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GSM Controller BR160SM-2SMT
BR161SM-2SMT
v11

Temperature version for digital signal and temperature monitoring.

GSM module for SMS remote monitoring and control applications

Alarm Notification
Remote Control

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Features

- Internal 2-band (BR160SM) / 4-band (BR161SM) GSM-modem SIM900
- 4 digital input
- 2 inputs for temperature sensor Smartec SMT160-30
- 3 Open-Drain MOSFET
- 1 Power Relay output
- Alarm notification using SMS messaging via cell phone
- Control via SMS
- Configuration from cell phone

Introduction

The BieneRemote160SM/161SM GSM controller is a communications device that connects used for wireless Alarm Monitoring and Control of remote equipments and systems. Multiple users can interrogate the BieneRemote160SM/161SM or be notified on configurable events.

The built-in quad band SIM900 GSM module compatible with **BieneRemote160SM-2SMT** 900/1800Mhz or **BieneRemote161SM-2SMT** 850/900/1800/1900Mhz GSM networks.

BR160SM-S, BR161SM-S - Standard version for digital signal monitoring.
BR160SM-4A/2A, BR161SM-4A/2A - Analog version
BR160SM-2SMT,BR161SM-2SMT - Temperature version
BR160SM-GATE,BR161SM-GATE - Gate opener version for Gate control.

SMS Function

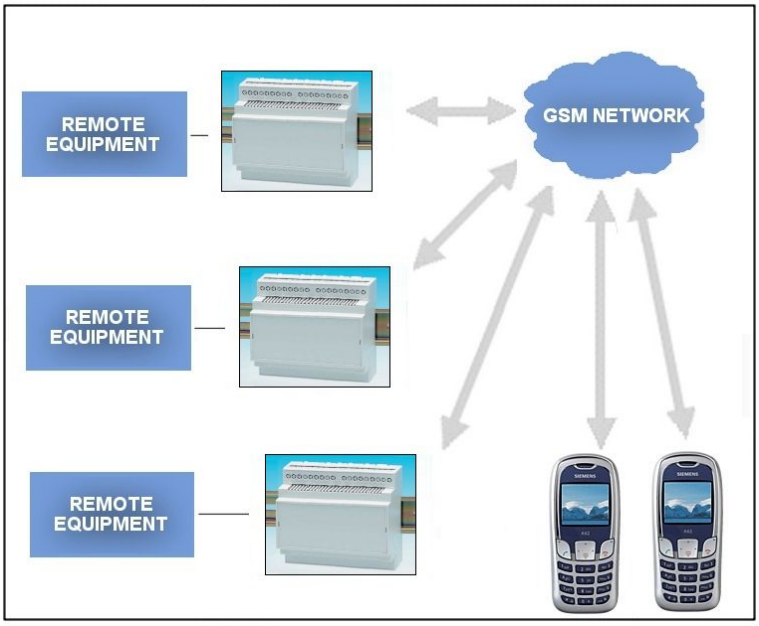
SMS controller send an event SMS messages to up to 3 cell phones.
Any cell phone can be used to send SMS commands to BieneRemote160SM/161SM.
Mobile users can contact and request information from a BieneRemote160SM/161SM GSM controller and up to 3 users can receive notification of events.

With the BieneRemote160SM/161SM GSM controller you can use a mobile phone to:

- Monitor the status of equipment or systems
- Send control commands to remote equipment
- Receive notification of events

Any BieneRemote160SM/161SM GSM controller can be used to send SMS commands to other BieneRemote GSM controller for remote control.

Any BieneRemote160SM/161SM GSM controller can be programmed via SMS instruction.



SMS based remote monitoring and control application

Input Signal Monitoring

The BieneRemote160SM-2SMT/161SM-2SMT has 6 voltage-free digital inputs that can be configured as:

- 4 0-1 or 1-0 event input
- each input can with jumper connect to pullup resistor (to +5V or +12V optional)

To receive SMS message by event on inputs, you need entering SMS message on a module (or SIM card) programming.

Two Smartec SMT160-30 Temperature Sensor can be connected to the two digital inputs (BR160SM-2SMT).

Output Control

The BR60SM-2SMT/BR161SM-2SMT has 3 open-drain Outputs and 1 Power Relay Output. These may be controlled with SMS messages from approved users. To set any output as you like, you need only to send an SMS message.

Module to Module Control

The BR60SM-2SMT/BR161SM-2SMT supports Module-to-Module management with SMS command.

Users / Administrator

Phone numbers for administration users are contained in the SIM card phone book.
The BieneRemote160SM/161SM supports 3 administration users (contains in SIM phone book at position from 001), who can programmed/setting/controlled module with SMS command.

Alarm

SMS messages can be sent to users when an input reaches an alarm state. The following setpoint configurations are available:
Alarm when 0-1 or 1-0 event at digital input.
Alarm when above set point at temperature input (BR160SM-SMT).
Alarm when below set point point at temperature input (BR160SM-SMT).
Alarm when inside set points point at temperature input (BR160SM-SMT).

Module Programming/Configuration

The BieneRemote160SM can be configured (programming) remotely with SMS command.

Technical Specification

BieneRemote160SM/161SM Hardware Specification

	BR160SM-S	BR160SM-4A/-2A	BR160SM-SMT	BR160SM-GATE
GSM band support	GSM850/900/1800/1900			
Internal GSM modem	SIM900			
RF Transmit Power	Class 4 (2W) 900Mhz, Class 1 (1W) 1800Mhz, 1900Mhz			
Command and data transmission	SMS			
SIM card reader	Yes			
SIM card type	Phase 1 and phase 2+; SIM 3V / 1.8V			
Antenna Connection	50Ω SMA (f) Connector			
Firmware	Yes			
Digital inputs				
Digital inputs type	Voltage-free, transistor ("0": 0...+1V; "1": +1.5…+12V without external limited resistor); Optional: +12V/+5V pullup resistor for each input			
- Number of digital inputs	6	6	4	5
- Events digital inputs	6	6	4	5
- Digital inputs event	0-1 or 1-0			
- Protection	Yes			
Temperature sensor inputs				
Temperature sensor	-	-	SMT160-30 (Smartec)	-
Number of temperature inputs	-	-	2	-
Temperature input event	-	-	min / norm / max	-
Temperature range	-	-	-45to +130°C	-
Events Temperature range	-	-	-45 to +99 °C	-
Accuracy	-	-	1.2 - 1.7°C	-
Protection	-	-	Yes	-
Analog inputs				
Number of analog inputs	-	4 / 2	-	-
- Maximum voltage	10VDC	10VDC	10VDC	10VDC
- Analog input event	-	min / norm / max	-	-
- ADC resolution	-	10-bit	-	-
Outputs				
Number of outputs	4			
- MOSFET Open Drain outputs	3 (50V max)			
- Relay outputs	1 (NO/COM/NC), 28VDC/230AC/ 5A			
- Digital output control	On-Off; Pulse (Standard and Gate version only)			
Gate Control				
Call Control				Yes
Number of user				Up to 250
Wiring				
Wiring Connections	Screw terminal blocks			
Power Supply				
Required Power supply	External +12 VDC stabilized, 1,7A minimum			
Power requirement	60mA typ, 300mA(rms) max, 2A typ. (3A max) peak during transmission			
Voltage regulator	Internal voltage regulator			
Power protection	Reverse-polarity and overvoltage protection			
Environmental Conditions				
Normal operating temperature.range	-20…+55°C			
Restricted operating temperature range	-25…+70°C (SIM300 can work, but the deviation from the GSM specification may occur)			
Storage temperature range	-40 to +80°C			
Humidity	0-95% non-condensing			

