PICOBOX

Modbus DAQ

Modbus Data Acquisition Modules

High performance data acquisition modules for any HMI / SCADA solution

Overview

The PICOBOX Modbus Data Acquisition (DAQ) is digital and analog I/O modules which are connected together on a RS485 network and is applicable for any HMI / SCADA solution. Communicating via the Modbus RTU protocol, PICOBOX DAQ is equipped with a 32-bit ARM CPU to provide high speed data processing and fast communication turn around times. Comes in 14 different module types to cater different I/O requirements, PICOBOX DAQ is a simple and cost-effective solution for any distributed I/O requirements in SCADA environment.

How Modbus DAQ Works

Features

- Portable device, DIN-rail mounting for easy installation
- Modbus connectivity
- Simple setup and easy handling on RS485 network
- Isolated modules available for special applications
- Low-cost IO modules for future expansion
- Works with MCONEX and other Modbus Master devices
- Easy module configuration and troubleshooting
- Data storage and close to real-time analysis on PC
- IO modules compatible with third party software via Modbus RTU Protocol
- Interface with field devices to provide real-time data for SCADA / PLC / HMI
- LEDs on every modules for digital IO status, communication and power supply
- Different types of IO Modules AI, AO, DI, DO, RTD, Thermocouples are available
- Direct reading of temperature without scaling by using RTD and Themocouple Modules

Applications

- **Data Centre**
  (UPS, Air-con, Router, Server, Fire alarm panel, Generator, Water leakage detector, Security, Lighting, Power quality/distribution, Etc
- **Manufacturing Process**
  (Process error, PLC, Sensor, Machine status, Vision, Alarm signals, Vacuum, Electric transformer, Pressure valve, Gas tank, Over voltage, Etc
- **Telecommunication**
  (Power, Water leakage detector, Air-con, UPS, Etc)
- **Fire and Security**
  (Door Sensor, Temperature, Smoke detector, Alarm panel, Annunciator)
- **Facility Maintenance**
  (Lift, Elevator, Pump, ATS, Gen Set, Chiler, HVAC, HT/LT, Oil temperature, Oil pressure, Water level, Etc)
- **Energy & Power Management**
  (Voltage Sag, Over voltage, Under voltage, Power outrage, DC system)
- **Environmental**
  (Temperature, Humidity, Co2, Wind speed, Water, Etc)
- **HVAC**
  (Run, Trip, Fault, Etc)
- **M & E Facility Management**
  (Tracking, Maintenance, Etc)
- **Other mission critical applications**

PICOBOX Modbus DAQ Modules

Digital Modules

Specifications

	PB-16DI	PB-16DO	PB-4RO	PB-8DIO
Digital Inputs	**16**	NA	NA	**8**
No. of Counters	16	NA	NA	8
Counter Resolution	32 Bit	NA	NA	32 Bit
Counter Frequency	1 KHz	NA	NA	1 KHz
Counter Mode	Up / Down	NA	NA	Up / Down
Pulse Width	Min 500 Micro Sec	NA	NA	Min. 500 Micro Sec
Input Impedance	2200 ohms	NA	NA	2200 ohms
Isolation (Field & Logic)	1500 V RMS	NA	NA	1500 V RMS
Status Indication	LED for each channel	NA	NA	LED for each channel
Digital Outputs	0	**16**	**4**	**8**
Type of Digital Output	NA	Open Collector	Relay, Form C	Open Collector
Maximum Load Current	NA	100 mA/channel	0.5A / 1A each channel	100 mA/channel
Maximum Load Voltage	NA	36V DC	220V AC/28V DC	36V DC
Isolation (Field & Logic)	NA	1500 V RMS	1000 V RMS	1500 V RMS
Status Indication	NA	LED for each channel	LED for each channel	LED for each channel
Power Supply	12-24V DC	12 - 24V DC	24V DC	12 - 24V DC

