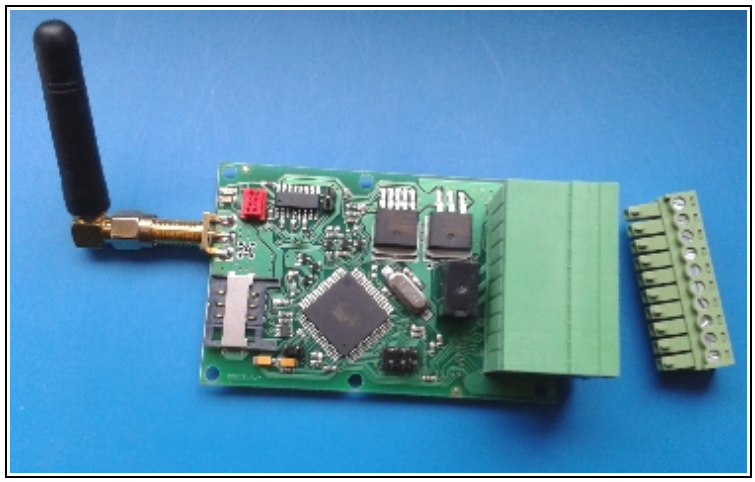
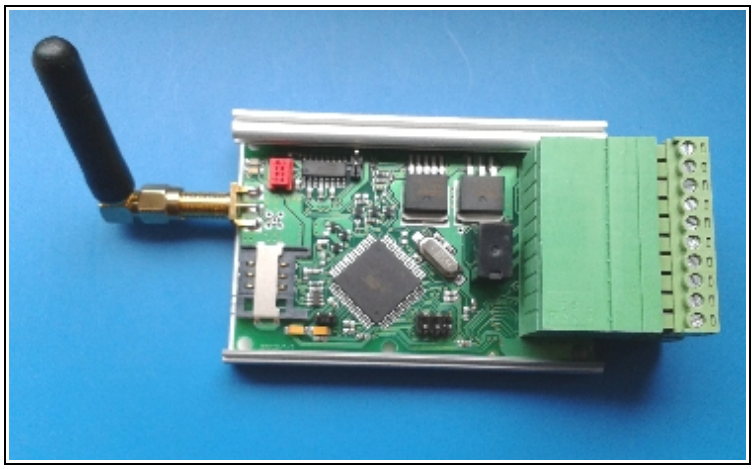
Remote Control
Data-logger Module
BR928-DL
with internal GSM modem





Revision Date: 14.10.2018

SOFTWARE MANUAL

PRELIMINARY DATA

Module programming

For module programming:

1. SIM card preparation
2. Programming with send control SMS (see paragraph 'SMS Control Command List')
   or via RS232 serial cable with software on PC (see " Programming software ").

SIM card preparation

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 up to 7 authorised numbers to Phone Book (position 1,2,3,4,5,6,7); you can write numbers to SIM phone book from PC setting software

Note:

1. *The BR928 can only be used with small SIM-cards with 1.8 or 3V technology.*
2. *For SIM card preparation you can use cell phone.*

Programming with SMS

See " SMS Control Command List "

1. Send SMS ***SETNR1*** from your cell phone to BR928 (store your number)
2. You can change alarm SMS message text,
3. You can set analogue signal level
4. You can set temperature level

Programming via serial port

See " BR928-DL setting up software "

GSM Band Installation

Default GSM band installed for your country.
If GSM band not installed, you can set GSM band with following steps:

1. Power Off module.
2. Connect module to PC with RS232 serial cable.
3. Run BR928-DL software on PC.
4. Select Baud Rate 19200 and com-port number.
5. Power On module.
6. After message “Welcome to BR928-DL programming"
7. For jump to programming mode click on **"Connect"** button
8. You receive message "I ready for BR928-DL programming"

See " BR928-DL setting up software "

SIM card

Set phone numbers from which management is authorised (number in SIM phone book)

	Phone Book	
1	A1	<Phone number Nr1> 1)
2	A2	<Phone number Nr2> 1)
3	A3	<Phone number Nr3> 1)
4	A4	<Phone number Nr4> 1)
5	A5	<Phone number Nr5> 1)
6	A6	<Phone number Nr6> 1)
7	A7	<Phone number Nr7> 1)

Note 1: full phone number with country code

Example - enable 3 phone numbers for module management

	Phone Book	
1	A1	+3719106159
2	A2	+3716149759
3	A3	371123456

Example - enable all phone numbers (disable authorisation numbers)

	Phone Book	
1	A1	99
2	A2	<Phone number2>

External cell phone number;
SMS receivers cell phone
(for personal notification)
External BieneRemote module (for module communication)

Outgoing numbers memory

Write with SMS command ***Setnr.*** Send SMS ***Setnr*** from cell phone.

	Cell phone / GSM modem / BR module	
Nr.1	Phone number Nr.1	External cell phone number; SMS receivers cell phone (for personal notification)
Nr.2	Phone number Nr.2	
Nr.3	Phone number Nr.3	
Nr.4	Phone number Nr.4	
Nr.5	Phone number Nr.5	External BieneRemote module (for module communication)
Nr.6	Phone number Nr.6	
Nr.7	Phone number Nr.7	

Alarm SMS text memory

Write with SMS command ***Settx*** and ***Setti*** or via serial port.

position	SMS text message	
	External (up to 32 character)	*Internal/External (up to 15 character)*
01	*Temperature input 1 minimum 2 level*	*)
02	*Temperature input 1 minimum 1 level*	*)
03	*Temperature input 1 normal*	*)
04	*Temperature input 1 maximum 1 level*	*)
05	*Temperature input 1 maximum 2 level*	*)
06	*Temperature input 2 minimum 2 level*	*)
07	*Temperature input 2 minimum 1 level*	*)
08	*Temperature input 2 normal*	*)
09	*Temperature input 2 maximum 1 level*	*)
10	*Temperature input 2 maximum 2 level*	*)
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21	*Analog input 1 minimum 2 level*	*)
22	*Analog input 1 minimum 1 level*	*)
23	*Analog input 1 normal*	*)
24	*Analog input 1 maximum 1 level*	*)
25	*Analog input 1 maximum 2 level*	*)
26	*Analog input 2 minimum 2 level*	*)
27	*Analog input 2 minimum 1 level*	*)
28	*Analog input 2 normal*	*)
29	*Analog input 2 maximum 1 level*	*)
30	*Analog input 2 maximum 2 level*	*)
31	*Analog input 3 minimum 2 level*	*)
32	*Analog input 3 minimum 1 level*	*)
33	*Analog input 3 normal*	*)
34	*Analog input 3 maximum 1 level*	*)
35	*Analog input 3 maximum 2 level*	*)
36	*Analog input 4 minimum 2 level*	*)
37	*Analog input 4 minimum 1 level*	*)
38	*Analog input 4 normal*	*)
39	*Analog input 4 maximum 1 level*	*)
40	*Analog input 4 maximum 2 level*	*)
41	*Digital input 1 0-1 events*	*)
42	*Digital input 2 0-1 events*	*)
43	*Digital input 3 0-1 events*	*)
44	*Digital input 4 0-1 events*	*)
45	*Digital input 5 0-1 events*	*)
46	*Digital input 6 0-1 events*	*)
47		
48	*Digital input 1 1-0 events*	*)
49	*Digital input 2 1-0 events*	*)
50	*Digital input 3 1-0 events*	*)
51	*Digital input 4 1-0 events*	*)
52	*Digital input 5 1-0 events*	*)
53	*Digital input 6 1-0 events*	*)
54		

*) see also paragraph '**Internal and external control**'

15 character text message

Number mask	space	SMS command 1	space	SMS command 2
0 .. F		Setou1		Rstou2

Number mask (send SMS to):
0 - disable internal and external SMS message
1 - send SMS message to Nr.5
2 - send SMS message to Nr.6
3 - send SMS message to Nr.5 and Nr.6
4 - send SMS message to Nr.7
5 - send SMS message to Nr.5 and Nr.7
6 - send SMS message to Nr.6 and Nr.7
7 - send SMS message to Nr.5, Nr.6 and Nr.7
8 - internal command (without SMS)
9 - send SMS message to Nr.5 and internal command
A - send SMS message to Nr.6 and internal command
B - send SMS message to Nr.5 and Nr.6 and internal command
C - send SMS message to Nr.7 and internal command
D - send SMS message to Nr.5 and Nr.7 and internal command
E - send SMS message to Nr.6 and Nr.7 and internal command
F - send SMS message to Nr.5, Nr.6 and Nr.7 and internal command

SMS command 1, 2 - external and internal control command; internal without SMS, external via SMS.

Output control SMS message:
Setou1, Setou2, Setou3
Rstou1, Rstou2, Rstou3

Inputs and Outputs Name

position	*Inputs / Outputs Name l (up to 15 character)*
55	*Digital input 1 state 1*
56	*Digital input 2 state 1*
57	*Digital input 3 state 1*
58	*Digital input 4 state 1*
59	*Digital input 5 state 1*
60	*Digital input 6 state 1*
61	*Digital input 7 state 1*
62	*Digital input 1 state 0*
63	*Digital input 2 state 0*
64	*Digital input 3 state 0*
65	*Digital input 4 state 0*
66	*Digital input 5 state 0*
67	*Digital input 6 state 0*
68	
69	*Digital Output 1 ON*
70	*Digital Output 2 ON*
71	*Digital Output 3 ON*
72	
73	
74	*Digital Output 1 OFF*
75	*Digital Output 2 OFF*
76	*Digital Output 3 OFF*
77	
78	

Outgoing numbers mask

	Cell phone / GSM modem / BR module
Nr.1	Phone number Nr.1
Nr.2	Phone number Nr.2
Nr.3	Phone number Nr.3
Nr.4	Phone number Nr.4
Nr.5	Phone number Nr.5
Nr.6	Phone number Nr.6
Nr.7	Phone number Nr.7

(see SMS command ***Setme***)

T1	T2			A1	A2	A3	A4	D1	D2	D3	D4	D5	D6	
0-F,-	0-F,-			0-F,-	0-F,-	0-F,-	0-F,-	0-F	0-F	0-F	0-F	0-F	0-F	

0 - disable all alert temperature SMS
'-' - temperature input disable

0 - disable all alert analog SMS
'-' - analogue input disable

TEMPERATURE

Bit3	Bit2	Bit1	Bit0
1/0	1/0	1/0	1/0

0	0	0	0	0 - not send alert SMS
0	0	0	1	1 - send alert SMS to Nr.1
0	0	1	0	2 - send alert SMS to Nr.2
0	0	1	1	3 - send alert SMS to Nr.1 and Nr.2
0	1	0	0	4 - send alert SMS to Nr.3
0	1	0	1	5 - send alert SMS to Nr.1 and Nr.3
0	1	1	0	6 - send alert SMS to Nr.2 and Nr.3
0	1	1	1	7 - send alert SMS to Nr.1, Nr.2 and Nr.3
1	0	0	0	8 - send alert SMS to Nr.4
1	0	0	1	9 - send alert SMS to Nr.1 and Nr.4
1	0	1	0	A - send alert SMS to Nr.2 and Nr.2
1	0	1	1	B - send alert SMS to Nr.1, Nr.2 and Nr.4
1	1	0	0	C - send alert SMS to Nr.3 and Nr.4
1	1	0	1	D - send alert SMS to Nr.1, Nr.3 and Nr.4
1	1	1	0	E - send alert SMS to Nr.2, Nr.3 and Nr.4
1	1	1	1	F - send alert SMS to Nr.1, Nr.2, Nr.3 and Nr.4
				- temperature inputs disable

ANALOG

Bit3	Bit2	Bit1	Bit0
1/0	1/0	1/0	1/0

0	0	0	0	0 - not send alert SMS
0	0	0	1	1 - send alert SMS to Nr.1
0	0	1	0	2 - send alert SMS to Nr.2
0	0	1	1	3 - send alert SMS to Nr.1 and Nr.2
0	1	0	0	4 - send alert SMS to Nr.3
0	1	0	1	5 - send alert SMS to Nr.1 and Nr.3
0	1	1	0	6 - send alert SMS to Nr.2 and Nr.3
0	1	1	1	7 - send alert SMS to Nr.1, Nr.2 and Nr.3
1	0	0	0	8 - send alert SMS to Nr.4
1	0	0	1	9 - send alert SMS to Nr.1 and Nr.4
1	0	1	0	A - send alert SMS to Nr.2 and Nr.2
1	0	1	1	B - send alert SMS to Nr.1, Nr.2 and Nr.4
1	1	0	0	C - send alert SMS to Nr.3 and Nr.4
1	1	0	1	D - send alert SMS to Nr.1, Nr.3 and Nr.4
1	1	1	0	E - send alert SMS to Nr.2, Nr.3 and Nr.4
1	1	1	1	F - send alert SMS to Nr.1, Nr.2, Nr.3 and Nr.4
				- analog input disable

