



® LSB6 RGB RSX

ANNUNCIATOR MODULE MANUAL

USE

Annunciator modules LSB6 RGB RSX is last generation device for registration of events, intended to keep attention of the engineering staff. In case of out of range of the technological process annunciator module activate blinking lightings at 6 windows and external audible device. LSB6 has in build Event Recorder with Serial port RS485. LSB6 has Serial port RS232/485/422. The Communication protocol Modbus RTU makes it compatible with SCADA systems. The Configuration settings of the LSB6 are accessible by software configuration tool.



FUNCTIONAL MODES

Annunciator modules LSB6 RGB RSX three basic functional modes.

1. In case of Input ON – blinking window with First basic color, Audible Output ON
After acknowledgement continuously lighting window with First basic color, Audible Output OFF.
In case of Input OFF – Lighting window with First basic color OFF.
2. In case of Input ON - blinking window with First basic color, Audible Output ON
After acknowledgement continuously lighting window with Second basic color ON, Audible Output OFF
In case of Input OFF – Lighting window with Second basic color OFF.
3. In case of Input ON - blinking window with First basic color, Audible Output ON
After acknowledgement continuously lighting window with Second basic color ON, Audible Output OFF
In case of Input OFF – Lighting window with Third basic color ON.

The Basic Colors can be adjusted by Customer. Default colors are:

- First basic color – White
- Second basic color – Green
- Third basic color – Yellow

FUNCTIONAL MODES OF THE AUDIBLE RELAY

1. In case of Input ON continuously up to acknowledge.
2. In case of Input ON continuously up to acknowledge + short ON/OFF after Input
3. Auto Quit – In case of Input ON automatically OFF after run out the set time.
4. Auto Quit + short ON/OFF after Input OFF.

Auto Quit Mode Time	1 – 60 seconds
Short ON/OFF after Input OFF	1 – 5 seconds

INPUTS AND POLARITY

Annunciator modules LSB6 RGB RSX can be operate with two types Input signals – potential and no potential (Dry contact). The Customer has to define one of those options by order. For option Potential Input voltage range is 10 – 250 V AC/DC and has to be define too in the Customer order. The polarity of the Input signals can be set by software tool.

ANNUNCIATOR INPUTS

The inputs of the Annunciator modules LSB6 RGB RS are galvanic insulated and protected by varistors. The Inputs have Software filtering Algorithm for rejection disturbances. The input hardware components are designed for long term active working under industrial condition and protected by additional treatment with polyester film. The Input settings can be set by Software tool. Accessible settings for all Inputs are:

- Input type - AC/ DC
- Input Polarity – per every Input.
- Input Software filtering Algorithm Time-Input ON 10 – 1000 mS
- Input Software filtering Algorithm Time-Input OFF 10 – 1000 mS

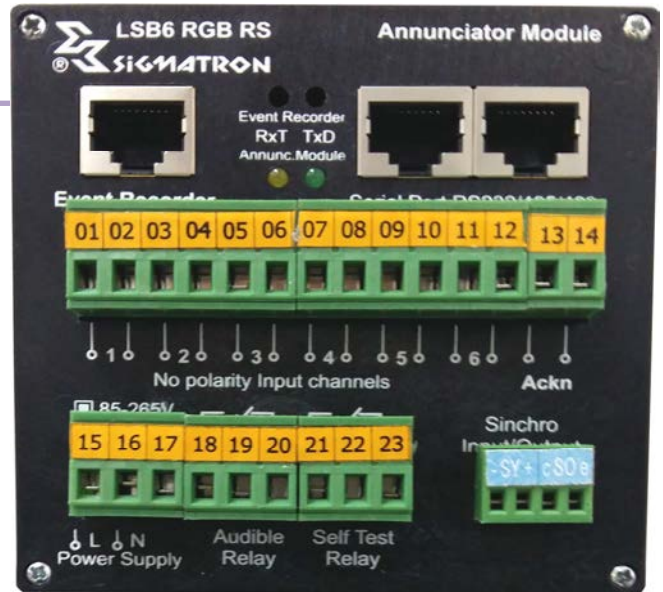
The terminal blocks of the Inputs are placed on the back panel. Connection diagram is given on the Sticker.

ANNUNCIATOR OUTPUTS

Annunciator LSB6RGB RSX has six Output LED RGB windows with dimensions 22 x 33 mm. It can be activated by „function OR” from hardware Input or by communication protocol from SCADA. There is no priority for Activating.

Audible relay Output – N.O/N.C.

“Self Test” Relay Function - N.O/N.C. It supports itself diagnostic under **Fail Save** Algorithm.



“SELF TEST” FUNCTION

Annunciator LSB6 RGB RSX has reliable function for tracking general functionality. The LED indicator on the main panel lighting continuously for Normal, Self Test relay is ON. In case of inside damages LED indicator and Self test relay blinking. In case Total damage LED indicator is OFF, Self test relay is OFF.

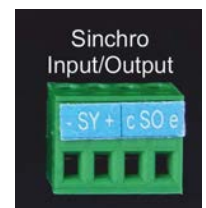
ANNUNCIATOR ASCNOWLEDGEMENT

Annunciator modules LSB6 RGB RSX Acknowledgement can be done by Acknowledge Button on the main panel or by Acknowledge Input placed on the back panel.



ANNUNCIATORS SYNCHRONIZATION

In case of use more than one Annunciator, to get visual comfort for engineering staff in case of blinking windows, LSB6 RGB RSX has function for synchronization. All Annunciators are connected in series by Synchro Inputs and Synchro Outputs. Input of the first in series is free. After five seconds first Annunciator become Master for all others Slaves after it.