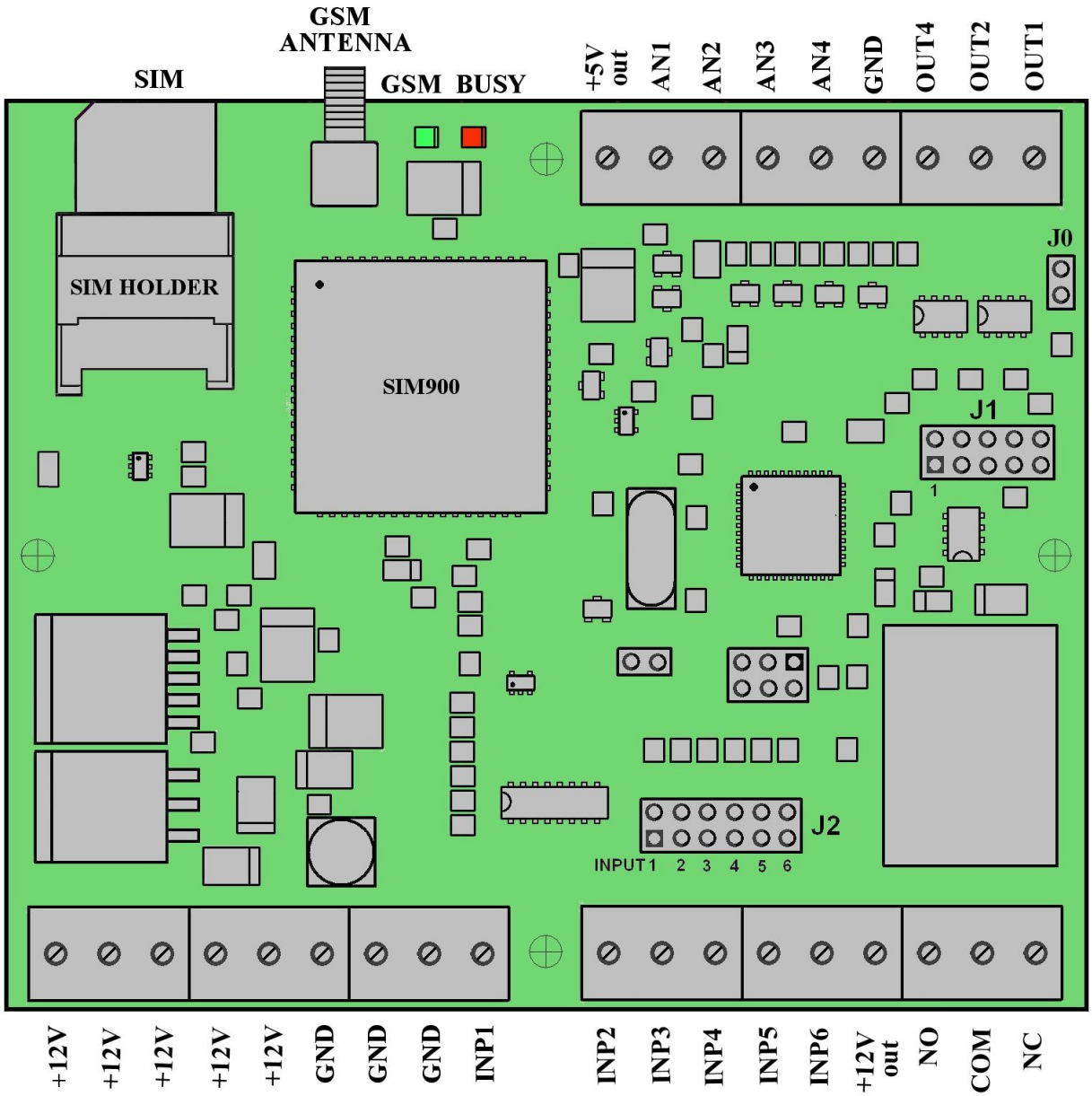
Physical parameter	
Board dimension	103 x 86.5 mm
Enclosure dimension	106 x 100 x 58 mm
Box	DIN-rail mounting
Weight	

BieneRemote160SM Firmware Specification

	BR160SM-S	BR160SM-4A/-2A	BR160SM-2SMT	BR160SM-GATE
Number of controlled outputs	4			
Number of digital event inputs	6	6	4	5
Number of readable digital inputs	6	6	4	5
Number of analog event inputs	-	4 / 2	-	-
Number of readable analog data	-	4 / 2	-	-
Authorization cell phone numbers	3	4 / 3	3	3
Events cell phone numbers	3	4 / 3	3	2
SMS events format	Text message			
SMS digital data format	Binary	Binary	Binary	HEX
SMS message format for analog data		In % from Reference level 00 - 99		
SMS message format for temperature data			º C min level, max level -45º C - +99º C	

Hardware

BR160SM-2SMT/BR161SM-2SMT module consists of the microprocessor, voltage regulator, inputs driver, MOSFET output driver, relay, built-in GSM module, SIM-card holder, GSM antenna connector and screw terminals for external power supply and for input and output signal connection.



Power Supply

BR160SM-2SMT/BR161SM-2SMT operates from a 12VDC power source. It draws less then 70mA standby, less then 350mA rms and 2A peak typ. (3A peak max.). 12VDC/1.7...2.5A switching stabilized power supply is recommended. Power supply input has reverse polarity and overvoltage protection.

SIM Card

Small SIM-card with 3V / 1.8V technology

Preparation of SIM card

1. Delete any SMS messages from SIM.
2. **Disable PIN code** request so it will not prompt for a PIN code on turning on.
3. Write authorized numbers to Phone Book (from position 001)
   for disable authorization numbers You can to position 1 write number 99 or delete number from position 001 in SIM phone book
4. First SMS to module - ***SETNR1*** from your cell phone (store your number)

Note:

- *The BieneRemote160SM/161SM can only be used with small SIM-cards with 3V/1.8V.technology.*
- *For SIM card preparation you can use cell phone or external GSM modem.*
- *SIM card change if power turn off.*

LED indicators

- Module status indication - RED LED (LED1)
- GSM Modem SIM300/SIM340 status indication - GREEN LED (LED2)

Module LED indication (Red LED)

LED status	Modem status
Permanently off	Device off
Short blinking after power on and after 1 min periodic blinking	SIM card read process
Short blinking (period 5-6 sec)	Module in work
Permanently on	Module work with modem

