

Functional Safety of Electrical/
Electronic/Programmable Electronic
Safety Systems



Certificate No. BAS01SP9449X
Dated 13 February 2002
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Certificate No. BAS01SP9449X

This Certificate is issued for : The MTL4840 Hart Multiplexer
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 in respect of non-interference with that safety system.

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)6116/7
File Reference EECS 0703/44/005

Baseefa Certification from
The Electrical Equipment Certification Service
The Health and Safety Executive
Harpur Hill, Buxton, Derbyshire SK17 9JN United Kingdom
Tel: +44 (0) 1298 28000 Fax: +44 (0) 1298 28244
baseefa.info.eecs@hsl.gov.uk www.baseefa.com



I M Cleare
Director



Schedule

Equipment :

The MTL4840 Hart Multiplexer system, comprises of a number of MTL4841 and 4842 modules, backplanes and optional connection units as detailed below.

MTL4841 Communication Module

The communications module is processor based and provides the control and translation from RS485 to Hart. The communications module additionally provides control signals for the MTL4842.

MTL4842 Hart Interface module

The MTL4842 is a 16 channel HART multiplexer

Backplane (BPHM64, BPHM16, BPHM16U, BPSH16 and BPSH16-32)

These provide mountings for the MTL4841 and 4842, provide their required power (+5V) with versions to allow the installation of IS barriers.

Optional Connection Units (HCU16 and HCU16AO)

These provide connection facilities and, in the case of the HCU16AO, additional filtering.

The system is intended to be used in conjunction with modules from the MTL4000 series to allow communication between a computer system and smart transducers located in potentially hazardous areas. The MTL4840 system is designed to integrate with safety related systems but not functionally form an active part of those systems in respect of IEC 61508. As such the system is designed to superimpose digital signalling on a standard 4-20mA signalling system in a manner which does not interfere with the operation of the 4-20mA system.

The 4841 and 4842 modules mount directly on to the backplanes with other connections being made by a mixture of screw terminals and removable plugs. The interface with the hazardous area loop is made via approved isolators from the MTL4000 range mounted on the same backplanes

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Documentation :

Item	Number	Issue	Date	Description
1	TC4801-1	1	11.98	BPHM64 Circuit Schematic
2	TC4842-1	5	9.94	4842 Circuit Schematic
3	TC4841-1	8	11.98	4841 Circuit Schematic
4	058-163 Sheet 1	1	2.00	HCU16 Circuit Schematic
5	058-164 Sheet 1	1	2.00	HCU16AO Circuit Schematic
6	AD4842-3	4	4.94	4842 Component Layout
7	AD4841-3	4	4.94	4841 Component Layout
8	AD4801-1	2	6.00	BPHM64 Component Layout
9	058-164 Sheet 2	1	2.00	HCU16AO Component layout and Component Schedule
10	058-163 Sheet 2	1	2.00	HCU16 Component layout and Component Schedule
11	PLE4801-1	1	11.98	BPHM64 Component Schedule
12	PLE4841-3 5 Sheets	5	10.98	4841 Component Schedule
13	PLE4842-3 2 Sheets	3	9.93	4842 Component Schedule
14	INM4840-3		4.01	Instruction Manual

Items 1 to 13 define the certified products. Item 14, together with this certificate, are intended to 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	21 to 35 Vdc
Host system interface	RS485 1.2kbaud-39.4kbaud

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

It is not anticipated that diagnostic tests will be used to detect faults.



j) Safe failure fraction :

The safe failure fraction is >90%.

k) Hardware fault tolerance :

The hardware fault tolerance is 1.

l) Application limits to avoid systematic failures :

See environmental recommendations at (d) above. See also special information concerning the use of the equipment.

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

The 4840 system may not be used to provide a safety function. However where it is used in parallel with a safety system SIL 3 may be claimed for the 4840 on the basis of non-interference and on condition that adequate care is taken regarding the operation of devices (such as smart transmitters) attached to the system.

n) Hardware configuration :

The hardware is identified by the documentation listed above which is applicable to all manufacture with a date code of 0140 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)6116/7 details the evidence used in the validation process.

Special Information concerning the use of the equipment :

This certificate refers only to the non-interfering operation of the 4840 communications system when connected to 4-20mA systems. No claims are made regarding the safety of the Hart data transmitted via the 4840 or the safe operation of any equipment employing such data.

The system integrator should take into account the possibility that erroneous Hart commands may cause changes in the performance of instrumentation in the safety system. For example, inadvertent changes to the range or calibration of the 4-20mA transmitter may cause an undetected error in the 4-20mA loop current. This should be guarded against by suitable means, such as by reliable trapping in the application software, or by password protection in the transmitter itself, to make it highly unlikely that such corruption of the transmitter settings could occur.