Combination Module

Specifications

Analog Inputs	**2**	0-20 mA/0-10V DC, Resolution: 12 bit, I/P Impedance: 250 ohms for current I/P, 190 K Ohms for Voltage I/P
Analog Outputs	**1**	0(4)-20 mA/0(2)-10V DC, Resolution: 12 bit, Drift: 100 PPM/DegC, Accuracy: 0.05% of span, Load: 1000 ohms@24V for current, 2000 Ohms for voltage output
Digital Inputs	**4**	Counter 32 bit, Frequency: 50Hz, Pulse width: 20ms, Voltage: 10-26V DC
Digital Outputs	**2**	Open collector, 36V DC (Max), 100mA/Output
RTD Inputs	**2**	Connection: 2/3 wire, Types: PT100/Ni120/PT1000, Resolution: 0.1 DegC, Isolation: 1500 V RMS
Power Supply		12-24V DC

PB-DAIO

Analog Modules RTD and Thermocouple Inputs

PB-6RTD

PB-8TC

PB-8TCS

Specifications

Inputs	6, RTD Inputs	8, Thermocouple Inputs	8, Isolated Thermocouple Inputs
Type	PT100, Ni 120, PT1000, Ni1000-DIN, NI1000 Landys & Gyr 10-400 Ohms, 100-4000 Ohms	J,K,E,T,N,B,S,R,mV,C,D and G	J,K,E,T,N,B,S,R,mV, C, D and G
Connection	2/3 wire	2 wire	2 wire
Resolution	0.1 DegC	0.1 DegC	0.1 DegC
Sample Rate	31 samples/min	42 samples/min	37 samples/min
Drift	100 PPM/DegC	100 PPM/DegC	100 PPM/DegC
Isolation (Field & Logic)	1500 V RMS	1500 V RMS	1500 V RMS 350 V (P.P) between channels
Power Supply	12V to 24V DC	12V to 24V DC	12V to 24 V DC

Current & Voltage Inputs

PB-8AII

PB-8AIV

PB-8AIIS

PB-8AIVS

Specifications

Analog Inputs	8	8	8	8
Type	Single-Ended	Single-Ended	Differential	Differential
Voltage	NA	0-10V DC / 0-5V DC	NA	0(2) - 10V / 0(1)- 5V DC
Current	0-20 mA	NA	0-20 mA	NA
Offset by Switch	4 mA	2V DC(0-10)/1V DC(0-5)	4 mA	2V DC (0-10)/ 1V DC (0-5)
Resolution	12 bit (0-4095)	12 bit (0-4095)	12 bit (0-4095)	12 bit (0-4095)
Sample Rate	12.5 Samples/sec	12.5 samples/sec	12.5 samples/sec	12.5 samples/sec
I/P Impedance	250 Ohms	20 K Ohms	250 Ohms	110 K Ohms
Isolation (Ch-Ch)	NA	NA	350 V (P.P)	350 V (P.P)
Drift	50 ppm/ DegC	50 ppm / DegC	100 ppm/DegC	100 ppm/DegC
Accuracy	0.2% of span	0.2% of span	0.2% of span	0.2% of span
Isolation (Field & Logic)	1500 V RMS	1500 V RMS	1000 V RMS	1500 V RMS
Power Supply	12V - 24V DC	12V - 24V DC	12V - 24V DC	12V - 24V DC

