

INSTRUCTION SHEET

SA1P Series Portable Sensor Checker

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

Safety Precautions

Special expertise is required to use the SA1P.

- Read this instruction sheet to make sure of correct operation before starting installation, wiring, operation, maintenance, and inspection of the SA1P. Keep this instruction sheet where it can be accessed by the end user.
- All SA1P are manufactured under IDEC's rigorous quality control system, but users must add backup or failsafe provisions to control systems use the SA1P in applications where heavy damage or personal injury may be caused if the SA1P should fail.
- Make sure that the operating conditions are as described in this instruction sheet. If you are uncertain about the specifications, contact IDEC before using the SA1P.
- In this instruction sheet, safety precautions are categorized in order of importance from Warning and Caution:

WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

WARNING

- Turn off the power to the SA1P before starting installation, removal, wiring, maintenance, or inspection on the SA1P. Failure to turn off the power may cause damage, electrical shocks or fire hazard.

CAUTION

- Install the SA1P in environments as described in this instruction sheet. If the SA1P is used in places where it is subjected to high-temperature, high-humidity, condensation, corrosive gases, excessive vibrations, or excessive shocks it will result in electrical shocks, fire hazard, or malfunction.
- The environment rating for using the SA1P is "Pollution degree 2."
- Prevent metal fragments and pieces of wire from dropping inside the SA1P housing. Ingress of such fragments and chips may cause fire hazard, damage, or malfunction.
- Do not disassemble, repair, or modify SA1P.
- Dispose of the SA1P as an industrial waste.

Notes for Operation

- Battery-powered operation may not be possible depending on the type of mobile battery. Connect the SA1P to a mobile battery with output of 5V DC, 2A or higher. Inrush current occurs at the USB port. As a result, depending on the load conditions of the external output (sensor power supply), overcurrent may occur on the USB power supply side, preventing correct operation. When battery-powered operation is not possible, symptoms may include dim and flashing indicators, or a failure of a sensor or other device to operate even when correctly connected. In such cases, change to a suitable mobile battery.
- While a USB power supply with output of 5V DC, 2A or higher is recommended, when using a 5V-0.5A, 5V-1.0A, or 5V-1.5A USB power supply, use with the external output (sensor power supply) load conditions shown in the table below.

- External output (sensor power supply) load conditions (reference)

USB power rated	external output (sensor power supply) load conditions
5V DC-0.5A	Buzzer ON: 30mA maximum, Buzzer OFF: 60mA maximum
5V DC-1.0A	Buzzer ON: 110mA maximum, Buzzer OFF: 140mA maximum
5V DC-1.5A	Buzzer ON: 170mA maximum, Buzzer OFF: 200mA maximum

- Fully charge the mobile battery before connecting it. If the SA1P is connected when the mobile battery is not fully charged, battery-powered operation may not be possible.
- The provided fastening belt is intended for simple fastening. Be aware that it is not intended as a belt to prevent falling. Use sufficient caution to prevent the mobile battery from falling during transport and use.
- Take care not to apply any physical loads to the USB connector. When the USB cable is connected, do not subject it to extreme bends, or forceful pushing or pulling. Doing so may result in malfunction.
- In addition to the provided USB cable, a USB cable purchased in the market can also be used. However be aware that no guarantee of operation is provided when aftermarket parts are used.

1 TYPE

Type No.: SA1P-UC24V

2 Specification

- The SA1P is used to check the operation of sensors, switches, and similar components that operate on 24V DC power.
- The power supply for the SA1P uses a USB port on a mobile battery or similar device.
- Use of the SA1P in combination with a mobile battery is convenient when taking the SA1P with you, and can also be used at desktops and work sites.

Packing

Name	Pcs/pack	Description
Main Unit	1	
Fastening belt	1	Fix the USB cable or mobile battery. color: Black length: 0.3m, width: 20mm, thickness: 1mm
USB Cable	1	This cable is used to connect the SA1P and the power supply. Connector (main unit side): USB type C Connector (power supply side): USB type A Length: 0.25m
Strap	1	Used to prevent the SA1P from falling.

