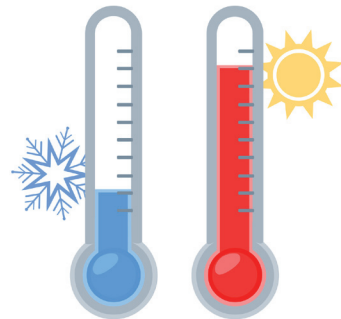# Irinos IR-TEMP

Temperature measurement for the Irinos-System via thermocouples

- ○ Direct connection of thermocouples

- ○ Integrated cold-junction compensation

- ○ Very high measurement accuracy and stability

- ○ Galvanic isolation of each measurement channel

- ○ Sampling rate ~ 4 Hz for each measurement channel

- ○ Expandable with other Irinos-Boxes via ILink interface

Irinos IR-TEMP

Precise measurement technology

The measurement electronics of the Irinos-Box IR-TEMP provides a precise and reliable temperature measurement via thermocouples.

An important quality characteristic for the temperature measurement with thermocouples is the so-called cold-junction compensation. It compensates measurement value variations, which occur because of temperature changes of the measurement electronics and of the connectors (in other words: changes of the ambient temperature).
The Irinos-Box IR-TEMP has a very precise compensation. The remaining variations are typically below 0.02°C per °C ambient temperature. Thus they can typically be neglected in practice.

By connecting the thermocouple sensor directly to the Irinos-Box IR-TEMP, the acquisition of the temperature value is directly connected to the sensor cable. This minimizes potential interferences on the temperature signal.

Pre-calibration

All temperature inputs are pre-calibrated (2-point-calibration at 20°C and 50°C). A calibration of the Irinos-Box by the user is not required.

This allows for an easy setup and a trouble-free replacement by an identical model.

High measurement speed

The temperature is sampled with approximately 4 Hz per channel. If a fast thermocouple is used, the workpiece temperature can be measured very quickly.

Integrated error detecion

An integrated error detection mechanism identifies sensor- and cabling-problems.

If a single measurement turns out to be invalid, the measurement value is dropped and no error is reported. In case of multiple invalid measurements, an error Bit is set.

Additionaly the sensor state is displayed via an LED directly besides the respective connector.

Irinos IR-TEMP

Expansion

Multiple Irinos-Boxes can be connected via the ILink-Interface. It does not matter, whether they are of the same type IR-TEMP or for other measurement inputs (e.g. for incremental encoders).

The ILink-Interface containes three different functionalities:

• Data-exchange between Irinos-Boxes

• Synchronisation of multiple Irinos-Boxes

• Power-supply for the Irinos-Boxes

32 Irinos-Boxes at a maximum can be connected in line topology to build up a whole measurement system.

The amount of Irinos-Boxes has no influence on reading the measurement values from the PC, except that more channels are available. All measurement values are transferred via a single ethernet connection from the Irinos-System to the PC. This allows an easy integration into Windows based measurement software (DLL available).

Galvanic Isolation

Each Irinos-Box has galvanic isolation.

The galvanic isolation from the power supply ensures that external noise will not influence the measurement electronics.

Additionally the ILink-Interface has galvanic isolation, which allows for a robust communication between multiple Irinos-Boxes. Further it avoids ground loops or similar negative effects.

The Irinos-Box IR-TEMP has an additional galvanic isolation of each measurement channel. This avoids any interference between multiple temperature measurement channels.

Labelling

Each measurement channel can be labelled via an optional label carrier. It is suitable for 8 plastic-labels, which are widely used in switch cabinet construction. They can be printed with many commercially available plastic-label printers.

Irinos IR-TEMP

Specifications

Inputs for **Thermocouples type K**	
To be used with thermocouple types	○ Type K (NickelChromium-Nickel) ○ others on request
Number of channels	2, directly connected (4 on request)
Connectors type	Miniature thermocouple connector, 1 wide pin, 1 narrow pin
Channel setup	independent input channels, galvanically isolated
Calibration	Pre-calibration of all measurement channels (2-point-calibration at 20°C and 50°C). No calibration of the measurement channels required by the customer.
Measurement speed	approximately 4 measurements/s, independent of the number of channels
Measurement range	-200 .. +300°C
Temperature coefficient	Typically < 0,02°C per °C change of ambient temperature Max. 0,05°C per °C change of ambient temperature (within the measurement range 20°C .. 50°C.)
Resolution	0,01°C

Power supply	
Rated voltage	24 V DC ± 10 %
Reverse voltage protection	yes
Power consumption	≤ 4 watt
Coupling	galvanic isolation
Forwarding	If multiple Irinos-Boxes are used, the power-supply is forwarded via the ILink-Interface to all Irinos-Boxes (no separate power supply required).

Use an Irinos power supply, e.g. IR-PU50.

Irinos IR-TEMP

Casing	
	Aluminium designer housing, black anodized, rear plate clear anodized, front plate with cover foil
Dimensions	160 x 98 x 33 mm (H x W x D)
Protection class	IP65 if IP65 ILink cables are used; except thermocouple connectors
Mounting (standard)	2 tapped bushes M4 on the rear side
Mounting options	○ adaption for hat rail mounting ○ adaption for aluminium profile 40mm, Item or similar ○ adaption for front side mounting
Labelling	Optional label carrier for plastic labels type „Murrplastik ABB 17x9" (order number Murrplastik: 86421020).

Miscellaneous	
Temperature range	operation: 0 - 50 °C / storage: 0 - 70 °C
Status indication	Numeric display showing box-number and/or error.
Expansion	System expansion up to 32 Irinos-Boxes via ILink-Interface (max. 256 probes possible). Combinable with other inputs, e.g. for incremental encoders, analog inputs, digital in/outputs, etc.
Connection to PC	Standard ethernet. DLL available for easy integration into PC software (Windows based).

Irinos IR-TEMP

Ordering information

Preferred types have shorter lead times.

Irinos-Boxes IR-TEMP for thermocouples		
Order-No.	**Description**	**Preferred type**
828-5027	**IR-TEMP-2-TCK-MINIJACK-IL** 2 channel **thermocouple type K**, measurement range -200 .. +300 °C, **without Ethernet**-Interface (additional Irinos-Box), without digital inputs	Yes

Accessories labelling and mounting		
Order-No.	**Description**	**Preferred type**
828-5040	**IR-MIPL-8-ABB179** Labelling carrier for 8 plastic labels	Yes
828-5041	**IR-MHRM-1** Adapter for hat rail mounting	Yes
828-5042	**IR-MFFM-1** Front-side mounting kit	Yes
828-5043	**IR-MITEM-40** Mounting bracket for aluminium profile 40mm (Item or similar)	Yes
828-5044	**IR-MWIP-40** Stand for aluminium profile 40mm (Item or similar)	Yes

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Accessories ILink connection cable between multiple Irinos boxes		
Order-No.	**Description**	**Preferred type**
828-5055	ILink connection cable **IR-ILINK-002-IP40** Length 0,2 m, protection class IP40	Yes
828-5056	ILink connection cable **IR-ILINK-010-IP40** Length 1 m, protection class IP40	Yes
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	

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