FMS Tension Control / Amplifier

EMGZ 492.ECAT Dual-Channel 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

EMGZ 492.ECAT
The EMGZ 492.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 individually 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 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 492.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 EtherCAT® 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 connectivity in your production line.
EMGZ 492.ECAT | 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
- **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 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**: 0 to +10 VDC

EMGZ 492.ECAT | EtherCAT® Features

- **Cycle time**: ≥ 1 ms in Free Run Mode
- **Baud rate**: 100 Mbit/s
- **Cyclic process data**: TxDPO 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 client and 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**: Fix length of 128 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 V2.1.0.2); EtherCAT® Conformance Test Record ETG7000-2 V1.2.8; ETG.1300 Indicator Specification; ETG.9001 Marking rules; Interoperability Test
EMGZ 492.R.ECAT housing for DIN rail | Dimensions in mm [in]

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

EMGZ 492.W.ECAT housing for wall mount | Dimensions in mm [in]

Electrical connection via pg gland (internal, detachable terminal blocks) and M12 plug, 4 pole, D-coded (IP65).
EMGZ 492.ECAT | Order code
EMGZ 492. | W. | ECAT
EthECAT®
W Version for wall mount; R Version for DIN rail

EMGZ 492.ECAT | Scope of supply
- Amplifier
- Installation and operation instruction

EMGZ 492.ECAT | NOT included in scope of supply
- Power supply (EMC Immunity specification EN 61000-4-2, 3, 4, 5; EN 55024 light industry level, criteria A)
- Patch cable
- RJ45 connectors
- M12 connectors

EMGZ 492.ECAT | Options
.R | Version for DIN rail mount, IP 20
.W | Version for wall mount, IP 65

EMGZ 492.ECAT | Accessories
Patch cable
RJ45 connectors
M12 connectors
D-coded

Other FMS Products | Tension Control

Force sensors
Tension controllers
Solutions for explosive gas atmospheres

EMGZ 492.R.ECAT | Typical application

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.

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