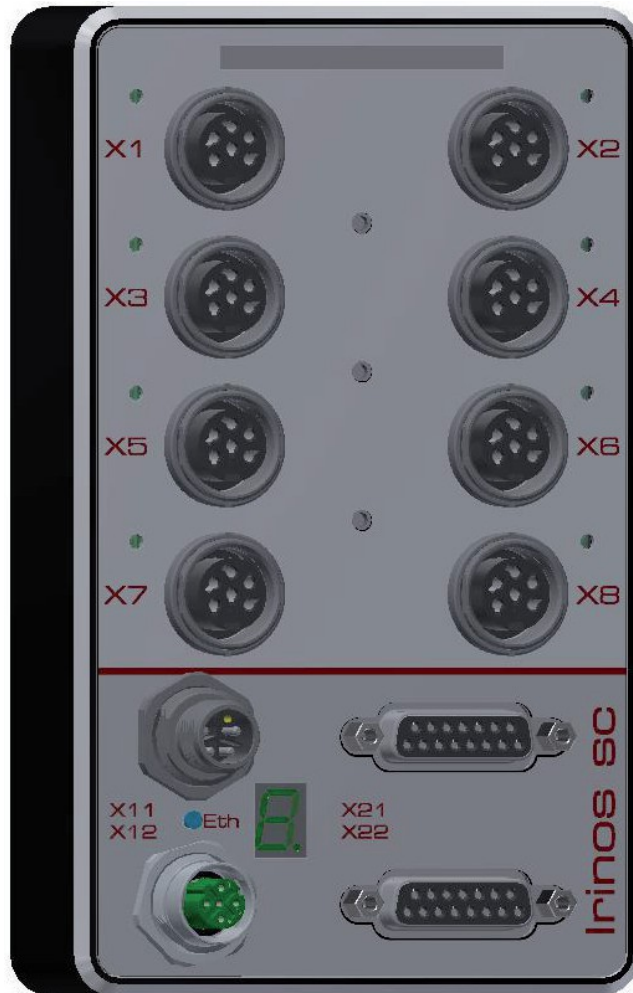


Irinos SC-AIN

Digital measurement box for
analogue inputs $\pm 10\text{ V}$



- 8 differential analogue inputs $\pm 10\text{ V}$
- Direct 24 V DC power supply to sensors
- Very high measurement accuracy and stability
- Synchronous data acquisition at up to 4,000 readings per second (all channels simultaneously)
- Can be cascaded with other Irinos boxes from the SC series via the SCLink interface (mixed operation with measurement inputs for inductive probes / incremental encoders is possible)
- Available with an integrated Ethernet interface for direct connection to a PC



Messtechnik Sachs GmbH
Siechenfeldstr. 30/1 73614
Schorndorf
www.messtechnik-sachs.de

Tel. 07181 26935-0
Fax 07181 26935-49
post@messtechnik-sachs.de

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High measurement accuracy & stability

The measurement electronics of the Irinos-Box SC-AIN are based on more than 30 years' experience in precision measurement technology at Messtechnik Sachs GmbH.

Each measurement channel has its own input circuit with high-quality analogue components. It is designed as a differential circuit, ensuring a stable measurement result even under difficult cabling conditions.

The AD converter and the reference voltage source have high temperature stability across the entire measurement range. AD conversion is fully synchronous (no multiplexing).

Factory calibration

All measurement channels are pre-calibrated at the factory to the voltage range ± 10 V. Calibration by the user is not required.

As well as simplifying commissioning, this also allows for the seamless replacement of an Irinos box with an identical model.

24 V power supply for sensors

Each measurement channel has a 24 V output. External sensors can be powered directly via this output.

+10 V reference voltage

Each measurement channel has a +10V reference voltage output. This allows, for example, potentiometers to be connected directly.

Cascading

Several Irinos boxes can be cascaded together via the SCLink interface. It makes no difference whether these are additional Irinos SC-AIN boxes or Irinos boxes from the SC series designed for other measurement inputs (e.g. for inductive probes or incremental encoders).

The SCLink interface combines data exchange between the Irinos boxes, their time synchronisation and the transmission of the power supply. Cascading is carried out via a single SCLink connection cable. A maximum of 12 Irinos boxes can thus be connected in a daisy-chain configuration to form a complete measurement system.



