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Multi-Channel Data Loggers



User's Manual

Microedge Instruments Inc. 404 - 1688 152nd Street Surrey, BC Canada, V4A 4N2 Toll Free: 1.877.352.9158 www.microedgeinstruments.com

About this Manual

This manual contains operational information for Site-Log Data Loggers. Please read this manual before using the data loggers.

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Microedge Instruments Inc.

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Conditions of Sale and Product Warranty

Microedge Instruments Inc. (MEI) and the Buyer agree to the following terms and conditions of Sale and Purchase:

1. Limited Warranty.

MEI warrants its product(s) to be free from defects in materials and workmanship for a period of one year from the date of registered purchase. Any unit which is found to be defective will, at the discretion of MEI, be repaired or replaced.

MEI will not be responsible for the repair or replacement of any unit damaged by user modification, negligence, abuse, improper installation, or mishandling.

MEI reserves the right to alter any feature or specification at any time.

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Extended 2-year warranty service is available to purchase on new products at time of order entry and up to ninety days thereafter. The extended warranty protects you from unbudgeted service expenses and provide additional 2 years of protection at a fraction of the price of a repair.

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Defective Product Return:

A Buyer may return a defective product to MEI for repair or replacement, at MEI option, in the event MEI determines that the product is defective. The defective product must be returned to MEI within the warranty period. The Buyer shall be responsible for all shipping costs. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days.

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Products that are not defective may be returned to MEI within 30 days from the date of shipment. All non-defective product returns are subject to a 20% restocking fee. If the product is unsatisfactory for the application for which it was purchased, MEI shall, at its option, either refund the purchase price paid by the Buyer or replace the product with one that is satisfactory for the application. The Buyer shall be responsible for all shipping costs and restocking fee determined by MEI.

Method of Return:

Prior to returning the product, completely fill out the RMA Application Form, send it to MEI or contact MEI directly for a Return Material Authorization number. All products returned to MEI must be securely packaged in the original shipping materials and reach MEI without damage and shipped in accordance with Applicable laws, rules, and regulations. The products must contain all software and accessories that were shipped to the Buyer in connection with the product.

5. MEI reserves the right to alter any feature or specification at any time.

Notes to Buyer:

If you disagree with any of the above terms or conditions you should promptly return the unit to the manufacturer or distributor within 30 days from date of purchase.

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1. Introduction

1.1 Features of the logger

Congratulations on purchasing the Site-Log series data loggers! These portable battery powered data loggers allow recording information and saving measurements to a 4MB flash memory for later retrieval.

The internal lithium battery provides up to 5 years (for LRHT-1/2 and LPSE-1) / 10 years (for all other models) of instantaneous logging operation when sampling at interval of one minute.

Site-Log data logger can be manipulated by SiteView Windows software for data downloading, logging management, and property configuration. It has both TTL-compatible serial port and USB interface for different communications requirements.

Site-Log data logger features a wide sampling interval range from 20 milliseconds to 12 hours (LRHT-1/2 from 1 second to 12 hours), providing alternative to data acquisition devices and paper chart recorders.

Site-Log data logger provides alarm outputs controlled by the low and high programmable alarm thresholds of each enabled channel. The alarm control outputs can be used to turn on/off external alarm devices such as strobe lights, sirens or alarm telephone diallers.

Site-Log data logger (except LRHT-1/2) also has an excitation control output used to switch the power supply of the external transducer/transmitter.

Site-Log data logger (except LRHT-1/2 and LPSE-1) contains one internal thermistor channel, and seven external process signal channels. The 16-bit analog-to-digital converter makes the measurements more precise and accurate.

Site-Log data logger also has a rugged, splash resistant aluminum enclosure and internal electronics are protected against moisture ingress by conformal coating.

1.2 Approvals

CE

All Site-Log Series data loggers are in conformity with the EN standard(s) listed below:

EN 61000-6-2:[2005] General standards – Immunity for industrial environments

EN 61000-6-3:[2007] General standards – Emission standard for residential, commercial and lightindustrial environments

following the provisions of the following directive(s)

☑ 2004/108/EC Electromagnetic compatibility (EMC)



All Site-Log Series data loggers comply with Part15 of the FCC Rules. Operation is subject to the following two conditions:

- 1. These devices may not cause harmful interference, and
- 2. These devices must accept any interference received, including interference that may cause undesired operation.

1.3 Care of the logger

Although the Site-Log data loggers are weather resistant, the loggers are designed to work in humid atmospheres of up to 95% RH non-condensing. They should be protected against immersion. The environment temperature should be within -40 to $+70^{\circ}$ C (-40 to $+158^{\circ}$ F).

1.4 Identity of the logger

Each logger has its own unique serial number, which can be found on the back of the enclosure. The serial number is used to identify the logger and enable us to keep a record of its history like calibrations and warranty. Please reference it in any correspondence with MEI.

1.5 Battery

The battery lasts in excess of 10 years (5 years for LRHT-1/2, LPSE-1) when sampling at 1minute intervals. When the battery is nearing the end of its service life, the on-board status LED will glow in amber each time the logger is sampling the data. The battery indicator on the status window in SiteView software will also display warning of low battery level. The battery operates approximately one or two weeks from the time the logger first indicates a low battery, but we recommend that the battery be changed as soon as the warning is displayed. The battery is factory replaceable only.

1.6 Recalibration

Any Site-Log data logger is supplied with all channels pre-calibrated and should not require any further recalibration for a period of 12 months.

We recommend the logger be recalibrated every year. You may recalibrate the logger longer than a year depending on your application standard.

You may return the logger to the supplier for recalibration service or recalibrate it on your own via SiteView software.

SiteView software provides two-point calibration for the most of the loggers.

1.7 Safety Warning

Maximum Input Voltage Range

For logger model: LPV-1/LPVB-1, LPM-1/LPMB-1, LPTH-1, LPTM-1, LFV-X, LFVB-X: The logger is designed to measure single common ground DC voltages in the range up to 20 VDC. Any voltages over this range may cause permanent damage to the device.

For logger model: LPSE-1:

The logger is designed to measure single common ground DC voltages in the range up to 40 VDC. Any voltages over this range may cause permanent damage to the device.

Maximum Input Current Range

For logger model: LPC-1/LPCB-1, LPM-1/LPMB-1, LFC-X, LFCB-X: The logger is designed to measure single common ground DC current in the range up to 50 mA. Any current over this range may cause permanent damage to the device.

External Power Supply

When using external power supply (via USB, Serial Port, Device Server, or thirty party +5 VDC power supply) to power the logger please make sure that the external power supply has the same common ground with the external input process signals.

When using other third party external power supplies, please make sure the voltage of the external power supply is +5 VDC (+/- 5% ripple).

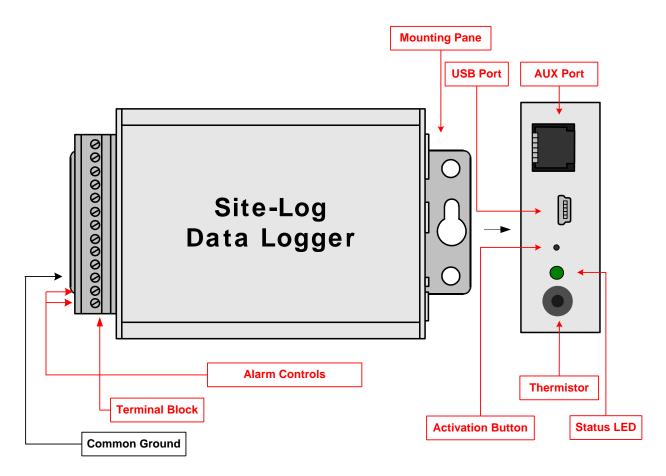
Grounding

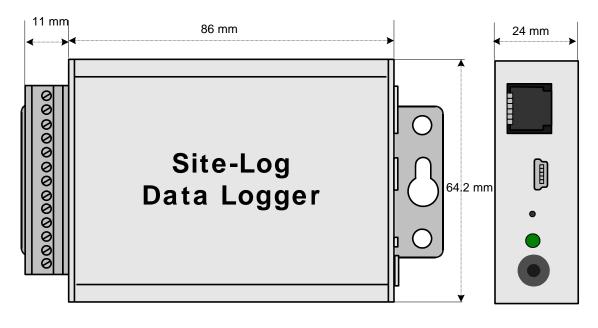
The common ground of the Site-Log data logger is connected directly to the ground of the input process signals and the ground of the external power supply (if applicable).

2. Hardware & Mechanical Dimension

Logger Diagram:

For Model LPV-1, LPVB-1, LPC-1, LPCB-1, LPM-1, LPMB-1, LPTM-1, LPTH-1, LPTHB-1, LFV-X, LFVB-X, LFC-X, LFCB-X, LPSE-1, LRTD-X, LRHT-2:

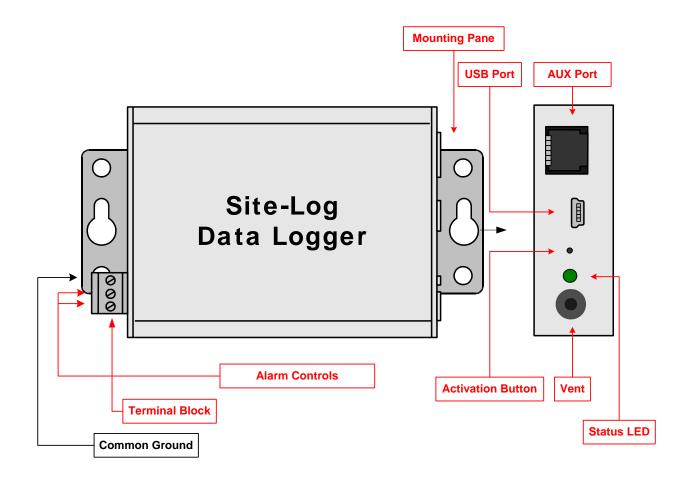


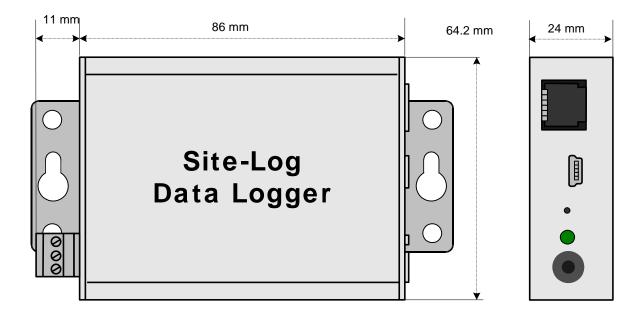


Dimension:

88 X 64.2 X 24 MM 3.46 X 2.53 X 0.95 Inches

Logger Diagram for Model LRHT-1:

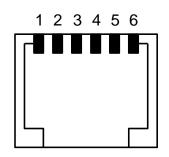






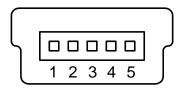
88 X 64.2 X 24 MM 3.46 X 2.53 X 0.95 Inches

AUX Port Pin-out (Face-In)



Pin1: Alarm1 (Same as ALARM1 on the terminal block)
Pin2: External Power Supply (+5 VDC)
Pin3: Logger Communications Receiver Line (RX)
Pin4: Logger Communications Transmitter Line (TX)
Pin5: Common Ground (COM, GND)
Pin6: Alarm2/Excitation (Same as A2/EXT on the terminal block)

USB Port Pin-out (Face-In)



Pin1: External Power Supply (+5 VDC)Pin2: Logger Communications Receiver Line (RX)Pin3: Logger Communications Transmitter Line (TX)Pin4: Common Ground (COM , GND)

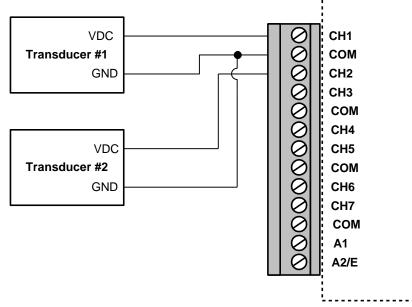
3. Channels and Sensor connections

All Site-Log data loggers except LRHT-1/2 and LPSE-1 have one on-board thermistor located beside the status LED.

All "COM" terminals are connected together and should be connected to the common ground of the process signals.

