



GsmControl



USER GUIDE

Issue:03-2002 Firmware Version 1.4 - OCTOBER 2002

- *Start marker # & **
 - *Automatic registration retry on low signal strength*
 - *Output latching command ' M ' and status code ' !on '*
-

Issue:04-2003 Firmware Version 3.0 - JULY 2003

- *SMS confirmation on configuration*
- *Output 1 Permanently ON with CLIP configuration ' 0 '*
- *Push-push SIM card receptacle*
- *External Antenna connector from bottom side*
- *RJ11 programming socket*
- *Extended temperature range*

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Safety Information

Radio devices have limitations in the vicinity of electronic devices :



- Do not install the GsmControl near medical devices like pacemakers or hearing aids. The GsmControl may interfere with the operation of these devices.



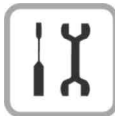
- Switch the GsmControl off when flying. Secure it so that it cannot be switched on inadvertently.



- Do not install the GsmControl near petrol stations, fuel depots, chemical plants or blasting operations when the GsmControl can disturb the operation of technical equipment.



- Interference can occur if the device is used near televisions, radios or PCs.



- 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 GsmControl. However, the warranty does not cover these accessories.

The warranty does not apply in the event of improper use.

Safety Information

GsmControl is not authorized for use as critical component in life-support devices or systems unless a specific written agreement regarding such intended use is entered into between the customer and Contrive prior to use.

Life-support devices or systems are devices or systems intended for surgical implantation into the body or to sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labelling and user's manual, can be reasonably expected to result in significant injury.

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 mechanisms appropriate to the risk involved.

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

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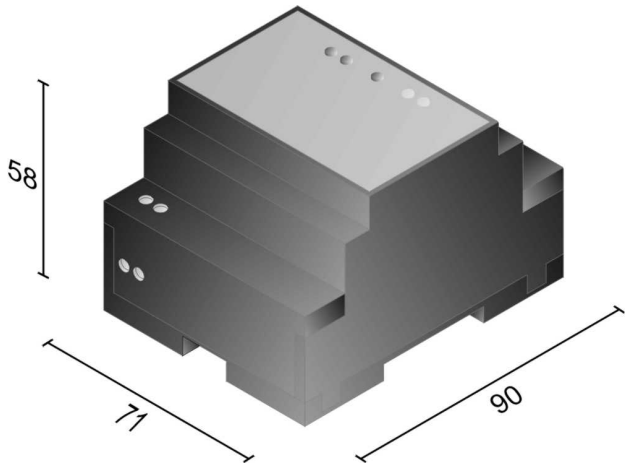
Product description

The GsmControl is an industrial GSM terminal 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 as a dual band GSM remote control.

The features, functions and interfaces of the GsmControl are described below.

All the interfaces are integrated in the housing. The connections are suitable for use in domestic and industrial environments.



The GsmControl is based on proven RF technology by Telit - DAI Telecom.

Product description

- Highlights**
- Dual band EGSM900 / DCS1800
 - Ring, CLIP, SMS and Fax
 - R&TTE approval
 - Easy to integrate
 - Industrial interfaces
 - LED displays
 - Standard industry and automotive voltage range
 - Highly compact, light and powerful
 - Embedded omnidirectional antenna (type A)
 - External antenna connector (type X)

- Applications**
- Teleservice
 - Security systems
 - Domotic appliances
 - Home and automotive antitheft systems
 - Free call gate opener
 - Doorbell repeater
 - Alert caller
 - Vending machines
 - Remote configuration

