Autonics

2-CH USB Temperature Data Logger

SCM-USU2I

INSTRUCTION MANUAL

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

▣ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.

※Safety considerations are categorized as follows.

⚠**Warning** Failure to follow these instructions may result in serious injury or death.

⚠**Caution** Failure to follow these instructions may result in personal injury or product damage.

※The symbols used on the product and instruction manual represent the following
⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠Warning

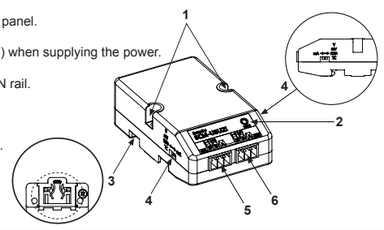
1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in personal injury, fire, or economic loss.
2. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in fire.
3. **Do not disassemble or modify the unit. Please contact us if necessary.**
   Failure to follow this instruction may result in fire.
4. **Do not put metallic materials at the openings of the unit.**
   Failure to follow this instruction may result in fire. Please contact us if repair the unit.
5. **Do not disconnect the connector while operating the unit.**
   Failure to follow this instruction may result in personal injury, economic loss or malfunction of the unit.
6. **Disconnect all power sources when operating the unit.**
   Failure to follow this instruction may result in personal injury, economic loss or malfunction of the unit.
7. **When disposing the unit categorize it as industrial waste.**

⚠Caution

1. **Do not use the unit outdoors.**
   Failure to follow this instruction may result in shorten the life cycle of the unit.
2. **Connect only the dedicated connector for the unit.**
   Failure to follow this instruction may result in USB connector damage.
3. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or shorten the life cycle of the unit.
4. **Keep dust and wire residue from flowing into the unit.**
   Failure may result in fire or product malfunction.
5. **When the connector is not inserted or disconnected easily, do not apply excessive force to the connector.**
   Failure may result in product malfunction.
6. **Do not repeatedly connect or disconnect the USB cable during communication with the unit.**
   Failure may result in product or PC malfunction or product damage.
7. **Connect the unit based on descriptions and make sure that connection is correct.**
   Failure may result in product or PC malfunction or product damage.
8. **Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.**
   Failure to follow these instructions may result in fire.
9. **Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, and impact may be present.**
   Failure to follow this instruction may result in fire or explosion.

▣ Unit Description

1. **Mounting hole**:
   Used when the unit mounts to the panel.
2. **Power indicator (red)**:
   Turns ON the power indicator (red) when supplying the power.
3. **Rail Lock**:
   Used when the unit mounts on DIN rail.
4. **Input type selector**:
   Input type selector by each CH.
   The left selector is for CH1 and the right one is for CH2 in the face.
   V, mV, RTD, TC ◀▶ mA
   (default)
5. **CH1 connector**
6. **CH2 connector**



▣ Integrated Device Management Program (DAQMaster)

DAQMaster is the integrated device management program. **DAQMaster** sets the parameters by connecting **SCM-USU2I and PC via USB cable.** Visit our website (www.autonics.com) to download DAQMater and the user manual.

※**SCM-USU2I cannot be used alone.**

Item	Minimum specifications
System	IBM PC compatible computer with Intel Pentium III or above
Operations	Microsoft Windows 98/NT/XP/Vista/7/8/10
Memory	Min. 256MB
Hard disk	More than 1GB of free hard disk space
VGA	1024×768 or higher resolution display
Other	USB port

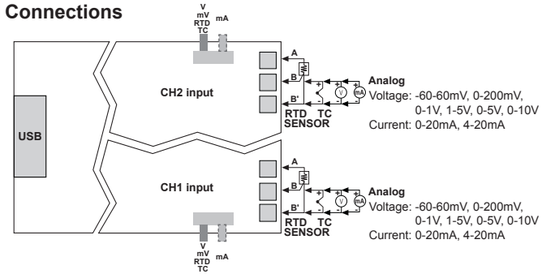
※**The above specifications are subject to change and some models may be discontinued without notice.**