LPV-1 /LPVB-1 – Voltage Inputs, Programmable Range

Besides the on-board thermistor channel, the LPV-1/LPVB-1 logger has seven external voltage DC channels used to measure single-ended voltage DC signals maximum of 20 volt. The following figure illustrates the correct input connections:



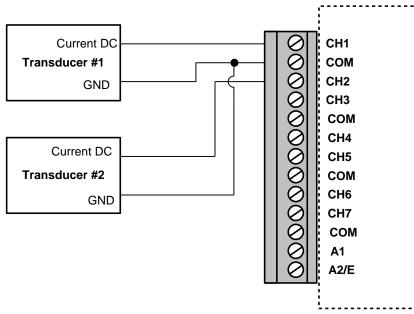
Voltage External Input Connections

Note: All inputs must share the same common ground.

Compositions	Diversible terminal block for seven external shannels, excitation
Connections:	Pluggable terminal block for seven external channels, excitation
	controls and alarm outputs
Channels:	CH0: on-board thermistor $(-40 \sim +70^{\circ}\text{C})$ $(-40 \text{ to } +158^{\circ}\text{F})$.
	CH1 to CH7: Seven external Voltage DC with software
	programmable input range selections for each channel:
	0 to 20 V, -5 to +5V
Resolution:	0.0018%
Accuracy:	Thermistor channel: $+/- 0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$
	Voltage channels:
	For LPV-1:
	+/- 0.15% @ 25°C from 0.1Vand up
	+/- 0.5% @ 25°C from 0 – 0.1V
	For LPVB-1::
	+/- 0.05% FSR @ 25°C
Input Impedance:	> 1 Mohms
Over-voltage protection:	For LPV-1: up to -3 VDC and +40 VDC
	For LPVB-1: +/- 40 VDC

LPC-1/LPCB-1 – Current Inputs, Range Programmable

Besides the on-board thermistor channel, LPC-1/LPCB-1 logger has seven external current DC channels used to measure single-ended current DC signals maximum of 50 mA. The following figure illustrates the correct input connections:



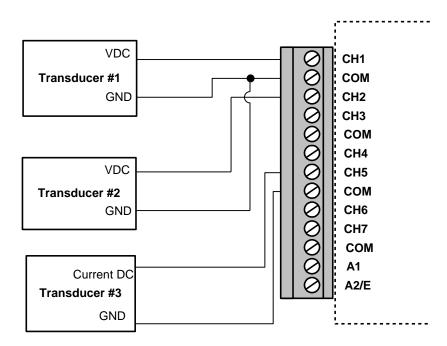
Current External Input Connections

Note: All inputs must share the same common ground.

Connections:	Plugeable terminal block for seven external channels, excitation			
	controls and alarm outputs			
Channels:	CH0: One on-board thermistor $(-40 \sim +70^{\circ}\text{C})$ $(-40 \text{ to } +158^{\circ}\text{F})$.			
	CH1 to CH7: Seven external current DC with software			
	programmable input range selections for each channel:			
	4-20 mA, 50 mA			
ADC Resolution:	0.0018%			
Accuracy:	Thermistor channel: $\pm - 0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$			
	LPC-1 $4 - 20$ mA channel:			
	+/- 0.15% FSR @ 25°C			
	LPC-1 50mA channel:			
	+/- 0.15% @ 25°C from 2.5 – 50 mA			
	+/- 0.5% @ 25°C from 0 – 2.5 mA			
	LPCB-1 current channel: +/- 0.1% FSR @ 25°C			
Load Resistance:	12 Ohm			
Over-current Protection	+/- 100 mA			

LPM-1/LPMB-1 – Voltage & Current Inputs, Range Programmable

Besides the on-board thermistor channel, LPM-1/LPMB-1 logger has seven external voltage and current channels. The first four external channels are used to measure single-ended voltage maximum of 20 VDC and the remaining three external channels are used to measure single-ended current DC signals maximum of 50 mA. The following figure illustrates the correct input connections:



Voltage and Current External Input Connections

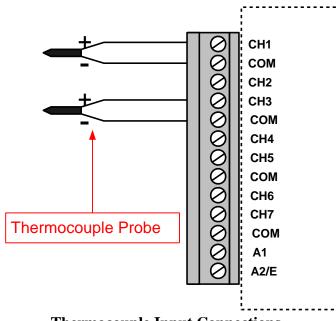
Note: All inputs must share the same common ground.

Connections:	Plugeable terminal block for seven external channels,
	excitation controls and alarm outputs
Channels:	CH0: One on-board thermistor $(-40 \sim +70^{\circ}\text{C})$ $(-40 \text{ to } +158^{\circ}\text{F})$. CH1 to CH4: External voltage DC with software programmable input range selections for each channel: 0 - 20 V-5 to +5 V
	CH5, CH6, CH7: External current DC with software programmable input range selections for each channel: 4-20 mA, 50 mA
Resolution:	0.0018%

Accuracy:	Thermistor channel: +/- $0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$			
	LPM-1 voltage channels: +/- 0.15% @ 25°C from 0.1V and up, +/- 0.5% 0 – 0.1V @ 25°C.			
	LPMB-1 voltage channels: +/- 0.05% FSR @ 25°C			
	LPM-1 4 – 20mA current channels: +/- 0.15% FSR @ 25°C			
	LPM-1 50mA channel: +/- 0.15% 2.5 – 50 mA @ 25°C, +/- 0.5% 0 – 2.5 mA @ 25°C			
	LPMB-1 current channels: +/- 0.1% FSR @ 25°C			
Input Impedance:	> 1 Mohms (for CH1 to CH4)			
Load Resistance:	12 Ohm (for CH5, CH6, CH7)			
Over-voltage Protection	For LPM-1: up to -3 VDC and +40 VDC			
	For LPMB-1: +/-40 VDC			
Over-current Protection	+/-100 mA			

LPTM-1 – Thermocouple Inputs, Range Programmable

Besides the on-board thermistor channel, LPTM-1 logger has seven external voltage DC channels used to measure thermocouple probes or small voltage signals. The following figure illustrates the correct input connections:



Thermocouple Input Connections

Note: All inputs must share the same common ground.

Connections:	Plugeable terminal block for seven external channels, excitation
	controls and alarm outputs
Channels:	CH0: on-board thermistor $(-40 \sim +70^{\circ}C)$ (-40 to + 158°F).
	CH1 to CH7: Seven external Voltage DC with software
	programmable input range selections for each channel:
	Range1: -8 to +73 mV
	Range3: -2 to +18 mV
Resolution:	0.0018%
Accuracy:	Thermistor channel: +/- $0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$
	Voltage channels:
	Range:(-8 to +73 mV:
	+/- 0.1% (0.08 mV) @ 25°C + T/C Accuracy
	Range -2 to $+18 \text{ mV}$:
	+/- 0.15% (0.03 mV) @ 25°C + T/C Accuracy
Over-voltage protection:	+/- 20 VDC

Channel and Sensor Specifications:

Measure Temperature:

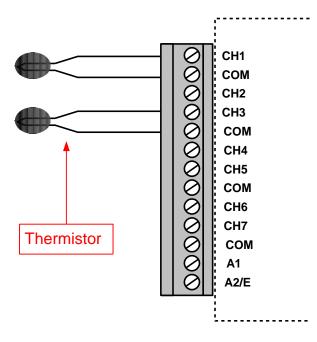
Based on the thermocouple type you want to use and the desired temperature range you want to measure you can select one of four channel's available ranges and the correct factory thermocouple equation:

Channel #	Channel Type/Input Range	Enabled	Description	Equation
0	Thermistor 😽		СНО	Temperature [Temperature]
1 (TC Range1(-8 to +73mV) 💌		CH1	VoltageDC [VoltageDC]
2	TC Range1(-8 to +73mV)		CH2	VoltageDC [VoltageDC]
3	TC Range1(-8 to +73mV) 💌	 Image: A start of the start of	СНЗ	ThermocoupleJ [ThermocoupleJ]
4	TC Range1(-8 to +73mV) 💌	~	CH4	ThermocoupleK [ThermocoupleK]
5	TC Range1(-8 to +73mV) 💌	~	CH5	ThermocoupleT [ThermocoupleT] Digit [ADC Digit Value]
6	TC Range1(-8 to +73mV) 🛛 🔽	~	СН6	Ave5Points Average of Previous 5 P

For detailed temperature range and voltage – temperature look-up table of a specific thermocouple type please refer to NIST's website at: <u>http://srdata.nist.gov/its90/download/download.html</u>

LPTH-1 – Thermistor / Resistor Inputs, Range Programmable

Besides the on-board thermistor channel, LPTH-1/ logger has seven external channels used to measure the external thermistors or resistors. The following figure illustrates the correct input connections:



Thermistor External Input Connections

Note: All inputs must share the same common ground.

Channel and Sensor Specifications:

Connections:	Plugeable terminal block for seven external channels, excitation
	controls and alarm outputs
Channels:	CH0: on-board thermistor (-40 ~ $+70^{\circ}$ C (-40 to + 158°F).
	CH1 to CH7: Seven external thermistor/resistor with programmable
	input range selections for each channel:
	Range1: > 8 Kohms (any type of thermistor)
	Range2: > 2 Kohms and <= 8 Kohms
	Range3: <= 2 Kohms
Resolution:	0.0018%
Accuracy:	Thermistor channel: $+/-0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$
	External channels:
	+/- 0.2% FSR @ 25°C

Measure Resistance:

SiteView provides factory resistance equation for measuring the resistor's value. Based on the range you want to measure you can select either >8 Kohms, between 2 and 8 Kohms or from zero to 2 Kohms. In Configuration dialog:

Channel #	Channel Type/Input Range	Enabled	Description	Equation	Cali. Low	Cali. High
0	Thermistor 😽		Office	Temperature [Temperature]	• 0	0
1	Resistance (>8K) 🛛 🗸 🗸		Lab with Temperature	Resistance [Resistance]	54	-63
2	External Thermistor Resistance (>8K)		CH2	Temperature [Temperature]	/ 39	-11
3	Resistance (8K)		СНЗ	Resistance [Resistance]	 0 	0
4	Resistance (2K)		CH4	Resistance [Resistance]	 0 	0

Change Channel Type/Input Range to the one best fits your measuring range.

Once you selected the right range you choose Resistance equation:

Channel #	Channel Type/Input Rang	е	Enabled	Description	Equation	
0	Thermistor	*	~	Office	Temperature [Temperature]	
1	Resistance (>8K)	~	~	Lab with Temperature	Resistance [Resistance] 🛛 🗸 🗸	
2	External Thermistor	¥	~	CH2	Resistance (Resistance)	
3	Resistance (8K)	¥	 Image: A start of the start of	СНЗ	Ave5Points [Average of Previous 5 Pr CO_200PPM [CO 200 PPM Equation] DewPointEquation [Dew point equatic	
4	Resistance (8K)	¥	 Image: A start of the start of	CH4		
5	Resistance (8K)	¥	 Image: A start of the start of	CH5	ExtThermistor2 [Equation for an exterr PowerConsume [Power consumption]	
6	Resistance (8K)	~	 Image: A set of the set of the	CH6	StraightLine [Custom Line Test]	

Measure Temperature:

To measure temperature of an external thermistor, you need to change the channel type to External Thermistor:

Channel #	Channel Type/Input Range	Enabled	Description	Equation	
0	Thermistor 😽		Office	Temperature [Temperature]	*
1	Resistance (>8K) 🛛 🗸 🗸		Lab with Temperature	Resistance [Resistance]	~
2	External Thermistor Resistance (>8K)		CH2	Temperature [Temperature]	~
3	Resistance (8K)		СНЗ	Resistance [Resistance]	~
4	Resistance (2K)		CUA	D:	

The simple way to measure temperature is by using built-in "Temperature" equation. You select "Temperature" in "Equation" column:

#	Channel Type/Input Rang	je	Enabled	Description	Equation		Cali. Low	Cali. High	Action
0	Thermistor	~		СНО	Temperature	×	0	0	
1	External Thermistor	~	V	СН1	Temperature	Y)	192	-176	Change Coefficients
2	External Thermistor	~	~	CH2	Resistance	~	39	-11	
3	Resistance (8K)	~	~	СНЗ	Resistance	~	10	11	
4	Resistance (8K)	~		CH4	Resistance	~	0	0	
5	Resistance (8K)	~		CH5	Resistance	~	0	0	
6	Resistance (8K)	~		CH6	Resistance	~	0	0	
7	Resistance (8K)	~		CH7	Resistance	~	0	0	

Then you need to change temperature coefficient values by clicking "Change Coefficients" button in "Action" column:

#	Channel Type/Input Range	в	Enabled	Description	Equation		Cali. Low	Cali. High	Action	
0	Thermistor	~		CHO	Temperature	<	0	0		
	External Thermistor	*	V	CH1	Temperature	~	192	-176	Change Coefficients	
2	External Thermistor	¥	~	CH2	Resistance	~	39	-11		
3	Resistance (8K)	~	~	CH3	Resistance	~	10	11		
4	Resistance (8K)	¥		CH4	Resistance	~	0	0		
5	Resistance (8K)	~		CH5	Resistance	~	0	0		
6	Resistance (8K)	¥		CH6	Resistance	~	0	0		
7	Resistance (8K)	~		CH7	Resistance	~	0	0		

In the pop-up dialog enter new temperature coefficient values and click "OK" button.

