Siemens Energy & Automation

INSTRUCTION ADDENDUM

SDA760-6

Rev. 1 November 2007

ValvePAC Series 760 Valve Positioners Hazardous Area Certification

Instruction Involved

SD760, Installation and Service Instruction, ValvePACTM Series 760, Intelligent Valve Control, Issue 5 and earlier

Introduction

Attached is the certification describing installation of a Model 760P Pneumatic Valve Positioner or Model 760E Electro-Pneumatic Valve Positioner in a hazardous area. This certification supersedes that provided in the above Installation and Service Instructions and in Instruction Addendum SDA760-5, if attached.

Customer/Product Support

For customer/product support, visit the Siemens Process Instrumentation product support page at http://www2.sea.siemens.com/Products/Process-

<u>Instrumentation/Customer+Support.htm?languagecode=en</u>. Select the desired type of support (e.g. application, product selection, sales, technical – see below).

Technical Support	
Telephone	1 800 333 7421
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Hours of Operation	8 a.m. to 4:45 p.m. eastern time, Monday through Friday (except holidays)
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Safe Area

- 1. Refer to the "model number" label located under the cover in order to identify the configuration of 760 Valve Controller in terms of options it is equipped with. Follow thereafter the installation instructions below for the particular 760 Valve Controller configuration.
- 2. After selecting the configurations of the intrinsically safe loops for the particular configuration of 760 Valve Controller, refer to Sheet 2 of this Control Drawing to determine the Temperature Code of Controller.

Warning:

Failure to follow the above instructions may impair suitability of 760 Valve Controller for use in Hazardous Locations

Installation Instructions:

- 1. If 760 Valve Controller is equipped with 4-20 mA feedback option, refer to the sheet 3 of 13 of this control drawing.
- 2. If 760 Valve Controller is equipped with Potentiometer (1K) option, refer to the sheets 4 to 7 of 13 of this control drawing.
- 3. If 760 Valve Controller is equipped with Limit Switch #1 option, refer to the sheets 8 to 11 of 13 of this control drawing.
- 4. If 760 Valve Controller is equipped with Proximity Switch #1 option, refer to the sheet 12 of 13 of this control drawing.
- 5. If 760 Valve Controller is equipped with Limit Switch #2 option, refer to the sheets 8 to 11 of 13 of this control drawing.
- 6. If 760 Valve Controller is equipped with Proximity Switch #2 option, refer to the sheet 12 of 13 of this control drawing.
- 7. If 760 Valve Controller is equipped with I/P option, refer to the sheet 13 of 13 of this control drawing.

General Intrinsically Safe Installation Notes

- Shielded Cable is required and the shield shall be connected as shown. The unterminated end of the shield shall be
- The series 760 Valve Controller shall not be connected to, under normal or abnormal conditions, a source of supply that exceeds 250 Vrms or 250 Vdc with respect to earth ground.
- 3) The user is responsible for compatibility and approval of the user provided associated apparatus.
- 4) Entity installation requirements (where applicable): $Vmax \ge Voc; Imax \ge Ioc; Ca \ge Ci + Ccable; La \ge Li + Lcable.$
- 5) Installation must be in accordance with applicable electrical codes, refer to ISA RP12.6 for guidance.
- 6) Caution: use cables suitable for 5° C above surrounding ambient.
- 7) These instructions are provided for conformance with FM and CSA Certifications only.

Notes for Installation in Division 2 Locations

- Limit switches and potentiometers must be installed as intrinsically safe (with barriers). See sheets 8 to 11 for limit switches or sheets 4 to 7 for potentiometer installation notes.
- Caution: use cables suitable for 5° C above surrounding ambient.

Rev	Date	Details	Approved	Title
2	9 Oct. 97	As Certified	J. Sweeney	Control Drawing for
3	19 Feb. 98	As FM Approved	J. Sweeney	
4	20 April 98	Minor corrections	J. Sweeney	Series 760 Valve Controller
5	14 June 07	ControlAir I/P Added	J. Sweeney	
		0 1	• •	Drawing No.

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Spring House PA, USA 19477

15032-7602

Hazardous (Classified) Location Class I, Division 1, Groups A, B, C, D

I/P

Module

ertification Agency Controlled Document

No Changes Allowed Without Reference to the Appropriate Certifying Agency

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Class II, Division 1, Groups E, F, G

Class III. Division 1

0(Pot.

Proximity

Limit

Sheet 1 of 13

Temperature Code and Ambient Temperature Range for Series 760 Valve Controller

Determine the options that have been installed in your Series 760 Valve Controller by checking the label that is under the cover. Compare the option(s) installed to Table 1 to determine Model 760 Temperature Code and Ambient Temperature Range.

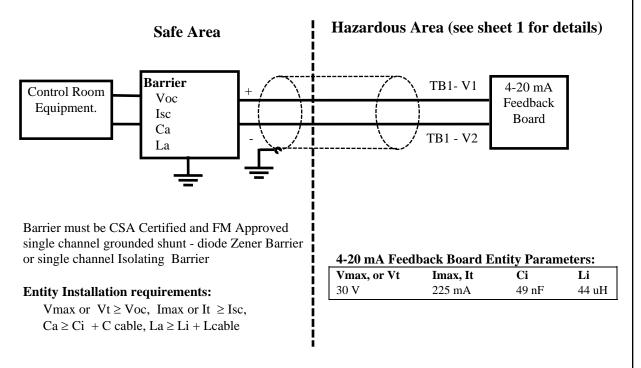
Table 1: Determination of Temperature Code and Permissible Ambient Temperature Range

Option or Combination of Options: Temperature Code and Fermissione Ambient Temperature Range Ambient				
Option of Combination of Options.	Code			
	Code	Temperature		
		Range		
4-20 mA Feedback Option	T3C	-40°C to +85°C		
4-20 mA Feedback and Limit Switch #1 and #2	T3C	-40°C to +85°C		
4-20 mA Feedback and Proximity Switch #1 and #2	T3C	-25°C to +85°C		
4-20 mA Feedback and I/P Module	T3C	-40°C to +75°C		
4-20 mA Feedback and Limit Switch #1 and #2 and I/P Module	T3C	-40°C to +75°C		
4-20 mA Feedback and Proximity Switch #1 and #2 and I/P	T3C	-25°C to +75°C		
Module				
Potentiometer Option	None	-40°C to +85°C		
Potentiometer and Limit Switch #1 and #2	None	-40°C to +85°C		
Potentiometer and Proximity Switch #1 and #2	None	-25°C to +85°C		
Potentiometer and I/P Module	T3C	-40°C to +75°C		
Potentiometer and Limit Switch #1 and #2 and I/P Module	T3C	-40°C to +75°C		
Potentiometer and Proximity Switch #1 and #2 and I/P Module	T3C	-25°C to +75°C		
Limit Switch #1 and #2	None	-40°C to +85°C		
Limit Switch #1 and #2 and I/P Module	T3C	-40°C to +75°C		
Proximity Switch #1 and #2	None	-25°C to +85°C		
Proximity Switch #1 and #2 and I/P Module	T3C	-25°C to +75°C		
I/P Module – ABB	T3C	-40°C to +75°C		
I/P Module – ControlAir	T4	-40°C to +75°C		

