



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 07ATEX2064X** Issue: **1**

4 Equipment: **9400 Series Ethernet Modules**

5 Applicant: **Controlled Systems Limited**

6 Address: Ryder Close
Cadley Hill
Swadlincote
Derbyshire DE11 9EU
UK

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

8 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 60079-0:2006	IEC 60079-26:2006	IEC 61241-0:2004
EN 60079-11:2007	EN 50303:2000	IEC 61241-11:2005

10 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 1GD
Ga Ex ia IIC T4
Ex iaD 20 T135°C
(Ta = -40°C to +60°C) - 9469 Module
(Ta = -40°C to +70°C) - 9461, 9465 and 9466 Modules



I M1
Ma Ex ia I
(Ta = -40°C to +60°C) - 9469 Module
(Ta = -40°C to +70°C) - 9461, 9465 and 9466 Modules

Project Number 52L14824
C. Index 15

C Ellaby
Certification Officer

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13 DESCRIPTION OF EQUIPMENT

The **9400 Series Ethernet Modules** are designed to extend an Ethernet network into a hazardous area and also to act as an interface between an Ethernet network and equipment having a wireless connection or a serial communication port.

The following 4 types of Modules are intended to be located in the hazardous area:

The **9461-ET Module** is configured as an Ethernet gateway to enable existing equipment having a serial communications port to be connected to an Ethernet network.

The **9465-ET Module** is configured as a 10/100 Mbps Fibre to Copper Media Converter to allow an Ethernet network to be extended over a greater distance. The fibre optic link may be up to 2 kilometres in length when running at 100 Mbps and, due to the use of 1300 nm optics, an extended distance of 5 kilometres is achievable at 10 Mbps. Longer distances may be obtained by connecting a **9466-ET** (10/100 Mbps Ethernet Switch) between two **9465-ET** media converters, effectively giving a 'repeater' function (This also provides 3 x UTP ports available for local network connectivity and is the 'typical' configuration encountered). The fibre optics of the **9465-ET Module** also permits 9400 Series Ethernet Modules in the non-hazardous area to communicate with other 9400 Series Ethernet Modules in the hazardous area and vice versa.

The **9466-ET Module** is configured as a 10/100 Mbps Ethernet Switch to allow the interconnection of the 9400 Series Ethernet Modules via its five, Ethernet connectors. The **9466-ET Module** also enables an Ethernet network to span a greater distance when used in conjunction with **9465-ET Module** media converters. This is achieved by the low latency 'store and forward' mechanism integral to the switch that only transmits 'good' packets of data and ensures that the stringent timing associated with Ethernet is maintained. Each connection of the **9466-ET Module** is effectively a 'point-to-point' network segment unlike the older generation hubs that were simple 'dumb' repeaters.

The **9469-ET Module** is configured as a wireless communication unit having a microwave output less than 500 mW. The aerial may be either omnidirectional or unidirectional depending upon application. The **9469-ET Module** also permits communication between a **9469-ET Module** in the non-hazardous area to communicate with a **9469-ET Modules** in the hazardous area.

The **9400 Series Ethernet Modules** comprise electronic components mounted on printed circuit boards all completely encapsulated within a plastic enclosure designed for mounting on a DIN rail. External electrical connections are made via screw type terminals and/or connectors mounted on the front of the enclosure.



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Apparatus supply and Input/Output parameters

The **9461 Ethernet Gateway Module** has the following safety description:

(Supply input)

Terminals T1, T2 wrt T3, T4

U_i = 15.4 V
C_i = 0
L_i = 0

(RS485/422 Port 3)

Terminals T6 wrt T10, T7 wrt T10, T8 wrt T10, T9 wrt T10

U_i = 7.2 V
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 111 mA
P_o = 163 mW
C_o = 20 µF
L_o = 3 mH

(RS485/422 Port 4)

Terminals T11 wrt T15, T12 wrt T15, T13 wrt T15, T14 wrt T15

U_i = 7.2 V
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 111 mA
P_o = 163 mW
C_o = 20 µF
L_o = 3 mH

(TTL/RS232 Port 1)

(Connector CON1)

Pin 9 wrt Pin 5

U_i = 0
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 188 mA
P_o = 276 mW
C_o = 20 µF
L_o = 2.26 mH

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Pin 3 wrt Pin 5, Pin 4 wrt Pin 5, Pin 7 wrt Pin 5

U_i = 5.88 V
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 16 mA
P_o = 24 mW
C_o = 20 µF
L_o = 138 mH

Pin2 wrt Pin 5, Pin 1 wrt Pin 5

U_i = 12.5 V
C_i = 0
L_i = 0
U_o = 3.15 V
I_o = 3.4 mA
P_o = 2.7 mW
C_o = 50 µF
L_o = 1.0 H

(TTL/RS232 Port 2) (Connector CON2) Pin 9 wrt Pin 5

U_i = 0
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 188 mA
P_o = 276 mW
C_o = 20 µF
L_o = 2.26 mH

