

# **PB-0151**

REFERENCE MANUAL

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## **1 Revision History**

2015-04-26 First revision.

2 Introduction

PB-0151 is a flexible input/output device with communication capabilities. Designed to work both in commercial and industrial environments. PB-0151 is a flexible solution to capture field status parameters and measurements. PB-0151 communication capabilities are enough in almost all scenario.

PB-0151 can be used to store in it's SD memory: configuration, measurements, status, events and alarms. Some files can be download using a standard navigator through Ethernet.

Once PB-0151 is installed, it should be exposed to electromagnetic disruptions or discharges. During design process we pay attention on isolation putting air gaps and opto/photo devices. To facilitate reparations, two models of optoisolators and relays were used.

Table of Contents

1 Revision History.....3

2 Introduction.....4

3 Features.....6

4 PB-0151 Hardware Description.....7

    4.1 CC/AC Power Supply.....7

    4.2 RTC.....7

    4.3 Ethernet.....7

    4.4 CAN.....7

    4.5 RS-485.....7

    4.6 Micro SD Memory Holder.....7

    4.7 Mini USB AB.....7

    4.8 Isolated Logical Inputs.....8

    4.9 Isolated Outputs.....8

    4.10 Relay Output.....8

    4.11 4-20mA Loop.....8

    4.12 Keyboard.....8

    4.13 LCD Display.....8

5 Layout.....9

6 Absolute Maximum Rating.....10

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## **3 Features**

CC/CA wide range power supply.

RTC.

SWD port.

Ethernet 10/100

RS-485 with V+

CAN with V+

SD memory holder.

Mini USB AB

8 Isolated logical inputs

4 Isolated open collector logical outputs

4 Relay outputs

2 4-20mA loop with source.

Keyboard

LCD Display

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## **4 PB-0151 Hardware Description**

### **4.1 CC/AC Power Supply**

PB-0151 has a diode bridge to protect against polarity inversion and accepts AC input.

VIN 24VCC or 15VAC

### **4.2 RTC**

PB-0151's battery maintains RTC working properly during power failures. The RTC time can be set manually or by Simple Network Time Protocol (SNTP).

### **4.3 Ethernet**

PB-0151's ethernet port has automatic time set, data display, configuration, file transfer and firmware upgrade functions.

Available protocols:

- Http: Firefox, Chrome, IExplorer. PB-0151's pages contains status, control and graphic information.
- FTP: file transfer protocol. Administrator gain access to password protected SD files.
- SNTP client. Time is set with a time server.

CN2 RJ-45

### **4.4 CAN**

Future.

### **4.5 RS-485**

PB-0151 can communicate with accesories and others PB-0151s through RS-485.

CN5 V+ A

CN6 B GND

### **4.6 Micro SD Memory Holder**

Provides full MS-DOS compatible file system. Brings support for desktop PC features such as long file names, multiple disk volumes, and directory handling to embedded systems.

CN2

### **4.7 Mini USB AB**

USB 1.1 and 2.0 compliant is a serial communication device for data transfer.

CN25

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## 4.8 Isolated Logical Inputs

Interrupt driven inputs. Inputs are independent each other and are isolated from field's voltages.

CN19 - 24

## 4.9 Isolated Outputs

Outputs are independent each other and are isolated from field's voltages. PCB accepts both LTV817S and 4N25 isolators.

CN15 - 18

## 4.10 Relay Output

Single pole dual throw relay (1 Form C). PCB accepts both telecom (1462042-7) and sugar cube form factor (HRS4) relays. Insulation:

Initial dielectric strength:

between open contacts	1800V <sub>rms</sub>
between contact and coil	2500V <sub>rms</sub>

CN11 – CN14

## 4.11 4-20mA Loop

PB-0151's 4-20mA inputs have high voltage precision difference amplifier so readings accuracy is guaranteed. Those inputs are qualified for automotive applications and offers enhanced input over voltage and ESD protection, and includes EMI filtering. The input common mode voltages range extends from -2V to +45V operating and -24V to +80V survival.

PB-0151 can be configured with external batteries and resistors to match the operating point of each circuit.

