Field Certification
Certificate of Compliance

Certificate: 70069460 **Master Contract:** Not Available

Project: 70069460 **Date Issued:** May 12, 2017

Issued to: **Pietro Fiorentini S.p.A.**
Via E. Fermi 8/10
36057 Arcugnano (VI)
ITALY

Attention: Mr. Ferrari Mauro

The products listed below are eligible to bear CSA Field Certification Labels, bearing the CSA Mark shown with adjacent indicators 'C' and 'US'.

C US

Issued by:

Joe da Silva, C.E.T.

PRODUCTS

CLASS – 2258-03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non Incendive Systems - For Hazardous Locations
CLASS – 2258-83 - PROCESS CONTROL EQUIPMENT-Intrinsically Safe and Non-Incendive - Systems-For Hazardous Locations-Certified to U.S. Standards

CSA Field Certification Label(s) issued: from serial numbers FU208869 to FU208878

Cl. I, Div. 2, Gp. D; -20°C ≤ Ta ≤ 60°C; T3

CSA field certification of ten (10) analytical interface processor, model FIO 2.2, with non incendive inputs and outputs when used installed as per “Safety Instruction Document – FIO22 – CSA - SICR03E” and when used with battery pack p/n AS0672T03M01R00 or rechargeable battery pack AS0672T02M01R00 with suitable power supply with entity parameters as per “Safety Instruction Document – FIO22-CSA-SICR03E”.

(Note – Although processors are marked with CSAus label, units are still certified for use in Canada)

Certificate: 70069460 **Master Contract:** 123456
Project: 70069460 **Date:** May 12, 2017

APPLICABLE REQUIREMENTS

CSA C22.2 No. 142 – M1987 – Process Control Equipment
CSA C22.2 No. 213-16 – Nonincendive Electrical Equipment for Use in Class I and II, Division 2
ANSI/ISA – 12.12.01 – 2015 - Nonincendive Electrical Equipment for Use in Class I and II, Division 2
UL 916, 5th Ed – Energy Management Equipment

Descriptive Report and Test Results

MASTER CONTRACT: N/A
REPORT:70069460
PROJECT: 70069460

Edition 1: May 12, 2017; Project - 70069460
Issued by Joe da Silva, C.E.T.

Contents: Certificate of Compliance - Page 1 to 2
Description and Tests - Pages 1 to 5

CLASS – 2258-03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non Incendive Systems - For Hazardous Locations
CLASS – 2258-83 - PROCESS CONTROL EQUIPMENT-Intrinsically Safe and Non-Incendive - Systems-For Hazardous Locations-Certified to U.S. Standards

CSA Field Certification Label(s) issued: from serial numbers C123456 to C654321

Cl. I, Div. 2, Gp. D; -20°C ≤ Ta ≤ 60°C; T3

CSA field certification of ten (10) analytical interface processor, model FIO 2.2, with non incendive inputs and outputs when used installed as per "Safety Instruction Document – FIO22 – CSA -SICR03E" and when used with battery pack p/n AS0672T03M01R00 or rechargeable battery pack AS0672T02M01R00 with suitable power supply with entity parameters as per "Safety Instruction Document – FIO22-CSA-SICR03E".

APPLICABLE REQUIREMENTS

CSA C22.2 No. 142 – M1987 – Process Control Equipment
CSA C22.2 No. 213-16 – Nonincendive Electrical Equipment for Use in Class I and II, Division 2
ANSI/ISA – 12.12.01 – 2015 - Nonincendive Electrical Equipment for Use in Class I and II, Division 2
UL 916, 5th Ed – Energy Management Equipment

MARKINGS

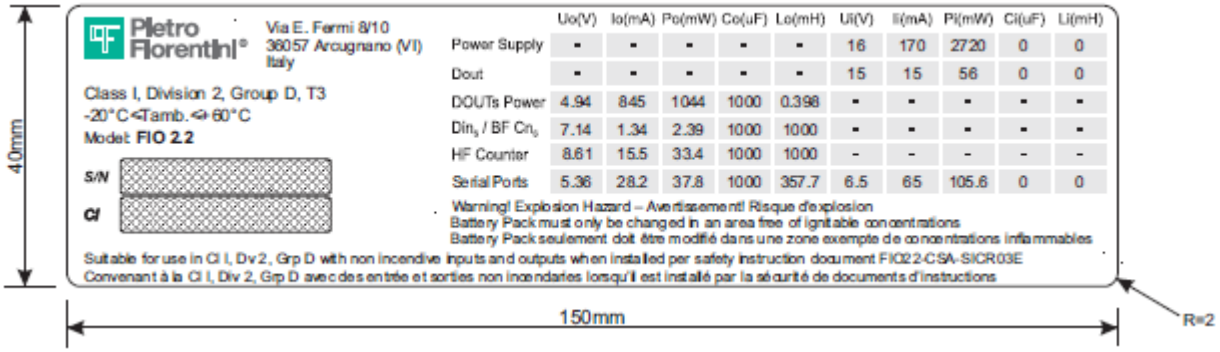
The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Markings as shown below appear on polyester (Reflex LT) adhesive label (using MACbond B2990 Adhesive);



Refer to submittor's drawing ET0672T01M02R00-DSMR02E for overall marking label

Refer to submittor's drawing AS0672T03M01R00-IMMR01E and AS0672TO3M01R00-DSMR01I for lithium-ion battery pack marking label.

