

# Certificate of Compliance

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*Issued to:* HIRSCHMANN AUTOMATION AND CONTROL GMBH  
STUTTGARTER STR 45-51  
72654 NECKARTENZLINGEN GERMANY

*This is to certify that representative samples of*

## PROGRAMMABLE CONTROLLERS FOR USE IN HAZARDOUS LOCATIONS


Open type, Industrial ethernet switches, Cat No. RS20, RS22, RS30 and RS32 followed by 4 numbers, followed by a T or M or N or S or L or O or G or U or V or E, followed by a number or G or L or M or N or O or U or V or E, followed by a T or M or S or L or G or O or Z or E, followed by a number or Z, followed by S or T or E, followed by D or P, followed by two letters may be followed by additional suffixes. Cat No. RS40- followed by 0009, followed by CCCC, followed by S or T or E, followed by a D, followed by two letters, may be followed by additional suffixes.

*Have been investigated by Underwriters Laboratories in accordance with the Standard(s) indicated on this Certificate.*

*Standard(s) for Safety:* UL 508, Seventeenth Edition  
CAN/CSA C22.2 No. 142-M1987

*Additional Information:* See UL On-line Certification Directory at [WWW.UL.COM](http://WWW.UL.COM) for additional information.

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**Look for the UL Listing Mark on the product**

**William R. Carney**  
**Director, North American Certification Programs**

Underwriters Laboratories Inc.

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File E203960  
Project 10CA64318

October 5, 2011

REPORT

On

PROGRAMMABLE CONTROLLERS, FOR USE IN HAZARDOUS LOCATIONS  
(NRAG, NRAG7)

Hirschmann Automation and Control GmbH  
Neckartenzlingen, Germany

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## DESCRIPTION

## PRODUCT COVERED:

USL, CNL - Programmable Controllers for use in  
Class I, Division 2, Groups A, B, C and D Hazardous  
Locations

Open type, Industrial ETHERNET Switch, Cat No. RS20, RS22, RS30 and RS32 followed by 4 numbers, followed by a T or M or N or S or L or O or G or U or V or E, followed by a number or G or L or M or N or O or U or V or E, followed by a T or M or S or L or G or O or Z or E, followed by a number or Z, followed by S or T or E, followed by D or P, followed by two letters may be followed by additional suffixes.

Cat No. RS40- followed by 0009, followed by CCCC, followed by S or T or E, followed by a D, followed by two letters, may be followed by additional suffixes, for use in Class I, Div. 2, Groups A, B, C and D Hazardous Locations.

## GENERAL:

These devices are for use in industrial automation applications. The models consist of the Industrial Control Ethernet LAN components for rail mounting. They are microcomputer-based and communicate via interfaces through wire or fiber optics, to be supplied by a Class 2 source only. The devices RS22- and RS32- are additionally provided with PoE ports. (Power over Ethernet). These incorporate nonincendive field wiring for relay outputs

## ELECTRICAL RATINGS:

Main Supply Voltage: 9.6 - 60 Vdc max. Class 2 or  
18 - 30 Vac max. Class 2 alternatively,  
48 Vac max. Class 2 (for devices RS22-  
and RS32- only)

Max. surrounding air temperature: 0°C - 60°C for S types  
-40°C - 70°C for T or E types  
-40°C - 50°C for T or E types (for  
devices RS22-and RS32- only)

Note: For types refer to item VI of  
nomenclature breakdown

Entity Parameter for Relay Outputs(Fault Contact):

V<sub>max</sub>: 30 Vdc,  
I<sub>max</sub>: 0.09 A,  
C<sub>i</sub>: 2.5 nF  
L<sub>i</sub>: 1.0 uH

