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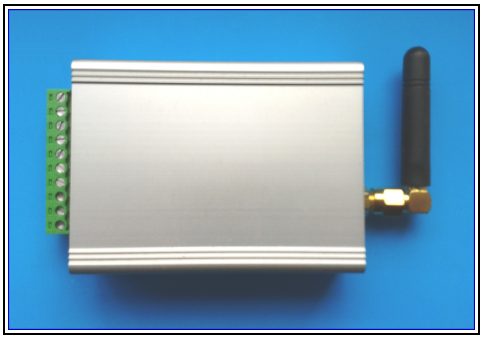
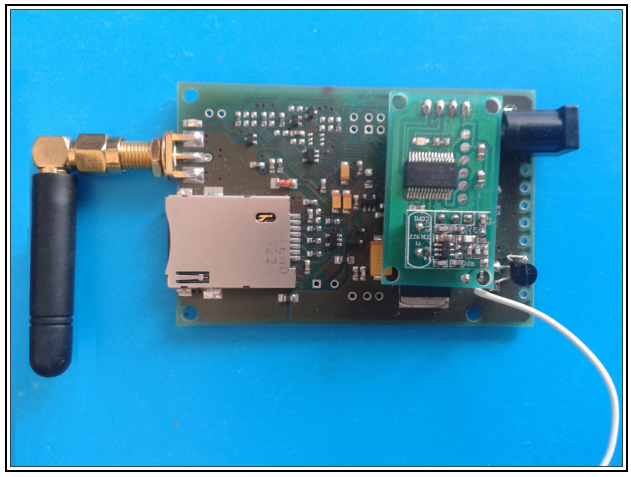
GSM Controller BR900-RF

Preliminary version

GSM controller for SMS remote monitoring and control applications.
Temperature monitoring and wireless AC-switch control.
You can use a mobile phone to set ON or OFF any device (lighting, heating) in you home use AC Sockets with Wireless Remote Control. Control with up to 5 AC-switch RF receivers.





Features:

- Dual or Quad band SIM900 GSM module or compatible
- Control up to 5 AC Socket with Wireless Remote Control (Proove SYS2000, NEXA NEYCR1000)
- 433 MHz RF communication between BR900-RF and RF AC-Switch RF Receivers
- Internal Smartec SMT160-30 (TO92) temperature sensor for temperature monitoring
- 1 digital input (example, for door contact monitoring)
- Auto heater (AC output 1) / air conditioner (AC output 2) control mode
- Configuration with SMS command from cell phone
- Push-Push SIM holder
- Standard 5.5/2.1 power connector (+5Vdc centre)
- External stabilized +5VDC power supply, 1A min
- Dimensions: 80x55x24mm

Applications:

Temperature monitoring
Heating remote control
Lighting remote control
Other home equipment remote monitoring

Power Supply:

External stabilized +5VDC power supply, 1A min.
Power connector: 5VDC stabilized, 5.5/2.1 power socket (+ centre)