ALTERATIONS

Not Applicable

FACTORY TESTS:

Not Applicable

DESCRIPTION

General – Refer to submittor's drawing AP0672T01M01R00-DSMR01E for overall assembly details, Refer to "Safety instruction for FIO 2.2 Devices" (Dwg. FIO22-CSA-SICR03E) document for installation instruction and Refer to "Technical Note: FIO 2.2 Device" (Dwg. FIO22 TAXR03E) document for complete Cl. I, Div. 2, Gp. D analysis.

Enclosure – Made of plastic material (eg. polycarbonate enclosure with acrylonitrile Butadiene styrene window) with overall dimensions (with door closed) of app. 229 mm by 205 mm by 120 mm. Refer to submittor's drawing AP0672T01M01R00-DSMR01I for further details.

Membrane Switch Pad – Fits over and connects to (thru use of ribbon cable) display pc board, refer to drawings MP0671T01M01R00-DSMR01I and MP0672T01M01R00-IMMR01I for further details.

Main PC Board - Multi-layer fiberglass material,

Refer to drawing CS0672T01M00R01-DSMR01I for pcb dimensions
Refer to drawing CS0670T01M00R02 for pcb component and trace layout
Refer to drawing SK0672T01M01R00-SCER01E for pcb Schematic
Refer to drawing SK0672T01M01R00-BOMR02E for pcb part list

Display PC Board - Multi-layer fiberglass material,

Refer to drawing CS0672T02M00R01-DSMR01I for pcb dimensions
Refer to drawing CS0670T02M00R01 for pcb component and trace layout
Refer to drawing SK0672T02M01R00-SCER01E for pcb Schematic
Refer to drawing SK0672T02M01R00-BOMR01E for pcb part list

Bluetooth PC Board - Multi-layer fiberglass material,

Refer to drawing CS0672T04M01R01-DSMR01I for pcb dimensions
Refer to drawing CS0670T04M00R01 for pcb component and trace layout
Refer to drawing SK0672T04M01R01E-SCER01E for pcb Schematic
Refer to drawing SK0672T04M01R00-BOMR01E for pcb part list

Modem PC Board - Multi-layer fiberglass material,

Refer to drawing CS0672T07M00R00-DSMR01I for pcb dimensions
Refer to drawing CS0670T03M00R00 for pcb component and trace layout
Refer to drawing SK0672T03M01R01 SCER01E for pcb Schematic
Refer to drawing SK0672T03M01R01-BOMR01E for pcb part list

Rechargeable Battery Pack - This battery pack consists of an lithium ion type battery, manufacture by SAFT, model MP174565 xtd(3.65V (nominal) /4.2 (max)), the battery is used in conjunction with electronic cell protection circuitry pc board as described below (or as an alternate Saft GP30849). The power three pole connector used to interconnect onto the main pcb is an snap-on clip type connector which holds the connector in place from being dislodged.

Refer to drawing AS0672T02M01R00-DSMR01I for Assembly details
Refer to drawing SK0672T06M01R00-SCER01E for pcb Schematic
Refer to drawing SK0672T06M01R00-BOMR01E for pcb part list

Lithium Battery Pack – This battery pack manufacture by Tadiran, model TLP-93111/A/SM consists of a hybrid lithium type battery model SL-2880, (3.6V (nominal) /3.9 (open)), the battery is used in conjunction with hybrid layer capacitor p/n HLC-1550. The power two pole connector used to interconnect onto the main pcb is an snap-on clip type connector which holds the connector in place from being dislodged.

Refer to drawing AS0672T03M01R00-DSMR01I for Assembly details

Accessories:

Any accessory that is certified to either CSA and/or UL stds. can be used so long as the accessory meets the entity parameters necessary as outline in the Safety Instruction Document – FIO22 – CSA-SICR03E, additional the items listed below can also be used;

