SLBT- A1- 100 Wireless Busbar Temperature Monitoring System

Catalogue

1. Introduction:-

SLBT-A1-100 wireless temperature measuring equipment has been developed in compliance with the Specification for Wireless Temperature Measuring equipment, NB/T 42086-2016. It is suitable for 3-35kV indoor switchgear, including built-in, handcart, fixed, and loop-net switchgear. It is also suitable for 0.4kV low-voltage switchgear such as fixed switchgear and drawer switchgear. The wireless temperature sensors can be installed at any heating point in switchgear, the device utilizes the wireless data transmission technology for real-time transmission of monitored temperature data and displays such data on SLBT-A1 100 locally. In addition, it can be networked via the RS485 port for remote intelligent monitoring.

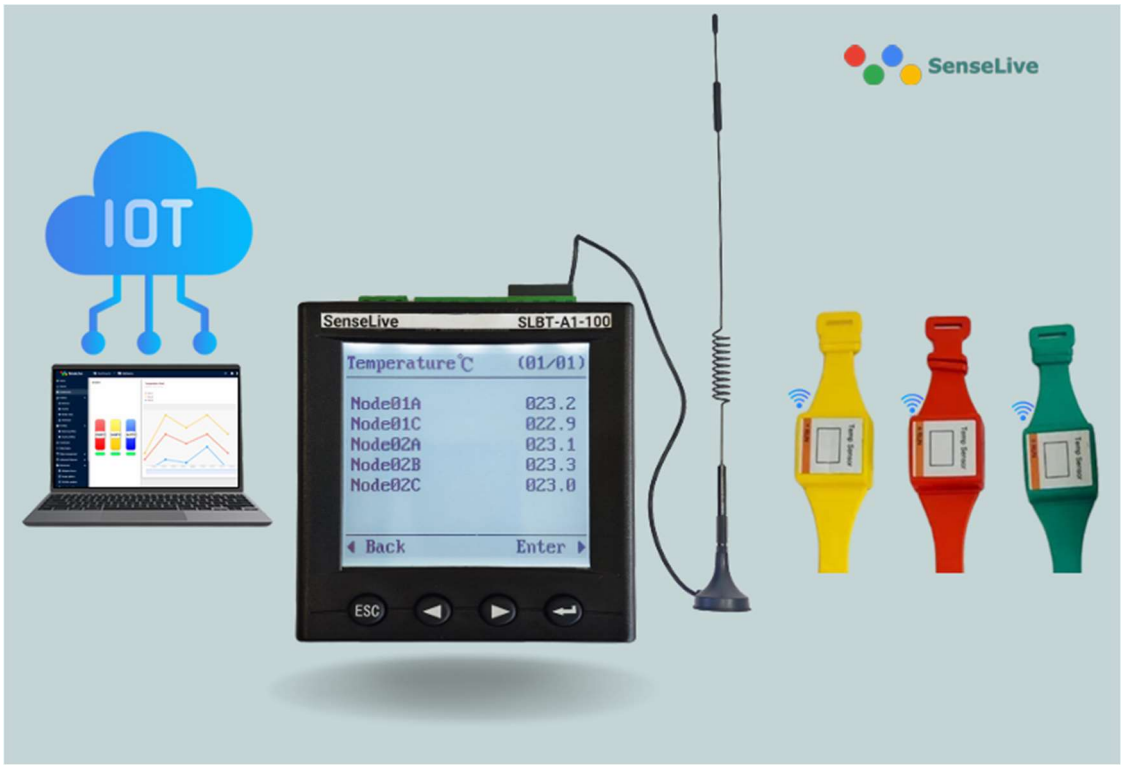
2. Technical Parameters:-

Items		Features
Rated input	Wiring mode	3P3L or 3P4L
	Voltage	100V
	Current	5A
	frequency	50Hz
Accuracy rating	Current, Voltage	0.5 class
	Active power	0.5 class
	Reactive power	0.5 class
	Energy	0.5 class
Power Source		AC85~265V，DC100~300V
Power Consumption		8W
	Protocol	Modbus-RTU

Communication	Baud rate (bps)	2400, 4800, 9600, 19200
Environment	Temperature	-10℃~55℃
	Humidity	≤95%
	Atmospheric pressure	86kPa~106kPa
MTBF		≥50000 h
Active wireless temperature sensor	Wireless frequency	470MHz
	Communication distance	150m 150m in an open area
	Sampling frequency	25s
	Transmitting frequency	25s~5min
	Power source	Battery
	Installation	Magnetic / bolted /Belt
	Range of temperature	-50℃~+125℃
	Precision	±1℃
	Application	Joints in high or low voltage switchgear
	Battery life	≥5 years
Passive wireless temperature sensor	Wireless frequency	470MHz
	Communication distance	150m in an open area
	Sampling frequency	15s
	Transmission frequency	15s

	Power source	CT-powered, starting current≥5A
	Installation	Alloy chip fixing
	Sensor probe	Alloy bottom
	Range of temperature	-50℃~125℃
	Precision	±1℃
	Application	Joints in high or low voltage switchgear
Outdoor wireless temperature sensor	Wireless frequency	470MHz
	Communication distance	150m 150m in open area
	Sampling frequency	25s
	Transmitting frequency	25s~5min

3. Hardware connection:-



4. DI configuration:-

- The device provides 4 digital inputs, that can connect to the auxiliary contact of the breaker.
- The device works after the power is on. If the digital input contact is closed, the DI is “1” on the DI Status interface.
- When the digital input contact is open, the DI is “0” on the DI Status interface.

