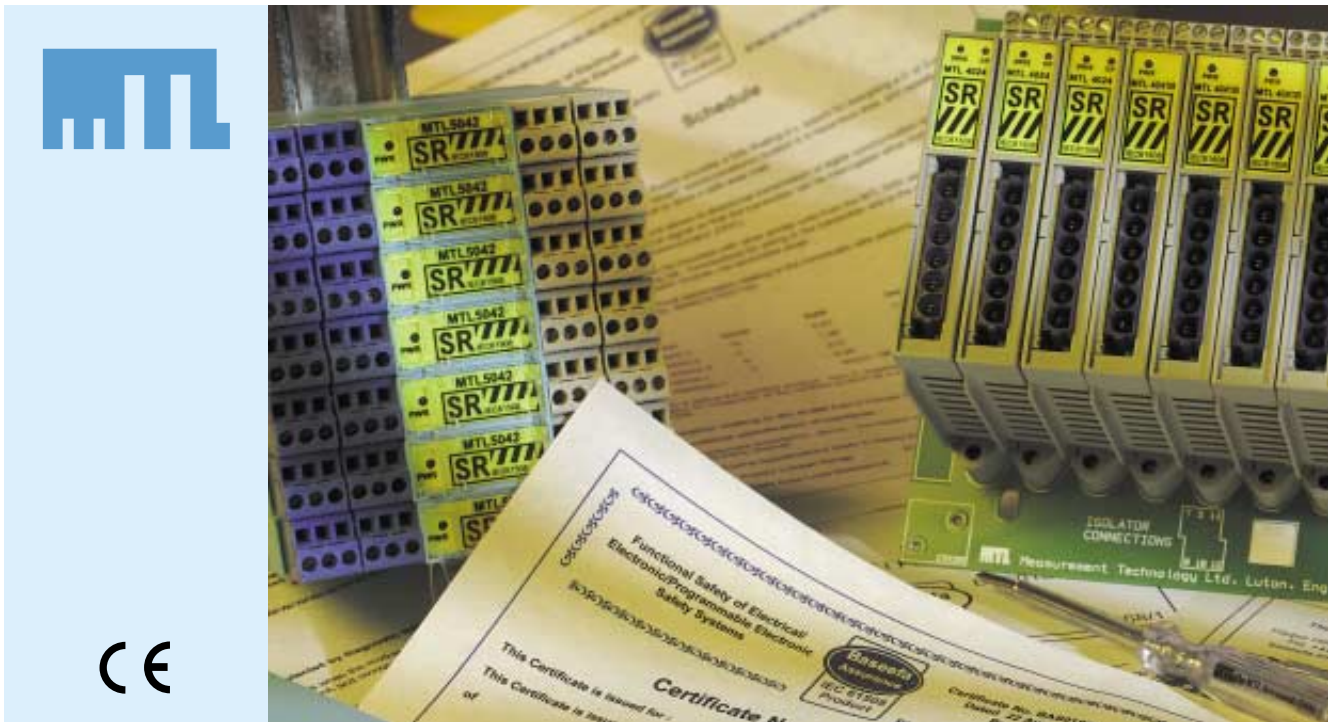


safety related (SR)
interfaces

SR SERIES INTERFACES

certified interfaces for Safety Instrumented Systems



- ◆ BASEEFA certified to IEC61508
- ◆ TÜV approved to DIN 19250
- ◆ System backplanes with bussed power - MTL 4000 Series
- ◆ Straightforward 'clip-on' DIN rail mounting - MTL5000 Series
- ◆ Certified HART® connectivity

Safety Instrumented Systems (SIS) are not a new concept and it has long been the practice to fit protective systems to industrial process plant where there is a potential threat to life or the environment should something go wrong. What is new is that IEC61508 provides guidelines to achieving an adequate Safety Integrity Level (SIL) for systems, sub-systems and components. The new MTL4000-SR, MTL5000-SR and MTL4840 HART®-SR products come with certified reliability data, thus the safety system designer no longer has the uncertainty of having to use uncertified devices. Interfaces available in the new SR-Isolator Series cover Digital Input (DI), Digital Output (DO) and Analogue Input (AI) functions.