▣ Specifications

Model		SCM-USU2I
Power supply		USB BUS POWER (5VDC)
Permissible voltage range		90 to 110% of rated voltage
Communication method		USB
Protocol		Modbus RTU
Display method		Check via PC Software (DAQMaster)
Input type	RTD	DPt100Ω, DPt50Ω, JPt100Ω, Cu100Ω, Cu50Ω, Nickel120Ω
	Thermocouple	K(CA), J(IC), E(CR), T(CC), B(PR), R(PR), S(PR), N(NN), C(TT), G(TT), L(IC), U(CC), Platinel II
	Analog	Voltage: -60-60mV, 0-200mV, 0-1V, 1-5V, 0-5V, 0-10V Current: 0-20mA, 4-20mA
Display accuracy※1	RTD	●At room temperature range (23℃±5℃) : (PV ±0.3% or ±1℃, select the higher one) ±1-digit ●Out of room temperature range : (PV ±0.5% or ±2℃, select the higher one) ±1-digit
	Thermocouple	
	Analog	●At room temperature range (23℃±5℃): ±0.3% F.S. ±1-digit ●Out of room temperature range: ±0.5% F.S. ±1-digit
Sampling cycle		50ms (2-CH simultaneous sampling)
Dielectric strength		500VAC 50/60Hz for 1 min. (between input terminal and power terminal)
Vibration		0.75mm amplitude at frequency of 5 to 55Hz (for 1 min.) in each X, Y, Z direction for 2 hours
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times
Insulation resistance		Min. 100MΩ (at 500VDC megger)
Memory retention		Approx. 10 years (when using non-volatile semiconductor memory type)
Environment	Ambient temperature	-10 to 50℃, storage: -20 to 60℃
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Protection structure		IP20 (IEC standard)
Insulation type		Double insulation or reinforced insulation
Installation		DIN rail or panel mounting
Accessory		USB 2.0 AB type cable: 1 (length: 1m)
Approval		CE
Weight※2		Approx. 195g (approx. 140g)

※1: ●At room temperature range (23℃±5℃)
●Below -100℃ of thermocouple K, J, T, N, E, and L, U, PLII, RTD Cu50Ω, DPt50Ω
: (PV ±0.3% or ±2℃, select the higher one)±1-digit
●Below 200℃ of thermocouple C, G and R, S
: (PV ±0.3% or ±3℃, select the higher one)±1-digit
●Below 400℃ of thermocouple B does not have accuracy standard.
●Out of room temperature range
●RTD Cu50Ω, DPt50Ω: (PV 0.5% or ±3℃, select the higher one)±1-digit
●Thermocouple R, S, B, C, G, L, U: (PV ±0.5% or ±5℃, select the higher one)±1-digit
●Below -100℃ of other sensors: within ±5℃
※2: The weight includes packaging. The weight in parentheses is for unit only.
※Environment resistance is rated at no freezing or condensation.

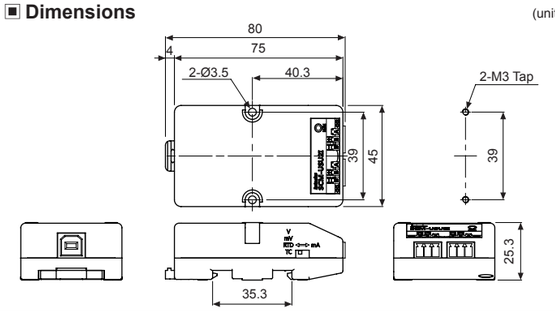
▣ Connections



※Input parts and USB cable connection part are insulated each other.

