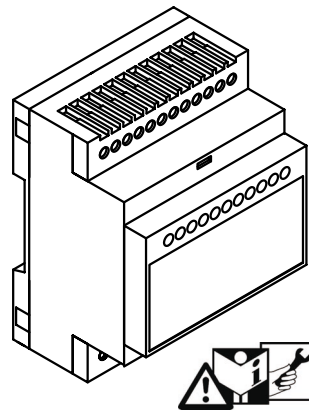


Mobi.Control

GSM REMOTE CONTROL



CE 0681

This device complies with Part 15 of the FCC Rules
CONTAINS FCC ID N7NQ2687

EN USER GUIDE

Mobi.Control 2500. 2 2 . X B

STANDARD VERSION: 2500.22.XB
OTHER OPTIONS ON REQUEST
ANTENNA IS NOT PROVIDED AND
MUST BE PURCHASED SEPARATELY

OUTPUTS	
NO OUTPUT RELAYS	0
1 OUTPUT RELAY	1
2 OUTPUT RELAYS	2
ANALOG INPUTS	
NO INPUTS	0
2 INPUTS	2
ANTENNA	
EXTERNAL FME	X
INTERNAL	I
BATTERY	
NO BATTERY	0
Li-Poly BATTERY	B

CARE AND MAINTENANCE

Your Mobi.Control 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.
- 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.
- 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: keep it in a safe place 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.
- Keep your unlock and PIN codes in safe place.

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.

WARRANTIES

CONTRIVE GUARANTEES FOR TWO YEARS FROM THE DATE OF MANUFACTURE OF ITS PRODUCT TO REPLACE, OR, AT ITS OPTION, TO REPAIR ANY PRODUCT OR PART THEREOF WHICH IS FOUND DEFECTIVE IN MATERIAL OR WORKMANSHIP OR WHICH OTHERWISE FAILS TO CONFORM TO THE DESCRIPTION OF ITS SALES ORDER. CONTRIVE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY EXPRESS OR IMPLIED. IN NO EVENT SHALL CONTRIVE BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY NATURE WHICH MAY ARISE IN CONNECTION WITH SUCH PRODUCTS.

THE WARRANTY DOES NOT APPLY IN CASE OF IMPROPER USE

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, 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 complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

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.

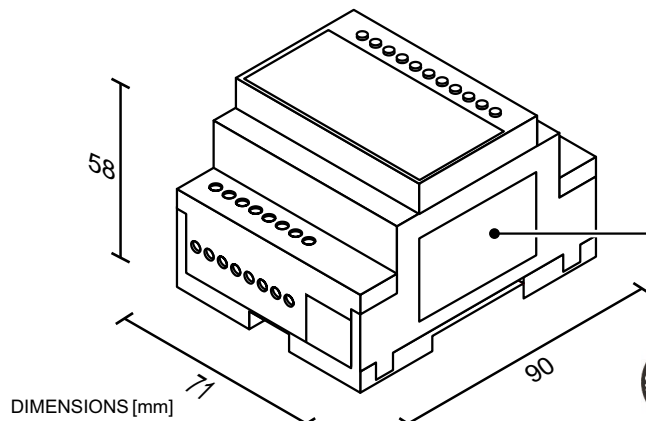
PRODUCT DESCRIPTION

Mobi.Control 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.

PRODUCT FEATURES

Quad band GSM / GPRS / EDGE communication with manual / automatic selection on bands 850 / 900 / 1800 / 1900 MHz for data, sms, data and voice applications.

Output power:	Class 4 (2W for GSM850 and EGSM900) Class 1 (1W for DCS1800 and PCS1850)
Temperature:	-30 to 60°C (-40 to 85°C when relays are not in use) -20 to 60°C recommended for battery
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



CONFIGURATION

Mobi.Control is fully configurable by means of:

- Mobi.Suite**: freeware tool available for download: www.contrive.mobi
 - linked to device through local COM port
 - generating configuration SMS to be sent to the remote device
 - sending configuration through device Web account ONCE A WEB ACCOUNT HAS BEEN CREATED BY DEVICE
- Web interface**: once a web account is available: www.webadmin.mobi

The configuration interface and Web Control requires a data connection, consider enabling this interface depending on the application and evaluating the tariff plan related to data transfer proposed by your Operator.