Of particular importance to HART® users is the certification for the MTL4840 HART® interface system. A common method of exploiting the HART® protocol is to multiplex the digital data stream from field devices onto the primary analogue field wiring, and then demultiplex the signals and present them to a maintenance software package for monitoring and diagnostics. When calculating the SIL for such systems the multiplexer is seen as an intrusion in the loop and negatively impacts on the SIL. By incorporating a multiplexer that has been assessed as a safety related sub-system, users can exploit the many benefits of HART® without compromising the SIL of the loops involved.

The benefits to users of specifying sub-systems or components assessed for use in a Safety Instrumented System are significant; a more scientific, numeric approach to specifying and designing safety systems is possible; the nature of the risk can be quantified and a protective system appropriate to that risk can be designed. Because the protective system is assessed against a widely accepted standard, its suitability can be clearly demonstrated to all. Under- or over-specifying of protective systems is less likely and, in many cases, a less expensive solution may be shown to provide adequate protection.

Further application information is provided in AN9025, 'An introduction to Functional Safety and IEC61508' explaining the principles of IEC61508 along with worked examples of solving practical issues associated with the new standard. This is available via www.mtl-inst.com or by contacting your local MTL office.

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EUROPE (EMEA) Tel: +44 (0)1582 723633
AMERICAS Tel: +1 603 926 0090
ASIA PACIFIC Tel: +65 487 7887
E-mail: enquiry@mtl-inst.com Web site: www.mtl-inst.com

Fax: +44 (0)1582 422283
Fax: +1 603 926 1899
Fax: +65 487 7997

MTL SR-SERIES CERTIFIED INTERFACES

MODEL No.	DESCRIPTION	APPROVALS BODY
MTL4113x MTL4114x MTL5113x MTL5114x	Failsafe Proximity Detector input with LFD Failsafe Proximity Detector input Failsafe Proximity Detector input with LFD Failsafe Proximity Detector input	TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508
MTL4043	Current Repeater - Current sinking (smart transmitters)	Eutech assessed SIL2 to IEC61508
MTL4041B-SR MTL4041P-SR MTL4024-SR MTL4061-SR	Current Repeater (smart transmitters) Current Repeater - high power (smart transmitters) Solenoid / alarm driver Fire & Smoke detector interface	BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL1 to IEC61508
MTL5021-SR MTL5022-SR MTL5025-SR MTL5042-SR MTL5061-SR	Solenoid / alarm driver Solenoid / alarm driver IIB gases Solenoid / alarm driver low power Current Repeater (smart transmitters) Fire & Smoke detector interface	BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL1 to IEC61508
MTL4841/2	HART Multiplexers	BASEEFA certified SIL3 to IEC61508
EO2011	Current Repeater	Assessment to AK5 DIN 19250

MTL4000 & MTL4840 SERIES COMMON SPECIFICATIONS

Location of units

Safe area

Isolation

250V rms between safe-area and hazardous-area terminals, tested at 1500V rms minimum between safe and hazardous area terminals

Long term drift

No recalibration necessary

Maximum safe-area voltage

$U_m = 250V$ rms or dc

Hazardous-area connectors

SCC01: Screw-clamp connector accommodates conductors of 14AWG max.

CCH01: Crimp-contact header accommodates:
CRC01 crimps for conductors of 14–20AWG, or
CRC02 crimps for conductors of 18–24AWG

Ambient temperature limits

–20 to +60 °C continuous working

–40 to +80 °C storage

Humidity

5 to 95% relative humidity

Mounting

On MTL or user-supplied backplanes which in turn can be surface, DIN-rail or 19-inch rack mounted

Weight

100g approximately

MTL5000 SERIES COMMON SPECIFICATIONS

Location of units

Safe area

Isolation

250V rms between input, output and power supply terminals, tested at 1500V rms minimum between safe and hazardous-area terminals.

