EtherCAT ACCESSORIES

DEWESoft®

TECHNICAL REFERENCE MANUAL

EtherCAT Accessories V23-1

1. Table of contents

2. About this document

This is the users manual for a series of EtherCAT Accessories available along with our devices.

2.1. Legend

The following symbols and formats will be used throughout the document.

Important
It gives you important information about the subject.
Please read carefully!

Hint
It gives you a hint or provides additional information about a subject.

Example
Gives you an example of a specific subject.

2.2. Online versions

2.2.1. Device Technical Reference Manual

The most recent version of this manual can be downloaded from our homepage:
https://dewesoft.com/download/manuals
In the *Hardware Manuals* section click the download link for the *Device® technical reference manual*.

2.2.2. DEWESoft® User Manual

The DEWESoft® User Manual document provides basics and additional information and examples for working with DEWESoft® and certain parts of the program.
The latest version of the DEWESoft® tutorials can be found here:
https://dewesoft.com/download/manuals
In the Software Manuals section click the download link of the DEWESoft X User Manual entry.

3. EtherCAT Accessories

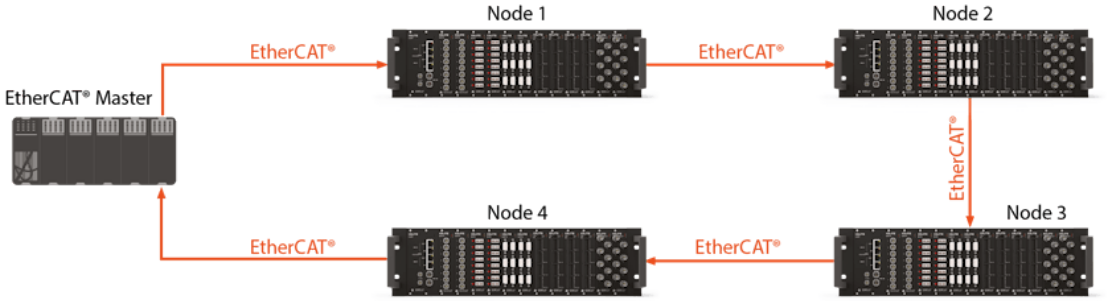
EtherCAT stands for “Ethernet for Control Automation Technology.” It is a protocol that brings the power and flexibility of ethernet to the world of:

- industrial automation,
- motion control,
- real-time control systems, and
- data acquisition systems.

The EtherCAT protocol is maintained by the EtherCAT Technology Group and is **standardized under IEC 61158**.

Advantages of DAQ and EtherCAT

- High and low-speed data from advanced DAQ systems can now be integrated perfectly into a real-time control system
- Eliminating redundant A/D processing means less complexity, better accuracy, and real cost savings
- A separate very high-speed data file is available for advanced analysis if needed, and it is also synchronized with the PLC data



An example of EtherCAT network with ring topology

Channel expansion via additional EtherCAT equipped DAQ systems

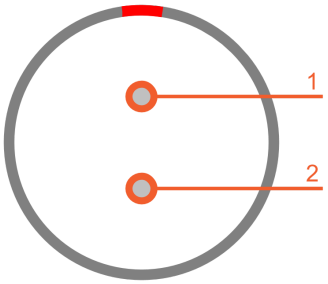
3.1. ECAT Power Junction

The ECAT Power Junction box (article number: ECAT-POWER-JUNCTION) can be used to inject power into the Ethernet connection between your PC and the KRYPTON modules: so that you only have one cable for power and data to your KRYPTON modules.