Pin 3 wrt Pin 5, Pin 4 wrt Pin 5, Pin 7 wrt Pin 5

U_i = 5.88 V
C_i = 0
L_i = 0
U_o = 5.88 V
I_o = 16 mA
P_o = 24 mW
C_o = 20 µF
L_o = 138 mH

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Pin 2 wrt Pin 5, Pin 1 wrt Pin 5

U _i	=	12.5 V
C _i	=	0
L _i	=	0
U _o	=	3.15 V
I _o	=	3.4 mA
P _o	=	2.7 mW
C _o	=	50 µF
L _o	=	1.0 H

**RJ45 Connector
(10/100 Base T)**

U _o	=	0
I _o	=	0
P _o	=	0
C _i	=	0.075µF
L _i	=	0
U _i	=	15.4 V Maximum (PoEx)

The **9465 10/100 Media Converter Module** has the following safety description:

(Supply input)

Terminals T1, T2 wrt T3, T4

U _i	=	15.4 V
C _i	=	0
L _i	=	0

**Fibre-optic transmitter
(HFBR1312 or AFBR-5803AZ or AFCT-5179CZ)**

P _o	=	5 mW maximum Optical
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**RJ45 Connector
(10/100 Base T)**

U _o	=	0
I _o	=	0
P _o	=	0
C _i	=	0.075µF
L _i	=	0
U _i	=	15.4 V Maximum (PoEx)



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The **9466 10/100 5 Port Switch Module** has the following safety description:

(Supply input)

Terminals T1, T2 wrt T3, T4

U _i	=	15.4 V
C _i	=	0
L _i	=	0

(PoEx Supply inputs)

Terminals T6 wrt T7, T8 wrt T9, T10 wrt T11, T12 wrt T13, T14 wrt T15

U _i	=	15.4 V
C _i	=	0.075 µF
L _i	=	0

mini DIN 8-way connector

(Connector CON1)

(Management Port)

Pin 5 wrt Pins 4 and 8

U _i	=	12.5 V
C _i	=	0
L _i	=	0
U _o	=	3.15 V
I _o	=	3.4 mA
P _o	=	2.7 mW
C _o	=	50 µF
L _o	=	1.0 H

Pins 1, 3 and 4 wrt Pins 5 and 6

U _i	=	0
C _i	=	0
L _i	=	0
U _o	=	5.88 V
I _o	=	48 mA
P _o	=	72 mW
C _o	=	20 µF
L _o	=	15 mH

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RJ45 Connector A (10/100 Base T)

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	0 (PoEx)
Uo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters
Io	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters
Po	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters
Co	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters
Lo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters
Lo/Ro	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T6 wrt T7 for the PoEx output parameters

RJ45 Connector B (10/100 Base T)

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	0 (PoEx)
Uo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters
Io	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters
Po	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters
Co	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters
Lo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters
Lo/Ro	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T8 wrt T9 for the PoEx output parameters

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**RJ45 Connector C
(10/100 Base T)**

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	0 (PoEx)
Uo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters
Io	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters
Po	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters
Co	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters
Lo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters
Lo/Ro	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T10 wrt T11 for the PoEx output parameters

**RJ45 Connector D
(10/100 Base T)**

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	0 (PoEx)
Uo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters
Io	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters
Po	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters
Co	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters
Lo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters
Lo/Ro	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T12 wrt T13 for the PoEx output parameters

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**RJ45 Connector E
(10/100 Base T)**

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	0 (PoEx)
Uo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters
Io	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters
Po	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters
Co	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters
Lo	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters
Lo/Ro	=	Refer to the certified parameters of the intrinsically safe power supply connected to Terminals T14 wrt T15 for the PoEx output parameters

The **9469 WLAN AP/Bridge Module** has the following safety description:

**(Supply input)
Terminals T1, T2 wrt T3, T4**

Ui	=	12.8 V
Ci	=	0
Li	=	0

**Antenna "A"
TNC Connector**

Po	=	500 mW maximum RF
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**RJ45 Connector
(10/100 Base T)**

Uo	=	0
Io	=	0
Po	=	0
Ci	=	0.075 μ F
Li	=	0
Ui	=	12.8 V Maximum (PoEx)

**Antenna "B"
TNC Connector**

Po	=	500 mW maximum RF
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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	16 August 2007	R52L14824C	The release of the prime certificate.
1	8 January 2008	R52L14824E	Report number R52L14824C was replaced by Report number R52L14824E.

15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

15.1 When used with Group I gases, the Modules shall each be mounted within an enclosure providing a degree of protection of at least IP54, in accordance with EN 60529, and in a manner that does not impair the existing creepage and clearance distances. The enclosure shall also comply with the requirements of Clauses 7 and 8 of EN 60079-0:2006.