WINDOW COLOR SETTINGS

Annunciator LSB6 RGB RSX color settings can be done by Software tool. Customer can be set 26 colors according to Color diagram below. The LED’s brightness can be set in 32 steps. The lighting of the LED’s is corrected by diffusion filter. In the table below is given the colors and codes.

COLOUR TABLE

No	Basic color	No	Additional colors	No	Additional colors
1	Red	8	Dark Orange	18	Hot Pink
2	Lime (Green)	9	Deep Pink	19	Tron Blue
3	Blue	10	Carnation Pink	20	Maroon
4	Yellow	11	Chartreuse	21	Green
5	Magenta	12	Jade Green	22	Navy Blue
6	Cyan	13	Dragon Green	23	Olive
7	White	14	Lovely Purple	24	Purple
		15	Blue Dress	25	Teal
		16	Light Steel Blue	26	Gray
		17	Corn Yellow		

The colors in the table can be different $\pm 5\%$ of the shown because of the LED's tolerance.

FUNCTIONALITY TEST

Functionality test is simple. Push and hold Acknowledge button or activate Acknowledge input for more than 5 seconds. All windows will blink and audible relay will be ON. If in the same time Annunciator register Input signals it will be shown after the functionality test.

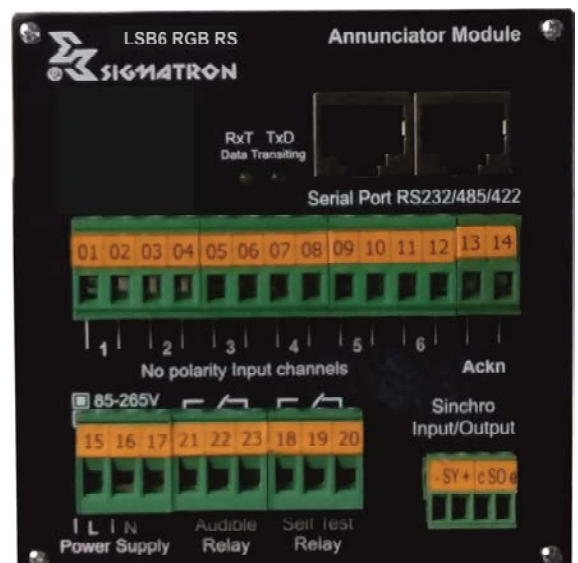


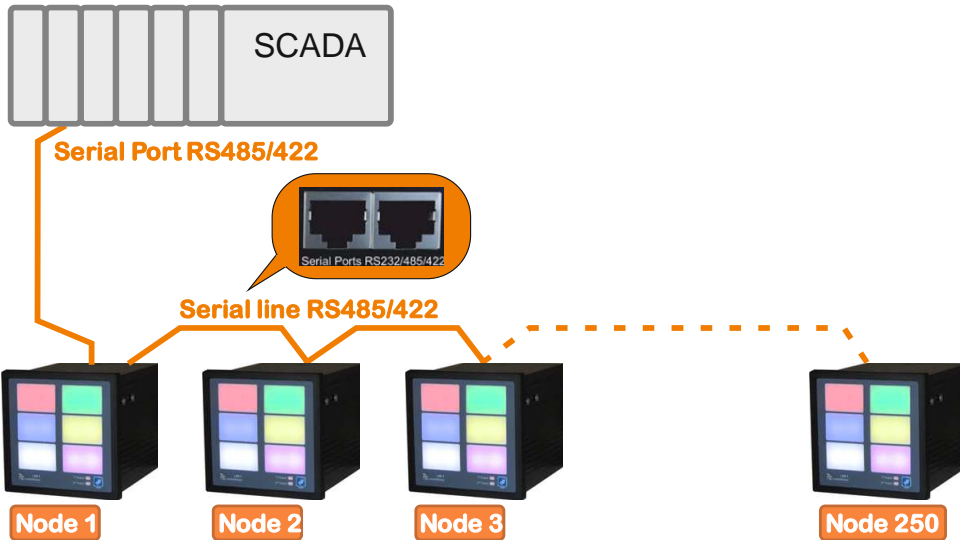
COMMUNICATIONS

Annunciator LSB6 RGB RSX supports three versions of the communications as follows:

RS – Serial port RS232/485/422 , placed on two RJ45 connectors on the back panel – A1 and A2. The Serial port supports ≥ 128 devices on the serial line, inbuilt termination module, ESD protections and filters for noise suppress. Port speed is up to 57600. Max node on the line - 250 Slaves. The graphical application is shown the location of the RJ45 connector pins to the physical standards RS232, RS485 and RS422. For visualization of the processes during communication with external devices, two LEDs are provided, indicating the direction - receiving and transmitting data. The communication protocol through the serial port is Modbus RTU. The basic communication schemes are given in the graphical applications below.

RS232/422/485	
1	COM
2	RxD_232
3	TxD_232
4	RTS_232
5	RxD_422+
6	RxD_422-
7	TxD_422+/485+
8	TxD_422-/485-





RSE - Serial port RS232/485/422 , placed on two RJ45 connectors on the back panel – A1 and A2. The Serial port supports ≥ 128 devices on the serial line, inbuilt termination module, ESD protections and filters for noise suppress. Port speed is up to 57600. Max node on the line - 250 Slaves. The graphical application is shown the location of the RJ45 connector pins to the physical standards RS232, RS485 and RS422. For visualization of the processes during communication with external devices, two LEDs are provided, indicating the direction - receiving and transmitting data. The communication protocol through the serial port is Modbus RTU.

