RÖLESAN

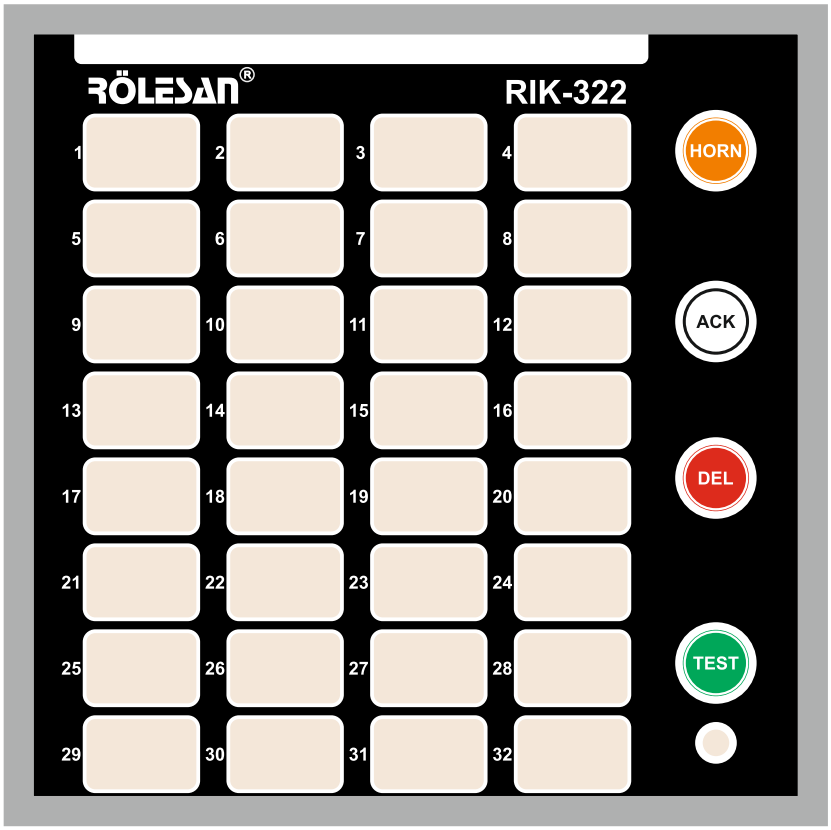
RÖLESAN ELEKTRİK ELEKTRONİK SAN.VE TİC. LTD. ŞTİ.

RIK-322

USER MANUAL

RÖLESAN ELEKTRİK ELEKTRONİK SAN.VE TİC. LTD. ŞTİ.

Front Wiev



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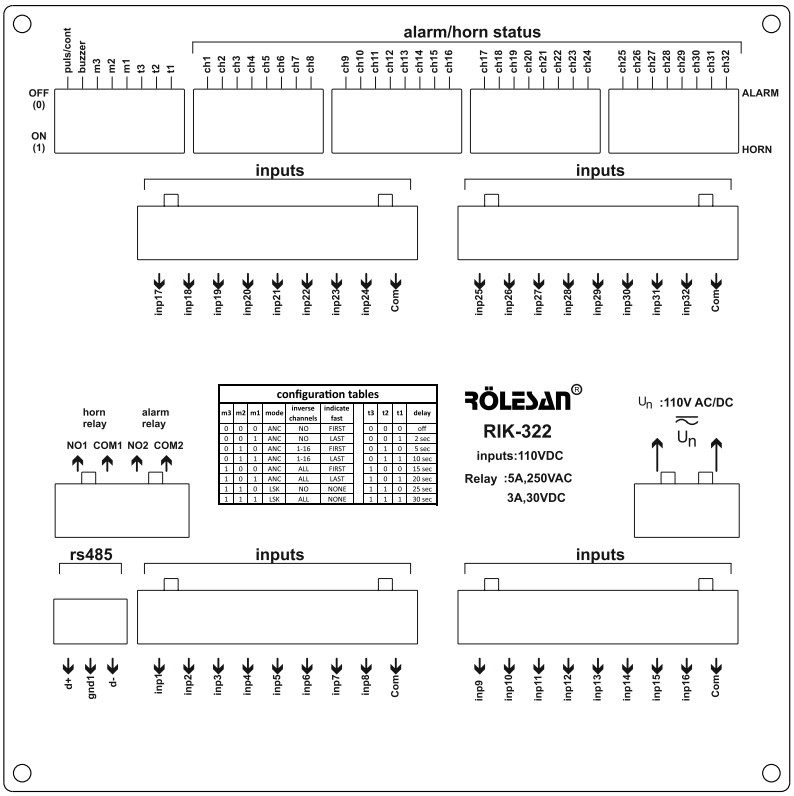


