



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX ETL 18.0007X** Page 1 of 4 [Certificate history:](#)
Issue No: 1 [Issue 0 \(2018-05-04\)](#)

Status: **Current**

Date of Issue: 2022-11-07

Applicant: **Alabama Specialty Products**
152 Metal Samples Rd, Munford, AL 36268
United States of America

Equipment: **Models MS4500E, MS4500L, MS4500E-HC and MS4500L-HC High Resolution ER Data Logger**

Optional accessory:

Type of Protection: **Intrinsic Safety ' ia'**

Marking: **Ex ia [ia] IIC T4 Ga**
-25°C ≤ Ta ≤ +60°C – for use with MS4500E and MS4500L
-40°C ≤ Ta ≤ +70°C – for use with MS4500E-HC and MS4500L-HC
IECEX ETL 18.0007X

Approved for issue on behalf of the IECEx
Certification Body:

Kevin J. Wolf

Position:

Certification officer

Signature:
(for printed version)

Date:
(for printed version)

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Manufacturer: **Alabama Specialty Products**
152 Metal Samples Rd, Munford, AL 36268, USA
United States of America

Manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[US/ETL/ExTR17.0070/00](#)

[US/ETL/ExTR17.0070/01](#)

Quality Assessment Report:

[GB/ITS/QAR14.0019/05](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Refer to Certificate Annex for Description of Equipment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to the Certificate Appendix for a list of the special conditions for safe use.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

This assessment considers the following changes to the equipment:

- Update of IEC 60079-0 to latest iteration of standard.
- Revision to equipment to include variable mainboards in, EXCDB-000032 Rev A and B and EXCDB-000063 depending upon construction.
- Inclusion of alternative measurement board EXCDB-000037 to be fitted optionally with EXCDB-000015.
- Modifications to display board EXCDB-000016 to permit the use of an alternative LCD module.
- Modifications and reassessment of enclosure to degree of protection IP54.
- General modifications to BoMs to account for supply chain.

Annex:

[Annex to IECEx ETL 18.0007X Issue 1.pdf](#)



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Certiifacte Description

The model MS4500 is a portable monitoring equipment which measures the corrosion rate of metallic pipe through a resistive probe. The equipment utilises a rectangular cuboidal non-metallic enclosure with approximate dimensions 9" x 5" x 3" which is housed within a rubber boot to provide additional impact resistance. The equipment fascia incorporates an LCD display and a pushbutton keypad. Batteries may be interchanged in the equipment in the non-hazardous area via a screw secured compartment located on the rear of the enclosure. The enclosure has been tested to degree of protection IP44 in accordance with IEC 60529.

The ambient temperature range in which the equipment may be installed is dependent upon the cells used. Models E and L are differentiated by the installed measurement board and the -HC suffix designates a high capacity Lithium Thionyl Chloride battery pack.

Ambient Temperature Range	Model	Cells
-25°C ≤ Tamb ≤ +60°C	MS4500E/ MS4500L	Duracell PC1500 (or Duracell MN1500)
-40°C ≤ Tamb ≤ +70°C	MS4500E-HC/MS4500L-HC	Xeno Energy XL-145F or Tadiran TL4920

The equipment must be removed from the hazardous area, or the area confirmed to be non-hazardous prior to changing cells.

Connection to the equipment is made through connectors on the side wall of the enclosure. The equipment has the facilities for connection to an external corrosion measurement probe, a USB stick for data storage and transfer and a USB port for connection to a USB isolator for communications in the non-hazardous area. Further detail on each connection is given below.

ER Measurement probe (for use with the MS4500E and MS4500E-HC models)

The equipment has been assessed for use with one of two measurement boards. The first of which is the ER measurement board, designed to connect to a simple resistive probe through the 6 pin connector external to the equipment. This probe shall be a simple resistive device with no discrete sources of resistance, inductance or capacitance. The probe connection has the following associated entity parameters.

- Uo: 4.94V
- Io: 0.332A
- Po: 0.410W
- Ci: 0µF
- Li: 0µH
- Co: 1µF
- Lo: 100µH

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Measurement probe – EXCDB-000037 – LPR Measurement Board

The equipment has been assessed for use with one of two measurement boards. The second of which is the LPR measurement board, designed to connect to a simple resistive probe through the 6 pin connector external to the equipment. This probe shall be a simple resistive device with no discrete sources of resistance, inductance or capacitance. The probe connection has the following associated entity parameters.