Analog Outputs

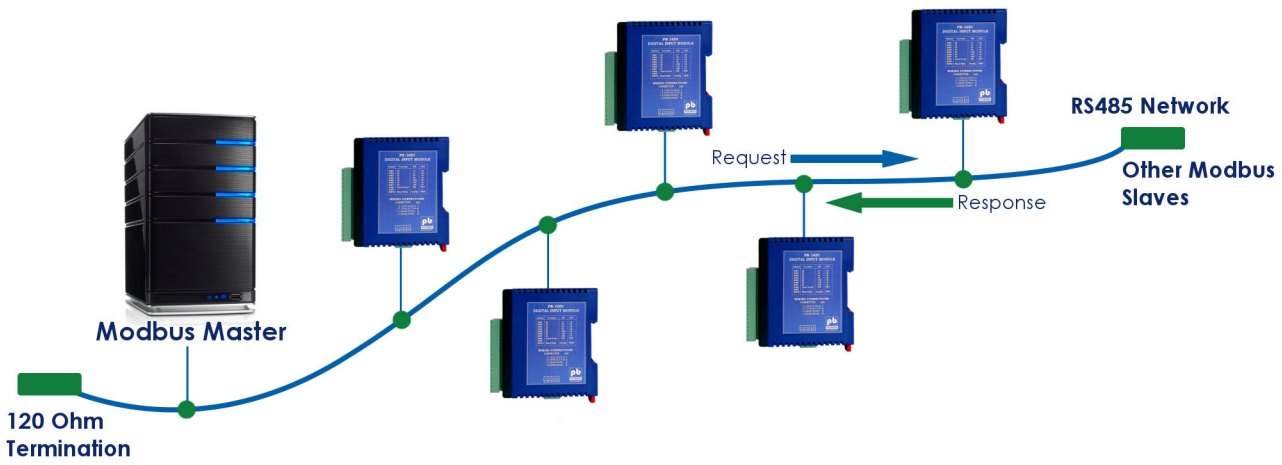
Specifications

	PB-8AOI	PB-8AOV
Analog Outputs	8	8
Voltage	NA	0-10V DC
Current	0-20 mA	NA
Offset	4 mA	2V DC
Resolution	12 bits (0-4095)	12 bits (0-4095)
Drift	100 ppm/DegC	100 ppm/DegC
Accuracy	0.05% of span	0.05% of span
Load	1000 Ohms @ 24V DC	2000 Ohms
Isolation (Field & Logic)	1500 V RMS	1500 V RMS
Power Supply	12V - 24V DC	12 - 24V DC

PB-8AOI

PB-8AOV

Typical DAQ Setup



Environmental & Physical

Operating Temperature	-10°C to + 50°C
Storage Temperature	-40°C to + 85°C
Dimension (W x H x D)	23 x 109 x 98mm
Weight	105 grams
Mounting	DIN Rail
Power Supply	12 - 24V DC
Isolation (Field &Logic)	1500 V RMS

Communication

Interface	2 Wire, RS485
Modbus Address Setting	By Dip Switch
Modbus Max Address	127 only
Baud Rate	2400, 4800, 9600,19200
	38400, 57600, 115200
Parity	None, Even, Odd
Stop Bits	1,2
Data Bits	8

Model & Description

PB-16DI	16 Digital Input Module Including Counters
PB-16DO	16 Digital Output Module
PB-4RO	4 Relay Output Module
PB-8DIO	8 Digital Input & 8 Digital Output Module
PB-8TC	8 Thermocouple Input Module Incl. 0-50mV & ±100mV I/P
PB-8TCS	8 TC Input Module Incl. 0-50mV & ±100mV I/P Fully Isolated
PB-6RTD	6 RTD Input Module - PT100, Ni120, PT1000, Ni1000, Ni1000LG & Ohms
PB-8AII	8 Analog Input 0-20mA / 4-20mA
PB-8AIV	8 Analog Input 0-5V / 1-5V / 0-10V / 2-10V
PB-8AIIS	8 Analog Input 0-20mA / 4-20mA / ± 20mA Fully Isolated
PB-8AIVS	8 Analog Input 0-1V / 0-10V / ± 1V / ± 10V Fully Isolated
PB-8AOI	8 Analog Output Module 4-20mA
PB-8AOV	8 Analog Output Module 2-10V
PB-DAIO	2 RTD I/P, 2 Analog Input 4-20mA / 2-10V, 1 Analog Output 4-20mA / 2-10V,
	4 Digital Input, 2 Digital Output