When you configure the access point to the network (APN), the device automatically activates the data link and create its own account.

The configuration of the access point can be made using Mobi.Suite, alternatively you can send the following SMS to the device:

xxxx	APN	device password	DEFAULT=0000
xxxx	APN	access point	PROVIDED BY YOUR OPERATOR
user	APN	APN username	LEAVE BLANK IF NOT REQUIRED
pwd	APN	APN password	LEAVE BLANK IF NOT REQUIRED

Example: 0000 APN=apn.operator.com,mymobi,mypassword

Once you have completed the activation, Mobi.Control will send you back an SMS including the identifier to be used to access its Web account.

You can set up some information about the device:

IDENTIFIER	to be included in all sent messages
PHONE NUMBER	assigned to SIM card
EMAIL ADDRESS	to be used within messages
PASSWORD	to be used for local/remote access
CLOCK SETTINGS	manual / automatic

Mobi.Control can be configured so that the occurrence of specific events:

POWER SUPPLY	failure / restore
BATTERY	low / high
INTERNAL TEMPERATURE	low / high
RELAY OUTPUT O1-O2	on / off
DIGITAL INPUTS I1-I8	opening / closing
ANALOG INPUTS A1-A2	low / high thresholds
DIGITAL INPUTS C1-C2	opening / closing
TIME COUNTER INPUTS T1-T2	accumulated time threshold
PULSE COUNTER INPUTS P1-P2	accumulated pulses threshold
PULSE COUNTER INPUTS P1-P2	low / high ratio thresholds
GEO POSITION	MCC / MNC / LAC / CI change

send alerts to recipients using different formats and at configurable intervals:

PHONE CALL	voice message on answer
SMS	custom text
EXTENDED SMS	including device status
TWEET	custom text
EMAIL	custom text and device status

For each input / output channel is possible to define a name and set the operating parameters.

The behavior of Mobi.Control can be configured by setting some rules:

USERS 1	enable according to day / hour
USERS 2	enable according to day / hour
RECIPIENTS	enable according to day / hour
INCOMING CALLS	behavior / timing / feedback
ORIGINATED CALLS	behavior / duration / inter-call pause
INCOMING SMS	confirmation feedback
ORIGINATED SMS	mode / pause between sending
WEB SERVICES	connectin mode
PLC (10)	name / event / commands

By means of PLC rules is possible to define up to 10 commands (the same available from remote) that will be **carried out upon the occurrence of a local event**, creating a small programmable controller.

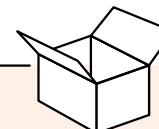
The same commands can be **scheduled to be carried out** by configuring up to 100 operations on a specified date (only once) or periodically daily, weekly or yearly.

If the Web Services have been activated you can define operations associated with **sunrise and sunset time** (updated weekly by date and geographical area).

The incoming SMS messages that contain no commands are discarded. But it is possible to define some forwarding rules based on the sender's phone number and/or based on keywords contained in the text in order to send these messages to a phone number of your choice.

Please perform the following tasks after receiving the product:

- Inspect the unit for damage. If the unit appears damaged upon receipt, contact the shipper immediately.
- Verify receipt of the correct unit by checking the label on the right side of the unit.
- If you have received the wrong model or the device does not function properly, contact your supplier.



REMOTE CONTROL

Up to 5 commands can be issued to Mobi.Control within SMS, Tweet, Email, Web. Message must include device password (default 0000,editable). Commands will be recognized both uppercase, lowercase and mixed, nested within other text wherever placed inside the incoming message.

