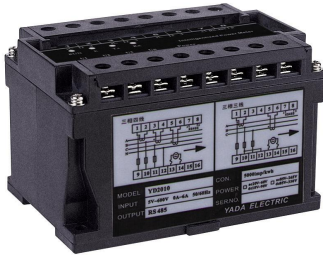


PI2010A Intelligent Power Transducer with a 4-20mA & RS485 output

Electrical Measuring Transducer 4-20mA Output

The PI2010A is not only a competitively priced, single (4-20mA) output, Transducer, but is 21 programmable transducers in one housing, In addition it has an RS485 output capable of monitoring 33 electrical variables on a computer screen via an RS485 Output. It may also be used as a precision dc current source up to 20mA dc.

- Programmable 4-20mA for Voltage, Current, Frequency, Active and Reactive Power, Volt-Amps and Power Factor.
- Programmable output of 0 to 20mA in 20000 steps.
- Power Supply 85-265Vac or 85-330Vdc
- Programmable for any VT or CT



Introduction

PI2010A is an economic, multi-functional intelligent transducer using the PIC18 series SCM chip as the controlling core. It measures all the electrical parameters in a 3Ph 4W system as well as any other network. Therefore, PI2010A can be widely used for electrical control and automated systems in industrial applications such as Power generation and transmission systems, energy management, railway, construction and telecoms, etc.

Features: Measured Parameters

- Frequency
- Phase currents, the average of phase currents (RMS)
- Phase voltages, the average phase voltages (RMS)
- Line voltages, the average line voltages (RMS)
- Each phase Active Power and system total power
- Each phase Reactive power and total reactive power
- Each phase apparent power and total apparent power
- Each phase power factor, average system power factor
- 1 channel of 4-20mA dc analogue output

Computation (4 Quadrant)

- Four-quadrant power measurement, brownout not lost.
- Import Active Energy Export Active Energy
- Import Reactive Energy Export Reactive Energy

Data Acquisition

RS485 digital communications interface using all data collected to support MODBUS Statute PC demo program provides a user-friendly PC preparation procedures.

Monitoring

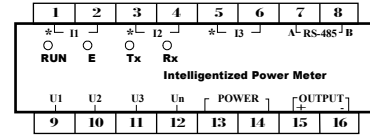
There are four LED indicators which monitor the Transducers status: Auxiliary Supply on / Measured Supply on / communications sent / Communications Received.

6 Programmable Systems

- Single Phase 2 & 3 Wire Loads/ 3 Phase 3 & 4 Wire
- Balanced Loads 3 Phase 3 & 4 Wire Unbalanced Loads

Installation

Terminals



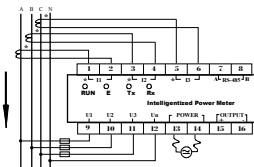
1,2	A phase current	10	B phase voltage
3,4	B phase current	11	C phase voltage
5,6	C phase current	12	Neutral-voltage line
7,8	RS485	13,14	Auxiliary Voltage
9	A phase voltage	15,16	Analogue output

Cable Specifications

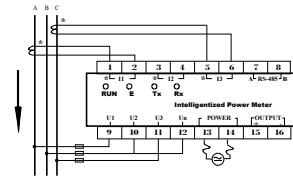
Current circuits should use cable greater than 2.5 mm² and have multiple copper conductors. Voltage circuits should use cable greater than 1.5 mm² and have multiple copper conductors. RS485 must use a shielded twisted pair.

Connection Diagrams

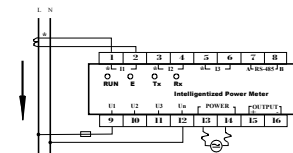
3Ph 4W (3P4W) Unbalanced load Connection



