FMS Tension Control / Measuring Amplifier

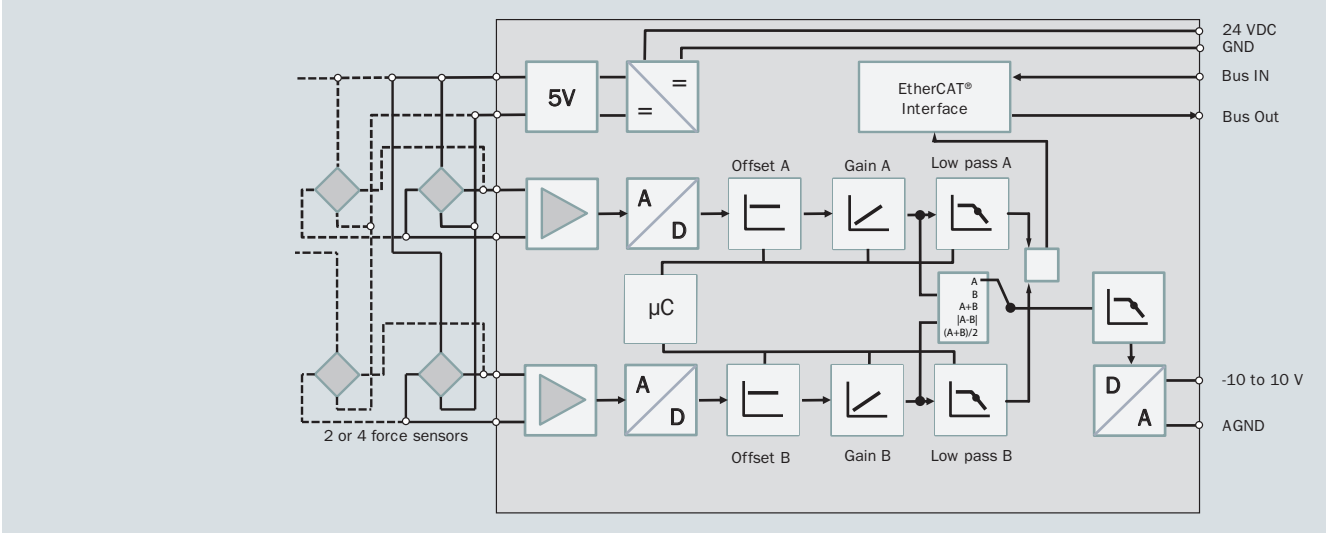
EMGZ492.ECAT-Series Dual-Channel Measuring Amplifier for ETHERCAT®

- **EtherCAT® Slave**
  Simple integration into EtherCAT® networks
- **Precise material tension over the entire measuring roller**
  Independent data evaluation of two force sensors for left and right
- **Communication cycle time ≥ 1 ms**
  Fast and precise – well suited for time-critical applications
- **Various installation options**
  Narrow DIN rail version for cabinet or sealed IP 65 wall mount for harsh environment. RJ45/M12 plugs and detachable terminal blocks for easy installation