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4-20 mA Feedback Board Installation

4-20 mA Feedback Board Intrinsically Safe Installation



4-20 mA Feedback Board Division 2 FM Approved and CSA Certified:

Maximum Voltage: 42 V Current: 4 - 20 mA

4-20 mA Feedback Board Ambient Temperature Range: See Sheet 2 of 13

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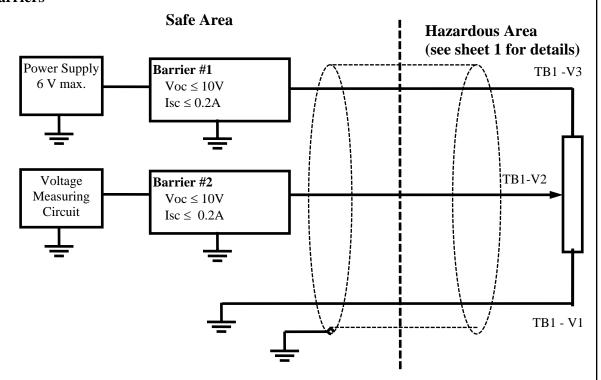
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Sheet 3 of 13

Potentiometer Installation

Potentiometer Intrinsically Safe and Division 2 Installation - Grounded Circuit Two Barriers



1. Barriers #1 and #2 must be CSA Certified and FM Approved single channel grounded Shunt-Diode Zener Barriers with Voc and Isc parameters as indicated. Alternatively, instead of two single Channel Barriers, one CSA Certified and FM Approved Dual Channel grounded Shunt Diode Barrier (with Voc and Isc parameters, for each channel as indicated for Barriers #1 and #2) may be used.

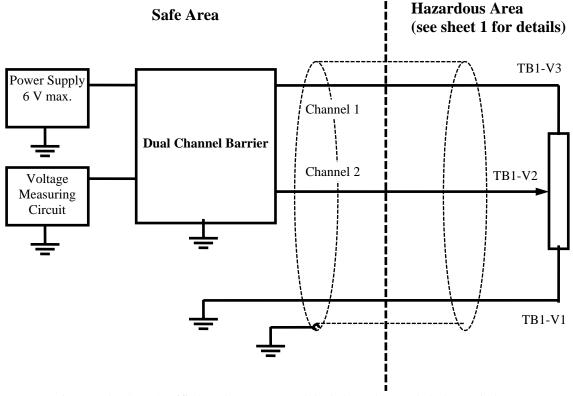
CSA Certified and FM Approved MTL 710 Single Channel grounded Shunt Diode Zener Barrier is recommended for use as Barriers #1 and #2.

- 2. Connections to the terminals TB1-V1 and TB1-V3 may be swapped.
- 3. Potentiometer Cable Parameters for Intrinsic Safety Grounded Circuit Two Barriers:

Coa Cwayna	Maximum Values			
Gas Groups	Capacitance	Inductance	L/R Ratio	
A & B	0.22 uF	110 uH	35 uH per Ohm	
C & E	0.90 uF	440 uH	140 uH per Ohm	
D, F & G	2.40 uF	880 uH	280 uH per Ohm	

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Potentiometer Intrinsically Safe and Division 2 Installation - Grounded Circuit Dual Channel Barrier



1. Barrier must be CSA Certified and FM Approved dual channel grounded Shunt Diode Zener Barrier with output safety parameters, as follows:

Voc Channel 1 - Channel $2 \le 10V$; Voc Channel 1 - earth $\le 10V$; Voc Channel 2 - earth $\le 10V$; Isc Channel 1 or Channel $2 \le 0.2A$.

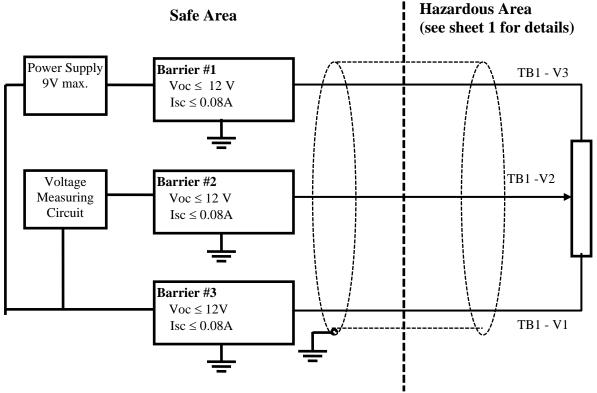
CSA Certified and FM Approved MTL760 Dual Channel, star connected Barrier, is recommended.

- 2. Connections to the terminals TB1-V1 and TB1-V3 may be swapped.
- 3. Potentiometer Cable Parameters for Intrinsic Safety Grounded Circuit Dual Channel Barrier:

Maximum Values			
Capacitance	Inductance	L/R Ratio	
0.30 uF	110 uH	35 uH per Ohm	
0.90 uF	440 uH	140 uH per Ohm	
2.40 uF	880 uH	280 uH per Ohm	
	0.30 uF 0.90 uF	Capacitance Inductance 0.30 uF 110 uH 0.90 uF 440 uH	

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Potentiometer Intrinsically Safe and Division 2 Installation - Ungrounded Circuit Three Barriers



1. Barriers #1, #2 and #3 must be CSA Certified CSA and FM Approved single channel grounded Shunt Diode Zener Barriers with Voc and Isc parameters as indicated.

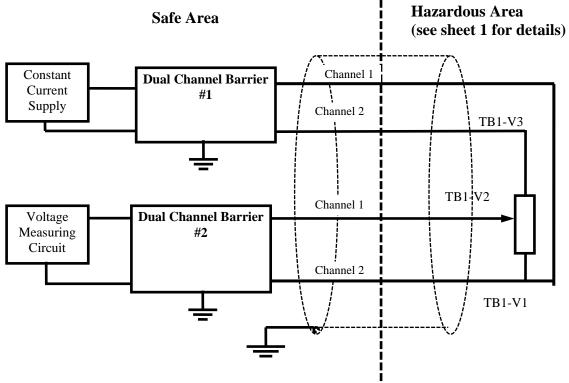
CSA Certified and FM Approved MTL 766 Single Channel Barrier is recommended for use as barrier #1, #2 and #3.

