



The manufacturer
may use the mark:



Valid until December 1, 2017
Revision 1.5 December 5, 2014



ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat Zertifikat / 合格証

MAG 091039 C001

exida hereby confirms that the:

Eclipse Enhanced Model 705 3X Guided Wave Radar Level Transmitter

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

Has been assessed per the relevant requirements of:

IEC 61508 : 2000 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 1_H

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

Safety Function:

The Eclipse Enhanced Model 705 3X Transmitter will measure Level within the stated safety accuracy.

Application Restrictions:

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



Griff Irons

Evaluating Assessor

Rudolf P. Chalupa

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

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Eclipse Enhanced
Model 705 3X Guided
Wave Radar Level
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.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element.

IEC 61508 Failure Rates in FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
Eclipse Enhanced Model 705, 705-51A*-* ^{***} , Low Trip	0	600	847	154	90.4%
Eclipse Enhanced Model 705, 705-51A*-* ^{***} , High Trip	0	624	847	130	91.9%

* FIT = 1 failure / 10⁹ 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 subsystem 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 09/10-39-R005 V1R4

Safety Manual: 57-651.3, March 2012



64 N Main St
Sellersville, PA 18960

T-002, V3R4-3