DIGITAL

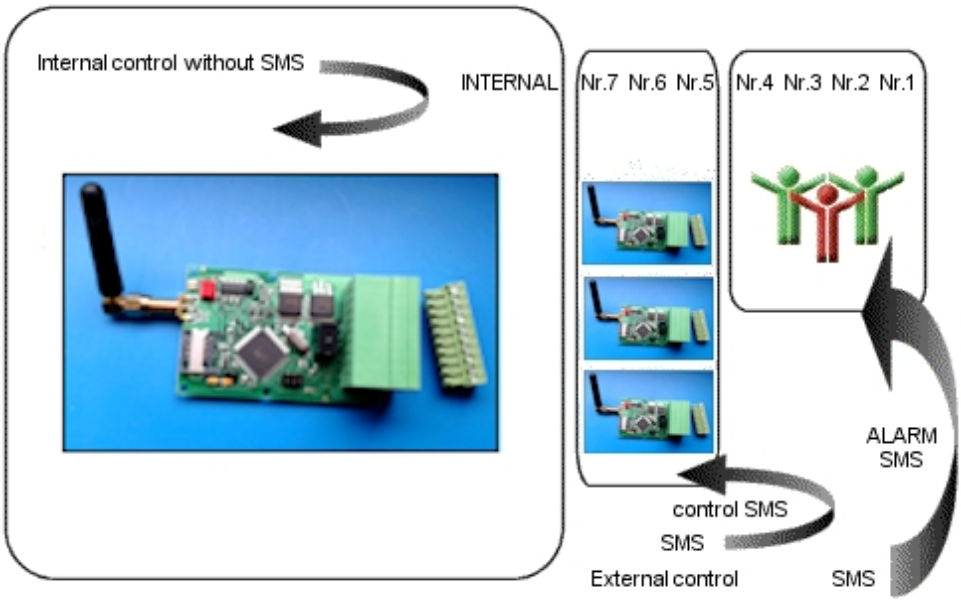
Bit3	Bit2	Bit1	Bit0
1/0	1/0	1/0	1/0

0	0	0	0	0 - not send alert SMS
0	0	0	1	1 - send alert SMS to Nr.1
0	0	1	0	2 - send alert SMS to Nr.2
0	0	1	1	3 - send alert SMS to Nr.1 and Nr.2
0	1	0	0	4 - send alert SMS to Nr.3
0	1	0	1	5 - send alert SMS to Nr.1 and Nr.3
0	1	1	0	6 - send alert SMS to Nr.2 and Nr.3
0	1	1	1	7 - send alert SMS to Nr.1, Nr.2 and Nr.3
1	0	0	0	8 - send alert SMS to Nr.4
1	0	0	1	9 - send alert SMS to Nr.1 and Nr.4
1	0	1	0	A - send alert SMS to Nr.2 and Nr.2
1	0	1	1	B - send alert SMS to Nr.1, Nr.2 and Nr.4
1	1	0	0	C - send alert SMS to Nr.3 and Nr.4
1	1	0	1	D - send alert SMS to Nr.1, Nr.3 and Nr.4
1	1	1	0	E - send alert SMS to Nr.2, Nr.3 and Nr.4
1	1	1	1	F - send alert SMS to Nr.1, Nr.2, Nr.3 and Nr.4
				- digital input disable

Internal control, external control and alarm notification SMS to 4 cell phone numbers:
Numbers 1,2,3,4 – for alarm SMS (for example, SMS message to service personal);
- text message length = 32 character

Number 5,6,7 – for external BieneRemote module – external control – with command SMS message;
- text message length = 15 character

INTERNAL – internal control without SMS.

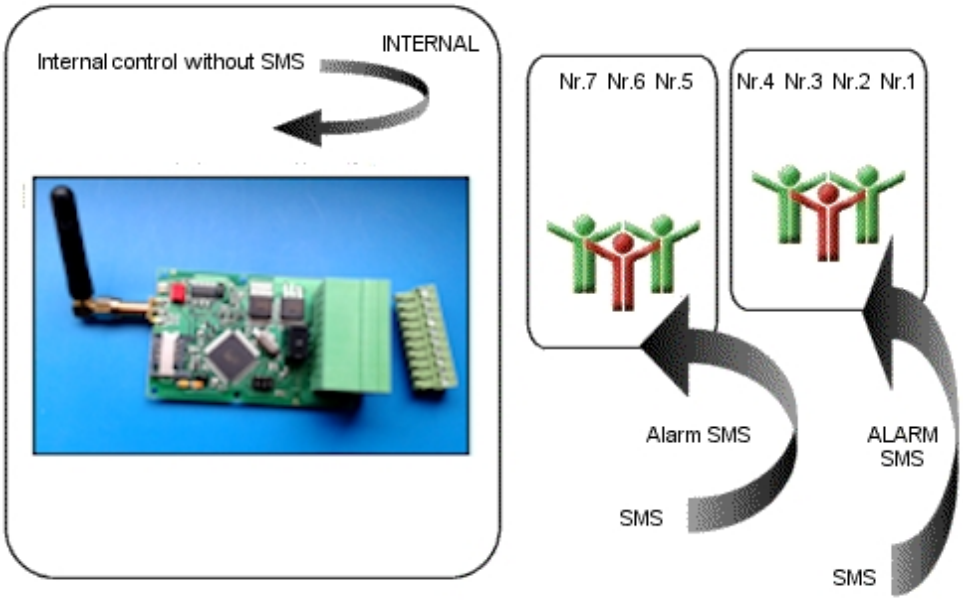


Internal and alarm notification SMS to 7 cell phone numbers:

Numbers 1,2,3,4 – for alarm SMS (for example, SMS message to service personal);
- text message length = 32 character

Number 5,6,7 – for alarm SMS (for example, SMS message to service personal);
- text message length = 15 character

INTERNAL – internal control without SMS.

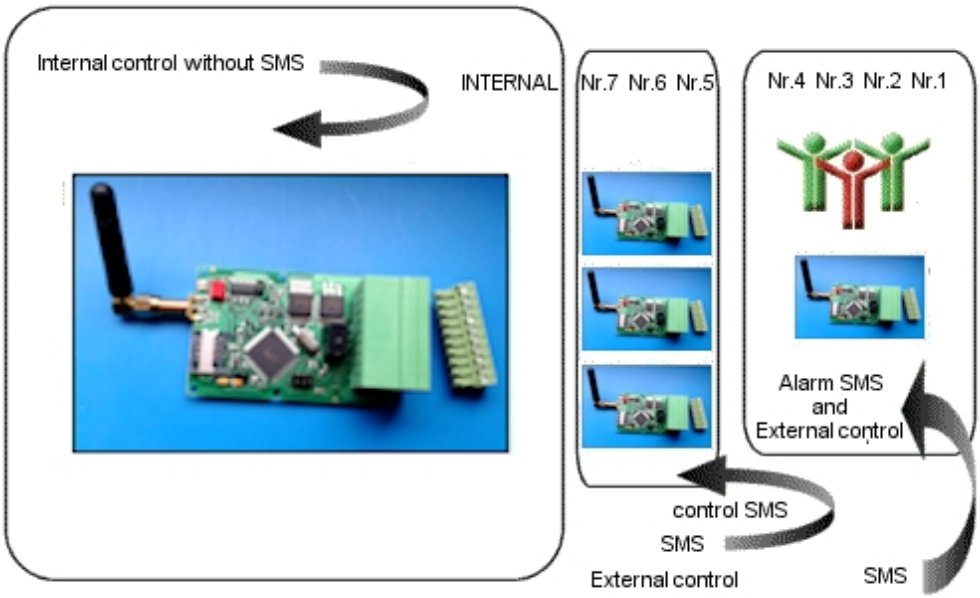


Internal control, external control and alarm notification SMS to up to 4 cell phone numbers:

Numbers 1,2,3,4 – for alarm SMS (for example, SMS message to service personal) and for control SMS;
- text message length = 32 character

Number 5,6,7 – for alarm SMS (for example, SMS message to service personal);
- text message length = 15 character

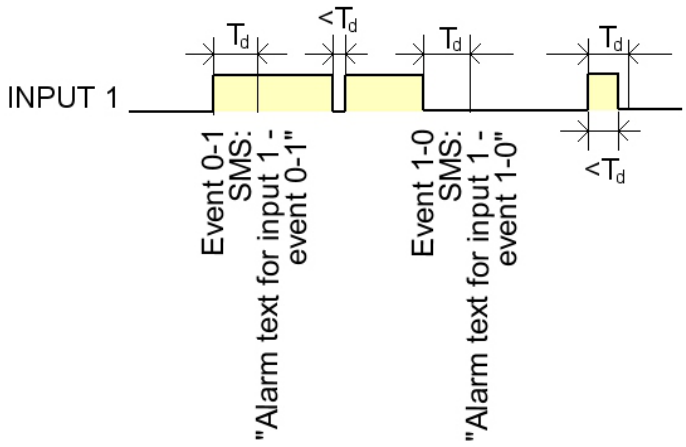
INTERNAL – internal control without SMS.



Digital and analogue signal and temperature monitoring

Digital signal monitoring (0-1 and 1-0 events)

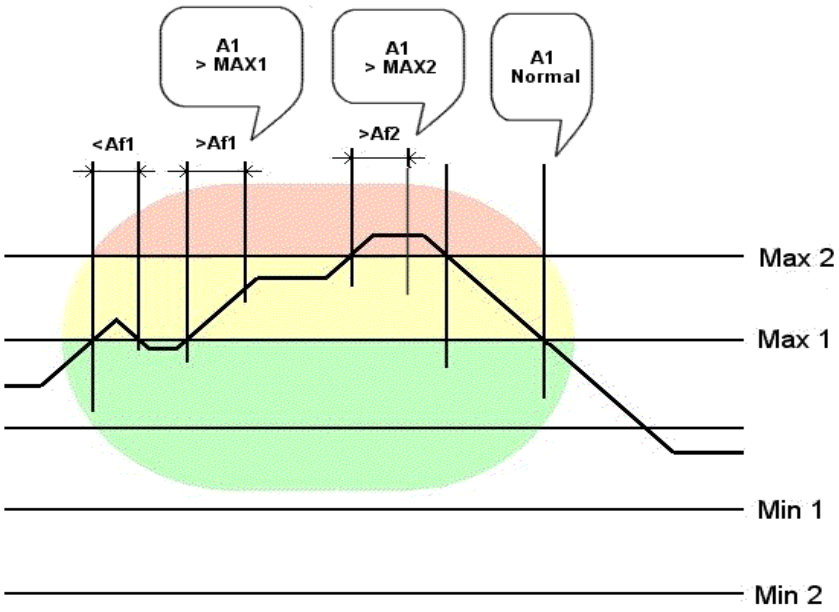
You can set different SMS notification message for 0-1 and for 1-0 events.
For example, 0-1 SMS message 'DOOR OPEN', 1-0 SMS message 'DOOR CLOSE'.
On Fig. Td - delay filter for digital signals; Td = 0 (25-50ms); 1 - 1 sec… 9 – 9sec.
Note: filter work for 0-1 or 1-0 event only.



Analogue signal monitoring

Can set 2 minimum level and 2 maximum level (on Fig, Ta - delay filter for analog signals):
MINIMUM 2 < MINIMUM 1, MAXIMUM 2 > MAXIMUM 1

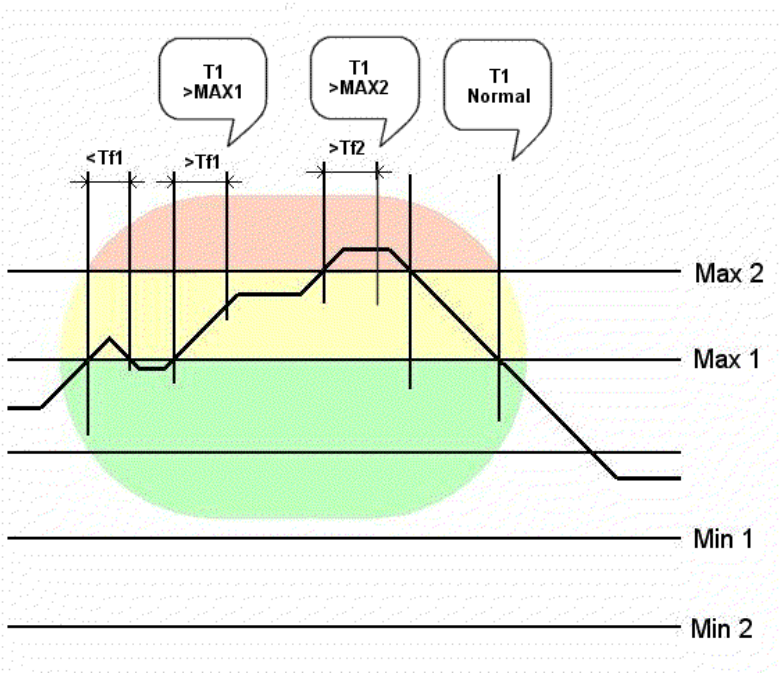
For analogue signal monitoring
MINIMUM1 and MAXIMUM1 level - with time-out filter from 30 sec. (Af1 = 00) to 15 min (Af1 = 99); see command ***Settf.***
MINIMUM2 level and MAXIMUM2 level - with time-out filter Af2=30 sec (Af2 = 00) to 15 min (Af2 = 99); see command ***Settf.***