Connector Label	Connector type	Info
POWER IN	2-pin LEMO male	9 - 48 VDC: e.g. for connection from the Power-Out connector of a Sirius slice
Ethernet	RJ-45	Ethernet data connection to your PC The Ethernet cable should always be shielded! You can use an EIA568-B straight or crossover cable.
EtherCAT	8-pin LEMO female	Power and Data connection to your KRYPTON module/s use any of the ECAT to ECAT expansion cables (e.g. L1T8m-L1T8f-10M)

ECAT Power junction

3.1.1. Power in connector: Pinout

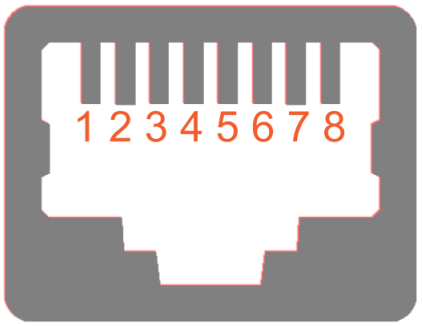


Pin	Name	Description
1	IN+	Input +
2	IN-	Input -

Power junction connector: pinout (2-pin LEMO male)

POWER IN connector (on the device): EXJ.1B.302.HLD
Mating connector (for the cable): FGJ.1B.302.CLLD
Power will be connected from 2-pin PS LEMO V+ to VCC of the 8-pin LEMO. V- is GND on the 8-pin LEMO.

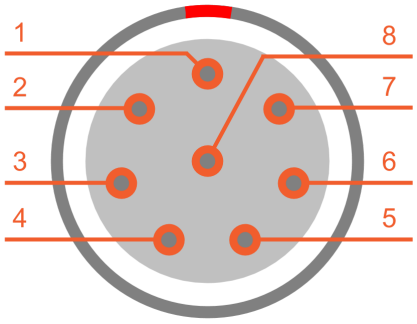
3.1.2. RJ45 connector: Pinout



Ethernet connector: pinout (RJ-45 female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	-	-
5	-	-
6	RX_N	Reception -
7	-	-
8	-	-

3.1.3. EtherCAT connector: Pinout



ECAT connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLAC65Z

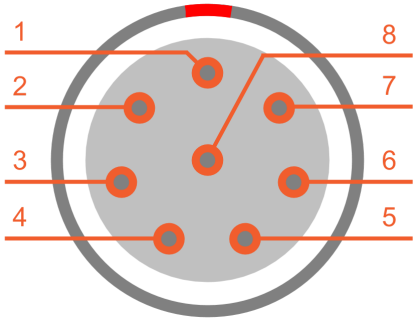
3.2. ECAT Power Injector

The ECAT Power Injector box (article number: ECAT Power Injector) can be used to inject power into the Ethernet connection between KRYPTON modules, when you can have a very long measurement chain.

Connector Label	Connector type	Info
PWR	8-pin LEMO female	Max. 48 VDC
↓ EtherCAT In ↑ EtherCAT Out	8-pin LEMO	Power and Data connection to your KRYPTON module/s use any of the ECAT to ECAT expansion cables (e.g. L1T8m-L1T8f-10M)
GND	Banana	Ground connection

ECAT Power injector

3.2.1. PWR connector: Pinout

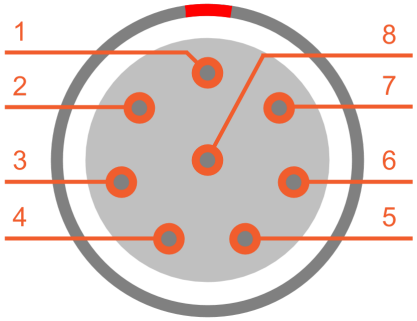


PWR connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	-	-
2	-	-
3	-	-
4	-	-
5	VCC	PWR OUT
6	VCC	PWR OUT
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

3.2.2. EtherCAT OUT connector: Pinout



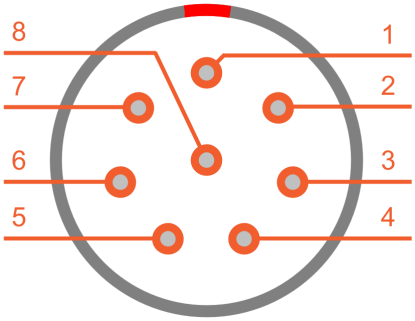
ECAT connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

3.2.3. EtherCAT IN connector: Pinout

The connector for EtherCAT is a LEMO 1T 8-pin male connector.