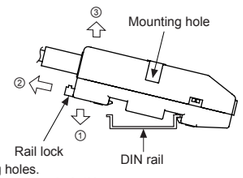
▣ Dimensions

(unit: mm)

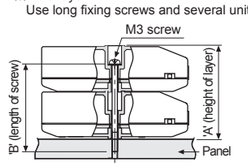


▣ Installation

※Mounting & Removing the unit on DIN rail
•Mounting
1)Hook DIN rail connector on to DIN rail.
2)Push the unit down to the direction "①".
•Removing
1)Pull the rail lock of the unit to the direction "②".
2)Remove the unit by pulling to the direction "③".



※Mounting the unit to panel
1)The unit is able to mount on the panel with two mounting holes.
2)For mounting this unit to panel, use M3 screws. Tightening torque is 0.4N·m.
※Multi-layer
Use long fixing screws and several units are fixed by stacking as multi-layer.



Number of layers(N)	'A' (23N+0.5)	'B' (23N-3)
1	23.5mm	20mm
2	46.5mm	43mm
3	69.5mm	66mm
4	92.5mm	89mm

▣ Parameter Groups

1. Parameter 1 group

※Alarm□ : Alarm1, Alarm2, Alarm3, Alarm4 ※CH□ : CH1, CH2

Parameter	Display	Descriptions
Alarm output□ target CH	Alarm□ Target CH	Set the CH for monitoring by alarm. Setting range: CH1, CH2, CH1 or CH2, CH1 and CH2
Alarm output□ mode※1	Alarm□ Mode	Setting range: OFF, AL-1, AL-2
Alarm output□ low-limit SV CH□	Alarm□ Low_CH□	Setting range: Refer to the '▣Input type and Temperature Range'
Alarm output□ high-limit SV CH□	Alarm□ High_CH□	※When changing alarm operation mode, alarm output high/low-limit SV is automatically reset as min./max. value which has no alarm.
Alarm output□ hysteresis CH□	Alarm□ Hysteresis_CH□	Set the hysteresis of alarm output. Setting range: 1 to 100 (000.1 to 100.0)

※1: Alarm output mode

Mode	Name	Operations		Descriptions
OFF	—	—		No alarm output
AL-1	Absolute value high-limit alarm	OFF H ON PV 90℃ Alarm absolute value: Sets 90℃	OFF H ON PV 110℃ Alarm absolute value: Sets 110℃	Alarm output turns ON when PV is more than alarm absolute value.
AL-2	Absolute value low-limit alarm	ON H OFF PV 90℃ Alarm absolute value: Sets 90℃	ON H OFF PV 110℃ Alarm absolute value: Sets 110℃	Alarm output turns ON when PV is lower than alarm absolute value.

※H: Alarm output hysteresis

2. Parameter 2 group

Parameter	Display	Descriptions
CH□ input type	CH□ Input Type	Setting range: Refer to the '▣Input type and temperature range'.
CH□ sensor temperature unit	CH□ Unit	℃↔℉ ※Does not set in analog input.
CH□ low-limit input value	CH□ Low Range	Set the low-limit input value within analog input range. Setting range: min. range to {high-limit input value (CH□ High Range)-F.S. 10% digit}]
CH□ high-limit input value	CH□ High Range	Set the high-limit input value within analog input range. Setting range: {low-limit input value (CH□ Low Range)+F.S. 10% digit}} to max. range
CH□ decimal point place of scale value	CH□ Scale Dot	Within high/low-limit scale value, set the decimal point place for display value (PV). Setting range: 0, 0.0, 0.00, 0.000
CH□ low-limit scale value	CH□ Low Scale	Set display scale for analog low-limit input value (CH□ Low Range). Setting range: -9999 to 9999
CH□ high-limit scale value	CH□ High Scale	Set display scale for analog high-limit input value (CH□ High Range). Setting range: -9999 to 9999
CH□ analog display unit	CH□ Digital Unit	For analog input, set the display unit. Setting range: ℃, ℉, % , OFF
CH□ input correction	CH□ Input Bias	Input correction is to correct deviation occurred from temperature sensor. ※After input correcting, when present value (PV) is over the temperature range of the sensor, HHHH or LLLL is displayed. Setting range: -999 to 999 (-999.9 to 999.9)
CH□ input digital filter	CH□ Digital Filter	If the present value (PV) is fluctuating repeatedly by rapid change of input signal, stable recording is difficult. Input digital filter makes the present value stable. When input digital filter is set as 0.4 sec., input digital filter is applied for the input values for 0.4 sec. and the present value is may be different with the actual input value. Setting range: 0.1 to 120.0 (sec.)

