



Certificate No.  
CASS 00015/01

## Functional Safety Management (FSM)

**Crouse-Hinds**  
by **EAT•N**

# Functional and Intrinsic Safety Concepts

MTL is well known for its work in the protection and prevention of explosions in hazardous areas of process plants by applying the concept of **Intrinsic Safety (IS)**. This means MTL offers customers a wide product range for use in hazardous applications which are designed and certified to prevent ignition.

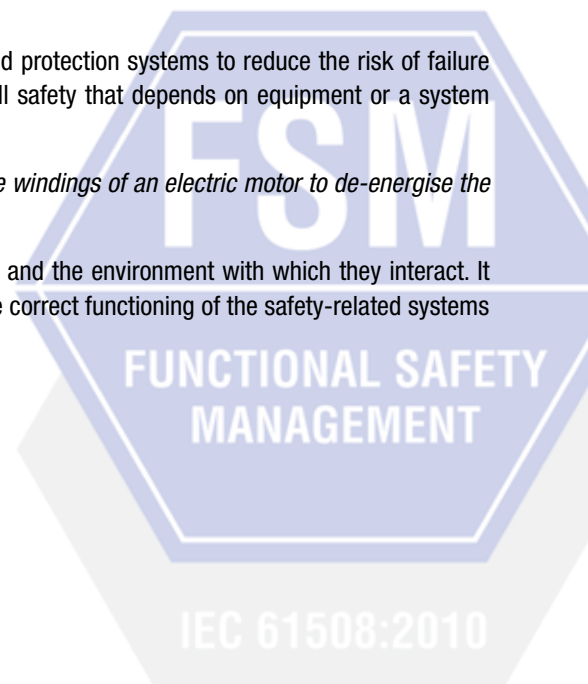
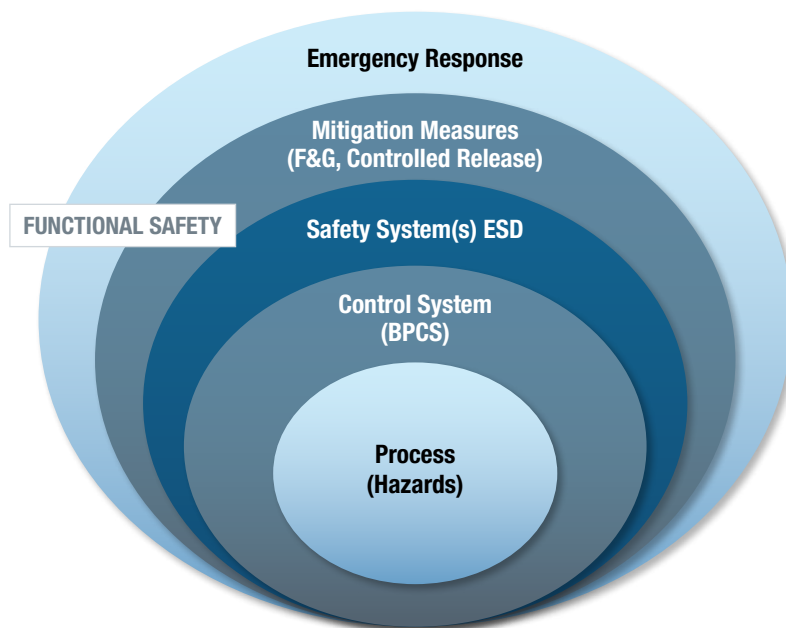
**Functional Safety** applies to all industrial processes, whether the materials employed have an explosive hazard or not. MTL's IS products are used for all instrumentation signals for a plant (control, safety, fire & gas systems) whereas Functional Safety applies only to the signal used for safety and fire & gas systems.

## WHAT IS FUNCTIONAL SAFETY?

Functional Safety is when electrical & electronical products are used in safety and protection systems to reduce the risk of failure affecting the operation of a protective system. Functional Safety is part of overall safety that depends on equipment or a system operating correctly in response to its inputs.

*For example, an over temperature protection device, using a thermal sensor in the windings of an electric motor to de-energise the motor before they can overheat, is an instance of Functional Safety.*

Functional Safety cannot be determined without considering systems as a whole and the environment with which they interact. It aims to reduce the risk of harm by being part of overall safety that depends on the correct functioning of the safety-related systems and other risk reduction measures.



