

SOBRAN

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



SOBRANO LOM ROCOF RELAY LINE MONITORING AND PROTECTION RELAY USER MANUAL

Proper Use and Safety Conditions

- Installation and connections must be done by authorized persons in accordance with the instructions in the user manual. The device should not be operated until the connections are made correctly.
- Before connecting the device to the line, be sure that energy is cut-off.
- Use dry dustcloth for cleaning/removing dust from the device. Don not use corrosive chemicals like alcohol and thinner.
- After completing the all connections of the device, you can put the device into use.
- Do not open the device box. There is no part exist that user can make any changes.
- Keep away the device from the humid, wet,vibrating and dusty ambiances.

Cihaz Hakkında Genel Bilgiler

LOM-01 is a product of multi-functional line monitoring(Loss of Mains) relays which is located between the grid circuit and a power plant.

It is monitoring the mains continuously. In case of any possible interference in voltage or frequency, it disconnects the power plant from the grid circuit at a particular time. When the system values turns its nominal values, again the device provides the power plant put into use.

- Microprocessor Based Digital Control
- Supply: 18-36VDC, 0.2A
- Maximum Measurable Voltage: 400V AC RMS (560Vp)
- Frequency Measurement Range: 40-60Hz
- Modbus RTU data transfer

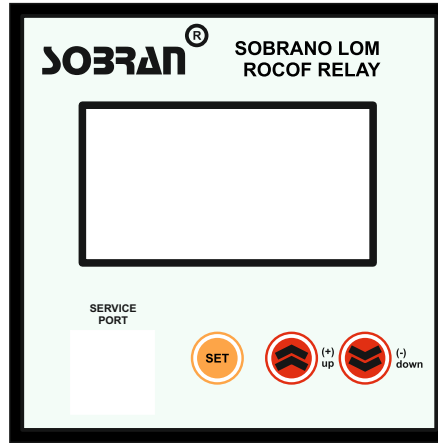
Device Inputs and Outputs

- 1 Rs485 port
- 4 isolated input
- 1 trip/starting relay
- 1 lock/closing relay
- 3 phases, 1 neutral voltage input

Isolated Inputs:

- 1-Circuit Breaker Position Information
- 2-Remote Active/Passive
- 3-Remote Trip Relay
- 4-Remote Lock/Closing Relay

Trip and Lock Relay works in pulse principal. After the relays remain active for the Relay Pulse period in the settings of the device, they become passive again.



Service Port

This port is used by the manufacturer when there is a need for software update of the device. It is not used for any kind of communication.

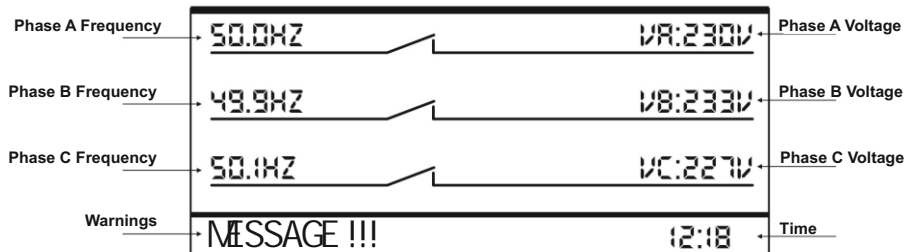
Front Panel Buttons

3 buttons are situated on the front panel of the device which are “SET”, “UP” and “DOWN” buttons.

SET : It is used for transition between parameters of the Setting, Rs485 Setting, CLOCK setting, Event Record and Messages pages. It supports oriented movement from upside to downside between parameters. After the last parameter, it supports returning to the starting point.

UP : It supports transition between pages. If any change is desired on any parameter, SET button is used to select the parameter and the value of parameter can be increased with the UP button.

DOWN : It supports transition between pages. If any change is desired on any parameter, SET button is used to select the parameter and the value of parameter can be decreased with the DOWN button.



Main Screen Display

.This is the main screen display of the device. The voltage and frequency values of the 3(three) phase, hour and minute of time, close-open position of the circuit breakers and any kind of warning can be seen from this page. In this page, users can not change the parameters.

Voltage Between Phase A-B	VAB:382V		V _A :229V	Phase A Voltage
Voltage Between Phase A-C	VAC:391V		V _B :230V	Phase B Voltage
Voltage Between Phase B-C	VBC:385V		V _C :232V	Phase C Voltage
Frequencies	A HZ	B HZ	C HZ	Time
	50.0	50.0	50.0	

Measurement Page

Measurement display page of the device. The voltage and frequency values of the 3(three) phase, voltage between phases, hour and minute section of the time can be monitored from this page. User can not change the parameters of this page.