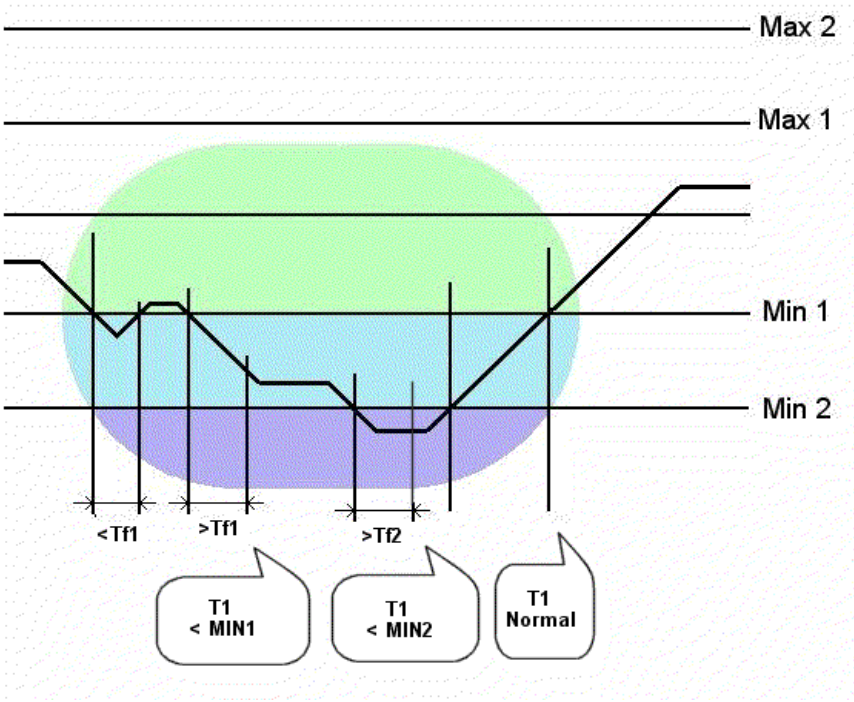


Temperature monitoring

Can set 2 minimum level and 2 maximum level (on Fig. Tt - delay filter for temperature).
MINIMUM 2 < MINIMUM 1, MAXIMUM 2 > MAXIMUM 1

For temperature monitoring
MINIMUM1 and MAXIMUM1 level - with time-out filter from 40-50 sec (Tf1=00) to 45-50 min (Tf1=99); see command ***Settf.***
MINIMUM 2 level and MAXIMUM 2 level - with time-out filter 40-50 sec (Tf2=00) to 45-50 min (Tf2=99); see command ***Settf.***





GPRS DATA LOGGING

FTP (extended version only)

BR928-DL every (SampleRate+1) min send 'measuring information line' to store in EEPROM memory. You can set sampling rate from 0 to 9 (from 1 min to 10 min). If sampling rate = 4, then BR928-DL approximately every 5 min send 'measuring information line' to store in EEPROM memory. 'Measuring information line' length 92 character. File Name as Date/Time with extension csv. (csv format).
MMDDHHMMSS.csv

You can set: DLPERn, where n = 1,2,3...9
n **Data Logger Period** - number of Data Logger records in csv-file
1 - Data Logger Period = 1 - 1 records in file
2 - Data Logger Period = 2 - 2 records in file
3 - Data Logger Period = 4 - 4 records in file
4 - Data Logger Period = 8 - 8 records in file
5 - Data Logger Period = 16 - 16 records in file
6 - Data Logger Period = 32 - 32 records in file
7 - Data Logger Period = 64 - 64 records in file
8 - Data Logger Period = 128 - 128 records in file
9 - Data Logger Period = 256 - 256 records in file

You can set: SRATEn, where n = 0,1,2,3...9
Sample Rate – period of sample rate for data logger
Sample Rate=0 - 1 min
Sample Rate=1 - 2 min
Sample Rate=2 - 3 min
Sample Rate=3 - 4 min
Sample Rate=4 - 5 min
Sample Rate=5 - 6 min
Sample Rate=6 - 7 min
Sample Rate=7 - 8 min
Sample Rate=8 - 9 min
Sample Rate=9 - 10 min

for example
If **Sample Rate=0** and **Data Logger Period = 4** (4 samples in file) - csv-file write period 4 min
If **Sample Rate=0** and **Data Logger Period = 16** (16 samples in file) - csv-file write period 16 min
If **Sample Rate=0** and **Data Logger Period = 64** (64 samples in file) - csv-file write period 64 min
If **Sample Rate=4** and **Data Logger Period = 4** (4 samples in file) - csv-file write period 20 min
If **Sample Rate=4** and **Data Logger Period = 8** (8 samples in file) - csv-file write period 40 min

00.00.00,00.00.00,+000.0,+000.0,000000,000000,00.0,00.0,00.0,00.0,0,0,0,0,0,0,0,0,0,0,**
DATE TIME T1 T2 C1 C2 A1 A2 A3 A4 6 5 4 3 2 1 3 2 1 Status
Temperature Counters Analog Inputs Digital Outputs

DATE: YY.MM.DD
TIME: HH.MM.SS

FTP mode selected
If HTTP host empty; write space in HTTP host Edit Box and click WR in programming mode (see below). FTP setting you can change if you use own FTP server. For directory you can use IMEI 15 digits (default IMEI) or set Dir Name up to 16 characters.

GPRS DATA LOGGING

HTTP

BR928-DL every (SampleRate+1) min send 'measuring information line' to HTTP server with HTTP protocol method GET and store in EEPROM memory. You can set sampling rate from 0 to 9 (from 1 min to 10 min). If sampling rate = 4, then BR928-DL approximately every 5 min send 'measuring information line' to HTTP server and store in EEPROM memory.
'Measuring information line' length 92 character.

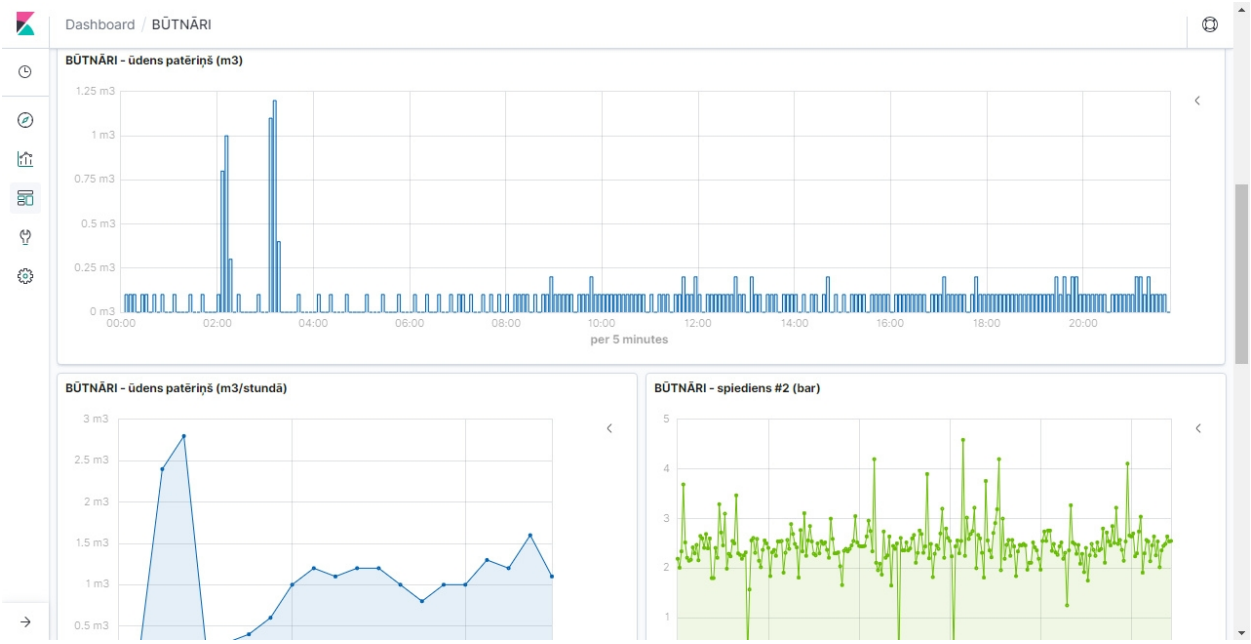
Setting default
Data Logger Period = 1 - 1 records in file

You can set: SRATEn, where n = 0,1,2,3...9
Sample Rate – period of sample rate for data logger
Sample Rate=0 - 1 min
Sample Rate=1 - 2 min
Sample Rate=2 - 3 min
Sample Rate=3 - 4 min
Sample Rate=4 - 5 min
...
Sample Rate=9 - 10 min

00.00.00,00.00.00,+000.0,+000.0,000000,000000,00.0,00.0,00.0,00.0,0,0,0,0,0,0,0,0,0,0,**
DATE TIME T1 T2 C1 C2 A1 A2 A3 A4 6 5 4 3 2 1 3 2 1 Status
Temperature Counters Analog Inputs Digital Outputs**

DATE: YY.MM.DD
TIME: HH.MM.SS

WEB server visualisation (order separately)



HTTP mode selected
If HTTP host not empty. Not change FTP setting if you use HTTP mode. DL period in HTTP mode = 1.

19.03.22,19.08.02,+026.6,+026.5,00000050,00003000,99.5,59.7,00.0,12.1,1,1,0,1,1,1,1,0,0,0,****

where,
19.03.22, Date
19.08.02, Time
+026.6, Temperatere 1
+026.5, Temperatere 2
counter1 00000050
counter2 00003000
99.5, analog 1 in %
59.7, analog 2 in %
00.0, analog 3 in %
12.1, analog 4 = supply voltage in V
1, Dig.Inp.7
1, Dig.Inp.6
0, Dig.Inp.5
1, Dig.Inp.4
1, Dig.Inp.3
1, Dig.Inp.2
1, Dig.Inp.1
0, Out.3
0, Out.2
0, Out.1
**** status

SMS mode only

Datalogging disable

SMS command

Setap,[space character]

Setap,

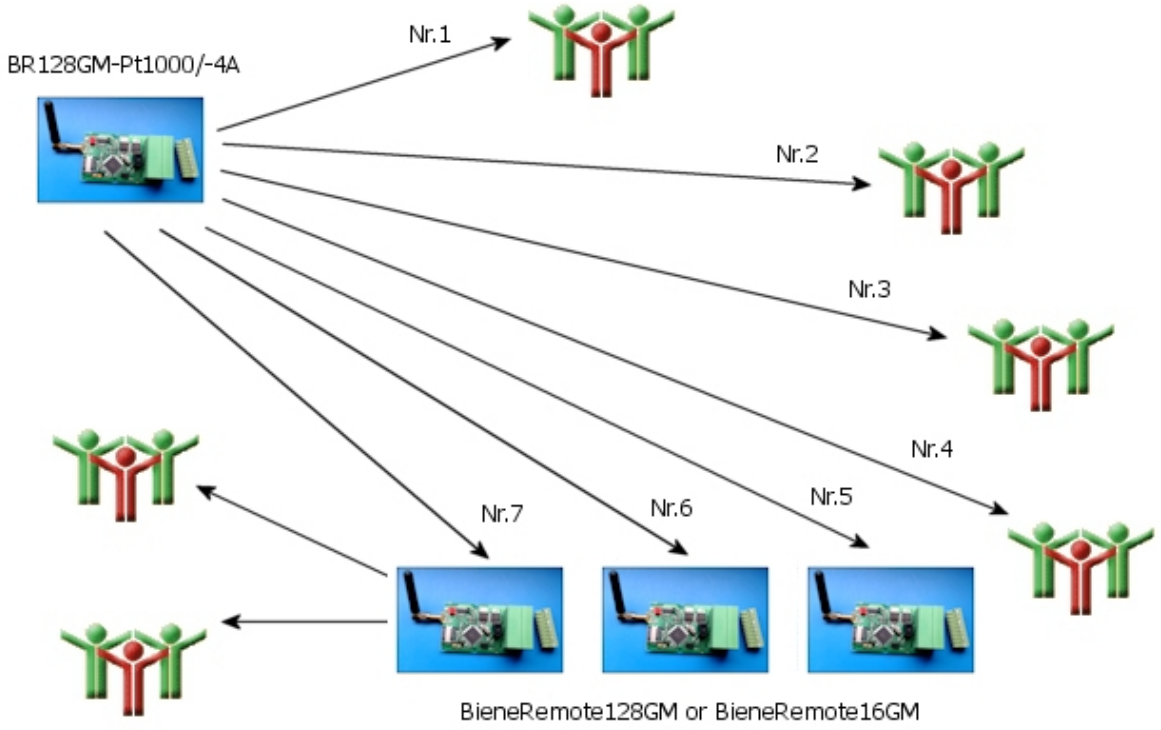
Internal and external control

At occurrence of event (digital 0-1, digital 1-0, analog MINIMUM2, MINIMUM1, MAXIMUM1, MAXIMUM2, temperature MINIMUM2, MINIMUM1, MAXIMUM1, MAXIMUM2) BR928-DL send corresponding notification SMS text message (from Text messages memory): external SMS text message (up to 32 character) and internal/external SMS text message (up to 15 character).

BR928-DL can send SMS message to number Nr1, Nr2, Nr3, Nr4, Nr5, Nr6, Nr7.
Nr1,Nr2,Nr3,Nr4 - only for external SMS text message (up to 32 character).
Nr5,Nr6,Nr7 - only for internal/external SMS text message (up to 15 character).

Number Mask (see command ***Setme***) - for external SMS text message.
For internal/external SMS text message Number Mask = first character in text message (note 4 in SMS " Control Command List ".).

At occurrence of event SMS message BR928-DL can send to all numbers and to internal process - execute internal command (only ***Setou***, ***Rstou*** SMS command) or only to internal process or not send the SMS message (if first character in SMS text message - space or if mask = 0).
You can program internal management of outputs on events on inputs.
Also you can program external management of outputs others BieneRemote Module on events on inputs (communication between BieneRemote Module).



Communication between BieneRemote module and
between BieneRemote module and technical personals.