Preparation of SIM card

1. Disable PIN code request so it will not prompt for a PIN code on turning on.
2. SIM card change if power turn off.

LED indicators

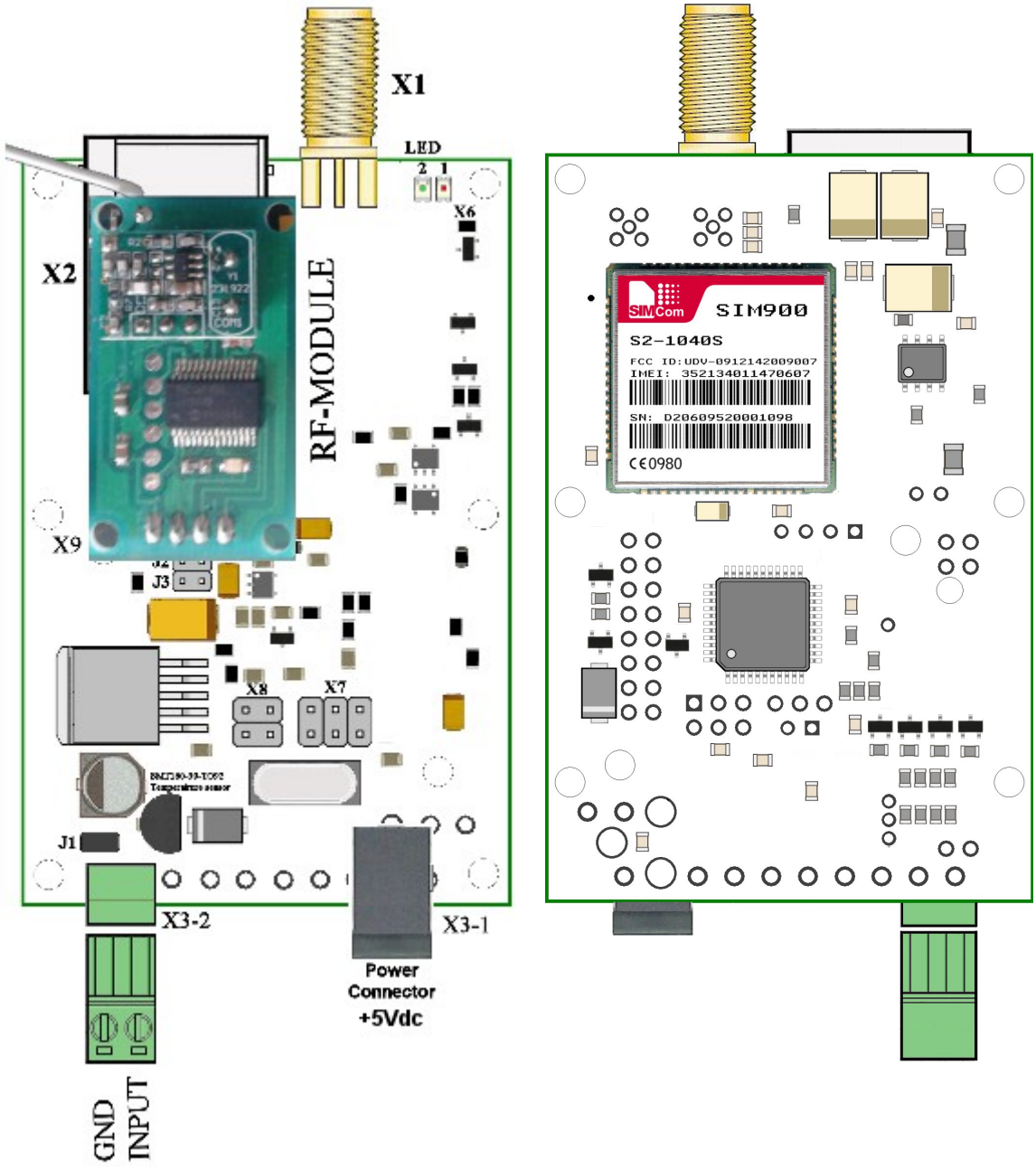
Module status LED indication (Red LED)

LED status RED	**Module status**
Permanently off	Device off
Short blinking after power on	SIM card read process
Short periodic blinking	Module in work
Permanently on	Module work with modem

GSM Modem LED indication (Green LED)

LED status GREEN	**GSM Modem status**
Permanently off	Device off
Fast blinking (period 1s, ton 0,5s)	Net search / Not registered / Turning off
Slow blinking (period 3s, ton 0,3s)	Registered full service
Permanently on	A call is active

Hardware



Top view Bottom view

X1 - GSM Antenna SMA female connector
X2 - Push-push SIM holder
X3-1 - Power connector 5.5/2.1 (+ centre), 5VDC stabilized power supply
X3-2 - Plugin Terminal Connector for digital input
X9 - Socket for RF transmitter module
1 - +5VDC (left)
2 – GND
3 – Transmit data
4 – Not used

Minimal SMS command set for user

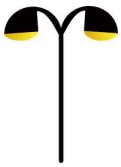
SMS command for ON, OFF external devices