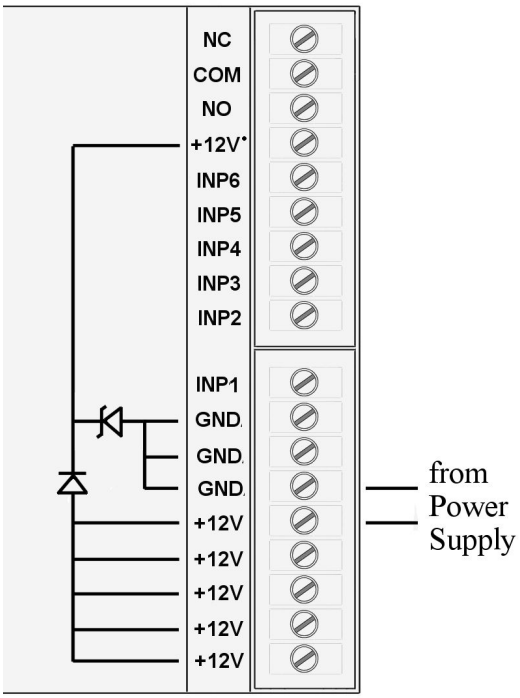
GSM Module SIM900 LED indication (Green LED)

LED status	Modem status
Off	SIM900 is not running
64ms On / 800ms Off	SIM900 does not find the network
64ms On / 3000ms Off	SIM900 find the network
64ms On / 300ms Off	GPRS communication

Connectors and Jumpers

- Power supply (X2 - screw terminal block).
- Controlled equipment inputs and outputs (X2, X3, X4 - screw terminal block)
- SMA female connector (X5) for GSM antenna connection.
- SIM holder (X1)

Power Supply Connection



+12VDC stabilized Power Supply must be connected with screw terminal block.
We recommend use stabilized 2...2.5A 12VDC power supply.
Power supply input has negative voltage and over voltage protection.

Internal +12VDC connection and Power Supply connection schematic.

Antenna connection

GSM antenna must be connected to SMA connector X5. Use only the 50Om antenna of the necessary frequency range. Base version complected with direct mount GSM antenna.

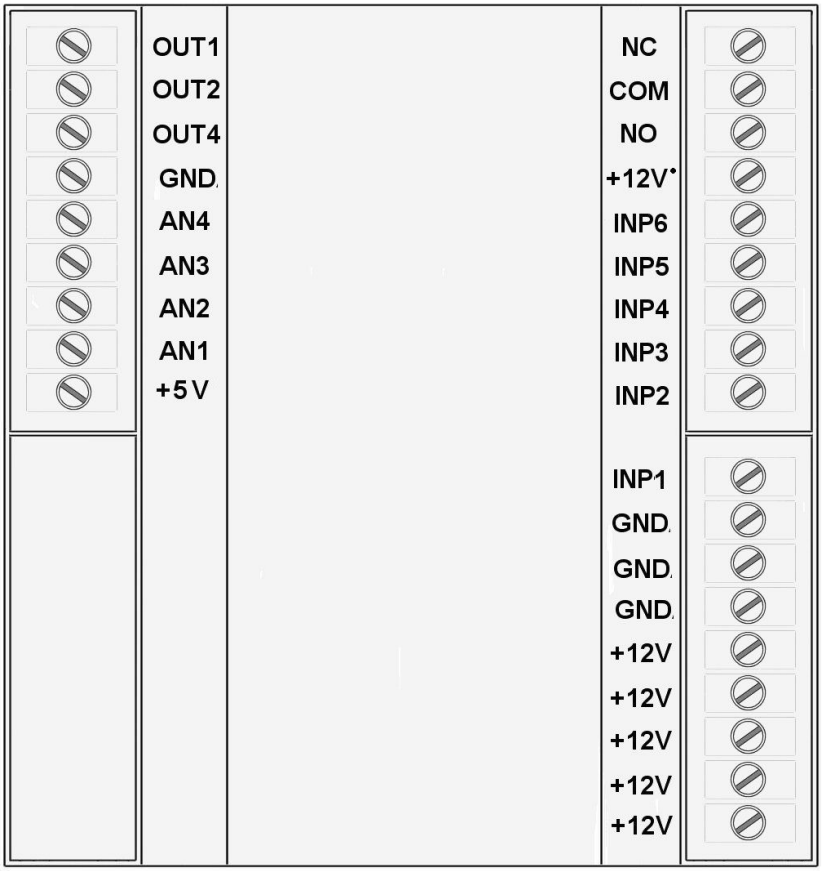
Note*: It is very important that the antenna is installed on a location where the GSM-network coverage is sufficient. Please also check carefully that antennas are not installed nearby technical devices, cables etc which could influence the GSM-radiation.*

Inputs and Outputs connection

Digital inputs and outputs must be connected with screw terminal blocks X2-X4.
Note: *See also "Inputs and Outputs schematic".*

Connectors

For Power supply, Inputs and Outputs connection used screw terminal blocks.



+12V	-	+12VDC Power Supply input / +12VDC output
GND	-	GND
INP1, INP2	-	Temperature Input for Smartec SMT160-30 sensor connections
INP3...INP6	-	Digital Inputs 3-6
AN1...AN4	-	Analog Inputs 1-4 (not support in this version)
OUT1,OUT2,OUT4	-	Output 1, Output 2, Output 4
NO/COM/NC	-	Relay Output 3
+5V	-	+5V output (50mA max)

Additional Interface

Standard 2x3 pin ISP interface connector X1. Used only for in-system microcontroller programming.

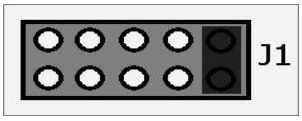
Pin		Pin	
1	MISO	2	VCC
3	SCK/	4	MOSI
5	Reset/	6	GND

Jumpers

Jumper J1

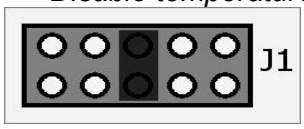
Set events state 0-1 or 1-0

- Set events state 0-1 (set jumper)

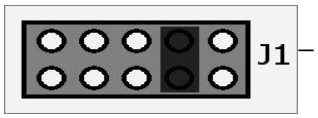


Disable temperature sensor

– *Disable temperature sensor 2*



Disable temperature sensor 1

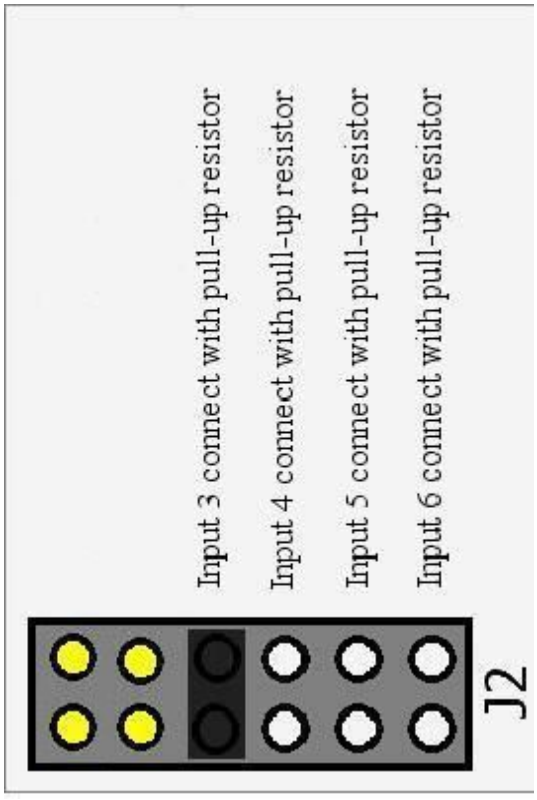


Note:
For version BR160SM-2SMTm not required disable/enable sensor. Software check sensor itself.