IN connector: pinout (8-pin LEMO male)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	-	-
6	-	-
7	-	-
8	-	-

IN connector (on the device): EGJ.1T.308.CLD
Mating connector (for the cable): FGJ.1T.308.CLL.1433

3.3. ECAT Sync Junction

The ECAT Sync Junction box can be used to inject the sync signal into the EtherCAT line. The source of the sync signal must be IRIG B DC: thus, the sync signal of Sirius USB slices can be directly connected to the ECAT Sync Junction box.

Connector Label	Connector type	Info
IN	8-pin LEMO	EtherCAT input connector: e.g. connection to the PC via L1T8f-RJ45-1M cable
OUT	8-pin LEMO	EtherCAT output connector to your KRYPTON slice/s use any of the ECAT to ECAT expansion cables (e.g. L1T8m-L1T8f-10M).
SYNC	4-pin LEMO	Input connector for the IRIG-B-DC signal (TTL level), e.g. external, or directly from Sirius USB Note: the two SYNC connectors are directly connected, so you can use the other connector as output (to daisy-chain the same sync signal to other devices: e.g. DEWE-43-A, DS-CAM, etc.)

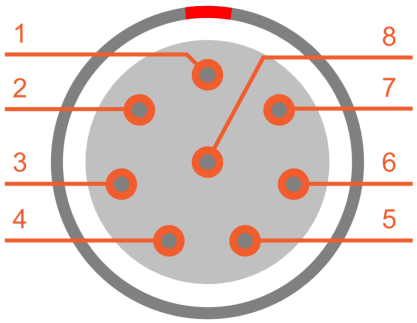
ECAT sync junction

3.3.1. ECAT Sync Junction: Specifications

Interface	
Data interface	EtherCAT®
Data Rate	100 Mbps Full Duplex bus speed
Max. Throughput per Chain	From 6 MB/s to 10 MB/s (see 1)
Sync Accuracy	< 200 ns within same EtherCAT chain < 2 µs using sync for multiple EtherCAT chains below 1 sample to Sirius®
EtherCAT®	Max. Cable Length 100 m
Max. Number of Units	64 or more (power injectors may be required)
Data Interface Connection	LEMO 1T EtherCAT® hybrid cable Single cable for data, power and sync, daisy chainable
Power specification	
Power Supply	9-48 V DC
Current	8 A DC max
Power Consumption	Typ. 1.3 W (Max. 1.5 W) (without additional power daisy-chain)

Environmental specification	
Operating Temperature	-40 to 70°C
Storage Temperature	-40 to 85°C
Shock & Vibration	Shock: SIST EN 60068-2-27:2009 (100 g, 6 ms) Random vibration
1) It depends on the devices connected, numbers of channels, configuration, length of cables and other parameters.	

3.3.2. EtherCAT out connector: Pinout



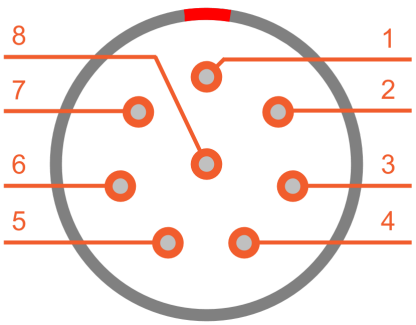
OUT connector: pinout (8-pin LEMO female)

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

3.3.3. EtherCAT in connector: Pinout

The connector for EtherCAT is a LEMO 1T 8-pin male connector.



IN connector: pinout (8-pin LEMO male)

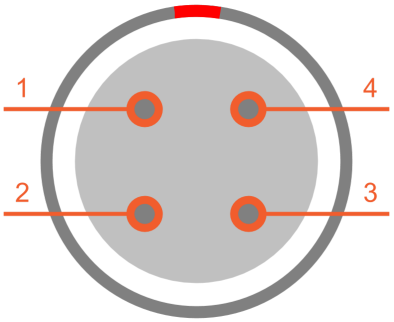
IN connector (on the device): EGJ.1T.308.CLD

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground

Mating connector (for the cable):
FGJ.1T.308.CLL.1433

8	GND	Ground

3.3.4. Sync connector: Pinout



Sync connector: pinout (4-pin LEMO female)