The LAN Port supports Protocols: IP, TCP, UDP, DHCP, DNS, HTTP, ARP, ICMP, Web socket, HTTPD Client, Modbus TCP Global MAC address IEEE defined MAC address

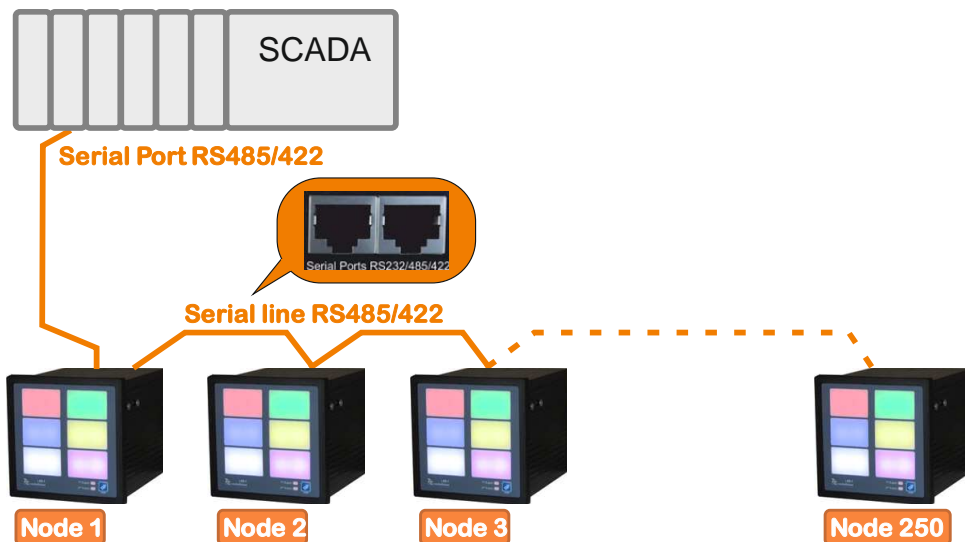
Speed - 600 bps – 1024K bps

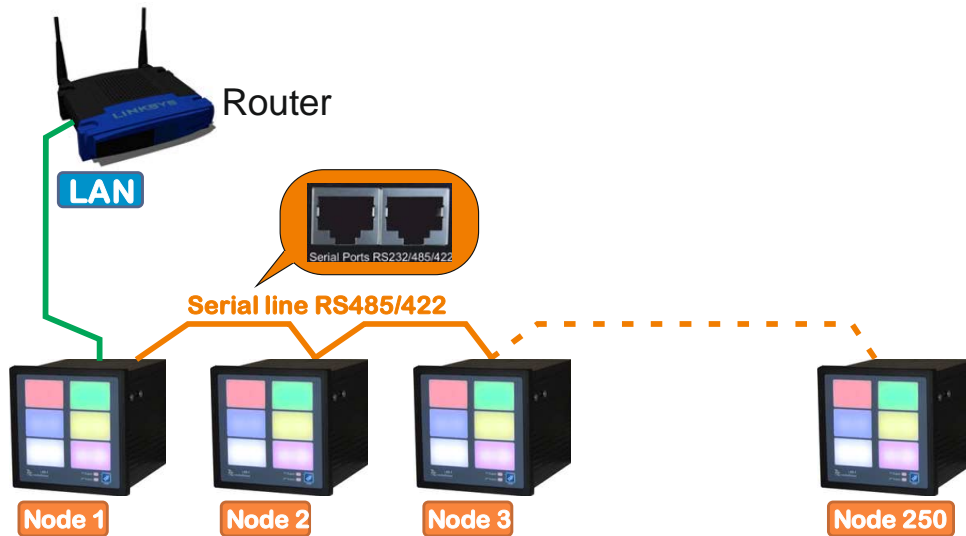
Data Format - 5, 6, 7, 8 bits, Stop bits 1, 2, Parity, None, Even, Odd, Space, Mark.

Bidirectional Internal connection LAN to Serial Port



The basic communication schemes of the **RSE** version are given in the graphical applications below.





RSWEE - Serial port RS232/485/422 , placed on two RJ45 connectors on the back panel – A1 and A2. The Serial port supports ≥ 128 devices on the serial line, inbuilt termination module, ESD protections and filters for noise suppress. Port speed is up to 57600. Max node on the line - 250 Slaves. The graphical application is shown the location of the RJ45 connector pins to the physical standards RS232, RS485 and RS422. For visualization of the processes during communication with external devices, two LEDs are provided, indicating the direction - receiving and transmitting data. The communication protocol through the serial port is Modbus RTU.

WiFi router + 2 x LAN Ports.

Internal ceramic or external Antenna.

Range up to 200m

The version RSWEE supports Serial to LAN/Wi-Fi, LAN to Wi-Fi or LAN to LAN transmission.

Bidirectional Internal connection LAN to Serial Port

Modbus RTU to Modbus TCP.

