

Irinos IR-MASTER

Ethernet Interface-Box
for the connection of the Irinos-System
to a PC



- Connection of the Irinos-System to a PC via standard ethernet 10/100 MBit/s
- To be expanded by other Irinos-Boxes via ILink-Interface (e.g. for inductive probes / incremental encoders)
- 3 differential analogue inputs ± 10 V, e.g. for temperature measurement
- 4 integrated in- and outputs
- I/O-Bus for the connection of separate I/O-Boxes



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Irinos IR-MASTER

3 analogue inputs $\pm 10V$

Available with variant IR-MASTER-KB1.

Three analogue inputs $\pm 10V$ allow the direct connection of various sensors to the IR-MASTER.

Each connector provides 24V as sensor supply. For the connection of potentiometers, a reference voltage of +10V is available.

The analogue measurement values can be sampled synchronously with all other measurement inputs.

4 integrated in- and outputs

Available with variant IR-MASTER-KB1.

The IR-MASTER provides 4 digital in- and outputs. They can for example be used to connect push buttons, foot pedals or signal lamps.

Connectors M12 are with pinning according to industrial standard. A 24V output is available at each connector.

Digital in-/outputs via I/O-Bus

Via the I/O-Bus separate I/O-Boxes with 64 in- and outputs in total can be connected.

The I/O-Boxes are available with an integrated power supply for higher load applications.



I/O-Box for I/O-Bus with integrated power supply



Example connection module for I/O-Box

The digitale inputs can be read with an update rate of about 30 Hz.



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Expansion

Multiple Irinos-Boxes with different input types can be connected via the ILink-Interface.

The ILink-Interface contains 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.

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.



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Specifications

Analogue inputs	
Sensor inputs for	All sensors with analogue output ± 10 V or lower. For example: <ul style="list-style-type: none">○ Temperature sensors○ Force sensors○ Pressure transducers
Number of channels	8 analogue inputs, directly connected (8x M16 7-pin)
Channel setup	8 independent differential input channels (no multiplexing -> no settling time)
Synchronisation	Simultaneous acquisition of all measurement channels (jitter using one Irinos-Box: 0ns; jitter using multiple Irinos-Boxes: < 250 ns)
Calibration	Pre-calibration of all measurement channels. No calibration of the measurement channels required by the customer.
Measurement range	-10 .. +10 V DC
Max. resolution	0,3 mV (16 Bit)
Calibration range	64000 digits: -32000 -> -10 V 0 -> 0 V +32000 -> +10 V
Input impedance	typically 1 MOhm
Measurement speed	10.000 measurement values / s independent of the number of channels

Digital inputs	
Connector	M12 A-coded (industrial standard)
Number of inputs	4 (2 per M12 connector)
Voltage range	0 .. 26,4 V DC
Voltage levels	Similar to IEC61131-2: 0 .. 5 V -> Low 10,8 .. 26,4 V -> High
Input current	typically ca. 4 mA at 24V.
Coupling	galvanic isolation
Power supply	Yes (24 V DC) Usable for the supply of external compinents (e.g. limit switches). Specification see „power supply for digital I/O and analogue inputs“.



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Digital outputs

Connector	M12 A-coded (industrial standard)
Number of outputs	4 (2 per M12 connector)
Max. output current	0,7 A per channel; max. total current: 1 A Supply specification see „power supply for digital I/O and analogue inputs“.
Short circuit protection	yes
Coupling	galvanic isolation
Power supply	Yes (24 V DC) Usable for the supply of external compinents (e.g. limit switches). Specification see „power supply for digital I/O and analogue inputs“.

Power supply for digital I/O and analogue inputs

Output voltage	Input voltage from ILink minus voltage drop of thermo fuse. With power supply 24,0 V DC: min. 23,5 V, typically 23,9 V DC at 100 mA output current min. 22,5 V, typically 23,2 V DC at 1 A output current
Output current	max 1 A (sum for all 8 channels)
Overload protection	Self-resetting thermofuse, Rated current: 1,5 A @ 23°C / 1,1 A @ 50°C

Power supply

Rated voltage	24 V DC \pm 10 %
Reverse voltage protection	yes
Power consumption	\leq 5 watt (plus power consumption of connected components)
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.

Ethernet-Interface

Connector	M12 D-coded (industrial standard)
Speed	10 / 100 MBit/s (auto-negotiation)
Max. cable length	100 m Auto-Crossover



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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	Up to IP65 with the IP65 Irinos-Box type, using appropriate connectors
Mounting (standard)	2 tapped brushed M4 on the rear side
Mounting options	<ul style="list-style-type: none">○ 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: 5 - 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).



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Ordering information

Preferred types have shorter lead times.

Irinos-Boxes IR-MASTER		
Order-No.	Description	Preferred type
828-5000	IR-MASTER-KB1-68-68-3-SYSP-ETHIL (*) 4 digital inputs, 4 digital outputs, 3 analogue inputs, Irinos I/O-Bus for the connection of external I/O-Boxes, Ethernet -Interface for direct connection to a PC, protection class IP53 if appropriate connectors are used.	Yes
828-5001	IR-MASTER-IOB-64-64-0-SYSP-ETHIL (*) Without analogue / digital in-/outputs. Irinos I/O-Bus for the connection of external I/O-Boxes, Ethernet -Interface for direct connection to a PC, protection class IP65 if appropriate connectors are used.	Yes

(*) Exactly one Irinos-Box with ethernet interface allowed per Irinos-System.

Irinos I/O-Boxes to be connected to the Irinos-System via the I/O-Bus		
Order-No.	Description	Preferred type
828-1832	I/O-Box with 8 digital in- and outputs Connection of 8 in- and outputs via 2 connectors M23 16-pin, direct connection via standard connection modules integrated 50W power supply 115 / 230 V AC	
828-1834	I/O-Box with 16 digital in- and outputs Connection of 16 in- and outputs via 4 connectors M23 16-pin, direct connection via standard connection modules integrated 50W power supply 115 / 230 V AC	



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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

Ethernet cables		
Order-No.	Description	Preferred type
828-5050	Ethernet cable IR-CETH-RJ45-M12-010 Length 1m , Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded	Yes
828-5051	Ethernet cable IR-CETH-RJ45-M12-020 Length 2m , Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded	Yes
828-5052	Ethernet cable IR-CETH-RJ45-M12-050 Length 5m , Cat5e, 1 x RJ45, 1 x M12 SpeedCon D-coded	Yes
828-5053	Ethernet cable IR-CETH-RJ45-M12-100 Length 10m , 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	



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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	

I/O-Bus cables for the connection of I/O-Boxes via I/O-Bus		
Order-No.	Description	Preferred type
828-8013	Connection cable for Irinos I/O-Bus Length 1m 2x circular connectors	
828-8010	Connection cable for Irinos I/O-Bus Length 3m 2x circular connectors	
828-8011	Connection cable for Irinos I/O-Bus Length 5m 2x circular connectors	



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