Internal control, external control and alarm notification SMS to 4 cell phone numbers:

NOTIFICATION with SMS
Numbers 1,2,3,4 – for alarm SMS (for example, SMS message to service personal);
- text message length = 32 character

EXTERNAL
Number 5,6,7 – for external BieneRemote module – external control – with command SMS message;
- text message length = 15 character

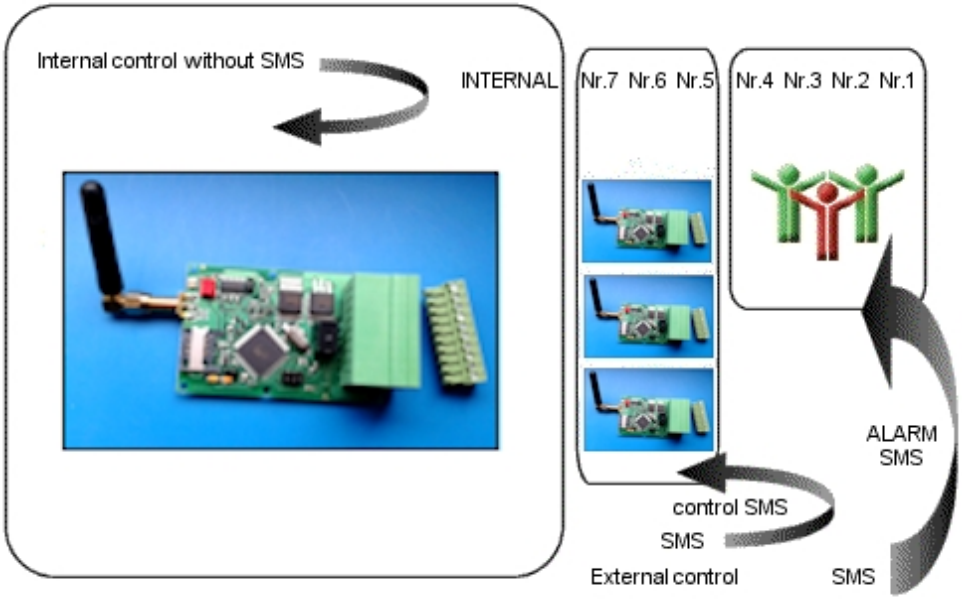
7 Setou1 Rstou3

INTERNAL – internal control without SMS.

8 Setou1 Rstou3

INTERNAL and EXTERNAL – internal control without SMS and external control with SMS.

F Setou1 Rstou3



position	SMS text message	
	Events type	*Internal/External (up to 15 character)* Nr.Mask CMD1 CMD2 Nr.Mask for Nr.7, Nr,6, Nr.5
		Output control (external, internal) examples
01	*Temperature input 1 minimum 2 level*	
02	*Temperature input 1 minimum 1 level*	
03	*Temperature input 1 normal*	
04	*Temperature input 1 maximum 1 level*	
05	*Temperature input 1 maximum 2 level*	
06	*Temperature input 2 minimum 2 level*	
07	*Temperature input 2 minimum 1 level*	
08	*Temperature input 2 normal*	
09	*Temperature input 2 maximum 1 level*	
10	*Temperature input 2 maximum 2 level*	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21	*Analog input 1 minimum 2 level*	8 SETOU1
22	*Analog input 1 minimum 1 level*	
23	*Analog input 1 normal*	
24	*Analog input 1 maximum 1 level*	8 RSTOU1
25	*Analog input 1 maximum 2 level*	
26	*Analog input 2 minimum 2 level*	
27	*Analog input 2 minimum 1 level*	
28	*Analog input 2 normal*	
29	*Analog input 2 maximum 1 level*	1 SETOU4
30	*Analog input 2 maximum 2 level*	
31	*Analog input 3 minimum 2 level*	
32	*Analog input 3 minimum 1 level*	
33	*Analog input 3 normal*	1 RSTOU4
34	*Analog input 3 maximum 1 level*	
35	*Analog input 3 maximum 2 level*	
36	*Analog input 4 minimum 2 level*	
37	*Analog input 4 minimum 1 level*	
38	*Analog input 4 normal*	
39	*Analog input 4 maximum 1 level*	
40	*Analog input 4 maximum 2 level*	
41	*Digital input 1 0-1 events*	3 SETOU3 RSTOU2
42	*Digital input 2 0-1 events*	3 RSTOU3 SETOU2
43	*Digital input 3 0-1 events*	
44	*Digital input 4 0-1 events*	
45	*Digital input 5 0-1 events*	
46	*Digital input 6 0-1 events*	
47		
48	*Digital input 1 1-0 events*	
49	*Digital input 2 1-0 events*	
50	*Digital input 3 1-0 events*	
51	*Digital input 4 1-0 events*	
52	*Digital input 5 1-0 events*	
53	*Digital input 6 1-0 events*	
54		

SMS Control Command List

Command *1)*	Function	Return Message	Description
COMMON			
Getst	Get Technical Status	INP=1001111 OUT=00000 SR=4 TL=1 Tf1= 1 Tf2= 1 Af1= 0 Af2= 1 Df=0 NM:FF00/FFFF/FFFF--- SQ:28,0 SMS Enable IMEI:863591021614973 (technical status)	Get input state , output state, reference level, pulse output data, timeout parameter, number mask, alarm enable/disable, signal quality... IMEI
Settf ,TT,TT, AA,AA,D	Set timeout filter for T1,2,A1,A2, Digital inputs	Technical Status	Temperature filter: TT=00-99 (0 – 99 min.) Analog filter: AA=00-99 (0 – 99 min.) Digital signal filter: D=0..9 (sec, approx)
SRATEn	Set sample Rate	Technical Status	N = 0,1,...,9 0: 1min, 1: 2min, … 9: 10min
DLPERn	DataLogger period (lines in file)	Technical Status	n, lines in file n=1 lines in file= 1 n=2 lines in file= 2 n=4 lines in file= 4 ... n=9 lines in file= 256
Seten	Alarm SMS enable	Technical Status	Set active mode - Alarm SMS enable
Setdi	Alarm SMS disable	Technical Status	Set passive mode - Alarm SMS disable
OUTPUTS and DIGITAL INPUTS			
Setou1	Set Output 1	Output 1 name in ON state	Set Output 1
Setou2	Set Output 2	Output 2 name in ON state	Set Output 2
Setou3	Set Output 3	Output 3 name in ON state	Set Output 3 - relay ON
Rstou1	Reset Output 1	Output 1 name in OFF state	Reset Output 1
Rstou2	Reset Output 2	Output 2 name in OFF state	Reset Output 2
Rstou3	Reset Output 3	Output 3 name in OFF state	Reset Output 3 - relay OFF
PulseN,T	Pulse output	Technical Status	N = 1,2,3, T = 0,1...9; 1 – 2 sec, 9 – 18 sec
GetosN	Get output state in text format	Answer text message – output (outputs) state	N=0 – get all outputs state; N=1..3 – get output N state “Inputs and Outputs Name” table on p.24
GetisN	Get input state in text format	Answer text message – input (inputs) state	N=0 – get all inputs state; N=1..6 – get input N state “Inputs and Outputs Name” table on p.24
NUMBERS			
SetnrN	Set number N=1,2,3,..,7	1: +37126149758	Set cell phone for alarm notification Note: Send this SMS from cell phone for alarm notification
SetnnN, +37126149758	Set number N=1,2,3,..,7	1: +37126149758	Set cell phone for alarm notification
ClrnrN	Clear number N=1,2,3,..,7	OK	Clear cell phone for alarm notification
GetnrN	Read number N=1,2,3,..,7	+3715881456 - A917351884165	Read stored notification numbers
Setme,TTCC, AAAA, DDDDDDD	TTCC – temperature and counter number mask; C=0..F AAAA - analog number mask; A=0..F. DDDDDDD - digital number mask; D=0..F	Technical Status	Set mask for cell phone number Nr.1,2,3,4 for alarm SMS sending. Individual mask for temperature events, for analog events, for digital events. TTCC - for temperature input 1,2 and counter 1,2, AAAA - for analog input 1,2,3,4, DDDDDDD - for digital input 1...,6; Note 3)
Getpb	Read phone book	N1:99 N2:+3716149759	Read administration numbers (first 7

		N3:+3715881419 N4: N5: N6: N7:	numbers from SIM phone book)
SetpbN,number	Add number to SIM Phone Book N=1...7 - position	OK. New number will be activated after restart	Example SETPB1,+37129106159
TEXT			
SettxNN,[text]	Write alarm SMS text (external)	NN-[text]	Write alarm SMS text; NN = 01,02,03,..54 {text] up to 32 characters
SettiNN,M,[text]	Write alarm SMS text; int.,ext. Note 4)	NN- M [text]	Write alarm SMS text; NN = 01,02,03,..54 M - 0..F - numbers mask (Note 4); [text] Write inputs state text; NN = 55..68 Write outputs state text; NN = 69..78
GettxNN	Read alarm SMS text (external)	NN-[text]	Read alarm SMS text; NN = 01,02,03,..54 {text] up to 32 characters
GettiNN	Read alarm SMS text (internal, external) Note 4)	NN- M [text]	Read alarm SMS text; NN = 01,02,03,..54 M - 0..F - numbers mask (Note 4) Read inputs state text; NN = 55..68 Read outputs state text; NN = 69..78

ANALOG			
Getan	Get Analog Data	A1=00.0% A2=50.0% A3=00.0% A4=66.2% 12.0V	Get analog data (in %) and level (min2, min1, max1, max2) for 4 analog inputs
Reflv2,DDDD Reflv5,DDDD	Reference Source Change, Divider change (only for 0-20mA/4-20mA)	Technical Status	ADC Reference Source +2,56V or ADC Reference Source +5V
AnlevN,00,00,00,00	Set level for analog input N, min2,min1,max1,max2 2)	An.level A1:00,50,00,66 A1:00 20 80 00 A2:00 00 00 00 A3:00 00 00 00 A4:40 46 00 00 An.Kf.1111 4-20 mode:0000 Ref.lv=+5V AM: 1000 1000 1000 Analog parameters	Max Level 1 > 1 Max Level 2 > 2 if Max Level = 0 and Min Level = 0, then no SMS message
420FLn,m	Set 4-20mA mode	Analog parameters	n = 1 ,2 or 3; m=1 for 4-20mA mode m=0 for 0-5,0-10,0-20mA
ADDKFn,2000	Set multiplier	Analog Multiplier.2=2000/1000	n = 1 ,2 or 3; 2000 = multiplier = 2000/1000 = 2
GETLV	Get analog parameters	Analog parameters	
TEMPERATURE			
Gettc	Get Temperature	T1=+20.5 T1:+006+030	Get Temperature and level (min2, min1, max1, max2) in °C for 1 or 2 temperature inputs
TclevN+000+000+000+000	Set level for temp. input 1 or 2	T1=+20.5 T1:+006+030	
COUNTER			
CLRCT0 CLRCT1 CLRCT2	Clear counter 1 and 2 Clear counter 1 Clear counter 2	C1=0 C2=0 C1eeprom=0 C2eeprom=0	
GETCT	Get counters	C1=521 C2=0 C1eeprom=504 C2eeprom=0	
DATE/TIME			
Settm, YY/MM/DD,HH:MM:SS+ZZ	Set Date/Time	DT: 07/01/15,23:13:00	Settm 07/01/15,23:13:00+02
Gettm	Get Date/Time	DT: 07/01/15,23:13:00	

SMS SHEDULE			
Setsh,T01020304 note: support only in last versions	Set SMS shedule	Setsh T07131902	Send SMS A – temperature SMS C – counter SMS D – digital data SMS T – temperature SMS L – datalogger row 07,13,19,02 – hours for SMS sending if 30, then send SMS every hour
Getsh	Get Shedule	Setsh T07131902	Get shedule

Note 1) *Not case sensitive. You can use GETST, Getst,*
Note 2) *If Max analog level = 00, then alarm for this level disable*
If Min analog level = 00, then alarm for this level disable
Note 3) *Setting for outgoing Phone Numbers for external alarm SMS (command Setme):*
TTCC for temperature inputs 1,2 and Counter 1,2: AAAA for analog inputs 1,2,3,4, DDDD--- for digital inputs 1,2,3,4,5,6,

0 - no send SMS — *1 - send SMS to Nr1*
2 - send SMS to Nr2 — *3 - send SMS to Nr1,Nr2*
4 - send SMS to Nr3 — *5 - send SMS to Nr1,Nr3*
6 - send SMS to Nr2,Nr3 — *7 - send SMS to Nr1,Nr2,Nr3*
8 -send SMS to Nr.4 — *9 - send SMS to Nr1, Nr4*
A - send SMS to Nr2, Nr4 — *B - send SMS to Nr1,Nr2, Nr4*
C - send SMS to Nr3, Nr4 — *D - send SMS to Nr1,Nr3, Nr4*
E - send SMS to Nr2,Nr3, Nr4 — *F - send SMS to Nr1,Nr2,Nr3, Nr4*
' - ' disable temperature, counter or analog input N or Digital event.
Set ' - ', if you not use temperature or analog input (disable inputs)

Note 4) *Setting for outgoing Phone Numbers for alarm SMS (internal/external text) - first character in text message:*

0 - no send SMS — *1 - send SMS to Nr5*
2 - send SMS to Nr6 — *3 - send SMS to Nr5, Nr6*
4 - send SMS to Nr7 — *5 - send SMS to Nr5, Nr7*
6 - send SMS to Nr6, Nr7 — *7 - send SMS to Nr5,Nr6, Nr7*
8 -send SMS to internal — *9 - send SMS to Nr5, internal*
A -send SMS to Nr6, internal — *B - send SMS to Nr5, Nr6, internal*
C -send SMS to Nr7, internal — *D - send SMS to Nr5, Nr7, internal*
E -send SMS to Nr6, Nr7, internal — *F - send SMS to Nr5,Nr6, Nr7, internal*

Example:
B SETOU1 RSTOU2 - internal/external SMS message
B - send SMS to Nr5, Nr6, internal, SETOU1 - first command, RSTOU2 - second command
8 SETOU1 RSTOU2 - internal message (SMS not send)
8 – internal control (if events, set Output1 and reset Output2)