- 2. Connections to the terminals TB1-V1 and TB1-V3 may be swapped.
- ${\it 3. \ Potentiometer\ Cable\ Parameters\ for\ Intrinsic\ Safety\ -\ Ungrounded\ Circuit\ Three\ Barriers:}$

Cog Croung	Maximum Values			
Gas Groups	Capacitance	Inductance	L/R Ratio	
A & B	0.125 uF	110 uH	49 uH per Ohm	
C & E	0.57 uF	440 uH	190 uH per Ohm	
D, F & G	1.52 uF	880 uH	390 uH per Ohm	

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Potentiometer Intrinsically Safe and Division 2 Installation - Ungrounded Circuit Two Dual Channel Barriers



1. Barriers #1 and #2 must be CSA Certified and FM Approved dual channel grounded Shunt Diode Barriers with output safety parameters, as follows:

Voc (Uo) Channel 1 - earth \leq 9V; Voc (Uo) Channel 2 - earth \leq 9V; Isc (Io) Channel 1 or Channel 2 \leq 0.1A.

CSA Certified and FM Approved MTL 761 Dual Channel Barrier is recommended as Barrier #1 and #2.

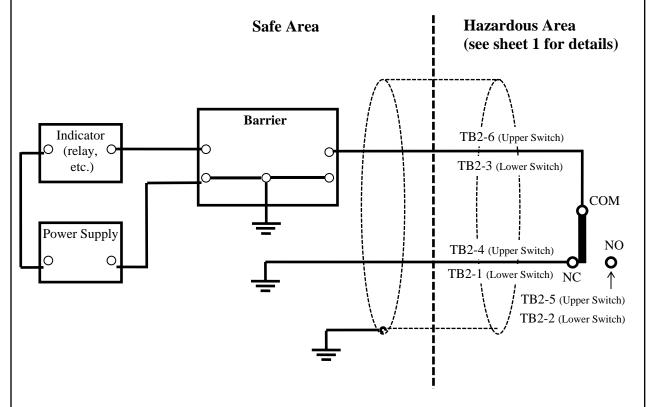
- 2. Connections to the terminals TB1-V1 and TB1-V3 may be swapped.
- 3. Potentiometer Cable Parameters for Intrinsic Safety Ungrounded Circuit Two Dual Barriers:

Cog Choung	Maximum Values			
Gas Groups	Capacitance	Inductance	L/R Ratio	
A & B	0.31 uF	110 uH	35 uH per Ohm	
C & E	1.32 uF	440 uH	140 uH per Ohm	
D, F & G	3.52 uF	880 uH	280 uH per Ohm	

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Limit Switch Installation

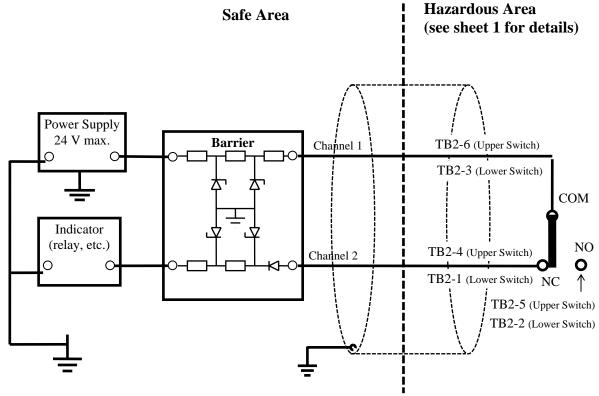
Limit Switch Intrinsically Safe and Division 2 Installation - Grounded Circuit Single Barrier



- 1 Barrier must be CSA Certified and FM Approved single channel grounded Shunt-Diode Zener Barrier.
- 2. Limit Switch Cable Parameters for Intrinsic Safety Grounded Circuit Single Barrier:
 - A) Cable Capacitance may not exceed Ca of the barrier.
 - B) Cable Inductance may not exceed La of the barrier or the cable L/R ratio may not exceed the L/R ratio of the barrier.
- 3. Ambient Temperature Range: See Sheet 2 of 13.
- 4. Normally, TB2-1 and TB2-4 are connected to ground as shown. Alternativly, TB2-2 may be grounded if no connection is made to TB2-1 and/or TB2-5 may be grounded if no connection is made to TB2-4.

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Limit Switch Intrinsically Safe and Division 2 Installation - Ungrounded Circuit Single Barrier



1. Barrier must be CSA Certified and FM Approved dual channel shunt-diode Zener Barrier with output safety parameters, as follows:

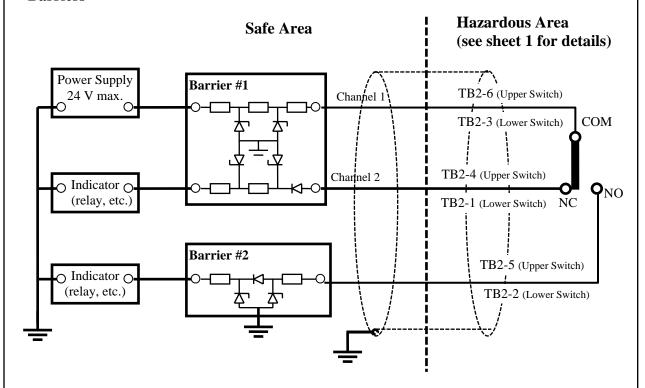
Voc Channel 1 - earth \leq 28V; Isc Channel 1: \leq 0.093A Voc Channel 2 - earth \leq 28V; Isc Channel 2: Diode Return.

CSA Certified and FM Approved MTL787 dual channel Barrier is recommended.

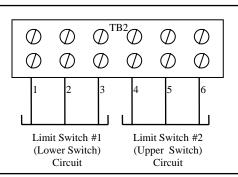
- 2. Limit Switch Cable Parameters for Intrinsic Safety Ungrounded Circuit Single Barrier:
 - A.) Cable Capacitance may not exceed Ca of the barrier.
 - B.) Cable Inductance may not exceed La of the barrier or the cable L/R ratio may not exceed the L/R ratio of the barrier.
- 3. Ambient Temperature Range: See Sheet 2 of 13.
- 4. Normally, TB2-1 and TB2-4 are connected to Barrier channel 2 as shown. Alternativly, TB2-2 may be connected to Barrier channel 2 if no connection is made to TB2-1 and/or TB2-5 may be connected to Barrier channel 2 if no connection is made to TB2-4.

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Limit Switch Intrinsically Safe and Division 2 Installation - Ungrounded Circuit Two Barriers



Note that connection is made to all three terminals for Limit Switch #1 (Lower Switch) and Limit Switch #2 (Upper Switch) in this configuration.



1. Barrier #1 must be CSA Certified and FM Approved dual channel Shunt-Diode Zener Barrier with output safety parameters, as follows:

Voc Channel 1 - earth \leq 28V; Isc Channel 1: \leq 0.093A Voc Channel 2 - earth \leq 28V; Isc Channel 2: Diode return.

CSA Certified and FM Approved MTL 787 Dual Channel Barrier is recommended.

Notes continued on next sheet.