Thermistor	Coefficients			×
temperatur The Steinh	е.	esistor whose resista tion is widely used fo recision:	-	
T =	a +	1 b ln (R) +	c ln ³ (R)	273.15
Where:	a, band ca	ature in Celsius re called the Steinha e coefficients nce in ohms	rt-Hart parameter	rs also called
logger, you		ature' equation for any cify a, b and c coeffic		stor channel of LPTH-1 an get from the
		r part number you ca nt values for you.	n also send us a	n email and we will
Please e	nter the follo	owing temperature	coefficient va	lues:
a: 0.00146272	1	b: 0.000239215	c: 9.	7E-08
Help		[OK	Cancel

You can also use a custom equation to do the same job or even more complicated calculation. An example of external thermistor equation is included in SiteView package. When you create your own equation you can refer to this equation and replace those temperature coefficients with the ones obtained from the thermistor manufacturer. The contents of the sample equation looks like this:

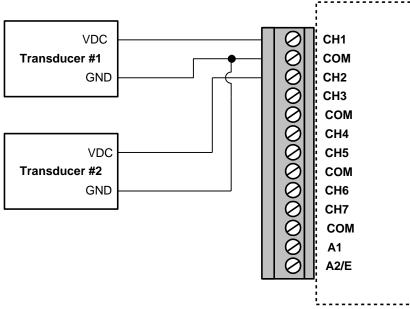
```
1
2
3
  //An example for external thermistor channel.
4 //You may change a,b and c values based on the thermistor spec
5 //Value 'Input' is resistance value
6 public double ExtThermistor2 (double Input)
7
  {
8
9
       double a, b, c, lgr, Output;
10
       //different thermistor will have different a, b, c values
11
       a = 0.001028444;;
12
       b = 0.000239244;
13
       c = 0.00000156;
14
15
       //validation
16
       if(Input <= 0)</pre>
17
           Input = 1;
       //-----
18
19
       lgr = Math.Log(Input);
20
21
         Output = 1f / (a + b * lgr + c * lgr * lgr * lgr) - 273.15f;
22
23
         return Output;
24
25 }
2.6
```

Once you have created your equation (for example YSI2252(YSI thermistor 44004)), you can apply it to the channel:

Channel #	Channel Type/Input Rang	je	Enabled	Description	Equation
0	Thermistor	~	~	Office	Temperature [Temperature]
1	External Thermistor	~	V	Lab with Temperature	Thermistor103J2 [Mytest] 🛛 🗸 🗸
2	External Thermistor	~	 Image: A start of the start of	CH2	DewPointEquation [Dew point equatic ExtThermistor2 [Equation for an exterr
3	Resistance (8K)	¥	 Image: A start of the start of	СНЗ	PowerConsume [Power consumption]
4	Resistance (8K)	¥	 Image: A start of the start of	CH4	StraightLine [Custom Line Test] StrightLineLow [Low Temp]
5	Resistance (8K)	¥	v	CH5	testTemp [Test] Thermistor103J2 [Mytest]
6	Resistance (8K)	¥	v	СН6	YSI2252 [YSI thermistor 44004]

LFV/LFVB Series – Voltage Inputs

Besides the on-board thermistor channel, a LFV/LFVB series logger has seven external voltage DC channels used to measure single-ended voltage DC signals maximum of 20 VDC. The following figure illustrates the correct input connections:



Voltage External Input Connections

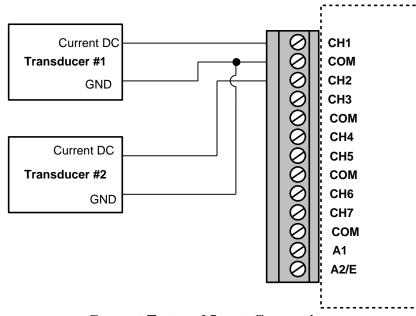
Note: All inputs must share the same common ground.

Connections:	Plugeable terminal block for seven external channels, excitation
connections.	controls and alarm outputs
Channels:	controls and alarm outputs
	On board thermister $(40 + 70^{\circ}C)$ (40 to + 159°E)
CH0:	On-board thermistor $(-40 \sim +70^{\circ}\text{C})$ $(-40 \text{ to } +158^{\circ}\text{F})$.
LFV-1/LFVB-1:	CH1 to CH7: 20 VDC
LFV-2/ LFVB-2:	CH1 to CH7: 10 VDC
LFV-3/ LFVB-3:	CH1 to CH7: 5 VDC
LFV-4/ LFVB-4:	CH1 to CH7: 2 VDC
LFV-5/LFVB-5	CH1: 20 VDC
	CH2: 10 VDC
	CH3: 10 VDC
	CH4: 5 VDC
	CH5: 5 VDC
	CH6: 2 VDC
	CH7: 2 VDC
Resolution:	0.0018%
Accuracy:	Thermistor channel: $\pm - 0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$
	LFV voltage channels:
	+/- 0.15% @ 25°C from 0.1V and up
	+/-0.5% @ 25°C from $0-0.1V$
	LFVB voltage channels:
	+/-0.05% FSR @ 25°C for 20V, 10V, 5V channels
	+/- 0.1% FSR @ 25°C for 2V channels

Input Impedance:	> 1 Mohms
Over-voltage protection:	For LFV-1: up to -3 VDC and +40 VDC
	For LFVB-1: +/- 40 VDC

LFC/LFCB Series – Current Inputs

Besides the on-board thermistor channel, a LFC/LFCB series logger has seven external current DC channels used to measure single-ended current DC signals maximum of 50 mADC. The following figure illustrates the correct input connections:



Current External Input Connections

Note: All inputs must share the same common ground.

Connections:	Plugeable terminal block for seven external channels, excitation controls and alarm outputs
Channels:	
CH0:	On-board thermistor $(-40 \sim +70^{\circ}\text{C})$ $(-40 \text{ to } +158^{\circ}\text{F})$.
LFC-1/LFCB-1:	CH1 to CH7: 4 – 20 mA
LFC-2/ LFCB-2:	CH1 to CH7: 50 mA
LFC-3/LFCB-3:	CH1: 50 mA
	CH2: 50 mA
	CH3: 50 mA
	CH4: 4 – 20 mA

	CH5: 4 – 20 mA
	CH6: 4 – 20 mA
	CH7: 4 – 20 mA
Resolution:	0.0018%
Accuracy:	Thermistor channel: +/- $0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$
	LFC $4 - 20$ mA channel:
	+/- 0.15% FSR @ 25°C
	LFC 50mA channel:
	+/- 0.15% 2.5 – 50 mA @ 25°C, +/- 0.5% 0 – 2.5 mA @ 25°C
	LFCB current channel: +/- 0.1% FSR @ 25°C
Load Resistance:	12 Ohms
Over-current Protection	+/-100 mA

LRHT-1/LRHT-2 – Relative Humidity & Temperature Inputs

LRHT-1 data logger has one on-board sensor for both temperature and humidity measurement. LRHT-2 is same as LRHT-1 except the sensor is housed in an external probe.

Channel and Sensor Specifications:

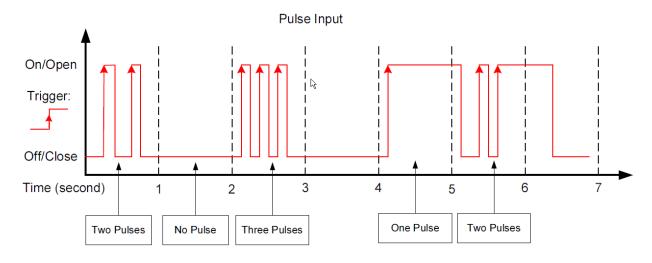
Channels:	CH0: On-board themperature $(-40 \sim +70^{\circ}\text{C})$ (-40 to + 158°F). CH1: On-board relative humidity (0 – 100% RH)
ADC Resolution:	12 bit (1/4096) (0.024%)
Accuracy:	Temperature: +/- 0.4°C at 25°C RH: +/-3% (20 – 80% RH)

LPSE-1 – Pulse/State/Event Inputs

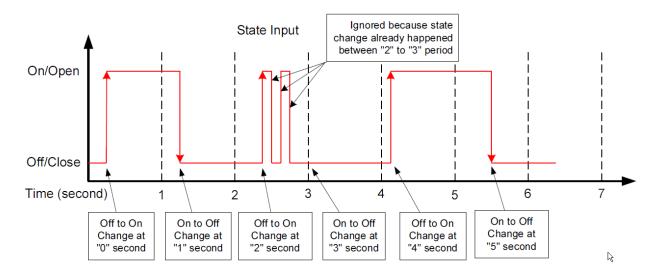
The LPSE-1 logger has seven external digital channels used to measure single-ended or voltage-free pulse count, state change or event signals.

Any channel can be software configured to either pulse, state or event type. Internal Pull-Up of each channel can be enabled if the input signal is voltage-free.

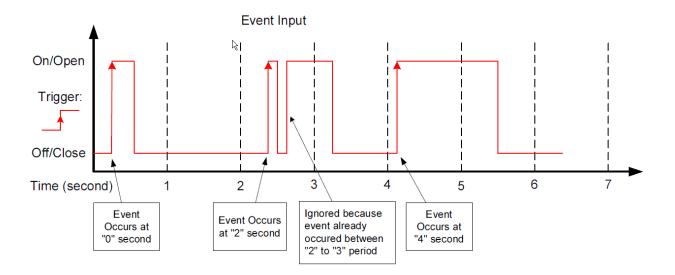
Pulse channel is used to measure and record the pulse signal. It records the total pulse count over the pre-defined sampling interval period and so on. A device with pulse output can be a flow meter, energy meter etc.



State channel is used to detect a state changes. It records the time stamp when a state changed from Off/Close to On/Open and from On/Open to Off/Close . The resolution of the time stamp is the sampling interval. i.e. if a state changed more than once during a sampling interval period only the first state will be recorded (the third period in the diagram below). A typical application is to monitor how long a device is on and off.



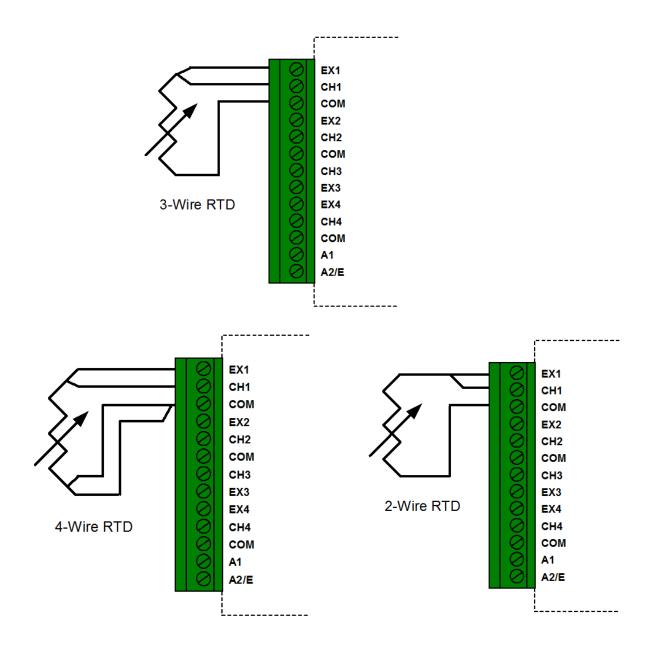
Event channel is used to detect the number of events that occur but not the duration of the event. In each sampling interval period if it detects an event, it saves the event with the time stamp. The resolution of the time stamp is the sampling interval. i.e. if there are more than one events occur during the same sampling interval period it only saves the first event (the third period in the diagram below). A typical application is to monitor rainfall with tipping bucket.



