IOLITE 2XASI

2-channel acceleration sensor interface and 1-channel RPM sensor interface with EtherCAT communication.

DEWESoft IOLITE 2xASI is a device with two analog sensor interface channels and one tacho channel. It converts the signal from DEWESoft ASI 1xVIB sensors and sends the data over EtherCAT bus to the master PC. Up to two ASI 1xVIB sensors with M8 connectors can be connected. Maximum sample rate is 40 kS/s per channel. Only a single cable is needed to daisy chain multiple IOLITE 2xASI devices with up to 50 m device-device distance.

FEATURES

- 40 kS/s max. sample rate per sensor, two sensors per device
- EtherCAT bus, daisy-chaining with single cable up to 50 m device-to-device
- DEWESoft X3 software support

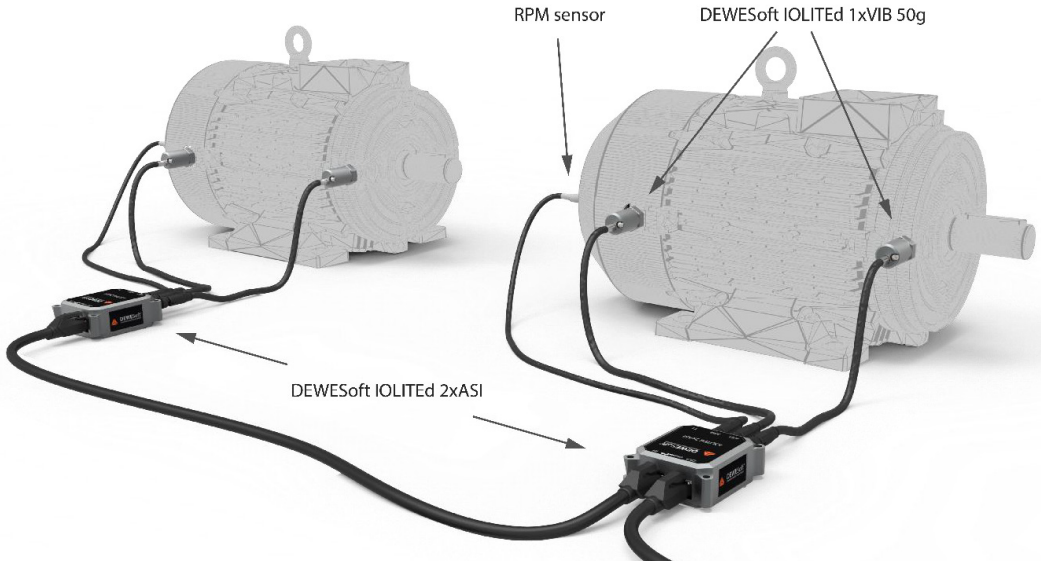
APPLICATIONS

- Vibration and temperature monitoring
- Machine condition monitoring
- Bearing fault detection

PRINCIPLE OF OPERATION

Two analog channels of the device featur anti-alias filtering, A/D conversion and digital filtering. Each of the channels provides precise 5 V excitation for the sensor, which is also used as a reference for the ADC. There is no other internal reference for the ADC, therefore the module should not be used as a general analog input module.

Both sensor channels also include I2C bus pins for interfacing to the ASI 1xVIB probe's temperature sensor and 3-axial accelerometer as well as to read the scaling info from the probe's EEPROM.



Microprocessor inside the DAQ module transmits the data samples over EtherCAT protocol into DEWESoft software running on a Windows PC, or alternatively to any controller running EtherCAT master on any platform.

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The tacho channels is meant to be used with 1 pulse per rotation RPM sensors. The device automatically converts the signal into RPM value and transmits the RPM values over EtherCAT to the PC / controller.

SOFTWARE

DEWESoft IOLITE 2xASI includes a Dewesoft-PROF software license. It is automatically recognized in Dewesoft software which provides automatic scaling, therefore the data in engineering units (g or m/s2, °C) is readily available to the user. Temperature and 3-axial accelerometer data are available as data channels in Dewesoft under System monitor channels. Dewesoft can act as a gateway to higher level factory protocols such as OPC UA (subject to additional licence). IOLITE series devices can also be directly connected to any controller with standard EtherCAT master functionality.

SPECIFICATIONS

Sensor input specification:

	Typ.	Unit
Number of channels	2	
ADC resolution	24	bit
Max. sample rate	40	kS/s
Measurement range	0..5*	V
Sensor recognition	I2C	
Isolation	No	
Front connector	M8 8 pin	
Input accuracy (25 degC)	+-0.05 % of reading +-0.2 mV	
Temperature gain drift	20	ppm/K
Temperature offset drift	(1 uV + 10 ppm of range)/K	
Gain non-linearity	<0.02	%
Passband	0.45	fs
Passband flatness	0.01	dB
Stopband rejection	-90	dB
Rejection at ADC oversampling frequency	-90	dB
Alias-free bandwidth	0.40	fs
-3 dB bandwidth	0.49	fs

***Note:** the two analog input channels are designed for connecting the ASI 1xVIB sensors. The channels can not be used as general analog inputs.