out	SWITCH OUTPUTS ON/OFF
start1	ENABLE GROUP 1 USERS
stop1	DISABLE GROUP 1 USERS
start2	ENABLE GROUP 2 USERS
stop2	DISABLE GROUP 2 USERS
alert	ENABLE ALERTS TO RECIPIENTS
noalert	DISABLE ALERTS TO RECIPIENTS
sms	SEND A DIRECT SMS
tweet	SEND A DIRECT TWEET
email	SEND A DIRECT EMAIL
status	ASK FOR DEVICE STATUS
clock	REAL TIME CLOCK SETTINGS
set1	CHANNEL 1 SETPOINT
set2	CHANNEL 2 SETPOINT
thr	ANALOG / COUNTER THRESHOLDS SETTINGS
zero1	RESET COUNTER 1
zero2	RESET COUNTER 2
log	ASK FOR 98 EVENTS LOG MEMORY
clearlog	DELETE EVENTS LOG MEMORY
logstatus	SAVE CURRENT STATUS TO LOG MEMORY
logemail	SEND CURRENT STATUS TO EMAIL ADDRESS
beep	PLAY AN AUDIO TONE
melody	PLAY A MELODY
speech	PLAY A VOICE MESSAGE
way	GEOGRAPHIC INFORMATION
neton	ENABLE RADIO AND NETWORK REGISTRATION
netoff	DISABLE RADIO AND RELEASE NETWORK
netnew	PERFORM A NEW NETWORK REGISTRATION
divert	ENABLE INCOMING CALL DIVERTING
nodivert	DISABLE INCOMING CALL DIVERTING

Complete commands list and details here:

www.contrive.mobi/mobicontrol

SHORTCUT COMMANDS FOR REGISTERED USERS

Users stored into device Phonebooks are allowed to use shortcut commands that doesn't require password. 7 commands are predefined (editable):

S1	Set output 1 ON
S2	Set output 2 ON
R1	Reset output 1 OFF
R2	Reset output 2 OFF
P1	Pulse output 1 (default 3")
P2	Pulse output 2 (default 3")
D	Status SMS request

Specifying a time interval after the set command, outputs will be released once set time has elapsed:

S1=DDhmm	hh	hours	00-23
	mm	minutes	00-59
	ss	seconds	00-59

... or at a specified expiry date/time:

S1=DDMMYYhmm	DD	day	01-31
	MM	month	01-12
	YY	year	00-99
	hh	hours	00-23
	mm	minutes	00-59

Example: **S1=083000 S2=2504141230 text D alien trailer**
turn ON output 1 for 8 hours and 30 minutes
turn ON output 2 until April 25, 2014 12:30
send back a status SMS

CALL COMMANDS FOR REGISTERED USERS

Behavior of Mobi.Control at incoming calls from Registered Users can be set to:

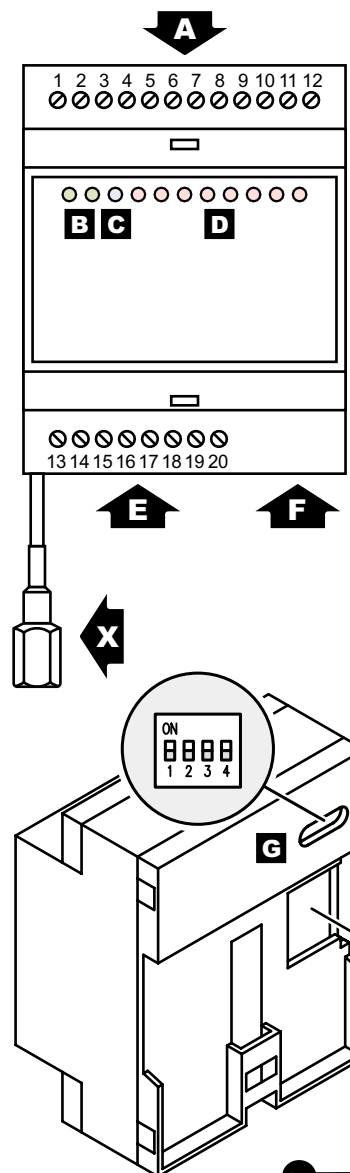
- NO ACTION**
Clip feature is disabled, nothing happens on incoming calls.
- PULSE (default 3")**
Selecting this mode, incoming voice (or fax) call will turn on out 1 for the specified time. A data call will do the same on output 2. Call terminated without answer.
- TOGGLE**
Incoming voice (or fax) call will toggle output 1 on to off or vice-versa, data calls will do the same on output 2. If the user waits online, Mobi.Control will confirm the operation by means of voice messages.
- REVERSE**
Any incoming call from registered users will start a sequence: output 1 pulse, pause, output 2 pulse (all times configurable). Call terminated without answer.
- ANSWER**
Mobi.Control answers the incoming call, accepting up to 5 control codes on the telephone keypad.
- * (star) to confirm once all commands are issued
- # (hash) to delete and start from the beginning

Voice prompt will guide during the operation.