Connections:	Pluggable terminal block for seven external channels, excitation
	controls and alarm outputs
Channels	Seven external channels record state changes, event or pulse
	count.
	Each channel can be configured as either stage, event or pulse
	channel for different applications.
	For Event and Pulse configuration, each channel's trigger
	detection can be configured between Normal Open (High to Low)
	(suggested) and Normal Close (Low to High) (not suggested)
Type of Inputs	Voltage, solid state switch, coil relay, dry contact, digital TTL
	signal.
Max. Pulse Count /	65535 pulse counts
Interval	
Pulse Accuracy	+/- 1 pulse
Max. Pulse Rate	Without external power supply: 10 HZ (20 HZ if only one channel
Max. Pulse Kale	without external power suppry. TO The (20 The finding one channel)
Max. Pulse Kate	enabled)
Max. ruise Kate	enabled)
Max. Pulse Kate	
Minimum Pulse Width	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled)
	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel
	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled) Without external power supply: 35 milliseconds
Minimum Pulse Width	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled) Without external power supply: 35 milliseconds With external power supply: 0.5 milliseconds
Minimum Pulse Width Internal Weak Pull-Up	 enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled) Without external power supply: 35 milliseconds With external power supply: 0.5 milliseconds 100 KOhms. Switch on/off by software
Minimum Pulse Width Internal Weak Pull-Up Input Impedance	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled) Without external power supply: 35 milliseconds With external power supply: 0.5 milliseconds 100 KOhms. Switch on/off by software >= 1MOhm
Minimum Pulse Width Internal Weak Pull-Up Input Impedance Maximum Input	enabled) With external power supply : 2 KHZ (4 KHZ if only one channel enabled) Without external power supply: 35 milliseconds With external power supply: 0.5 milliseconds 100 KOhms. Switch on/off by software >= 1MOhm

LRTD-1 (for PT100), LRTD-2 (for PT500), LRTD-3 (for PT1000) RTD Inputs

Besides the on-board thermistor channel, LRTD-1/2/3 logger has four external channels used to measure the external RTD sensors. The following figure illustrates the correct input connections:



Channel and Sensor Specifications:

Connections:	Plugeable terminal block for four external channels, excitation	
	controls and alarm outputs	
Channels:	CH0: on-board thermistor (-40 \sim +70°C (-40 to + 158°F).	
	CH1 ~ CH4: three-wire/two-wire RTD.	
	LRTD-1: 20 ~ 400 Ohms (-200°C ~ 850°C)	
	LRTD-2: 90 ~ 1650 Ohms (-200°C ~ 630°C)	
	LRTD-3: 185 ~ 3300 Ohms (-200°C ~ 630°C)	
	Built-in equations for TCR 0.00385 and 0.00392	
Resolution:	0.0018% (PT100: 0.02°C, PT500,1000: 0.015°C)	
Accuracy:	Thermistor channel: $+/- 0.2^{\circ}C(0^{\circ}C \sim 70^{\circ}C)$	
	RTD channels: +/- 0.015% @ 25°C	
	LRTD-1: +/-0.16°C @ 25°C	
	LRTD-2/3: +/-0.13°C, @ 25°C	

Choose Right Equation for RTD Sensors:

SiteView provides two factory RTD equations for measuring the temperature values:

RTD_TCR385:

This equation is for RTD sensor (PT100, PT500, PT1000) with TCR 0.00385 $\Omega/\Omega/^{\circ}$ C between 0 and 100°C. The temperature coefficients are: A: 3.9083E-3 B: -5.775E-7 C: -4.183E-12

RTD_TCR392:

This equation is for RTD sensor (PT100, PT500, PT1000) with TCR 0.00392 $\Omega/\Omega/^{\circ}$ C between 0 and 100°C. The temperature coefficients are: A: 3.9848E-3 B: -5.87E-7 C: -4E-12

SiteView also provides a custom equation called **RTDEquation** in case a RTD sensor has different characteristics. The sample code looks like below and you can change TMAX, TMIN, A, B, C and R0 to make it suit for your application:

```
A custom equation for any RTD sensor
11
     Please change the following parameters based on the RTD types
11
const double TMAX = 850; //maximum temperature range in degree C
const double TMIN = -200; //minimum temperature range in degree C
//temperature coefficients. Change them accordingly
const double A = 3.9083E-3;
const double B = -5.775E-7;
const double C = -4.183E-12;
//resistance value in OHM at zero degree C
const double R0 = 100;
//A custom equation. Do not change equation name. Equation must return a value.
public double RTDEquation(double Input)
{
    //Input is resistance in Ohm
    double r = Input;
```

```
double t;
    double rtst;
    double tindex;
    int loop = 0;
    tindex = (TMAX - TMIN) / 4;
    t = (TMAX + TMIN) / 2;
    rtst = T2R(t);
   while (0.9999999999 * r > rtst || rtst > 1.000000001 * r)
    {
        if (rtst < r) t += tindex;</pre>
        if (rtst > r) t -= tindex;
        tindex /= 2;
        rtst = T2R(t);//call helping function for resistance in OHM
        //make sure no infinite loop if the value is out of the range
        if (loop++ > 40)
            break;
    }
    return t; //always return value in degree C
}
//helping function
double T2R(double t)
{
   double r;
   // if t < 0
   if (t < 0)
       r = R0 * (1 + A * t + B * Math.Pow(t, 2) + C * (t - 100) * Math.Pow(t, 3));
    // if t >= 0
    else
        r = R0 * (1 + A * t + B * Math.Pow(t, 2));
    return r;
}
```

4 Basic Functions

Built-In Equations

Equation and Channel Type are two essential parameters to make sure the physical measurement can be converted correctly.

An equation is a software functionality identified by its name of up to 16 characters. A built-in equation is an equation provided by SiteView software to convert a measurement for a specific channel type.

A channel must have an equation assigned to it in order to make the measurement conversion.

"Digit" built-in equation can be assigned to any channel type. If you assign "Digit" equation to a channel the physical measurement will be the original digital value measured by ADC (Analog-to-digital converter) hardware.

Channel Type	Equation Name	Equation Description	
Internal-Thermistor	Temperature	Temperature	
External-Thermistor	Temperature	Temperature	
0-2 VDC	VoltageDC	Voltage DC	
0-5 VDC	VoltageDC	Voltage DC	
0-10 VDC	VoltageDC	Voltage DC	
0-20 VDC	VoltageDC	Voltage DC	
-5 to +5 VDC	VoltageDC	Voltage DC	
4-20 mA DC	CurrentDC	Current DC	
0-50 mA DC	CurrentDC	Current DC	
Thermocouple	ThermocoupleE	Thermocouple E	
Range:	ThermocoupleJ	Thermocouple J	
-8 to +73 mV	ThermocoupleK	Thermocouple K	
	ThermocoupleN	Thermocouple N	
	ThermocoupleT	Thermocouple T	
	VoltageDC	Voltage DC	
Thermocouple	ThermocoupleB	Thermocouple B	
Range:	ThermocoupleE	Thermocouple E	
-2 to +18 mV	ThermocoupleJ	Thermocouple J	
	ThermocoupleK	Thermocouple K	
	ThermocoupleN	Thermocouple N	
	ThermocoupleR	Thermocouple R	
	ThermocoupleS	Thermocouple S	
	ThermocoupleT	Thermocouple T	
	VoltageDC	Voltage DC	

The following table lists all available built-in equations for all channel types:

Thermistor Range1:	Temperature	Default external thermistor
> 8 Kohm		type.
	Resistance	Any resistor with range
		bigger than 8 Kohm
Thermistor Range2:	Resistance	Any resistor with range:
> 2 Kohm and ≤ 8		Between 2 to 8 Kohm
Kohm		
Thermistor Range3:	Resistance	Any resistor below 2 Kohm
<= 2 Kohm		
Relative Humidity	RelativeHumidity	Relative Humidity
(RHT-1)		
Temperature(RHT-1)	Temperature	Temperature
Pulse	Pulse	Pulse
Event	Event	Event
State	State	State
RTD	RTD_TCR385	For TCR of 0.00385
	RTD_TCR392	For TCR of 0.00392

Measuring & Logging

During the session of logging, when it's time to sample, Site-Log data logger measures the signal of each enabled channel, converts it to digital value and saves to the on-board memory.

Site-Log data logger uses a group of preset parameters to decide when and how to take in data and save it to the memory. Those parameters can be configured by SiteView software and their definitions are given as below:

Start Time:

This parameter specifies the date and time when the logger starts the session of logging.

End Time:

This parameter specifies the date and time when the logger will stop the session of logging. This value may be overridden by **Logging Mode** parameter. . If **Logging Mode** was set to **Continue Logging**, the **Start Time** and the **End Time** will be shifted forward.

Sampling Interval:

This parameter specifies the time span the logger will wait after it takes the first sample and before it takes the second sample.

If the logger is configured with a sampling interval faster than one second, it will operate in fast sampling mode. When a logger is in fast sampling mode, it has the following conditions:

- 1. The logger needs external power supply (supplied by USB or AUX port) for the logging period.
- 2. Any communications with the logger will interrupt its operation and stop the recording.
- 3. The number of enabled channels depends on the sampling intervals:
 - 1 channel with 20 ms interval
 - 2 channels with 30 ms interval
 - 8 channels with 40 ms or bigger interval

Logging Mode:

This parameter specifies if the logger will stop or continue logging when the memory is full. Available settings are **Stop Logging** and **Continue Logging**.

If **Logging Mode** was set to **Stop Logging**, the logger will stop logging at the **End Time**. If **Logging Mode** was set to **Continue Logging**, the logger will continue logging and the oldest data will be overwritten by the new data.

Downloading Data

The data in the logger can be transferred to the computer by SiteView software. If the logger is not in **Fast Sampling** mode, the data can be downloaded any time even when the logger is still recording. If the logger is in **Fast Sampling** mode, downloading the data will make the logger stop logging at the time when it received the downloading command.

The readings saved in the logger are ADC digital values, and will be converted to physical measurements by SiteView software after they are downloaded to the computer. The data conversion is handled by an equation that may be embedded in SiteView software or a script provided by the user.

Field Activation

Site-Log data logger comes with an on-board activation button which can be used to activate/initiate the logging session in the field.

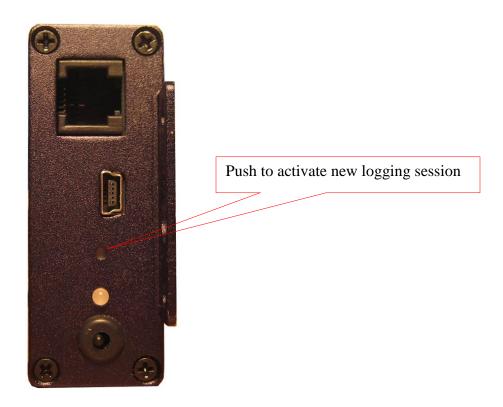
To activate the logger for new session:

1. With the SiteView software, open the configuration dialog of the logger, and set the start time to any time the desired start time will never reaches. Click **OK** button to save new settings to the logger.

Time to Start:	
07/08/2010, 4:11:44 PM	~
Time to End:	\mathbb{R}
18/09/2010, 4:31:44 PM	~



2. The logger is now in **Start Delay** mode. When you need to activate the logger, press and hold the Activation button on the logger. When you see the status LED starts to flash release the button. The logger is now activated and is recording data.



Field Activation

Note: The activation button cannot be further activated once the logger has started the new session.

Reset Device

The on-board activation button can also be used as a reset button in case the data logger does not respond to the PC communications.

Reset of CPU will cause the data and clock losses. Please reconfigure the logger after the recovery.

To reset the CPU, press and hold the activation button, the LED starts to blink in RED color with interval of one second. After 10 seconds the LED starts quick blinking to indicate it will reset the CPU. Release the button when you see this. Then plug the logger to USB port of PC, Site View should show it under the USB comm Tab.