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The number of Irinos boxes is irrelevant when reading out the measured values on the PC. Cascading merely changes the number of available channels. The PC always communicates with the system via a single Ethernet connection.

Synchronous high-speed measurement

In many measurement tasks, the measurement curves from different measurement inputs must be recorded in real time and calculated in relation to one another (e.g. for runout measurements).

The Irinos SC-TFV box can record 4,000 measurement values per second. This rate applies regardless of the number of channels. For example, in a real-time measurement with 32 measurement channels, $32 \times 4,000$ measurement values per second = 128,000 measurement values per second can be recorded.

The measured values are recorded synchronously and temporarily buffered in the internal memory of an Irinos-Box before being transferred to the PC via Ethernet.

Electrical isolation

Every Irinos box features multiple levels of galvanic isolation.

The galvanic isolation of the supply voltage ensures that external interference cannot reach the measurement electronics.

Additional galvanic isolation of the SCLink interface, required for cascading multiple Irinos boxes, enables particularly robust communication. Furthermore, this prevents ground loops or similar interference effects that may occur in practice.

Labelling

The measurement inputs can be labelled using an optional labelling tray. The labelling tray can hold 8 plastic labelling plates, as is standard in control cabinet construction. The labelling plates can be printed on using most commercially available printing systems.



Irinos SC-AIN

Technical data

Analogue inputs	
Connectable sensors	All sensors with an analogue output of ± 10 V or less. For example: ○ Temperature sensors ○ Force sensors ○ Pressure transducers
Number of channels	8 analogue inputs, plug-in (8x M16 7-pin connectors)
Channel configuration	8 independent differential input channels (no multiplexing -> no settling times)
Synchronisation	Simultaneous acquisition from all measurement channels (jitter within a single Irinos box: 0 ns; across cascaded Irinos boxes: < 250 ns)
Calibration	All measurement inputs are factory-calibrated to the measurement range ± 10 V. No calibration of the measurement inputs by the user is required.
Measurement range	-10 to +10 V DC
Maximum resolution	0.3 mV (16-bit)
Calibration range	64,000 digits: -32,000 -> -10 V 0 -> 0 V +32000 -> +10 V
Input impedance	typically 1 M Ω For special applications, > 10 M Ω available on request.
Measurement speed	4,000 measurements/s regardless of the number of channels
Power supply for sensors	
Output voltage	Actual supply voltage minus the voltage drop across the thermal fuse. For a 24.0 V DC power supply: min. 23.5 V, typically 23.9 V DC at an output current of 100 mA min. 22.5 V, typically 23.2 V DC at an output current of 1 A
Output current	Max. 1 A in total for all 8 channels
Overload protection	Automatically resetting thermal fuse, rated trip current: 1.5 A @ 23°C / 1.1 A @ 50°C



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Power supply

Rated voltage	24 V DC $\pm$ 10 %
Connector on the master box (type -EPI)	Optionally M12 L-coded with pinout in accordance with the industry standard or via DSUB on the SCLink interface.
Reverse polarity protection	Yes Power
consumption	$\leq$ 4 watts Version
	Galvanically isolated
Cascading	When cascading multiple Irinos boxes, the power is supplied via the SCLink interface (no separate power supply required). Power is supplied via a power supply unit from the Irinos series, e.g. IR-PU.

Ethernet interface on the master box (type -EPI)

Connector	M12 D-coded (industry standard) Speed
	100 Mbit/s (auto cross-over detection)
Maximum cable length	100 m, recommended: < 30 m

Housing

Design	Designer housing: black anodised aluminium, rear plate natural anodised, front panel with front film
Dimensions	160 x 98 x 33 mm (H x W x D)
Protection rating	IP65 when connected with suitable mating connectors (housing and communication connectors); analogue sockets comply with the manufacturer's standard IP40.
Standard mounting	2 M4 threaded sockets on the rear
Mounting accessories	○ Adapter for top-hat rail mounting ○ Flange plate for quick-change mounting, e.g. on a steel plate. ○ Mounting bracket for 40mm Item profile ○ Mounting stand for 40mm Item profile
Labelling	Option to label the measurement inputs using label holders (accessories).