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

INSTALLATION

This unit can be installed on any standard EN-50022 rail by simple snap-in. For safe operation, the unit must be installed only by qualified personnel in an enclosure which prevents accidental contact with hazardous voltages. Protection degree IP40 must be guaranteed, raised to IP54 for open air application.



- F. RJ socket - COM port
- A. Analog and digital input terminals 12 x 2,5mm² (AWG14)
- B. Output green LED indicators
- C. GSM operation blue LED indicator
 - OFF
 - 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
- D. Digital input red LED indicators
- E. Outputs, counter inputs and power supply terminals 8 x 2,5mm² (AWG14)
- X. Antenna connector NOT AVAILABLE FOR IPEX VERSION
- G. Analog input selector

Disconnect all power supplies and battery before to insert or remove the SIM card. Replace the plastic cover before to operate the unit.

F. SIM card holder 3V and 1,8V SIM card allowed

SIM PIN

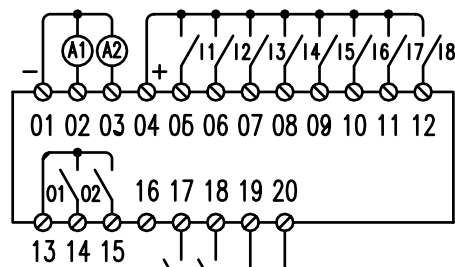
Put your SIM card into a cellular phone and program it so it won't ask for the PIN: the SIM card is 'open' and someone could steal the SIM card, use it and read the information inside. You may protect the SIM card later using **MobiSuite** configuration software.

WARNING

If you insert a SIM card that asks for a PIN number different from that stored into **Mobi.Control**, 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).

WIRING

- 01. Negative
- 02. Analog Input 1
- 03. Analog Input 2
- 04. Positive 3,3VDC
- 05. Digital Input 1
- 06. Digital Input 2
- 07. Digital Input 3
- 08. Digital Input 4
- 09. Digital Input 5
- 10. Digital Input 6
- 11. Digital Input 7
- 12. Digital Input 8
- 13. Output common
- 14. Relay output 1
- 15. Relay output 2
- 16. —
- 17. Counter input 1
- 18. Counter input 2
- 19. Power supply
- 20. Power supply

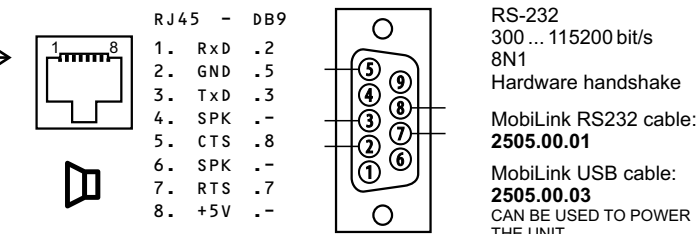


POWER SUPPLY, INPUTS AND COM PORT MUST MEET THE DEMANDS PLACED ON SELV (SAFETY EXTREMELY LOW VOLTAGE) CIRCUITS ACCORDING TO EN60950 / IEC950

Regulated 3,3V – 50 mA MAX available at terminal 04 respect to negative terminal 01. On battery equipped units such power supply is provided also when main power supply is missing; to prevent permanent damage to battery external loads must be disconnected when voltage drops below 3Vdc.

COM PORT

Easy configuration, local control, tracing and other advanced features are available through serial communication link. Configuration software **MobiSuite** for PC running Microsoft® Windows® is available for free download at www.contrive.it.