3Ph 3W (3P3W) Unbalanced Load Connection

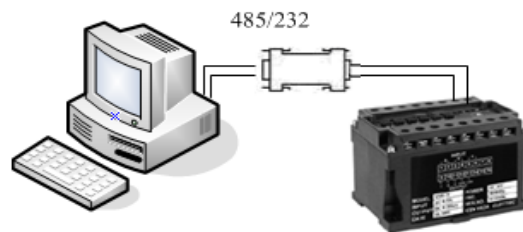


1P2W Single Phase Connection

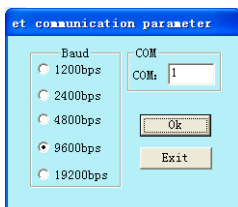


Communications

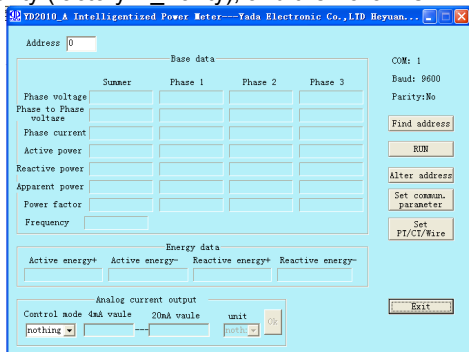
To establish a communication link it is necessary that an RS232C/RS485 adapter unit be used. Pentagon Instruments has a suitable adaptor for serial or USB applications. Please apply.



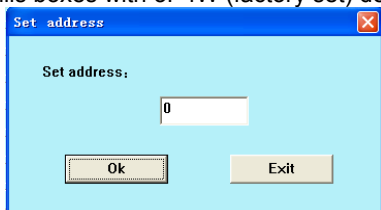
- ❖ PI2010A Demonstration Software... double click Icon



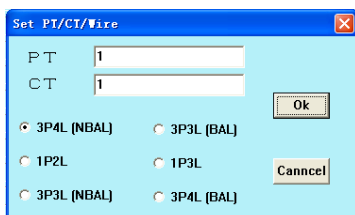
- ❖ Select Com: channel, Baud rate (Factory 9600bps) Parity (factory N_Parity), and then click "OK."



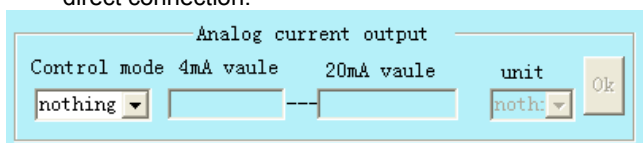
- ❖ Select: address (Factory setting 1) or Find address. (For previously used unit 1 to 247), then press RUN: Data fills boxes with 3P4W (factory set) details.



- ❖ To alter address select Alter address enter details then Ok



- ❖ Click relevant box to select the system being used e.g. 1P2L for single Phase etc. Enter transformation ratio for the current and voltage transformers being used (CT or VT primary/CT or VT secondary). 1 is for direct connection.



To programme the output, click on the arrow in the control mode box, scroll down to desired parameter (e.g. P for system Power). Enter desired 4mA and 20mA values, then press Ok.

❖ **Specifications of PI2010A**

External dimensions: 110mm×75mm×72mm
Weight: 350g

Measurement Ranges

Data update: 1s
Voltage measurement: 20~400V(phase voltage)
30~600V(line voltage)

Overload capacity: 800V

Current measurement: 0~6A

Overload capacity: 10A

Surge Overload: 100A/1s

Power measurement

Single phase: 0~3000W/var/VA

Total: 0~9000W/var/VA

Frequency: 40~60Hz

Power factor: -1 to +1

Accuracy

Current: 0.5%(0.5~6A)

Voltage Phase 0.5%(20~400V),

Line 1.0%

Power: 1.0%

Power Factor: 1.0%

Frequency: 0.1%(45~65Hz)

Energy: 1.0%(0.5L/0.5C)

Output: 0.5%

Analog O/P load: ≤400Ω

Power supply

Voltage range 1 ac20~60V or dc18~90V

Voltage range 2 ac85~265V or dc85~330V

Power Consumption: 5VA

Working conditions

Working temperature: -10 to +50 Deg. C

Storage temperature: -25 to +75 Deg. C

Relative Humidity: 20 to 95% (non-condensation)

Dielectric strength

Input/Other: 2.0kV/min 2mA

Power/Other: 2.0kV/min 2mA

RS485/Other: 2.0kV/ min 2mA

Electromagnetic Compatibility

Surge:

Power supply: 4kV

I/O line: 2kV

Transient pulse:

Power supply: 4kV 2.5kHz

I/O line: 2kV, 5kHz

Static discharge:

contact: 6kV

air 8kV

RF electronic magnetic field:

10V/m medium intensity electromagnetic radiation

Communication

Serial port: RS-485

Address Range: 1-247

(Factory default: 1)

Baud: 1200/2400/4800/9600/19200

(Factory default: 9600)

Data bit: 8bits

Stop bit: 2bits

Parity bit: odd/even/no

(Factory default: no)

Protocol: ModBus RTU