



1 **TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres 2014/34/EU

3 Certificate Number: **Sira 15ATEX4237X** Issue: **3**

4 Equipment: **Model CSI 9420 Vibration Monitor**

5 Applicant: **Computational Systems, Incorporated**
A Wholly Owned Subsidiary of Emerson Process Management

6 Address: 835 Innovation Drive
Knoxville
Tennessee 37932
U.S.A.

7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements that relate to the design of Category 3 equipment, which is intended for use in potentially explosive atmospheres. These Essential Health and Safety Requirements are given in Annex II to European Union Directive 2014/34/EU of the European Parliament and of the Council, 26 February 2014.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:

EN 60079-0:2012/A11:2013 EN 60079-11:2012

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11 This Type Examination Certificate relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:



II 3G
Ex ic IIC T4 Gc
Ta = -40°C to +85°C without LCD or
Ta = -20°C to +80°C with LCD

Project Number 70079607

C Ellaby
Deputy Certification Manager

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The CSI 9420 Vibration Monitor is used to monitor the vibration of equipment in explosive atmospheres. It is powered by a user-replaceable primary battery pack model 701PBKKF (p/n MHM-89002) or A0701PBU (p/n MHM-89004) and communicates the data via an RF link. Field mounted accelerometers (certified) connect to the CSI 9420 via a cable. A certified Hart Communicator may also be connected for configuration etc. It consists of various circuit board assemblies mounted in a rugged aluminium alloy or stainless-steel enclosure.

The equipment has the following entity parameters:

Hart Connector:

$U_o = 7.8 \text{ V}$	$I_o = 155 \text{ mA}$	$P_o = 303 \text{ mW}$	$C_o = 2 \mu\text{F}$	$L_o = 3 \text{ mH}$
$U_i = 7.8 \text{ V}$	$I_i = 5 \text{ mA}$	$P_i = 9.75 \text{ mW}$	$C_i = 54 \mu\text{F}$	$L_i = 3.1 \text{ mH}$

Accelerometer Connector:

$U_o = 7.8 \text{ V}$	$I_o = 158 \text{ mA}$	$P_o = 309 \text{ mW}$	$C_o = 2 \mu\text{F}$	$L_o = 3 \text{ mH}$
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Variation 1 - This variation introduced the following changes:

- The addition of 316SS stainless steel as a material of construction.
- The addition of a ground lug at the base of enclosure.
- Removal of HART board assembly and firmware modification to support HART functionality.
- Introduction of LCD glass protective overlay.
- Removal of antennas without ferrite wrap and addition of antennas with ferrite wrap.
- The addition of components key characteristics, test specifications and assembly notes on various drawings. These amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

Variation 2 - This variation introduced the following changes:

- It was recognised that Control Drawing D25418 has been modified to register changes to other certification associated with these products, this is an administrative change and no technical assessment was required.

Variation 3 - This variation introduced the following changes:

- Obsolete drawings were removed.
- The introduction of alternative battery pack A0701PBU and extended battery covers, the associated Specific Condition of Use was changed to recognise the new model.
- Additional manufacturing notes for threaded entries and alternative paint were accepted.
- The construction of DSP board was revised.
- Updates were recognised, these include an alternative antenna construction and the clarification of options that are used in the overall device construction.



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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	08 September 2015	R70039758A	The release of prime certificate.
1	02 February 2016	R70058200A	The introduction of Variation 1.
2	16 June 2016	R70041106A	This Issue covers the following changes: <ul style="list-style-type: none">Type Examination Certificate in accordance with 94/9/EC updated to EU-Type Examination Certificate in accordance with Directive 2014/34/EU. (In accordance with Article 41 of Directive 2014/34/EU, Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such Type Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)The introduction of Variation 2.
3	29 June 2016	R70079607A	The introduction of Variation 3.

15 SPECIFIC CONDITIONS OF USE

- 15.1 The antenna may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.
- 15.2 The apparatus may be equipped with an aluminium alloy or stainless-steel enclosure. The aluminium alloy enclosure is given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion.
- 15.3 This Monitor shall only be used with either Emerson Battery Pack 701PBKKF or A0701PBU.
- 15.4 Intrinsically Safe when installed per drawing D25418.
- 15.5 The battery pack may present a potential electrostatic ignition hazard. Use Caution when replacing battery pack.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed reports listed in Section 14.2.

17 CONDITIONS OF MANUFACTURE

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of Type Examination Certificates are required to comply with the production control requirements defined in Article 13 of Directive 2014/34/EU.

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- 17.3 Antenna options used in the device construction are 00735-2035-0051 and 00735-2035-0054 as per drawing 00735-2035.
- 17.4 When an epoxy-polyester or polyurethane top coat is applied to external surfaces, it must be in accordance with Fed. Std. 595. Manufacturer: Sherwin Williams; Description: Polane HS Series (V66V29 Catalyst) or Polane S Plus Series (V66V55 Catalyst); Thickness: 1.2 – 2.2 mils. Paint option -0072 is not used for CSI 9420.