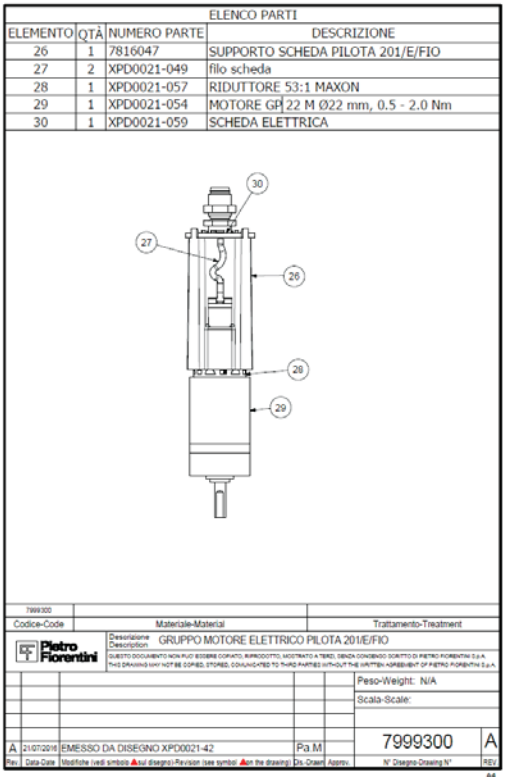
1/ Temperature Probe – Consists of a thermos-resistance PT1000 isolated to the ground, with negligible capacitance and inductance, this probe connects to M1

2/ Pressure Sensor – Man. by STS, model TD-GAS, resistive in nature with negligible capacitance and inductance, this sensor can be connected to M2 thru M5.

3/ Displacement Transducer – Man. by Gefran, series PZ12-F, this device is resistive in nature with negligible capacitance and inductance, this transducer can be connected to M6 and M7.

4/ Solenoids – Three types may be used, (1) the Valtek, p/n 04.LPG.25 or (2) PIV (Tecpool) 3.0V (10.8106.01.01) and 4.15 (10.8106.00.01), refer submittor's document "Technical Note: FIO 2.2 Device, Rev. 0.3, pages 47 and 48" for further details.

5/ Pilot 201/E/FIO connector and motor option – This is manufactured for the submittor and consists of a connector p/n 99336230004 with custom made dc motor with driver assembly as shown below;



TEST HISTORY

Submittor has provided CSA with "Technical Note: FIO 2.2 Device", Document Rev 0.3 - 06/07/2016, (Dwg. FIO22 TAXR03E), this document provides analysis for compliance to CSA C22.2 No. 213-16 and ANSI/ISA – 12.12.01 – 2015 Nonincendive Electrical Equipment for Use in Class I and II, Division 2. This document details evaluation of non incendive circuitry, temperature/thermal evaluation and calculations, this report was reviewed and used for comparison with test sample provided along with schematic..

Additionally submittor has provided CSA with a copies of Zelmec reports for the Tadiran battery SL-2880 (Zelmec Report Ex 09215131094) and the capacitor HLC-1550 (HLC-1550 Zelmec 3515171126) as well as a Ineris test report for Saft rechargeable batteries MP174565 (Ineris 154516/15 DM 30145).

Copies of test reports and documents are kept on file as part of descriptive document folder contained in report documentum folder. Additionally a C22.2 No. 213/ANS1 12.12.01 check list is provided under report bin in documentum.

The following Tests per CSA Std. C22.2 No. 142 and UL 916 were waived;

Rating Test – This test was waived since unit will be powered by battery or by defined Class 2 power supply

Dielectric Test - This test was waived since unit will be powered by battery or by defined Class 2 power supply

Temperature Test – This test was waived based on evaluation conducted under "Technical Note: FIO 2.2 Device", (Document Rev 0.3 - 06/07/2016)

All of the above mentioned test reports and evaluation documents were reviewed and deemed acceptable, the only testing deemed necessary were the impact test and the ignition (spark) test for the solenoids (only).

(1) Impact Test - (As per CSA Std. 213 and ANSI 12.12.01, Cl. 16.2/ CSA std. C22.2 No. 142, Cl. 6.10 / UL 916, Cl. 89) - A force of 7 Joules was applied to the front cover, to the enclosure back and to back of the enclosure, results were acceptable in that there was no damage that would compromise the safe use of the process analyzer in hazardous location or to the operator.

(2) Spark Ignition Testing of Nonincendive Circuits - (As per CSA Std. 213 and ANSI 12.12.01, Cl. 11)

Reference: IEC 60079-11 clause 10
Test gas mixture: 1.5 safety factor applied to gas per table 8; 48% hydrogen in 52% Air
1.5 safety factor used due to hydrocarbon analyser not functional.

Test 1:
Solenoid Model Tecpool 3Vdc,
OCV = 4.946Vdc; SCC = 423.6mA
Ignition: NO.
Calibration: Yes

Test 2:
Solenoid Voltek model Tecpool 4.5Vdc,
OCV = 4.946Vdc; SCC = 256mA
Ignition: NO.
Calibration: Yes

Test 3:
Solenoid Voltek model 12Vdc; pn 0.4LPG.25
OCV = 4.946Vdc; SCC = 280.9mA
Ignition: NO.
Calibration: Yes

---End of Report---