Proper Use and Safety Conditions

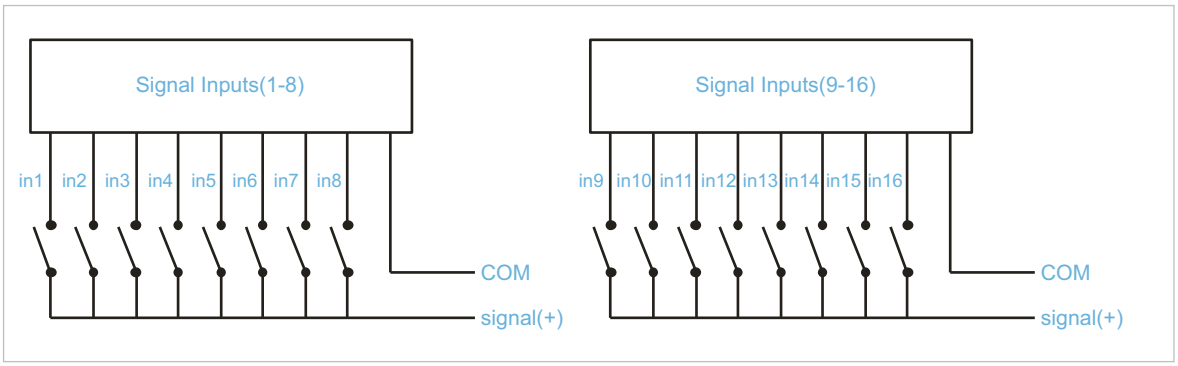
- According to instuctions in the user manual, montage and connections should made by the authorized persons. Do not turn on the device unless a proper connection is established.
- Be sure that the device is de-energized before connecting the device to the line.
- Use dry cloth to clean/remove dust from the device. Don't use any corrosive material like alcohol and thinner.
- Put the device into use after all connections are completed.
- Don't open the device box. There is no part exist that the user make any changes on it.
- Keep the device away from the humid, wet, vibrant and dusty ambients.

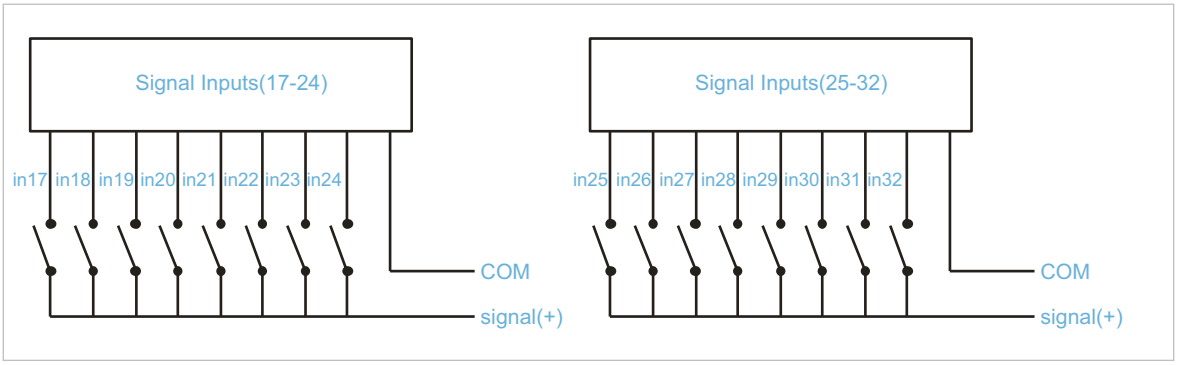
General Informations About the Device

RIK-322 is used for observing the alarms with the help of led indicators which occurs in several applications, taking records with real time and monitoring remotely with RS-485.

- 32 channel signal input
- Double colored backlighted indicator
- Assigning the channels to "HORN" and "ALARM" relays seperately with the help of dipswitches.
- Designation of green indicates "HORN" channels and red indicates "ALARM"channels.
- Isolated RS-485 port
- Standard MODBUS RTU protocol
- Lithium battery supported real time clock(at least 5 years lifetime battery)
- Able to hold 3000 record with real time.
- 24V,48V,110V and 220V DC signal input
- Alarm detection mode with respect to presence or absence of the signal.
- Alarm detection mode with 0-30sec ranged adjustable delay
- Two kind of working mode: "CONTINOUS" and "PULSE"
- Validation, rubbing of an alarm and testing the indicators with the buttons on the front panel
- Alarm warning with a buzzer
- Two pcs. of relay output as "HORN" and "ALARM"
- Configuration with dipswitch
- Adjustable mode as "ANC" and LSK"

Signal Input





Led Indicators

There is 32 led incdicators on this device. These indicators are assigned to related signal input channels. When alarm occur on a channel, related indicator specifies that case of alarm. Led indicators can be lit double colored as red and green. Besides depending on continuity of the signals on the input channels and occurance of the alarm as first or last, flashing mode of the leds can vary.

Front Panel Buttons

There are four pieces of buttons situated on the front panel of the device:”HORN”, “ACK”, “DEL” and “TEST”

HORN: This button turns off the buzzer if the buzzer is active.