※☐ : Enables to set in analog input.

3. Parameter 3 group

Parameter	Display	Descriptions
Communication write enable/disable	Communications Write	Parameter setting is enable or disable by software (DAQMaster) setting. (reading parameter set value (Read) is always possible.) Enable : Enables changing and writing by parameters Disable : Disables changing and writing by parameters
Parameter reset	Parameter Initialize	Setting range: NO, YES

※Parameters reset by changing the parameter

Group	Parameter	Display	Reset parameters
Parameter 1 group	Alarm output□ mode	Alarm□ Mode	Alarm□ High/Low_CH□
Parameter 2 group	CH□ input type	CH□ Input type	Alarm□ High/Low_CH□, CH□ Low/High Range, CH□ Scale Dot, CH□ Low/High Scale, CH□ Digital Unit, CH□ Input Bias
	CH□ sensor temprature unit	CH□ Unit	Alarm□ High/Low_CH□, CH□ Input Bias

▣ Factory Default

Group	Parameter display	Factory default	Parameter display	Factory default
Parameter 1 group	Alarm□ Target CH	Alarm1/2 : CH1 Alarm3/4 : CH2	Alarm□ High_CH□	1350
	Alarm□ Mode	Alarm1/3 : AL-1 Alarm2/4 : AL-2	Alarm□ Hysteresis_CH□	1
	Alarm□ Low_CH□	-200	—	—
Parameter 2 group	CH□ Input Type	K (CA).H	CH□ Low Scale	000.0
	CH□ Unit	℃	CH□ High Scale	100.0
	CH□ Low Range	000.0	CH□ Digital Unit	%
	CH□ High Range	100.0	CH□ Input Bias	0
	CH□ Scale Dot	0	CH□ Digital Filter	0.1
Parameter 3 group	Communications Write	Enable	Parameter Initialize	NO

▣ Input Type And Temperature Range

Input type			Display	Temperature range (℃)	Temperature range (℉)
Thermo-couple	K(CA)		K(CA).H	-200 to 1350	-328 to 2462
			K(CA).L	-200.0 to 1350.0	-328.0 to 2462.0
	J(IC)		J(IC).H	-200 to 800	-328 to 1472
			J(IC).L	-200.0 to 800.0	-328.0 to 1472.0
	E(CR)		E(CR).H	-200 to 800	-328 to 1472
			E(CR).L	-200.0 to 800.0	-328.0 to 1472.0
	T(CC)		T(CC).H	-200 to 400	-328 to 752
			T(CC).L	-200.0 to 400.0	-328.0 to 752.0
	B(PR)		B(PR)	0 to 1800	32 to 3272
	R(PR)		R(PR)	0 to 1750	32 to 3182
	S(PR)		S(PR)	0 to 1750	32 to 3182
	N(NN)		N(NN)	-200 to 1300	-328 to 2372
	C(TT)※1		C(TT)	0 to 2300	32 to 4172
	G(TT)※2		G(TT)	0 to 2300	32 to 4172
	L(IC)		L(IC).H	-200 to 900	-328 to 1652
			L(IC).L	-200.0 to 900.0	-328.0 to 1652.0
	U(CC)		U(CC).H	-200 to 400	-328 to 752
			U(CC).L	-200.0 to 400.0	-328.0 to 752.0
	Platinel II		PLII	0 to 1390	32 to 2534
RTD	Cu50Ω		CU50 .L	-200.0 to 200.0	-200.0 to 392.0
	Cu100Ω		CU100 .L	-200.0 to 200.0	-200.0 to 392.0
	JPt100Ω		JPt100.H	-200 to 600	-328 to 1112
			JPt100 .L	-200 to 600.0	-328.0 to 1112.0
	DPt50Ω		DPt50 .L	-200 to 600.0	-328.0 to 1112.0
	DPt100Ω		DPt100.H	-200 to 600	-328 to 1112
			DPt100. L	-200.0 to 600.0	-328 to 1112.0
	Nickel120Ω		NI120.H	-80 to 200	-112 to 392
Analog	Voltage	0-10V	AV1	-9999 to 9999 (the display range varies depending on the decimal point setting.)	
		0-5V	AV2		
		1-5V	AV3		
		0-1V	AV4		
		0-200mV	AmV1		
		-60-60mV	AmV2		
	Current	0-20mA	AmA1		
		4-20mA	AmA2		