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2. Barrier #2 must be CSA Certified and FM Approved ground referenced Barrier with output safety parameters, as follows:

 $Voc \le 28V$ (channel to earth)

Isc: Diode return.

CSA Certified and FM Approved MTL 786 Diode Return Barrier is recommended.

- 3. Barrier #1 and Barrier #2 must be of the same polarity, either both positive or both negative.
- 4. Connections to the following terminals may be swapped:

A) TB2-1 and TB2-2

- B) TB2-4 and TB2-5
- 5. Limit Switch Cable Parameters for Intrinsic Safety Ungrounded Circuit Two Barriers:
 - A) Cable Capacitance may not exceed Ca of the corresponding Barrier.
 - B) Cable Inductance may not exceed La of the corresponding Barrier or the cable L/R ratio may not exceed the L/R ratio of the corresponding Barrier.
- 6. Ambient Temperature Range: See Sheet 2 of 13.

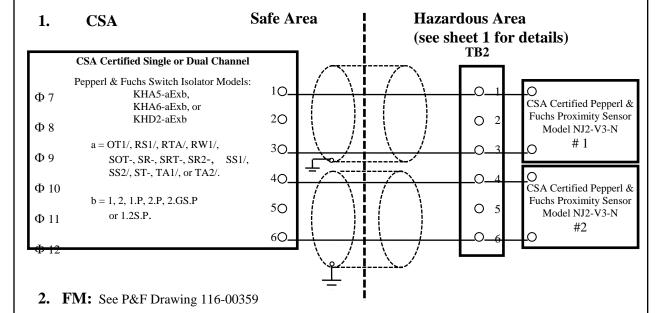
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Proximity Switch Pepperl & Fuchs GmbH Model NJ2-V3-N Installation Instructions

Proximity Switch Intrinsically Safe Installation:



Proximity Switch Installation in Division 2:

Certification	Input Ratings
CSA Division 2	25 V, 0.05A Maximum
FM Division 2	Maximum Voltage 25 V

Proximity Switch Ambient Temperature Range: See Sheet 2 of 13

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2	9 Oct. 97	As Certified	J. Sweeney	Control Draw	zing for
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I/P Module Installation Instructions

Determine the manufacturer of the supplied I/P Module and follow the appropriate instructions below:

ABB Model 22/06-65

I/P Module Intrinsically Safe Installation:

1. CSA

I/P Module: CSA Certified Sensycon Type 22/06-65. It is intrinsically safe when connected as per attached Sensycon Control Document No. 900842, Page 4 of 4.

2. FM

See Sensycon Drawing No. 900842

I/P Module Installation in Division 2:

Certification	Input Ratings
CSA Division 2	Current 4-20 mA, 8V maximum, 0.15A maximum
FM Division 2	Current 4-20 mA

I/P Module Ambient Temperature Range: See Sheet 2 of 13.

ControlAir Model T590

I/P Module Intrinsically Safe Installation:

1. CSA

I/P Module: CSA Certified ControlAir Model T590. It is intrinsically safe when connected as per attached ControlAir Control Document No. 431-990-047.

2. FM

See ControlAir Drawing No. 431-990-047

I/P Module Installation in Division 2:

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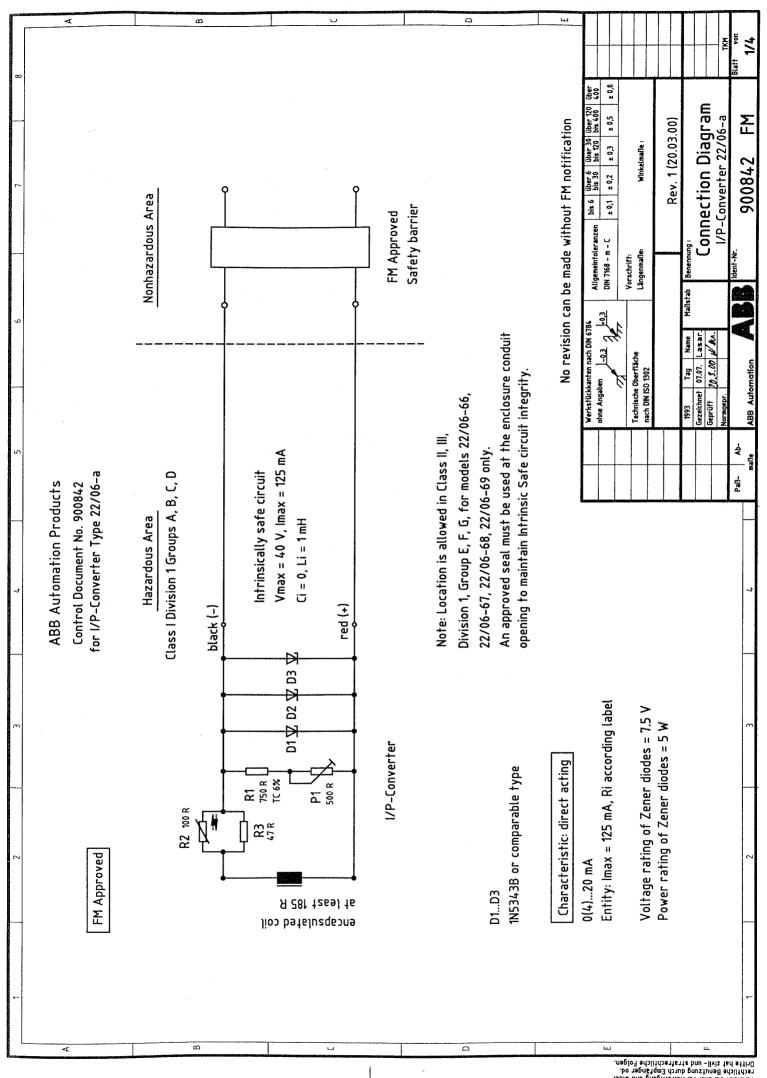
Certification	Input Ratings
CSA Division 2	Current 4-20 mA, 8V maximum, 0.15A maximum
FM Division 2	Current 4-20 mA