IEEE802.11b/g/n Wireless Standards

TCP/IP/UDP Network Protocols Wireless Network Type AP / Station / AP+Station

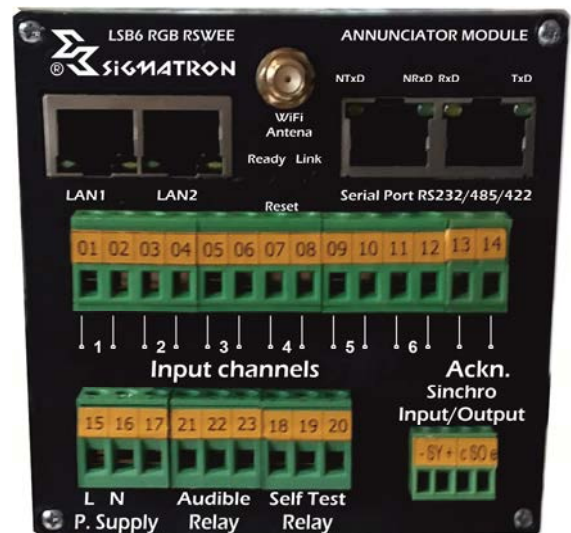
Security Mechanism WEP/WPA-PSK/WPA2-PSK

Support Web page Configuration Encryption Type WEP64/WEP128/TKIP/AES

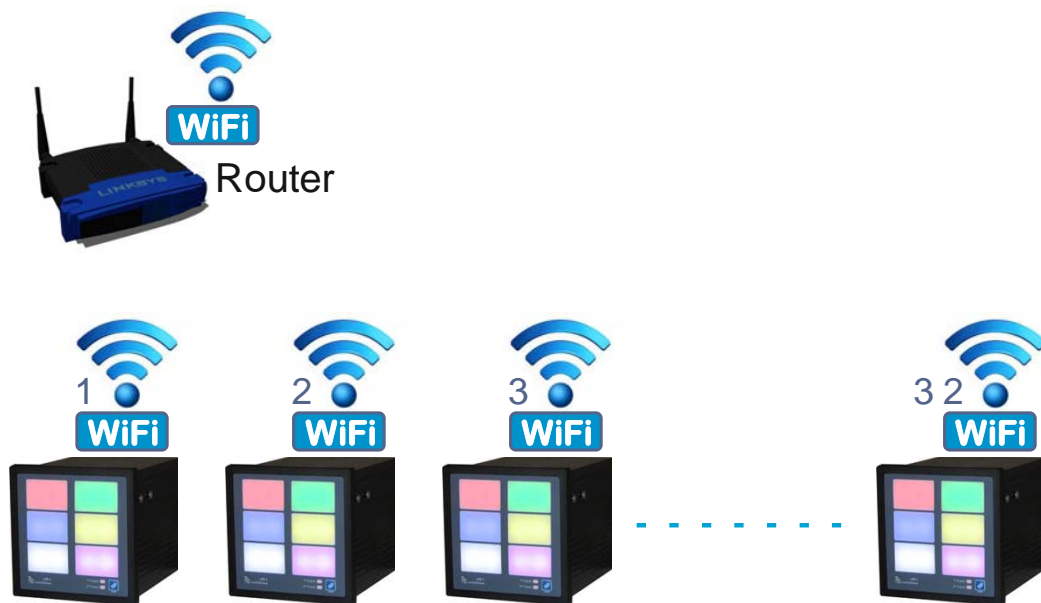
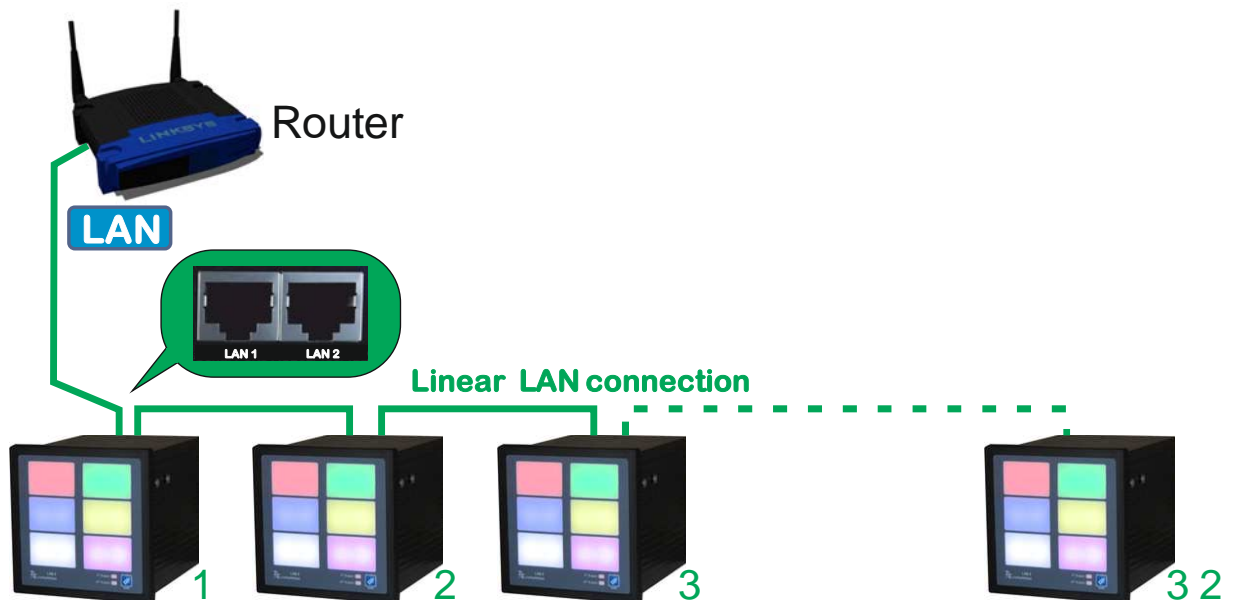
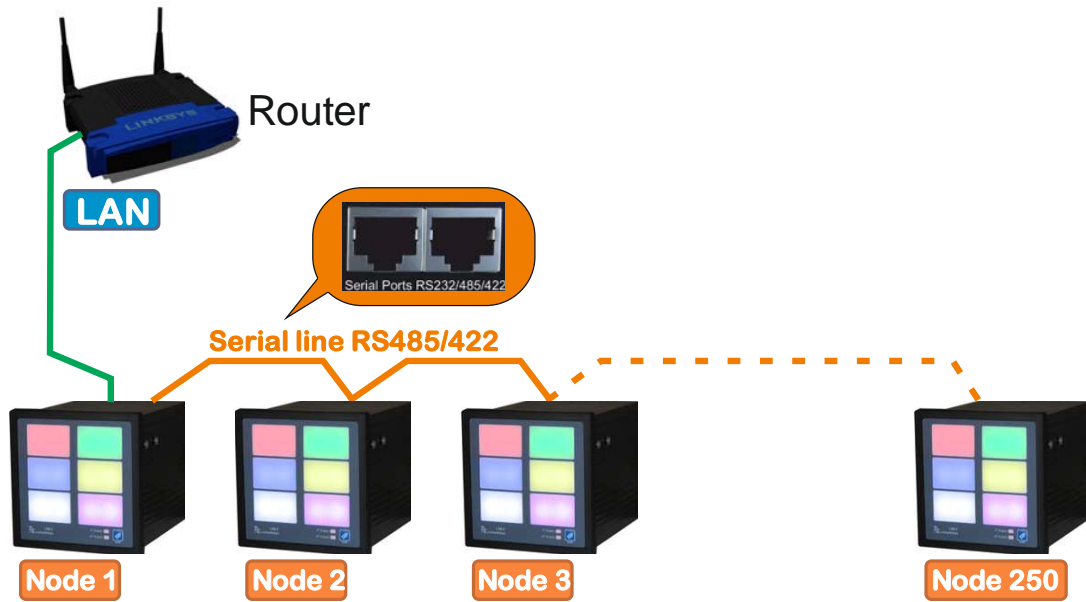
Work Mode Transparent Transmission, Serial Command