Features

- Product data**
- Dual band EGSM900 and GSM1800
 - Certified in accordance with GSM phase 2/2+
 - RF Output performance :
 - Class 4 (2W) for EGSM900
 - Class 1 (1W) for DCS1800
 - Sensitivity better than -102dBm
 - Power supply voltage 8÷38 Vdc, 6÷29 Vac
 - Power consumption 3 W_{MAX} @ 24Vac
[~60mA STANDBY, ~100mA TRANSMITTING PEAK]
 - 2 SPST relay output, 1000VA @ 250Vac
 - 2 SPST contact inputs, internal power supply
 - Operating temperature -10 ÷ +55 °C *
 - EN-50022 rail 4 modules enclosure
 - Weight approx : 180 g
 - Protection class EN-60529 : IP40 (properly fitted)

* System could operate in extreme functional condition -20 °C ÷ +70 °C affecting the sensitivity and performance of the module

- Certification**
- R&TTE approval (Directive 1999/5/EG)
 - Low Voltage Directive 73/23/EEC
 - EMC directive 89/336/EEC

- Interfaces**
- Power supply connector 2,5mm² (AWG14)
 - Inputs / Outputs connector 2,5mm² (AWG14)
 - Antenna connector FME male (type X)

- Accessories**
- Omnidirectional planar antenna
 - Power supply units
 - EIA-232 Programming adapter including freeware Windows® utility

Features

- Configuration**
- SMS
 - Add, replace, delete phonebook entries
 - Enable, disable options
 - Freeware Windows® utility
 - Add, replace, delete phonebook entries
 - Enable, disable options
 - Write custom event driven SMS

- SIM protection**
- Enable PIN request
 - Disable PIN request

- Control**
- Free call CLIP recognition pulse turn on ♦
 - SMS turn on, off, pulse without confirmation ♥
 - SMS turn on, off, pulse with free ring confirmation ♥
 - SMS turn on, off, pulse with SMS confirmation ♥

- Supervision**
- SMS status on request ♥
 - Free ring alert, event driven ♦
 - SMS status automatic issue, event driven ♦
 - Custom SMS or FAX automatic issue, event driven ♦

- ♦ Authorised subscribers stored into SIM phonebook
- ♥ PIN protected operation

Installation

- Package contents**
- GsmControl (1012.00.0X)
 - User Guide (B1012eng)

**Safety and
Installation
information**

- This device should be installed and set up only by qualified personnel
- If a power supply unit is used to supply the GsmControl, it must meet the demands placed on SELV ¹ circuits in accordance with EN60950.
- When using batteries and accumulators, adhere to relevant regulations.
- The maximum permissible connection length between GsmControl and supply source is 3 m.

**Mounting the
GsmControl**

GsmControl 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.

¹ Safety Extremely Low Voltage

Installation

Front view



- A. Power Supply input
- B. SIM card holder
- C. Input and output terminals
- D. Input LED status indicators
- E. GSM operation LED indicator
- F. Output LED status indicators
- P. RJ11 Programming socket
- X. RG174 cable stub with FME male jack (type X only)

Interface description

The following interfaces are available on the GsmControl:

- Terminals for power supply
- Terminals for input contacts
- Terminals for output contacts
- Mini SIM card holder
- Connector for programming adapter
- Antenna connector FME male (type X)

Power supply

GsmControl receives its power supply from terminal 1 and 2, on the left of bottom side. The voltage must be within 8÷38 Vdc or 6÷29 Vac.

Polarity reversal protection

Since GsmControl can be supplied by direct or alternating current, the power supply input is polarity independent.

Overvoltage protection

Overvoltages are suppressed by internal varistors on the power supply input.

Fuses

An internal automatic fuse ensures electrical safety in the event of faults.

If an external protection is provided, connect a fast 1,5 A fuse on the positive line of the power supply.

