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REPORT

On

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

Prosoft Technology Inc
Bakersfield CA 93309

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DESCRIPTION

PRODUCT COVERED:

*USL, CNL - Industrial gateways for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations.

Models:

PLX81-MNET-61850, PLX82-MNET-61850, PLX81-EIP-61850, PLX82-EIP-61850, **PLX82-EIP-PNC, PLX82-MBTCP-PNC, PLX81-EIP-CCLNK, PLX81-MBTCP-CCLNK, PLX81-EIP-PBM, PLX81-MBTCP-PBM, PLX81-EIP-PBS, PLX81-MBTCP-PBS, PLX82-EIP-ECATM, PLX82-MBTCP-ECATM, PLX82-EIP-ECATS, PLX82-MBTCP-ECATS, PLX81-EIP-CAN, PLX81-MBTCP-CAN.**

GENERAL:

These devices are open-type devices intended for installation in an ultimate enclosure **that requires a tool to open.**

RATINGS:

Input Electrical:

Model	Electrical Rating
*PLX81-MNET-61850, PLX82-MNET-61850, PLX81-EIP-61850, PLX82-EIP-61850	10-32 VDC, 500 mA, Class 2
PLX82-EIP-PNC, PLX82-EIP-PNC, PLX82-MBTCP-PNC, PLX81-EIP-CCLNK, PLX81-MBTCP-CCLNK, PLX81-EIP-PBM, PLX81-MBTCP-PBM, PLX81-EIP-PBS, PLX81-MBTCP-PBS, PLX82-EIP-ECATM, PLX82-MBTCP-ECATM, PLX82-EIP-ECATS, PLX82-MBTCP-ECATS, PLX81-EIP-CAN, PLX81-MBTCP-CAN	10-36 VDC, 610 mA max, Class 2

Surrounding Air Temperature Range:

Model	Surrounding Temperature Range
PLX81-MNET-61850, PLX82-MNET-61850, PLX81-EIP-61850, PLX82-EIP-61850	0°C to +60°C
PLX82-EIP-PNC, PLX82-EIP-PNC, PLX82-MBTCP-PNC, , PLX82-EIP-ECATM, PLX82-MBTCP-ECATM, PLX82-EIP-ECATS, PLX82-MBTCP-ECATS,	0°C to +50°C
PLX81-EIP-CCLNK, PLX81-MBTCP-CCLNK	0°C to +40°C
PLX81-EIP-PBM, PLX81-MBTCP-PBM, PLX81-EIP-PBS, PLX81-MBTCP-PBS, PLX81-EIP-CAN, PLX81-MBTCP-CAN	-20°C to +50°C

*

Temperature Code - T5

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

Products designated USL have been investigated using requirements contained in:

***ANSI/ISA 12.12.01-2015, Issued 2015-08-21** Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Division 1 and 2 Hazardous (Classified) Location.

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. 213-15, Issued 2015-08-21,** Non-incendive Control Equipment for Use in Class I, Division 2 Hazardous Locations.

CSA C22.2 No. 142-M1987, Process Control Equipment.

CONSTRUCTION DETAILS:

General - Devices shall be constructed in accordance with the following description.

Tolerances - Unless specified otherwise, all dimensions are nominal.

Connectors - All used connectors are described in the Description area of the Report. Connectors not described are not to be used in the construction of the Models evaluated.

Make/Break Components - All make and break components are either in non-incendive circuits or are considered as non-arcing components as described.

Corrosion Protection - All metallic parts of the device are suitably plated, painted or otherwise protected against corrosion.

Spacings - Spacings are not required between uninsulated live parts to ground since device is powered by a class 2 source, per Table 32.0.

Printed Wiring Boards -R/C (ZPMV2), rated V-2 minimum and suitable for direct support with a temperature rating of 105°C minimum.

Fuses - There are no fuses.

Model Difference - Model series PLX81 contains a single CPU board. Model Series PLX82 utilizes the same CPU board as PLX81, but also contains an additional Ethernet Board. Suffix designations -MNET and -EIP for both PLX81 and PLX82 is defined by software versions only.

Summary of Figures and Illustrations - The following Figures and Illustrations are included in this Report.

Fig. No.	Ill. No.	Drawing. No.	Rev.	Date	Description
1	-	-	-	-	PLX82-MNET-61850 External View - Top
2	-	-	-	-	PLX82-MNET-61850 External View - Bottom
3	-	-	-	-	PLX82-MNET-61850 Internal View - General
4	-	-	-	-	PLX81/PLX82 - CPU Board - Top
5	-	-	-	-	PLX81/PLX82 - CPU Board - Bottom
6	-	-	-	-	PLX82 - Ethernet Board - Top
7	-	-	-	-	PLX82 - Ethernet Board - Bottom
8-11					PLX82-EIP-PNC
-	1	-	-	-	CPU Board Schematic (PLX81 and PLX82)
-	2	-	-	-	Ethernet Board Schematic (PLX82)
	3				PLX82-EIP-PNC Schematic Main Board
	4				PLX82-EIP-PNC Schematic Daughter Card

MARKINGS:

The following markings shall appear on the device.

1. Listee's name.
2. Electrical ratings including the wording "Class 2" next to voltage marking.
3. Model number.
4. Optional - Operating temperature code "T5"
5. Ambient temperature as described under Environmental Ratings.
6. Hazardous location designation Class I, Division 2, Groups A, B, C, D.
7. Date code or serial number referencing date of manufacture.

INSTALLATION AND OPERATING INSTRUCTIONS:

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

THIS EQUIPMENT IS AN OPEN-TYPE DEVICE AND IS MEANT TO BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE ENVIRONMENT SUCH THAT THE EQUIPMENT IS ONLY ACCESSIBLE WITH THE USE OF A TOOL.