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Certificate Annexe



Certificate Number: Sira 15ATEX4237X
 Equipment: Model CSI 9420 Vibration Monitor
 Applicant: Computational Systems, Incorporated

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
D25658	1 of 1	0	28 Aug 15	9420 Zone 2 IIC, 2.4 Ghz
D25413	1 of 1	0A	28 Aug 15	CSI 9420 CSA-LCIE CE Nameplate
D25415	1 of 1	0A	28 Aug 15	CSI 9420 CSA-LCIE CE Alert Nameplate
D25426	1 of 1	0A	28 Aug 15	CSI 9420 CSA-LCIE-FM CE Nameplate
D25427	1 of 1	0A	28 Aug 15	CSI 9420 CSA-LCIE-FM CE Alert Nameplate
D25418	1 to 3	2	28 Aug 15	CSI 9420 Installation Drawing
D25412	1 to 2	0C	28 Aug 15	CSI 9420 Overall Assembly
00753-2351	1 to 2	AD	28 Aug 15	Housing Sub-Assembly
00753-2304	1 to 6	AD	28 Aug 15	Enclosure Main Body Aluminum
03151-2301	1 to 3	AL	28 Aug 15	Enclosure Standard Cover Aluminum
03151-4501	1 to 3	AM	28 Aug 15	Enclosure Window Cover Aluminum
00753-2020	1 to 4	AF	28 Aug 15	Enclosure Battery Compartment Cover Aluminum
00753-2306	1 to 5	AG	28 Aug 15	Enclosure Main Body SST
03151-2343	1 of 1	AD	28 Aug 15	Enclosure Standard Cover SST
03151-4521	1 to 2	AE	28 Aug 15	Enclosure Window Cover SST
00753-2024	1 of 1	AB	28 Aug 15	Enclosure Battery Compartment Cover SST
00753-2008	1 to 3	AC	28 Aug 15	Antenna Adapter Plastic
00753-2118	1 to 3	AC	28 Aug 15	Antenna Adapter SST
00753-2108	1 to 3	AC	28 Aug 15	Antenna Adapter Aluminum
03151-2325	1 to 4	AL	28 Aug 15	Mounting Bracket Assy
00701-1000	1 to 9	AB	28 Aug 15	Battery Pack Docs – All
D25394SC	1 to 2	1A	28 Aug 15	Battery Terminal Board Schematic
D25394AS	1 of 1	1	28 Aug 15	Battery Terminal Board Comp Layout
D25394FB	1 to 2	1	28 Aug 15	Battery Terminal Board Trace Layout
D25394BOM	1 of 1	1A	28 Aug 15	Battery Terminal Board BOM
03151-2320	1 to 4	AK	28 Aug 15	Feed-Thru Filter Details
D25393SC	1 to 5	0A	28 Aug 15	Power-Hart Board Schematic
D25393AS	1 of 1	0A	28 Aug 15	Power-Hart Board Comp Layout
D25393FB	1 to 2	0	28 Aug 15	Power-Hart Board Trace Layout
D25393BOM	1 to 5	0A	28 Aug 15	Power-Hart Board BOM
D25392SC	1 to 10	1	28 Aug 15	DSP Board Schematic
D25392SC	1 to 10	1_ALT	28 Aug 15	DSP Board Schematic ALT
D25392AS	1 of 1	1	28 Aug 15	DSP Board Comp Layout
D25392FB	1 to 2	1	28 Aug 15	DSP Board Trace Layout
D25392BOM	1 to 7	1	28 Aug 15	DSP Board BOM
D25392BOM	1 to 7	1_ALT	28 Aug 15	DSP Board BOM ALT
00753-3006	1 of 1	AA	28 Aug 15	Radio PCB Schematic
00753-3008	1 to 2	AF	28 Aug 15	Radio PCB Comp Layout
00753-3007	1 to 3	AE	28 Aug 15	Radio PCB Trace Layout & Dimensions
00753-3008-0006BOM	1 of 1	AF	28 Aug 15	Radio PCB BOM
03151-4515	1 of 1	AK	28 Aug 15	LCD Overall Assy
00753-3025	1 of 1	AA	28 Aug 15	LCD PCB Schematic
00753-3027	1 of 1	AC	28 Aug 15	LCD Comp Layout
00753-3026	1 to 3	AC	28 Aug 15	LCD PCB Trace Layout & Dimensions
00753-3027-0001	1 of 1	AC	28 Aug 15	LCD PCB BOM
00753-2035	1 to 7	AT	28 Aug 15	Antenna Details

