIN Unblocking Key).

DEVICE INFO

To identify your device more easily, you can store some specific information.

A supervisor can issue the following SMS:

```
+3,300,tel,info,,,,,email,text
tel Device own phone number 20 CHAR MAX [1]
info Short description 14 CHAR MAX
email Optional device own email address 40 CHAR MAX [2]
text Detailed device application info 56 CHAR MAX
```

Example: +3,300,+4456789,Building 1,,,,,Apt. 5 living room

info and text will be shown within status SMS sent by this unit.

[1] Device phone number (always in international format) will be used to perform real time clock autosync, missing this field the real time clock is unreliable and SMS commands involving date field will be rejected.

[2] All email issued from Gprs type unit will be sent carbon copy also to its own mailbox if a valid address is provided.

STATUS SMS

Following a typical status SMS issued on request:

```
Building 1 Short description
door control unit Detailed device application info
Out1:off output released
Out2: on 00:01:22 remaining time to output off
In 1 :3.14 V measured voltage (analog mode input)
In 2 :open input open
Clip:pulse on clip mode and status
Blackout Main power failure detected
```

Out 1 / 2 status: off output inactive
on output active, remaining time to disable could follow
!on output active and latched
| reverse or pulse clip sequence in progress

In 1 / 2 status: open input open, inactive

SYSTEM COMMANDS

Special control SMS are reserved for supervisors only:

Stop

Disable free calls control feature (CLIP): incoming calls will be rejected.

Start

Enable free calls control feature (CLIP): incoming calls from registered users will activate outputs following the specified sequence.

Lista#

An SMS reporting last # (1-9) answered call list will be sent. Full list specifying 0.

Listu#

An SMS reporting last # (1-9) unanswered call list will be sent. 0 = full list.

Pbook

An Email reporting the complete phonebook will be issued to supervisor's email address, if any (GPRS only).

Pbook++

An Email reporting the complete phonebook and all system settings will be issued to supervisor's email address, if any (GPRS only).

QUICK START

Add Users (group 0)

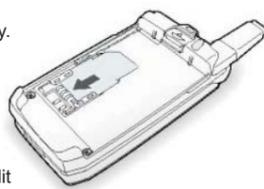
Remote control is allowed to registered users only.

It's possible to add, modify or delete subscribers from the SIM card phonebook using any GSM mobile phone or SIM card reader/writer.

Following operating instructions provided by phone manufacturer insert the SIM card into the SIM card holder, turn on the phone and scroll the option menu to enter the SIM card Phonebook edit mode.

Enter the users name and telephone number using international format.

Insert the SIM card into the device SIM card holder and turn on the power supply, the unit is ready to operate.



Store first supervisor

Although it is not mandatory to store a supervisor, you may add a supervisor who then has additional special commands only available to him (advanced manual). To store the first supervisor, once the unit is operative, issue the following SMS:

```
#xxxx.Name.email*
# start character
xxxx system PIN (default = 0000) 4 CHARACTERS
Name supervisor's name to be stored 14 CHARACTERS MAX
email optional email address 40 CHARACTERS MAX
* end character
```

Example: #0000.Harry Potter.harry.potter@hogwarts.com*

The telephone number of SMS sender is automatically collected from the incoming call presentation (thus the telephone number must be kept visible) and will be assumed as the first supervisor's telephone number.

First supervisor will be stored at position 401 and the unit will send back a confirmation or error SMS.

The dot [.] character is the separator between fields and must not be used inside NAME field. It's possible to use dot characters inside Email field. It's possible to use both ? and @ characters before the domain name.



SMS delivery failure is usually less than 1% but you must keep in mind that a message could not arrive and you cannot complain with your operator for this. **ATT-22 deletes any pending SMS at power-on.**

SMS CONTROL

Any registered user can control outputs by means of SMS.

Following default commands can be changed to any custom text using **ATT-tool**.

More details available on "Advanced Manual".

```
S1 Set output 1 ON [3]
S2 Set output 2 ON [3]
R1 Reset output 1 OFF
R2 Reset output 2 OFF
M1 Set output 1 ON and LATCH (set again at further power on) [4]
M2 Set output 2 ON and LATCH (set again at further power on) [4]
D Status SMS request
B Ringback request once command has been processed
```

Commands will be recognized both uppercase, lowercase and mixed, nested within other text wherever placed inside the incoming SMS. Multiple commands into same SMS are allowed.

[3] Specifying a time interval after the set command, outputs will be released once set time has elapsed. If a power failure occurs, the remaining time is missing, thus the output will be released. Command syntax:

```
S1ddhhmm dd days 00 - 99
hh hours 00 - 23
mm minutes 00 - 59
```

[4] Specifying date/time after the set and latch command, outputs will be released at specified expiry date/time. Output status will be recovered after blackout providing the real time clock sync has been performed successfully.

```
M1ddmmyyhhmm dd day 01 - 31
mm month 01 - 12
yy year 00 - 99
hh hours 00 - 23
mm minutes 00 - 59
```

Example: S1000830 M22504061230 text D alien trailer
turn ON output 1 for 8 hours and 30 minutes,
turn on and latch output 2 until April 25, 2006 12:30
send back a status SMS

```
s2 text M1 alien trailer B  
turn ON output 2,
```

FREE CLIP CONTROL

Registered users can control outputs by means of simple (free) calls. Supervisors can set different activation times and outputs behaviour issuing an SMS:

```
+2,290,,,pulse,rev1,hold,rev2,answ,mode
pulse On time 01 - 60" default 3"
rev1 Out1 ON time in reverse mode 01 - 60" default 3"
hold Hold time in reverse mode 01 - 600" default 3"
rev2 Out2 ON time in reverse mode 01 - 60" default 3"
answ Time to answer in toggle mode 01 - 60" default 15"
mode none, pulse, toggle, reverse, dtmf
```

NONE

Clip feature is disabled, nothing happens on incoming calls from registered users.

PULSE (default)

Selecting this mode, incoming voice (or fax) call from registered user will turn on out 1 for the time set in pulse. A data call will do the same on out 2.

TOGGLE

Incoming voice (or fax) calls will toggle out 1 on to off or vice-versa, data calls will do the same on out 2. A ringback will be issued only when an output is turned on. If the user waits online, after the time specified in answ ATT-22 will answer, playing a low tone after output release or four high tones after output activation. No ringback will be issued in such case.

REVERSE

This mode involves both outputs. Any incoming call from registered users will start a sequence: out 1 will be activated for the time specified in rev1, after the delay set in hold, out 2 will be activated for the time specified in rev2.

DTMF

ATT-22 will answer to incoming call from registered users that, after a short welcome tone, can type the command code on the phone keyboard. Following default commands can be changed to any custom one using **ATT-tool**.

1	2	3
OUT1 ON	OUT2 ON	-
4	5	6
OUT1 OFF	OUT2 OFF	-
7	8	9
OUT1 LATCH	OUT2 LATCH	-
*	0	#
CONFIRM	STATUS	DELETE

Once all commands are issued, confirm the execution typing * (star) key. Using # (hash) key is possible to delete everything and start from the beginning.

Correct commands will be confirmed by a sequence of high tones. Wrong commands will produce a long low tone.

Standards Ref. ETS 300-342-1

Directive No. 1999/5/CE:

CE 0678