Interference immunity

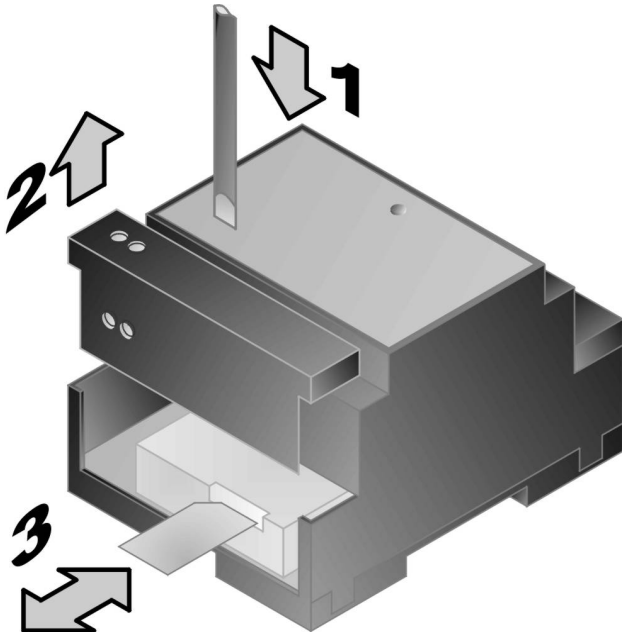
- The cable length must not exceed 3 m
- Max load current 1,5 A
- Nominal signal range 0...+40V
- Electrical fast transient burst protection requirements in accordance with ETS 300-342-1
- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1
- Voltage dips and interruption

Interface description

SIM card The SIM card receptacle is intended for 3V SIM cards in accordance with GSM 11.12 phase 2 to operate the GsmControl.

The SIM card must be inserted in the cardholder to put GsmControl into operation.

1. Make sure that there is no voltage applied to GsmControl and unlock the bottom cover using a small screwdriver.
2. Slide up the bottom lid.



3. Insert the SIM card in the SIM receptacle pushing until the card is retained.
To remove the SIM card, push again.

Interference immunity

- Electrostatic discharge requirements in accordance with ETS 300-342-1

Interface description

Input contacts GsmControl can receive up to 2 SPST contacts coming from customer's process or appliance. Power supply for contacts is provided by GsmControl. Use any mechanical or electromechanical switch with 40 V_{MIN} / 20 mA_{MIN} DC rating.

Polarity

Using electronic switches, the terminal 4 and 6 are the positive leg and terminal 3 and 5 are the inputs.

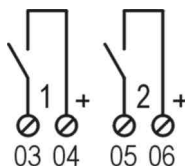
Debounce

In order to avoid false triggering, contacts will be considered closed or open after 1 second from stable condition.

Overvoltage protection

Overvoltages are suppressed by internal varistors on the contact inputs.

Wiring



Interference immunity

- The cable length must not exceed 3 m
- Nominal signal range 0...+40V
- Max load current 1 A
- Electrical fast transient burst protection requirements in accordance with ETS 300-342-1
- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1

Interface description

Output Contacts GsmControl can control the customer's process or appliance by means of 2 SPST relay contacts.

Contacts data

Rated current 6 A

Rated voltage 250 Vac

Max breaking voltage 400 Vac

Rated breaking capacity 1500 VA

Minimum contact load 100 mA, 12 V

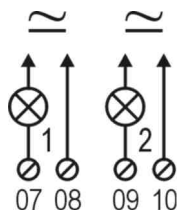
Cadmium free contacts

Insulation 250 V (IEC664 / VDE 0110 - cat. III / C)

Overvoltage protection

Overvoltages are suppressed by internal varistors on all output contacts.

Wiring



Interference immunity

- Electrical fast transient burst protection requirements in accordance with ETS 300-342-1
- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1

Interface description

Programming adapter

GsmControl can be configured also by means of any PC having EIA/RS-232 port, using appropriate interface converter and freeware software program (1013.00.01 GsmControl programming kit).

1. Make sure that there is no voltage applied to GsmControl.
2. Insert RJ11 plug into the top left receptacle [P]
3. Connect EIA/RS232 port to Personal Computer.
4. Start configuration utility and turn on power supply, make appropriate configuration following the prompts of the configuration program.
5. Remove power supply from GsmControl and wait at least 20 seconds before start again.