Jumper J2

Connection pull-up resistor to digital inputs. 2,2kOm resistor for each inputs is used. All resistor pulled up to +12V (+5V optional).

Note 1: Use this jumper only for Open Collector or Relay Output.
Note 2: Not set jumper to Input1 and Input2 !.
Disable jumper for input 1 and 2. Input 1 and 2 – for temperature sensor. Temperature sensor will broken if you set jumpers for inputs 1 and 2.



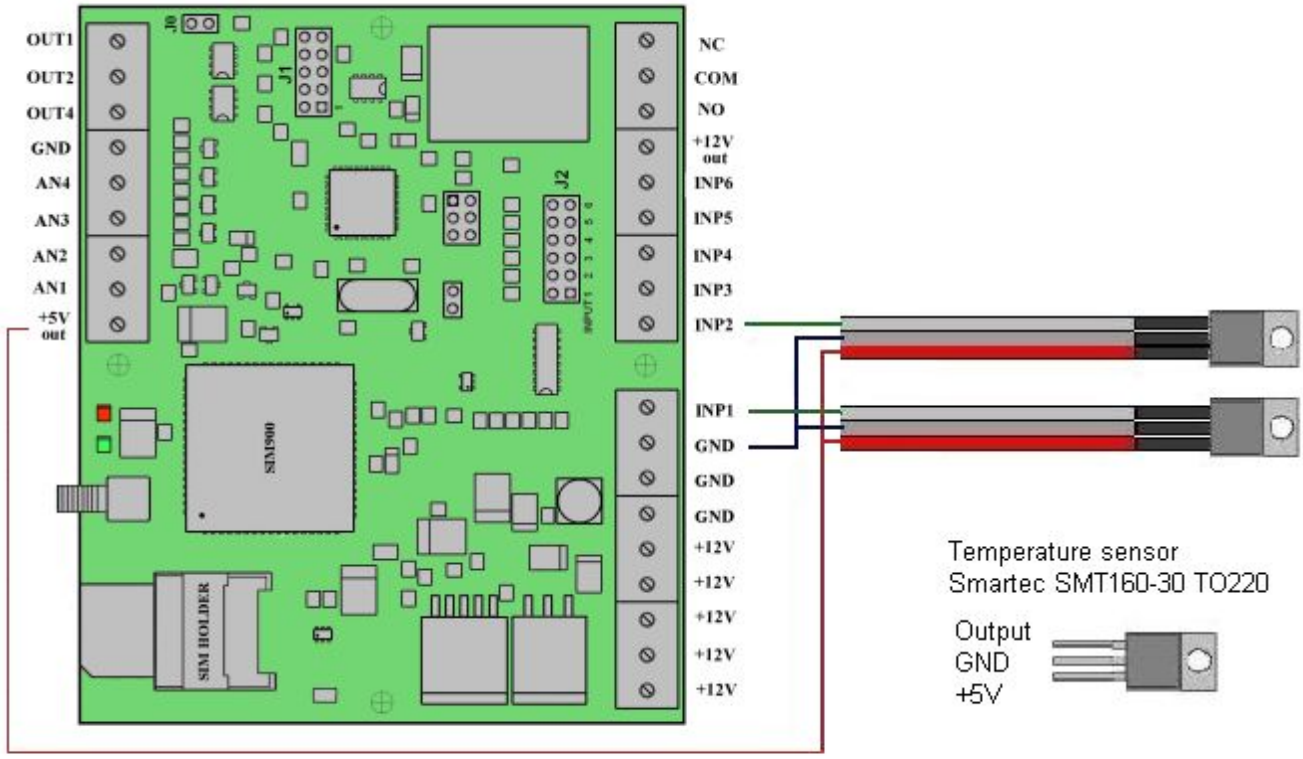
Temperature sensor SMT160-30 connection

(for version BieneRemote160SM-SMT)

The SMT160-30 (Smartec) is a three terminal integrated temperature sensor, with a duty-cycle output. Temperature sensor connected to Input1 and Input2.

(***Technical specifications of the SMT160-30*** **–** http://www.smartec.nl/pdf/DSSMT16030.PDF)

SMT160-30 sensor connection:



Technical specifications of the SMT160-30 **–** http://www.smartec.nl/pdf/DSSMT16030.PDF

The **SMT160-30 (TO18 model)** has an overall accuracy of 0.7 °C in the range from -30 °C to +100 °C and an accuracy of 1.2 °C from -45 to +130 °C.
The **SMT160-30 (TO220 model)** has an overall accuracy of 1.7 °C in the range from -30 °C to +100 °C and an accuracy of 2 °C from -45 to +130 °C.

Note:
If use long cable for Smartec SMT160-30 temperature sensor, connect sensor side between GND and +5V pins ceramic capacitor 0.1mkF.

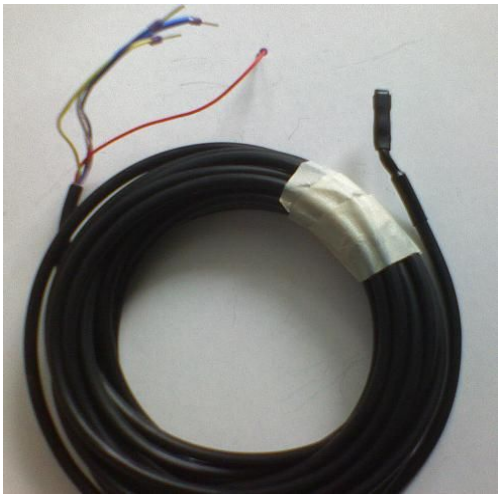
TEMPERATURE Probe with shielded cable

TEMPERATURE Probe Assembly SMTRVS1801
http://www.smartec.nl/temperature_probe.htm

Sensor: SMT1603018
Probe: stainless steel tube 7 mm. x 40 mm.
Cable: 5 m. PVC shielded, 3.5 mm.
Connections:
Brown: Vcc
White: Output
Green: Gnd

bSMT1603018 temperature probe

Sensor: SMT1603018
Cable: 5 m. shielded
Connections:
Red: Vcc
Yellow: Output
Blue: Gnd