ACK: This button is used for approving the alarm. When the ACK button is pressed, if the signal situation continuous, fast flashing leds becomes to flash slowly and slow flashing led indicators keep its positions. If the signal situation is not continuous, ralted led indicators lits constant(not flashing).(In LSK mode, this button deactivates the relays but as long as alarm input is active, leds keep to continue litting which belongs to that input channel).

DEL: This button is used for deleting the alarms. When DEL button is pressed, related channels indicators are dimmed if alarms on the channels are approved and signal situation stops.

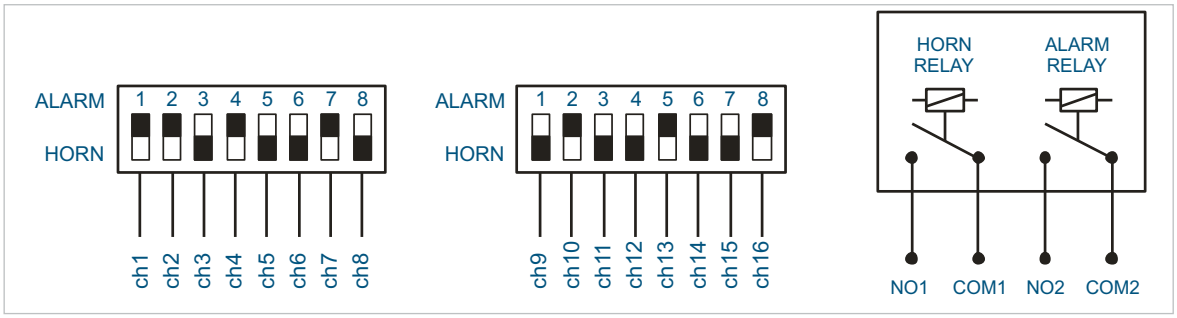
TEST: This button is used for controlling the device and led indicators are working correctly. As long as TEST button is pressed, led indicators lits as red and green respectively.

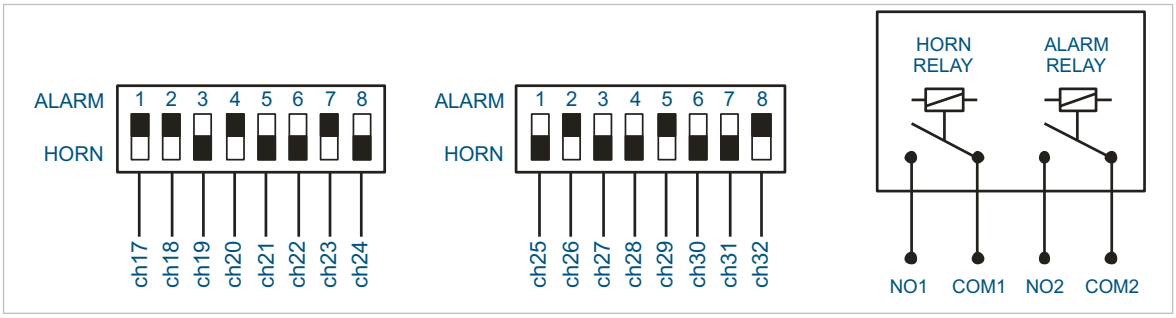
Alarm/Horn Status and Relays

All input channels can be adjusted separately as “ALARM” and “HORN” channel with dipswitches.

Red led indicator is assigned to “ALARM” channels and green led indicator is assigned to “HORN”channels.

Two relay present in the device as “ALARM” and “HORN”. Alarm channels are assigned to the “ALARM” relay and horn channels are assigned to “HORN” relay.



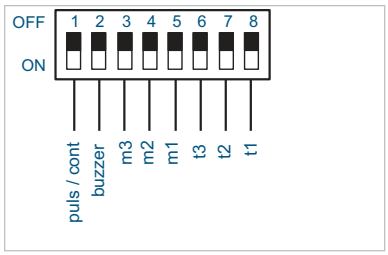


Reset the device after changing the dipswitch settings. If you don't resetthe device, it kepps working with the previous settings.

Device Configuration

The device reactions to the input signals can be adjusted by the configuration dipswitch. With this dipswitch, below adjustments can be done:

- Continuos/Pulse Mode(with puls/cont switch)
- Buzzer active / passive (with buzzer switch)
- Reversing input signals(with m1,m2 and m3 switches)
- Firs alarm/Last alarm(with m1,m2 and m3 switches)
- Delay(with t3, t2 and t1 switches)



Continuous/Pulse Mode

If the position of the "puls/cont" switch on the configuration dipswitch is OFF state, then "CONTINUOUS" mode is selected. When device is on "CONTINUOUS" mode, alarm relay is tripped if alarm channel is adjusted to "ALARM" state and horn relay is tripped if alarm channel is adjusted to "HORN" state and the buzzer becomes active. Until the imcoming alarms are approved, relays and buzzer preserves their position.

