

FUNCTIONAL SAFETY CERTIFICATE

This is to certify that the

DB3 Sounder

manufactured by

Eaton MEDC Ltd Unit B Sutton Parkway Oddicroft Lane Sutton-In-Ashfield NG17 5FB UK

has been assessed by Sira Certification Service with reference to the CASS methodologies and found to meet the requirements of

IEC 61508-1:2010 (Clause 6) IEC 61508-2:2010

The Product and its associated data contained herein can be considered for use in the design of safety functions up to and including

SIL 2*

when used in accordance with the scope and conditions of this certificate.

* The Product that has been certified is not implicit of the achieved Safety Integrity Level (SIL) of the safety related system

winas

Certification Manager:

Wayne Thomas

Initial Certification: This certificate issued: Renewal date:

31st January 2012 20th February 2017 19th February 2022

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



Certificate No.: Sira FSP 11010/04 Form 7016 issue 2 Page 1 of 5



Product description and scope of certification

This range of light weight all GRP, flameproof sounders is intended for use in potentially explosive gas and dust atmospheres and has been designed with high ingress protection to cope with the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries.

The DB3 Sounder can be configured with or without an ExE Chamber on the rear. The FMEDA has considered the ExE Chamber on the rear as being included.



Certified Data in support of use in safety functions

The assessment has been carried out with reference to the Conformity Assessment of Safety*related Systems* (CASS) methodology using the Route 2_{H} approach. Table 1: Proven in Use Summary Table

DB3 SOUNDER							
Safety Function of DB3 Sounder:							
'To provide a pre-described audible warning sound when required							
Architectural constraints:	Clause 7.4.4.3.1 states: HFT = 0		Proof Test Interval	SIL 2			
	Highest SIL capable through		=8760Hrs ^[4]	(Low Demand Mode ONLY)			
	Demand application.		$MTTR = 8 Hrs^{[4]}$				
Probability of failure on demand:		PFD _{AVG} =1.02E-03		SIL 2			
Hardware safety integrity compliance ¹¹		Route 2 _H					
Systematic safety integrity compliance ^[1]		Route 1s					
Systematic Capability ^[2]		SC 2					
Overall SIL-capability achieved ^[3]		SIL 2 (Low Demand)					

^[1] These are new parameters used in IEC61508 Part 2 Sections 7.4.2 & 7.4.4.

^[2] This is a new measurable scale for the systematic safety integrity level; refer to IEC61508 Part 4 Section 3.5.9.

^[3] This is determined by the lowest SIL indicated by each of the parameters given above.

^[4] These figures are used only for demonstration purposes.

Element Safety Function(s)

DB3 Sounder - The Safety Function of the DB3 Sounder is to provide the correct pre-determined audible warning when required.

The Safe State of the EUC is to be achieved when the product provides a predetermined audible warning.

The element safety function is intended for use in low demand Mode of Operation as indicated by the certified failure data overleaf.

The failure data above is supported by the base information given in Table 2 below.



Certificate No.: Sira FSP 11010/04 Form 7016 issue 2 Page 2 of 5



1	Product identification:	DB3 Sounder, both AC & DC Version. as described in manufacturer's product catalogue, See section 5.1
2	Functional specification:	Refer to paragraph above 'Use in safety functions' and full specification in manufacturer's product catalogue.
3-5	Random hardware failure rates:	Refer to summary table above
6	Environment limits:	Temperature range: -50 to +70°C operational
7	Lifetime/replacement limits:	Refer to Installation, Operation and Maintenance Manual
8	Proof Test requirements:	Refer to user manual
9	Maintenance requirements:	Refer to user manual
10	Diagnostic coverage:	60.24% (Ref to 56A24816A)
11	Diagnostic test interval:	Refer to Installation, Operation and Maintenance Manual
12	Repair constraints:	Refer to user manual
13	Safe Failure Fraction:	74% (Ref to 56A24816A)
14	Hardware fault tolerance (HFT):	0
15	Highest SIL (architecture/type A/B):	SIL2, Type B
16	Systematic failure constraints:	Refer to Systematic Assessment report R56A24816B
17	Evidence of similar conditions in previous use:	Refer to 56A24816A
18	Evidence supporting the application under different conditions of use:	Refer to 56A24816A
19	Evidence of period of operational use:	Compliance Route 2 _H proven-in-use
20	Statement of restrictions on functionality:	Compliance Route 2 _H proven-in-use
21	Systematic capability:	Refer to Systematic Assessment report R56A24816B
22	Systematic fault avoidance measures:	Refer to Systematic Assessment report R56A24816B
23	Systematic fault tolerance measures:	Refer to Systematic Assessment report R56A24816B
24	Validation records:	Refer to Systematic Assessment report R56A24816B