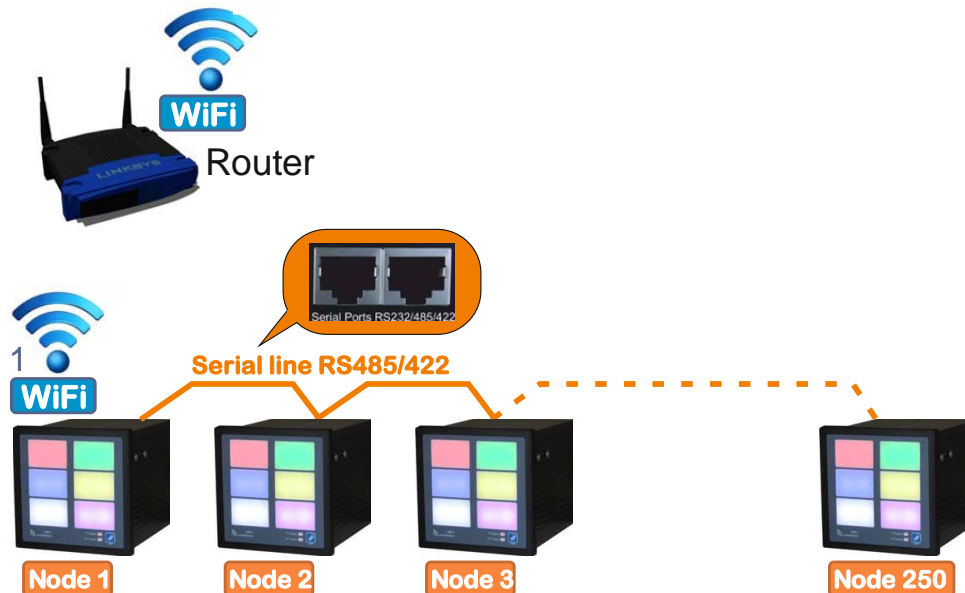
Router/Bridge Mode Networking Setting Command AT+instruction set

Support Work As STA/AP/AP+STA Mode, Max TCP connections – 32.



The basic communication schemes of the **RSWEE** version are given in the graphical applications below.