SETTING UP GPRS Internet

Command	Function	Return Message	Description
GPRS			
Setap,[APN] Setap,[space character]	Set APN or disable GPRS	APN: [APN]	Setap,[APN] - APN - Access Point Name; Setap, if APN = space character - disable Data Logging to GPRS
Getap	Get APN	APN: [APN]	Get Access Point Name
Setip,[IP address]	Set IP address	IP address: 0,0,0,0	Set IP address (GPRS context); 0,0,0,0 means dynamic; default 0.0.0.0
Getip	Get IP address	IP address: 0,0,0,0	Get IP address (GPRS context)
Setid,[User ID]	Set User ID	User ID: [user ID]	Authentication setting; default blank
Getid	Get User ID	User ID: [user ID]	Authentication setting
Setpw,[Password]	Set Password	PASSWORD: [password]	Authentication setting; default blank
Getpw	Get Password	PASSWORD: [password]	Authentication setting
HTTP			
SETRH,87.110.236.60:5046	Set remote host	Remote Host: 87.110.236.60:5046	
GETRH	Get remote host	Remote Host: 87.110.236.60:5046	
FTP			
Setft,[remote host]	Set remote host	FTP Host: [URL]	Set remote host of FTP server
Getft	Get remote host	FTP Host: [URL]	Get remote host of FTP server
Setpf,[Password]	Set Password	Password FTP: [password]	Set authentication password for FTP
Getpf	Get Password	Password FTP: [password]	Get authentication password for FTP
Setnm,[User Name]	Set User Name	User Name: [user name]	Set authentication user name
Getnm	Get User Name	User Name: [user name]	Get authentication user name
SRATEn	Sample Rate	Technical status	N = 0,1,...,9, 0: 1min, 1: 2min, … 9: 10min
DLPERn	Datalogger period	Technical status	n, lines in file 1 1 (for HTTP mode - 1) 2 2 3 4 4 8 ... 9 256
GETDLn	Get datalogger line	Datalogger line (current sample)	

APN (Access Point Name) - the logical name that selects the GGSN network connected; for example:

- for BITE, - internet or wap
- for Orange - orangeinternet

User ID and Password - authentication setting
Username and password may be are not required for Internet access

IP address - is the IP address associated with the terminal in the address space of the PDP.
IP address is assigned dynamically, or you can use a static IP address
may be are not required for Internet access

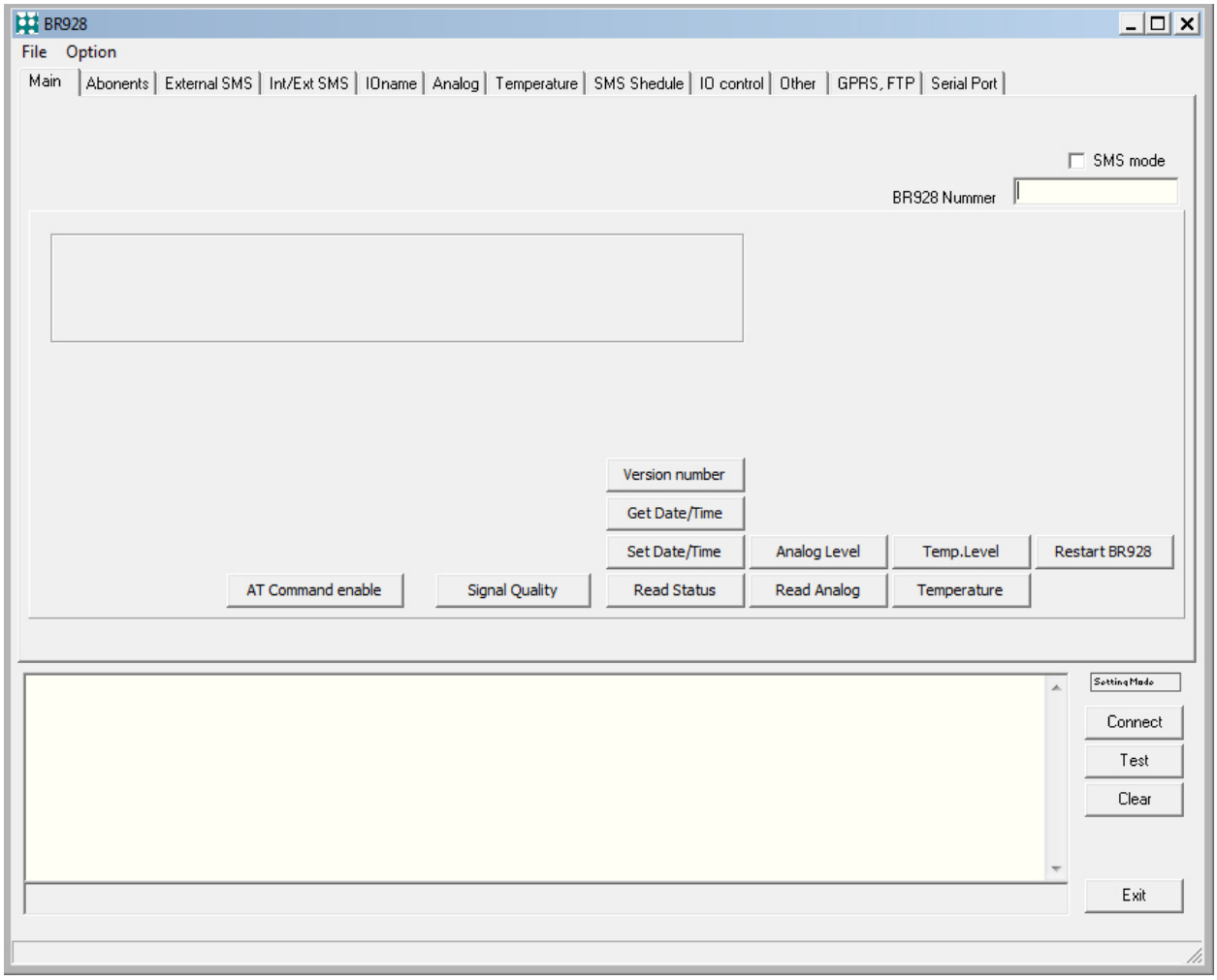
SETTING UP FTP
FTP host - address of FTP server (for Data Logging files *.csv)
User Name - authentication user identification string for FTP
Password - authentication password for FTP.

You can on one FTP account create more than one Directory for more than one BR928 module.

PC software for BR928 programming

Baud Rate for communication with BR928-DL module - 19200 Baud.

MAIN WINDOWS



You can setting/programming parameters for BR928 with software BR928.exe. Communication with RS232 cable between BR928 and PC. If PC without RS232 port you can use RS232-USB adapter. In this case Com port you can see here:
Control Panel
System
Device Manager
Ports (Com and LPT)

CONNECT - connection to BR828 in setting/programming mode.
CLEAR - clear data from messages windows.

READ STATUS - get technical status from BR928.
READ ANALOG – get analog data.
TEMPERATURE – get temperature.

SETTING UP PROCESS

- **Turn Off computer**
- **Connect BR928-DL and computer with serial cable**
- **Turn On computer**
- **Run BR928-DL setting up software**
- **Connect Power Supply to BR928-DL**
- First message from BR928 module “BR928 start; please wait.”
  If cyclic displayed message “BR928 start; please wait.”, then Power Supply weak or not stabilized !
- **Wait message "** Welcome to BR928 programming"
- For jump to programming mode click on **"Connect"** button
- You receive message "I ready for BR928 programming"
- You can programming BR928 module
- **For jump to work mode click on "Restart BR928" button**

Message after BR928 power ON

1.
BR928 start; please wait.

DT: 18/09/26,13:08:48
Welcome to BR928 programming

click to **CONNECT** button

I ready for BR928 programming

2. if no click to CONNECT button

BR928 start; please wait.

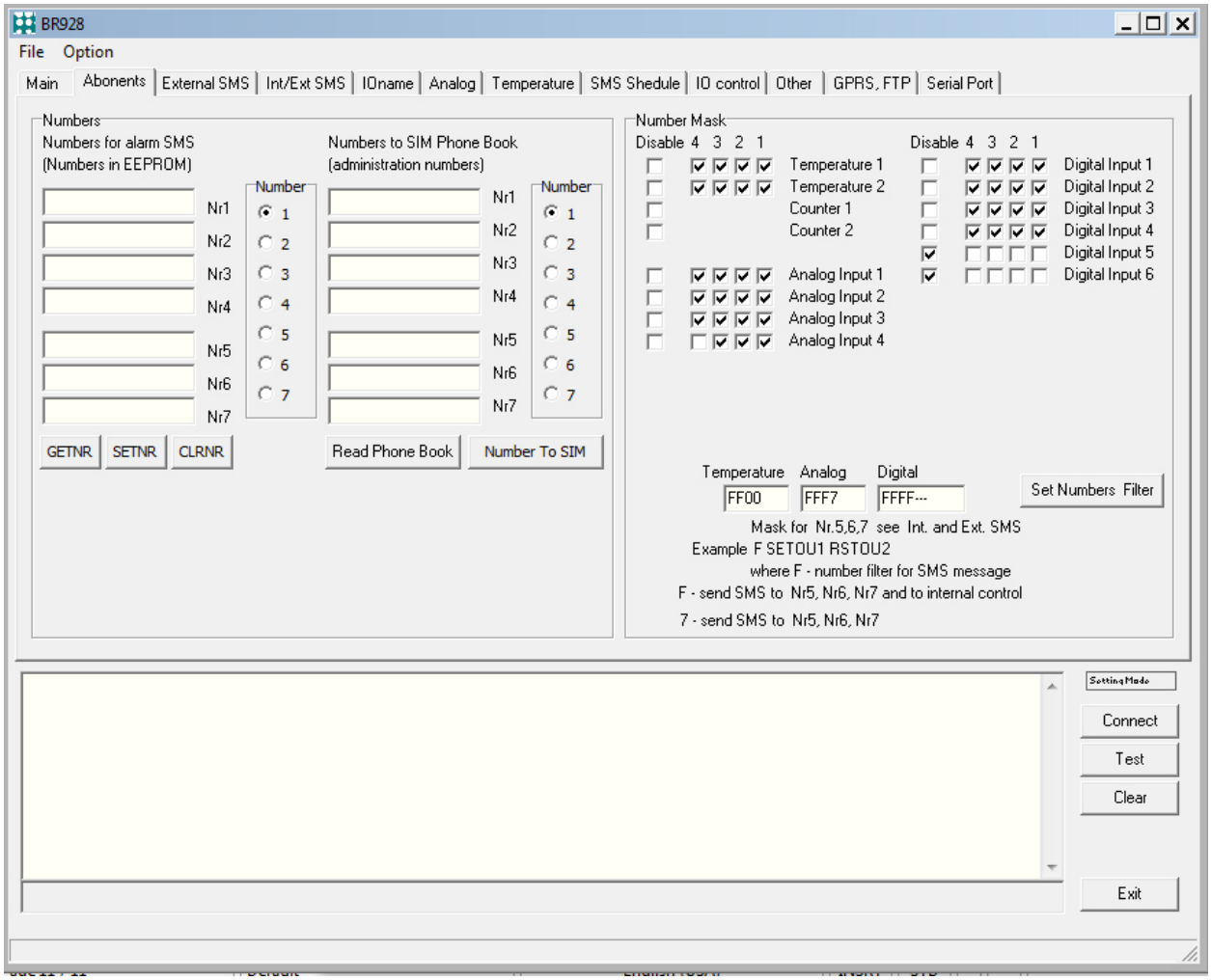
DT: 18/09/26,13:08:48
Welcome to BR928 programming

Thanks

GPRS connection OK

18.09.24,15.15.07,+021.5,+000.0,000940,00000000,00.0,00.0,00.0,11.9,1,0,0,1,1,1,1,0,0,0,0,0,*****