Status LED

Site-Log logger has an on-board LED used to indicate:

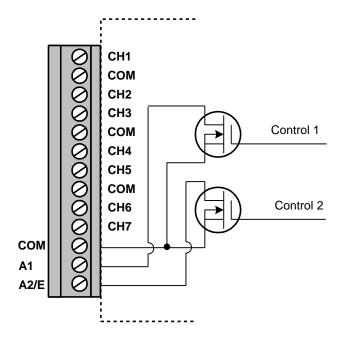
- Sampling: When the LED was enabled by SiteView, it will flash once in green when the logger is sampling. The colour of the LED can be overridden by the following conditions:
- Alarms: The LED will flash in red when it samples if any channel alarms are enabled and are triggered.
- 3. Low Battery: The LED will flash in amber when it samples if the logger detects a low battery level.

If you do not need the LED to indicate the status of operation you can disable it (via SiteView) in order to increase the battery life.

Alarm1 & A2/EXT Terminals

Alarm1 and A2/EXT terminals internally connect to the on-board N-channel MOSFET switches. They can be used to control an external power supply to turn on/off devices like lamp, strobe light or siren, or coil relays. The maximum power the switches can supply is 200mA @ 24VDC.

The internal schematics of the switches are as follows:



Alarm1 and A2/EXT can be associated with alarm state and/or excitation control. Please refer to Alarm Output and Excitation Control for details.

Alarm Output

The logger will be in a state of alarm if **ALL** of the following conditions are met:

- 1. Channel alarms are enabled.
- 2. The logger is logging the data.
- 3. Current sampled reading is beyond low or high alarm thresholds.
- 4. Alarm-On Delay counter has moved down to zero.

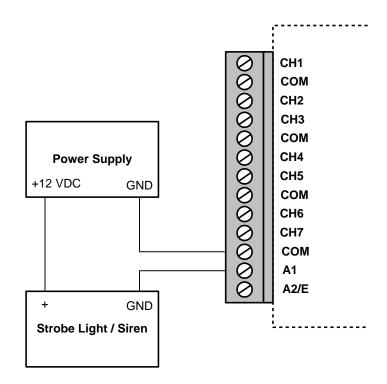
When the logger is in alarm state, Alarm1 and/or A2/E terminal strips can be configured by SiteView to be activated certain time after an alarm was triggered. The delay time selections are: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 minutes.

The following alarm output combinations can be set by SiteView:

Alarm1 & A2/E Options	Description
Disable any output -> Alarm1 and A2/EXT	No output connects to Alarm1 and
	A2/E terminals.
High alarm -> A2/EXT only	High-alarm state controls A2/EXT
	terminal.
Low alarm -> Alarm1 only	Low-alarm state controls Alarm1
	terminal.
High alarm -> A2/EXT and low alarm -> Alarm1	High-alarm state controls A2/EXT
	terminal and low-alarm state controls
	A1 terminal.
High alarm and low alarm -> Alarm1	Both high and low alarm states control

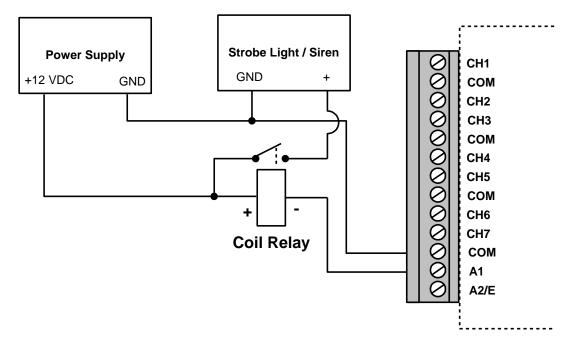
	A1 terminal.
Excitation control -> A2/EXT	Excitation controls A2/EXT terminal.
Excitation control -> A2/EXT and both alarms ->	Excitation controls A2/EXT and both
Alarm1	high and low alarm states control
	Alarm1 terminal.
Excitation control -> A2/EXT and low alarm ->	Excitation controls A2/EXT terminal
Alarm1	and low alarm state controls Alarm1
	terminal.
Excitation control -> A2/EXT and high alarm ->	Excitation controls A2/EXT terminal
Alarm1	and high alarm state controls Alarm1
	terminal.

The following schematics illustrate the physical connections required to control and drive an external device by the alarm output:



Alarm1 is used as switch to turn on/off siren based on alarm state.

If the alarm device needs more power to drive, A1 provides control signal to drive a coil relay as follows:



Alarm1 is used as switch of the power supply.

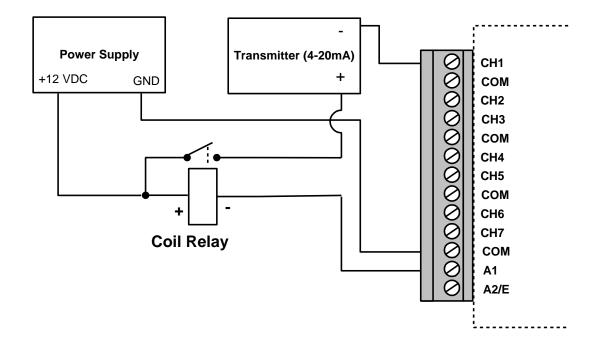
Excitation Output

NOTE: LRHT-1/2 logger does not support excitation output.

Excitation output is used when you need to save the electric power of the device that provides the signal source to the data logger. When there is no local power available and a battery pack is used to power the transducer, excitation control greatly reduces power consumption. It turns on the transducer only when it samples the data and turns off the transducer after the sampling.

A2/EXT on the terminal strips can be configured by SiteView software for excitation output purpose.

The following schematics illustrate the physical connections required to switch on/off an external battery pack for a 2-wire current loop transmitter:



5. Software

SiteView Windows software is used to communicate with the Site-Log data logger for data downloading, logging management, and channel range configuration.

This section outlines basic functions that SiteView offers. For complete instructions on how to use SiteView software please refer to **SiteView User's Manual** available for download online.

System Requirements

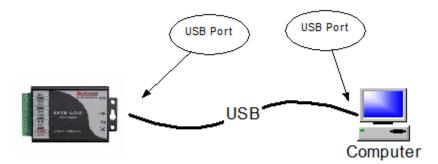
Computer: CPU: 1.0 GHZ or above Memory: 256M or above Port: 1 USB port or 1 COM port Hard Drive: 1GB or above

Operating System: Window XP with SP2 or above, Window Vista, Window 7, 8, 10

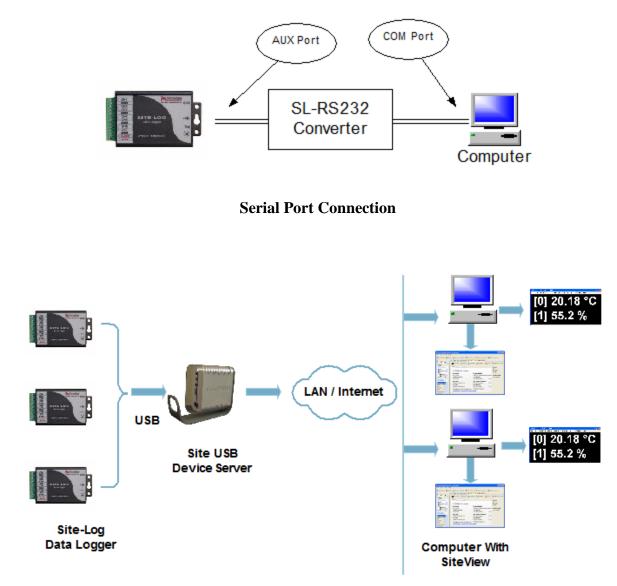
Communications Interfaces

The Site-Log logger has both TTL-compatible serial port and USB interface. It can communicate with host device via either USB or serial port.

The following schematics illustrate different options that SiteView software can communicate with a data logger.



USB Connection



Ethernet Connection (with Site USB Device Server)

Install SiteView and USB Driver

1. Install SiteView.

Insert the included CD to the CD Drive. The installation should start to run automatically. Follow the on-screen instructions to complete the installation.

i		SiteVie	ew 3.0.3 - InstallShield Wizard
			Welcome to the InstallShield Wizard for SiteView 3.0.3
	M Sile View		The InstallShield(R) Wizard will allow you to modify, repair, or remove SiteView 3.0.3. To continue, click Next.
			< Back Next > Cancel

Click "Next >" button to proceed to the next page.

BiteView 3.0.3 - InstallShield Wizard	×
License Agreement Please read the following license agreement carefully.	ge Inc.
Software License Agreement	^
PLEASE READ THIS SOFTWARE LICENSE AGREEMENT CAREFULLY BEFORE DOWNLOADING OR USING THE SOFTWARE. BY CLICKING ON THE ACCEPT BUTTON, OPENING THE PACKAGE, DOWNLOADING THE PRODUCT, OR USING THE EQUIPMENT THAT CONTAINS THIS PRODUCT, YOU ARE CONSENTING TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, CLICK THE DO NOT ACCEPT OF CANCEL BUTTON AND THE INSTALLATION PROCESS WILL NOT CONTINUE.	
Ownership of the Software	<u> </u>
O I accept the terms in the license agreement Print	
I do not accept the terms in the license agreement	
InstallShield	
<back next=""> Cancel</back>	

Please read the License Agreement carefully. If you accept the terms click "I Agree", then click "Next >" button. Otherwise click "Cancel" to cancel the installation.

In this dialog select a destination folder where SiteView will be installed. We recommend you keep the default folder.

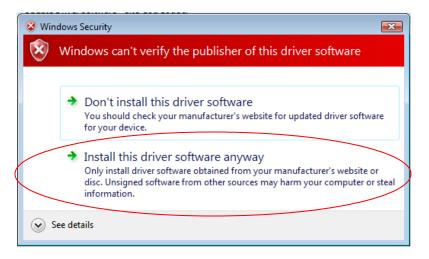
Once you are ready, click "Next >" button to proceed to the next page.

岁 SiteView 3.0.3 - InstallShield Wizard ×
Ready to Install the Program The wizard is ready to begin installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
Current Settings:
Setup Type:
Typical
Destination Folder:
C: \Microedge Instruments Inc\SiteView\
InstallShield
< Back 🚱 Install Cancel

Click "Install" button to start the installation.

閿	SiteView 3.0.3 - InstallShield Wizard 🛛 – 🗖 🗙
and a second	gram features you selected are being installed.
1 1 1	Please wait while the InstallShield Wizard installs SiteView 3.0.3. This may take several minutes. Status:
InstallShield	< Back Next > Cancel

Depending on the operating system, you may see the dialog similar to the one below displayed. Please select "**Continue Anyway**" or "**Install this driver software anyway**" to allow the software and the driver to be installed.



As SiteView is being installed the above dialog shows the installation progress by percentage. Once the installation is complete, the below dialog appears:

1		SiteVie	ew 3.0.3 - InstallShield Wizard	×
			InstallShield Wizard Completed	
	M. Site View		The InstallShield Wizard has successfully installed SiteView 3.0.3. Click Finish to exit the wizard.	
4	A		✓ Launch the program	
			< Back Finish Cancel	

Click "Finish" button to finish the installation and close the dialog.

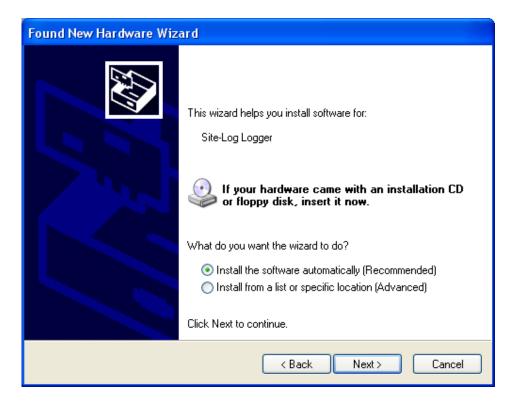
Connect Data Logger

Connect the logger to the computer's USB port. Windows Vista and Windows 7, 8, 10 will automatically recognize the data logger.

For Windows XP user, the following dialog window will appear:

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy police
	Can Windows connect to Windows Update to search for software?
	 Yes, this time only Yes, now and every time I connect a device No, not this time Click Next to continue.
	< Back Next > Cancel

Select "No, not this time" from options available and then Click "Next >" to proceed with the installation.