Pin	Name	Description
1	CLK	Clock
2	Trigg	Trigger
3	GPS-PPS	GPS - PPS
4	DGND	Digital Ground

Interface connector: EEG.00.304.CLL
Mating connector: FGG.00.304.CLAD27Z

3.4. ECAT GPS Junction

ECAT GPS Junction is used for synchronization between SIRIUS-EtherCAT or KRYPTON series to SIRIUS, IRIG-B-DC or GPS. ECAT GPS junction has a built-in 10 Hz GPS receiver and connector for connecting GPS or IRIG-B-DC time code signals. The devices are synchronized using this time code. The built-in GPS receiver can also be used for recording positioning, just like with any other navigational device.

Connector Label	Connector type	Info
IN	8-pin LEMO male	EtherCAT input connector: e.g. connection to the PC via L1T8f-RJ45-1M cable
OUT	8-pin LEMO female	EtherCAT output connector to your KRYPTON slice/s use any of the ECAT to ECAT expansion cables (e.g. L1T8m-L1T8f-10M).
SYNC	4-pin LEMO male	Input connector for the IRIG-B-DC signal (TTL level), e.g. external, or directly from the two SYNC connectors are directly connected, so you can use the other connector as output (to daisy-chain the same sync signal to other devices: e.g. DEWE-43-A, DS-CAM, etc.)
GPS	GPS ANT SMA Female Jack connector	Synchronization between SIRIUS-EtherCAT or KRYPTON series to GPS.

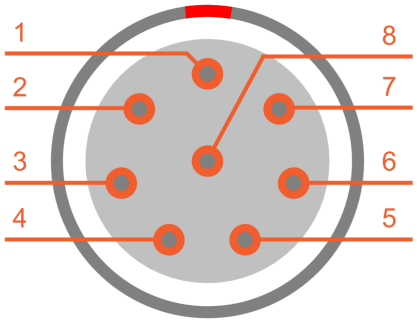
ECAT GPS junction

3.4.1. ECAT GPS Junction: Specifications

	ECAT-GPS-JUNCTION
SENSOR TYPE	
GNSS Receiver (Navigation)	✓
Dual Antenna (stationary heading determination)	-
Inertial Sensor (IMU)	-
Inertial Navigation (INS)	-
NAVIGATION	
Standalone (horizontal positioning)	2.5 m
Standalone (vertical positioning)	3 m
SBAS (horizontal positioning)	1 m
SBAS (vertical positioning)	3 m
RTK (horizontal positioning) (see 1.)	-
RTK (vertical positioning) (see 1.)	-
Velocity accuracy	0.05 m/s
Roll & Pitch accuracy (dynamic)	-
Heading accuracy (dynamic with GNSS)	-
Slip angle accuracy	-
Hot start time	< 3 s
Output data rate	10 Hz
GNSS	
Supported navigation systems (see 2.)	GPS L1, GLONASS L1
Supported SBAS systems	SBAS L1
ADDITIONAL FEATURES	
PPS output	✓
IRIG B DC output	✓
Dual antenna heading	-
RTK positioning (see 1.)	-
HARDWARE	
Interface	eCAT
Operating voltage	5V power by eCAT
Power consumption	-
Operating temperatures	-40 °C to 85 °C
Environmental protection	IP 67
Input protection	Polarity & short overvoltage protection
Shock limit	SIST EN 60068-2-27:2009 (100 g, 6 ms)
Dimensions	Standard Krypton slice
Weight	1,5 kg

INERTIAL SENSORS	
Accelerometer	-
Gyroscope	-
Magnetometer	-
Pressure sensor	-
APPLICATIONS	
Synchronisation and timing with DEWESoft DAQ	✓
Simple positioning	✓
Brake/Acceleration test	-
Vehicle dynamics	-
Lane change	-
Circle drive	-
Chassis development	-
Advanced driver assistance systems testing	-
Comfort testing	-
Pass by Noise	-
FuSi	-
Orientation of different object	-
1.) Optional fixed license with VGPS and 100Hz embedded receiver. NAVION i2 and IMU1 supplied with RTK licence by default	
2.) L2* and L5* frequencies require an RTK licence. BeiDou and GALILEO are separate licences for each constellation.	
*All navigation specifications are valid in open sky conditions!	

