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Project 08CA46815

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REPORT

on

PROGRAMMABLE CONTROLLERS

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DESCRIPTION

PRODUCT COVERED:

USL, CNL - Listed, open type, programmable controllers, modular switch, cat. no. MACH102-8TP, MACH102-8TP-R. Media modules M1-8, followed by TP-RJ45 or MM-SC or SM-SC or SFP. Listed programmable controllers, open type, compact switch, cat. no. MACH102-, followed by 8TP or 24TP, followed by -F or -FR.

GENERAL:

These devices (MACH102) are managed workgroup switches - intended for use in industrial automation applications. They communicate via interfaces through wire or fiber optics. The modular switches MACH102-8TP and MACH102-8TP-R are intended for use with the M1- media modules. To the switches MACH102-8TP-R, MACH102-8TP-FR, MACH102-24TP-FR the power supply can be connected redundantly.

The following table tabulates the max. assemblies of MACH100:

MACH100 Family	Gigabit ETHERNET	Fast ETHERNET TX	Number of sockets for media Modules	Number of additional ports	Redundant power supply
MACH102-8TP	2	8	2	16	n/a
MACH102-8TP-R	2	8	2	16	Yes
MACH102-8TP-F	2	8	n/a	n/a	n/a
MACH102-8TP-FR	2	8	n/a	n/a	Yes
MACH102-24TP-F	2	24	n/a	n/a	n/a
MACH102-24TP-FR	2	24	n/a	n/a	Yes

The Modular Switches MACH102-8TP and MACH102-8TP-R are intended for use with M1 Media Modules.

Media Modules	Description
M1-8TP-RJ45	8 x Fast ETHERNET TX RJ45
M1-8MM-SC	8 x Fast ETHERNET Multimode, DSC connector
M1-8SM-SC	8 x Fast ETHERNET Singlemode, DSC connector
M1-8SFP	8 x Fast ETHERNET, SFP slot

ELECTRICAL RATINGS:

Device	Input Rating
MACH102-8TP	100...240 Vac;
MACH102-8TP-F	50/60 Hz
MACH102-24TP-F	0.4...0.2 A
MACH102-8TP-R	2x 100...240 Vac;
MACH102-8TP-FR	50/60 Hz
MACH102-24TP-FR	0.4...0.2 A

*

Max. surrounding air temperature: 50°C

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

CNL - Indicates investigation to Canadian National Standard(s)
C22.2 No. 142-M1987.

USL - Indicates investigation to United States Standard UL 508,
(Industrial Control Equipment).

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

CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following descriptive pages and accompanying photographs and illustrations.

Corrosion Protection - All parts of corrosion resistant material are suitably painted or plated as protection against corrosion.

Internal Wiring - Unless otherwise specified, all internal wiring is Recognized Component Appliance Wiring Material (AVLV2/8) 105°C min., suitable for applied voltage and current, except for Limited Voltage/Current Circuits.

Electrical Tubing and Sleeving - Recognized Component tubing (YDPU2/8), and/or sleeving (UZFT2/8), rated 105°C min. and suitable for the applicable voltage.

Printed Wiring Board (ZPMV2/8) - rated min. 94V-2, suitable for direct support in accordance with UL 796, min. 105°C unless specified otherwise. Refer to Recognized Component Directory for solder temperature and dwell time limits. The manufacturer of the complete PWB assembly must pay attention to the maximum unpierced conductor area of a printed wiring board, which is judged by the diameter of the largest circle that can be inscribed within the pattern.

Tolerances - unless specified otherwise, all indicated dimensions are nominal.

Grounding - The pressure wire connector intended for connection for field installed equipment, grounding conductor shall be plainly identified such as being marked "G", "GR", "GRD", "Ground", "Grounding" or equivalent.

Wiring Connections - May also accomplished by listed wire connectors suitable for temperature, wiring gauge and number of conductors.

Segregation - Insulated conductors of different circuits are provided with spacings as specified in this Report unless both circuits are insulated for the highest voltage involved.

CONSTRUCTION DETAILS (Continued):

Regarding to table 32.0 of UL 508 no requirements to spacings for this device (limited voltage and pollution degree 2), except for the power supply modules (QQGQ2/8).

Spacings - The minimum spacings are determined based on pollution degree 2 in accordance with UL 508, 17th edition table 180.1. Spacings are not specified for secondary circuits with respect to table 32 of UL 508, limited voltage circuits. Spacings between any un-insulated live parts of opposite polarity, un-insulated grounded parts or exposed metal parts for the potential mentioned below are:

Voltage	Clearance Attachment Plugs	Creepage Attachment Plugs
250 Vac	1.6 mm	3.2 mm

Spacings for CAN/CSA C22.2 No. 142-M1987 were determined in accordance to table 3 and 4:

Voltage	Spacings for PWB	Clearance Attachment Plugs	Creepage Attachment Plugs
50	0.85	N/A	N/A
250 Vac	1.6 mm	1.6 mm	1.6 mm

Spacings at field wiring terminals meet the requirements of UL 508, table 36.1 and CSA/C22.2 No. 142-M1987, 4.14.6, 6.4 mm.

CONSTRUCTION DETAILS (Continued):

Installation Instructions - Shall be provided and include a wiring diagram.

Warning Markings - See Section General for details.

Marking - Markings may be provided in French or English for Canadian markets. Ink-stamped label permanently secured to the device, including Listee's name or file number, device catalog number, the electrical ratings and max. surrounding air temperature. In addition diagrams and instructions for installation shall be provided. Markings in the instruction manual:

- (i) Use 60/75°C copper wire only" for every model of this section.
- (ii) Tightening torque for field wiring terminals.
- (iii) Use in a pollution degree 2 environment.
- (iv) Use Class 1 wire only" or equivalent.

NOMENCLATURE BREAKDOWN:

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

For MACH100 series, basic devices:

MACH102	-	8TP	-	F
I		II		III

I: Switch type:

MACH102 Ethernet Switch, 2 x Gigabit ETHERNET combo port, MACH 100 Family

II: Number of Fast ETHERNET ports:

8TP 8 x 10/100 Mbit
24TP 24 x 10/100 Mbit

III: Switch type and redundant power supply:

(none) modular switch
F compact switch
FR compact switch, redundant power supply
R modular switch, redundant power supply

For M1 Media Modules:

M1	-	8TP	-	RJ45
I		II		III

I: Media Module type:

M1 Media Module, MACH 100 Family

II: Number/Type of ETHERNET ports:

8MM 8 x 100 Mbit, multimode
8SFP 8 x 100 Mbit, SFP slot
8SM 8 x 100 Mbit, singlemode
8TP 8 x 100 Mbit, twisted pair

III: Connector type:

RJ45 RJ45 socket
SC duplex SC plug