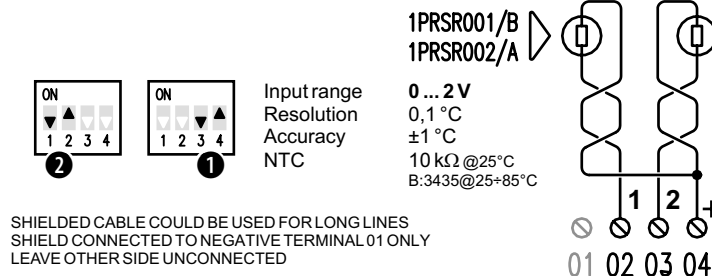
ANALOG INPUTS

Up to 2 analog signal can be connected at terminals 02 – 03 respect to negative terminal 01. Select input mode by means of dipswitch [G] before to operate the unit.

Software configuration available for each input:

full scale value	1 ... 100000
zero (offset) unit	0 ... 90% any text
Input range	0 ... 20 mA
Voltage drop	2 V @20mA
Resolution	0,02 mA
Accuracy	±1%
Impedance	100 Ω
Input range	0 ... 10 V
Resolution	0,01 V
Accuracy	±1%
Impedance	25 kΩ
Input range	0 ... 2 V
Resolution	0,002 V
Accuracy	±1%
Impedance	5 kΩ

NTC temperature sensor measuring in the range -10...60°C can be directly connected to analog inputs: set inputs for 2V and enable NTC software linearization.



SHIELDED CABLE COULD BE USED FOR LONG LINES SHIELD CONNECTED TO NEGATIVE TERMINAL 01 UNCONNECTED LEAVE OTHER SIDE UNCONNECTED

Active devices could be powered directly from **Mobi.Control** when voltage and output are compatible and total current consumption remains within 50 mA.

TEMP °C	OUT mV
+125	+1205
+100	+1049
+25	+580
0	+424
-25	+268
-40	+174

POWER SUPPLY

This unit can be supplied either by alternating or direct current, polarity independent, in a wide voltage range. Power supply connection terminals 19 and 20. The power supply must not be shared with other equipment: suggested power supply source is a simple 12VAC / 10VA transformer.

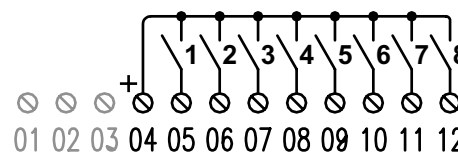
Supply Voltage	9,5... 35V DC
	9,5 ... 27 V AC
Power consumption	<200 mW IDLE
	<5 W PEAK

An automatic 2-pole circuit breaker or equivalent protection capable of disconnecting circuit in the event of short circuit or over-current condition should be placed on the AC mains side of power supply unit. Maximum permissible connection length between device and low voltage supply source is 3 m.

DIGITAL INPUTS

Up to 8 SPST contacts can be wired to terminals 05 – 12, status reported on LED indicators [D]. Internal power supply is available at terminal 04. Independent debounce time setting for each input in the range 1... 300 seconds.

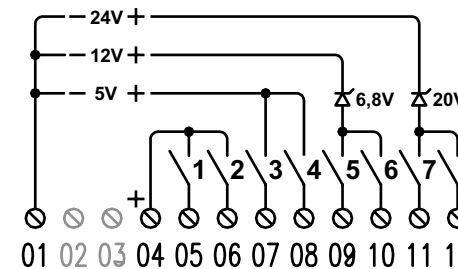
Input voltage 3 ... 9 Vdc
Input current 5mA @5V
Output voltage 3,3V DC AT TERMINAL 04



When inputs are supplied by external source, negative must be connected to terminal 01. Insert a zener diode to keep inputs voltage within 9Vdc.

Multiple options can be used, see example below:

- inputs 1 and 2 using internal supply
- inputs 3 and 4 using external 5Vdc supply
- inputs 5 and 6 using external 12Vdc supply reduced by zener diode 6,8V
- inputs 7 and 8 using external 24Vdc supply reduce by zener diode 20V



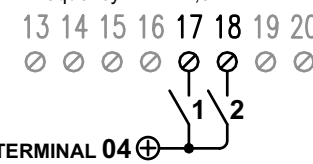
External power supply for inputs must meet SELV circuits requirements according to EN60950 / IEC950: maximum allowed voltage is 60Vdc.

