

Functional Safety of Electrical/
Electronic/Programmable Electronic
Safety Systems



Certificate No. BAS01SP9375X
Dated 19 December 2001
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Certificate No. BAS01SP9375X

This Certificate is issued for : The MTL5021 Solenoid/Alarm Driver
This Certificate is issued to : Measurement Technology Limited
of Power Court
Luton LU1 3JJ

Provided that the manufacturer maintains a production system in accordance with the requirements of the Certification Mark Licensing Scheme and holds a current licence, the equipment may be marked with the Baseefa IEC 61508 Product Certification Mark reproduced above.

This certificate is issued in respect of the conformance of the equipment as a sub-system for use in a Safety System intended to conform with the requirements of IEC 61508.

In particular, the performance of the equipment as a safety related sub-system is evaluated in the terms expressed in IEC 61508 Part 2 Clause 7.4.7.3 and is summarised in the attached Schedule.

In accordance with 7.4.7.3 (m), the highest Safety Integrity Level (SIL) that can be claimed for a safety function using this sub-system in single channel is SIL 3.

Note that the SIL of the Safety System in which this equipment is integrated may vary from that indicated for the equipment alone, according to the method of integration and other factors.

If the letter X is added after the Certificate Number, this indicates that there is particular information contained in the Schedule concerning the use of the equipment.

This certificate is issued in accordance with the applicable rules of the certification service. It does not necessarily indicate that the equipment may be lawfully used in particular industries or circumstances.

This certificate may be reproduced only in its entirety, without change, schedule included.

Report Reference 00(C)6116/4

File Reference EECS 0703/44/005

Baseefa Certification from
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I M Cleare
Director



Schedule

Equipment :

The MTL5021 Solenoid/Alarm Driver enables a device in a hazardous area to be controlled by a switch in the safe area. It can drive a certified intrinsically safe low power load, as well as non-energy-storing simple apparatus such as a LED

The module is intended to be mounted with other similar units from the MTL 5000 series range on a standard TS 35 mounting rail. Connections for power and wiring to both safe and hazardous areas are provided on the top of each module, via removable plugs.

For information and circuit parameters relating to the intrinsically safe performance of this module, see Baseefa Certificate No. BAS01ATEX7148.

Documentation :

Item	Number	Issue	Date	Description
1	TC5021-1	6	8.98	Circuit Schematic
2	AD5021-3	5	8.98	PCB Component Layout
3	PLE5021-3	5	7.97	Component Schedule
4	CI5021-1	2	2.96	PCB Artwork
5	INM5000-1		March 96	Instruction Manual

Items 1 to 4 define the certified product. Item 5, together with this certificate, provide the necessary information for integration of the certified product as a sub-system within a safety system in accordance with IEC 61508.

Information relating to IEC 61508 Part 2 Clause 7.4.7.3 :

a) Functional specification of interfaces :

See Equipment Description, above. Connection information and physical installation information is given in the Instruction Manual.

The following Specifications apply in Safety Related Applications and may differ from catalogue values:

Supply Voltage Range to energise output	20 to 35 Vdc
Output is de-energised for supply voltages	less than 2.0 Vdc



b) Estimated rates of failure in dangerous mode detected by diagnostic tests :

Zero.

c) Estimated rates of failure in dangerous mode undetected by diagnostic tests :

Zero.

d) Environmental limits :

Since de-energisation of the output is defined as a safe failure, environmental conditions are unlikely to result in an unsafe failure. However, to ensure maximum reliability of the circuit in all modes of operation, it is recommended that the following criteria are observed :

i) Protection against the effects of dust and water. The modules are intended to be mounted in an enclosure which provides at least IP 54 protection. Alternatively, equivalent protection may be provided by the location of mounting.

ii) Protection against the effects of vibration. The modules are intended to be mounted in a normal industrial environment without undue vibration. Type tests have been carried out in accordance with Lloyds Register Type Approval specification Standard Test 1 dated 1996 paragraph 12, Vibration Test 1, from 5 Hz to 100 Hz. From 5 Hz to 13.2 Hz the displacement was ± 1.0 mm. From 13.2 Hz to 100 Hz the acceleration was ± 0.7 g. For continued reliability, the level of vibration at the place of installation should normally be significantly below this value.

iii) Immunity from Electromagnetic Interference. The modules are intended to be mounted in a normal industrial environment without subjection to undue conducted or radiated interference. Type tests have shown compliance with EN 61326. For continued reliability, the level of conducted or radiated interference should not approach the values specified in these standards.

iv) Ambient Temperature Limits. -20 to +60°C continuous working
 -40 to +80°C storage

e) Lifetime limits :

There is no defined lifetime limit for safety purposes.

f) Periodic proof test and maintenance :

None.

Note : The instruction manual indicates a method of test that may be performed on a unit in order to confirm the operation of the unit in normal (non-safety related) applications.

g) Diagnostic coverage :

Not applicable.

h) Diagnostic test interval :

Not applicable.

i) Additional information regarding Mean Time to Restoration :

Not applicable.

j) Safe failure fraction :

The safe failure fraction is 100%.

k) Hardware fault tolerance :

The hardware fault tolerance is 0.

l) Application limits to avoid systematic failures :

None.

m) Highest safety integrity level that can be claimed for a safety function using this sub-system :

SIL 3 may be claimed for a safety system using this subsystem where zero output in the presence of an input voltage is defined as a safe failure.

n) Hardware configuration :

The hardware is identified by the documentation listed above which is applicable to all manufacture with a date code of 0120 onwards. Applicability of the certificate to future modifications will be confirmed by the issue of supplementary certification listing updated documentation.

o) Evidence of validation :

This certificate provides documentary evidence of validation. Associated confidential Certification Report No. 00(C)6116/4 details the evidence used in the validation process.

Special Information concerning the use of the equipment :

The Safety Integrity Level is defined only in respect of ensuring zero output for zero input (i.e. less than 2.0 Vdc).