Terminals

Accommodate conductors of up to 2.5mm² stranded or single-core

Ambient temperature limits

–20 to +60 °C operating

–40 to +80 °C storage

Humidity

5 to 95% relative humidity

Mounting

On 35mm (top hat) rail to
EN 50022 – 35 x 7.5; BS 5584
DIN 46277 – 35 x 27 x 7.3

Weight

110g approximately



MTL SR SERIES PRODUCTS - FUNCTIONAL SAFETY SPECIFICATIONS

Model No.	λ_{dd} (b) ^{Note1}	λ_{du} (c)	Periodic proof tests & maintenance	Safe Failure Fraction (j)	Hardware Fault Tolerance (k)	Highest SIL that can be claimed (m)
MTL4024-SR	0	0	NONE	100%	0	SIL3
MTL4041B-SR	1.4 x 10 ⁻⁷ hr 1.2 x 10 ⁻³ yr	1.4 x 10 ⁻⁷ hr 1.2 x 10 ⁻⁴ yr	At least once per year	98%	0	SIL2
MTL4041P-SR	1.4 x 10 ⁻⁷ hr 1.2 x 10 ⁻³ yr	1.4 x 10 ⁻⁷ hr 1.2 x 10 ⁻⁴ yr	At least once per year	98%	0	SIL2
MTL4061-SR	1.5 x 10 ⁻⁷ hr 1.3 x 10 ⁻³ yr	3.0 x 10 ⁻⁸ hr 2.6 x 10 ⁻⁴ yr	At least once per year	79.5%	0	SIL1
MTL5021-SR	0	0	NONE	100%	0	SIL3
MTL5022-SR	0	0	NONE	100%	0	SIL3
MTL5025-SR	0	0	NONE	100%	0	SIL3
MTL5042-SR	1.6 x 10 ⁻⁷ hr 1.4 x 10 ⁻³ yr	1.6 x 10 ⁻⁸ hr 1.4 x 10 ⁻⁴ yr	At least once per year	92.5%	0	SIL2
MTL5061-SR	1.7 x 10 ⁻⁷ hr 1.5 x 10 ⁻³ yr	3.4 x 10 ⁻⁸ hr 3.0 x 10 ⁻⁴ yr	At least once per year	79.5%	0	SIL1
MTL4841/2 Note2	N/A	8.0 x 10 ⁻⁸ hr 7.0 x 10 ⁻⁴ yr	Once every 10 years	>90%	1	SIL3

Note 1: Items (b), (c), (j), (k) and (m) refer to details under these sub-clauses on the certificate and information relating to IEC61508-2 cl 7.4.7.3

Note 2: Where an MTL4840 system is used in parallel with a Safety System, the highest SIL that can be claimed for a safety function is SIL3 in respect of non-interference with that Safety System.

For all Intrinsic Safety parameters please refer to the appropriate Certificate of Conformity.

CERTIFICATION

Model No.	Certificate No.	Approvals Body
MTL4113x MTL4114x MTL5113x MTL5114x	08/220/1203/7 08/220/1203/7 08/220/1203/7 08/220/1203/7	TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508 TüV approved AK5 to DIN 19250 & SIL3 to draft IEC1508
MTL4024-SR MTL4041B-SR MTL4041P-SR MTL4061-SR	BAS01SP9257X BAS01SP9196X BAS01SP9197X BAS01SP9412X	BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL1 to IEC61508
MTL5021-SR MTL5022-SR MTL5025-SR MTL5042-SR MTL5061-SR	BAS01SP9375X BAS01SP9376X BAS01SP9377X BAS01SP9258X BAS01SP9411X	BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL3 to IEC61508 BASEEFA certified SIL2 to IEC61508 BASEEFA certified SIL1 to IEC61508
MTL4840	BAS01SP9449X	BASEEFA certified SIL3 to IEC61508
E02011	TüV PP-112/2001	Assessment to AK5 DIN 19250