COUNTER INPUTS

Two special digital inputs are available at terminals 17 – 18. Inputs can be used as a standard digital input in addition to 8 channels already available (without LED indication).

Independent debounce time setting for each input in the range 1... 300 seconds. Inputs can operate also as a pulse or time counter. SPST contacts, magnetic reed or hall sensor and electronic switches can be used. Internal power supply is available at terminal 04, using electronic switches this is the positive leg.

Input voltage 3...9 Vdc
Input current 5mA @4V
Output voltage 4V DC ±20% AT TERMINAL 04
Pulse width > 200 / 20 ms CONFIGURABLE
Frequency < 2,5 Hz



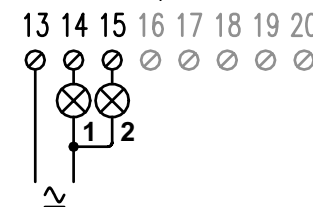
OUTPUTS

Two SPST relay contacts are available for process or appliance control at terminals 14 – 15, status reported on LED [B]. Common return at terminal 13.

Rated current 3 A
Rated voltage 250 VAC
Breaking voltage 277 VAC
Max breaking capacity 750 VA
Minimum contact load 1 mA, 5 VDC
Cadmium free contacts
Insulation to IEC60664
Voltage rating 277 V
Pollution degree 2
category as basic insulation III
category as reinforced insulation II

Surge voltage coil contacts: 5000VRMS

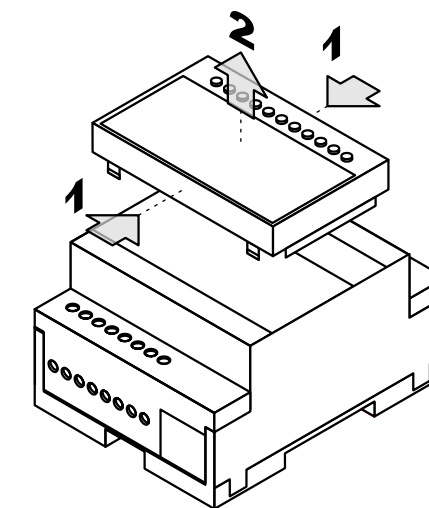
Dielectric strength
coil-contacts 3000VRMS
open contact circuit 750VRMS



To prevent relay contacts from damaging, an external protection should be provided (fuse or similar), according to the relay breaking capacity.

BATTERY

This unit could be equipped with an high efficiency Lithium-Ion Polymer battery having a long life, that largely depends on temperature and frequency of main power failures, used in normal condition can last several years. If the battery is already connected, you just need to provide power supply to operate **Mobi.Control**. The battery charging process will start. If the battery is not connected, proceed as follows:



Disconnect power supply and all live circuits. Remove front cover to access the inside :

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.
3. Unplug battery connector from the socket [K].
4. Replace the front cover to close the unit.

Disconnect the battery if the device is put out of service.

BATTERY SPECIFICATIONS

Voltage 3,7V 4,2V FULLCHARGE
Capacity > 320 mAh 1,26 Wh
Temperature -20...60°C 0...45°C CHARGING

Before a long period of inactivity switch off the unit to prevent deep discharge of the battery.

This operation can be accomplished using **Mobi.Suite** terminal or from the console by issuing the command **AT+CPOF**

Battery status is reported at any time by the LED located near the connector:

OFF	OFF	Charge OFF
RED	OFF	Charge in progress
OFF	GREEN	Charge completed
RED	GREEN	Bad or NO battery



ANTENNA

The antenna must be connected to the RF interface, implemented as a 50Ω connector available in 2 different options:

- External FME male coaxial jack at the end of a short RG178 cable stub exiting from the bottom left side of the unit.
- Internal IPEX connector suitable for embeddable antennas.

The antenna must fulfil the requirements given below:

Frequency TX	880 to 915 MHz	1710 to 1785 MHz	824 to 849 MHz	1850 to 1910 MHz
Frequency RX	925 to 960 MHz	1805 to 1880 MHz	869 to 894 MHz	1930 to 1990 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			

The gain must not exceed 8,4dBi @ 850MHz and 3,5dBi @ 1900MHz. 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.

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