If the position of the “puls/cont” switch on the configuration dipswitch is “ON” state, then “PULSE” mode is selected. When device is on “PULSE” mode, alarm relay trips if alarm channel is adjusted to “ALARM” state and horn relay trips if alarm channel is adjusted to “HORN” state and the buzzer becomes active. After 5 seconds, relays and buzzer passes to closed state.

Buzzer Active/Passive

With “BUZZER” switch on configuration dipswitch, status of the device’s internal buzzer can be changed between active and passive.

Reversing Input Signals

Reversing the input signal is a kind of process which alarm detection process made when the signals to the signal input are cut off. Channels input signal can be reversed by adjusting the m1, m2 and m3 switches.

First Alarm/Last Alarm

According to positions of m1, m2 and m3 switches on configuration dipswitch, if “FIRST ALARM” mode is selected, first incoming signal to device make fast flash and subsequent signals make slow flash.

According to position of m1, m2 and m3 switches on configuration dipswitch, if “LAST ALARM” mode is selected, last incoming signal to the device make fast flash and other incoming signals make slow flash.

Delay Time

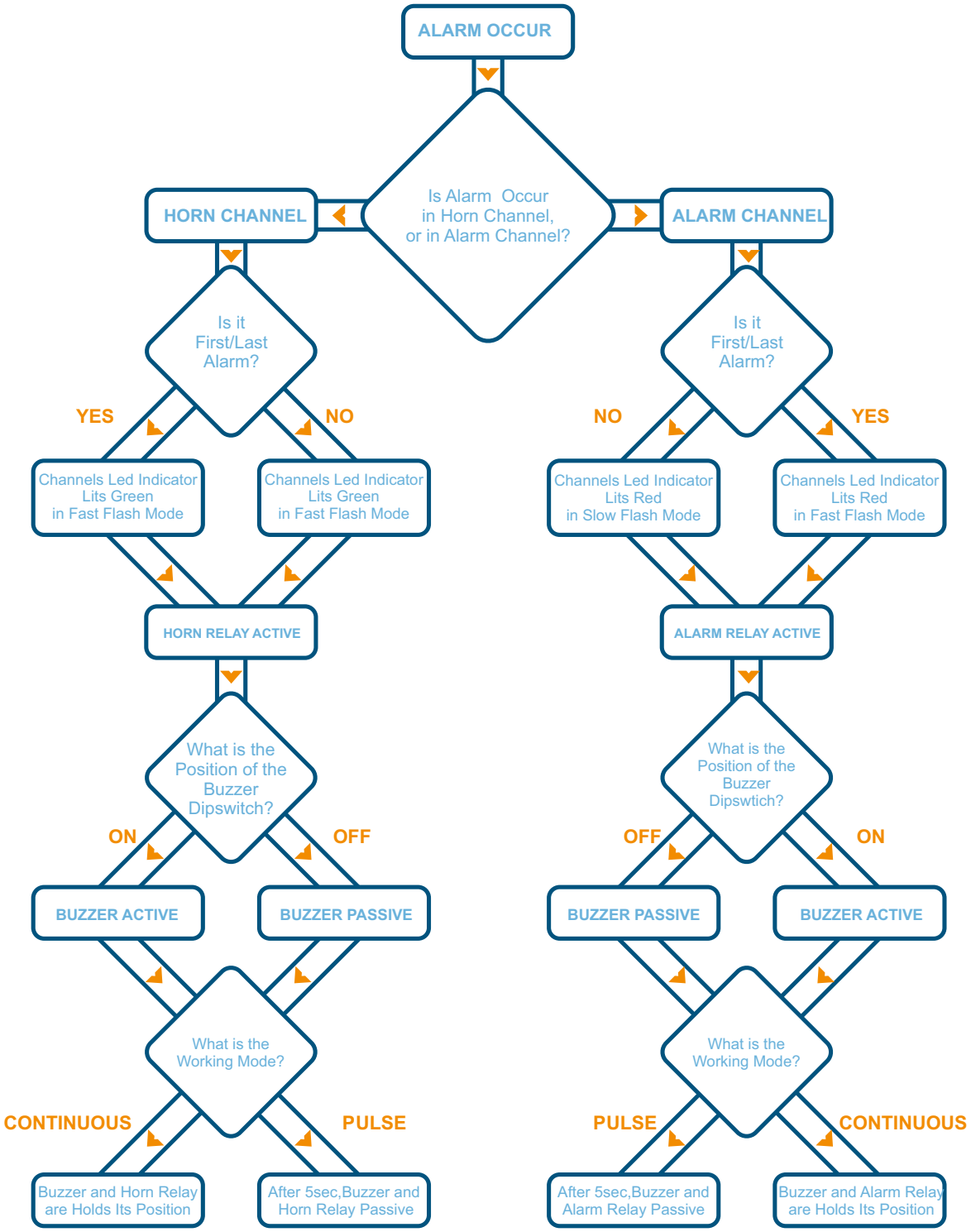
With t1, t2 and t3 switches on a configuration dipswitch, device delay time can be adjusted to 0, 2, 5, 10, 20, 25 and 30 seconds.