3.4.2. EtherCAT out connector: Pinout



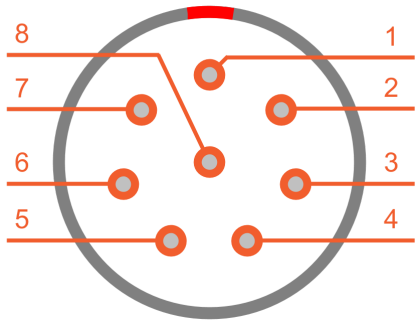
OUT connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

3.4.3. EtherCAT in connector: Pinout

The connector for EtherCAT is a LEMO 1T 8-pin male connector.

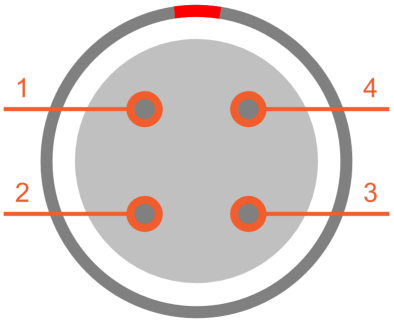


IN connector: pinout (8-pin LEMO male)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGJ.1T.308.CLD
Mating connector (for the cable): FGJ.1T.308.CLL.1433

3.4.4. Sync connector: Pinout



Sync connector: pinout (4-pin LEMO female)

Pin	Name	Description
1	CLK	Clock
2	Trigg	Trigger
3	GPS-PPS	GPS - PPS
4	DGND	Digital Ground

Interface connector: EEG.00.304.CLL
Mating connector: FGG.00.304.CLAD27Z

3.5. ECAT Repeater

The EtherCAT Repeater is a part of EtherCAT accessories used for the extension of EtherCAT hybrid cables allowing maximum connection of two 50 meters long cables. It increases connection stability for distributed EtherCAT systems with distances between measurement units larger than 50 meters.

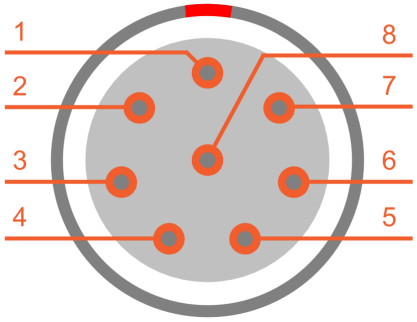
EtherCAT Repeater is a rugged inline device with an IP67 rating and corresponds to MIL-STD-810D standard. It has a LEMO 1T Series 8-pin male connector on the IN port and a female connector on the OUT port. Pinout corresponds to the standard KRYPTON devices.

EtherCAT Repeater

3.5.1. EtherCAT Repeater: Specifications

Interface	
Data interface	EtherCAT®
Data Rate	100 Mbps Full Duplex bus speed
Max. Throughput per Chain	From 6 MB/s to 10 MB/s (see 1)
Sync Accuracy	below 1 sample to Sirius®
EtherCAT®	Max. Cable Length 50 m
Data Interface Connection	LEMO 1T EtherCAT® hybrid cable Single cable for data, power and sync, daisy chainable
Input connector	L1T8m (data, power and sync)
Output connector	L1T8f (data, power and sync)
Power	
Power supply	9 - 48 VDC
Maximum current	max. 7.5 A
Power consumption	Typ. 0.72 W, Max. 1 W
Environmental	
Operating Temperature	-40 to 85 °C
Storage Temperature	-40 to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C
IP rating	IP67
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	85.3 x 35 x 34 mm (incl. connectors)
Weight	190 g
1) It depends on the devices connected, numbers of channels, configuration, length of cables and other parameters.	