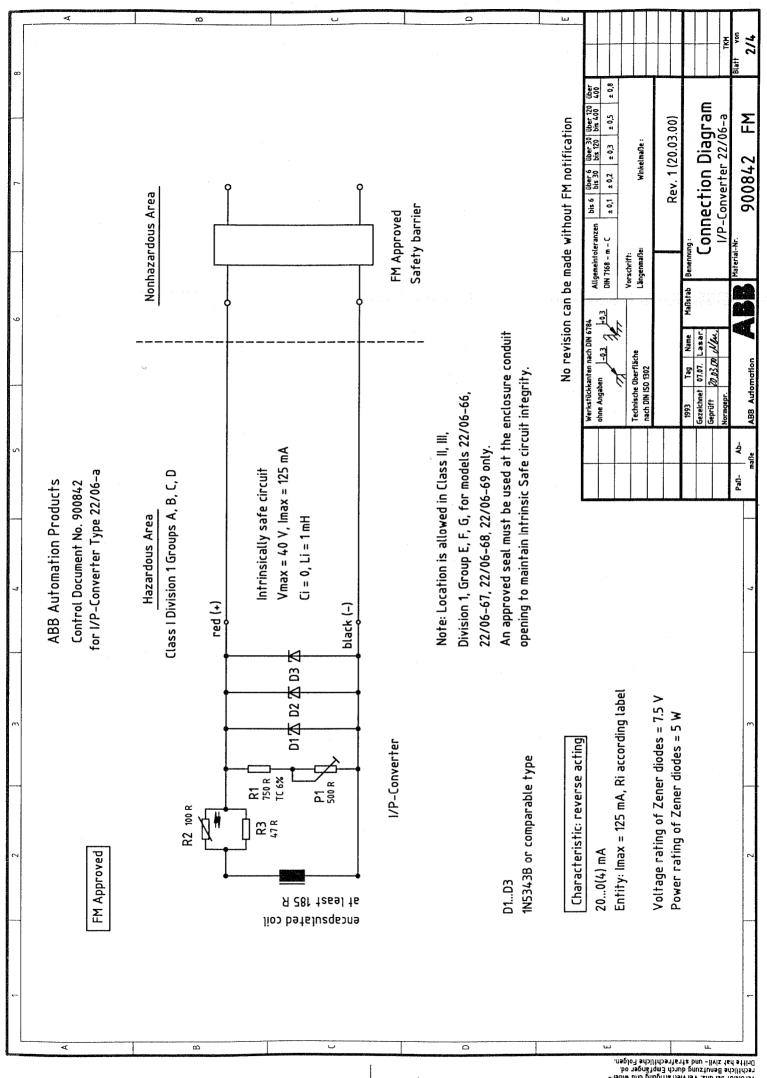
I/P Module Ambient Temperature Range: See Sheet 2 of 13.

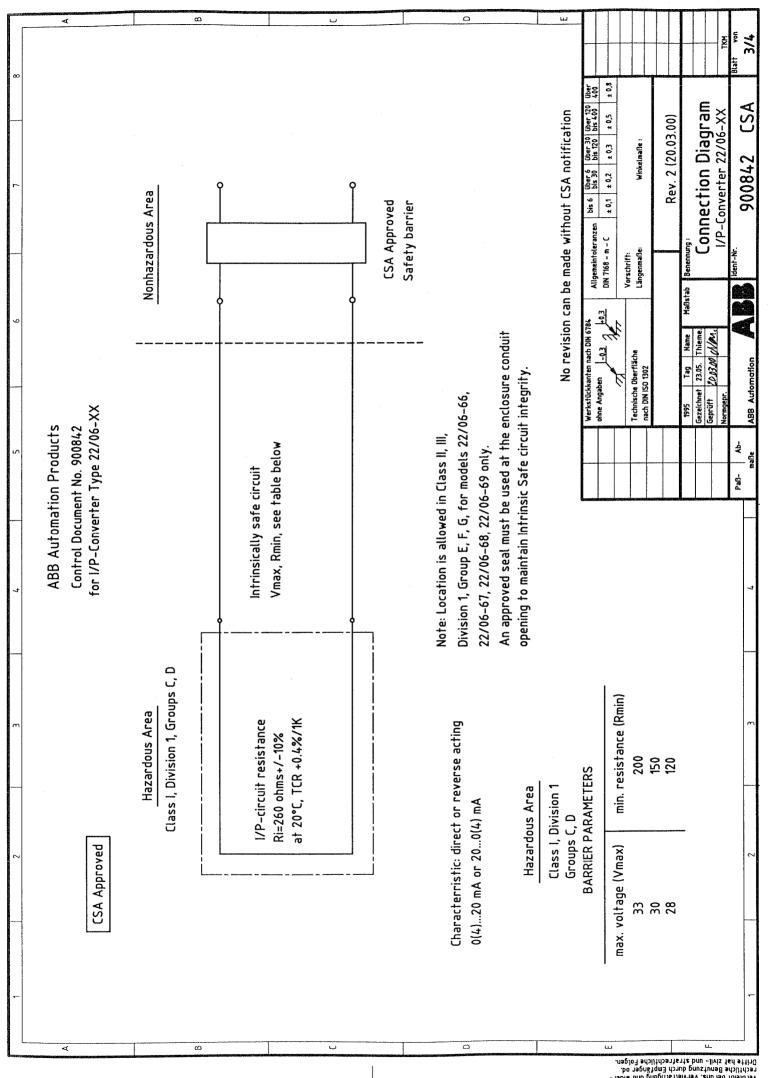
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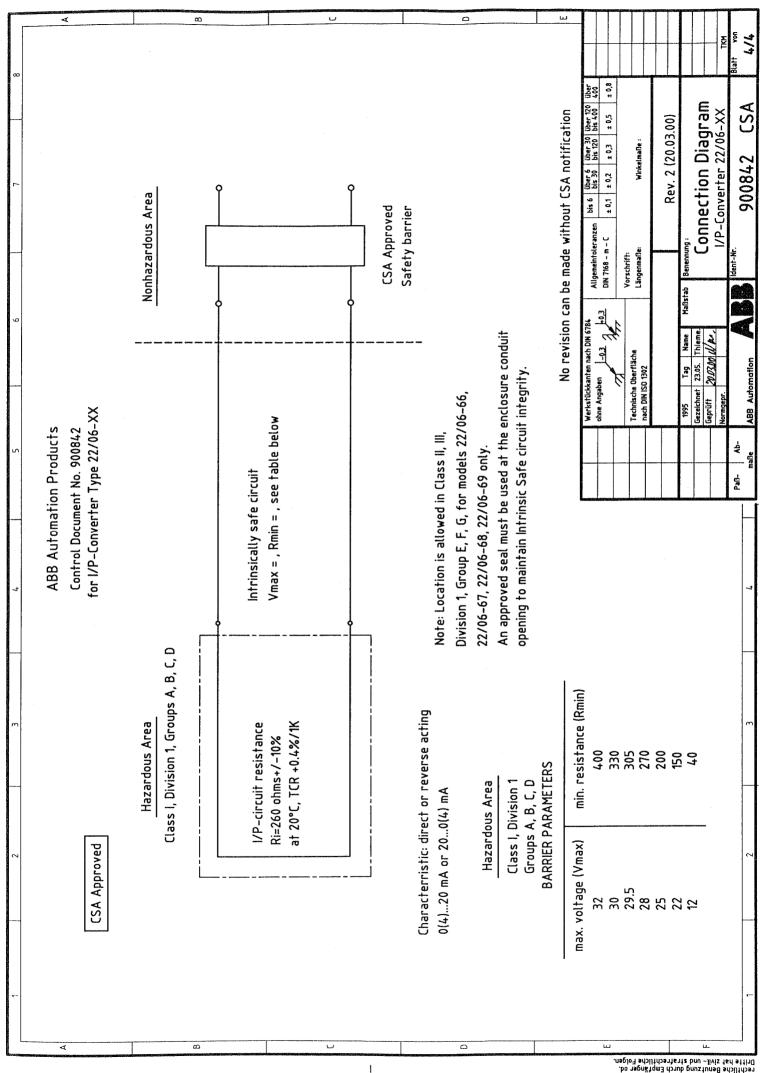
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- 1. (NORTH AMERICA) CONTROL EQUIPMENT CONNECTED TO THE ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 VRMS OR VDC.
- 2. (NORTH AMERICA) THE IS BARRIERS OR EQUIPMENT (ASSOCIATED APPARATUS) MUST BE FM APPROVED AND CSA CERTIFIED AND THE CONFIGURATION OF ASSOCIATED APPARATUS MUST BE FM APPROVED AND CSA CERTIFIED UNDER THE ENTITY CONCEPT. THE ASSOCIATED APPARATUS MAY BE INSTALLED WITHIN THE HAZARDOUS (CLASSIFIED) LOCATION FOR WHICH IT IS CERTIFIED. THE ASSOCIATED APPARATUS AND HAZARDOUS LOCATION LOOP APPARATUS MANUFACTURER'S CONTROL DRAWINGS MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT. AN AEX [IB] ASSOCIATED APPARATUS IS SUITABLE ONLY FOR CONNECTION TO CLASS I, ZONE 1, HAZARDOUS (CLASSIFIED) LOCATIONS AND IS NOT SUITABLE FOR CLASS I, ZONE 0, OR CLASS I, DIVISION 1 HAZARDOUS (CLASSIFIED) LOCATIONS. (ATEX) THE IS BARRIERS OR OTHER ASSOCIATED APPARATUS SHALL COMPLY WITH THE ATEX DIRECTIVE 94/9/EC WITH OUTPUT NOT EXCEEDING.
- 3. (US) INSTALLATION SHOULD BE IN ACCORDANCE WITH ANSI/ISA RP12.06.01 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND ARTICLE 500 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) (CANADA) INSTALLATION SHOULD BE IN ACCORDANCE WITH SECTION 18 OF THE CANADIAN ELECTRICAL CODE.

