DEWESoft®

Isolated IEPE signal conditioner with EtherCAT bus and DEWESoft software support

IOLITEi-1xACC

IOLITEi-1xACC is a single channel signal conditioner for IEPE sensors with high-precision isolated front end and EtherCAT bus on the back side (www.dewesoft.com).

Key features:

- 24 bit ADC, 40 kS/s max. sample rate
- -100 dB noise floor, 100 dB spurious-free dynamic range
- Signal and power isolation from EtherCAT to front-end
- TEDS communication
- EtherCAT bus, daisy-chaining with single cable up to 50 m device-device
- DEWESoft X3 software support

Typical applications:

- Machine vibration monitoring
- Bearing fault detection
- Modal structural analysis

Analog input specification:

	Typ.	Unit
ADC resolution	24	bit
ADC type	Sigma-delta	
Max. sample rate	40	kS/s
Measurement modes	IEPE, Voltage	
Input coupling	AC, DC	
Measurement ranges	+-10, +-5, +-1, +-0.2	V
Hardware high-pass filters	0.1, 1	Hz
Sensor recognition	TEDS over IEPE	
Sensor disconnect warning	Channel goes to overload	
Isolation	125 Vrms channel to ground	
Front connector	BNC	

Input accuracy (25 degC)	+-0.03 % of reading +-0.1 mV	
Temperature gain drift	10	ppm/K
Temperature offset drift	(0.3 uV + 5 ppm of range)/K	
Gain non-linearity	<0.02	%
SNR (10 kS/s, 10 V range, 18 Vpp sine wave @1 kHz)	90	dB
Noise floor (10 kS/s, 10 V range, input terminated)	100	dB
SFDR (10 kS/s, 10 V range, 18 Vpp sine wave @1 kHz)	100	dB
THD (10 kS/s, 10 V range, 18 Vpp sine wave @1 kHz)	-107	dB
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	dB
-3 dB bandwidth	0.49	dB
Slew rate (-10 V to +10 V at 40 kS/s)	0.4	V/us

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	130 g
Dimensions	82 x 62 x 28 mm

Software support: DEWESoft X3, any standard EtherCAT master

Installation: Devices 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.

Power supply: Passive PoE power injector is neccessary for merging the EtherCAT signal and power into a single cable.
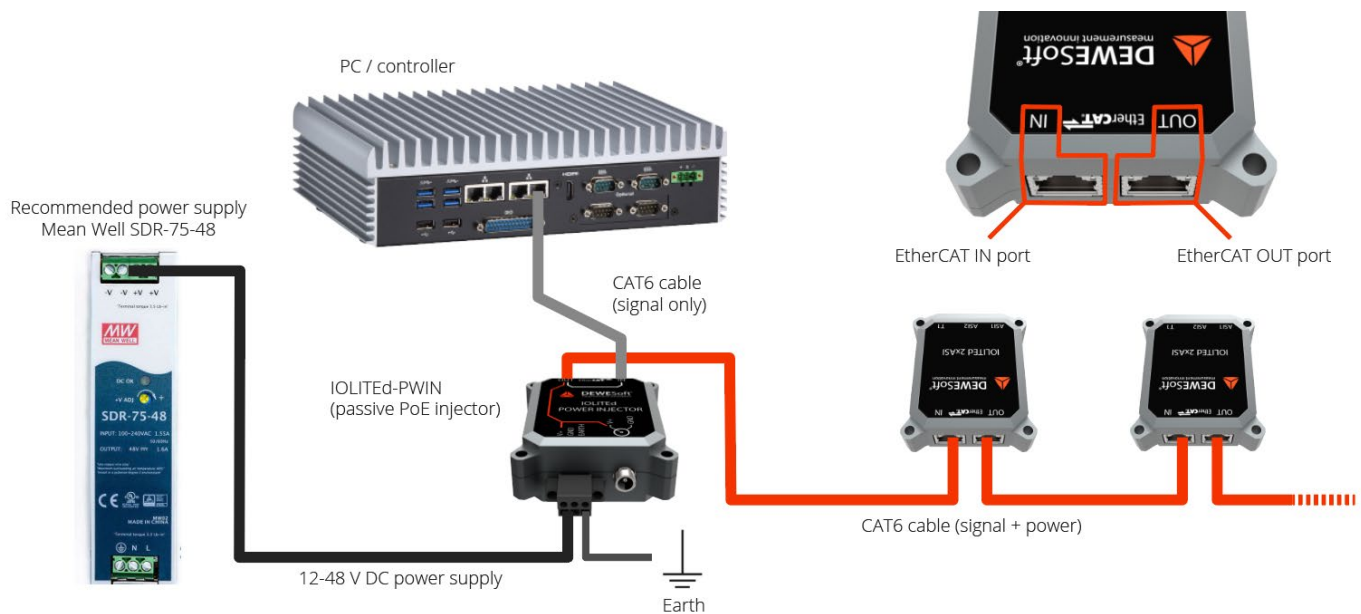
Power supply voltage	Cable length device-to-device	Cable size	Max. number of devices from a single power supply
24 V	1 m	AWG 24	6
24 V	50 m	AWG 24	3
48 V	1 m	AWG 24	12
48 V	50 m	AWG 24	7

Note: this table applies if device consumes its typical power supply as specified in general specification. The max. nr. of devices from a single power supply can change if devices uses more/less power (depending primarily on sensor exciation and front end power supply load).

Front end connector pinout

Mechanical drawing

3,5 [0]
27,7 [1,1]
19,2 [0,76]
5 [0,2]

67 [2,64]
58 [2,28]
81,7 [3,22]
72,7 [2,86]
ø 4,5 [0,18]