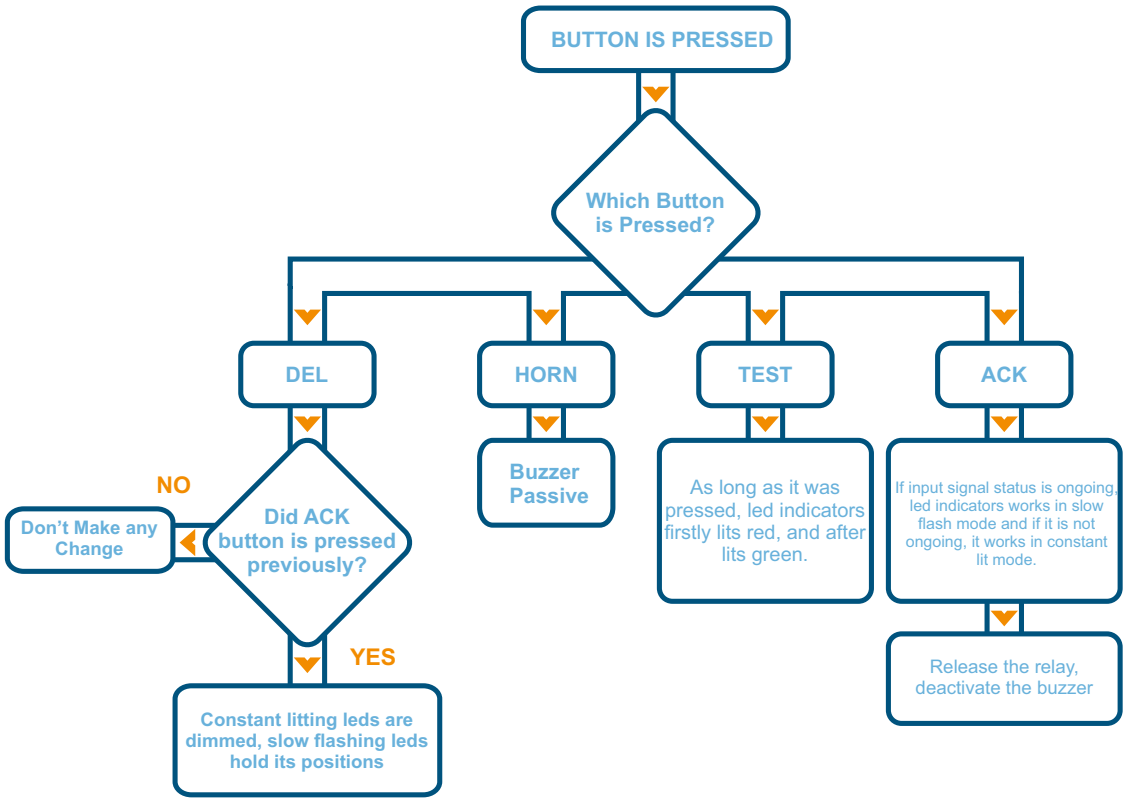
configuration tables

m3	m2	m1	mode	inverse channels	indicate fast		t3	t2	t1	delay
0	0	0	ANC	NO	FIRST		0	0	0	off
0	0	1	ANC	NO	LAST		0	0	1	2 sec
0	1	0	ANC	1-16	FIRST		0	1	0	5 sec
0	1	1	ANC	1-16	LAST		0	1	1	10 sec
1	0	0	ANC	ALL	FIRST		1	0	0	15 sec
1	0	1	ANC	ALL	LAST		1	0	1	20 sec
1	1	0	LSK	NO	NONE		1	1	0	25 sec
1	1	1	LSK	ALL	NONE		1	1	1	30 sec

Working Algorithm

In LSK mode, as long as the channel input is active, device will give output at the end of the delay time.





Technical Specifications

Input

- Number of Channels : 32
- Channel Current : <1.5mA
- Input Signal :110 VDC

General

- Supply Voltage :110V AC/DC
- Battery Lifetime : 5 years
- Connection : Screwed terminal block

Output

- Relay Outputs : 2 pcs. Form-A Relay
- Max. Switching Current : 5A AC,3A DC
- Max. Switching Voltage : 250V AC, 30V DC

Communication

- Communication Interface :Isolated Rs485 port
- Protocol : Modbus RTU
- Isolation : 2500V RMS
- Baud Rate :4800,9600,19200 bps

Real Time Clock(RTC)

The device have real time clock. Clock settings are done via Modbus. Qq. Modbus Table

Log

Device takes 300pcs. of logs with real time in its permanent memory.