General specification:

Digital interface	EtherCAT
Data interface connectors	RJ45 (single cable for data, power and sync)
Power consumption	2 W
Supply voltage	12-48 V
Operating temperature	-20 ... 60 degC
IP rating	IP20
Weight	150 g
Dimensions	82 x 62 x 28 mm
Tested according to	IEC-61010, IEC-61326

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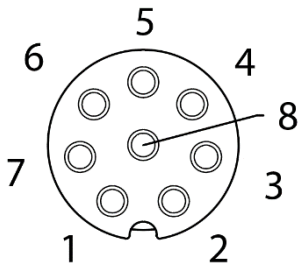
CONNECTORS AND PINOUT

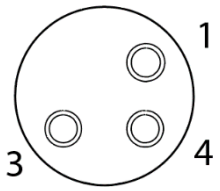
At the front side there are two 8-pin M8 connectors for connecting the ASI 1xVIB sensors and one 3-pin M8 connector for tacho (RPM sensor) connection.

8-pin connector pinout (color of the sensor wire in the brackets):



Pin 1 (blue): connection check
Pin 2 (White/Blue): +5VA (5 V analog voltage supply / excitation)
Pin 3 (Orange): Vout (accelerometer analog voltage output)
Pin 4 (White/Orange): GNDA (analog GND)
Pin 5 (Green): I2C SCL
Pin 6 (White/Green): +3V3 (3.3 V digital power supply for I2C)
Pin 7 (Brown): I2C SDA
Pin 8 (White/Brown): GNDD (digital GND)

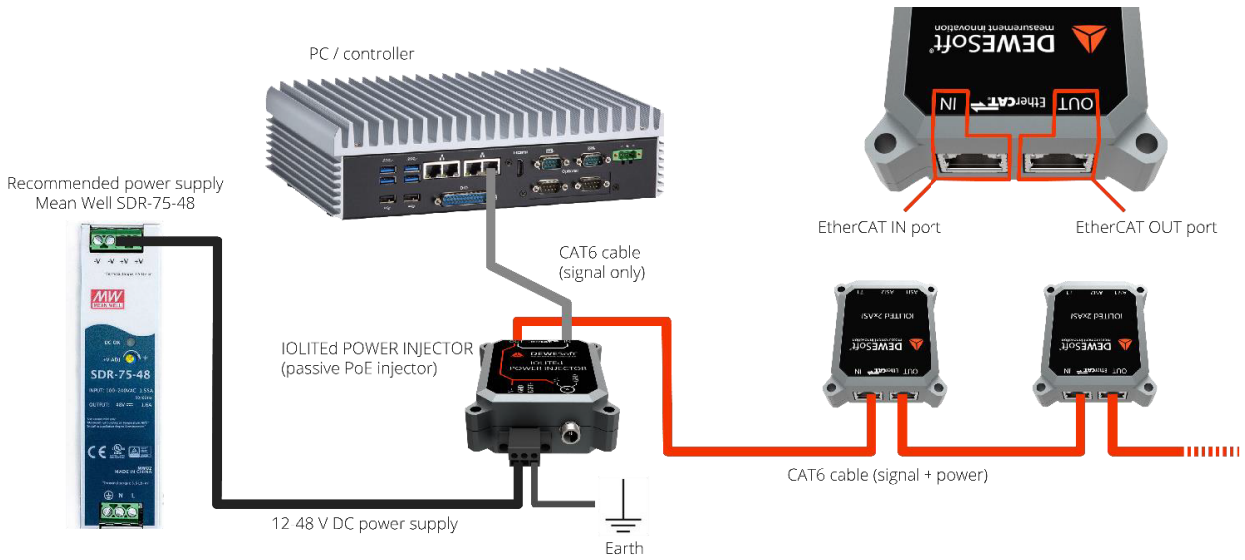
3-pin connector pinout:



Pin 1: +12V
Pin 3: GND
Pin 4: D_OUT (tacho signal output)

INSTALLATION

DAQ modules are daisy chained with a standard network cable. It is recommended that the cable is shielded (SFTP, CAT5e) and has a minimum 24 AWG wire thickness. The cable must have 4 wire pairs. The maximum distance node-to-node is 50 m. IOLITE POWER INJECTOR power injector is necessary for merging the EtherCAT signal and power into a single cable.



Power supply voltage	Cable length device -to- device	Cable size	Max. number of devices from a single power supply
24 V	1 m	AWG 24	6
24 V	50 m	AWG 24	3
48 V	1 m	AWG 24	12
48 V	50 m	AWG 24	7

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MECHANICAL DRAWING (NOT TO SCALE)