Uo: 8.61V
Io : 0.202A
Po: 0.044W

Co: 1μF
Lo: 18μH

Model ET1650 USB Data Storage Device

A USB port is provided for downloading data in the hazardous area. This port has been assessed for connection to the ET1650 USB storage device manufactured by Metal Samples Company (Alabama Specialty Products). The USB stick has been assessed for connection to a maximum Um of 6V. Connection of an unassessed USB stick to this port whilst the equipment is located in the hazardous area is not permitted. Connection of an alternative certified USB storage device is permitted providing it is compatible with the following output parameters:

Uo: 4.94V
Io: 1.045A
Po: 1.291W
Co: 12.7μF
Lo: 0μH

USB Barrier

The equipment has been assessed for connection to the model ET1867 USB barrier manufactured whilst both the barrier and the MS4500E or MS4500E-HC are located in the non-hazardous area. This USB barrier has been assessed for a maximum input voltage of 6V. Connection of an alternative certified USB barrier is permitted providing the following are parameters are satisfied.

Uo: 4.94V
Io: 0.215A (per channel)
Po: 0.322W (per channel)
Um: 6V

Connection shall only be made whilst both pieces of equipment are located in the non-hazardous area.

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The following drawing list relates to IECEx ETL 18.0007X

The following drawing list entirely replaces that of the previous report.

Technical Documents:			
TITLE:	DRAWING NO.:	REV. LEVEL:	DATE:
Circuit Diagram - MS4500 Data Logger Host Board Type III with USB A	EXCDB-000032	A	07/21/2022
Circuit Diagram - MS4500 Data Logger Host Board Type III with USB A	EXCDB-000032	B	08/11/2022
Circuit Diagram - MS4500 Data Logger Host Board Type III with USB C	EXCDB-000063	0	07/21/2022
Circuit Diagram - MS4500 Data Logger ER Measurement Board	EXCDB-000015	0	10/16/2014
Circuit Diagram - MS4500 Data Logger LPR Measurement Board	EXCDB-000037	A	07/21/2022
Circuit Diagram - MS4500 Data Logger Diode Shunt and LCD Board	EXCDB-000016	B	07/21/2022
Circuit Diagram - MS4500 Data Logger Power Supply Board TPS63000	EXCDB-000061	0	07/21/2022
Circuit Diagram - MS4500 Data Logger Power Supply Board TPS63060	EXCDB-000062	0	07/21/2022
Bill of Materials - MS4500 Data Logger Host Board Type III with USB A	EXBOM-000032	A	07/21/2022
Bill of Materials - MS4500 Data Logger Host Board Type III with USB A	EXBOM-000032	B	08/11/2022
Bill of Materials - MS4500 Data Logger Host Board Type III with USB C	EXBOM-000063	0	07/21/2022
Bill of Materials - MS4500 Data Logger ER Measurement Board	EXBOM-000015	A	07/21/2022
Bill of Materials - MS4500 Data Logger LPR Measurement Board	EXBOM-000037	A	07/21/2022
Bill of Materials - MS4500 Data Logger Diode Shunt and LCD Board	EXBOM-000016	B	07/21/2022
Bill of Materials - MS4500 Data Logger Power Supply Board TPS63000	EXBOM-000061	0	07/21/2022
Bill of Materials - MS4500 Data Logger Power Supply Board TPS63060	EXBOM-000062	0	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger Host Board Type III with USB A	EXPCB-000032	A	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger Host Board Type III with USB A	EXPCB-000032	B	08/11/2022
PCB Fabrication Drawing - MS4500 Data Logger Host Board Type III with USB C	EXPCB-000063	0	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger ER Measurement Board	EXPCB-000015	0	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger LPR Measurement Board	EXPCB-000037	A	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger Diode Shunt and LCD Board	EXPCB-000016	B	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger Power Supply Board TPS63000	EXPCB-000061	0	07/21/2022
PCB Fabrication Drawing - MS4500 Data Logger Power Supply Board TPS63060	EXPCB-000062	0	07/21/2022
Assembly Drawing - MS4500 Data Logger Host Board Type III with USB A	EXET1890	A	07/21/2022
Assembly Drawing - MS4500 Data Logger Host Board Type III with USB A	EXET1890	B	08/11/2022
Assembly Drawing - MS4500 Data Logger Host Board Type III with USB C	EXET2648	0	07/21/2022
Assembly Drawing - MS4500 Data Logger ER Measurement Board	EXET1477	E	07/21/2022
Assembly Drawing - MS4500 Data Logger LPR Measurement Board	EXET1970	A	07/21/2022
Assembly Drawing - MS4500 Data Logger Diode Shunt and LCD Board	EXET1478	B	07/21/2022
Assembly Drawing - MS4500 Data Logger Power Supply Board TPS63000	EXET2646	0	07/21/2022