ABONENTS



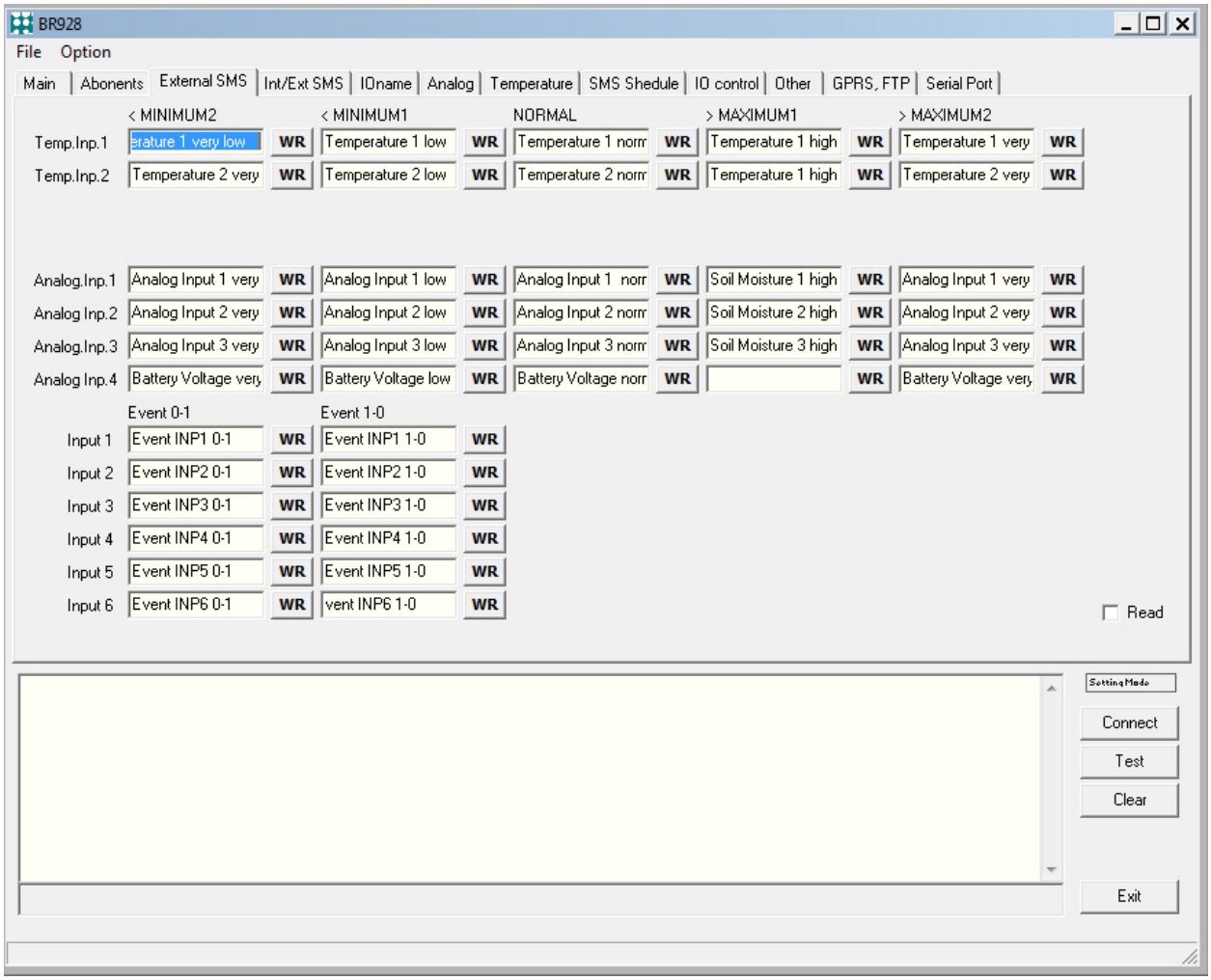
- Set numbers for alarm SMS (numbers in EEPROM)
  Numbers 1,2,3,4 for alarm SMS (up to 32 characters text EXTERNAL SMS)
  Numbers 5,6,7 for alarm SMS (up to 15 characters text EXTERNAL/INTERNAL SMS)
- Numbers to SIM phone book (administration numbers; numbers enabled for control with BR928)
- Set number filter for temperature, analog and digital:
  select/enable numbers for alarm SMS for every inputs
- For enable pulse input 5 for Counter disable DIG.INP.5
- For enable pulse input 6 for Counter disable DIG.INP.6

Numbers in EEPROM - numbers for alarm SMS

Numbers in SIM Phone Book - administration numbers enabled for control with BR928

Numbers filter for alarm SMS (enable/disable for individual numbers and events) - for alarm SMS direction to selected phone numbers.

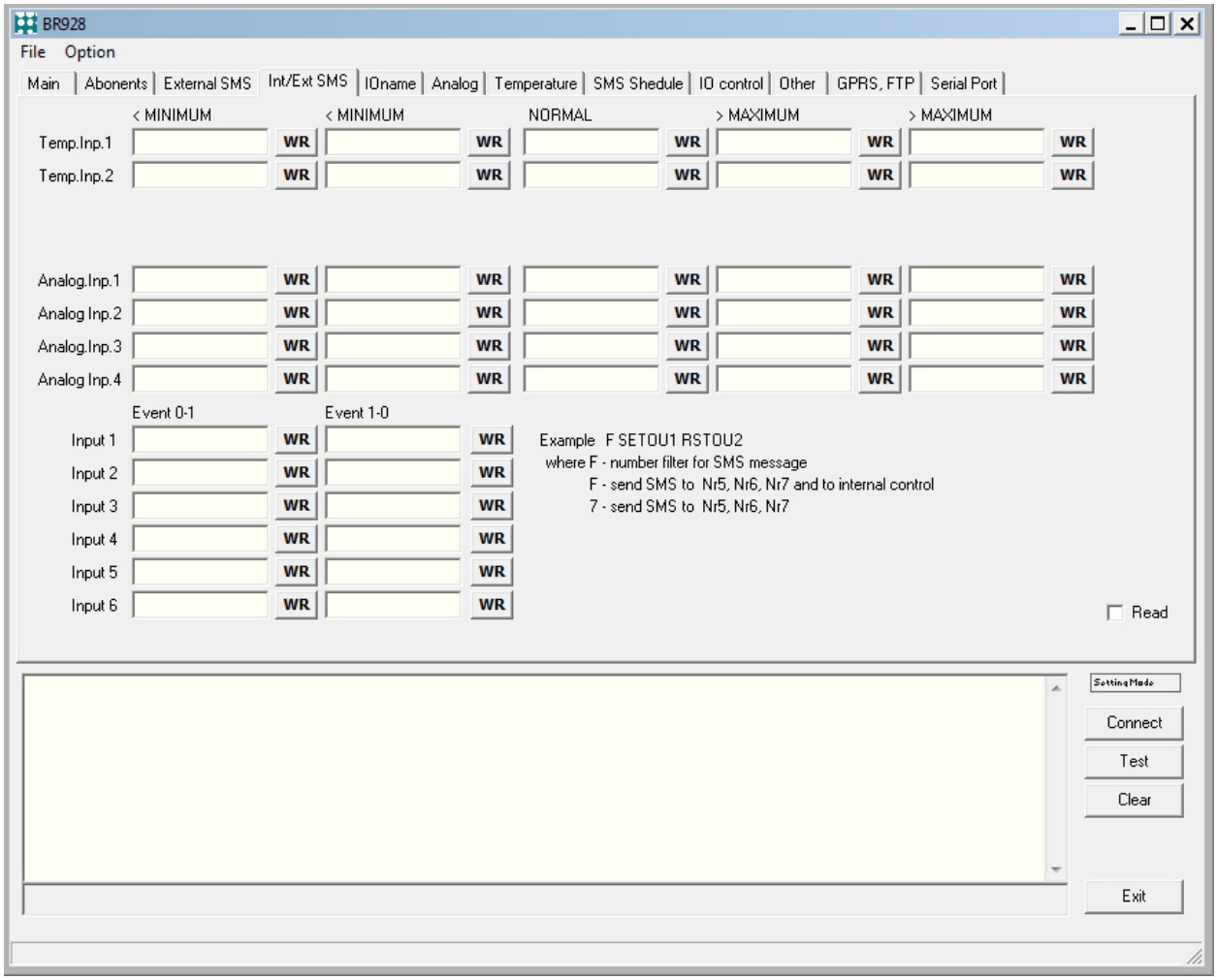
EXTERNAL SMS



Enter text message for alarm SMS (up to 32 characters, for Numbers 1,2,3,4) for events from temperature, analog, digital inputs. WR (write) button for set text to BR928 memory.
If click to READ, instead WR (write) buttons you must see RD (read) buttons. It for read text from BR928.

BR928-DL SMS not send if message empty, first symbols – space, numbers empty, number Filter = 0. 0 – disable for all 4 cell phone numbers; F – enable for all 4 cell phone numbers (for Number.4 ... Number.1)

INT/EXT SMS



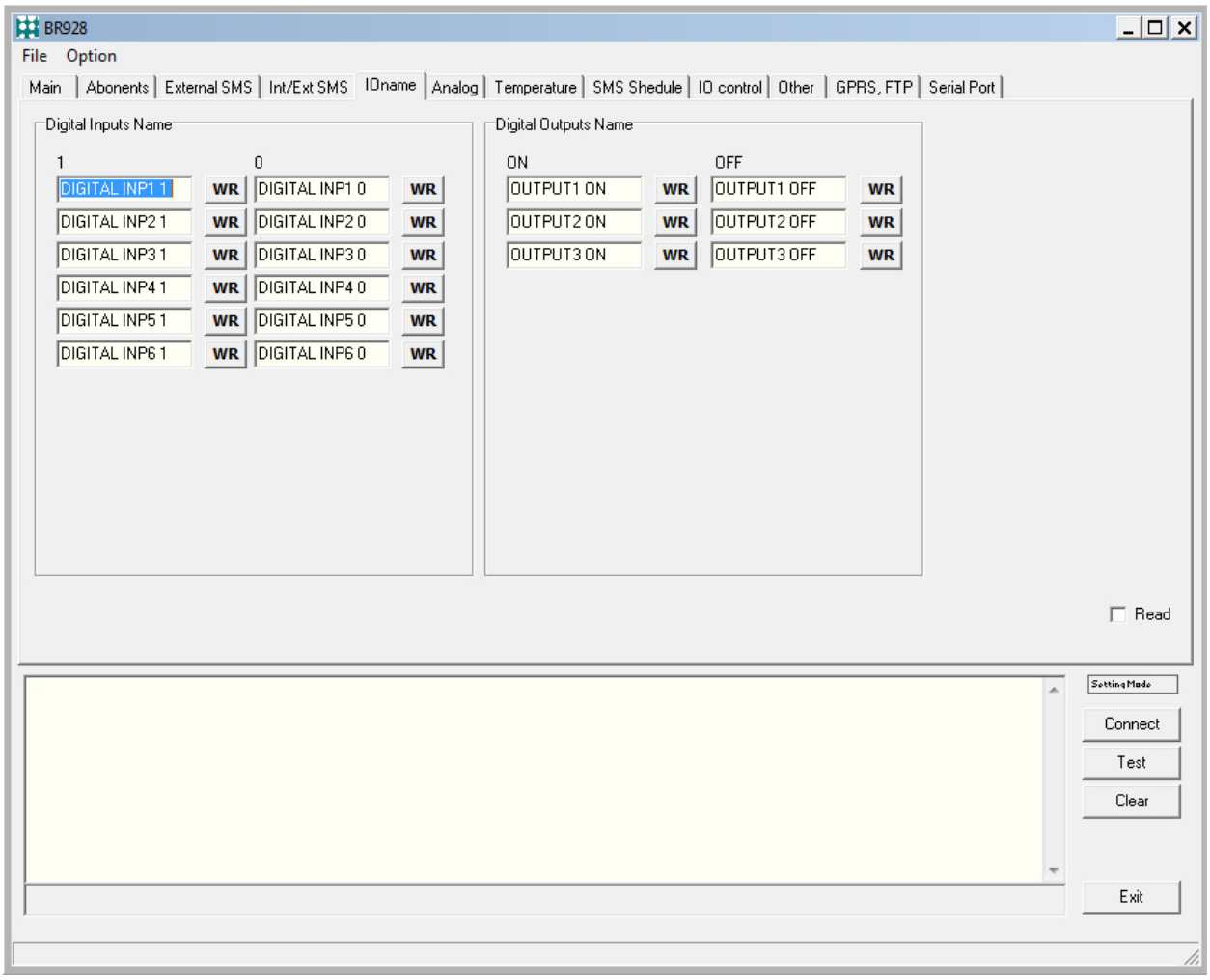
Enter text message for alarm SMS (up to 15 characters, for Numbers 5,6,7 and for internal control); for events from temperature, analog, digital inputs. WR (write) button for set text to BR928 memory.
If click to READ, instead WR (write) buttons you must see RD (read) buttons. It for read text from BR928.

You can enter SMS message for anyone event state.
BR928-DL SMS not send if message empty, first symbols – space, numbers empty, First symbol in message 0 or 8.

Internal control (output ON or OFF if event temperature, analog, digital).
Internal/External SMS message – for module – module communication.
Internal/External SMS message – for internal control without SMS..
i.e. Events on input ---> Output turn on/off on own BR928-DL and/or externam BR928-DL (BR160SM).

Internal message structure:
8 Setou1 Rstou2 - turn on Output 1, turn off Output 2 (only internal control)
9 Setou1 Rstou2 - turn on Output 1, turn off Output 2 (internal control) and turn on Output 1, turn off Output 2 BR928-DL (BR160SM) with Number 5 (cell phone number = Number.5 in EEPROM)

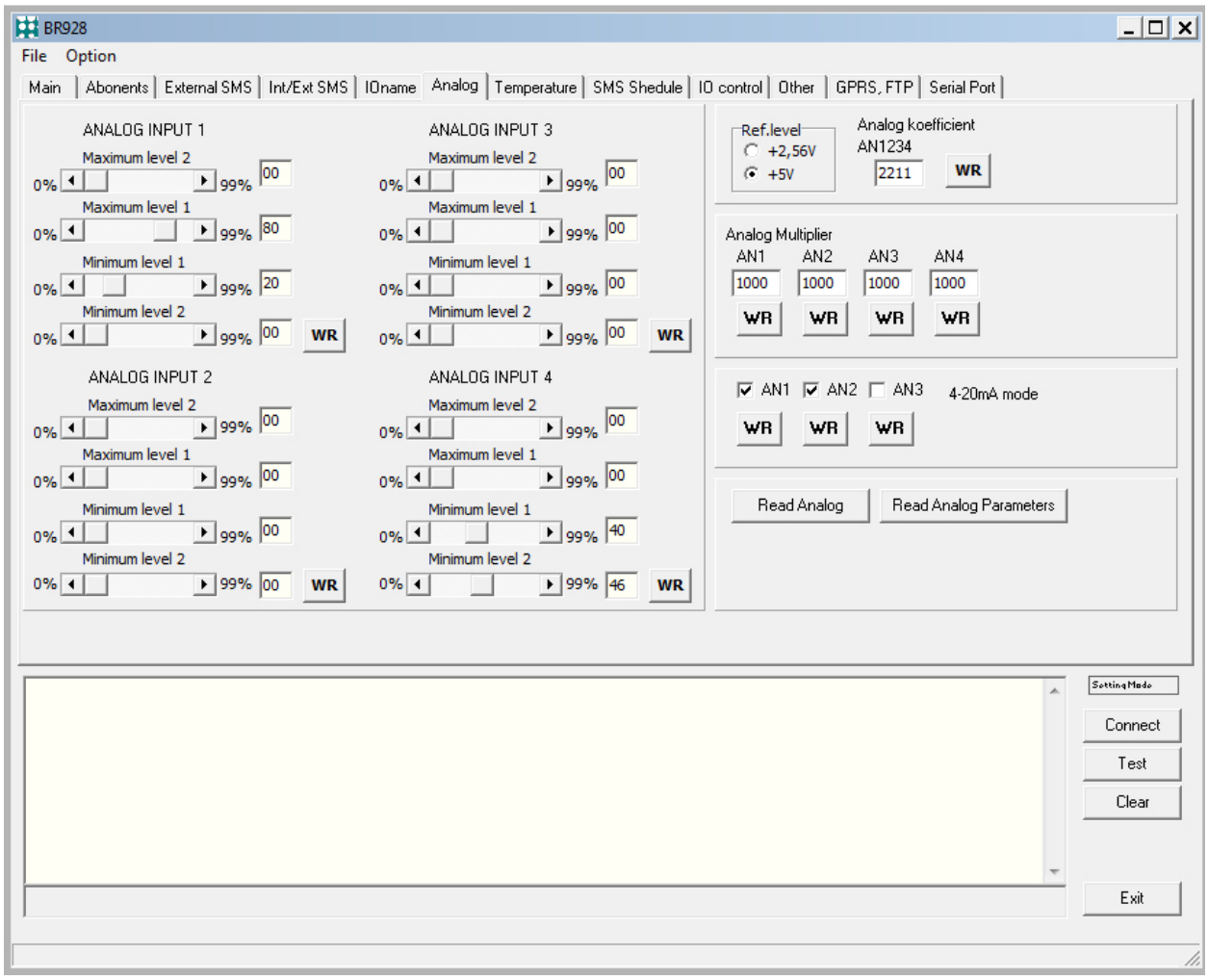
IO NAME



Set name for digital inputs =1 and for digital inputs =0.
Set name for outputs =1 and for outputs =0.