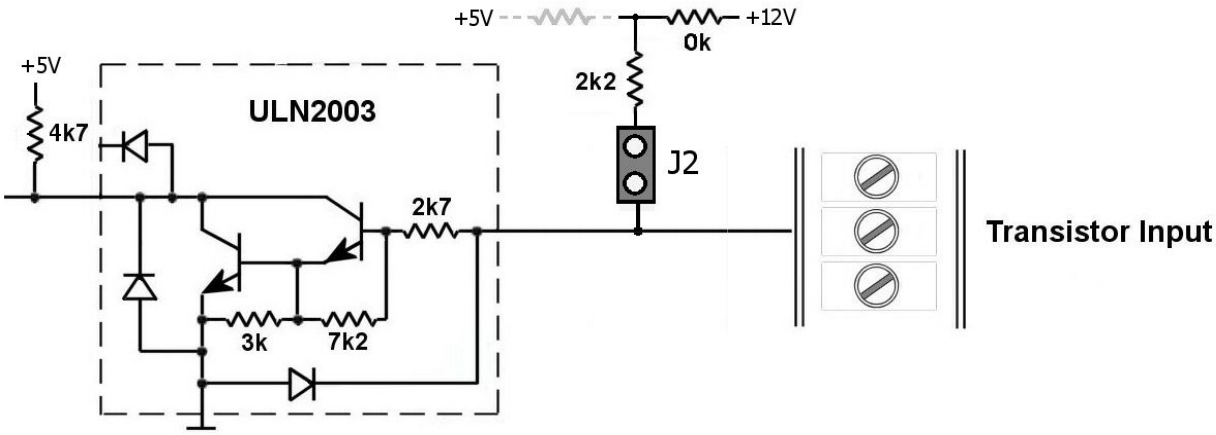


Inputs / Outputs Schematic

Inputs

Digital Transistor Inputs

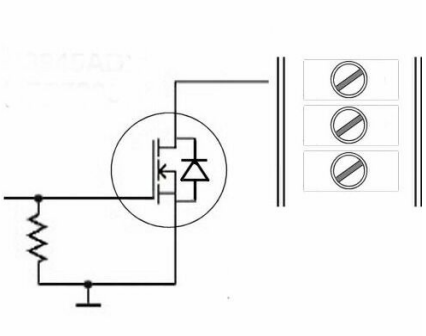
Connector: Screw terminal block
Inversion: Yes
Driver: ULN2003
Max input voltage: +12V without external limited resistor.
Free Input: logic "0"
Logic "0": 0V…+1V
Logic "1": +1.5V…+12V
J2 jumper – for pull-up resistor connections to +12VDC



Outputs

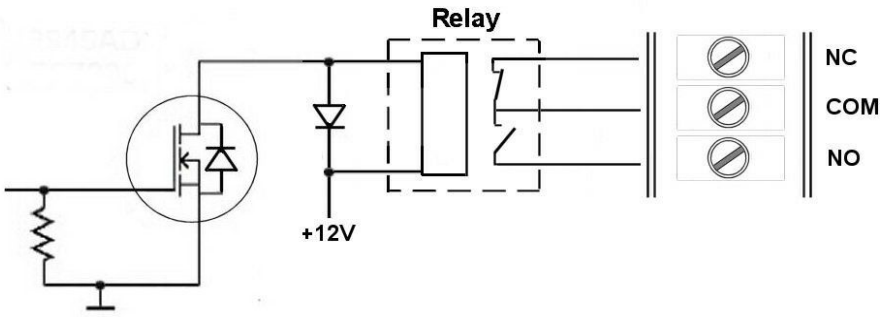
MOSFET Open Drain Outputs

Connector: Screw terminal block
MOSFET transistor: Si9945 or IRF7103
Max. Voltage: 50V



Relay Output

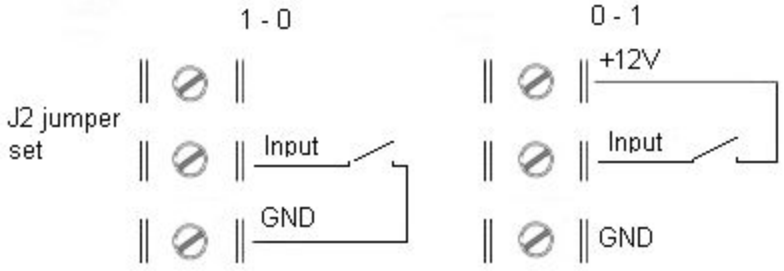
Connector: Screw terminal block
Outputs: NO/COM/NC
Relay: SPDT power relay
Breaking capacity: 5 A 240VAC / 28VDC
Min load: 0.1 A, 5VDC



Connection Example

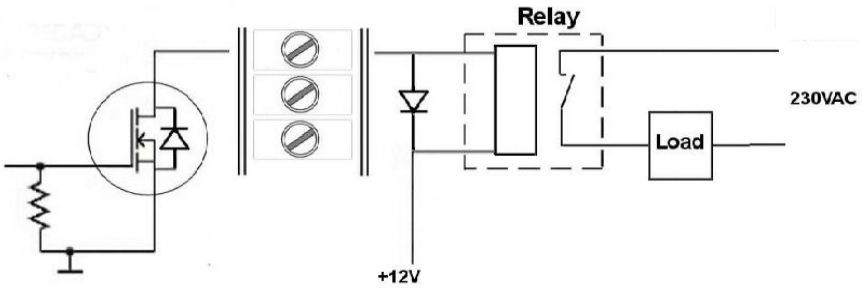
Connection example to Input Driver (Input 1-6)

1-0 and 0-1 event notification
You can use J2 pin header for in-board pull-up resistor connection.

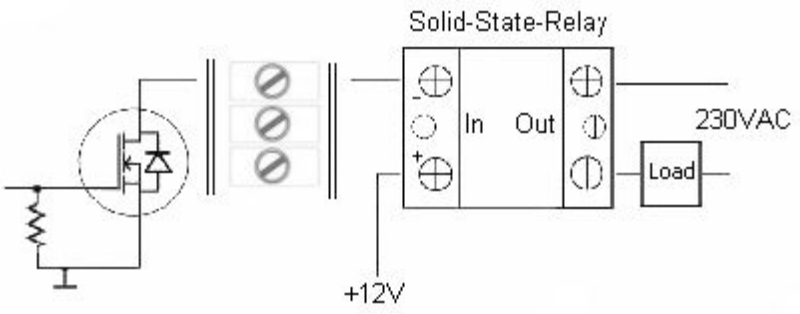


Relay connection example to Output Driver (Output 1, 2 and 4)

Electromechanical relay connection.



Solid-state-relay (SSR) connection.



Module programming

For module programming:

- SIM card preparation
- Programming with send control SMS (see paragraph 'SMS Control Command List')

SIM card preparation

- Delete any SMS messages from SIM.
- **Disable PIN code** request so it will not prompt for a PIN code on turning on.
- Write 3 authorized numbers to Phone Book (location 001,002,003)
  You can to position 1 write number 99 – for disable authorization numbers
- First SMS to module - ***SETNR1*** from your cell phone (store your number)

Note:

- The BieneRemote160SM can only be used with small SIM-cards with 3V/1.8V technology.
- For SIM card preparation you can use cell phone or external GSM modem.

Set phone numbers from which management is authorized

location	Phone Book	
1	A1	<Phone number1> 1)
2	A2	<Phone number2> 1)
3	A3	<Phone number3> 1)

Note:
1): full phone number with country code

Example - enable 3 phone numbers for BieneRemote management

location	Phone Book	
1	A1	+3719106159
2	A2	+3716149759
3	A3	+3718398597

Example - enable all phone numbers (disable authorization numbers)

location	Phone Book	
1	A1	99
2	A2	<Phone number2>
3	A3	<Phone number3>

Programming with SMS control command

Set alarm SMS

SMS command **SETTX** (see paragraph 'SMS Control Command List'):

SETTXN,[text]

Where
N = 0,1,2 for temperature input 1 (>max; <min; normal)
N = 3,4,5 for temperature input 2 (>max; <min; normal)
N = 6,7,8,9 for digital inputs 3,4,5,6

[text] - individual text message (maximum 12 character)

Set minimum and maximum level (for temperature input 1 and 2)

MINLVNZTT
MAXLVNZTT

Where N = 1, 2; Z = + or -; TT = 00…99 (°C)

MINLV1-06 - set minimum level -6°C for temperature input 1
MINLV2+16 - set minimum level +16°C for temperature input 2

Set temperature filter (delay to alarm SMS)

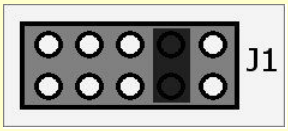
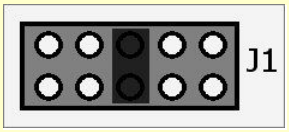
SETDFN,

Where N = 0, 1, ... 9
N=0 - 1 min. delay
N=1 - 5 min. delay
…
N=9 - 40 min. delay

Set cell phone number for management

Send SMS command **SETNR1** from cell phone with phone number 1.
Send SMS command **SETNR2** from cell phone with phone number 2.
Send SMS command **SETNR3** from cell phone with phone number 3.

