

IOLITEi-1xSTG

IOLITEi-1xSTG is a single channel strain gauge amplifier with internal quarter-, half- and full-bridge configurations. Low noise voltage and current source excitation are available with freely settable levels. Input ranges span from 50 V to 100 mV. Data is transferred over EtherCAT to a PC running powerful and easy to use DEWESoft software (www.dewesoft.com).

Key features:

- Internal bridge completion (quarter & half, 120 & 350 ohm)
- 50 V to 100 mV input voltage ranges
- 20 mA current input range (internal shunt)
- Settable voltage and current excitation (max 400 mW)
- Low noise, high dynamic performance
- Signal and power isolation from EtherCAT to front-end
- EtherCAT bus, daisy-chaining with single cable, 50 m device-device
- DEWESoft X3 software support

Typical applications:

- Material strain measurements
- Precise weighting
- Structural load monitoring



Analog input specification:

	Typ.	Unit
ADC resolution	24	bit
ADC type	Sigma-delta	
Max. sample rate	40	kS/s
Measurement modes	Voltage, Bridge, Potentiometer, Current (internal shunt)	
Input coupling	AC, DC	
Hardware high-pass filter (AC coupling)	1	Hz
Measurement ranges (voltage)	+/-50, +/-10, +/-1, +/-0.1	V
Input impedance	1 (50 V, 10 V range), 20 (1V, 100 mV range)	Mohm
Overvoltage protection	200 (50 V, 10 V range), 50 (1V, 100 mV range)	V
Sensor recognition	TEDS	
Sensor disconnect warning	Channel goes to overload	
Isolation	125 Vrms channel to ground	
Front connector	DSUB9 female	
Input accuracy (25 degC)	±0.03% of reading, ±0.02% of range, ±0.1mV	
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

Voltage excitation specification:

Free programmable levels	Unipolar 0 ... 24 V, Bipolar 0 ... 12 V
Accuracy	+/-0.05 % +/-2 mV
Drift	+/- 50 ppm/K +/-100 μ V/K
Stability (10% to 90% load)	<0.01 %
Current limit	42 mA (max power: 400 mW)

Current excitation specification:

Free programmable levels	0 ... 22 mA
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Bridge specification:

Bridge connection types	Full, half, quarter bridge (3-wire)
Bridge ranges	20 ... 1000 mV/V
Internal bridge completion (1/4 bridge)	120 ohm, 350 ohm
Bridge completion accuracy	0.05 %, TCR: 2 ppm/K
Internal shunt	100 kohm (0.1 %, TCR: 10 ppm/K)
Input short, Sensor Offset Adjust	Software selectable

General specification:

Digital interface	EtherCAT
Data interface connectors	RJ45 (single cable for data, power and sync)
Power consumption	2.5 W
Supply voltage	12-48 V
Operating temperature	-40 ... 60 degC
IP rating	IP20 (IP67 for "w" version)
Weight	130 g
Dimensions	71 x 62 x 28 mm
Tested according to	IEC-61010, IEC-61326

Option: IOLITEiw 1xSTG (outdoor version, IP67 rated)

IOLITEiw 1xSTG can be supplied in a waterproof aluminium enclosure with cable glands. The enclosure is designed to be mounted outdoor. EtherCAT cables are to be inserted through the cable glands at the installation location and crimped to the male RJ45 connectors. Female RJ45 connector of the 3xMEMS-ACC are located inside the waterproof enclosure. Sensor cable is to be inserted through the front cable gland and connected to a screw terminal inside the housing. The top lid is to be fixed to the enclosure using a seal and six bolts after the connectors are mated.



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.

Recommended power supply
Mean Well SDR-75-48

PC / controller

IOLITE-PW-IN
(passive PoE injector)

12-48 V DC power supply

Earth

CAT6 cable (signal only)

CAT6 cable (signal + power)

EtherCAT IN port

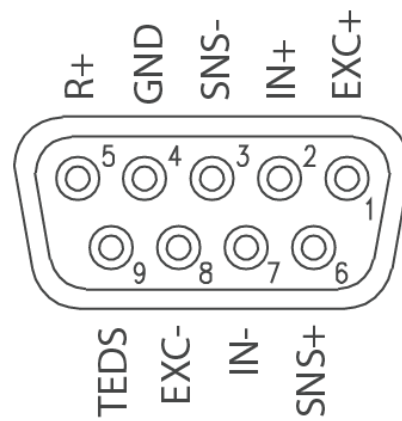
EtherCAT OUT port

The diagram illustrates the power supply configuration for the IOLITE-PW-IN. A Mean Well SDR-75-48 power supply provides 12-48 V DC power to the injector. A CAT6 cable (signal only) connects the PC/controller to the injector. The injector then provides power and signal to the EtherCAT IN and OUT ports of the IOLITE-PW-IN module. The module is connected to two IOLITE-PW-IN modules, which then connect to two IOLITE-PW-IN modules, which finally connect to two IOLITE-PW-IN modules.