SETTING PAGE	
AC HIGH (V)	0270
AC HIGH (SEC)	1.00
AC LOW (V)	0100
AC LOW (SEC)	1.00
FREQ HIGH (V)	51.0
FREQ HIGH (SEC)	1.00

Setting Page

Device parameters are adjusted in this page. Transition between parameters are provided by SET button. Parameter values can be changed with UP and DOWN buttons.

AC HIGH(V): This parameter is the set value of the High Voltage warning. The range of set value can be adjusted between 250-300V.

AC HIGH(SEC):This parameter is the value of the time setting of the High Voltage warning.In can be adjusted in the range of 500msec-5sec.

AC LOW(V): This parameter is the set value of the Low Voltage warning. The range of the set value can be adjusted between 150-210V.

AC LOW(SEC):This parameter is the value of the time setting of the Low Voltage warning.In can be adjusted in the range of 500msec-5sec.

HIGH FREQ.(Hz):This parameter is the set value of the High Frequency warning. It can be adjusted in the range of 20.2-52.0Hz.

HIGH FREQ.(SEC):This parameter is the time setting value of the High Frequency warning. It can be adjusted in the range of 500msec-5sec.

SETTING PAGE	
LOWFREQ(HZ)	49.0
LOWFREQ(SEC)	1.00
ROCOF (HZ)	0.50
ROCOF (SEC)	0001
ROCOF ON/OFF	OFF
C.Breaker LOCK(SEC)	0010

Setting Page

LOW FREQ.(Hz) : This parameter is the set value of the Low Frequency warning. It can be adjusted in the range of 45.0-49.8Hz.

LOW FREQ.(SEC) : This parameter is the set duration value of the Low Frequency warning. It can be adjusted in the range of 500msec-5sec.

ROCOF (HZ) : Rocof function is the parameter of the rate of change of frequency. It can be adjusted in the range of 0.40-2Hz.

ROCOF(SEC) : This parameter is the set duration value of the ROCOF. It can be adjusted in the range of 0.40-2Hz.

ROCOF ON/OFF : This parameter is used for turning on/off the rocof warning function.

C.BREAKER LOCK(SEC) : After the system is energized, if there is no any kind of warning and working mode is selected automatic, then this parameter determines after how many times

SETTING PAGE	
C.BRE. STANDBY (SEC)	0002
C.Breaker RECLOSE	0002
WORKING MODE	AUTO.
TRIP RELAY TEST	OFF
CLOSING RELAY TEST	OFF
RELAY PULSE (SEC)	1.00

Setting Page

C.BRE. STANDBY(Sec) : It is the parameter that determines how long to wait for the circuit brekaer position after activating the closing relay. Its range can be adjusted between 0-300sec.

C.BRE. RECLOSE : It is the parameter that determines how many times reclosing is going to made if circuit breaker position is switched to closed in dwell time after the reclosing relay is turned off.

WORKING MODE : It is the parameter that determines the working mode of the device. If the working mode is automatic, it carry outs reclosing and tripping according to fault on the line. If the working mode is manual, it can not carry out reclosing and tripping automatically. Excluding the remote function, reclosing and trippind can be done via device, modbus rtu, and external input.

TRIPPING RELAY TEST : It activates the tripping relay along relay pulse duration.

CLOSING RELAY TEST : It activates the closing relay along relay pulse duration.

RELAY PULSE (SEC): It is the parameter that determines how long the tripping and reclosing relays to remain active. The duration can be adjusted between 100msec-1min.

RS485 SETTING	
BAUD RATE	9600
MODBUS ID	1
DATA BIT	8
STOP BIT	1
PARITY	N REVD1

Rs485 Setting Page

It is the page that Rs485 communication settings are to be found. Baudrate and Modbus ID parameters are can be changed.

Baud Rate : Can be adjusted as 9600,19200,38400,57600.

Modbus ID : Can be adjusted between 1-247.

CLOCK SETTING	
HOUR	11
MINUTE	15
DAY	8
MONTH	10
YEAR	22

Clock Setting Page

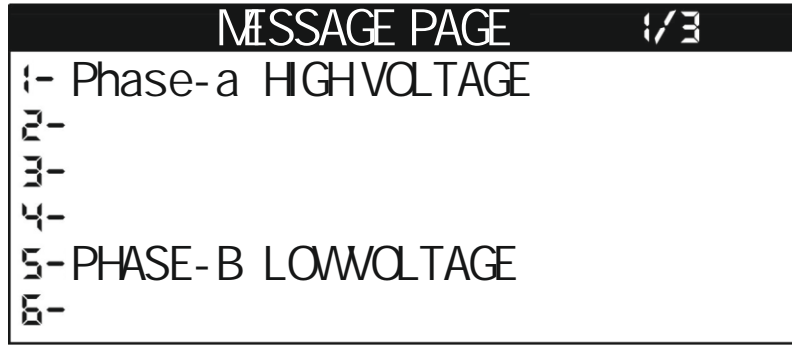
It is the page that device's clock settings are adjusted.