Clear SMS command **CLRNR1** from cell phone with phone number 1, 2 or 3.
Clear SMS command **CLRNR2** from cell phone with phone number 1, 2 or 3.
Clear SMS command **CLRNR3** from cell phone with phone number 1, 2 or 3.

Event Input	Set Alarm Text SMS to EEPROM	Jumper for disable T1 / T2 *For version BR160SM-2SMTm not required disable/enable sensor. Software check sensor itself.*
0	Settx0,textT1max	
1	Settx1,textT1min	
2	Settx2,textT1normal	
3	Settx3,textT2max	
4	Settx4,textT2min	
5	Settx5,textT2normal	
6	Settx3,text3	
7	Settx4,text4	
8	Settx5,text5	
9	Settx6,text6	

Output control	Set (ON)	Reset (OFF)
1	Setou1	Rstou1
2	Setou2	Rstou2
3	Setou3	Rstou3
4	Setou4	Rstou4

Number in EEPROM	Set number for alarm SMS	Send SMS from cell phone
1	Setnr1	1
2	Setnr2	2
3	Setnr3	3

Number in EEPROM	Clear number from alarm SMS	Send SMS from cell phone
1	Clrnr1	1, 2 or 3
2	Clrnr2	1, 2 or 3
3	Clrnr3	1, 2 or 3

Note. For new version BR160SM-2SMTm 6 number available

How to send alarm SMS message on some cell phones or on other BieneRemote module.

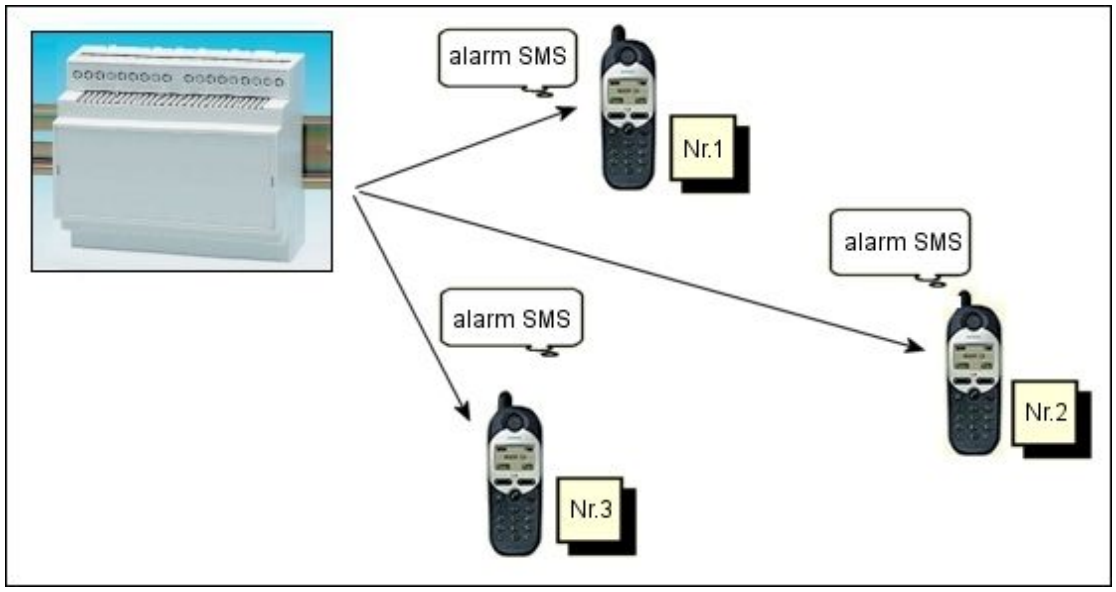
If you will receive alarm SMS on some cell phone.

Send SMS command **SETNR1** from cell phone with number Nr.1.
Send SMS command **SETNR2** from cell phone with number Nr.2.
Send SMS command **SETNR3** from cell phone with number Nr.3.

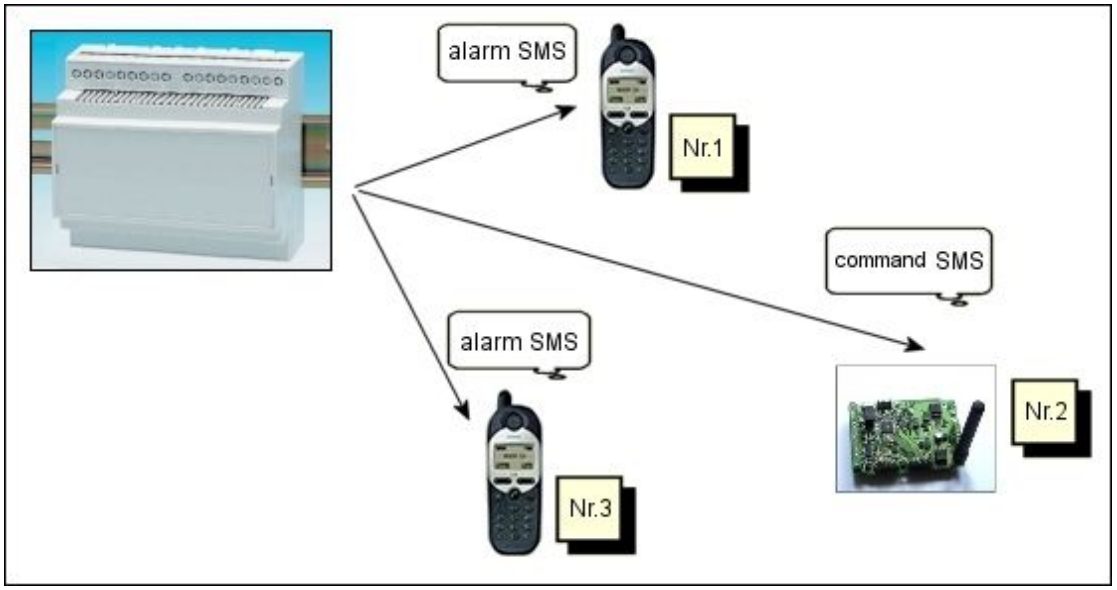
Clear SMS command **CLRNR1** from cell phone with number Nr.1, 2 or 3.
Clear SMS command **CLRNR2** from cell phone with number Nr.1, 2 or 3.
Clear SMS command **CLRNR3** from cell phone with number Nr.1, 2 or 3.