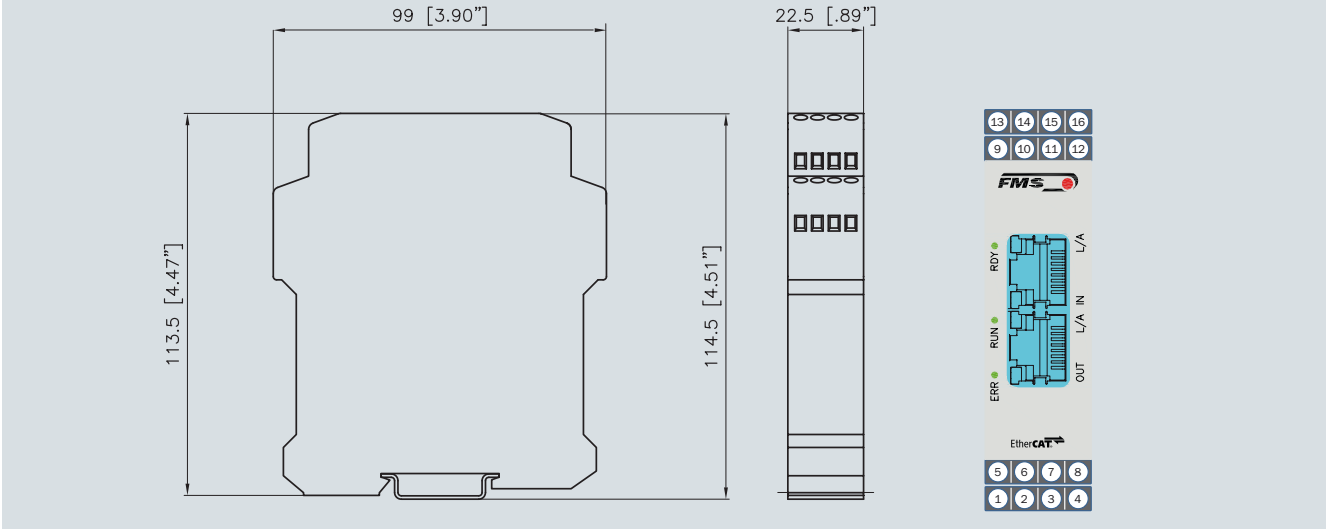
EMGZ492.ECAT-Series
The EMGZ492.ECAT amplifier has been designed for use in modern EtherCAT® networks where a typical application involves the measurement or control of web tension in coating, laminating, printing, extrusion, or other similar roll to roll processes. On a measuring roller with two force sensors the signals can be processed and evaluated indvidually for left and right sides. This dual channel amplifier can process the signals from one or two measuring rollers with two force sensors each. Making full use of the EtherCAT® capabilities allows this amplifier to excel in high speed applications. An extensive range of parameters allows for quick and flexible configuration of the unit, and all functions are easily adjusted via EtherCAT® with an EtherCAT® Master. EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Functional Description
The analog force sensor feedback signals are input directly to a high resolution A/D-converter. Functions such as signal filtering, automatic offset compensation, and gain calculation are all digitized on the EMGZ492. ECAT series amplifier. The measuring values of the connected force sensors A and B will be available as individual signals (A and B), as sum signal (A + B), as difference signal |A – B| and as mean value ((A + B)/2). In addition to the Ether CAT® fieldbus the device provides an analog output signal for further processing. Additional processing of the feedback signal can then be carried out in a PLC under real time conditions. The EtherCAT® interface provides enhanced connectivityin your production line.

EMGZ492.ECAT-Series : Block diagram

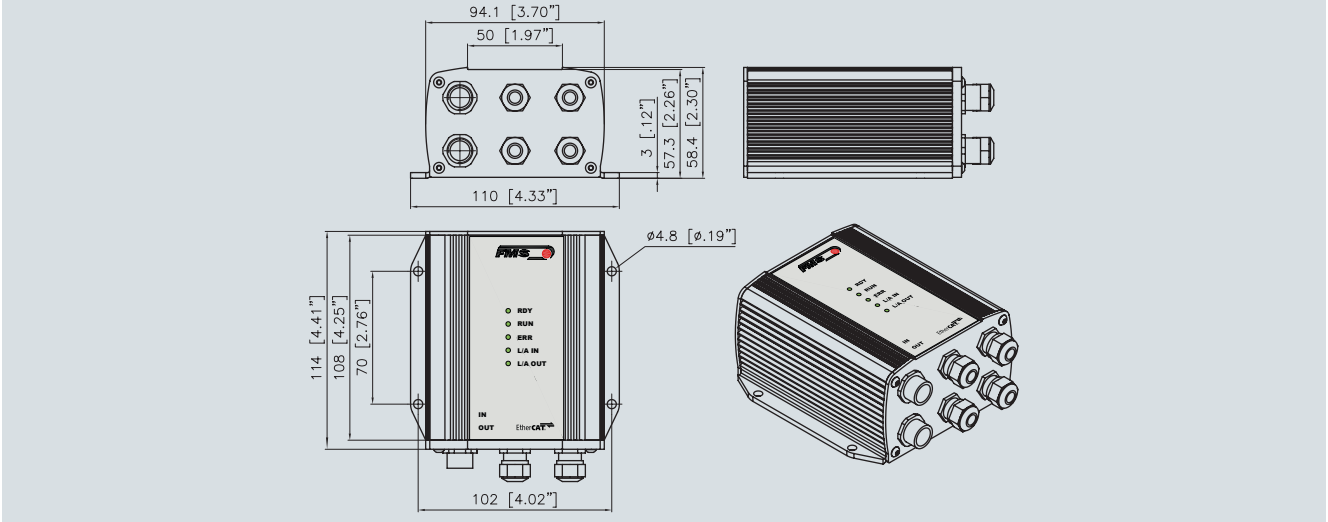


EMGZ492.R.ECAT-Series housing for DIN rail : Dimensions mm (.in)



Electrical connection via RJ45 and detachable terminal blocks (IP 20).

