

MonoDAQ-E-STG

MonoDAQ-E-STG 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 data acquisition software (www.monodaq.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 up to 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, ±0.1 mV	
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 uV/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

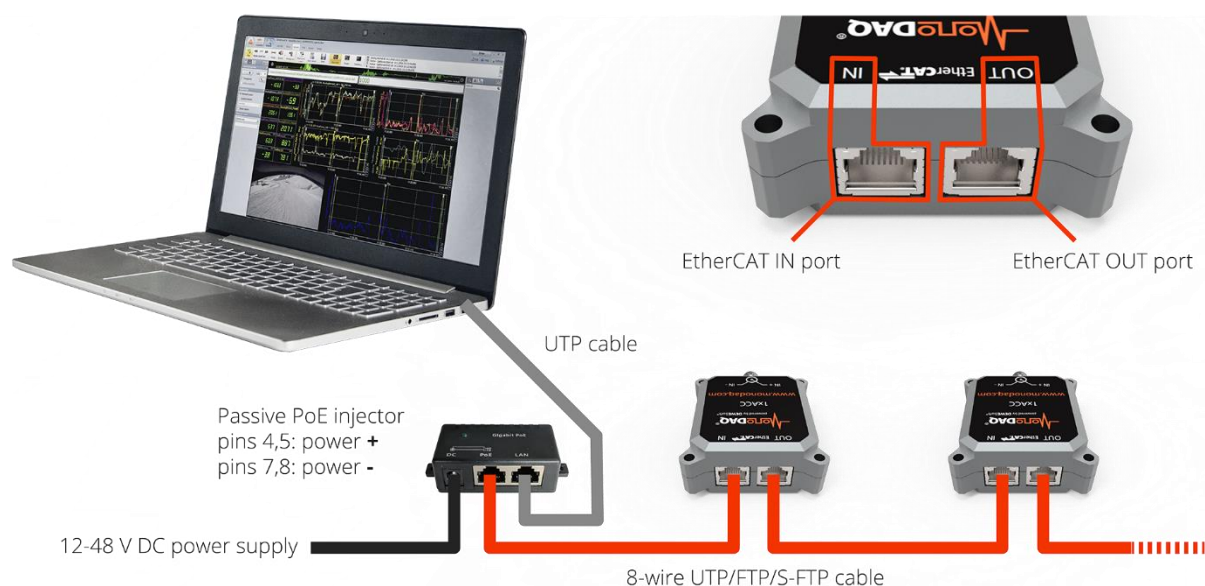
General specification:

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	-20 ... 60 degC
IP rating	IP20
Weight	130 g
Dimensions	71 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.

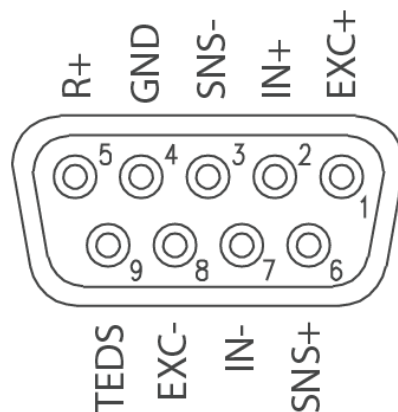
Power supply: Passive PoE power injector is necessary for merging the EtherCAT signal and power into a single cable.



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	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



Mechanical drawing