Note. For new version BR160SM-2SMTm 6 number available

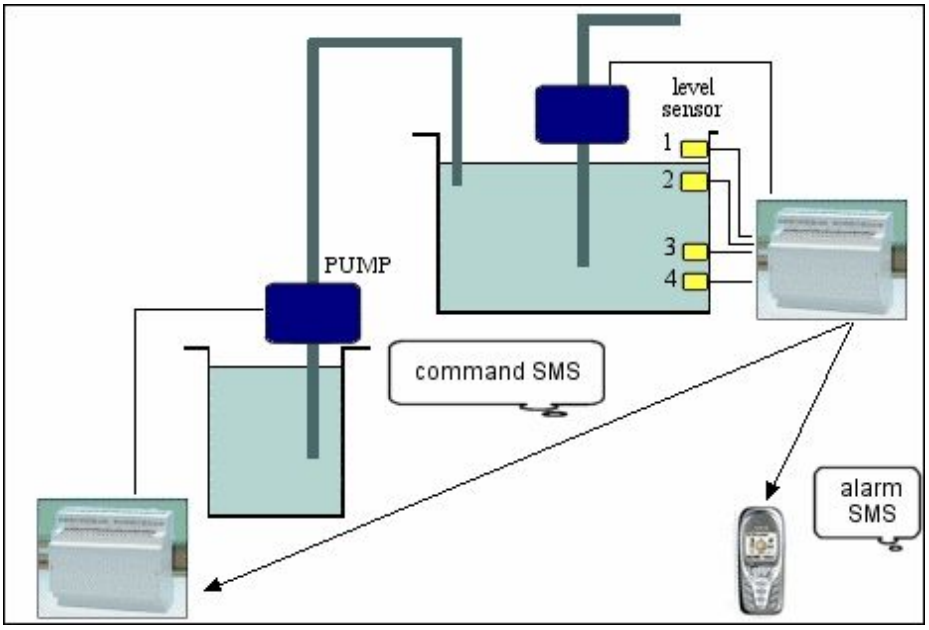
If events in digital inputs, you receive alarm SMS on cell phone with phone number 1 and on cell phone with phone number 2 and on cell phone with phone number 3.



You can instead of cell phone have another BieneRemote160SM/161SM (send **SETNR3** from cell phone to first BR160SM/161SM and after insert SIM card to BR160SM/161SM Nr.2). As alarm SMS message write SMS command.



Example: If water level overflow first BieneRemote160SM send SMS to second BieneRemote160SM/161SM and turn off pump.



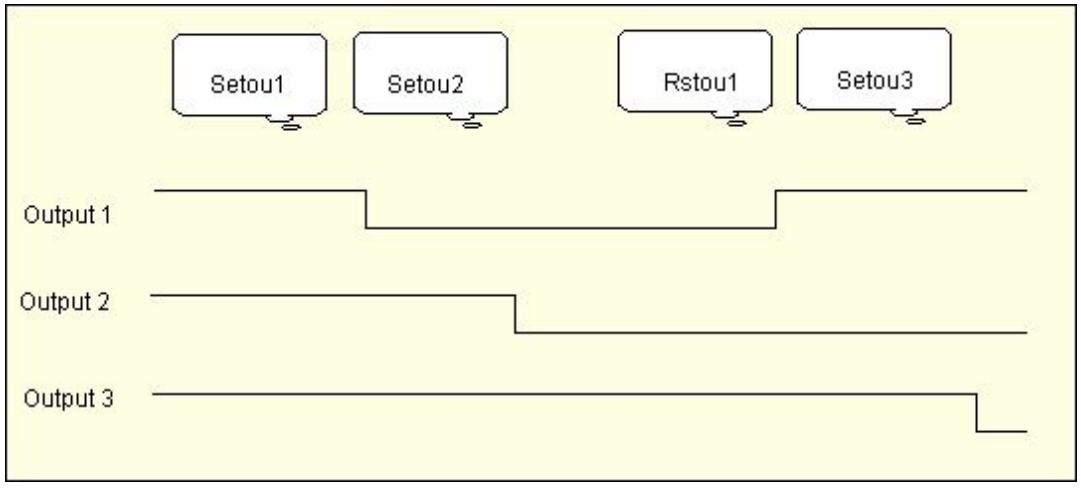
Remote control

We can 'turn on' and 'turn off' BieneRemote160SM outputs with SMS command:

SETOU
and
RSTOU.

SETOU1, SETOU2, SETOU3, SETOU4 - set output 1, 2, 3, 4 - active state.
RSTOU1, RSTOU2, RSTOU3, RSTOU4 - reset output 1, 2, 3, 4 - passive state (default).

Answer SMS:
INP=0000 OUT=000



Digital signal monitoring

Read status SMS command:

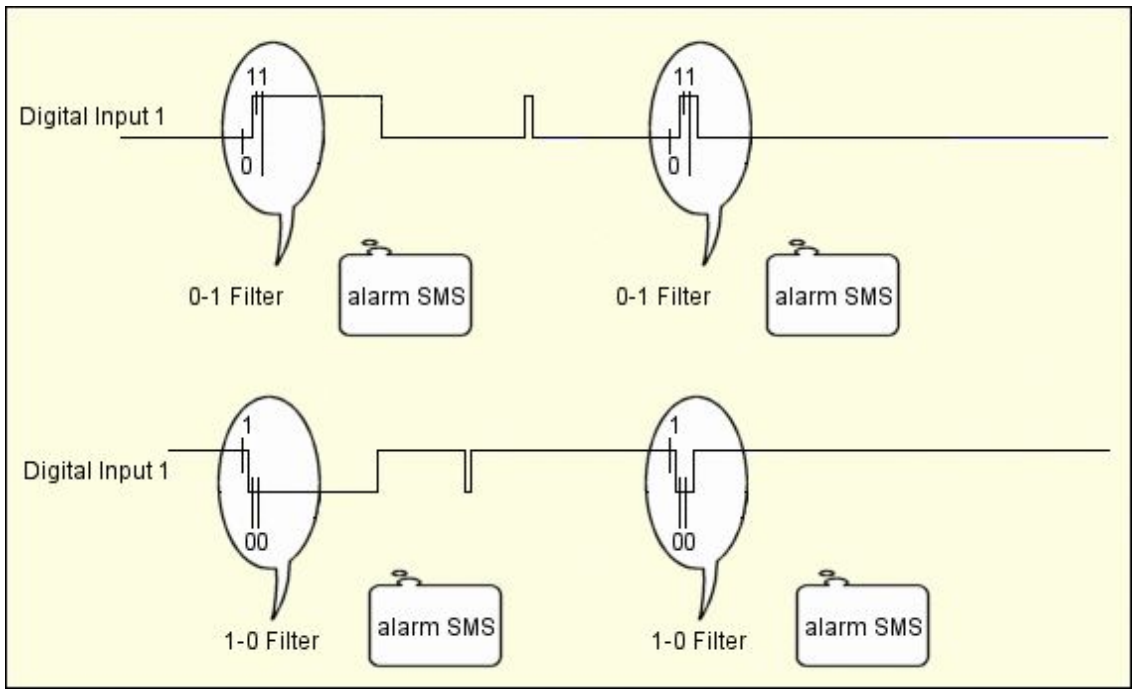
GETST

Answer SMS message format:
INP=000000 OUT=0000 enable SQ: 26,7 T=0000

where:
INP=000000 - input state (input 6...1)
OUT=0000 - output state (output 4...1)
SQ - GSM signal quality (<rssi>, <ber>)
<rssi> - reception (receive) level (possible values: 0 -113 dBm or less, 1 -111 dBm, 2-30 -109 to -53 dBm, 31 -51 dBm or more, 99 - unknown). If reception level < 6, then signal very low.
<ber> - like RXQUAL values from Table GSM 05.08 in Section 8.2.4 (possible values: 0-7, 99 – unknown)
T=0000 - pulse duration for each Output (0...9)

Alarm SMS

You receive alarm SMS message, if 1-0 (or 0-1) on any digital inputs.
Digital signal filter for short impulse = 25-50 ms.