EVENT RECORD	
0	PHASE - A HVOLTAGE 11:55 03.07.22
1	PHASE - C L.FREQUENCY 22:14 29.06.22

Event Record Page

Apart from the clock label, device takes 18 pcs. of event records related to warning occurred on the line. .This event records enables to monitor that when and which error occurred. Deleting the event records is stated on the last page of event record.

EVENT RECORD	
EVENT RECORD DEL N	



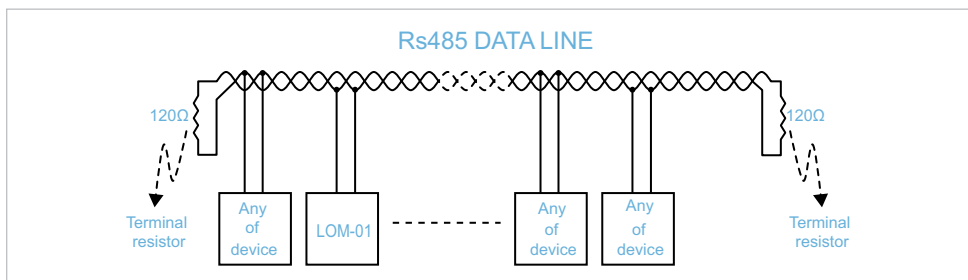
Messages Pages

It is the screen that show the erros the moment device is energized.

Communication

The device communicates using the isolated Rs485 port and Modbus RTU protocol. Supplied functions are:

- Read Digital Output(01H)
- Read Holding register(03H)
- Force Single Coil(05H)
- Preset Single Register(06H)



Modbus Table

READ DIGITAL INPUT(0x01)

Address	Parameter Description
0	Phase A High Voltage
1	Phase B High Voltage
2	Phase C High Voltage
3	Phase A Low Voltage
4	Phase B Low Voltage
5	Phase C Low Voltage
6	Phase A High Frequency
7	Phase B High Frequency
8	Phase C High Frequency
9	Phase A Low Frequency
10	Phase B Low Frequency
11	Phase C Low Frequency
12	ROCOF ERROR
13	Slave ID

Modbus Table

READ HOLDING REGISTER(0x03)

Address	Parameter Description
0	Phase A Voltage (V)
1	Phase B Voltage (V)
2	Phase C Voltage (V)
3	A-B Phase Voltage (V)
4	A-C Phase Voltage (V)
5	B-C Phase Voltage (V)
6	Phase A Frequency Scaling 1/10
7	Phase B Frequency Scaling 1/10
8	Phase C Frequency Scaling 1/10
9	High Voltage Set Value (V)
10	High Voltage Duration (msec)
11	Low Voltage Set Value (V)
12	Low Voltage Duration (msec)
13	High Frequency Set Value (Hz)
14	High Frequency Duration (msec)
15	Low Frequency Set Value (Hz)
16	Low Frequency Duration (msec)
17	Rocof Set Value Scaling 1/10
18	Rocof Duration
19	Rocof ON/OFF 1-->OFF 2-->ON
20	Closing Duration (Sec)
21	Circuit Breaker Position Waiting(Sec)
22	Number of Reclosing
23	Working Mode 1-->OTO 2-->MANUEL
24	Relay Pulse Duration (Sec)
50	Hour
51	Minute
52	Second
53	Day
54	Month
55	Year

FORCE SINGLE COIL(0x05)