Interference immunity

- The cable length must not exceed 1.8 m
- Nominal signal range $\pm 15V$
- Max load current 1 A
- Electrical fast transient burst requirements not specified
- Surge immunity requirements not specified
- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1



SIM card must be inserted when programming. No connection with GsmControl is possible when the SIM card is not properly inserted.

Interface description

External Antenna (type X)

A dual band antenna (GSM900/1800) must be connected to the RF interface available on the type model X.

The connection is implemented as a 50Ω FME male coaxial jack at the end of a short RG174 cable stub exiting from the lower side of the device.



Interference immunity

- Electrical fast transient burst requirements (cable > 3m)
- Surge immunity requirements not specified
- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1

Purpose of the connections

PIN	Signal	I/O	Description
Inner	RF	I/O	RF input/output
Outer	GND	X	Frame connection

Interface description

Internal Antenna (type A) An internal dual band antenna (GSM900/1800) is provided on the front panel of the type model A. This internal omnidirectional antenna can work properly if the front side of the GsmControl is not shielded by metallic frames (i.e.: the GsmControl is installed inside a metal cabinet).

Interference immunity

- Electrostatic discharge requirements in accordance with ETS 300-342-1
- Immunity RF common mode 0,15÷80 MHz in accordance with ETS 300-342-1

Operating Status / Indicator

The GSM light indicator [E] on the front panel display the following operating states of GsmControl :

Operating state	LED Indicator
- Power supply off	OFF
- During start-up sequence	ON ♦
- Network search - SIM card not installed - Incorrect PIN	FLASHES RAPIDLY ♣
- Standby (registered in the network)	FLASHES SLOWLY
- Call in progress	ON

- ♦ Usually the start-up takes 1÷2 seconds from power-on.
- ♣ The network search takes few seconds until the GsmControl is registered.
If the LED indicator continues to flash rapidly, this means that no SIM card is inserted or an incorrect PIN number was provided. If the SIM card is unlocked and no PIN number is requested at all, no error will be generated.
If the GSM signal strength is less than -113dBm, GsmControl could not operate.
Verify the signal quality by means of cellular phone strength indicator.

Operating Status / Indicator

Network search	In the network search state the GsmControl searches for a GSM network in order to register to main operator or to the roaming service provider.
Standby	In the Standby state, the GsmControl is registered in the network and ready to send and receive. Paging is performed with the GSM network in order to obtain synchronisation with the GSM network. Power consumption in this state depends on the current network availability.
Call in progress	When an incoming call is detected or a confirmation ring is issued, a connection on the network is established. GsmControl will drop the incoming call when the output is released (or receiving calls from unauthorised subscribers), without responding. The optional confirmation callback is dropped after the first ring, avoiding subscriber response.
Input status indicators	Closing input contacts, the front panel associated led indicators [D] will lit.
Output status indicators	When an output is active (contact closed) the front panel associated led indicators [F] will lit.

SIM PIN



GsmControl can operate using a SIM card with or without SIM PIN request.

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 all the information stored inside.

Enter default SIM PIN

GsmControl comes with a random predefined PIN number, reported on a removable label.

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

Of course, you should keep this number secret.

Change default SIM PIN

Using the Windows® utility and the programming adapter you can program and change the system PIN.



If you insert a SIM card that ask for a PIN number different from that stored into GsmControl the device will not operate.

If you turn on GsmControl for 3 times having this mismatch condition, the SIM card will lock up and you must provide the PUK (PIN Unblocking Key).

SMS Service Centre

SMSs are sent by GsmControl to a Service Centre where the message is dispatched towards its final destination or kept until delivery is possible. SMSs sent by GsmControl have a validity period of 24 hours, if no delivery is possible within this time messages are deleted by Service Centre. Missing SMS Service Centre Address, GsmControl can receive but is not able to issue messages.

Set SMS Service Centre Address

Many GSM operators sells SIM card with Service Centre Address already programmed.