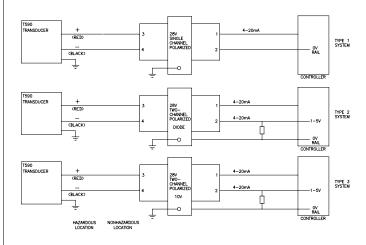
(ATEX) INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL INSTALLATION RULES ENERGY LIMITATION PARAMETERS SPECIFIED.

- 4. (NORTH AMERICA) UNITS MUST BE MOUNTED IN A SUITABLE ENCLOSURE FOR TYPE 4X INSTALLATIONS.
- 5. (NORTH AMERICA) UNITS ARE SUITABLE FOR CLASS I, DIVISION 2, GROUPS A, B, C, AND D HAZARDOUS (CLASSIFIED) LOCATIONS. TRANSDUCERS TO BE INSTALLED IN ACCORDANCE WITH THE (US) NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) DIVISION 2 HAZARDOUS (CLASSIFIED) LOCATION WIRING TECHNIQUES (CANADA) CANADIAN ELECTRICAL CODE.
- 6. THE INTRINSIC SAFETY ENTITY CONCEPT ALLOWS THE INTERCONNECTION OF TWO INTRINSICALLY SAFE DEVICES WITH ENTITY PARAMETERS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM WHEN:

UI OR VMAX >UO OR VOC II OR IMAX > IO OR ISC OR IT CA OR CO > CI + CCABLE LA OR LO > LI ÷ LCABLE PI > POENTITY PARAMETERS FOR: MODELS TYPE 590X UI(VMAX) = 40 VII (IMAX) = 150 MACI=0 UF U=0 MH

PI = 0.7 WATTS

7. NO REVISION TO THIS DRAWING IS PERMITTED WITHOUT PRIOR FM APPROVAL AND CSA CERTIFICATION.



HAZARDOUS LOCATION UNITS: FM & CSA INTRINSICALLY SAFE: CLASS I, DIV. I, GROUPS A, B, C, D SUITABLE FOR: CLASS I, DIV. 2, GROUPS A, B, C, D

HAZARDOUS LOCATION UNITS:

ATEX(FM)
FM07ATEX02X || 1 G Ex ia || C T4* Ta=-55° C TO +85° C
FM07ATEX03X || 3 G Ex nL || C T4* Ta=-55° C TO +85° C II 3 G Ex nA nL IIC T6** Ta=-55°C TO +85°C

* SEE ENERGY LIMITING PARAMETERS TABLE BELOW ** T6 TEMPERATURE CLASS FOR SELF PROTECTED ENERGY LIMITED APPARATUS, THE 4-20 mA INPUT VOLTAGE OF 40Vdc.

ENERGY LIMITING PARAMETERS

TEMP. CLASS	Ta	Li	Ui	Pi	
T6	60° C	50 mA	42.5 V	2.125 W	
T6	55° C	60 mA	38.8 V	2.328 W	
T5	70° C	60 mA	38.8 V	2.328 W	
T5	55° C	100 mA	30.0 V	3.0 W	
T5	45° C	120 mA	28.0 V	3.36 W	
T4	85° C	60 mA	38.8 V	2.328 W	
T4	85° C	100 mA	30.0 V	3.0 W	
T4	80° C	120 mA	28.0 V	3.36 W	
T4	70° C	150 mA	25.5 V	3.825 W	
T5	85° C	23 mA	6.75 V	0.155 W	

INSTALLATION DRAWING NO. 431-990-047



1



EC TYPE-EXAMINATION CERTIFICATE

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX2577X Issue: 1

4 Equipment: Series 760 Valve Controllers

5 Applicant: Siemens Energy and Automation Inc.

6 Address: 1201 Sumneytown Pike

Spring House PA19477-0900

USA

- 7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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 to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 + Amendments 1 and 2 EN 50020:2002

- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- 11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.
- 12 The marking of the equipment shall include the following:



II 2G

EEx ia IIC T4 or T5 or T6 (Ta = -40°C to +85°C)

(The applicable temperature class and maximum ambient temperature depend upon the type of device that is incorporated into the equipment, see section 15.1 – special conditions for safe use.)

Project Number 52A16928 C. Index 11

This certificate and its schedules may only be reproduced in its entirety and without change.