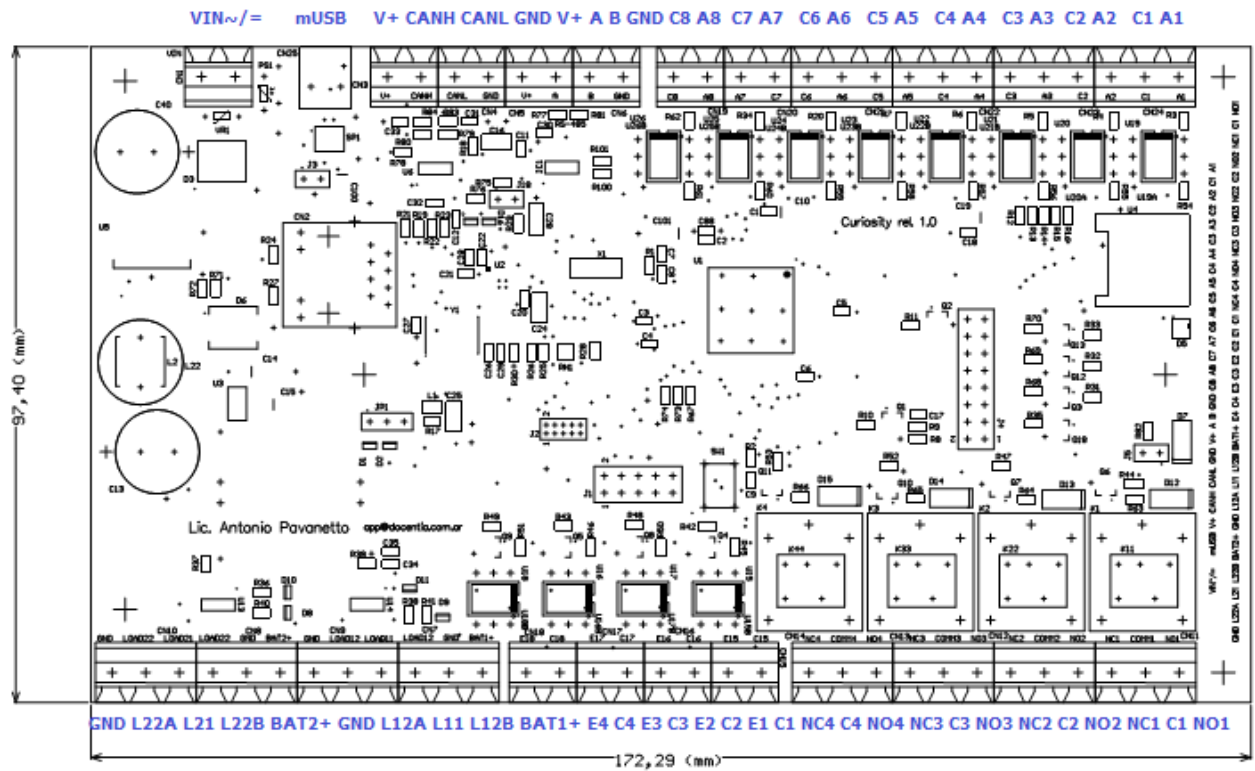
External battery is optional.

External resistance  $R$ , where:  $0\Omega \leq R \leq 240\Omega$

## 4.12 Keyboard

## 4.13 LCD Display

## 5 Layout



Label	Description	Label	Description
VIN~/=	Power source 24VCC	GND L22A L21 L22B BAT2+	4-20mA
mUSB	Micro USB AB	GND L12A L11 L12B BAT1+	4-20mA
V+ CANH CANL GND	CAN	E4 C4	Emitter-Collector
V+ A B GND	RS-485	E3 C3	Emitter-Collector
C8 A8	Cathode-Anode	E2 C2	Emitter-Collector
C7 A7	Cathode-Anode	E1 C1	Emitter-Collector
C6 A6	Cathode-Anode	NC4 C4 NO4	Relay SPDT(1 Form C)
C5 A5	Cathode-Anode	NC3 C3 NO3	Relay SPDT(1 Form C)
C4 A4	Cathode-Anode	NC2 C2 NO2	Relay SPDT(1 Form C)
C3 A3	Cathode-Anode	NC1 C1 NO1	Relay SPDT(1 Form C)
C2 A2	Cathode-Anode		
C1 A1	Cathode-Anode		



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## 6 Absolute Maximum Rating

These are stress ratings only and functional operation of the device at these ratings or any other above those indicated in the operation sections of the specifications below is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

VIN.....40VCC/28VAC

### Input Voltages

Optoisolators.....-6V to 40V

4-20mA .....-24V to 80V

RS-485 Logic..... -0.3V to 5.5V

RS-485 Drivers..... -0.3V to 5.5V

RS-485 Receivers.....  $\pm 15V$

### Output Voltages

Optoisolators.....-6V to 35V@50mA

Relays.....250V@2A

RS-485 Logic..... -0.3V to 5.5V

RS-485 Drivers.....  $\pm 15V$

RS-485 Receivers.....-0.3V to 5.5V

Storage Temperature.....-65 °C to +150 °C