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## FSM AND ITS ROLE WITHIN FUNCTIONAL SAFETY

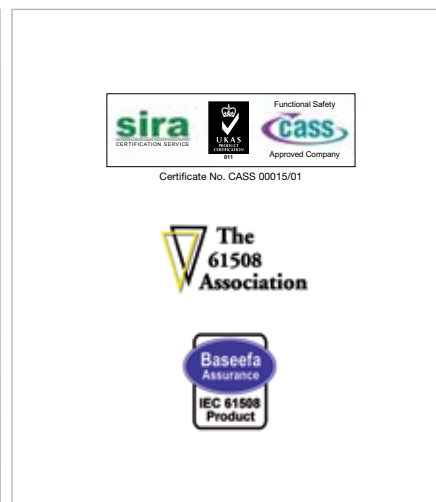
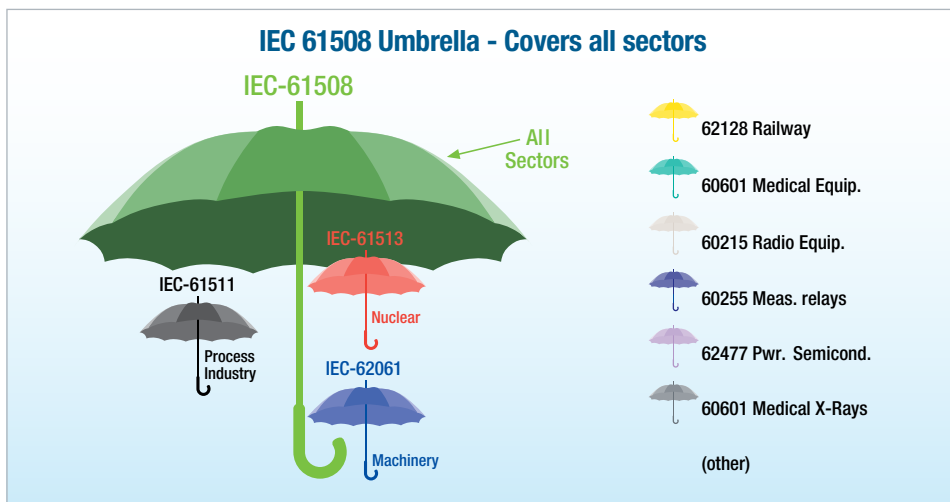
When MTL products are used in safety systems they need to demonstrate an adequate level of Functional Safety. Customers demand that products used in safety systems meet the requirements of the second edition of the IEC 61508 Functional Safety standard. Therefore, when MTL design and manufacture products for use in functional safety-related systems, both the design processes and products comply with IEC 61508:2010. MTL demonstrates compliance by being certified as a Functional Safety Management (FSM) company.

# Industry Standards



## INTRODUCTION

The International Electrotechnical Commission (IEC) develops and sets international standards in electro technical engineering areas. In 1997 the IEC published the IEC 61508 standard for functional safety of electrical/electronic/programmable electronic, safety-related systems. IEC 61508 is the generic standard and is further defined by specific industry standards, for example; IEC 61511 for the process industries. IEC 61508 mainly applies to device manufacturers whereas supplier IEC 61511 would be used by safety instrumented system designers integrators and users.



## WHY IS IEC 61508 DIFFERENT TO OTHER STANDARDS?

Most standards are prescriptive or rule-based; if you follow the rules you have met the requirements of the standard. IEC 61508 takes an approach often called performance-based. Although there are some numeric limits, most of the requirements are specified in terms of what is to be achieved rather than exactly how to do it.

### Fundamental concepts of IEC 61508:

1. The notion of functional safety. Provision of *safety functions* for mitigation of risk associated with abnormal situation.
2. A focus on risk *reduction*. The standard implicitly assumes that there is no such thing as zero risk - risk cannot be entirely eliminated.
3. The notion of *Safety Integrity Level*, or SIL, of a required function. There are four degrees of SIL, SIL 1 through SIL 4, ranging from moderately stringent to very stringent.
4. A detailed system **life-cycle model**, from initial development through decommissioning.