Identification of certified equipment

The certified equipment and its safe use are defined in the manufacturer's documentation listed in Table 3 below.



Certificate No.: Sira FSP 11010/04 Form 7016 issue 2 Page 3 of 5



Document no.	Pages	Rev	Date	Document description
TM249	24	Α	None	Technical Manual for the Sounder DB3 & DB3L,
				Includes the Safety Manual
133B	1	NIL	21-10-1998	New Product Design Specification
6DSO94/R	2	R		Product Data Sheet
219-118	2	F	04-03-1998	DB3 Production Drawing
219-160	2	D	03-11-1999	Circuit Diagram DB3 Dual Tone DC Version with
				Volume Control
219-209	1	D	02-11-1999	DB3 Customer Wiring Diagram
219-893	1	Α	13-11-1999	DB3 Single Tone DC Wiring With EOL Fitted
219-894	1	Α	13-11-2008	DB3 Dual Tone DC Wiring with EOL Fitted
DS30235J	1	NIL	NIL	PIC16C62X Data Sheet

Table 3: Certified drawings

Conditions of Certification

The validity of the certified base data is conditional on the manufacturer complying with the following conditions:

- 1. The manufacturer shall analyse failure data from returned products on an on-going basis. Sira Certification Service shall be informed in the event of any indication that the actual failure rates are worse than the certified failure rates. (A process to rate the validity of field data should be used. To this end, the manufacturer should co-operate with users to operate a formal field-experience feedback programme).
- 2. Sira shall be notified in advance (with an impact analysis report) before any modifications to the certified equipment or the functional safety information in the user documentation is carried out. Sira may need to perform a re-assessment if modifications are judged to affect the product's functional safety certified herein.
- 3. On-going lifecycle activities associated with this product (e.g., modifications, corrective actions, field failure analysis) shall be subject to surveillance by Sira in accordance with 'Regulations Applicable to the Holders of Sira Certificates'.

Conditions of Safe Use

The validity of the certified base data in any specific user application is conditional on the user complying with the following conditions:

- 1. The user shall comply with the requirements given in the manufacturer's user documentation (referred to in Table 3 above) in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc;
- 2. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
- 3. All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.
- 4. The unit should be tested at regular intervals to identify any malfunctions; in accordance with the safety manual.



Certificate No.: Sira FSP 11010/04 Form 7016 issue 2 Page 4 of 5



General Conditions and Notes

- 1. This certificate is based upon a functional safety assessment of the product described in Sira Test & Certification Assessment Report R56A24816A and any further reports referenced in that report (under previous Sira projects).
- 2. If certified product or system is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
- 3. The use of this Certificate and the Sira Certification Mark that can be applied to the product or used in publicity material are subject to the 'Regulations Applicable to the Holders of Sira Certificates' and 'Supplementary Regulations Specific to Functional Safety Certification'.
- 4. This document remains the property of Sira and shall be returned when requested by the issuer.

Certificate History

Issue	Date	Project No.	Comment
04	20/02/2017	70105191	Certificate re-issued after successful recertification audit.



Certificate No.: Sira FSP 11010/04 Form 7016 issue 2 Page 5 of 5