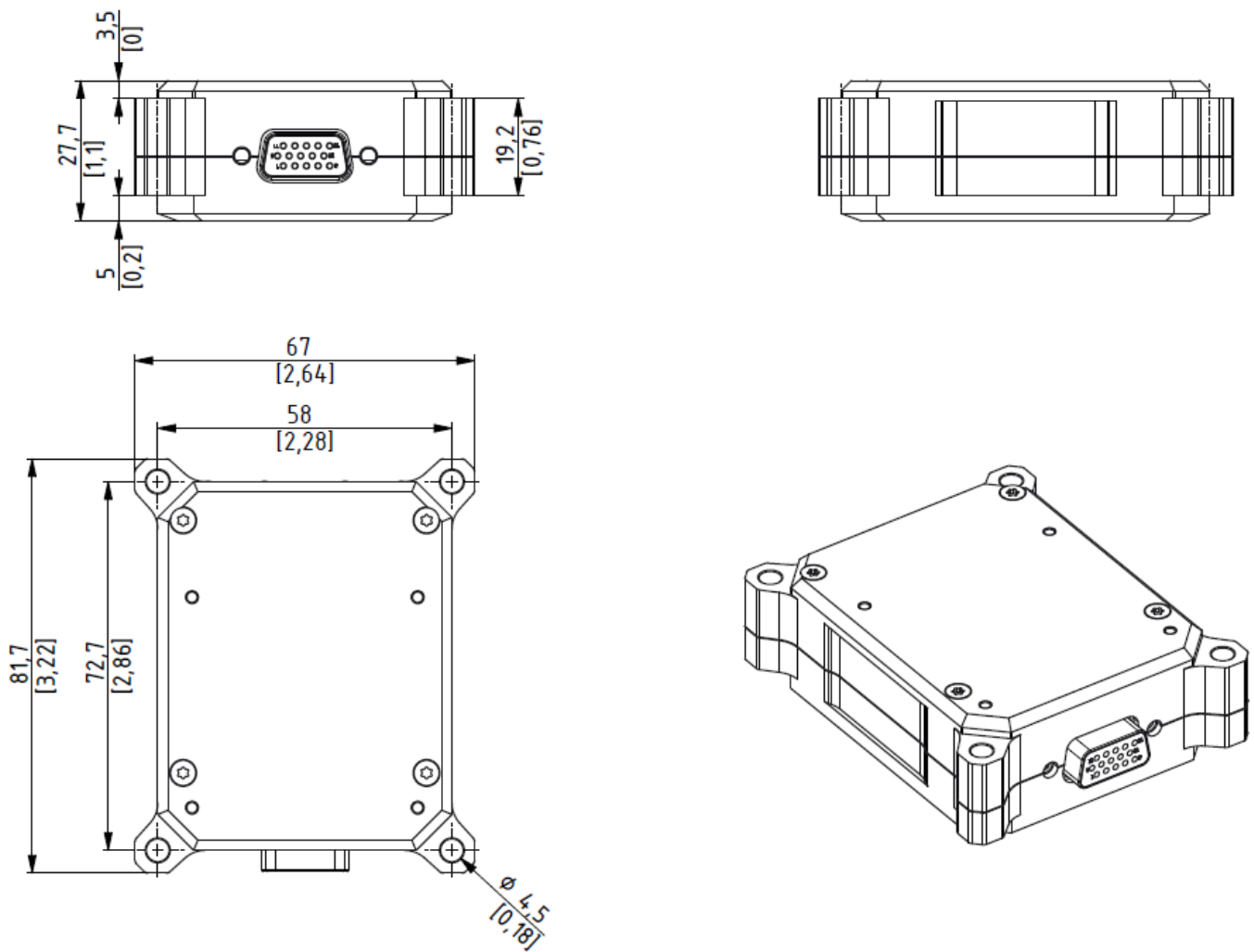
Power supply voltage	Cable length device-to-device	Cable size	Max. number of devices from a single power supply
24 V	1 m	AWG 24	4
24 V	50 m	AWG 24	3
48 V	1 m	AWG 24	10
48 V	50 m	AWG 24	6

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 (IOLITEi 1xSTG)



Mechanical drawing (IOLITEi 1xSTG)



Front end connector pinout (IOLITEiw 1xSTG)

1	2	3	4	5	6	7	8	9	10
SHIELD	TEDS	R+	GND	EXC-	EXC+	SNS-	SNS+	IN-	IN+

Mechanical drawing (IOLITEiw 1xSTG)