CONFUGURATION (SETTINGS) TOOL

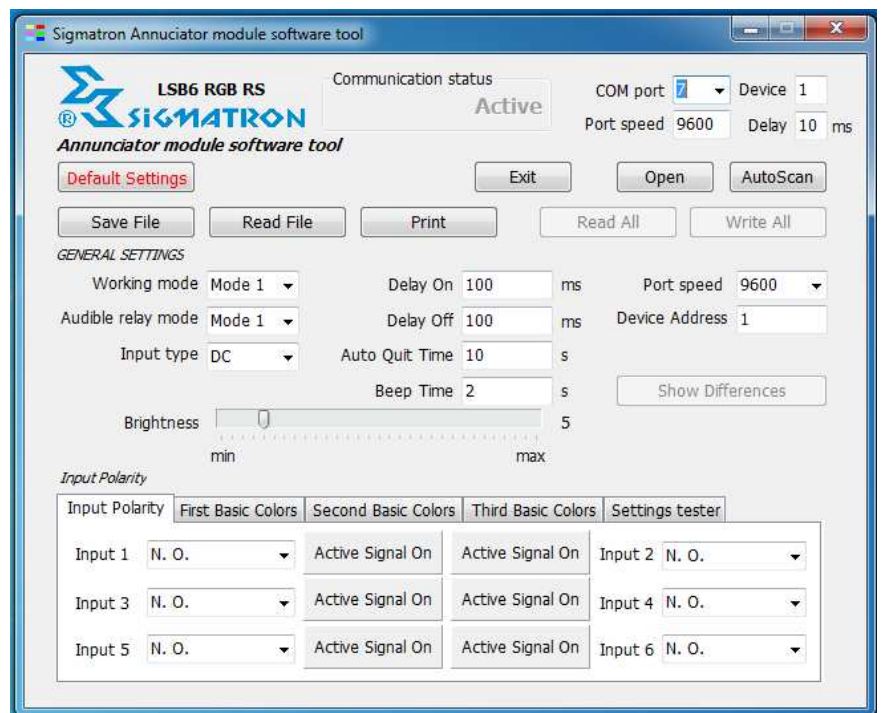
The settings of the Annunciator module LSB6 RGB RSX can be done by software tool ATool. Customer can be download the software from Sigmatron's website following the link - <http://sigmatron.bg/portfolio-item/lsb6/>.

The interface of the tool is shown in the graphical application. All basic settings are associative and available in a single window. To connect with Annunciator use button AutoScan. The software tool will find Node address and Speed. After this operation you can make settings as you need.

NOTE: Autoscan function is not possible in case of Annunciator is plugged in the Serial line. It must unplugged.

The settings can be saved to a configuration file or retrieved from a file - see the Save file and Read file buttons. The Annunciator configuration (settings) can be printed, the format containing the attributes of a document. The Configuration Tool allows checking for differences in data between the cassette and the window displayed. This is done by activating the Show Differences button.

Check the cassette functionality with the Settings tester. Built-in buttons test light fields, ticking, alarm relay, and full functionality. The interface of the tool is shown in the graphical application. All basic settings are associative and available in a single window. The settings can be saved to a configuration file or retrieved from a file - see the Save file and Read file buttons. The cassette configuration can be printed, the format containing the attributes of a document.



MODBUS RTU ADDRESS REGISTERS

MODBUS ADDRESSES AND VALUE

VERSION LSB 6 V0.1

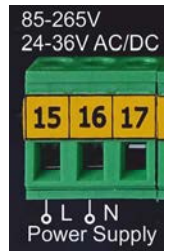
Address	type	Description	Initial value	Note
2000	1 reg int	Input type 0-DC,1-AC	0	DC – 0 AC - 1
2001	1 reg int	DELAY_ON_TIME: 10 - 1000 ms	100	
2002	1 reg int	DELAY_OFF_TIME: 10 - 1000 ms	100	
2003	1 reg int	ALARM_RELAY Function:0,1,2,3	0	See Chapter FUNCTIONAL MODES OF THE AUDIBLE RELAY
2004	1 reg int	AUTO_QUIT_TIME: 1 - 60 s	10	
2005	1 reg int	BEEP_TIME: 1 - 5 s	2	
2006	1 reg int	REACTION_TYPE: 0, 1, 2	0	
2007	1 reg int	INPUT_LEVEL_1: 0-ON, 1 - OFF	0	
2008	1 reg int	INPUT_LEVEL_2: 0-ON, 1 - OFF	0	
2009	1 reg int	INPUT_LEVEL_3: 0-ON, 1 -OFF	0	
2010	1 reg int	INPUT_LEVEL_4: 0-ON, 1 - OFF	0	
2011	1 reg int	INPUT_LEVEL_5: 0-ON, 1 - OFF	0	
2012	1 reg int	INPUT_LEVEL_6: 0-ON, 1 - OFF	0	
2013	1 reg int	COLOR_1_1	26	First basic - White
2014	1 reg int	COLOR_2_1	18	Second basic - Green
2015	1 reg int	COLOR_3_1	24	Third basic - Yellow
2016	1 reg int	COLOR_1_2	26	First basic - White
2017	1 reg int	COLOR_2_2	18	Second basic - Green
2018	1 reg int	COLOR_3_2	24	Third basic - Yellow
2019	1 reg int	COLOR_1_3	26	First basic - White
2020	1 reg int	COLOR_2_3	18	Second basic - Green
2021	1 reg int	COLOR_3_3	24	Third basic - Yellow
2022	1 reg int	COLOR_1_4	26	First basic - White
2023	1 reg int	COLOR_2_4	18	Second basic - Green
2024	1 reg int	COLOR_3_4	24	Third basic - Yellow
2025	1 reg int	COLOR_1_5	26	First basic - White
2026	1 reg int	COLOR_2_5	18	Second basic - Green
2027	1 reg int	COLOR_3_5	24	Third basic - Yellow
2028	1 reg int	COLOR_1_6	26	First basic - White
2029	1 reg int	COLOR_2_6	18	Second basic - Green
2030	1 reg int	COLOR_3_6	24	Third basic - Yellow