3.5.2. EtherCAT out connector: Pinout



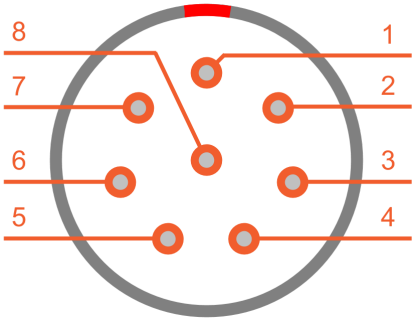
OUT connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

3.5.3. EtherCAT in connector: Pinout

The connector for EtherCAT is a LEMO 1TB 8-pin male connector.



IN connector: pinout (8-pin LEMO male)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGJ.1T.308.CLD
Mating connector (for the cable): FGJ.1T.308.CLL.1433

3.6. DS-HUBe7

DS-HUBe7 is EtherCAT HUB and allows the connection of up to 7 EtherCAT devices in a star topology. The device features the same chassis form factor as the SIRIUS modular line of DAQ systems and requires the same power supply (PS-120W-L1B2f).

The front panel includes eight standard 8-pin LEMO connectors, familiar from the SIRIUS EtherCat and KRYPTON line of instruments. The first connector is used for EtherCAT input (IN) and the other seven connectors for the EtherCAT output (OUT).

DS-HUBe7

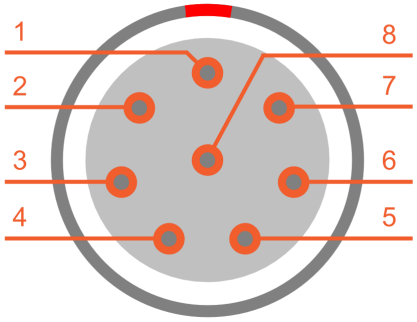
3.6.1. DS-HUBe7: Specifications

Interface	
Data interface	EtherCAT®
Data Rate	100 Mbps Full Duplex bus speed
Max. Throughput per Chain	From 6 MB/s to 10 MB/s (see 1)
Sync Accuracy	below 1 sample to Sirius®
EtherCAT®	Max. Cable Length 100 m
Max. Number of Units	64 or more (power injectors may be required)
Data Interface Connection	LEMO 1T EtherCAT® hybrid cable Single cable for data, power and sync, daisy chainable
Input	Single IN port, L1T8m (data only)
Output	7x OUT port, L1T8f (data and power from POWER IN)
Power	
Power supply	24 V typ. (18 - 30 V)

Maximum current	10 A typ., 15 A max.
Power consumption	Typ. 4 W (excl. ECAT devices)
Power out	
Type	LEMO 2pin female, daisy chain
Output Voltage	Equal to input power supply voltage
EtherCAT® Power out	
Type	Switched input supply on EtherCAT® connector, LEMO 8pin female
Maximum current	6 A typ.
Output Voltage	Equal to input power supply voltage
Environmental	
Operating Temperature	-25 to 60 °C
Storage Temperature	-40 to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C
IP rating	IP50
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	266 x 139 x 65 mm
Weight	1 kg
1) It depends on the devices connected, numbers of channels, configuration, length of cables and other parameters.	

Important
DS-HUBe7 currently supports only sample rates up to 10kHz.

3.6.2. EtherCAT out connector: Pinout



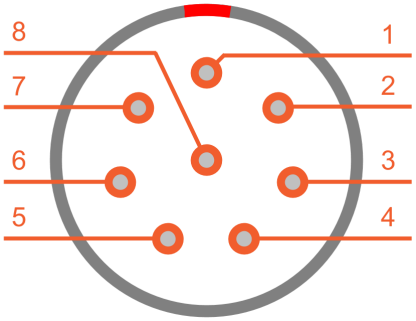
OUT connector: pinout (8-pin LEMO female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGG.1T.308.CLN
Mating connector (for the cable): FGG.1T.308.CLA.1433

3.6.3. EtherCAT in connector: Pinout

The connector for EtherCAT is a LEMO 1TB 8-pin male connector.