Temperature monitoring

With temperature sensor SMT160-30 (http://www.smartec.nl)

The **SMT160-30 (TO18 model)** has an overall accuracy of 0.7 °C in the range from -30 °C to +100 °C and an accuracy of 1.2 °C from -45 to +130 °C.

The **SMT160-30 (TO220 model)** has an overall accuracy of 1.7 °C in the range from -30 °C to +100 °C and an accuracy of 2 °C from -45 to +130 °C.

Temperature inputs 2
Digital event inputs 4
Temperature range: -45 to +99 °C

Read temperature

GETTC

Answer SMS message format:

T1=+21 T2=-10 T1:+15 +25 T2:+00 +00 INP=00 OUT=00 F=1 Alarm Enable

T1=, T2= - temperature in °C
T1:, T2: - min and max level in °C

N=0 - 1 min. delay;
N=1 - 5 min. delay
…
N=9 - 37 min. delay.

See **SETDFN** SMS command

Temperature 1		Temperature 2		Level for Temperature 1			Level for Temperature 2		
T1=	+21	T2=	-03	T1:	+15	+25	T2:	-05	+00
	°C		°C		°C	°C		°C	°C
					Min	max		min	max

Set minimum and maximum level (for temperature input 1 and 2)

MINLV
MAXLV

MINLVNZTT, MAXLVNZTT

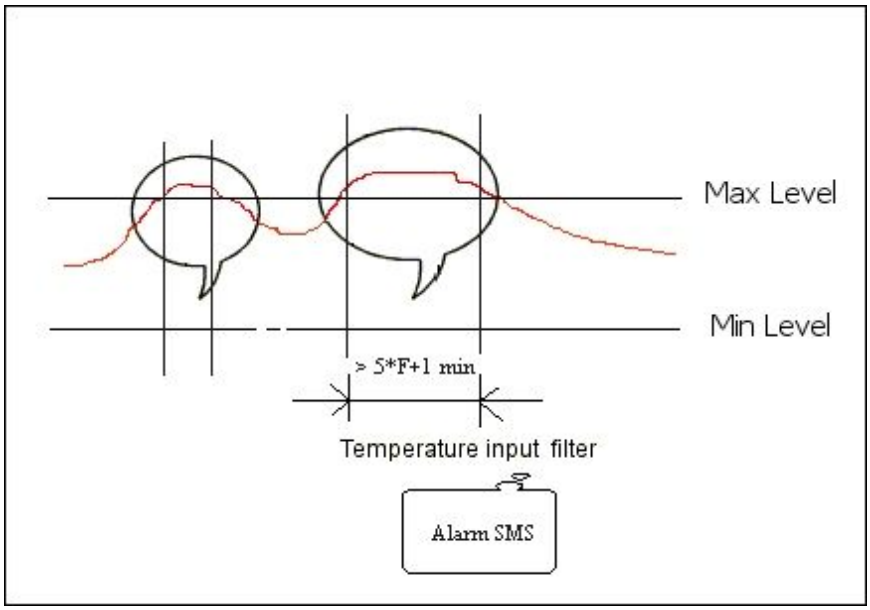
Where, N = 1 or 2; Z = - or +; TT = 00 .. 99

MINLV1+15 - set minimum level +15°C for temperature 1
MINLV2-06 - set minimum level -06°C for temperature 2

Answer SMS: T1=+17 T2=-12 T1:+15 +25 T2:-06 +00 F=1 Alarm Enable

Temperature filter

You can set temperature filter from 1min to 37min.



SMS Control Command List

Control Command List

Command 1)	Function	Return Message	Description
Gettc	Read Temperature	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Get temperature (in ºC) and min and max level, F = 0..9 filter
Setou1	Set Output 1	Status (as Gettc)	Set Output 1 to '1'
Setou2	Set Output 2	Status (as Gettc)	Set Output 2 to '1'
Setou3	Set Output 3	Status (as Gettc)	Set Output 3 to '1'
Setou4	Set Output 4	Status (as Gettc)	Set Output 4 to '1'
Rstou1	Reset Output 1	Status (as Gettc)	Set Output 1 to '0'
Rstou2	Reset Output 2	Status (as Gettc)	Set Output 2 to '0'
Rstou3	Reset Output 3	Status (as Gettc)	Set Output 5 to '0'
Rstou4	Reset Output 4	Status (as Gettc)	Set Output 4 to '0'
Seten	Alarm SMS enabled	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Set active mode - Alarm SMS enable
Setdi	Alarm SMS disabled	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1	Set passive mode - Alarm SMS disable
MinlvNZTT Minlv1-05	Set min temperature N -1,2; Z - or + TT - 00..99	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Set minimum temperature level
MaxlvNZTT Maxlv1+35	Set max temperature N -1,2; Z - or + TT - 00..99	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Set maximum temperature level
SettxZ,TEXT Settx0,T1 high	Set text SMS Z = 0..9, TEXT - text message max 21 character	Z TEXT	Set text SMS: 0,1,2 - event for temperature input 1 (max, min, normal) 3,4,5 - event for temperature input 2 (max, min, normal) 6,7,8,9 - event digital input 3,4,5,6
SetdfN Setdf2	Set temperature filter N = 0..9	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Set temperature filter. N=0 - 1 min. delay; N=1 - 5 min. delay … N=9 - 40 min. delay.
SetnrN Setnr1	Set number N=1,2,3	T1=+20 T2=14 T1: +17 +24 T2: -99 +99 F=1 Alarm Enable	Set cell phone for temperature alarm notification Send this SMS from cell phone for alarm notification
ClrnrN Clrnr1	Clear number N=1,2,3	-	Clear cell phone number for temperature alarm notification

Note:

1) Not case sensitive. You can use **GETST, Getst**,
2) For new version BR160SM-2SMTm 6 number available

Output state (default)

	Output state	Output state
Output 1	Open Drain	0 (Off)
Output 2	Open Drain	0 (Off)
Output 3	Reley NO	0 (Off)
Output 4	Open Drain	0 (Off)

Not connected input state

	Input state	Input state with connected pull-up resistor (J2)
Input 1	-	-
Input 2	-	-
Input 3	0	1
Input 4	0	1
Input 5	0	1
Input 6	0	1

Active event on input

			Input state	
Input 1			-	-
Input 2			-	-
Input 3			1-0	0-1
Input 4			1-0	0-1
Input 5			1-0	0-1
Input 6			1-0	0-1

Support

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