Environmental Specifications

Operating Temperature	-10 to +50°C (no freezing)
Relative Humidity	30 to 85%RH (no condensation)
Storage Temperature	-25 to +70°C (no freezing)
EMC Resistance	IEC/EN61000-6-2, IEC/EN61000-6-4
Laws and Compatible Standards	Comply with EU directives (EMC Directive, RoHS Directive)

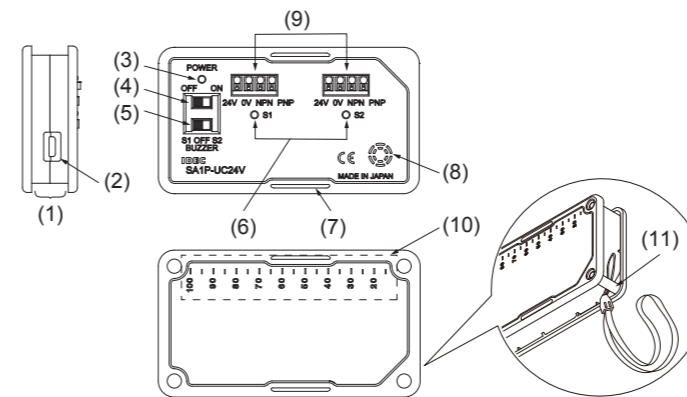
Electrical Specifications

	Power supply	Sensor connection	Buzzer Output	Slide Switches	Indicator
Connectors	USB Type-C connector (USB2.0 Type-A conversion cable on the main unit) *1	Connectors	Terminal S1, S2 (push-in type)	POWER Switch (ON-OFF)	POWER indicator (Green)
USB power rated	5V DC, 2A maximum	External Output (for sensor power)	24V DC±10% 200mA maximum (Total of S1 and S2)	Buzzer Switch (S1-OFF-S2)	Signal input indicator S1 side (Red)
Input Current	Maximum Load Current: 1.8A (when Buzzer ON), 1.5A (when Buzzer OFF) No Load: 0.2A	Points	2 points		Signal input indicator S2 side (Red)
		Connect type *2	NPN: Connect to 24V type NPN open collector output. PNP: Connect to 24V type PNP open collector output.		
		Input Current	NPN: Buzzer output ON: 25mA (peak current 50mA) /point Buzzer output OFF: 2mA/point PNP: Buzzer output ON: 2mA/point Buzzer output OFF: 2mA/point		
		Minimum Input Time	0.5s		

*1 It is recommended that the USB cable which was provided with the product be used. If an aftermarket USB cable is used instead of the recommended cable, select a short cable length in consideration for the voltage drop that occurs when current flows in the USB cable. The guarantee of operation does not apply when an aftermarket USB cable is used.

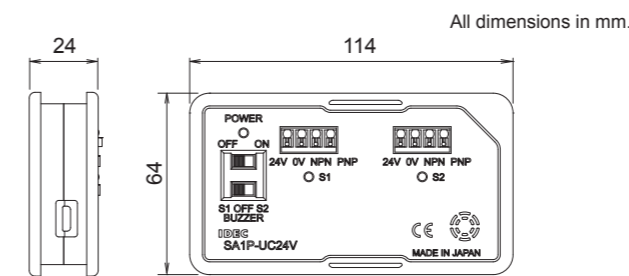
*2 Although a proximity switch, a switch or other device with contacts can be connected, a DC 2-wire type sensor with built-in power supply cannot be connected.

3 Part Names



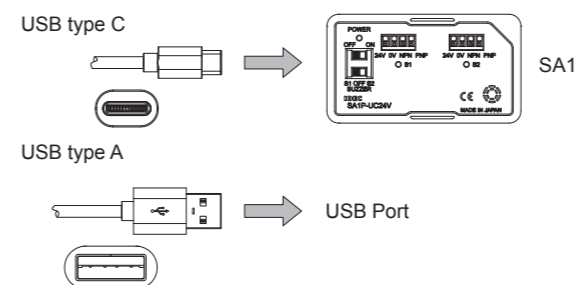
No.	Part Name	Description
(1)	Cable Groove	This groove is used for winding the USB cable.
(2)	USB Connector	USB Interface, Connector: Type C
(3)	POWER Indicator	Illuminated green. POWER switch is on (the SA1P is energized).
(4)	POWER Switch	This switch turns the power on/off.
(5)	Buzzer Switch	The buzzer sounds according to the external input signal. Terminal S1, S2, or off can be selected.
(6)	Input LED	Illuminated red. Illuminates according to the external input signal.
(7)	Hole for fastening belt	These holes are for passing the fastening belt through. There are 4 holes located on the top, bottom, front, and back.
(8)	Buzzer	Single tone (tone length is adjustable) The buzzer sounds according to the input signal at the terminal selected with the buzzer switch.
(9)	Terminal S1/S2	These terminals are used to supply power to the external device. 24V DC can be supplied to 2 devices at the same time.
(10)	Measure	A scale is stamped at 5 mm intervals on the edge of the SA1P.
(11)	Hole for strap	This hole is for installing the strap.