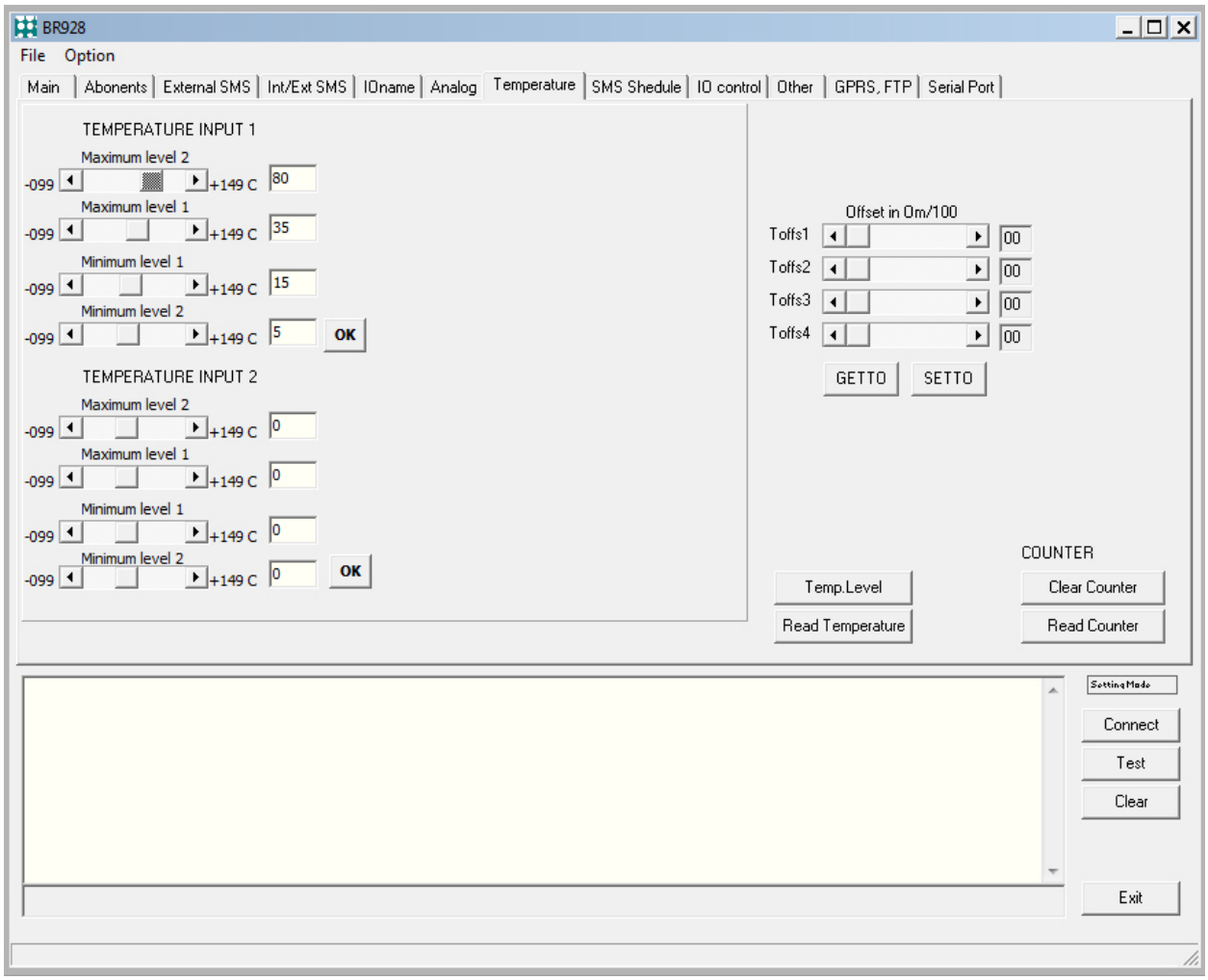
For get Digital Input status use SMS command GETIS.
For get Outputs status use SMS command GETOS.

ANALOG



- Set analog levels (setpoints).
- Set Multiplier (for correction)
- Set analog koefficient (if low signal monitoring)
- Select 4-20Ma mode (for 4-20mA signal use external resistor 249 Om between Analog input and GND; see 4-20mA sensor connection paragraph)

TEMPERATURE

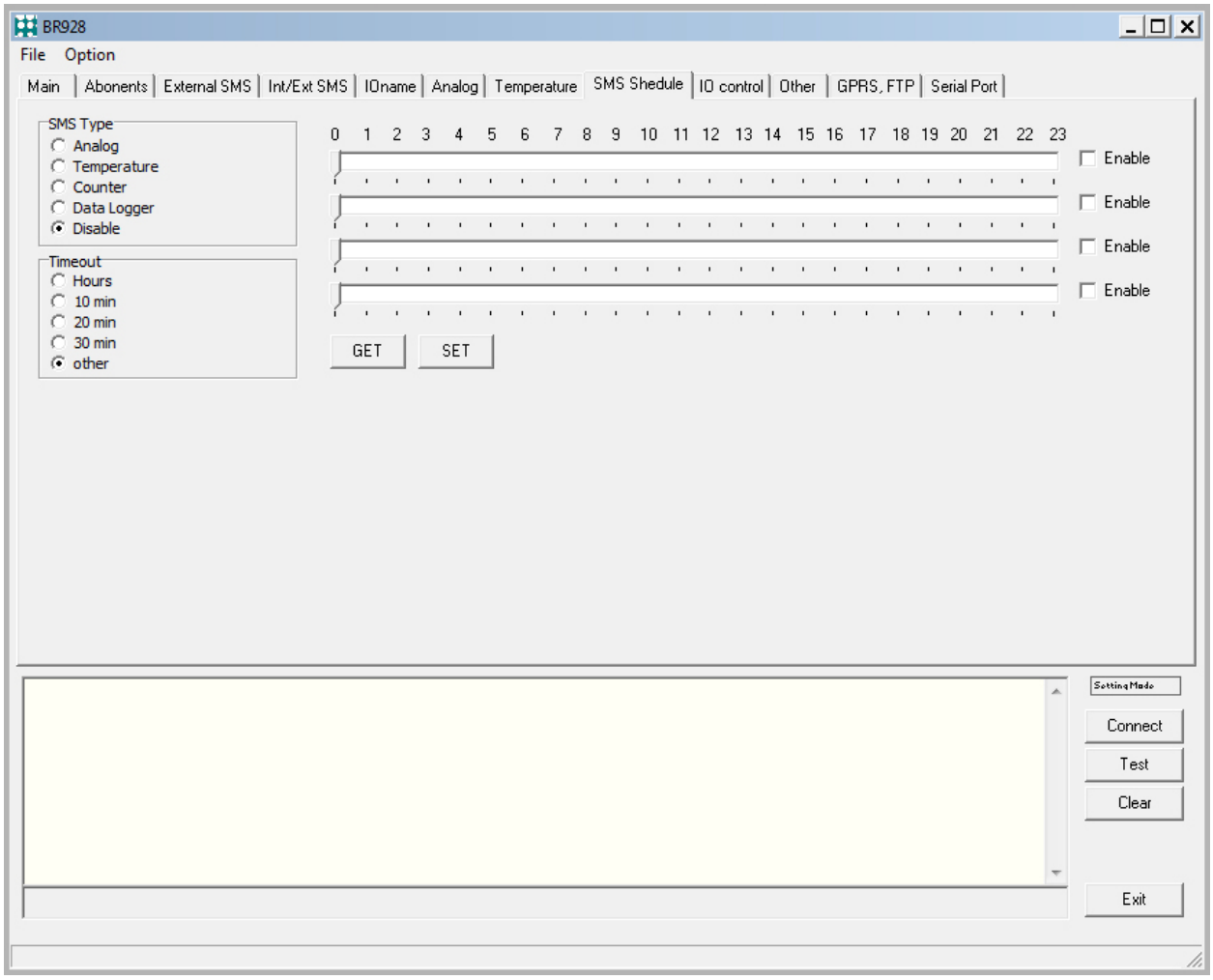


- Set temperature levels (setpoints).
- Read Temperature
- Clear Counters

You can use 2 MINIMUM and 2 MAXIMUM level for 4 temperature inputs – alarm level (module send alarm SMS if level > MAXIMUM or level < MINIMUM). You can use timeout filter (for example, for refrigerators cycle) – see Timeout Filter in Main Windows.

Temperature range -45 ... + 135 °C.

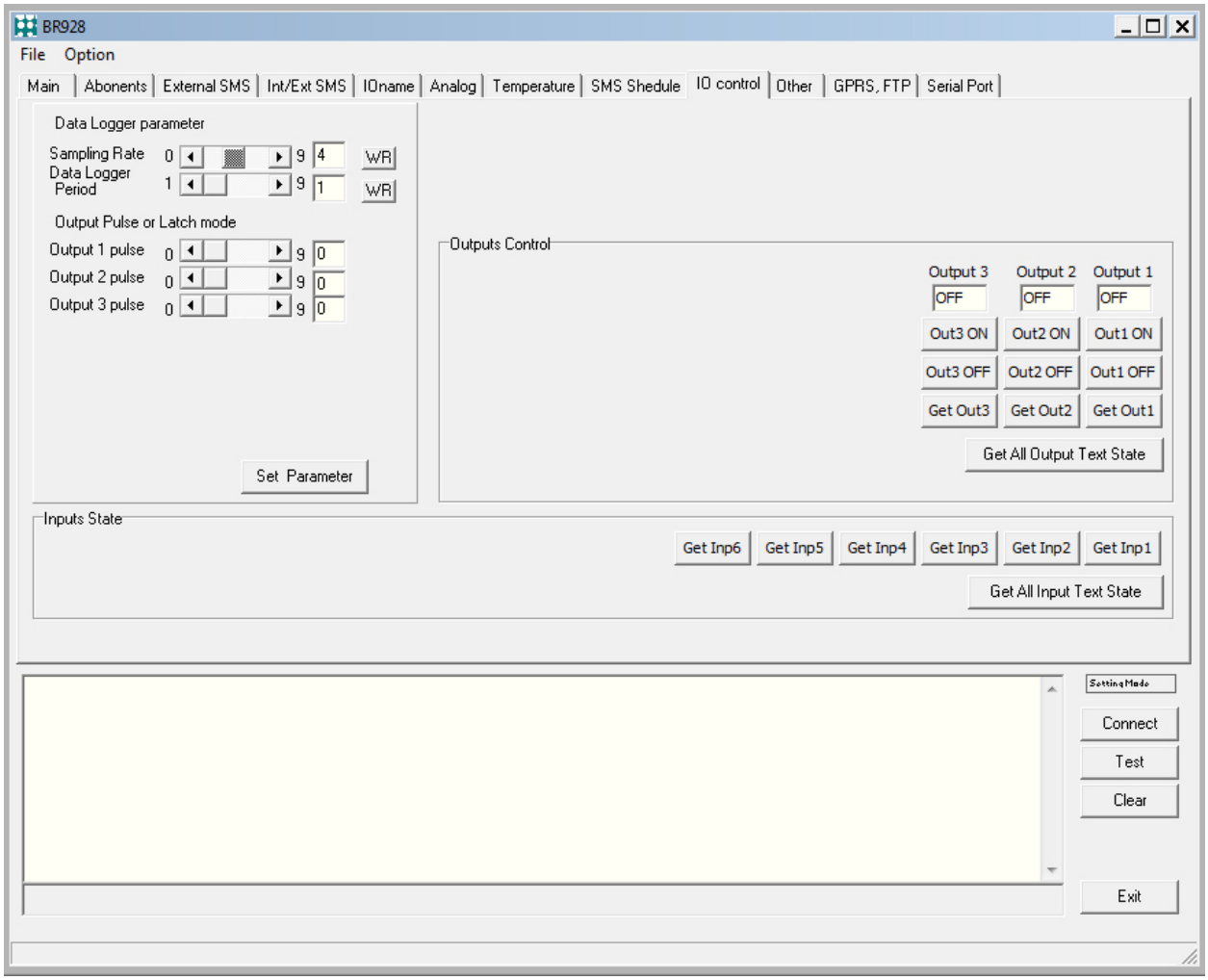
SMS SHEDULE



Set auto-periodic SMS. You can select SMS type and period.
You can set time sheduler for SMS status automatic sending (up to 4 SMS in day).
You can select SMS type and set up to 4 time point in day or 1 hours 30min, 20min, 10min period