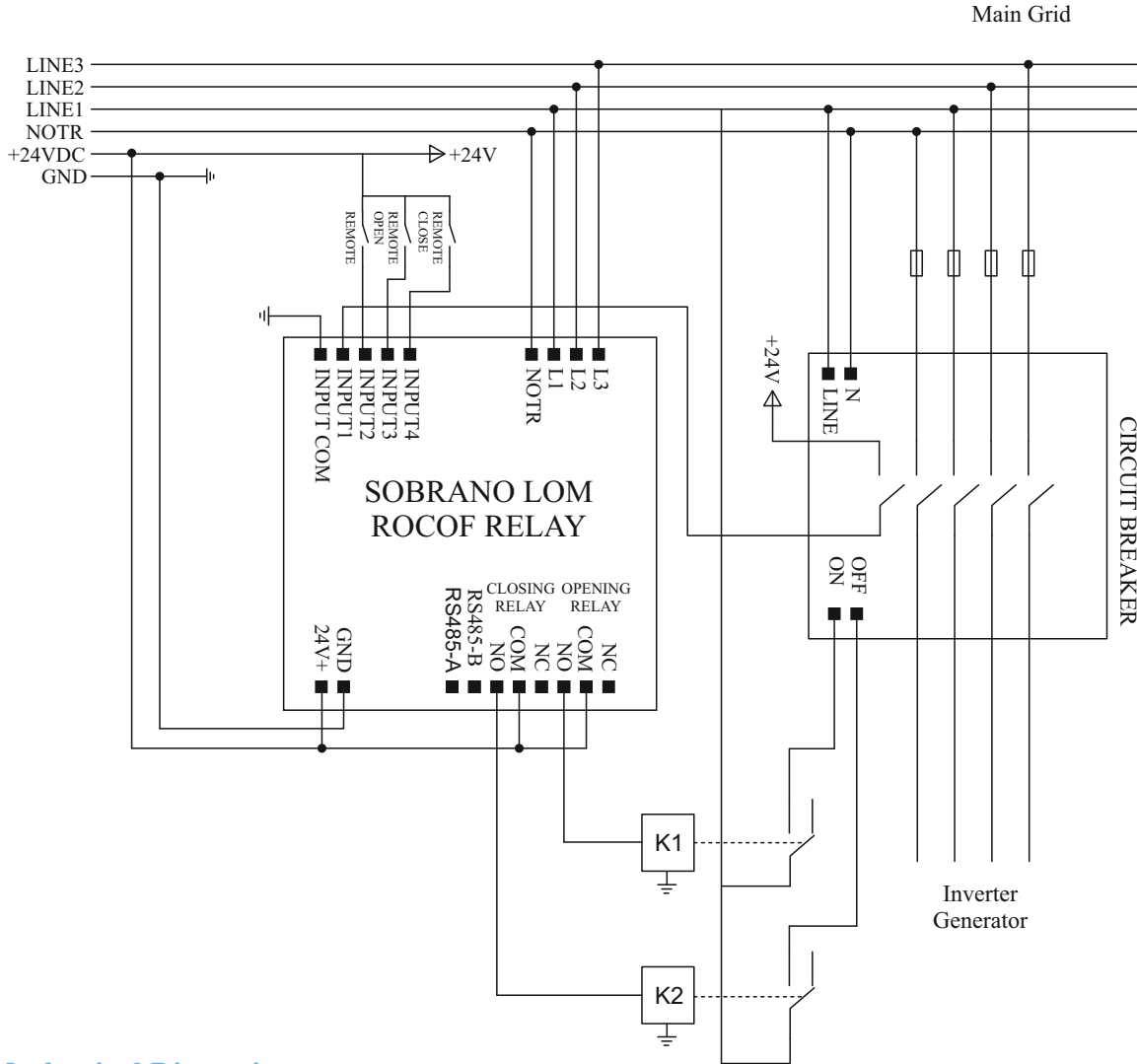
Address	Parameter Description
0	Tripping Relay
1	Closing Relay
2	Delete Event Record

Modbus Tablosu

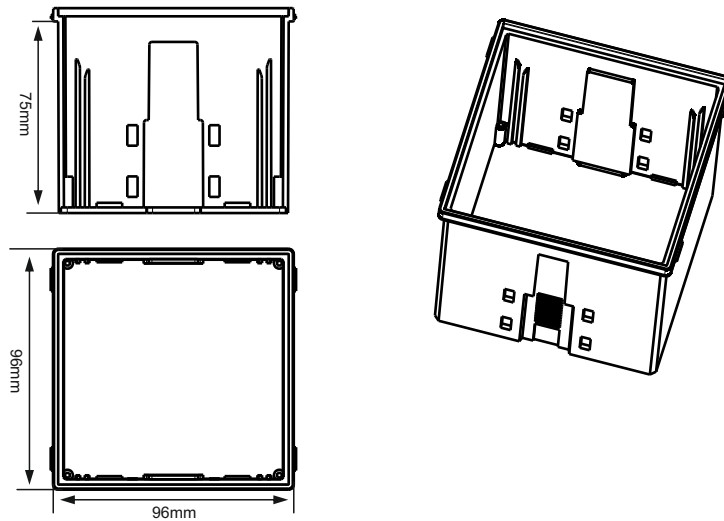
PRESET SINGLE REGISTER(0x06)

Address	Parametre Açıklaması
0	High Voltage Set Value (V)
1	High Voltage Duration(msec)
2	Low Voltage Set Value (V)
3	Low Voltage Duration (msec)
4	High Frequency Set Value (Hz)
5	High Frequency Duration (msec)
6	Low Frequency Set Value (Hz)
7	Low Frequency Duration (msec)
8	Rocof Set Value
9	Rocof Duration
10	Rocof ON/OFF 1-->OFF 2-->ON
11	Closing Duration (Sec)
12	Circuit Breaker Position Waiting(Sec)
13	Number of Reclosing
14	Working Mode 1-->OTO 2-->MANUEL
15	Relay Pulse Duration (Sec)
50	Hour
51	Minute
52	Second
53	Day
54	Month
55	Year

Bağlantı Şeması



Mechanical Dimensions



Device Front View



Device Back View