If you need to insert or change this number, the simplest way to put your SIM card into a cellular phone and program the Service Centre Address.



You can write and modify your Service Centre Address (SCA) also by means of the Windows® utility and the programming adapter.

Configuration

Phonebook entries (gratis CLIP command)

The output 1 can be activated for a predefined time when GsmControl receives a call from a caller number included into the SIM phonebook.

GsmControl will not respond, thus no fee is charged. You can configure different output behaviour, see next *Mode Configuration* chapter for details.

Add authorised number to SIM phonebook

Authorised numbers can be added to SIM phonebook from anywhere, without accessing GsmControl, sending an SMS formatted like this:

```
#XXXXIIInnnnnnnnnn*
```

start marker ◆

X system PIN, 4 characters

I index position you want to write ♥
3 characters (i.e. 3 must be written 003)

n telephone number to be stored
max 20 characters, you can store numbers in national or international format

* end marker ◆

Writing to a specified index, any telephone number stored will be overwritten with the new one, omitting phone number the entry number will be deleted.

Missing number at index position 2 (first subscriber) the gratis CLIP feature will be disabled.

- ◆ The message must be enclosed within markers.
- ♥ The number of available positions depends from the SIM card type (usually more than 100).

Ringback Confirmation

When the number was successfully written into the SIM card phonebook, GsmControl will call back the subscriber that performed the operation.

This simple one-ring-confirmation is free of charge. If the subscriber is unreachable for 20" the Ringback will be cancelled.

SMS confirmation

Placing a 'D' character before the end marker GsmControl will send a status SMS instead of ringback confirmation.



You can write and modify your SIM phonebook also by means of the Windows® utility and the programming adapter.

Configuration

Mode configuration Operating mode of GsmControl depends on configuration register settings.

Gratis CLIP command GsmControl can ring back a confirmation to requester after each valid CLIP command enabling the option **R**. When a valid CLIP command is received, GsmControl turns on output 1 for a period of time defined by option **P**. It's possible to define pulses from 1 to 9 seconds or turn the output permanently ON. GsmControl will not respond (free of charge) but it will not drop the line until output 1 is on.

Inputs warnings Inputs changes can force GsmControl to send a warning to **MASTER subscriber** stored at phonebook **index 2** (index 1 is reserved to configuration register). This warning could be a simple bell or a status message in which the triggering input will be represented in uppercase letters like this:

```
i1: ON i2:off  
o1:off o2:off
```

In this example input 1 triggered the warning. Option **W** defines this behaviour.

Option **T** defines the triggering event, that could be contact opening, closing or both.

Custom SMS warnings Inputs changes can force GsmControl to send custom SMS, FAX or EMAIL that are stored into the SIM card at specified position.

To store SMS (FAX and EMAIL format depending on your GSM Operator) at position 1 2 3 4 of SIM card you can use a cellular phone with this facility or the Windows® utility and the programming adapter.



In order to be recognised, the caller must leave the Caller Line Identification Presentation (CLIP) enabled.

Configuration

Configuration by means of SMS

Configuration register is stored at the 1st position of the phonebook and can be changed using the same format described before, specifying **index 1**:

#XXXX001#RPWTwt1234*

start and data marker ♦

R **gratis CLIP command ringback confirmation**

0 ringback disabled (default)

1 ringback enabled

P **gratis CLIP command pulse time**

1÷9 seconds (default = 2 sec)

0 Turn permanently ON

W **input 1 warning**

0 warnings disabled (default)

1 Bell

2 Dump SMS

T **input 1 warning trigger**

3 closing input (default)

4 opening input

5 both

w **input 2 warning**

0 warnings disabled (default)

1 Bell

2 Dump SMS

t **input 2 warning trigger**

3 closing input (default)

4 opening input

5 both

1 **send message 1 on input 1 closing**

0 don't send (default)

1 send

2 **send message 2 on input 1 opening**

0 don't send (default)

1 send

3 **send message 3 on input 2 closing**

0 don't send (default)

1 send

4 **send message 4 on input 2 opening**

0 don't send (default)

1 send

* end marker

Configuration

Configuration example #XXXX001#1513030010*

For the string message indicated above:

#XXXX001#1513000010*

Pin number according to SIM setting.