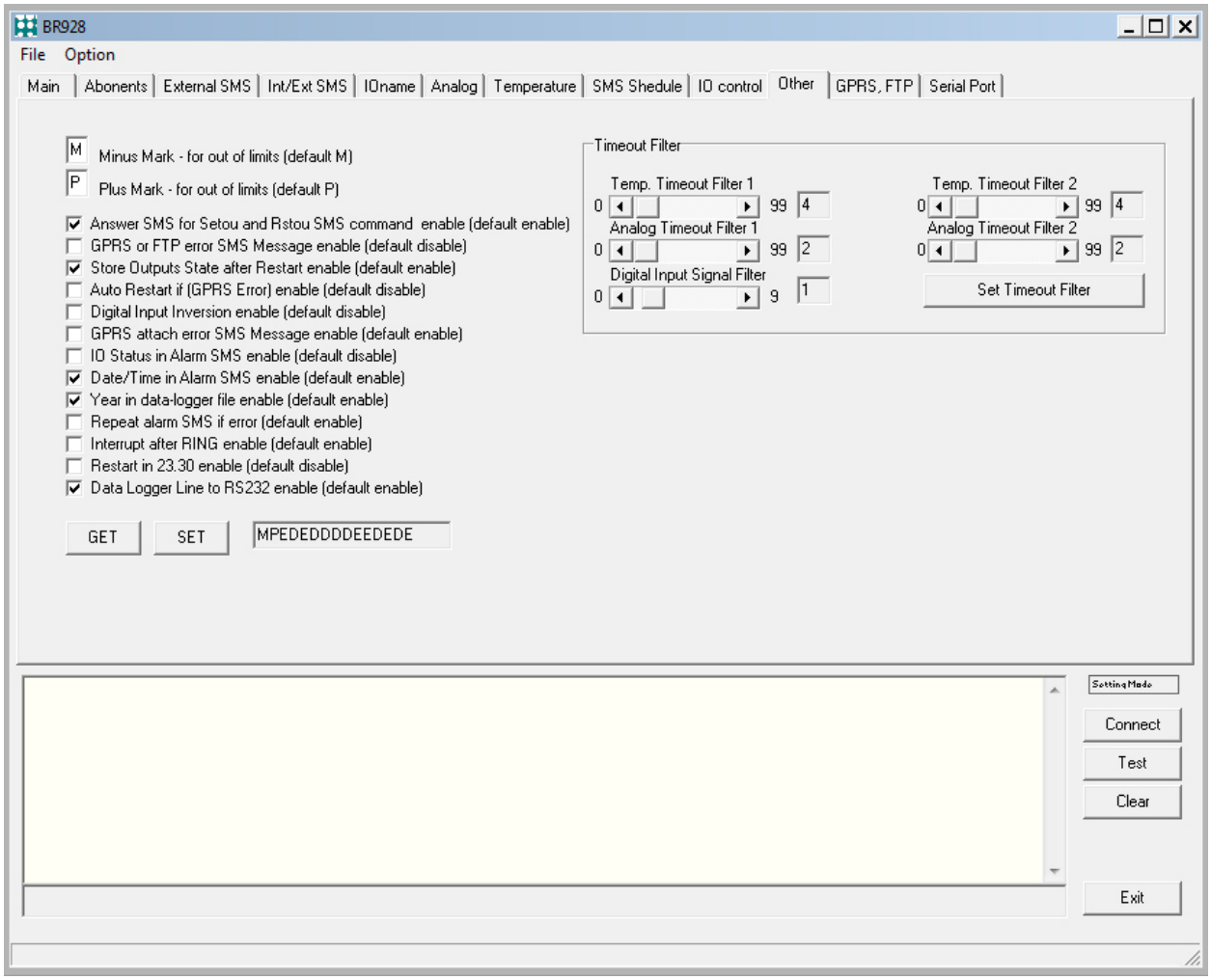
SMS Type - SMS message type select
Timeout - set up to 4 time point in day (other) or 1 hours 30min, 20min, 10min period

IO CONTROL



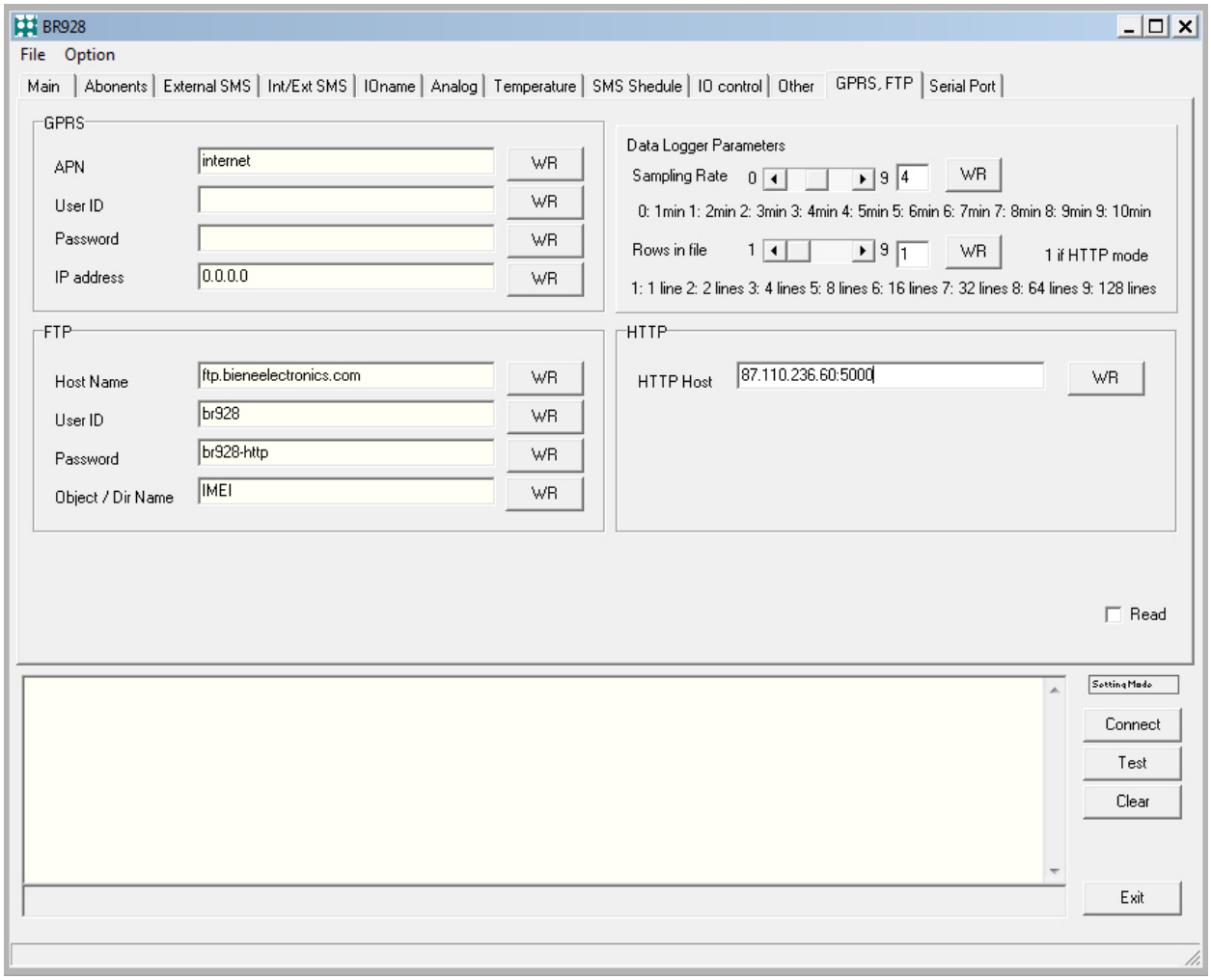
- Control (testing) inputs and outputs.
- Get inputs and outputs state.

OTHER



Set timeout filter for temperature, analog and digital.
For example if you use BR928 in refrigerators, you can set temperature timeout filter > 40 min.

GPRS and FTP



Setting GPRS and FTP parameters.
For GPRS usualy enough change only APN.
For FTP you must set your FTP server Host Name, User ID and Password.

Also you can set Directory. If Directory empty, BR928 write file to root directory your FTP account.
If Dir Name = IMEI, directory will be IMEI 15 digits. With GETST (main windows) you can see IMEI for BR928.

Also here you can set Sampling Rate (from 1 min to 10 min) and DataLogger files period - lines in csv-file – 1 (HTTP mode),2,4,8,16,23,64,128,256 lines in file.

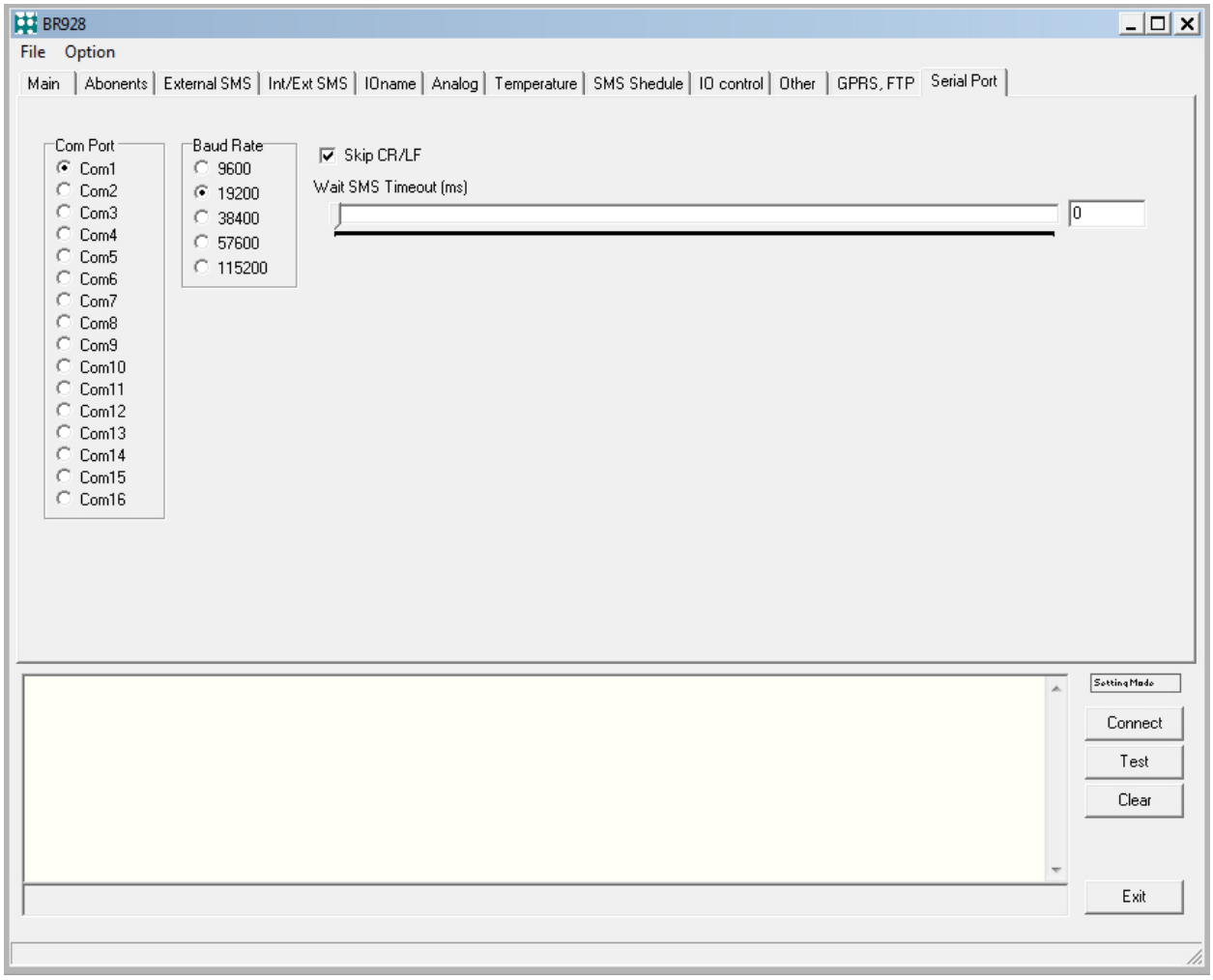
GPRS mode selected
If you not use FTP or HTTP mode, you must delete APN - write space in APN Edit Box.
If you use FTP or HTTP mode, you must set APN for your SIM card GSM operator.

HTTP mode selected
If HTTP host not empty
Not change FTP setting if you use HTTP mode.

FTP mode selected
If HTTP host empty; write space in HTTP host Edit Box.
FTP setting you can change if you use own FTP server.

SERIAL PORT

Baud Rate for communication with BR928-DL module - 19200 Baud.



Communication with RS232 cable between BR928 and PC. If PC without RS232 port you can use RS232-USB adapter. In this case Com port you can see here:
Control Panel
System
Device Manager
Ports (Com and LPT)