The logs which are taken by the device are;

- In which channel alarms are come of leave
- Which buttons are pressed
- Device supply is energized
- Device is resetted

Each log holds 64bits of data in memory and they held like below:

BCD Formatted Minute								BCD Formatted Second							
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

RST	PON	PDWN	HORN	ACK	DEL	TEST	SHORN	SACK	SDEL	ALMS	ALARM CHANNEL				
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Bit 63 - 56 : BCD formatted day
Bit 55 - 48 : BCD formatted month
Bit 47 - 40 : BCD formatted year (Last two digits are shown. 2013 can be readed as 13 i.e.)
Bit 39 - 32 : BCD formatted hour
Bit 31 - 24 : BCD formatted minute
Bit 23 - 16 : BCD formatted second
Bit 15 : Device restarted
Bit 14 : Device energized
Bit 13 : -
Bit 12 : HORN button is pressed
Bit 11 : ACK button is pressed
Bit 10 : DEL button is pressed
Bit 9 : TEST button is pressed
Bit 8 : SOFT HORN command received
Bit 7 : SOFT ACK command received
Bit 6 : SOFT DEL command received
Bit 5 : Alarm status. This bit becomes “1" when alarm comes and becomes “0" when alarm go
Bit 4-0 : Channel number where the alarm occured is shown in “hex” format.

BCD Format

Its the numerical coding method whereit is used for converting the decimal numbers into binary numbers is computer and electronic systems. While the conversion process is carrying out, every digit of the pirimary number converted to binary base one by one and then BCD coded presentation is acquired by combining the each digits equivalent binary values respectively.

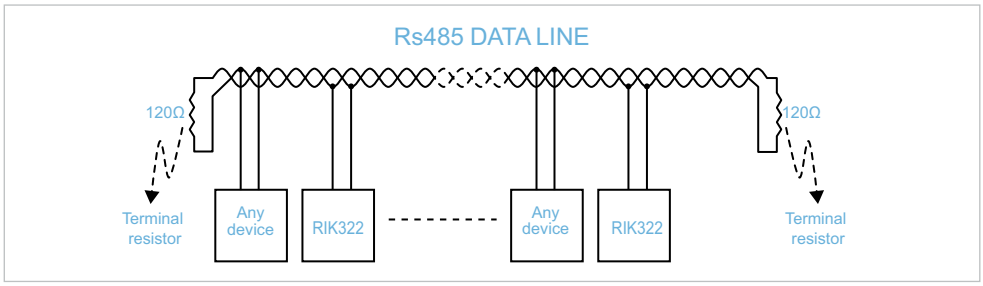
Decimal	Binary	BCD	Decimal	Binary	BCD
0	0000	0000 0000	8	1000	0000 1000
1	0001	0000 0001	9	1001	0000 1001
2	0010	0000 0010	10	1010	0001 0000
3	0011	0000 0011	11	1011	0001 0001
4	0100	0000 0100	12	1100	0001 0010
5	0101	0000 0101	13	1101	0001 0011
6	0110	0000 0110	14	1110	0001 0100
7	0111	0000 0111	15	1111	0001 0101

Communication

Using the Modbus RTU protocol, device can communicate via isolated Rs485 port embedded on it. Supported functions are:

- Read Holding register(03H)
- Preset Single Register(06H)
- Preset Multiple Registers(10H)

Rs485 Connection Line



Modbus Table

Address	Parameter Description	R / W	Data Type	Function
0	Channels Input Status (32 - 17 channels)	RO	16 bit word	03H
1	Channels Input Status (16 - 1 kanallar)	RO	16 bit word	03H
2	Channels Dipswitch Status (32 - 17 channels)	RO	16 bit word	03H
3	Channels Dipswitch Status (16 - 1 channels)	RO	16 bit word	03H
4	Configuration Dipswitch Status	RO	16 bit word	03H
5	Number of Log in Memory	RO	16 bit word	03H
6	Second	R / W	16 bit word	03H-06H-10H
7	Minute	R / W	16 bit word	03H-06H-10H
8	Hour	R / W	16 bit word	03H-06H-10H
9	Day	R / W	16 bit word	03H-06H-10H
10	Month	R / W	16 bit word	03H-06H-10H
11	Year	R / W	16 bit word	03H-06H-10H
12	Blaud Rate	R / W	16 bit word	03H-06H-10H
13	Slave ID	R / W	16 bit word	03H-06H-10H
14	RESERVE	RO	16 bit word	03H
15	Firmware Version	RO	16 bit word	03H
16	Fast flashing indicator (32 - 17 channels)	RO	16 bit word	03H
17	Fast flashing indicator (16 - 1 channels)	RO	16 bit word	03H
18	Slow flashing indicator (32 - 17 channels)	RO	RO	03H
19	Slow flashing indicator (16 - 1 channels)	RO	RO	03H