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

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MODEL Series PLX81 and PLX82T EXTERNAL AND INTERNAL VIEW
FIGS. 1 THROUGH 7

General - Figs. 1 and 2 show the overall external view, and Figs. 2 through 7 show the internal view of Model Series PLX81 and PLX82 as noted for each specific model series below.

The difference between model series PLX81 and PLX82 is: PLX81 contains a single CPU board, and PLX82 contains the same CPU board as PLX81, and an additional Ethernet board.

*Model **PLX81-MNET-61850** and **PLX82-MNET-61850** is representative of model **PLX81-EIP-61850** and **PLX82-EIP-61850**, respectively.

Construction of above named models is the same. The model suffix designations are defined by the software loaded on each module.

1. Case - Aluminum, approximately 136.5 by 106.4 by 50.8 mm, 1.3 mm minimum thickness.
2. Power Connector (J2) - 3 Pin connector. Mechanically secured with two screws.
3. LAN Connector (J6) - RJ45 type connector. Secured with a 90° latching.
4. LAN Connector (J2) - PLX82 only - Located on Ethernet board. RJ45 type connector. Secured with a 90° latching.
5. Jumpers (JP1, JP2) - PLX82 only - Located on Ethernet board. Secured with friction. Mass is less than 1.5g.
6. SD Card Reader - Located on the bottom of the CPU board. Uses mechanical securement when SD card is installed. Location of the reader (on the bottom of the unit) prevents card from disconnecting.

MODEL PLX82-EIP-PNC
FIGS. 8-11

General - Fig 8 to 11 show the internal and external view of the PLX82-EIP-PNC device. Model PLX82-EIP-PNC is considered a representative of models PLX82-MBTCP-PNC, PLX81-EIP-CCLNK, PLX81-MBTCP-CCLNK, PLX81-EIP-PBM, PLX81-MBTCP-PBM, PLX81-EIP-PBS, PLX81-MBTCP-PBS, PLX82-EIP-ECATM, PLX82-MBTCP-ECATM, PLX82-EIP-ECATS, PLX82-MBTCP-ECATS, PLX81-EIP-CAN and PLX81-MBTCP-CAN. The only difference between the models is firmware and interface on the Hilscher module.

The main card board number for all the models is 046-0145, with an alternate card number of 045-0147. The 045-0147 alternate card has additional resistors, capacitors, diodes and IC's that are unpopulated on the board. The daughter card number is 045-0142.

Product	PCBAs				
	Main Card	Alt Main Card	Daughter Card	Hilscher Module	Alt Hilscher Module
PLX82-EIP-PNC	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX82-MBTCP-PNC	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX81-EIP-CCLNK	045-0145	045-0147	045-0142	COMX 10CA-CCS	-
PLX81-MBTCP-CCLNK	045-0145	045-0147	045-0142	COMX 10CA-CCS	-
PLX81-EIP-PBM	045-0145	045-0147	045-0142	COMX 100CA-DP	-
PLX81-MBTCP-PBM	045-0145	045-0147	045-0142	COMX 100CA-DP	-
PLX81-EIP-PBS	045-0145	045-0147	045-0142	COMX 100CA-DP	-
PLX81-MBTCP-PBS	045-0145	045-0147	045-0142	COMX 100CA-DP	-
PLX82-EIP-ECATM	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX82-MBTCP-ECATM	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX82-EIP-ECATS	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX82-MBTCP-ECATS	045-0145	045-0147	045-0142	COMX 100CA-RE	-
PLX81-EIP-CAN	045-0145	045-0147	045-0142	COMX 100CA-CO	COMX 10CA-COS
PLX81-MBTCP-CAN	045-0145	045-0147	045-0142	COMX 100CA-CO	COMX 10CA-COS

1. Case - Aluminum, approximately 136.5 by 106.4 by 50.8 mm, 1.3 mm minimum thickness.

Main Card

1. Power Connector (P1) - R/C (XCFR2/8), One provided. Three (3) Pin terminal block, manufactured by, WEIDMUELLER INTERFACE GMBH & CO KG (E60693), type BL 3.5/3/270F. (Suitable for Field wiring, 28-14 AWG). Plug is secured to header with screws.
2. Ethernet Connectors - Up to Three (3) may be provided. Mechanically secured by latching mechanism.

3. Pushbutton switch (BP1) - Considered non arcing component. Not accessible during normal operation.
4. SD Card Reader (P10) - Card is mechanically secured to holder by latching construction.
5. USB Connector (P5) - Optional. One provided. Mechanically secured via dimpled construction.
6. Board Connector (P3) - Connector is soldered directly into the board and connects to J2 on daughter card. Connection is mechanically secured with 3 screws.

Daughter Card

1. Connector (J2) - Connector is soldered directly into the board and connects to P3 on daughter card. Connection is mechanically secured with 3 screws.
2. USB Debug Connector (J3) - Not used during normal operation.
3. Connector (J1) - Header is soldered to PCB and connects to X1 on Hilscher module. Connection is mechanically secured with two screws.

Hilscher Module (COMX 100CA-RE) - Fig 11

COMX 100CA-RE represents COMX 10CA-CCS, COMX 100CA-DP, COMX 100CA-CO and COMX 10CA-COS. Models differ in the type of interface provided.

1. Connector (X1) - Soldered to PCB and connects to J1 on Daughter Card. Connection is mechanically secured with two screws.
2. RJ45 Connectors (X1) - Up to two provided. Plug is mechanically secured to the header with a lever.
3. Heatsink - Aluminum, Measures 22mm x 22mm. See Fig 11 for heat sink location