Implementation of the 2016 Edition of FM 3611 *Approval Standard for Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations*

FM Approvals standard 3611 *Approval Standard for Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations* was recently updated. The 2016 edition of the FM Approvals standard adopts the requirements of the bi-national C22.2 No. 213-16/ ANSI/ISA-12.12.01-2015. This continues FM Approvals' efforts to create harmonized North American requirements. The adoption of C22.2 No. 213-16/ ANSI/ISA-12.12.01-2015 introduces a number of alternative methods which allow manufacturers more flexibility in designs as well as creating a universal set of requirements for use in North America.

The table below identifies the significant changes[1] between the 2004 and 2016 editions of FM 3611 (as referred to in the specific sections of ANSI/ISA-12.12.01-2015).

		Type of Change		
ANSI/ISA 12.12.01 Section Title	**Clause No.**	**Editorial**	**Extension**	**Technical**
Ambient Conditions	1.3		Ambient low temperature reduced from -20°C to -50°C without special investigation.	
Continuous Operating Temperature (COT)	3.2		The definition COT has been introduced to allow its use as a replacement for the conditioning requirements for sealed devices.	
Enclosed Break	3.5	Introduction of the term Enclosed Break.	This is a new protection concept for the Division 2 standard and applies to entire product as well as sub assemblies	
Enclosed Break	5.1		Enclosed break added as an additional protection method.	

		Type of Change		
ANSI/ISA 12.12.01 Section Title	**Clause No.**	**Editorial**	**Extension**	**Technical**
Fuse Access	5.4		Fuses replaceable from outside the enclosure do not have to be tool secured provided they are supplied with a switch to turn off the power to the fuse. If the switch is not part of the product as permitted by the standard a warning near the fuse is required.	
Batteries and Battery Powered Equipment	5.6		Additional clarification to current practice.	
Enclosure Requirements for Class II,III	6.1 d)		Class II and III enclosures meeting Type 4, 4X, 6 or 6P of UL50/UL50E are considered acceptable. Clause 6.1 c is equivalent to current practices when testing per clause 15.3.	
Spark Ignition by Analysis	7.3		Minimum safety factor reduced from 1.1 to 1.0.	
Connectors	8.6		Additional clarification to current practice.	
Connections External to the Enclosure	8.8.3			New requirement for the evaluation of connectors in incendive circuits, which have to be evaluated to UL2238, UL 2237 or alternative relevant standard[2].
Surface Temperature of Small Components	10.3		Permits use of the small component relaxation found within 60079-0.	
Spark Ignition Test for Nonincendive Components	12.2.1		Reduction in test supply from 150% of rated current to rated load.	

		Type of Change		
ANSI/ISA 12.12.01 Section Title	**Clause No.**	**Editorial**	**Extension**	**Technical**
Sealed Device	13.1.5			Sealed devices have to be rated for the ambient air surrounding the device (service temperature). There is no longer a conditioning test.
Enclosed Break	14		Test requirements for a new protection concept.	
Dust-blast Method	15.2		Alternative test method to the circulating dust method.	
Atomized-Water Method	15.4		Alternative test method to the circulating dust method.	
Gasket Test	15.5		Alternative test method to rate gaskets.	

Notes:

1. *The changes referred to above reflect significant changes but are not an exhaustive list of all modifications from the previous version.*
2. *The UL standards UL 2238, or UL 2237 pertain to Cable Assemblies and Fittings for Industrial Control and Signal Distribution and Power Cable Assemblies with voltage limits up to 600V and 1000V respectively, thus are not specifically intended for low voltage and low power or limited energy circuits. By low voltage and low power or limited energy circuits we are referring to low voltage and low power as defined in clause 6.3.1 of ANSI/ISA 61010-1 and in section 9.3 and table 13. Thus voltage levels not exceeding 30V rms and 42.4V peak or 60 Vdc and power levels not exceeding 8A and not exceeding 150W. With connectors used for low voltage and low power or limited energy circuits a "common sense" evaluation may be conducted by reviewing the manufactures power, current and voltage ratings and examining the insulation type, thickness and separation distances against table 5 of the intrinsic safety standard 60079-11 for the level of protection "ic", and the relevant creepage and clearances tables of ANSI/ISA 61010-1.*

As denoted above, a vast majority of the changes to FM 3611:2016 are either editorial or extensions to existing requirements and have little impact on currently Approved product. For this reason, there will be a phased adoption of the new edition and it will be in three stages as described below.

1) Manufacturers can elect to have their product(s) certified to FM 3611:2016 now. They can also request that their currently Approved products be reassessed to FM 3611:2016 at any time.
2) Manufacturers seeking certification to FM 3611 after March 1, 2019 will be required to have their product(s) assessed against the 2016 edition.
3) Manufacturers submitting Revision Requests after January 1, 2020 on product(s) certified to an earlier edition of FM 3611 will be required to have the product(s) re-evaluated against FM 3611:2016 regardless of change(s).