EMGZ492.W.ECAT-Series housing for wall mount : Dimensions mm (.in)



Electrical connection via pg gland (internal, detachable terminal blocks) and M12 plug, 4 pole, D-coded (IP 65).

EMGZ492.ECAT-Series : Technical Data	
Number of channels	2 channels for 2 or 4 force sensors
Power supply for force sensor	5 VDC, max. 80 mA, highly stable
Sensor feedback signal	± 9 mV (max. 11.25 mV); with option .V05 ± 2.5 mV (max. ± 3.125 mV)
Resolution A/D converter	± 32768 Digit (16 Bit)
Resolution D/A converter	0 to 4096 (12 Bit)
Measuring error	< 0.05 % FS
Connector for Interface	EMGZ 492.R: 2 x RJ-45 EMGZ 492.W: 2 x M 12 4-Pol, D-coded
Configuration	via EtherCAT® Master
Protection class	IP 20 (.R Version), IP 65 (.W Version)
Power supply	24 VDC (18 to 36 VDC) / 5 W
Temperature range	–10 to +50 °C (14 to 122 °F)
Weight	370 g / 0.82 lbs (.R Version), 470 g / 1.04 lbs (.W Version)
Analog output	-10 to +10 VDC

EMGZ492.ECAT-Series : EtherCAT® Features	
Cycle time	≥ 1 ms in Free Run Mode
Baud Rate	100 Mbit/s
Cyclic process data	TxPDO with fixed mapping For channels A and B individually: Actual value in digits (ADC), actual value in (N), actual value in (lbf), actual value in configured unit, status. Actual value sum (A + B), actual value difference |A – B|, mean value (A + B)/2
Acyclic communication	SDO Master-Slave
Supported protocols	SDO server side protocol (CoE) File Access over EtherCAT® (FoE)
CoE (CAN application layer over EtherCAT®)	SDO Upload and SDO Download including SDO Complete Access, SDO Information Service (Object Dictionary)
Mailbox Size	SM0, SM1: 128 Byte, Bootstrap Mode: 1484 Byte
SII (Slave Information Interface)	4 kB
Type	Complex Slave
FMMUs	8
SYNC Manager	4
Explicit Device Identification	Set Device Identification by Configuration Tool
EtherCAT® Conformance	EtherCAT® Protocol (EtherCAT® Conformance Test Tool V2.2.1.0, EtherCAT® Conformance Test Record ETG7000-2 V1.2.8), ETG.1300 Indicator Specification; ETG.9001 Marking rules; Interoperability Test

EMGZ492.ECAT-Series : Order Code

EMGZ492	**.W**	**.V05**	**.ECAT**	
				EtherCAT®
				Sensor feedback signal ± 2.5 mV (max. ± 3.125 mV)
				Version for wall mount, .R Version for DIN rail
				Series

EMGZ492.ECAT-Series : Options	
.R	Version for DIN rail mount, IP 20
.W	Version for wall mount, IP 65
.V05	Sensor feedback signal ± 2.5 mV (max. ± 3.125 mV) for force sensors with a sensitivity of 0.5 mV/V

EMGZ492.ECAT-Series : Scope of supply

- Measuring Amplifier
- Installation and operation manual

EMGZ492.ECAT-Series : Accessories

- Patch cable with RJ45 connectors
- M12 connectors D-coded

EMGZ492.ECAT-Series : Typical Application

Other products : Tension Control

Force Sensors	Tension Controllers	ATEX

About us

FMS Force Measuring Systems AG is the market leader in the field of web tension measurement, control and specialist for web guiding solutions. For the wire industry we are the only manufacturer offering a complete range of technologies for force measurement, data processing and radio transmission of signals.

Our in house developed products are used in the manufacturing industry, converting, metals, paper, textiles, as well as in cable and wire rope production. Utilising the latest technology, high quality components and a firm understanding of customer applications, FMS supports customers worldwide in the effort to maximize the productivity of their machines. Since 1993, our highly qualified employees have been creating high-end solutions for machine builders and plant operators. As an owner-managed company, we pride ourselves on being personal and approachable with the ability to make decisive moves fast.

World Headquarters: FMS Force Measuring Systems AG
Aspstrasse 6 • 8154 Oberglatt (Switzerland) • Phone + 41 44 852 80 80 • Fax + 41 44 850 60 06
info@fms-technology.com • **www.fms-technology.com**