File E203960
Project 10CA57048

March 18, 2011

REPORT

On

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

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DESCRIPTION

PRODUCT COVERED:

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

Open type, Industrial ETHERNET Switch, cat. no. MAR10 or MAR11 followed by 4, followed by 0- or 2-, followed by 4C, followed by 4C, followed by 4C, followed by 4C, followed by 99, followed by 99, followed by S **or C** or T or E, followed by L or M, followed by L or M or 9, followed by a letter, may be followed by additional suffixes.

GENERAL:

These devices are Ethernet network communication switches intended for use in industrial applications. They are microcontroller-based and communicate via interfaces through wire or fiber-optic ports. These devices are open-type devices intended for installation in an ultimate enclosure.

These devices are constructed in accordance with ordinary locations File E175531, Volume 1, Section 27, issued date 2010-07-28 and the following description. The file covers Programmable Controllers for this manufacturer. In the case of any discrepancy between this File and E175531, Volume 1, Section 27 this file has precedence.

RATINGS:

Electrical:

Cat. no.		Input 1	Input 2	Input/output communication
MAR1x40-4C4C4C4C9999x	LL	24-48Vdc, 1.4-0.7A	24-48Vdc, 1.4-0.7A	16 communication ports
	LM	24-48Vdc, 1.4-0.7A	100-240Vac, 50-60Hz 0.7-0.4A	
	MM	100-240Vac, 50-60Hz 0.7-0.4A	100-240Vac, 50-60Hz 0.7-0.4A	
	ML	100-240Vac, 50-60Hz 0.7-0.4A	24-48Vdc, 1.4-0.7A	
MAR1x42-4C4C4C4C9999x	LM	24-48Vdc, 1.4-0.7A	100-240Vac, 50-60Hz 0.7-0.4A	16 communication ports
	MM	100-240Vac, 50-60Hz 0.7-0.4A	100-240Vac, 50-60Hz 0.7-0.4A	

where x stand for letters or numbers according to the Nomenclature,

RATINGS (cond.):

Relay contacts:

The relay connections are to be used within their Entity Parameters (detailed below), as per Control Drawing 000154226DNR (see Ill. 2)

Vmax: 30V
Imax: 90mA
Ci: 50pF
Li: 2uH

Environmental:

Max. surrounding air temperature:
+60°C for models: MAR1x4x-4C4C4C4C9999Sxxx **or MAR1x4x-4C4C4C4C9999Cxxx,**
+70°C for models: MAR1x4x-4C4C4C4C9999Txxx or MAR1x4x-4C4C4C4C9999Exxx,
where x stand for letters or numbers according to the Nomenclature.

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

Products designated USL have been investigated using requirements contained in:

ANSI/ISA 12.12.01-2007, Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations, Approved 12 April 2007.
UL 508, Industrial Control Equipment, Seventeenth Edition, with revisions through and including July 11, 2005.

Products designated CNL have been investigated using equipments contained in:

CSA C22.2 No. 213-M1987, Non-incendive Control Equipment for Use in Class I, Division 2 Hazardous Locations.
CSA C22.2 No. 142-M1987, Process Control Equipment.

NOMENCLATURE:

The significance of the alphanumeric marking system is explained as follows:

MAR10	4	2	-	4C	4C	4C	4C	99	99	E	L	M	...
I	II	III		IV	V	VI	VII	VIII	IX	X	XI	XII	XIII

I: Switch type: Rugged Switch, MACH 1000 family
MAR10 standard construction
MAR11 ports on backside

II: 4 Gigabit Ethernet

III: 0- standard construction
2- PoE Ports

IV: Gigabit Ports 1 to 4
4C 4x Combo port (SFP slot: 100/1000 Mbit/s, alternatively twisted pair RJ45 socket: 10/100/ 1000 Mbit/s)

V: Gigabit Ports 5 to 8
Same as under IV

VI: Gigabit Ports 9 to 12
Same as under IV

VII: Gigabit Ports 13 to 16
Same as under IV

VIII: Gigabit Ports 17 to 20
99 not present

IX: Gigabit Ports 21 to 24
99 not present

X: Maximum surrounding air temperature range
S 60°C
C 60°C, with conformal coating on PWBs
T 70°C
E 70°C, with conformal coating on PWBs

XI: Voltage range Power supply unit 1
L 24VDC to 48VDC
M 100VAC to 240VAC

XII: Voltage range Power supply unit 2 or PoE power supply unit
9 Not present
L 24VDC to 48VDC clampable
M 100VAC to 240VAC

XIII: Software version, customer specific etc. – not relevant
any letter, may be followed by additional suffixes