IN connector: pinout (8-pin LEMO male)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	RX_N	Reception -
5	VCC	PWR IN
6	VCC	PWR IN
7	GND	Ground
8	GND	Ground

IN connector (on the device): EGJ.1T.308.CLD
Mating connector (for the cable): FGJ.1T.308.CLL.1433

3.7. IOLITE Power injector

IOLITE Power Injector is a passive PoE power injector. It merges a 12-48V DC power source and the EtherCAT communication into a single CAT6 cable. The IOLITE single channel devices need the IOLITE Power injector as the first device in the chain.

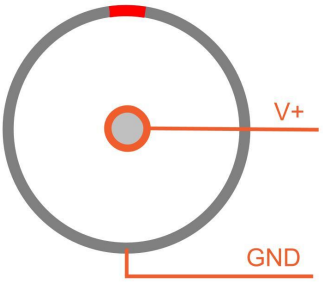
IOLITE Power injector

3.7.1. General specifications

General specifications	
Digital interface	EtherCAT
EtherCAT connector	RJ45
Power connectors	Wire terminal, 2mm jack
Erath connectors	Wire terminal
Wire terminal connector type	MC 1,5 / 3-STF-3.81
Power consumption	< 500 mW
Supply Voltage	12 V - 48 V
Operating temperature	-20 .... 60 degC
IP rating	IP20
Weight	105 g
Housing material	Aluminum

3.7.2. IOLITE Power Injector: Connector

3.7.2.1. IOLITE Power Injector: 2 mm Jack Pinout



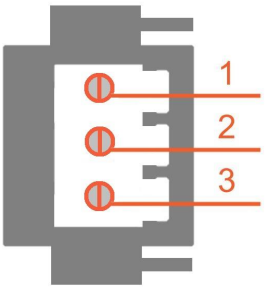
Power in connector: pin-out (2 mm DC jack, male)

Pin	Name	Description
1	V +	Supply
2	GND	Ground

For the power supply an unregulated DC voltage between 12 V and 48 V is required.

Connector (on the device): 2 mm DC power jack - PJ-067A

3.7.2.2. IOLITE Power Injector: Phoenix MC 1,5/3 Pinout



Power in connector: pin-out (Phoenix MC 1,5/3)

Pin	Name	Description
1	V +	Supply
2	GND	Ground
3	EARTH	Earth

For the power supply an unregulated DC voltage between 12 V and 48 V is required.

Connector (on the device): Wire terminal, Phoenix MC 1,5/ 3-GF-3.81
Mating connector (for the cable): Wire terminal, Phoenix MC 1,5/ 3-STF-3,81

3.8. IOLITE Repeater

Daisy-chains increase the distance for signal, synchronization and power between IOLITE single channel instruments. Suggested length of the cable is up to 50 m, after that IOLITE Repeater is needed for power and communication purposes.

IOLITE-REPEATER

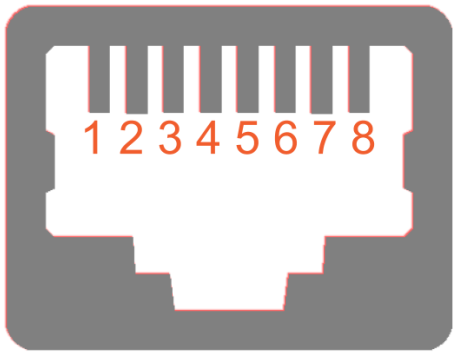
3.8.1. General specifications

General specifications of the IOLITE Repeater device	
Digital interface	EtherCAT
EtherCAT connector	RJ45
Power consumption	1200 mW
Supply Voltage	12 V - 48 V
Operating temperature	-20 .... 60 degC
IP rating	IP20
Weight	105 g
Housing material	Aluminum

3.8.2. Connectors

Connector used on the device is a standard ethernet connector (RJ45). Standard ethernet cable with standard connector can be used to connect IOLITE-REPEATER with a device.