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Certificate Annexe



Certificate Number: Sira 15ATEX4237X

Equipment: Model CSI 9420 Vibration Monitor

Applicant: Computational Systems, Incorporated

Issue 1

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
00753-2020	1 to 4	AH	29 Jan 16	Enclosure Battery Compartment Cover Aluminium
00753-2035	1 to 11	BC	29 Jan 16	Antenna Details
00753-2108	1 to 3	AG	29 Jan 16	Antenna Adapter Aluminium
00753-2118	1 to 3	AD	29 Jan 16	Antenna Adapter SST
00753-2304	1 to 6	AF	29 Jan 16	Enclosure Main Body Aluminium
00753-2306	1 to 5	AH	29 Jan 16	Enclosure Main Body SST
00753-2351	1 to 3	AH	29 Jan 16	Housing Sub-Assembly
00753-3006	1 of 1	AD	29 Jan 16	Radio PCB Schematic
00753-3008	1 of 1	AM	29 Jan 16	Radio PCB Component Layout
00753-3008-0007 BOM	1 of 1	AA	29 Jan 16	Radio Board BOM
00753-3025	1 of 1	AC	29 Jan 16	LCD PCB Schematic
00753-3027	1 of 1	AD	29 Jan 16	LCD Component Layout
03151-2301	1 to 4	AN	29 Jan 16	Enclosure Standard Cover Aluminium
03151-2320	1 to 3	AM	29 Jan 16	Feed-Thru Filter Details
03151-2343	1 of 1	AE	29 Jan 16	Enclosure Standard Cover SST
03151-4501	1 to 3	AN	29 Jan 16	Enclosure Window Cover Aluminium
03151-4515	1 of 1	AU	29 Jan 16	LCD Overall Assembly
D25415	1 of 1	1	29 Jan 16	CSI 9420 CE Alert Nameplate

The following were removed from the drawing suite but retained on the certificate to maintain the history.

Drawing	Sheets	Rev.	Title	Reason
00753-2008	1 to 3	AC	Antenna adapter plastic	Obsolete
00753-3008-0006 BOM	1 to 1	AF	Radio Board BOM	Replaced with 00753-3008-0007 BOM

Issue 2

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
D25418	1 to 3	4	09 May 16	CSI 9420 Installation Drawing

Issue 3

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
D25415	1 to 1	3	17 May 16	CSI 9420 CE Alert Nameplate
D25418	1 to 3	5	17 May 16	CSI 9420 Installation Drawing
D25412	1 to 3	1	17 May 16	CSI 9420 Overall Assembly
00753-2304	1 to 6	AG	17 May 16	Enclosure Main Body Aluminum
03151-2301	1 to 4	AP	17 May 16	Enclosure Standard Cover Aluminum
03151-4501	1 to 3	AP	17 May 16	Enclosure Window Cover Aluminum
00753-2306	1 to 5	AJ	17 May 16	Enclosure Main Body SST
D25393FB	1 to 2	0A	17 May 16	Power-Hart Board Trace Layout
D25392SC	1 to 10	2	17 May 16	DSP Board Schematic
D25392SC	1 to 10	2A	17 May 16	DSP Board Schematic ALT
D25392AS	1 to 1	2A	17 May 16	DSP Board Comp Layout
D25392FB	1 to 2	2	17 May 16	DSP Board Trace Layout
D25392BOM	1 to 3	2	17 May 16	DSP Board BOM
D25392BOM	1 to 4	2A_ALT	17 May 16	DSP Board BOM ALT
00753-2035	1 to 12	BF	17 May 16	Antenna Details
D25643	1 to 2	1	17 May 16	Enclosure Battery Compartment Cover Extended

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Certificate Number: Sira 15ATEX4237X

Equipment: Model CSI 9420 Vibration Monitor

Applicant: Computational Systems, Incorporated

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
D25644	1 to 2	3	17 May 16	Cover, 9420 Extended Life Pwr. Module, SST, Machining
D25641	1 to 3	1	17 May 16	Cover, 9420 Extended Life Pwr. Module, SST, Cast
D25640	1 to 2	1	17 May 16	Cover, 9420 Extended Life Pwr. Module, Alum, Cast
D25693	1 to 1	0	17 May 16	A0701PBU Update Label
MHM-89004	1 to 4	5	17 May 16	9420, Extended life power module, ASSY.

The following drawings have been removed from the active drawing list.

Drawing	Sheets	Rev.	Description	Reason
D25413	1 to 1	0A	CSI 9420 CSA-LCIE CE Nameplate	Obsolete
D25426	1 to 1	0A	CSI 9420 CSA-LCIE-FM CE Nameplate	Obsolete
D25427	1 to 1	0A	CSI 9420 CSA-LCIE-FM CE Alert Nameplate	Obsolete

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