Address	Parameter Description	R / W	Data Type	Function
20	Constant litting indicators (32 - 17 channels)	RO	16 bit word	03H
21	Constant litting indicators (16 - 1 channels)	RO	16 bit word	03H
24	Command Address	WO	16 bit word	06H
50	1.Log Day and Month	RO	16 bit word	03H
51	1.Log Year and Hour	RO	16 bit word	03H
52	1.Log Minute and Second	RO	16 bit word	03H
53	1.Log Data	RO	16 bit word	03H
54	2.Log Day and Month	RO	16 bit word	03H
55	2.Log Year and Hour	RO	16 bit word	03H
56	2.Log Minute and Second	RO	16 bit word	03H
57	2.Log Data	RO	16 bit word	03H
58	3.Log Day and Month	RO	16 bit word	03H
59	3.Log Year and Hour	RO	16 bit word	03H
60	3.Log Minute and Second	RO	16 bit word	03H
61	3.Log Data	RO	16 bit word	03H
62	4.Log Day and Month	RO	16 bit word	03H
63	4.Log Year and Hour	RO	16 bit word	03H
64	4.Log Minute and Second	RO	16 bit word	03H
65	4.Log Data	RO	16 bit word	03H
66	5.Log Day and Moth	RO	16 bit word	03H
67	5.Log Year and Hour	RO	16 bit word	03H
68	5.Log Minute and Second	RO	16 bit word	03H
69	5.Log Data	RO	16 bit word	03H
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
12042	2998.Log Day and Month	RO	16 bit word	03H
12043	2998.Log Year and Hour	RO	16 bit word	03H
12044	2998.Log Minute and Second	RO	16 bit word	03H
12045	2998.Log Data	RO	16 bit word	03H
12046	2999.Log Day and Month	RO	16 bit word	03H
12047	2999.Log Year and Hour	RO	16 bit word	03H
12048	2999.Log Minute and Second	RO	16 bit word	03H
12049	2999.Log Data	RO	16 bit word	03H
12050	3000.Log Day and Month	RO	16 bit word	03H
12051	3000.Log Year and Hour	RO	16 bit word	03H
12052	3000.Log Minute and Second	RO	16 bit word	03H
12053	3000.Log Data	RO	16 bit word	03H

Note: 124 pieces of data can be requested at most in each query.

Channels Alarm Flags

15	14	13	12	11	10	9	8
32.Channel Alarm Status	31.Channel Alarm Status	30.Channel Alarm Status	29.Channel Alarm Status	28.Channel Alarm Status	27.Channel Alarm Status	26.Channel Alarm Status	25.Channel Alarm Status

7	6	5	4	3	2	1	0
24.Channel Alarm Status	23.Channel Alarm Status	22.Channel Alarm Status	21.Channel Alarm Status	20.Channel Alarm Status	19.Channel Alarm Status	18.Channel Alarm Status	17.Channel Alarm Status

15	14	13	12	11	10	9	8
16.Ch. Alarm Status	15.Ch. Alarm Status	14.Ch. Alarm Status	13.Ch. Alarm Status	12.Ch. Alarm Status	11.Ch. Alarm Status	10.Ch. Alarm Status	9.Ch. Alarm Status

7	6	5	4	3	2	1	0
8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status	8.Ch. Alarm Status

Channels Dipswitch Status

15	14	13	12	11	10	9	8
32.Channel	31.Channel	30.Channel	29.Channel	28.Channel	27.Channel	26.Channel	25.Channel

7	6	5	4	3	2	1	0
24.Chahnel	23.Chahnel	22.Chahnel	21.Chahnel	20.Chahnel	19.Chahnel	18.Chahnel	17.Chahnel

15	14	13	12	11	10	9	8
16.Channel	15.Channel	14.Channel	13.Channel	12.Channel	11.Channel	10.Channel	9.Channel

7	6	5	4	3	2	1	0
8.Channel	7.Channel	6.Channel	5.Channel	4.Channel	3.Channel	2.Channel	1.Channel

Configuration Dipswitch Status

15	14	13	12	11	10	9	8
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

7	6	5	4	3	2	1	0
t1	t2	t3	First / Last	Inv. Ch 9-16	Inv. Ch 1-8	Buzzer	Cont / Pals

Number of Log in Memory

In devices, number fo log occupied in memory is given to user via modbus. When device reaches the end of 300 pieces of log memory, it records the incoming logs by means of writing on the old ones starting from the beginning of the log memory. Number of log in memory can be 2999 at most. If this number is observed as “0", then it should be understood from that memory is full and it returns the beginning. In other words, at that time 3000 pieces of log present in the memory.

Clock/Date Setting

Clock and date values can be read and adjusted via modbus. These values can be changed with 06H and 10H functions.

Baud Rate Setting

Baud rate value of the device can be read and adjusted via modbus. This value can be changed with 06H and 10H functions. Baud rate can be adjusted to below values:

- 4800 bps
- 9600 bps
- 19200 bps

Factory setting of the baud rate of the device is adjusted to 9600 bps.

Slave ID Setting

Value of Slave ID can be read and adjusted via modbus. Slave ID can be adjusted to the value between 1 and 247. These values can be changed with 06H and 10H functions. Factory setting of SLAVE ID of the device is adjusted to 1.