C Ellaby Certification Officer

Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England





EC TYPE-EXAMINATION CERTIFICATE

Sira 03ATEX2577X Issue 1

13 **DESCRIPTION OF EQUIPMENT**

The Series 760E and 760P Valve Controllers are designed to be mounted on a valve to drive an actuator that positions the valve in proportion to an electrical input signal; they also feed back the valve position and line pressure information to control circuitry located in a non-hazardous area. They comprise a number of separate parts housed within a metal enclosure that can be fitted with an optional transparent 'Lexan' dome that permits a valve position indicator to be viewed. External electrical connections are made to the terminal blocks via a threaded entry that accommodates conduit or cable. A number of other threaded entries permit the pneumatic connections.

The Model 760E has the I/P converter fitted and the Model 760P does not.

The Valve Controllers are intended to be configured so that all or some of the separate parts (listed as items 1, 2, and 3 below) may be present.

- 1 One of the following I/P converters can be fitted:
 - a) ABB (formally Hartmann & Braun GmbH) I/P Converter (Certificate: TUV 99ATEX1487X) coded EEx ia IIC T6/T5/T4 (Tamb. range = -55 to +85°C), II 2G.
 - b) ControlAir Inc. I/P Converter (Certificate: FM 07ATEX0002X) coded EEx ia IIC T6/T5/T4 (Tamb. range = -55 to +85°C), II 1G.
- 2 A 4-20mA printed circuit board or the PCB may be replaced by a Spectrum Sensors and Controls Inc. P/N 6209-2040-230 (1kohm +/-10%) type or P/N 6209-2039-130 (5kohm +/-10% type).
- Two proximity switches, Pepperl and Fuchs Type NJ 2-V3-N, Type 4, (PTB 00ATEX2032X, coded EEx ia IIC T4/T5/T6 (Tamb range = -20 to + 74°C) or two simple limit switches may be used (Tamb.= -40 to +85°C); these switches are rated at 0.5A, 125V dc.

The applicable safety descriptions are defined in section 15.1.

Variation 1 - This variation introduced the following changes:

i. A number of drawing changes were recognised, in addition, alternative and replacement component devices were introduced, the product description has therefore been amended and the special conditions for safe use have also been modified.

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England





EC TYPE-EXAMINATION CERTIFICATE

Sira 03ATEX2577X Issue 1

14 **DESCRIPTIVE DOCUMENTS**

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	19 May 2004	R52A10387A	The release of prime certificate.
1	12 October 2007	R52A16928A	This Issue covers the following changes:
			All previously issued certification was rationalised into a single certificate, Issue 1, Issue 0 referenced above is
			only intended to reflect the history of the previous certification and has not been issued as a document in this format.
			The introduction of Variation 1.

- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
- 15.1 The applicable electrical parameters and corresponding maximum ambient temperatures are defined as follows and depend on the type of I/P Converter fitted:

Table 1: I/P Converter, Converter Terminals dependant on I/P Converter fitted

FM 07ATEX0002X (ControlAir Inc.)							
T Class	Tamb. Max	Ii	Ui	Pi			
T6	-55°C to +55°C	60 mA	38.8 V	2.328 W			
T6	-55°C to +60°C	50 mA	42.5 V	2.125 W			
T5	-55°C to +85°C	23 mA	6.75 V	0.155 W			
T5	-55°C to +45°C	120 mA	28 V	3.36 W			
T5	-55°C to +55°C	100 mA	30 V	3W			
T5	-55°C to +70°C	60 mA	38.8 V	2.328 W			
T4	-55°C to +70°C	150 mA	25.5 V	3.825 W			
T4	-55°C to +80°C	120 mA	28 V	3.36 W			
T4	-55°C to +85°C	100 mA	30 V	3 W			
T4	-55°C to +85°C	60 mA	38.8 V	2.328 W			

TUV 99ATEX1487X (ABB)						
T Class	Tamb. Max	Ii				
T6	-55°C to +55°C	60 mA				
T6	-55°C to +60°C	50 mA				
T5	-55°C to +45°C	120 mA				
T5	-55°C to +55°C	100 mA				
T5	-55°C to +70°C	60 mA				
T4	-55°C to +70°C	150 mA				
T4	-55°C to +80°C	120 mA				
T4	-55°C to +85°C	100 mA				
T4	-55°C to +85°C	60 mA				

Table 2: 4 – 20 mA PCB, TB1 - 1,2,3 or Potentiometer (6920 Series), TB1 - 1,2,3

Max. amb. temp.	Device	Temp. class	Parameters
>40, ≤80°C	Potentiometer	T4	Ii = 69.0 mA, Pi = 0.63 W
		T5	Ii = 42.6 mA, Pi = 0.24 W
≤40°C	Potentiometer	T4	Ii = 80.0 mA, Pi = 0.92 W
		T5	Ii = 69.0 mA, Pi = 0.63 W
		T6	Ii = 42.6mA, Pi = 0.24 W
	4 – 20 mA PCB	T4	Ui = 30 V, Ii = 110 mA, Pi = 0.78 W, Ci = 49 nF, Li = 20 μH

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England





EC TYPE-EXAMINATION CERTIFICATE

Sira 03ATEX2577X Issue 1

Table 3: Proximity Switches, TB2 1, 2, 3 and TB2 4, 5, 6 or Limit Switches, TB2 1, 2, 3 and TB2 4, 5, 6

Max. amb. temp.	Device	Temp. class	Parameters
>80, ≤85°C	Limit switches	T5	Ui = 30 V, Ii = 400 mA, Pi = 1.3 W
≤80°C	Limit switches	T6	Ui = 30 V, Ii = 400 mA, Pi = 1.3 W
>45, ≤74°C	Proximity switches	T4	Ui = 16 V, Ii = 76 mA, Pi = 242 mW, Ci = 40 nF, Li = 50 μH
>30, ≤45°C	Proximity switches	T5	Ui = 16 V, Ii = 76 mA, Pi = 242 mW, Ci = 40 nF, Li = 50 μH
≤30°C	Proximity switches	T6	Ui = 16 V, Ii = 76 mA, Pi = 242 mW, Ci = 40 nF, Li = 50 μH

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 in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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Sira Certification ServiceRake Lane, Eccleston, Chester, CH4 9JN, England

Certificate Annexe

Certificate Number: Sira 03ATEX2577X

Equipment: Series 760 Valve Controllers

Applicant: Siemens Energy and Automation Inc.