SIRA, a UKAS accredited body, has certified MTL (Measurement Technology Ltd) as being compliant with IEC 61508-1:2010



# How MTL is accredited for FSM

International safety standards IEC 61511 and IEC 61508 identify an overall approach to determine and apply safety within the process plant. This approach directs the user to consider all required phases of the **Safety Systems Lifecycle** outlined in MTL's FSM poster.

Everyone involved in the lifecycle needs to demonstrate **Functional Safety Management** to comply with the standards.

MTL chose to obtain **FSM** accreditation to demonstrate competence to design and market products in accordance to the standard. This gives customers confidence and assurance when using MTL products in safety instrumented systems (SIS) without the need for further verification of documentation.

## MTL'S FUNCTIONAL SAFETY ACTIVITY FOCUS

- Specification, application, design and development of products for use in functional safety systems.
- Competent staff to undertake Functional Safety activities when participating in projects in IEC 61508-1:2010 and MTL developed a programme for achieving and maintaining staff competence.

## MTL'S COMPETENCE ASSESSMENT

MTL's procedures, competence and safety management are assessed through the external certifying body **SIRA**. This certification assures that MTL's FSM system is audited by a **UKAS** accredited body, ensuring customers of quality management.

MTL follows the **CASS** scheme (Conformity Assessment of safety-related systems), which is a framework underpinning IEC 61508 certification. This provides an internationally accepted structure under which certification of safety-related systems can take place.



## MTL'S MANAGEMENT OF FUNCTIONAL SAFETY

[CLICK HERE](#)



MTL, a supplier of process instrumentation, is now certified as a Functional Safety Management (FSM) company



# MTL's FSM product range



MTL continues to expand its Functional Safety offering with a range of products already assessed as suitable for use in or with safety loops. These include:

## Wiring components

- MTL7xx and MTL77xx series of DIN-rail mounted zener-diode barriers



## Signal conditioning and interface components

- MTL45xx series (backplane mounted) and MTL55xx series (DIN-rail mounted) intrinsically safe isolators



## Signal surge protection

- TPxx series (field mounted) and Sxx series (DIN-rail mounted) surge protection



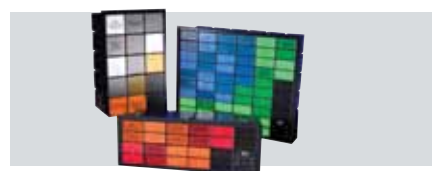
## Asset management instrumentation

- MTL4850 HART® SIL 3 multiplexer for use with safety systems



## Alarm annunciator equipment

- SIL725 safety annunciator



Safety instrumented systems are too important to leave to chance

# Support Material

MTL'S **NEW** FUNCTIONAL SAFETY MANAGEMENT POSTER [CLICK HERE](#)

IEC 61508 Overview  
Safety Lifecycle  
Safety Integrity Levels



Cass Scheme Overview  
Terminologies and  
Abbreviations

SAFETY MANUALS [CLICK HERE](#)



FUNCTIONAL SAFETY MANAGEMENT - OVERVIEW [CLICK HERE](#)





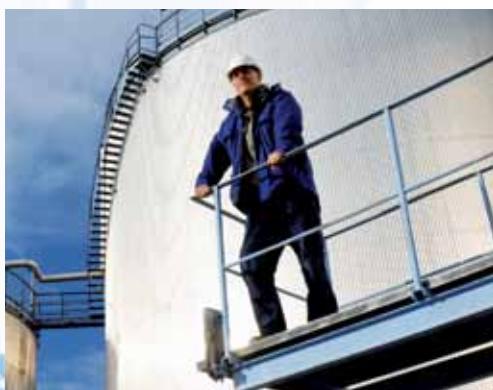


## APPLICATION NOTES...

### Zener Barriers

There is an increasing interest in the use of a statistical approach to all types of reliability analysis...

To read more visit our website: [CLICK HERE](#)



## LATEST NEWS...

**MTL4850** Hart Multiplexer gains SIL3 rating for functional-safety related loops

To read more visit our website: [CLICK HERE](#)



**MTL4500 & MTL5500** series Isolators now under FSM umbrella

To read more visit our website: [CLICK HERE](#)



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