Address of Led Indicator Status

Three pieces of address which are defined on the modbus table are represents the status of the led indicators.It can be understood from that addresses how the led indicators lits at that time. This function can be used for knowing the status of the screen about which the device can be make remote read.

bit15	bit 14	bit 13	bit 12	bit 11	bit 10	bit 9	bit 8
32.channel LED indicator	31.channel LED indicator	30.channel LED indicator	29.channel LED indicator	28.channel LED indicator	27.channel LED indicator	26.channel LED indicator	25.channel LED indicator

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
24.channel LED indicator	23.channel LED indicator	22.channel LED indicator	21.channel LED indicator	20.channel LED indicator	19.channel LED indicator	18.channel LED indicator	17.channel LED indicator

bit15	bit 14	bit 13	bit 12	bit 11	bit 10	bit 9	bit 8
16.channel LED indicator	15.channel LED indicator	14.channel LED indicator	13.channel LED indicator	12.channel LED indicator	11.channel LED indicator	10.channel LED indicator	9.channel LED indicator

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
8.channel LED indicator	7.channel LED indicator	6.channel LED indicator	5.channel LED indicator	4.channel LED indicator	3.channel LED indicator	2.channel LED indicator	1.channel LED indicator

The structure of led indicator status register

- Address 12- An address which indicates thestatus of the fast flashing LED: If the related address value is “1" then that channels LED indicator makes fast flash.
- Address 13- An address which indicates the status of the slow flashing LED: If the related address value is “1" then that channel LED indicator makes slow flash.
- Address 14- An address which indicates the status of the constant lit LED. If the related address value is “1" then this channels LED indicator lits constantly.

If none of these addresses values are “1", then that channels LED indicator status is dimmed.

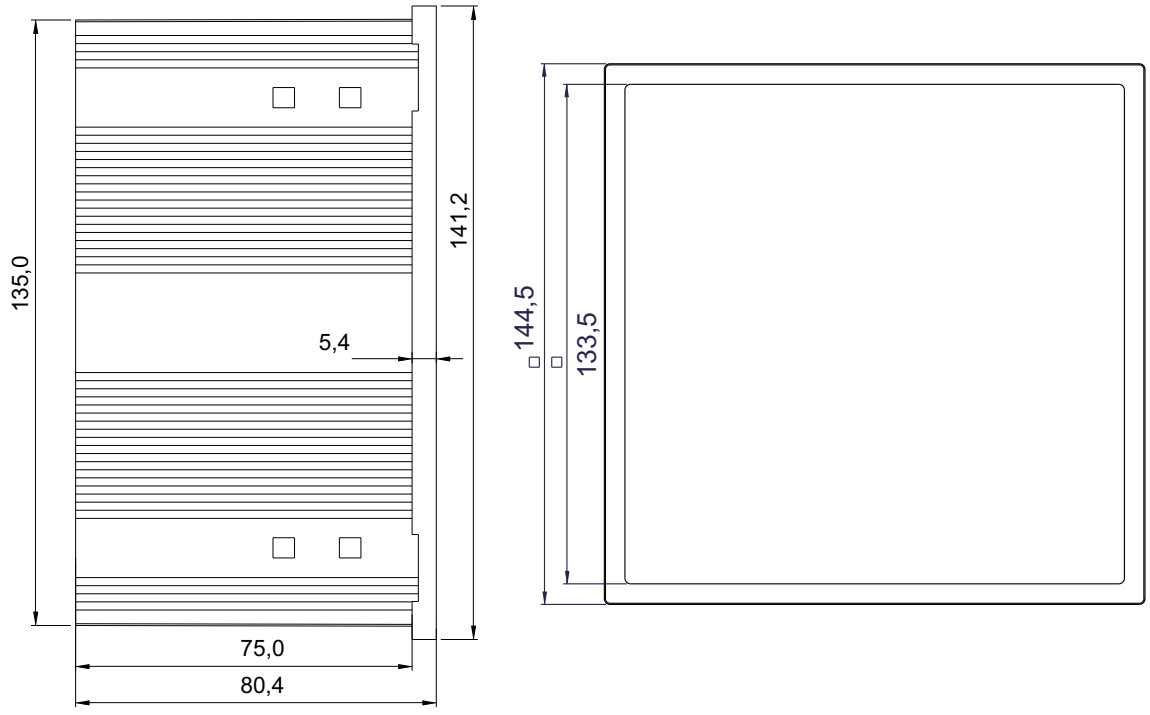
Command Address

- If numbers of the defined commands are send to this address then operations of the related command is accomplished. Defined commands are:

Command Duty	Address to be Send Command	Number Send
Press HORN button	24	1111
Press ACK button	24	2222
Press DEL button	24	3333

After the processing of the related command, it is recorded with the current date and time. Qq:log(Record)

Firmware Version

Version of the embedded software which is uploaded to the device can be read from “firmware version” address.

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