FMS Tension Control / Amplifier

EMGZ 491.ECAT Single-Channel Amplifier for EtherCAT®

- **EtherCAT® Slave:**
  Simple integration into EtherCAT® networks

- **Configuration via EtherCAT®:**
  Easy configuration with parameter sets for demanding applications

- **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

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**EMGZ 491.ECAT**

The EMGZ 491.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. 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 force sensor feedback analog 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 EMGZ 491.ECAT series amplifier.

In addition to the EtherCAT® fieldbus the device provides an analog output signal for further processing. The EtherCAT® interface provides enhanced connectivity in your production line. Additional processing of the feedback signal can then be carried out in a PLC under real time conditions.
EMGZ 491.ECAT | Block diagram

EMGZ 491.ECAT | Technical data

- **Number of channels**: 1 channel for 2 sensors
- **Power supply for force sensor**: 5 VDC, max. 80 mA, highly stable
- **Input signal range**: ± 9 mV (max. 12.5 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 491.R: 2 x RJ-45
  EMGZ 491.W: 2 x M 12 4-Pol, D-coded
- **Configuration**: via EtherCAT® Master
- **Protection class**: IP20 (.R Version); IP65 (.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**: 0 to 10 VDC

EMGZ 491.ECAT | EtherCAT® Features

- **Cycle time**: ≥ 1 ms in Free Run Mode
- **Baud rate**: 100 Mbit/s
- **Cyclic process data**: TxPDO with fixed mapping
- **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)**
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- **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 V1.2.6);
  ETG.1300 Indicator Specification; ETG.8001 Marking rules; Interoperability Test
EMGZ 491.R.ECAT housing for DIN rail | Dimensions in mm [in]

- 99 [3.90”]
- 22.5 [.89”]
- 113.5 [4.47”]
- 114.5 [4.51”]

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

EMGZ 491.W.ECAT housing for wall mount | Dimensions in mm [in]

- 94.1 [3.70”]
- 50 [1.97”]
- 110 [4.33”]
- 3 [0.12”]
- 57.3 [2.26”]
- 58.4 [2.30”]
- Ø4.8 [0.19”]

Electrical connection via pg gland (internal, detachable terminal blocks) and M12 plug, 4 pole, D-coded (IP 65).
FMS Tension Control | Amplifier  | EMGZ 491.ECAT

**EMGZ 491.ECAT** | Order code
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**EMGZ491.** | **W.** | **ECAT**
 EtherCAT®

**Series**

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**Other FMS Products** | Tension Control
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**FMS Force Measuring Systems AG**

FMS Force Measuring Systems AG is a worldwide market leader in the fields of tension measurement/control, web guiding, and specialized telemetry technologies. Our standard and custom solutions are applied in the converting, metals, paper, textile and wire & cable industries. FMS Force Measuring Systems AG’s advanced technology, high quality components and extensive application knowledge supports customers around the world in maximizing productivity.

Since 1993 our highly skilled workforce have crafted superior solutions and set the benchmark in the industry.