Miscellaneous

Temperature range	Operation: 0 – +50 °C / Storage: -20 – +70 °C
Status display	7-segment display for showing the box number or an error. Expansion Easy daisy-chaining of 12 Irinos boxes via the SCLink interface. This allows expansion to up to 96 probes. Can be combined with other measurement inputs, e.g. inductive probes, incremental encoders, thermocouples, as well as digital inputs and outputs.
PC communication	Ethernet. A DLL is available (Windows) for easy integration into PC software. Alternatively, access is possible via a Telnet-like interface.



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Ordering information

Two different basic types are available: the Master Box and the Slave Box. A Master Box is essentially a Slave Box with an additional Ethernet interface and a connection for the power supply. A system consists of exactly one Master Box and optional Slave Boxes.

828-3049 **SC-AIN-8-D10-M16-EPI**

Irinos SC-AIN boxes with analogue inputs

Item No.	Description
	8 analogue inputs ± 10 V, plug-in type , including an Ethernet interface for direct connection to a PC, power supply via M12 L-coded connector
828-3011	SC-AIN-8-D10-M16-IL 8 analogue inputs ± 10 V, direct plug-in , without Ethernet interface (suitable only as an add-on box for cascading)

Accessories Power supply unit (1 required per system)

Type	Europe (Schuko plug)	USA / Mexico (NEMA)	India (Type D)
Power 30 W	828-5046	828-5100	828-5082
Power 80 W	828-5083		828-5088

Accessories for labelling and mounting

Item no.	Description
828-5040	IR-MIPL-8-ABB179 Label holder for 8 ABB179 labels 828-5081 IR-MIPL-8-
	COLOR Labelling holder with 8 coloured labelling areas for laser/engraving labelling
828-5041	IR-MHRM-1 Mounting adapter for top-hat rail mounting 828-
5042	IR-MFFM-1 Mounting flange for quick-change mounting 828-
5043	IR-MITEM-40 Mounting bracket for Item profile 40 mm
828-5044	IR-MWIP-40 Mounting stand for Item profile 40 mm



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Ethernet cable accessories

Item no.	Description
828-5050	Ethernet cable IR-CETH-RJ45-M12-010 Length 1 m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded
828-5051	Ethernet cable IR-CETH-RJ45-M12-020 Length 2 m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded
828-5052	Ethernet cable IR-CETH-RJ45-M12-050 Length 5 m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded
828-5053	Ethernet cable IR-CETH-RJ45-M12-100 Length 10 m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded
828-5054	Ethernet cable IR-CETH-RJ45-M12-150 Length 15m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded
828-5076	Ethernet cable IR-CETH-RJ45-M12-200 Length 20 m, Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded



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The boxes are connected via the SCLink interface using ILink cables. **Please note the maximum total cable length (20m).**

Accessory: ILink connection cable for cascading multiple Irinos boxes	
Item no.	Description
828-5055	ILink connection cable IR-ILINK-002-IP40 Length 0.2 m, protection class IP40
828-5056	ILink connection cable IR-ILINK-010-IP40 Length 1 m, protection class IP40
828-5057	ILink connection cable IR-ILINK-020-IP40 Length 2 m, protection class IP40
828-5058	ILink connection cable IR-ILINK-030-IP40 Length 3 m, protection class IP40
828-5059	ILink connection cable IR-ILINK-050-IP40 Length 5 m, protection class IP40
828-5060	ILink connection cable IR-ILINK-100-IP40 Length 10 m, protection class IP40
828-5061	ILink connection cable IR-ILINK-002-IP65 Length 0.2 m, protection class IP65
828-5062	ILink connection cable IR-ILINK-010-IP65 Length 1 m, protection class IP65
828-5063	ILink connection cable IR-ILINK-020-IP65 Length 2 m, protection class IP65
828-5064	ILink connection cable IR-ILINK-030-IP65 Length 3 m, protection class IP65
828-5065	ILink connection cable IR-ILINK-050-IP65 Length 5 m, protection class IP65
828-5066	ILink connection cable IR-ILINK-100-IP65 Length 10 m, protection class IP65
828-5079	ILink connection cable IR-ILINK-150-IP65 Length 15 m, protection class IP65
828-5077	ILink connection cable IR-ILINK-200-IP65 Length 20 m, protection class IP65

Unused SCLink sockets (D-sub sockets) and incremental encoder sockets on the Irinos boxes can be sealed to IP65 using the following protective cap:

Accessory: Protective cap for SCLink interface	
Item No.	Description
828-7020	DSUB15 socket protective cap, IP65, screw-on

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