Table 1: Power supply indication on module label

Module Type									Power supply current, A			
									U <sub>in</sub> = 9.6 Vdc	U <sub>in</sub> = 60.0 Vdc	U <sub>in</sub> = 18.0 Vac	U <sub>in</sub> = 30.0 Vac
RS20 -	04 08	00	T1 T5	T1 T5	x	D	x	x	0.6	0.1	0.3	0.2
RS20 -	04 08	00	T1 T5	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	0.7	0.2	0.4	0.3
RS20 -	04 08	00	M2 M4 S2 S4 E2 L2 G2	T1 T5	x	D	x	x				
RS20 -	04 08	00	M2 M4 S2 S4 E2 L2 G2	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	0.8	0.2	0.5	0.3
RS20 -	09	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.0	0.2	0.6	0.4
RS20 -	16	00	T1 T5	T1 T5	x	D	x	x	1.0	0.2	0.6	0.4
*												
RS20 -	16	00	T1 T5	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.1	0.2	0.6	0.4
RS20 -	16	00	M2 M4 S2 S4 E2 L2 G2	T1 T5	x	D	x	x	1.1	0.2	0.6	0.4
RS20 -	16	00	M2 M4 S2 S4 E2 L2 G2	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.2	0.2	0.7	0.4

## and Report

Table 1: Power supply indication on module label

Module Type								Power supply current, A				
								U <sub>in</sub> = 9.6 Vdc	U <sub>in</sub> = 60.0 Vdc	U <sub>in</sub> = 18.0 Vac	U <sub>in</sub> = 30.0 Vac	
RS20-	17	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.4	0.3	0.8	0.5
RS20-	24	00	T1 T5	T1 T5	x	D	x	x	1.3	0.2	0.7	0.4
RS20-	24	00	T1 T5	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.4	0.3	0.8	0.5
RS20-	24	00	M2 M4 S2 S4 E2 L2 G2	T1 T5	x	D	x	X				
RS20-	24	00	M2 M4 S2 S4 E2 L2 G2	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.5	0.3	0.8	0.5
RS20-	25	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	D	x	x	1.7	0.3	1.0	0.6
RS30-	08	02	T1 O6	T1 O6	x	D	x	x	1.0	0.2	0.5	0.3
RS30-	08	02	OO	ZZ	x	D	x	x	1.3	0.3	0.7	0.5
RS30-	16	02	T1 O6	T1 O6	x	D	x	x	1.4	0.3	0.8	0.5
RS30-	16	02	OO	ZZ	x	D	x	x	1.8	0.3	1.0	0.6
RS30-	24	02	x	x	x	D	x	x	1.7	0.3	0.9	0.6
RS30-	24	02	OO	ZZ	x	D	x	x	2.1	0.4	1.1	0.7
RS40-	00	09	CC	CC	x	D	x	x	2.1	0.4	1.1	0.7

Table 1 (CONT'D)

Module Type									Power supply current, A
									$U_{in} = 48 \text{ Vdc}$
RS22-	08	00	T1	T1	x	P	x	x	1.5
RS22-	08	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.6
RS22-	08	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	
RS22-	08	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.7
RS22-	09	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.6
RS22-	16	00	T1	T1	x	P	x	x	
RS22-	16	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.7
RS22-	16	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	
RS22-	16	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.8

Table 1 (CONT'D)

Module Type									Power supply current, A	
									U <sub>in</sub> = 48 Vdc	
RS22-	17	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.7	
RS22-	24	00	T1	T1	x	P	x	x		
RS22-	24	00	T1	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.8	
RS22-	24	00	M2 M4 S2 S4 E2 L2 G2	T1	x	P	x	x		
RS22-	24	00	M2 M4 S2 S4 E2 L2 G2	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.9	
RS22-	25	00	MM NN VV UU EE LL GG	M2 M4 S2 S4 E2 L2 G2	x	P	x	x	1.8	
RS32-	08	02	T1 O6	T1 O6	x	P	x	x	1.6	
RS32-	08	02	OO	ZZ	x	P	x	x		
RS32-	16	02	T1 O6	T1 O6	x	P	x	x	1.7	
RS32-	16	02	OO	ZZ	x	P	x	x		
RS32-	24	02	x	x	x	P	x	x	1.8	
RS32-	24	02	OO	ZZ	x	P	x	x	1.9	

## ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USL and CNL have been investigated using requirements contained in:

**\*UL 121201 (CSA C22.2 No. 213-17, 3rd Edition) NONINCENDIVE ELECTRICAL EQUIPMENT FOR USE IN CLASS I AND II, DIVISION 2 AND CLASS III, DIVISIONS 1 AND 2 HAZARDOUS (CLASSIFIED) LOCATIONS- Edition 9 - Issue Date 2017/09/15**

Note: CNL = Canadian National Standards - Listed.  
USL = United States Standards - Listed.