Select "Install the software automatically (Recommended)" as shown in the above figure and then click "Next >".

Found New Hardware Wizard
Please select the best match for your hardware from the list below.
Site-Log Logger
Description Version Manufacturer Location
Site-Log Logger 2.8.8.0 FTDI c:\windows\inf\oem5.ir
Site-Log Logger 2.8.8.0 Microedge Instruments Inc. c:\windows\inf\oem9.ir
This driver is not digitally signed! <u>Tell me why driver signing is important</u>
< Back Next > Cancel

Select the item with Manufacturer of Microedge Instruments Inc and click "Next>" to proceed.

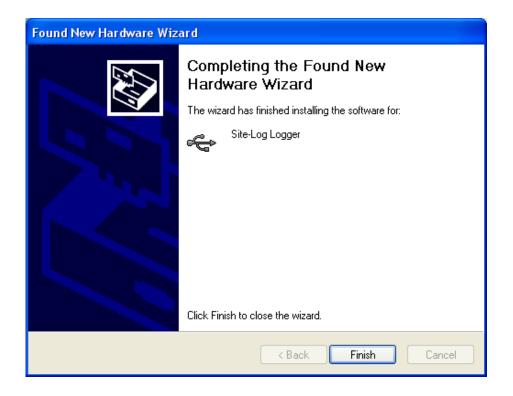
In the following message dialog, click "Continue Anyway" to continue with the installation:

Hardwa	re Installation
1	The software you are installing for this hardware: Site-Log Logger has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

The screen below will be displayed as Windows copies required driver files:

Found New Hardware Wizard
Please wait while the wizard installs the software
Site-Log Logger
Setting a system restore point and backing up old files in
case your system needs to be restored in the future.
< Back Next > Cancel

Windows should then display a message indicating the installation was successful:



Activate SiteView

After the installation SiteView needs to be activated by entering Product Key you obtained when you bought SiteView.

If the above installation of SiteView was successful, SiteView can be launched by either one of the following methods:

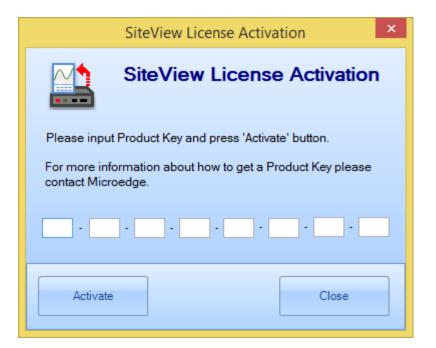
Double click on SiteView icon on the desktop:



Or:

Using Windows Start Menu, select Start : All Programs: Microedge Instruments Inc.: SiteView.

Double click "SiteView" icon on the desktop, and the following dialog appears:



Enter the Product Key, then click the **Activate** button. If the Product Key is accepted the following confirmation dialog will appear:

SiteView 🔀
SiteView was activated successfully
ОК

Click **OK** button to finish the activation. From now you can start using SiteView.

Main Window Frame

L)	sion Available		Si	teView by Mi	croedge Ins	truments (IN HOUSE V	ERSION)		+
General	Logs Others Help	-								
About	Contents 🕜 Index	Get Latest Versi	on							
	Help	Upgrade SiteView								
SB	*	SITE-LOG LPT	H-1 (SI	N- 0106010002	341					
	LOG LPTH-1 (S/N: 010601000234)	SITE EOUEFT	111 (S)						-	(
		Real-Time 🐔	Refre	sh 🕗 Down		lear 📌	Configure 🔀	Calibrate 🔹 💽	Add to Schedule Downloa	Factory Calibrate
		General			Alarm & Excit	ation				Device Info:
		SITE-LOG LPTH-1	(S/N: 0	10601000234)						Firmware:
		LED light when	samplin	g						2.26
		Description:			Loggi	ng Method:				Board ID:
		New Logger			Stop I	ogging wher	memory full			SL RHT-F-5
		Sampling Interval:			Total	Memory:				Battery Level:
		5 Seconds			41922	256 Reading	s	30 Days 7 Hou	rs 49 Minutes 20 Seconds	-
		Start Time:			User	Selected Me	mory:			0.08V (2%)
		2018-04-14 8:36:56	AM.0		32150)4 Readings		2 Days 7 Hour	s 49 Minutes	Low Battery!!
		End Time:			Used	Memory:				Restart Cause:
		2018-04-14 8:36:56	AM.0		0 Rea	-		(0.0%)		NORMAL_POWER_U
		 The logger was last 	t config	ured at:	2018-	04-14 8:36:5	1 AM 0			Restart Counter:
		The logger has	-					Minutes 44 Se	conds	1
		Channels:								
		Channel #	Ena	Description	Equation	Cali. Low	Cali. High	Fact Cali Zero	Fact. Calli Span	
		0 [PT103J2 Ther	-	CH0	Tempera	0	0	30	29	
		1 [External Thermi	-	CH1	Resistan	0	0	46	16	
		2 [External Thermi	✓	CH2	Resistan		0	20	9	
		3 [External Thermi	~	CH3	Resistan		0	191	-1289	
		4 [External Thermi	~	CH4	Resistan		0	26	-5	
		5 [External Thermi	✓	CH5	Resistan	0	0	-15	-11	
		Logs								
₽ USB		Time	R	eporter			Log			
USB Serve	27	2018/4/15 10:17:41.707		re-log LPTH-1 (Loading equation			
5		2018/4/15 10:17:41.735 2018/4/15 10:17:41.747		FE-LOG LPTH-1 (FE-LOG LPTH-1 (Loading equation Loading extra dai	properties Succeede	ed	
Serial Por	t	2018/4/15 10:17:41.759		re-log lpth-1 (Loading extra da			
		2018/4/15 10:17:41.763	SI	re-log lpth-1 (S/N: 010601000)234)	The logger prope	rties were loaded suc	cessfully.	

Communication Panel

The communication Panel contains USB, USB Device Server and Serial Port communication tabs that are used to deal with the respective physical logger connections to the computer. For instance, if the logger is connected to the computer via a USB port you need to use USB tab to communicate with the logger.

Ribbon Control

The ribbon control provides an easy way to access the menu items by including some of the frequently used items on the tab controls.

Main Working Panel

The Main Working Panel contains a series Tab pages for logger status illustrated as the follows:

SITE-LOG LPTH-1 (S/N: 010601	00023	= SITE-LOG LRTD-1 (S/	N: 021001000099)	
Real-Time Refresh	Download	Clear Configure	Calibrate 🝷	
General	Alarm	& Excitation		
SITE-LOG LRTD-1 (S/N: 02100100)0099)			
LED light when sampling				
Description:		Logging Method:		

Information Log Panel

This section shows the information logs for any activities SiteView does. This is for diagnostics and information purposes.

View Logger Status

This manual will use USB as an example of communications interface. For other communications interfaces please refer to **SiteView User's Manual** available for download online.

If the logger is connected to the computer correctly the logger icon should show in USB tab of the communication panel illustrated below:

	Log-In User: admin New Version Available
	General Logs Others Help
	SVF File DB Explorer Log
	Explorer Data
USE	
\$	PRECISE-LOG PL-VW (S/N: 060700600999)
* *	
0	2 Double click to communicate
•	
	4
	4
	Click to select
	USB
÷	USB
2	USB Server
	Serial Port

Double clicking the logger icon or clicking "Contact" button with the icon been highlighted will bring up the logger status page.

The status page shows the start and end time, sampling interval and other properties of the connected logger:

< SITE-LOG LPTH-1	(S/N: 0106	501000234)					<
· · · · · · · · · · · · · · · · · · ·			🖌 Clear 🏓	Configure	🗲 Calibrate 🝷	Add to Schedule Download	6
General		Alarm 8	Excitation				Device Info:
SITE-LOG LPTH-1 (S/	N: 0106010	00234)					Firmware:
LED light when san	pling						2.26
Description:			Logging Method:				Board ID:
New Logger			Stop logging whe	n memory full			SL RHT-F-5
Sampling Interval:			Total Memory:		1 10 M 1 20 0	Battery Level:	
5 Seconds			4192256 Readings 30 Days 7 Hours 49 Minutes 20 Second			Hours 49 Minutes 20 Seconds	3.66V (100%)
Start Time:			User Selected M	emory:			
2018-04-14 8:36:56 AM			321504 Readings 2 Days 7 Hours 49 Minutes				
End Time:			Used Memory:				
2018-04-14 8:36:56 AM			0 Readings (0.0%)				
The logger was last co	nfigured at:	:	2018-04-14 8:36:	51 AM			
The logger has sto	opped log	ging data an	d has been do	rmant for 3	7 Minutes 4 S	econds	
Channels:							
Channel #	Enabled	Description	Equation	Cali. Low	Cali. High		
0 [Thermistor]	-	CH0	Temperature	0	0		
1 [External Thermistor] I CH1		Resistance 0 0		0			
2 [External Thermistor] 🗹 CH2		CH2	Resistance	Resistance 0 0			
3 [External Thermistor] CH3		CH3	Resistance	0	0		
4 [External Thermistor]	~	CH4	Resistance	0	0		
5 [External Thermistor]	~	CH5	Resistance	0	0_		

General

This sub tab page displays the general properties of the logger.

Alarm & Excitation

This sub tab page displays the properties regarding the alarm and excitation. By clicking the "Alarm & Excitation" tab page caption, the following page will appear:

📧 Real-Time 了 F	Refresh 🤳 Download 🙀	Clear 🏓 Configu	ure 🔀 Ca	alibrate 👻 😿	Add to Schedule Dow	nload
General	Alarm & Ex	citation				
Alarm Excitation Selec	tion:	Channel Alarm	Settings:			
Disable any output to A Excitation Warm-up De		Channel #	Enabled	Low Alarm	High Alarm	Unit
Keep on		0 [Thermis		1171.95	-91.65	°C
Alarm-On Delay:	Alarm-Off Delay:	1 [External		0.000	38540000.000	Ohm
0 Minute	0 Minute	2 [External		0.000	65525000.000	Ohm
		3 [External		0.000	655340000.000	Ohm
		4 [External		0.000	655340000.000	Ohm
		5 [External		2.137	655340000.000	Ohm
		6 [External		0.000	54602500.000	Ohm
		7 [External		0.000	655340000.000	Ohm

Through the tool bar buttons you can act on other tasks described in the following chapters.

Configure Logger

Configuration of the logger is a procedure to edit the properties of the logger and to start the new logging session.

If you are already in the logger status panel, clicking on the **Configure** button will bring up the configuration dialog window:

< SITE-LOG LPTH-1 (S/	/N: 010601000234)			_			
Real-Time 💦 Refre	esh 🔳 Download			Configure	Calibrate 🝷		
General	Alarm &	Excitatio	on				
Alarm Excitation Selection: Channel Alarm Settings:							
02	Logger Configur	ation SITE	-LOG LPTH	-1 (S/N: 01	0601000234)		? ×
General	Alarm & Excitation						
Description:	Time To Start:	Cun	rent Time: 20	18-04-15 10	:36:43 AM		
New Logger	2018-04-15, 10:34:01 AM	- Real	I-Time:				
Sampling Interval:	Time To End:	Ch	nannel #	Reading	Unit		
5 Seconds V	2018-04-17, 6:23:01 PM]-					
On-Board LED: Ught When Sampling When Memory Full: Stop Logging Continue Logging	Total Time Span: Years Months Days 0 0 2 v Hours Minutes Seconds 7 49 0 v Memory Usage: 7.67%						
Channels:							
	Description Equation		Cali. Low	Cali. High			
	CH0 Temperature	~		0			
	CH1 Resistance	×	-	0			
	CH2 Resistance CH3 Resistance	×	-	0			
		×	-	0			
	CH4 Resistance CH5 Resistance	~	-	0			
	CH6 Resistance	~		0			
	CH7 Resistance	~		0			
Help Real-Time		d Template	Save As]	Apply	ок	Cancel

There are two tab pages in this dialog. The **General** page is displayed in the above screen shot. If you click **Alarm & Excitation** tab the following page will appear:

02	Logger Config	uration SITE-	LOG LPTH-1 (S	/N: 01060100023	4)
General Alarm & E	Excitation				
Alarm/Excitation Selection:	Channel Alarm Se	ttings:			
Disable any output to A1 and A2/E	Channel #	Enabled	Low Alarm	High Alarm	Unit
Funitation Warm on Dalaus	0 [Thermistor]		1171.95	-91.65	°C
Excitation Warm-up Delay: keep on	1 [External Ther		0.000	38540000.000	Ohm
Keep on v	2 [External Ther		0.000	65525000.000	Ohm
Alarm-On Delay: Alarm-Off Delay:	3 [External Ther		0.000	655340000.000	Ohm
0 Minute V 0 Minute V	4 [External Ther		0.000	655340000.000	Ohm
	5 [External Ther		2.137	655340000.000	Ohm
	6 [External Ther		0.000	54602500.000	Ohm
	7 [External Ther		0.000	655340000.000	Ohm
				·	

The following fields are for editing:

Description:

Description specifies the information about the logging session with a maximum of 30 characters. It will be the default Title section of the plot in the plot view.