4 Dimensions



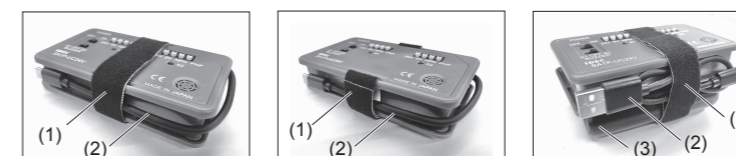
5 Connecting

Use the provided USB cable and connect the SA1P to a mobile battery. Connect the Type-C side of the USB cable to the USB connector on the SA1P and the Type-A side to the USB connector on the mobile battery.



6 Storage

The SA1P can use the included fixing belt to compactly store the USB cable and mobile battery.

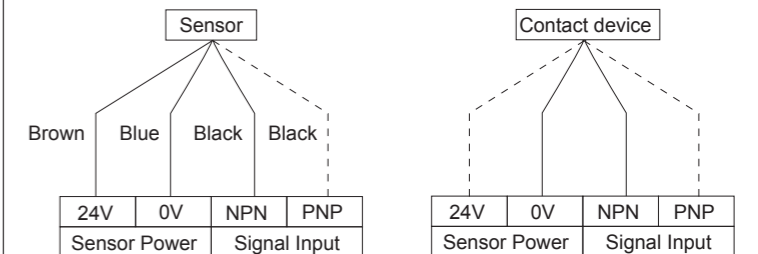


No.	Name
(1)	Fastening belt
(2)	USB cable
(3)	Mobile battery

7 Wiring

The wiring for terminals S1/S2 is as shown below. The dotted line, PNP type of wiring. When the signal to NPN or PNP is input from the sensor, the buzzer and LED turns ON. For the buzzer output, use the buzzer switch to select terminals S1, S2, or OFF.

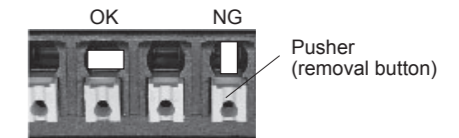
- 3-wires Sensor
- Proximity switch, Switch or other device with contacts



Note: 2-wire type sensor with built-in power supply cannot be connected.

[Precautions when inserting and removing wires]

- When connecting a stranded wire, insert the wire fully in the wiring port. Wire is connected when the pusher is released.
- When connecting a wire with ferrules, connect to the terminal block so that the ferrule longer direction faces sideways. (Refer to the below diagram.)



- When disconnecting a wire, use a flat blade screwdriver or similar tool and press the pusher (removal button) with approximately 20 N of force while pulling the wire straight out.
- Be careful not to damage the push-in terminal. Do not apply 40 N or more of force when pressing the pusher. Do not pull out the cable without pressing the pusher.

8 Applicable Cable / Recommended Ferrule / Recommended Screwdriver

The recommended ferrule is made by Weidmüller. To crimp the ferrules shown below, use a special crimping tool. To the terminal block, use the recommended screwdriver made by Weidmüller.

- Applicable Wire and Specifications

Applicable Wire	0.2 to 1.5 mm ² (AWG16 to 24)
Wire Strip Length	8±1mm

- Ferrules with Insulated Covers

Applicable Wire (Stranded Wire)	Wire Strip Length	Recommended ferrule
AWG	mm ²	10 to 11mm
24	0.25	
22	0.34	
20	0.50	
18	0.75	H0.75/14 W (0462900000)

- Recommended tools

Tool Name	Model Number	
Flat blade screwdriver	Normal type	SDS 0.4×2.5×75 (900930000)
	With insulated cover	SDIS 0.4×2.5×75 (9008370000)
Crimping tool	S3TL-CR06D (IDEC)	

() indicates the Type No. of Weidmüller Interface GmbH & Co. KG.