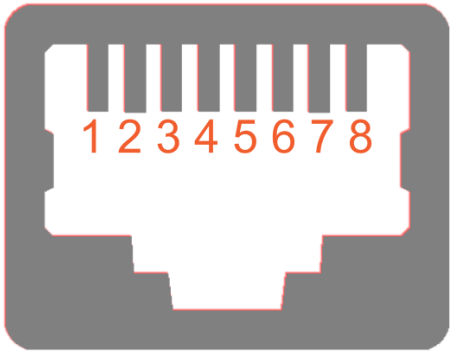
3.8.2.1. EtherCAT - IN



EtherCAT connector: pin-out (RJ-45 female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	DC +	PoE +
5	DC +	PoE +
6	RX_N	Reception -
7	DC -	PoE -
8	DC -	PoE -

3.8.2.2. EtherCAT - OUT



EtherCAT connector: pin-out (RJ-45 female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	DC +	PoE +
5	DC +	PoE +
6	RX_N	Reception -
7	DC -	PoE -
8	DC -	PoE -

Hint

The power over ethernet (PoE) is passive. This means that there are no data signals on the power supply pins.

4. Warranty information

Notice
The information contained in this document is subject to change without notice.

Note:
Dewesoft d.o.o. shall not be liable for any errors contained in this document. Dewesoft MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWESOFT SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Dewesoft shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

The copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office. To find a local dealer for your country, please visit https://dewesoft.com/support/distributors.

4.1. Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

4.2. Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly.

Dewesoft d.o.o.
Gabrsko 11a
1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: http://www.dewesoft.com
Email: Support@dewesoft.com
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

4.3. Service/repair

The team of Dewesoft also performs any kinds of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly on https://dewesoft.com/support/rma-service.

4.4. Restricted Rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

4.5. Printing History

Version 2.0.0, Revision 217 Released 2015 Last changed: 23. July 2018 at 16:54.

4.6. Copyright

4.7. Trademarks

We take pride in our products and we take care that all key products and technologies are registered as trademarks all over the world. The Dewesoft name is a registered trademark. Product families (KRYPTON, SIRIUS, DSI, DS-NET) and technologies (DualCoreADC, SuperCounter, GrandView) are registered trademarks as well. When used as the logo or as part of any graphic material, the registered trademark sign is used as a part of the logo. When used in text representing the company, product or technology name, the ® sign is not used. The Dewesoft triangle logo is a registered trademark but the ® sign is not used in the visual representation of the triangle logo.

5. Safety instructions

Your safety is our primary concern! Please be safe!

5.1. Safety symbols in the manual

Warning

Calls attention to a procedure, practice, or condition that could cause the body injury or death

Caution

Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

5.2. General Safety Instructions

Warning

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft d.o.o. assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as an option and will not be shipped as standard parts.

5.2.1. Environmental Considerations

Information about the environmental impact of the product.

5.2.2. Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

5.2.3. System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid unnecessary pollution of the environment and to keep natural resources.

This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances
This product has been classified as Monitoring and Control equipment and is outside the scope of the 2002/95/EC RoHS Directive. However, we take care of our environment and the product is lead-free.

5.2.4. General safety and hazard warnings for all Dewesoft systems

Safety of the operator and the unit depend on following these rules.

- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advice for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non-interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.

- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized personnel only.
- Adverse environmental conditions are Moisture or high humidity Dust, flammable gases, fumes or dissolver Thunderstorm or thunderstorm conditions (except assembly PNA) Electrostatic fields, etc.
- The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuiting, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until the safe operation can be verified by service-trained personnel. If necessary, return the product to Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged obviously or causes strange noises. The system does not work anymore. The system has been exposed to long storage in adverse environments. The system has been exposed to heavy shipment strain.
- Warranty void if damages caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation in the immediate vicinity of high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!

- Lithium ion batteries are classified as not hazardous when used according to the recommendations of the manufacturer described in Battery Safety Data Sheet, which is available for download from this link.
- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipment in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use in humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already- lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advice of the connected systems.
- This product has left the factory in safety-related flawlessness and in proper condition. In order to maintain this condition and guarantee safety use, the user has to consider the security advice and warnings in this manual.

EN 61326-3-1:2008
IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for the protection of buildings, are excluded from the scope of IEC 61326-3-1.

5.3. Documentation version history

Version	Date	Notes
V23-1	2.10.2023	- Inital version, a collection of information from multiple manuals