Issue 0

Number	Sheet	Rev.	Date	Description
15032-7612	1 of 6	1	10 Feb 04	General view, standard case
15032-7612	2 of 6	1	10 Feb 04	I/P converter
15032-7612	3 of 6	1	10 Feb 04	Option PCB parts
15032-7612	4 of 6	1	10 Feb 04	Option PCB layout
15032-7612	5 of 6	1	10 Feb 04	Option board schematics
15032-7612	6 of 6	1	10 Feb 04	Pneumatic and mechanical schematic
5-1030	1 of 1	2	10 Apr 04	Label, general

Issue 1

Number	Sheet	Rev.	Date (Sira stamp)	Description
15032-7612	1 of 7	6	03 Oct 07	General view, standard case
15032-7612	2 of 7	6	03 Oct 07	I/P Converter
15032-7612	3 of 7	6	03 Oct 07	Option PCB parts
15032-7612	4 of 7	6	03 Oct 07	Option PCB layout
15032-7612	5 of 7	6	03 Oct 07	Option board schematics
15032-7612	6 of 7	6	03 Oct 07	Pneumatic and mechanical schematic
15032-7612	7 of 7	6	03 Oct 07	Miscellaneous notes

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England



1



TYPE EXAMINATION CERTIFICATE

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 03ATEX4578 Issue: 1

4 Equipment: Series 760 Valve Controllers

5 Applicant: Siemens Energy and Automation Inc.

6 Address: 1201 Sumneytown Pike

Spring House PA19477-0900

USA

- 7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- 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 94/9/EC of 23 March 1994.

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 50021:1999

- If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- 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 3 (

EEx nL IIC T5 (Ta=-25°C to +85°C)

Project Number 52A16928 C. Index 11

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C Ellaby Certification Officer

Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England





TYPE EXAMINATION CERTIFICATE

Sira 03ATEX4578 Issue 1

13 **DESCRIPTION OF EQUIPMENT**

The Series 760E and 760P Valve Controllers are designed to be mounted on a valve to drive an actuator that positions the valve in proportion to an electrical input signal; they also feed back the valve position and line pressure information to control circuitry located in a non-hazardous area. They comprise a number of separate parts housed within a metal enclosure that can be fitted with an optional transparent 'Lexan' dome that permits a valve position indicator to be viewed. External electrical connections are made to the terminal blocks via a threaded entry that accommodates conduit or cable. A number of other threaded entries permit the pneumatic connections.

The Model 760E has the I/P converter fitted and the Model 760P does not.

The Valve Controllers are intended to be configured so that all or some of the separate parts (listed as items 1, 2, and 3 below) may be present.

The separate parts are as follows:

1 One of the following I/P converters can be fitted:

a) ABB (formerly Hartmann & Braun GmbH) I/P Converter (TUV 99ATEX1487X)

I/P Converter terminals: $I_i = 120 \text{ mA}$

b) ControlAir Inc. I/P Converter (FM 07ATEX0003X)

i. I/P Converter terminals (Ex nL version):

FM 07ATEX0003X (ControlAir Inc.)						
T Class	Tamb.	Ii	Ui	Pi		
T4	-55°C to +85°C	60 mA	38.8 V	2.328 W		
T4	-55°C to +85°C	100 mA	30 V	3.0 W		
T4	-55°C to +80°C	120 mA	28 V	3.36 W		
T4	-55°C to +70°C	150 mA	25.5 V	3.825 W		
T5	-55°C to +70°C	60 mA	38.8 V	2.328 W		
T5	-55°C to +55°C	100 mA	30 V	3.0 W		
T5	-55°C to +45°C	120 mA	28 V	3.36 W		
T5	-55°C to +85°C	23 mA	6.75 V	0.155 W		
T6	-55°C to +60°C	50 mA	42.5 V	2.125 W		
T6	-55°C to +55°C	60 mA	38.8 V	2.328 W		

ii. I/P Converter terminals (Ex nAnL version):

Ui = 40V

Ii = 20mA (Tamb. -55°C to +85°C)

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Sira Certification Service





TYPE EXAMINATION CERTIFICATE

Sira 03ATEX4578 Issue 1

2 A 4-20 mA printed circuit board

Terminal block TB1 (1,2,3): Ui = 42 V Ii = 40 mA Co = 34 nF Lo = 40 mH

Or

The pcb may be replaced by a Spectrum Sensors and Controls Inc. P/N 6209-2040-230 (1kohm +/-10%) type or P/N 6209-2039-130 (5kohm +/-10% type).

3 Two proximity switches, Pepperl and Fuchs Type NJ 2-V3-N-Y17905

Terminal block TB2 (1,2,3 and 4,5,6): Ui = 25 V

Or

As an alternative to the proximity switches, two simple limit switches may be used; these switches have minimum ratings of 0.25 A, 125 V dc.

Terminal block TB2 (1,2,3 and 4,5,6)

 $U_i = 30 \text{ V}$ $U_i = 36.5 \text{ V}$ $U_i = 42 \text{ V}$ $U_i = 55 \text{ V}$ $I_i = 140 \text{ mA}$ $I_i = 92 \text{ mA}$ $I_i = 70 \text{ mA}$ $I_i = 45 \text{ mA}$

Variation 1 - This variation introduced the following changes:

i. A number of drawing changes were recognised, in addition, alternative and replacement component devices were introduced, the product description has therefore been amended.

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification ServiceRake Lane, Eccleston, Chester, CH4 9JN, England





TYPE EXAMINATION CERTIFICATE

Sira 03ATEX4578 Issue 1

14 **DESCRIPTIVE DOCUMENTS**

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	14 May 2004	R52A10388A	The release of the prime certificate.
1	12 October 2007	R52A16928A	 This Issue covers the following changes: All previously issued certification was rationalised into a single certificate, Issue 1, Issue 0 referenced above is only intended to reflect the history of the previous certification and has not been issued as a document in this format.
			The introduction of Variation 1.

15 SPECIAL CONDITIONS FOR SAFE USE

None

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (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 CERTIFICATION**

- 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 8 of directive 94/9/EC.

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification ServiceRake Lane, Eccleston, Chester, CH4 9JN, England

Certificate Annexe

Certificate Number: Sira 03ATEX4578

Equipment: Series 760 Valve Controllers

Applicant: Siemens Energy and Automation Inc.



Issue 0

Number	Sheet	Rev.	Date	Description
15032-7612 15032-7612 15032-7612 15032-7612 15032-7612 15032-7612	1 of 6 2 of 6 3 of 6 4 of 6 5 of 6 6 of 6	1 1 1 1 1	10 Feb 04 10 Feb 04 10 Feb 04 10 Feb 04 10 Feb 04 10 Feb 04	General view, standard case I/P converter Option PCB parts Option PCB layout Option board schematics Pneumatic and mechanical schematic
5-1030	1 of 1	В	24 Feb 04	Label, general

Issue 1

Number	Sheet	Rev.	Date (Sira stamp)	Description
15032-7612	1 of 7	6	03 Oct 07	General view, standard case
15032-7612	2 of 7	6	03 Oct 07	I/P Converter
15032-7612	3 of 7	6	03 Oct 07	Option PCB parts
15032-7612	4 of 7	6	03 Oct 07	Option PCB layout
15032-7612	5 of 7	6	03 Oct 07	Option board schematics
15032-7612	6 of 7	6	03 Oct 07	Pneumatic and mechanical schematic
15032-7612	7 of 7	6	03 Oct 07	Miscellaneous notes

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England