#XXXX001#1513000010*

Index 1 must be specified.

#XXXX001#1513000010*

Ringback on each gratis CLIP command received.

#XXXX001#1513000010*

5 sec pulse on each gratis CLIP command received.

#XXXX001#1513000010*

Bell warning on input 1 event.

#XXXX001#1513000010*

Warning trigger: input 1 closing.

#XXXX001#1513000010*

Warnings disabled for input 2.

#XXXX001#1513030010*

Warning trigger: input 2 closing.

#XXXX001#1513000010*

No custom message sent on input 1 closing.

#XXXX001#1513000010*

No custom message sent on input 1 opening.

#XXXX001#1513000010*

Send custom message on input 2 closing.

#XXXX001#1513000010*

No custom message sent on input 2 opening.

Confirmation Ringback or SMS confirmation will be issued as specified for Phonebook operation (page 23).



GsmControl settings and Phonebook are stored into the SIM card. No personal information is stored into GsmControl memory.

Output control Anyone that knows the system PIN (also if the SIM PIN was disabled) can control outputs, sending an SMS formatted like this:

#XXXXA0a0C*

start marker ♦

X system PIN, 4 characters

A action required

S set output (turn on)

R reset output (turn off)

M latch output (turn on and latch) ♠

T 3 second pulse on

O channel identifier

1 output 1

2 output 2

a action required ♣

S set output (turn on)

R reset output (turn off)

M latch output (turn on and latch) ♠

T 3 second pulse on

o channel identifier ♣

1 output 1

2 output 2

C confirmation required ♥

B bell ringback

D dump status SMS

* end marker ♦

- ♦ The message must be enclosed within markers.
- ♣ Optional second command.
- ♥ Missing this field, no confirmation will be issued.
- ♠ The output will be latched and then turned on again after a black-out.

SMS control

Status response If required, dump status SMS will be sent after command reception:

```
i1: on i2:off  
o1:off o2:TIM
```

i1-i2 are the input channels

o1-o2 are the output channels

off means the channel is off (inactive)

on means the channel is on (active)

!on means the output is latched (active)

tim means the output is temporary on (timed)

Uppercase letters represents the acknowledge to last received command (output 2 timed on in the example above).

Delivery Confirmation If you want to receive a delivery confirmation, activate Receive Report when issuing your control SMS: you will receive a delivery confirmation once GsmControl receives your command.

SMS control

Ask for I/O status If you want only to receive an information message containing status, without affecting output channels, send the SMS with the PIN only:

```
#XXXX*
```

start marker ◆

X system PIN, 4 characters

* end marker ◆

- ◆ The message must be enclosed within markers.

Status response When the status request is received by GsmControl, it will send to requester an SMS like this:

```
i1: on i2:off  
o1:off o2:!on
```

i1-i2 are the input channels

o1-o2 are the output channels

:off means the channel is off (inactive)

: on means the channel is on (active)

:!on means the output is latched (active)

:tim means the output is temporary on (timed)



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.

Any pending SMS will be deleted by GsmControl at power-on.

Tracking Each GsmControl can be identified by its own IMEI number permanently stored in the internal non-volatile memory.

Maintenance Treat the SIM card with the same care as your credit card. Do not bend or scratch SIM card or expose it to static electricity.
Do not use chemical cleaning agent, on the SIM card and the GsmControl.
Do not remove any cover or label from GsmControl.

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.
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CONTRIVE S.r.l.
I-24040 SUISIO (Bergamo) via Enrico Fermi 18
TEL +39.35.4948236 FAX +39.35.4933759
info@gsm-control.biz
<http://www.gsm-control.biz>