2345S1 … 2345S5	Status info	Set output *)
2345R1 … 2345R5	Status info	Reset output *)
2345R0 (or 2345R)	Status info	Reset all outputs *)

Request status info

2345I	Status info	Read status SMS

Full SMS command set

	Auto control disable **2345A0**	**Auto control enable** **2345A1**	**Auto control enable** **2345A1**
Heater (RF output 1)		**Enable heater** **2345B1**	
Air Conditioner (RF output 2)			**Enable air condition** **2345B0**
	Output 1...5	Output 1	Output 2
	  Lamp, Fan, Pump, Heater,   Air conditioner..	 Heater	 Air conditioner
SMS command	**Text** (length 16 characters)	**Text** (length 16 characters)	**Text** (length 16 characters)
	Default text	Default text	Default text
2345X1,text	Input event 1	Input event 1	Input event 1
2345X2,text	Output 1	Output 1	Output 1
2345X3,text	Output 2	Output 2	Output 2
2345X4,text	Output 3	Output 3	Output 3
2345X5,text	Output 4	Output 4	Output 4
2345X6,text	Output 5	Output 5	Output 5
2345X7,text	Temperature low	Temperature low	Temperature low
2345X8,text	Temperature norm	Temperature norm	Temperature norm
2345X9,text	Temperature high	Temperature high	Temperature high

Temper. Level	Auto-control disable		direct output control
T high	> +27 Celsius		enable
T low	< +18 Celsius		

Temper. Level	Heater enable, air conditioner disable		direct output control
T high	> +27 Celsius	Heater OFF	Disable for Output 1
T low	< +18 Celsius	Heater ON	

Temper. Level	Heater disable, air conditioner enable		direct output control
T high	> +27 Celsius	Air condit. ON	Disable for Output 2
T low	< +18 Celsius	Air condit. OFF	

SMS command	**Answer SMS**	**Function**
2345L+18	Output 1 OFF Output 2 OFF Output 3 OFF Output 4 OFF Output 5 OFF I1=1 T=+22 T:+18+27 F=0 AUTO: disable E 6 (Status info)	Set minimum temperature level **default:** +18
2345H+25		Set maximum temperature level **default:** +27
2345F0		Timeout filter 0 – 20sec, 1: 5min, 2: 10min ... 9: 45min; **default 0**
2345I	Status info	Read status SMS
2345N1,+37122842913 2345N2,+37122842914 2345N3,+37122842915 2345N4,+37122832798	Number 1 added	Set up to 4 cell phone numbers for alarm SMS at position 1..4
2345P2010	Passw: 2010, 2010 – new password	Change password; **default password 2345** If forgot password you can with jumper J2 restore default password 2345. Set jumper J2, power ON, wait 15-20 sec, power OFF, remove jumper J2
2345S1 … 2345S5	Status info	Set output *)
2345R1 … 2345R5	Status info	Reset output *)
2345R0 (or 2345R)	Status info	Reset all outputs *)
2345E1 2345E0 2345E	Status info	Enable alarm SMS, **default** enable Disable alarm SMS Disable alarm SMS
2345A0 (or 2345A) 2345A1	Status info AUTO: disable or AUTO: Heater or AUTO: Air cond.	0 - auto control disable (default) 1 - auto control enable
2345B0 (or 2345B) 2345B1	Status info	1 - auto control heater (default) 0 - auto control air condition

2345X6,Input 7	7:Temperature low	Set SMS text message for input 1 and 2 events, outputs name and temperature event. Text up to 16 characters
2345V1 2345V0 (or 2345V)	Status info	Digital event 1-0 Digital event 0-1

Status info

Output 1 ON, Output 2 OFF, Output 3 ON, Output 4 OFF Output 5 OFF outputs state
I1=1 inputs state
T=+22 temperature
T:+18+25 temperature level
AUTO: disable auto mode
F=0 temperature filter
E alarm SMS enable/disable
(E – enable, D – disable)

*) direct control disabled for Out.1 if heater enabled, direct control disabled for Out.2 if air condition enabled; answer SMS " disable " if auto-control enable (only for Output 1 or 2).