15.2 The connectors do not meet the ingress protection rating of IP20, therefore, this shall be taken into consideration during the installation of the 9400 Series Ethernet Modules when used with Group II gases, and each module shall be provided with an enclosure that is commensurate with the environment into which it is installed.

15.3 The supply to the modules must be derived from a suitably certified, intrinsically safe supply.

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.

17.3 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products.

17.4 Assembly DB1 shall be constructed from 2 zener diodes type 1N5339B connected in parallel.

Certificate Annexe

Certificate Number: Sira 07ATEX2064X
Equipment: 9400 Series Ethernet Modules
Applicant: Controlled Systems Limited



Issue 0 - The drawings associated with this Issue were replaced by those listed in Issue 1.

Issue 1

Common

Number	Sheet	Rev.	Date (yyyy/mm/dd)	Description
9400Haz-ATEX Label	1 of 1	2	2007/12/10	Label Details, 9400 Series Ethernet
CSL-ZENER	1 of 1	3	2003/01/28	Zener diode assembly
13003-PCB	1 of 1	Orig.	2002/08/23	Zener PCB

9461-ET Ethernet Gateway Module

Number	Sheet	Rev.	Date (yyyy/mm/dd)	Description
9461-ASSY	1 of 1	1	2007/03/14	General Assembly, Ethernet Gateway
9461-PSU	1 of 1	2	2007/12/11	Circuit Diagram, Ethernet Gateway PSU Board
9461-CPU	1 of 1	3	2007/12/11	Circuit Diagram, Ethernet Gateway CPU Board
9461-PSU PCB	1 of 1	2	2007/03/23	Ethernet Gateway PSU Board Artworks
9461-CPU PCB	1 to 2	3	2007/08/08	Ethernet Gateway CPU Board Artworks

9465-ET 10/100 Media Converter

Number	Sheet	Rev.	Date (yyyy/mm/dd)	Description
9465-ASSY	1 of 1	1	2007/03/14	General Assembly, Ethernet 10/100 Media Converter
9465-PSU	1 of 1	2	2006/11/22	Circuit Diagram, Ethernet 10/100 Media Converter PSU Board
9465-FO	1 of 1	3	2007/12/11	Circuit Diagram, Ethernet 10/100 Media Converter Main Board
9465-OPTIC	1 of 1	1	2006/02/16	Circuit Diagram, Ethernet 10/100 Media Converter Optic Board
9465-PSU PCB	1 of 1	2	2007/03/23	Ethernet 10/100 Media Converter PSU Board Artworks
9465-FO PCB	1 of 1	3	2007/08/08	Ethernet 10/100 Media Converter FO Board Artworks
9465-OPTIC PCB	1 of 1	1	2007/03/23	Ethernet 10/100 Media Converter OPTIC Board Artworks

9466-ET 10/100 5 Port Switch

Number	Sheet	Rev.	Date (yyyy/mm/dd)	Description
9466-ASSY	1 of 1	2	2007/12/10	General Assembly, Ethernet 10/100 5 Port Switch
9466-PSU	1 of 1	2	2006/11/24	Circuit Diagram, Ethernet 10/100 5 Port Switch PSU Board
9466-SW	1 of 1	4	2007/12/11	Circuit Diagram, Ethernet 10/100 5 Port Switch SW Board
9466-LED	1 of 1	3	2007/12/11	Circuit Diagram, Ethernet 10/100 5 Port Switch LED Board
9466-FLEX	1 of 1	1	2007/10/24	Circuit Diagram, Ethernet 10/100 5 Port Switch SW Flex Connector
9466-PSU PCB	1 of 1	2	2007/03/29	Ethernet 10/100 5 Port Switch PSU Board Artworks
9466-SW PCB	1 to 2	4	2007/10/04	Ethernet 10/100 5 Port Switch SW Board Artworks
9466-LED PCB	1 of 1	3	2007/10/24	Ethernet 10/100 5 Port Switch LED Board Artworks
9466-FLEX PCB	1 of 1	1	2007/10/24	Ethernet 10/100 5 Port Switch FLEX Connector Artworks

9469-ET WLAN AP/Bridge

Number	Sheet	Rev.	Date (yyyy/mm/dd)	Description
9469-ASSY	1 of 1	1	2007/03/14	General Assembly, Ethernet WLAN A/P Bridge
9469-PSU	1 of 1	2	2007/12/11	Circuit Diagram, Ethernet WLAN A/P Bridge PSU Board
9469-WL	1 of 1	3	2007/12/11	Circuit Diagram, Ethernet WLAN A/P Bridge Main Board
9469-PSU PCB	1 of 1	2	2007/03/23	Ethernet WLAN A/P Bridge PSU Board Artworks
9469-WL PCB	1 of 1	3	2007/08/08	Ethernet WLAN A/P Bridge WL Board Artworks

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