Sampling Interval:

This field specifies the time span the logger will wait between two measurements sampling. Valid settings are:

Sampling Interval for Fast Sampling Mode	Sampling Interval for Normal Sampling Mode
20, 30,90 milliseconds	1 second to 9 seconds in 1-second increment
100, 200, 900 milliseconds	10 seconds to 50 seconds in 10-second increment
	1 minute to 59 minutes with 1-minute increment
	1 hour to 12 hour with 1-hour increment

If the sampling interval is faster than one second the logger must be powered by an external power supply during the logging period.

Making changes to the Sampling Interval will affect Total Time Span fields.

On-Board LED

Check this field to enable the on-board status LED. If the LED is enabled it will flash each time when it samples data to indicate:

- 1. The logging is active if the LED flashes in green.
- 2. The logger is in alarm state if the LED flashes in red.
- 3. The battery will die soon if the LED flashes in amber.

If you do not need LED indication, you can uncheck this field to increase the battery life.

When Memory Full

If you want the logger to stop logging when the memory is full select **Stop logging**. If you want the logger to continue logging and overwrite the oldest data with the new data (FIFO), you choose **Continue logging**.

Time to Start & Time to End

These two fields specify the desired time the logger will start logging data and the time to stop logging data.

Making changes to the Time to Start/End will affect Total Time Span fields mentioned later.

If you have selected the **Continue logging** field, when the memory is full, both start time and end time will move forward accordingly.

Total Time Span

These fields are an alternate way to specify the total logging time from the start time you specified above.

Changes made on these fields will affect Time to End field.

Channel Settings:

Enabled

Check this field to enable this channel for logging.

Channel Range

This field specifies the measurement range the channel will use. Different channel types have different input range selections. Please refer to **Channels and Sensor Connections** chapter for details.

Description

This field specifies the name or the description of the channel (maximum of 30 characters).

Equation

This field specifies the equation used for the channel. Different channel ranges have different default equations. Please refer to **Channels and Sensor Connections** chapter for details.

In order to convert a process signal to a correct measurement value an equation must be applied to the channel.

For example, if you want to use the 0-5 VDC channel to record a battery voltage output, the logger will first convert the battery voltage values to digital values and save them in the memory. Later when all data are downloaded to a computer, SiteView will use equation "VoltageDC" to convert the digital values back to voltage values.

If you are recording the voltage output of a transducer or transmitter and the range of the voltage refers to another measurement unit, you will need to create your own equation for this conversion. For instance, if your CO2 transducer outputs 0 - 5VDC representing 0 - 5000PPM of CO2, the custom equation you need to create looks like this:

}

For detailed instructions on how to create a custom equation please refer to the **SiteView User's Manual** available for download online.

Cali. Low & Cali. High

These two fields specify the custom calibration values that are used for measurement adjustment.

Cali. Low value specifies the digital value that is over zero when the input value is in the low range value (for 0-5 VDC channel the low range is zero volt). The equation will subtract this value from the original digital value when doing the conversion.

Cali. High value specifies the digital value that is over 65535 when the input value is in the high range value (for 0 - 5VDC channel the high range is 5 volt). The equation will subtract this value from the original digital value when doing the conversion.

The valid range for these two parameters is from -32768 to 32767.

These two parameters for each channel were originally set to zero when the logger was first released.

If you have finished the **Cali. Low** and **Cali. High** calibration instructed in the later chapter, the "Cali. Low" and "Cali. High" values may be readjusted.

Alarm and Excitation:

Alarm/Excitation Selection

This field specifies how Alarm1 and A2/E terminals are being controlled by alarm state and/or excitation settings. Available settings are:

Alarm/Excitation Selection:

Disable any output to A1 and A2/E	*
Disable any output to A1 and A2/E	
High alarm to A2/E only	
Low alarm to A1 only	
High alarm to A2/E, low alarm to A1	
Both high and low alarm to A1	
Excitation control to A2/E	
Excitation control to A2/E, both high and low alarm to A1	
Excitation control to A2/E, low alarm to A1	
Excitation control to A2/E, high alarm to A1	

Alarm-On Delay

This filed specifies a time delay before sending out alarm notification if there is an alarm. This applies to both terminal strips and the dial-out command which is sent out via communications port.

Alarm-On Delay:	
1 minute	*
0 minute	~
1 minute	
2 minutes	
3 minutes	
4 minutes	
5 minutes	
6 minutes	
7 minutes	×

Excitation Warm-up Delay

This field specifies how much delay will be put after the excitation terminal is activated and before the logger is taking the sample.

Excitation Warmup Delay:

keep on	*
keep on	~
10 seconds	
20 seconds	
30 seconds	
40 seconds	
50 seconds	
460 seconds	_
70 seconds	~

Channel Alarm Settings

This table specifies how each channel controls alarm state by:

Alarm Enabled:	Check this field to associate this channel to the alarm state.
Low & High Alarm:	These fields define the alarm thresholds. If the reading is beyond these thresholds, the alarm is triggered.

Channel Alarm Settings:						
Alarm Enabled	Low Alarm	High Alarm	Unit			
	-134.09	110.50	°C			
	-353.3989	20568.2460	mV			
~	-8.5205	10.0501	mV			
~	0.0000	0.0000	mV			
~	0.0000	0.0000	mV			
~	0.0000	0.0000	mV			
~	0.0000	0.0000	mV			
~	0.0000	0.0000	mV			
	Alarm Enabled	Alarm Enabled Low Alarm ✓ -134.09 ✓ -353.3989 ✓ -8.5205 ✓ 0.0000 ✓ 0.0000 ✓ 0.0000 ✓ 0.0000	Alarm Enabled Low Alarm High Alarm ✓ -134.09 110.50 ✓ -353.3989 20568.2460 ✓ -8.5205 10.0501 ✓ 0.0000 0.0000 ✓ 0.0000 0.0000 ✓ 0.0000 0.0000 ✓ 0.0000 0.0000	Alarm Enabled Low Alarm High Alarm Unit Image:		

Once you have finished making changes to the available settings, you can click **OK** button to save the settings to the logger. The logger will start to record data from **Time to Start** you have set.

Note: clicking on OK or Apply buttons will erase all existing measurements saved in the logger.

For a detailed description of each available setting please refer to the **SiteView User's Manual** available for download online.

Download Logger

If you are already in logger status tab, clicking on "Download" button will bring up **Download** dialog window:



Download Log	gger SITE-L(OG LPTH-1 S/N: 010601000234	x
Choose where to download	d data to:		
🗷 Append Data To System Database		Download Data To SiteView File	
	—— Databas	e Information	
Session:	Already Down	loaded Data:	
2018-04-15 10:39:04 AM	Not available		
			J
	Data to b	e Downloaded	h
Start Time:		End Time:	
2018-04-15 10:39:09 AM	¥	2018-04-15 10:45:49 AM	
6 Minutes 40 Seconds [648 Readin	gs]		
)
Help		OK Cancel	٦

Started from Site View 3, data can be downloaded to the system database. Each data logger has a life-time database file associated to it. If you choose to "Append Data to System Database" you can specify End Time and start to download the data.

If you choose to download data to a separate Site View file, the user interface looks like:

Download Logger SITE-LOG LPTH-1 S/N: 010601000234	×
Choose where to download data to:	
Append Data To System Database Incorrect of a contract of the second data to Site View File	
Download Data to SiteView File	
Filename: C:\Microedge Instruments Inc\SiteView\Download\SITE-LOG LPTH-1-010601000234-2018-04-15-1	0-45-53 evf
	43-33.84
Browse	
Data to be Downloaded	
Start Time: End Time:	
2018-04-15 10:39:09 AM	•
4	
6 Minutes 40 Seconds [648 Readings]	
)
Help	Cancel

The fields that you can edit are:

Filename & Browse

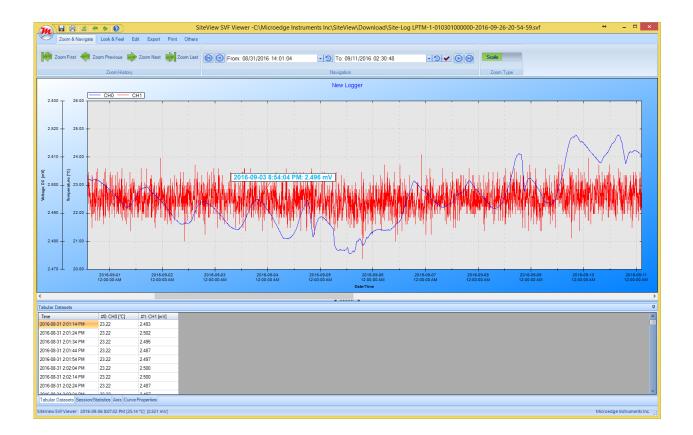
These fields specify the full file path the downloaded data will be saved into. Clicking on **Browse** button will display **File Save** dialog where you can edit or choose a file name.

Start Time & End Time

These fields specify the desired start and end time for the data to be downloaded. You can use either scroll bars or the calendar controls to change the start and end time.

Once you have selected a desired time frame you can click **OK** button to start the download process.

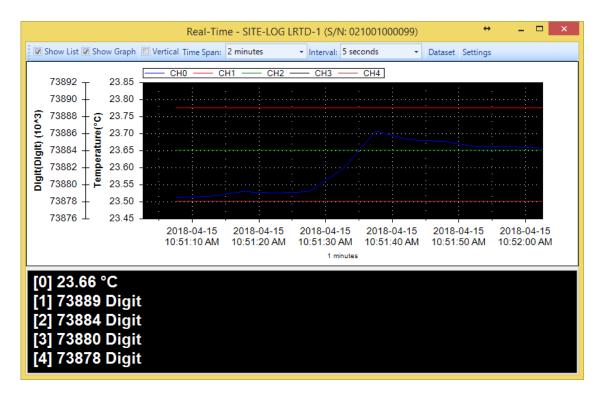
After the download the plot and tabular data will be displayed:



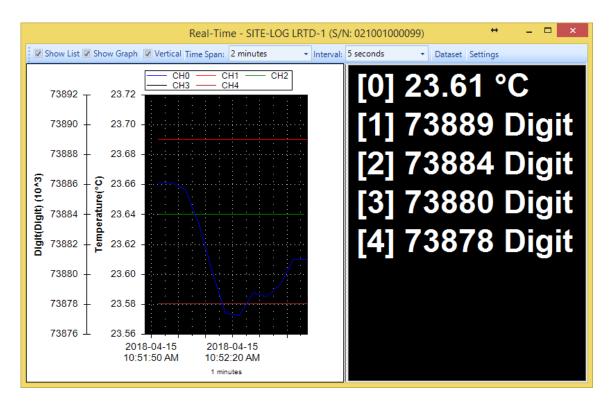
Real-Time Display

If the logger is in normal sampling mode (sampling interval is one second or longer), SiteView can view the real-time measurements while the logger is still logging data. The real-time display shows the list of the latest channel real-time measurements, as well as the trend chart of all channel real-time measurements for the past given period of time from the current time.

To open real-time view, if the logger has been contacted and the status of the logger is displayed, click on **Real-Time** tool bar button. The following real-time dialog appears:







Real-Time In Vertical View

Tool bar buttons:

Show List

Click to show/hide the list view panel.

Show Graph

Click to show/hide the chart view panel.

Vertical

Click to display the chart and list views vertically.