3000	1 reg int	GLOBAL_BRIGHTNESS	0 - 31 steps	5	Brightness
2980	1 reg int	MODBUS_ADDR		1	1 - 254
2981	1 reg int	MODBUS_SPEED		1	Communication speed
			0 - 4800		
			1 - 9600		
			2 - 14400		
			3 - 19200		
			4 - 28800		
			5 - 38400		
			6 - 57600		
				Read	Current Input Status
1000	1 reg int	INPUT_CHAN_1			0 – OFF 1 – ON 2 – ON under Acknowledge
1001	1 reg int	INPUT_CHAN_2			0 – OFF 1 – ON 2 – ON under Acknowledge
1002	1 reg int	INPUT_CHAN_3			0 – OFF 1 – ON 2 – ON under Acknowledge
1003	1 reg int	INPUT_CHAN_4			0 – OFF 1 – ON 2 – ON under Acknowledge
1004	1 reg int	INPUT_CHAN_5			0 – OFF 1 – ON 2 – ON under Acknowledge
1005	1 reg int	INPUT_CHAN_6			0 – OFF 1 – ON 2 – ON under Acknowledge
1006	1 reg int	KV_INPUT			Acknowledgement Input Status 0 – OFF 1 – ON
				Read/Write	Software Input operating
1007	1 reg int	SET_CHAN_1			0 – OFF 1 - ON
1008	1 reg int	SET_CHAN_2			0 – OFF 1 - ON
1009	1 reg int	SET_CHAN_3			0 – OFF 1 - ON
1010	1 reg int	SET_CHAN_4			0 – OFF 1 - ON
1011	1 reg int	SET_CHAN_5			0 – OFF 1 - ON

1012	1 reg int	SET_CHAN_6		0 – OFF 1 - ON
1013	1 reg int	SET_KV_INPUT	Read/Write	Software Asc. operating 0 – OFF 1 - ON
			Read/Write	Software Input operating
1100	Coil	Channel 1 R/W		Coil: 1 - ON, 0 - OFF
1101	Coil	Channel 2 R/W		Coil: 1 - ON, 0 - OFF
1102	Coil	Channel 3 R/W		Coil: 1 - ON, 0 - OFF
1103	Coil	Channel 4 R/W		Coil: 1 - ON, 0 - OFF
1104	Coil	Channel 5 R/W		Coil: 1 - ON, 0 - OFF
1105	Coil	Channel 6 R/W		Coil: 1 - ON, 0 - OFF
1106	Coil	Achnnowledge R/W		Coil: 1 - ON, 0 - OFF
1107	Coil	Audible Relay R/W		Coil: 1 - ON, 0 - OFF

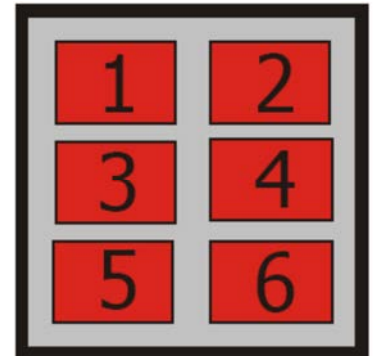
POWER SUPPLY

Annunciator module LSB6 RGB RSX has Pulls Power Supply supplied optionally 24-36 V AC/DC or 85-265 V AC/DC. Both of it are designed on base of **POWER INTEGRATION** components. The input of the Power Supply is fully ESD protected. The customer has to define the Power supply option range by order.



MOUNTING

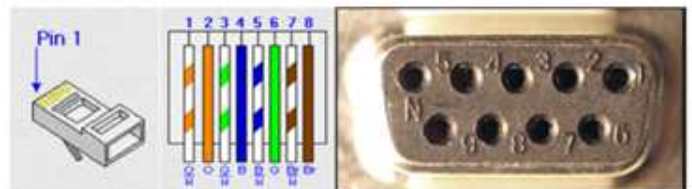
Annunciator module LSB6 RGB RSX is inbuilt in panel case DIN 96 x 96 x119. The mounting hole is 92 x 92 mm. After the mounting of the LSB6 it has to fix to the main panel with fixing clamps. The correspondence of the number of the working Inputs and number of the window is shown on the graphic sample.



COMMUNICATION CABLE

On the graphic diagram is shown wiring of the communication cable RS232- Cannon 9 to RJ45. In the table number of the pins compliance to each other. Pins 7 and 8 are necessary shorted.

For crimping RJ45 you have to use tool in good condition to be sure the connector is quality done.



RG-45	DE-9 (F)
1	5
2	3
3	2
4	7,8



SERIAL INTERFACE SETTINGS AND TERMINATING

Serial interface RS485/422 needs terminating at the end of the line (last device). Annunciator module LSB6 RGB RS has in build module for it to reach max length 1200 m even in big noise condition. Settings jumper field are placed on the top of the communication pcb. How to do the settings are shown on the graphics below.

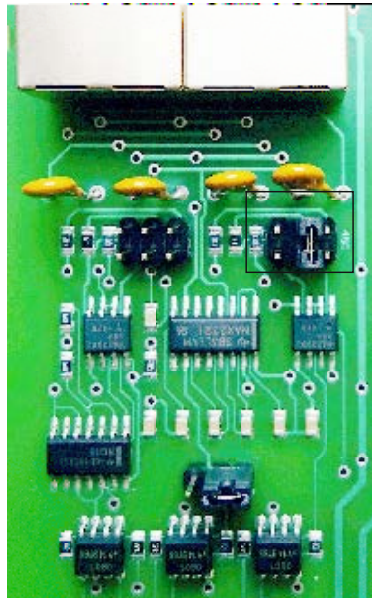
RS485

Jumper positions without Terminating



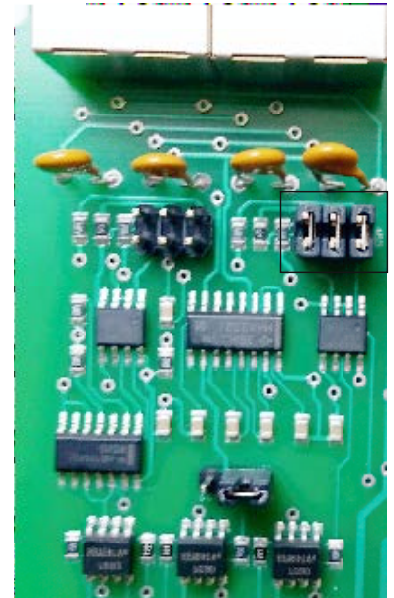
Позиция на джъмперите без терминиране за Сериен интерфейс RS485

