# Certificate / Certificat
# Zertifikat / 合格証

MAG 15-02-050 C001

*exida* hereby confirms that the:

## E3 Modulevel Level Displacer Transmitter

## Magnetrol International, Inc.
## Aurora, IL - USA

Has been assessed per the relevant requirements of:

**IEC 61508 : 2010 Parts 1-7**

and meets requirements providing a level of integrity to:

**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type B Element**

**SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route $2_H$**

**$PFD_{AVG}$ and Architecture Constraints must be verified for each application**

Safety Function:
The E3 Modulevel Level Displacer Transmitter will measure a level, interface level or density measurement, and transmit a corresponding signal within the stated safety accuracy.

Application Restrictions:
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 1.1 Sep 1, 2016
Surveillance Audit Due
September 1, 2019

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

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## Systematic Capability: SC 3 (SIL 3 Capable)

## Random Capability: Type B Element

### SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route $2_H$

**$PFD_{AVG}$ and Architecture Constraints must be verified for each application**

**E3 Modulevel Level Displacer Transmitter**

**Systematic Capability :**
The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated. This device meets exida criteria for Route 2H.

**Random Capability:**
The SIL limit imposed by the Architectural Constraints must be met for each element.

### IEC 61508 Failure Rates in FIT*

| Device | $\lambda_{SD}$ | $\lambda_{SU}$ | $\lambda_{DD}$ | $\lambda_{DU}$ |
|---|---|---|---|---|
| E3 Local | 0 | 13 | 579 | 61 |
| E3 Remote | 0 | 14 | 607 | 61 |

* FIT = 1 failure / $10^9$ hours

**SIL Verification:**
The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of $PFD_{AVG}$ considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

**Assessment Report:** MAG 15-02-050 R002 V1 R2

**Safety Manual:** E3 Modulevel Safety Manual 48-651.0

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