5. Relay configuration:-

Relay output includes sensor group 1 high temperature, sensor group 1 over temperature, sensor group 2 high temperature, sensor group 2 over temperature, sensor group 3 high temperature, sensor group 3 over temperature, sensor group 4 high temperature, sensor group 4 over temperature, sensor group 5 high temperature, sensor group 5 over

temperature, sensor group 6 high temperature, sensor group 6 over temperature. The high-temperature alarm is the first relay output, and the over-temperature alarm is the second relay output.

➢ Notice: it is valid only when the “Node Enable” of the sensor group is “ON”!

6. Wireless Receiver:-

Set the high-temperature values and over-temperature values of wireless temperature sensor groups. When measured temperature values exceed the setting values, the relay output contact will be closed.

7. RS485 communication

- **Read State (Function code 02H):-**

For example, the master send the data frame:

		Register Addr		Register Count		CRC16	
		Hi	Lo	Hi	Lo	Hi	Lo
01H	02H	00H	00H	00H	30H	78H	1EH

Slave answer data frame:

Addr	Fun	Byte count	Data 1		Data 2		Data 3		CRC16	
			Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
01H	02H	06H	00H	00H	00H	00H	00H	FCH	E0H	F8H

- **Read Data (Function code 03H/04H):-**

For example, master send data frame:

		Register Addr	Register Count	CRC16

Addr	Fun	Hi	Lo	Hi	Lo	Hi	Lo
01H	03H	00H	30H	00H	03H	05H	C4H

Slave answer data frame:-

Addr	Fun	Byte count	Data 1		Data 2		Data 3		CRC16	
			Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
01H	02H	06H	00H	00H	00H	00H	00H	00H	21H	75H

- **Preset Single Register (Function code 06H):-**

For example, the master send the data frame:-

Addr	Fun	Register Addr		Value		CRC16	
		Hi	Lo	Hi	Lo	Hi	Lo
01H	06H	00H	03H	03H	E8H	74H	79H

Slave answer data frame:-

Addr	Fun	Register Addr		Value		CRC16	
		Hi	Lo	Hi	Lo	Hi	Lo
01H	06H	00H	03H	03H	E8H	74H	79H

- **Preset Multi Registers (Function code 10H):-**

For example, the master sends the data frame:-

Addr	Fun	Register Addr		Register Count		Byte Count	Value 1		Value 2		CRC16	
		Hi	Lo	Hi	Lo		Hi	Lo	Hi	Lo	Hi	Lo
01H	10H	00H	03H	00H	02H	04H	00H	28H	00H	64H	59H	32H

Slave answer data frame:-

Addr	Fun	Register Addr		Register Count		CRC16	
		Hi	Lo	Hi	Lo	Hi	Lo
01H	10H	00H	03H	00H	02H	B1H	C8H

8. Parameter Address Table:-

Address	Parameter	Attribute	Range	Data type
10001~10002	Relay Output	R	DO1, DO2	bit*2
10003~10006	Digital Input	R	DI1, DI2, DI3, DI4	bit*4
10007~10066	High temperature	R	0-normal, 1-alarm, Node1A~Node 20C high temperature	bit*60
10067~10126	Over temperature	R	0-normal, 1-alarm, Node1A~Node 20C over temperature	bit*60
10127~10146	Node Enable	R	0-OFF, 1-ON, Node 1~Node 20 enable for relay output alarm	bit*20
10147~10152	Reserved	R	Reserved for filling full byte	bit*6
30001	Address	R/W	001-247	Word

30002	Baud rate	R/W	2400、4800、9600、19200	Word
30003	Backlight time	R/W	000-999s, 000 is for lighting on all the time	Word
30004	cycling time	R/W	000-999s, 000 is for normal display	Word
30005	Relay Output	R/W	bit0~bit1: high temperature alarm, over temperature alarm	word
30006	Digital Input	R	bit0-bit3：DI1-DI4。	Word
30007	High temperature Alarm state 1	R	0-normal, 1-alarm. bit0~bit14: Node1A~Node 5C high temperature	Word
30008	High temperature Alarm state 2	R	0-normal, 1-alarm. bit0~bit14: Node6A~Node	Word
			10C high temperature	
30009	High temperature Alarm state 3	R	0-normal, 1-alarm. bit0~bit14: Node11A~Node 15C high temperature	Word
30010	High temperature Alarm state 4	R	0-normal, 1-alarm. bit0~bit14: Node16A~Node 20C high temperature	Word
30011	Over temperature Alarm state 1	R	0-normal, 1-alarm. bit0~bit14: Node1A~Node 5C over temperature	Word
30012	Over temperature Alarm state 2	R	0-normal, 1-alarm. bit0~bit14: Node6A~Node 10C over temperature	Word
30013	Over temperature Alarm state 3	R	0-normal, 1-alarm. bit0~bit14: Node11A~Node 15C over temperature	Word
30014	Over temperature Alarm state 4	R	0-normal, 1-alarm.bit0~bit14: Node16A~Node 20C over temperature	Word