Time Span

This field allows changing the time span for the chart view. Available settings are:

5 minutes	*
1 minute	
2 minutes	
5 minutes	
10 minutes	
20 minutes	
30 minutes	
1 hour	
2 hours	
5 hours	
12 hours	
1 day	
2 days	
5 days	
10 days	
1 month	

Dataset

Click to display the tabular view of the recorded measurements illustrated below:

Time	CH1 (°C)	CH2 (mV)	CH3 (mV)	CH4 (mV)	CH5 (mV)	CH6 (mV)	CH7 (mV)	CH8 (mV)
21/08/2010 9:57:45 PM	23.94	76.9055	76.9055	76.9055	76.9055	77.2107	77.2107	77.5158
21/08/2010 9:57:50 PM	23.93	76.2951	76.6003	76.2951	76.6003	76.6003	76.9055	76.9055
21/08/2010 9:57:55 PM	23.91	76.6003	76.6003	76.6003	76.6003	76.9055	77.5158	76.9055
21/08/2010 9:58:00 PM	23.90	76.6003	76.9055	76.2951	77.2107	77.2107	77.2107	77.2107
21/08/2010 9:58:05 PM	23.91	76.6003	76.6003	76.9055	77.2107	76.6003	75.9899	76.2951
21/08/2010 9:58:10 PM	23.92	76.9055	76.9055	77.2107	76.6003	76.9055	76.6003	76.9055
21/08/2010 9:58:15 PM	23.94	76.6003	76.2951	77.2107	77.2107	76.9055	76.6003	76.9055
21/08/2010 9:58:20 PM	23.93	77.2107	76.2951	76.2951	76.9055	76.9055	77.2107	77.2107
21/08/2010 9:58:25 PM	23.94	76.6003	76.2951	76.6003	77.2107	76.9055	76.9055	76.2951
21/08/2010 9:58:30 PM	23.94	76.2951	76.6003	76.9055	77.2107	77.5158	76.9055	77.2107
21/08/2010 9:58:35 PM	23.94	76.6003	76.2951	76.9055	76.9055	76.9055	76.6003	76.9055

Settings

Click to display more properties illustrated below:

	Real-Time Settings	×
Line Properties:	Axis Properties:	
Channel # Visible Width Color 0 • 1 • 1 • 1 • 2 • 1 • 3 • 1 • 4 • 1 •	Name Visible Auto Scale Min Na Celsius ('C) Image: Color To Image: Color To Na O 10 Digit (Digit) Image: Color To Image: Color To List View Properties	
Help	0	K Cancel

For detailed instructions on how to change real-time view settings please refer to **SiteView Instruction Manual** available for download online.

Calibrate a Channel (Not available for LPSE-1)

SiteView software provides two-point calibration for most of the loggers.

Understand Cali. Low & Cali. High

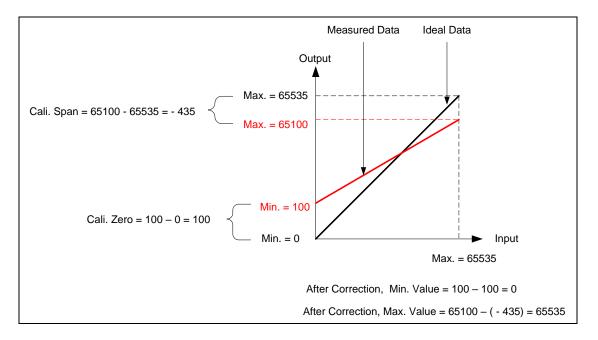
In the logger status page, there are two properties for each listed channel called **Cali. Low** and **Cali. High**. These two fields specify the calibration values that are used for measurement adjustment.

Cali. Low value specifies the digital value that is over zero when the input value is the lowest value (for 0-5 VDC channel the lowest value is zero volt). For instance, if you apply zero volt input and the logger measured 100 as the digital value, then **Cali. Low** should be 100 digits. The equation entity will subtract this value when resolving the correct lowest digital value.

Cali. High value specifies the digital value that is over 65535 when the input value is the highest value (for 0 - 5VDC channel the high range is 5 volt). For instance, if you apply 5 volt voltage to the channel and the logger measured 65100 as the digital value. Then **Cali. High** is "- 435" (calculated from 65100 – 65535). The equation entity will subtract this value (-435) from the digital value when resolving the highest digital value.

The valid range for these two parameters is from -32768 to 32767.

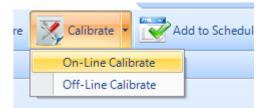
The following figure illustrates the relationship between an ideal data line and a measured data line and how **Cali. Low** and **Cali. High** correct the measured data line.



Decide On-Line or Off-Line Calibration

If the source signal like voltage or current can be connected to the logger while the logger is connecting to the computer, you can calibrate the logger on-line. If the source signal like a temperature or relative humidity is not available for on-line calibration, you can calibrate the logger off-line after the logger has recorded the low and high point data.

You access On-Line / Off-Line Calibration via Calibrate button on the logger status tool bar.



The following dialog appears:

Select Channel 😁 🛛 🗕 🗖 🗙
Warning — Calibration procedure can change the accuracy of the working channel. Please keep a record of the existing Calibration Values before proceeding.
Select a channel to calibrat
Help OK Cancel

Select the channel you want to calibrate on and click **OK** button. The calibration dialogs appear as follows:

Channel Calibration Wizard - Channel:1	x
Step 1: Low Point Calibration	
Based on the equation the channel is using, the range of the channel is: 0 MilliVolt(mV) To 20000 MilliVolt(mV) Please type in the low point value of the source input that is connected to the channel:	
Input Low Reference Value 10 MilliVolt(mV) Click "Start Calibration" button to start the calibration. When you see the current reading is stable you can click "Stop Calibration" button to stop this procedure. (Minimum 3 readings)	
Start Calibration Current Reading MilliVolt(mV)	
Click "Next >>" button to proceed for High Point Calibration. Timer: 00:00:16 seconds. 3 readings	
Help Previous Next >> Cancel	

	Channel Calibration Wizard - Channel:1	×
St St	tep 2: High Point Calibration	
0	ne channel is using, the input range of the channel is: MilliVolt(mV) To 20000 MilliVolt	(mV)
Input High Reference 800 Click "Start Calibration" I	oint value of the source input that is connected to the channel: the Value MilliVolt(mV) button to start the calibration. When you see the current reading is button to stop this procedure.(Minimum 3 readings)	s stable you can
Start Calibration	Current Reading MilliVolt	(mV)
Click "Next >>" button to Timer: 00:00:16 seconds.		
Help	Previous Next >>	Cancel

Channel Calibra	tion Wizard - Channel:1
Step 3: Calibration	Result
Given Parameters: Channel Range 0 MilliVolt(mV) To Input Low Reference Value 0.000 MilliVolt(mV) Calculated Parameters Measured Input Low Digit 2289 Calibration Low Value 2288	20000 MilliVolt(mV) Input High Reference Value 900.000 MilliVolt(mV) Measured Input High Digit 2290 Calibration High Value -63224
Save Parameters to the logg Help	Previous Done Cancel

The above dialogs are for On-Line Calibration.

			(Channel Cal	ibration		+		×
Step 1	. Retrieve reference ar	d actual valu	Jes:						
1.1	Make sure the followir	ng channel c	onfiguration is	correct:					
	Channel	Cali. Zero	Cali. Span	Equation	Range From	Range To	Unit		
	#1 (PT100 (0-400 Ohms))	0	0	Digit	0	65535	Digit (Digit)		
1.3	 Make sure the logger is logging data with the proper sampling interval. Adjust the source input to a value close to 'Range From' parameter in the above table. Take note of this input value as 'Low Referene' Value. Apply the source input to the designated channel for a period of time that can best reflect the accuracy of the source input. Adjust the source input to a value close to 'Range To' parameter in the above table. Take note of this input value as 'High Referene' Value. Apply the source input to the designated channel for a period of time that can best reflect the accuracy of the source of this input value as 'High Referene' Value. Apply the source input to the designated channel for a period of time that can best reflect the accuracy of the source input. Download the logger first. Open the downloaded file and zoom in to the time frames when the designated channel was applied by the source input. Write down the mean value in the first period of time as 'Real Low' Value and the mean value in the second period of time as 'Real High' Value. 					o the			
Step 2	. Calibrate channel:								
2.1	2.1 Fill out the following fields with the parameters retrieved in step 1.								
2.2	Click "Calibrate" butt	on to calcula	te the calibra	tion values a	nd save them ba	ack to the logge	r.		
	Low Reference Value:	Rea	al Low Value:		High Reference		Real High Val		
	Digit		Dig	t		Digit		Digit	
	Help					Calibra	te	Close	

The above dialog is for Off-Line Calibration.

Please refer to Calibrate Logger chapter in SiteView User's Manual for details.

6. Specifications

Common Specifications

Alarm	
Channel Alarms	Two editable alarm thresholds per channel. Alarm controls
	Alarm1, A2/EXT outputs and send out over comm. interface.
Alarm Outputs	Alarm1 & A2/EXT can be configured as alarm outputs.
	Alarm-On: MOSFET(N-Channel) switch on
	Alarm-Off: MOSFET(N-Channel) switch off
	Max Power: 200mA @ 24VDC.
	With purchase of SiteView software, Site-Log can report alarm
	status to host PC via USB, Modem or Ethernet Device Server.
Alarm-On Delay	Programmable 0 - 10 minutes delay with 1-minute increment.
Alarm Indicator	On-board LED lights in red when in alarm state.
On-board Memory	
Capacity	8 Mega-bytes (4 Mega measurements)
Data Retention	Over 20 years
Sampling & Logging	
Sampling Interval	1 second to 12 hours for model LRHT-1/2, user selectable.
	20 milliseconds ^[1] to 12 hours for other models, user selectable.
Logging Mode	Stop recording or FIFO when memory is full.
Logging Activation	Programmable instant, start delay or field push button activation.
Communications	
Interface	USB (Mini-USB-B) (USB-A-mini USB-B Cable included)
	AUX(RJ11) for direct TTL level communications
	With purchase of DeviceServer, Site-Log can be connected to
	Ethernet for remote access.
Baud Rate	Auto-detect baud rate from 2400 to 115200 bps on both USB
	and AUX.
Battery	
Power	Built-in 3.6V Lithium Battery.
Life Cycle	5 years for model LRHT-1/2 on 1 minute sampling interval.
	10 years for other models based on 1 minute sampling interval.
Software	
SiteView ^[2]	Configuration, downloading, scheduled downloading, plotting,
	real-time plotting, custom calibration and custom equation
Software Requirements	Computer with 1.0 GHZ or faster processor
-	256 MB Memory or higher
	1.0 GB of available hard-drive space or higher
	Windows XP with SP2 or later, Vista, Window 7
	At least one USB port or one COM port.

Physical

Material	Aluminum Enclosure.		
PCB Treatment	Conformal coating		
Dimension	88 X 64.2 X 24 mm		
	3.46 X 2.53 X 0.95 Inches		
Weight	150g		
Mounting	Probe/wall-mount holes for hanging/mounting.		
Others			
LED Indicator	Tri-Color LED: (can be disabled for power saving)		
	Normal Sampling: green when sampling.		
	Alarm: red when sampling.		
	Low Battery: amber when sampling.		
Excitation Control	A2/EXT terminal strip can be configured as excitation control		
	output for driving the power of connected devices.		
	Warm-up Interval settings: 10 to 240 seconds with 10-second		
	increment.		
Operating Environment	$-40 \sim +70^{\circ}$ C (-40 to + 158°F), 0 ~ 95 %RH non-condensing.		
Clock Accuracy	+/- 1 minute per month		
Approvals	CE, FCC		

[1]: Maximum enabled channels: 1 for 20ms interval, 2 for 30ms, 8 for 40ms or bigger interval.

[2]: Sold separately.

Logging Capacity

Sampling Interval	Enabled Channel	Logging Capacity
1 minute	1	8 years
1 minute	2	4 years
1 minute	8	1 year
10 seconds	1	485 days
10 seconds	2	242 days
10 seconds	8	60 days

Sampling Interval	Enabled Channel	Logging Capacity
1 second	1	48 days
1 second	2	24 days
1 second	8	6 days
100 ms	1	4 days
100 ms	2	2 days
100 ms	8	14.4 hours