Products have been evaluated as Programmable Controllers (NRAQ, NRAQ7) to the Ordinary Locations requirements of UL 508, "Industrial Control Equipment", Seventeenth Edition and CAN/CSA C22.2 No. 142-M1987, "Process Control Equipment" under File E175531, Issue Date: 2006-03-06.



## NOMENCLATURE:

RS30-	24	02	T1	06	S	D	B	P	H	H	01.0	00
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII

## I: Switch type

RS20- Compact Switch, Fast-ETHERNET uplinks  
 RS22- Compact Switch, Fast-ETHERNET uplinks, with PoE  
 RS30- Compact Switch, Gigabit-ETHERNET uplinks  
 RS32- Compact Switch, Gigabit-ETHERNET uplinks, with PoE  
 RS40- Compact Switch, Gigabit-ETHERNET ports

## II: Number of Fast-ETHERNET ports

00 none (RS40 modules only)  
 04 4x100 Mbit  
 08 8x100 Mbit  
 09 9x100 Mbit  
 16 16x100 Mbit  
 17 17x100 Mbit  
 24 24x100 Mbit  
 25 25x100 Mbit

## III: Number of Gigabit-ETHERNET ports

00 none  
 02 2x1000 Mbit  
 09 9x1000 Mbit (RS40 modules only)

## IV: Type 1 uplink port / connector type

T1 twisted pair / RJ45 (100 or 1000 Mbit)  
 T5 twisted pair / M12 (100 Mbit)  
 M2 multimode / SC (100 Mbit)  
 M4 multimode / ST (100 Mbit)  
 S2 singlemode / SC (100 Mbit)  
 S4 singlemode / ST (100 Mbit)  
 L2 singlemode LH / SC (100 Mbit)  
 E2 singlemode SM+ (100 Mbit) (RS20 or RS22 switch type only)  
 G2 singlemode LH / SC (100 Mbit), 200 km  
 O6 SFP slot / SFP (1000Mbit)  
 MM 2xmultipmode / SC (100 Mbit)  
 NN 2xmultipmode / ST (100 Mbit)  
 VV 2xsinglemode / SC (100 Mbit)  
 UU 2xsinglemode / ST (100 Mbit)  
 LL 2xsinglemode LH / SC (100 Mbit)  
 EE 2xsinglemode SM+ (100 Mbit) (RS20 or RS22 switch type only)  
 GG 2xsinglemode LH / SC (100 Mbit), 200 km  
 OO 2xSFP slot / SFP (1000Mbit)  
 RS40-types only: 1. and 2. uplink port / connector type  
 CC Combo Port Gigabit Ethernet (SFP or TX 1000 Mbit)