30015	Node Enable 1	R/W	Node enable for relay output alarm: 0-OFF, 1-ON; bit0~bit9: Node 1~Node 10.	Word
30016	Node Enable 2	R/W	Node enable for relay output alarm: 0-OFF, 1-ON; bit0~bit5: Node 11~Node 20.	Word
30017 ~30056	Wireless temperature sensor alarm temperature value	R/W	Alarm temperature value: Node1 HighTemp, Node1 OverTemp ~ Node20 OverTemp, Node20 OverTemp, default: HighTemp 60.0, OverTemp 80.0; Range: 0~125.0 (×10)	Word* 40
30057~ 30116	Wireless temperature sensor value	R	Node temperature value: Node1A~Node20C; range: 0~125.0 (×10)	Word* 60
30117[4]	Ambient temperature	R	Ambient temperature: ATC300 ambient temperature value; Range: -50~85.0 (×10)	Word
30118~ 30124[5]	Time parameter	R/W	Time：year, month, day, hour, minutes, second, millisecond; Range: year 2000~2050, other parameters are normal	Word* 7
30125[6]	Compare temperature Alarm state 1	R	0-normal, 1-alarm. bit0~bit14: Node1A~Node 5C compare temperature	Word
30126[6]	Compare temperature Alarm state 2	R	0-normal, 1-alarm. bit0~bit14: Node6A~Node 10C compare temperature	Word
30127[6]	Compare temperature Alarm state 3	R	0-normal, 1-alarm. bit0~bit14: Node11A~Node 15C compare temperature	Word
30128[6]	High temperature Alarm state 4	R	0-normal, 1-alarm. bit0~bit14: Node16A~Node 20C compare temperature	Word
30129~ 30148[6]	Wireless temperature sensor alarm temperature	R/W	Alarm temperature value: Node1 Compare Temp~ Node20 Compare Temp, default: High Temp 10.0,	Word*

	value			20
30149~30208	ID Wireless temperature sensor ID	R	Node1A~Node20C wireless temperature sensor ID, in hexadecimal number	Word*60
30209-30210[7]	Phase voltage	R	Primary Side:0.0~99999999.99KV (V) [8]	Float
30211-30212[7]	Phase voltage	R	Primary Side:0.0~99999999.99KV(V) [8]	Float
30213-30214[7]	Phase voltage	R	Primary Side:0.0~99999999.99KV (V) [8]	Float
30215-30216[7]	Line voltage UAB	R	Primary Side:0.0~99999999.99KV(V) [8]	Float
30217-30218[7]	Line voltage UAB	R	Primary Side:0.0~99999999.99KV (V) [8]	Float
30219-30220[7]	Line voltage UCA	R	Primary Side:0.0~99999999.99 KV(V) [8]	Float
30221-30222[7]	Ia	R	Primary Side:0.0~99999999.99	Float
30223-30224[7]	Ib	R	Primary Side:0.0~99999999.99	Float
30225-30226[7]	Ic	R	Primary Side:0.0~99999999.99	Float
30227-30228[7]	PA	R	0.0~99999999.99KW(W)[8]	Float
30229-30230[7]	PB	R	0.0~99999999.99KW(W)[8]	Float

30231-30232[7]	PC	R	0.0~99999999.99KW(W)[8]	Float
30233-30234[7]	P P total	R	0.0~99999999.99KW(W)[8]	Float
30235-30236[7]	QA	R	0.0~99999999.99Kvar(var)[8]	Float
30237-30238[7]	QB	R	0.0~99999999.99Kvar(var)[8]	Float
30239-30240[7]	QC	R	0.0~99999999.99Kvar(var)[8]	Float
30241-30242[7]	Q Q total	R	0.0~99999999.99Kvar(var)[8]	Float
30243-30244[7]	PFA	R	0.0~1.0	Float
30245-30246[7]	PFB	R	0.0~1.0	Float
30247-30248[7]	PFC	R	0.0~1.0	Float
30249-30250[7]	PF PF total	R	0.0~1.0	Float
30251-30252[7]	SA	R	0.0~99999999.99KVA(VA)[8]	Float
30253-30254[7]	SB	R	0.0~99999999.99KVA(VA)[8]	Float
30255-30256[7]	SC	R	0.0~99999999.99KVA(VA)[8]	Float

30257-30258[7]	S S total	R	0.0~99999999.99KVA(VA)[8]	Float
30259-30260[7]	Frequency Freq	R	45.0~65.0	Float
30261-30262[7]	Electrical energy (Hi16)	R	0.0~99999999.99KWh	Float
30263[7]	Electirc uint set	R/W	Electirc uint setting：0-KV,1-V	Word
30264[7]	Line mode set	R/W	Electirc uint setting：0-3P3W,1-3P4W	Word