Temperature monitoring and control

Heater auto-control mode - AC Switch/Receiver 1 (Output 1)
(2345A0, 2345B1)

Low level		High level
Temperature low	Temperature normal	Temperature high
Output 1 ON		Output 1 OFF

Air conditioner auto-control mode - AC Switch/Receiver 2 (Output 2)
(2345A0, 2345B0)

Low level		High level
Temperature low	Temperature normal	Temperature high
Output 2 OFF		Output 2 ON

Auto-control disable (2345A0)

Low level		High level
Temperature low	Temperature normal	Temperature high
SMS "Temperature low"	SMS "Temperature normal"	SMS "Temperature high"

Temperature set-points

2345L+18 set set-point for minimum temperature level
2345H+27 set set-point for maximum temperature level

AC Switch/Receiver initialization

Reset AC switch (reset all address)

Press button, keep > 7 sec and wait until red LED blinking.
After red LED blinking let go button and short press button.
Should be Relay switching.

Set AC Switch/Receiver 1 to address 1

Reset AC switch 1

- **2345A0** and wait answer SMS - if set auto mode, disable auto mode
- **2345R0** and wait answer SMS - reset all outputs
- **2345S1** and wait answer SMS - set outputs 1
- press button on AC Switch/Receiver 1
- Power OFF-ON on BR900-SMT-RF device
- wait AC Switch/Receiver 1 Relay switching
- Power OFF-ON on BR900-SMT-RF device
- if AC Switch/Receiver 1 turned ON, then address installation OK
- **2345R0** and wait answer SMS - reset all outputs

Set AC Switch/Receiver 2 to address 2

Reset AC switch 2

- **2345A0** and wait answer SMS - if set auto mode, disable auto mode
- **2345R0** and wait answer SMS - reset all outputs
- **2345S2** and wait answer SMS - set outputs 2
- press button on AC Switch/Receiver 2
- Power OFF-ON on BR900-SMT-RF device
- wait AC Switch/Receiver 2 Relay switching
- Power OFF-ON on BR900-SMT-RF device
- if AC Switch/Receiver 2 turned ON, then address installation OK
- **2345R0** and wait answer SMS - reset all outputs

Set AC Switch/Receiver 3 to address 3

Reset AC switch 3

- **2345A0** and wait answer SMS - if set auto mode, disable auto mode
- **2345R0** and wait answer SMS - reset all outputs
- **2345S3** and wait answer SMS - set outputs 3
- press button on AC Switch/Receiver 3
- Power OFF-ON on BR900-SMT-RF device
- wait AC Switch/Receiver 3 Relay switching
- Power OFF-ON on BR900-SMT-RF device
- if AC Switch/Receiver 3 turned ON, then address installation OK
- **2345R0** and wait answer SMS - reset all outputs

Set AC Switch/Receiver 4 to address 4

Reset AC switch 4

- **2345A0** and wait answer SMS - if set auto mode, disable auto mode
- **2345R0** and wait answer SMS - reset all outputs
- **2345S4** and wait answer SMS - set outputs 4
- press button on AC Switch/Receiver 4
- Power OFF-ON on BR900-SMT-RF device
- wait AC Switch/Receiver 4 Relay switching
- Power OFF-ON on BR900-SMT-RF device
- if AC Switch/Receiver 4 turned ON, then address installation OK
- **2345R0** and wait answer SMS - reset all outputs

Set AC Switch/Receiver 5 to address 5

Reset AC switch 5

- **2345A0** and wait answer SMS - if set auto mode, disable auto mode
- **2345R0** and wait answer SMS - reset all outputs
- **2345S5** and wait answer SMS - set outputs 5
- press button on AC Switch/Receiver 5
- Power OFF-ON on BR900-SMT-RF device
- wait AC Switch/Receiver 5 Relay switching
- Power OFF-ON on BR900-SMT-RF device
- if AC Switch/Receiver 5 turned ON, then address installation OK
- **2345R0** and wait answer SMS - reset all outputs