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TITLE:	DRAWING NO.:	REV. LEVEL:	DATE:
Assembly Drawing - MS4500 Data Logger Power Supply Board TPS63060	EXET2647	0	07/21/2022
MS4500X-XX Handheld Data Logger	EXMDB-010966	A	2022-06-24
Instrument Assembly Drawing MS4500E / MS4500E-HC Type III	EXMDB-010894	A	2022-06-24
Instrument Assembly Drawing MS4500L / MS4500L-HC Type III	EXMDB-011200	0	2022-06-24
Protective Boot assembly MS4500X-XX Enclosure Type III	EXET2719	0	2022-07-22
LCD and Diode Boards Assembly MS4500X-XX Instrument Type III	EXET1510	A	2022-06-24
MS4500E Data Logger Battery Cable assembly	EXET1528	A	04/04/18
Hazardous Area Label - MS4500E & MS4500E-HC	EXMDB-011185	0	07/21/2022
Hazardous Area Label - MS4500L & MS4500L-HC	EXMDB-011210	0	07/21/2022
Control Drawing MS4500E/L Hand Held Data Logger USB A	EXWDB-000085	F	07/25/2022
Control Drawing MS4500E/L HC Hand Held Data Logger USB A	EXWDB-000123	B	07/25/2022
Control Drawing MS4500E/L Hand Held Data Logger with USB C	EXWDB-000166	0	07/25/2022
Control Drawing MS4500E/L HC Hand Held Data Logger with USB C	EXWDB-000167	0	07/25/2022
MS4500E - XX High Resolution ER Data Logger Operator's Manual	EXDOC-000014	E	07/25/2022
MS4500L - XX High Resolution ER Data Logger Operator's Manual	EXDOC-000029	0	07/25/2022
Bill OF Material - USB Flash Drive	EXBOM-000028	0	6/26/2017
Circuit Diagram - USB Drive	EXCDB-000028	0	04/03/17
Assembly Drawing - USB Drive	EXET-1649	0	04/25/17
PCB Fabrication Drawing - USB Drive	EXPCB-000028	0	4/25/2017
Hazardous Area Label USB Memory Storage Unit	EXMDB-011186	0	02/28/2022
Label - USB Storage Device	EXET1861	A	04/04/2018
Bill OF Material - USB Barrier	EXBOM-000022	0	2/8/2018
Circuit Diagram - USB Barrier	EXCDB-000022	0	12/01/2016
Assembly Drawing - USB Barrier	EXET-1669	0	11/29/16
PCB Fabrication Drawing - USB Barrier	EXPCB-000022	0	11/29/16
Hazardous Label - USB Barrier	EXMDB-011187	0	02/28/2022
Manufacture's Label - USB Barrier	EXET1871	0	02/08/2018
USB Barrier Assembly intrinsically safe certified	EXET1867	0	05/10/2017

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The following special conditions for safe use apply to certificate IECEX ETL 18.0007X

- Connection of the equipment to the ET1867 USB barrier may only be made whilst both the barrier and the equipment are located in the non-hazardous area.
- External non-metallic materials utilize a conductive coating to prevent the risk of electrostatic charging. The equipment shall be removed from service if damage to this coating is observed. Refer to the manufacturer's instruction manual for further information on the durability and any chemical vulnerability of this coating.

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