



QPS Evaluation Services Inc
Testing, Certification and Field Evaluation Body
Accredited in Canada, the USA, and Internationally

File
LR1377

CERTIFICATE OF COMPLIANCE
(ISO TYPE 3 CERTIFICATION SYSTEM)

Issued to	HMI Elements Limited
Address	Unit A & B Windmill Industrial Estate Showfield Lane, Malton North Yorkshire, YO17 6BT, UK
Project Number	LR1377-2R5
Product	Computer
Model Number	HMI ELEMENTS 470-Z1
Ratings/Markings	100-240V ac, 50-60 Hz, 2A See Annex Below for full ratings and marking information
Applicable Standards	CSA C22.2 No. 60950-1-07 CSA C22.2 No. 60079-0:15 CSA C22.2 No. 60079-11:14 CSA C22.2 No. 60079-18:12 CSA C22.2 No. 60079-7:12 CSA C22.2 No. 60079-31:15 IEC 60079-28-2015 (as a guide) UL 60950-1-07 ANSI/ISA 60079-0:2013 ANSI/ISA 60079-11:2013 ANSI/ISA 60079-18:2012 ANSI/ISA 60079-28:2013, ANSI/ISA 60079-7:2008 ANSI/ISA 60079-31:2013
Factory/Manufacturing Location	Same as Applicant

Statement of Compliance: The product(s) identified in this Certificate and described in the Report covered under the above referenced project number have been investigated and found to be in compliance with the relevant requirements of the above referenced standard(s). As such, they are eligible to bear the QPS Certification Mark shown below, in accordance with the provisions of QPS's Service Agreement.



Issued By: **Dave Adams, P.Eng.**
 Manager, Hazardous Locations Dept. [Ex. Equipment]

Signature:

Date: July 12, 2018



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ANNEX

Ratings and markings:

100-240V ac, 50-60 Hz, 2A

Ref	Design Option	US	Canada
Gas Marking			
1	With 'IS' and Optical interfaces	Class I, Zone 1 AEx e ib mb [ib] [op is] IIC T4	Ex e ib m [ib] IIC T4 Gb
2	Without 'IS' and Optical interfaces	Class I, Zone 1 AEx e ib mb IIC T4	Ex e ib m IIC T4 Gb
3	With Optical interfaces only	Class I, Zone 1 AEx e ib mb [op is] IIC T4	Ex e ib m [ib] IIC T4 Gb
4	With Solexy Ethernet Coupler (op is not available)	Class I, Zone 1 AEx e ib mb [ib] IIC T4 Ta = -20°C to +60°C	Ex e ib m [ib] IIC T4 Gb Ta = -20°C to +60°C
5	With Solexy Ethernet Coupler & Ex I PS2	Class I, Zone 1 AEx e ib mb [ib] IIC T4 Ta = -20°C to +60°C	Ex e ib m [ib] IIC T4 Gb Ta = -20°C to +60°C
Dust Marking			
1	With Rota DE2/DR4 Connector(s)	N/A	N/A
2	With 'IS' and Optical interfaces	Class II, Zone 21 AEx tb [ibD] [op is] IIIC T135°C	Ex t [ibD] [op is] IIIC T135°C Db
3	Without 'IS' and Optical interfaces	Class II, Zone 21 AEx tb IIIC T135°C	Ex t IIIC T135°C Db
4	With Optical interfaces only	Class II, Zone 21 AEx tb [op is] IIIC T135°C	Ex t [idD] IIIC T135°C Db
5	With Solexy Ethernet Coupler (op is not available)	Class II, Zone 21 AEx tb [ib] IIIC T135°C	Ex t [idD] IIIC T135°C Db
6	With Solexy Ethernet Coupler & Ex I PS2	Class II, Zone 21 AEx tb [ib] IIIC T135°C	Ex t [idD] IIIC T135°C Db
Ambient		Ta = -40°C to +60°C Ta = -20°C to +60°C (with Solexy Ethernet Couplers) Ta = -40°C to +55°C (with Rota DE2 Couplers) Ta = -40°C to +55°C (with Main Power cable plug arrangement)	
Notes:	(1) Options fitted with Rota DE2 / DR4 Couplers are not to be marked 'Dust Protected – 'Ex t' or 'AEx tb' (2) When either the Wi-Fi (IS752) and/or the IS993 (iSiS-Ex Ethernet Barrier) are fitted, the Ex codes will be those shown in Tables 1-5 for Gas, and Tables 4-6 for Dust. (3) When the IS993 is fitted, the Gas group shall be downgraded to IIB.		



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Um = 250Vac

Table 1		
PS/2 Interface (Where fitted)		
Uo	=	5.355 Vdc
Io	=	0.155 A
Po	=	0.572 W
Ci	=	17.05 µF
Co	=	47.95 µF
Li	=	0
Lo	=	0.4 mH
Note:	NOT galvanically isolated	

Table 2		
Wi-Fi- Interface (ZIGBEE or Zcomax)		
Uo	=	6.51 Vdc
Io	=	1.031 A (at 2.4Ghz)
Po	=	1.69 W
Co	=	<22 µF
Lo	=	<33 µH
Ci	=	10.5pF
Li	=	0
Note:	NOT galvanically isolated	

Table 3					
IS993 Ethernet Isolator (where fitted) – only for IIB or IIA applications					
10/100 Ethernet TX (output)			10/100 Ethernet RX (input)		
Uo	=	4.935 Vdc	Ui	=	5.88 Vdc
Io	=	1.176 A	Ii	=	1.666 A
Po	=	1.451 W	Pi	=	Any value
Co	=	999 µF	Ci	=	908 nF
Lo	=	12.8 µH or	Li	=	0
Lo / Ro	=	31 µH / Ω (Note 1)			
<p>Note 1: The quoted value of Lo/Ro can only be used if the connected Ethernet device has a terminal inductance (Li) of zero. The quoted value of Lo/Ro takes into account the total current from the IS993 Ethernet isolator, plus the connected Ethernet device and is calculated on the basis of a IIB system. If the connected Ethernet device quotes a lower value of Lo/Ro, this lower value should be used in the selection of a suitable cable.</p> <p>Note 2: The Ethernet port connected to the IS993 Ethernet Isolator shall be resistively-limited, with a source resistance $R_s \geq U_o/I_o$</p>					

Table 4 – Only suitable for -20°C ambient		
Solexy Ethernet Barrier (where fitted)		
10/100 Ethernet TX (output)		
Um	=	250 V
Uo	=	3.4 V
Io	=	701 mA
Co	=	100 µF
Lo	=	85 µH

Table 5	
Optical (Output) TOSA-E168-9010-ELC	
Po	30 µW
62.5/125µm MM Fibre	
Optical (Output) Cotsworks Module	
Po	< 35mW
Wave length	850 nm