- V: Type 2 uplink port(s)  
T1 twisted pair / RJ45 (100 or 1000 Mbit)  
T5 twisted pair / M12 (100 Mbit)  
M2 multimode / SC (100 Mbit)  
M4 multimode / ST (100 Mbit)  
S2 singlemode / SC (100 Mbit)  
S4 singlemode / ST (100 Mbit)  
L2 singlemode LH / SC (100 Mbit)  
E2 singlemode SM+ (100 Mbit) (RS20 or RS22 switch type only)  
G2 singlemode LH / SC (100 Mbit), 200 km  
O6 SFP slot / SFP (1000Mbit)  
ZZ 2xSFP slot / SFP (100 Mbit)  
RS40-types only: 3. and 4. uplink port / connector type  
CC Combo Port Gigabit Ethernet (SFP or TX 1000 Mbit)
- VI: Surrounding air temperature range & coating  
S 0°C up to +60°C **restricted for devices RS22- and RS32- only**  
T -40°C up to +70°C  
-40°C up to +50°C restricted for devices RS22- and RS32- only  
E -40°C up to +70°C inclusive conformal coating of PCB's  
-40°C up to +50°C restricted for devices RS22- and RS32- only
- VII: Power supply rating  
D 9.6 - 60 V DC or 18 - 30 V AC optional  
-not for RS22- or RS32  
P 48 Vdc for devices RS22- and RS32 only
- VIII: Approvals / Qualification  
A cUL508, cUL ISA 12.12.01 Class 1 Div. 2  
B cUL508, cUL ISA 12.12.01 Class 1 Div. 2, German  
Lloyd, IEC61850  
Substations Railway standards EN 50121-4 / EN 50155,  
ATEX 100a Zone 2  
H cUL508, cUL ISA 12.12.01 Class 1 Div. 2, German  
Lloyd, IEC61850  
Substations Railway standard EN 50121-4  
C cUL 508, cUL ISA 12.12.01 Class 1 Div. 2, German Lloyd, IEC  
61850 Substations Railway standard EN 50121-4, EN50155  
X any letter, no influence to the investigation
- IX: Software version  
E enhanced  
P professional  
x any letter, no influence to the investigation
- X: optional: Configuration  
H Standard  
F Metal housing  
P Polymer housing  
X Customer specific (X: any letter)
- XI: optional: OEM type  
H Standard  
X Customer specific (X: any letter)
- XII: optional: Software release  
01.0 Software release 1.0
- XIII: optional: Bugfix  
00 bugfix version 00

## CONSTRUCTION DETAILS:

General - The details of construction are covered in the following photographs and accompanying descriptive pages and illustrations.

Corrosion Protection - All parts of corrosion resistant materials are painted or plated as corrosion protection.

Class 2 circuit - The investigation has been conducted under consideration of the Class 2 requirements. This allows for the investigation of spacings and components on the secondary to be waived.

Make/break components - There are no make/brake components (potentiometers, switches, etc.) other than those specifically identified in the following descriptions.

## MARKINGS:

The following markings shall appear on the device. Markings may be provided in French or English for Canadian markets. Ink-stamped label permanently secured to the device.

1. Listee's name, trademark, or identifier.
2. Electrical ratings.
3. Catalog number or equivalent.
4. Operating temperature code - "T4".
5. "Maximum surrounding air temperature 70 °C" for models coded: Type T or E according to the Nomenclature.
6. "Maximum surrounding air temperature 60 °C" for models coded: Type S according to the Nomenclature.
7. Hazardous location designation Class I, Division 2, Groups A, B, C, D.
8. Date code or serial number referencing date of manufacture.
9. USB port to be marked with the Tri-Ex symbol.
10. Relay terminals are marked with the Tri-ex symbol. The side of the Ethernet switch is marked with the triangle and "See Control Drawing 000157671DNR". Ill.5 shows the Control Drawing.

The following markings are also provided on the device or as part of the installation instructions:

"Use 60/75 or 75°C copper(CU)wire only"

"SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D  
HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY."

"WARNING - EXPLOSION HAZARD - SUBSTITUTION OF ANY COMPONENTS MAY  
IMPAIR SUITABILITY FOR CLASS I, DIVISION 2."

"WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE  
CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE  
CONCENTRATIONS."

"The USB connector is for temporary connection only. Do not use,  
connect, or disconnect unless area is known to be non-hazardous.  
Connection or disconnection in an explosive atmosphere could result  
in an explosion."

## INSTALLATION AND OPERATING INSTRUCTIONS:

Installation Instructions - Shall be provided and include a wiring diagram. It must include a statement "Only for connection with a Class 2 power supply" or equivalent.

Installation Instructions shall also contain a statement that peripheral equipment must be suitable for the location it is used in.

An installation manual shall be provided with each unit to direct the user on proper installation and operation of the device.

The following pages with construction details have been removed.

Hirschmann Automation and Control GmbH  
2018-11-20 / mb