※1. C(TT): same as existing W5(TT) type sensor ※2. G(TT): same as existing W(TT) type sensor

▣ Troubleshooting

Displays at software (DAQMaster).

Display	Description	Troubleshooting
OPEN	Flashes if input is broken or disconnected.	Check input sensor status.
HHHH	Flashes if present value is higher than the temperature range of the sensor.	When input is within the rated temperature range of the sensor, this display disappears.
LLLL	Flashes if present value is lower than the temperature range of the sensor.	

※When error displays and input is connected or within the rated temperature range of the sensor, the error display disappears and the unit operates normally.

▣ Caution During Use

1. When connecting PC with the unit, and changing PC USB port to another (changed) USB port, USB driver will be reinstalled. This is not unit malfunction.
2. In case of connect PC with the several units, number of COM port will be numbered in order. This is not unit malfunction. (e.g.: COM14, COM15 ... COM256)
3. When connecting PC with the unit via USB connector, check COM port number before communication. (This is not unit malfunction.)
4. When connecting PC with the unit via USB cable, do not use the extension cable to extend USB cable length. It may cause malfunction.
5. When connecting PC with the unit via USB hub which is external power supply type, external power must be supplied for normal operation.
6. USB cable must be the dedicated specifications.
7. When using USB cable over 3m, make sure the noise countermeasures.
8. USB cable should not be broken or shorted. Check the cable before supplying the power.
9. Check the connection is correct.
10. Use the unit within the rated voltage range.
11. For preventing inductive noise, the unit should be separated with high-voltage cable or power cable.
12. Do not use the unit with the below environment.
    ① Place where severe vibration or shock is present
    ② Place where strong alkalis or acids are used
    ③ Place where direct ray of the sun is present
    ④ Place where strong magnetic field or electric noise are generated
13. Storage
    Keep the unit -20 to 60℃, 35 to 85%RH with avoiding direct ray of light. It is recommended to keep the unit package as it is.
14. This unit may be used in the following environments.
    ①It shall be used indoor. ②Altitude up to 2,000m
    ③Pollution degree 2 ④Installation category I

※**Failure to follow these instructions may result in product damage.**

▣ Major Products

■ Photoelectric Sensors ■ Temperature Controllers
■ Fiber Optic Sensors ■ Temperature/Humidity Transducers
■ Door Sensors ■ SSRs/Power Controllers
■ Door Side Sensors ■ Counters
■ Area Sensors ■ Timers
■ Proximity Sensors ■ Panel Meters
■ Pressure Sensors ■ Tachometers/Pulse(Rate) Meters
■ Rotary Encoders ■ Display Units
■ Connector/Sockets ■ Sensor Controllers
■ Switching Mode Power Supplies
■ Control Switches/Lamps/Buzzers
■ I/O Terminal Blocks & Cables
■ Stepper Motors/Drivers/Motion Controllers
■ Graphic/Logic Panels
■ Field Network Devices
■ Laser Marking System(Fiber, CO_2, Nd:YAG)
■ Laser Welding/Cutting System

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