Jumper positions with normal terminating



Позиция на джъмперите със стандартно терминиране за Сериен интерфейс RS485

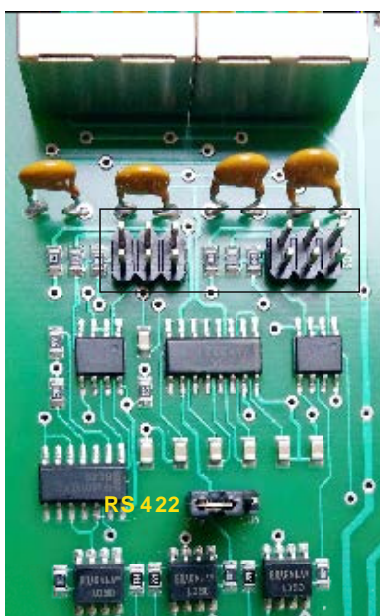
Jumper positions with extended terminating



Позиция на джъмперите с пълно терминиране за Сериен интерфейс RS485

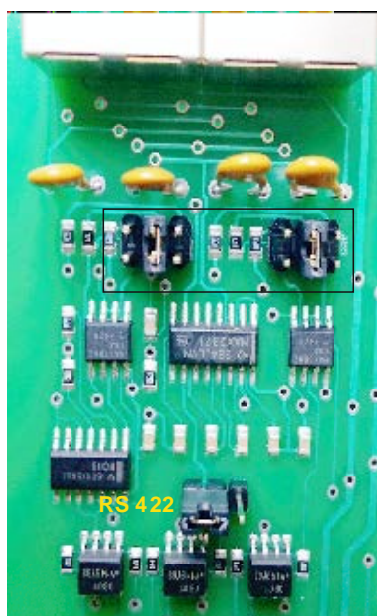
RS422

Jumper positions without Terminating



Позиция на джъмперите без терминиране за Сериен интерфейс RS422

Jumper positions with normal terminating



Позиция на джъмперите със стандартно терминиране за Сериен интерфейс RS422

Jumper positions with extended terminating



Позиция на джъмперите с пълно терминиране за Сериен интерфейс RS422

SPECIFICATIONS

Operating Inputs	Six - no polarity
Input activation*	Potential signal - 10 -265 V AC/DC – By custom order No potential – inside voltage 24V DC
Receive Input Signal Time	10 – 1000 mS for DC Input signals 50-1000 mS for AC Input signals
Identifying Signal	Software Algorithm
ESD Input protection	Varistors
Range of protection	8-20 μ S
Energy absorbing	10 J
Threshold protection	Yes – for potential Inputs mode
Threshold range	0 - 130 V (for Input 220V)
Asc. / Test Input	Potential/No potential Input
Acknowledgement button*	On the main panel
Terminal blocks	2.5 mm ² -
Relay Outputs	2 pcs. - 2A/250 V
Lighting windows	6 pcs. LED RGB
Lighting windows dimensions	22 x 33 mm
Lighting windows colors	26
Serial ports	RS232/485/422
LAN ports	RSE – 1, RSWEE - 2
Connectors	Серийни портове - 2 x RJ45, LAN – 1 или 2 x RJ45
Communication Protocols	Modbus RTU / Slave, Modbus TCP Client/Server
Power Supply	85-265V AC/DC or 24/36 V AC/DC – By order
Max Power Consumption	6 VA
Working temperature	- 10 ÷ 70 °C
Storage temperature	- 20 ÷ 80 °C
Humidity	0 ÷ 90 % without condense
Device dimensions without terminal blocks	DIN – 96 x 96 x 119 mm
Mounting whole	92x92 mm
Fixing method	Fixing clamps – two pcs.
Case material	PC – glass mixed, no flammable
Protection Class	IP45 Front panel, IP25 back panel
Long term operation	More than 15 year under operating requirements.

** Type of the Inputs – potential/no potential, Working Input voltage and type of the Power supply have to be define in the Customer order.*

ORDER FORM

LSB6 RGB - RSX – A – B – CCC

RS	Interface	Serial RS232/485/422
RSE		Serial RS232/485/422+ LAN port
RSWEE		Serial RS232/485/422+ WiFi + 2 LAN ports
A - 1	Power Supply	80-265V AC/DC
2		24-36V AC/DC
B – 1	Input type	Potential
2		No Potential
CCC	Input voltage	10 – 265V, If no potential put 000

СТАНДАРТИ

EMC	БДС EN 61326, БДС EN 61000-4-2, БДС EN 61000-4-4, БДС EN 61000-4-5, БДС EN 61000-4-6, БДС EN 61000-4-11
Safety	БДС EN 60950(:2000) :2002
Communication	ISO/IEC 8482, ANSI/TIA/EIA-422-B, Modbus RTU, Modbus TCP
SMT technology	ECSS-Q-ST-70-38C (2008). High-reliability soldering for surface-mount and mixed technology.
Mechanical	IEC 61554
Safety	UL94 V0