

Measure Box Quick Reference Guide



Scope

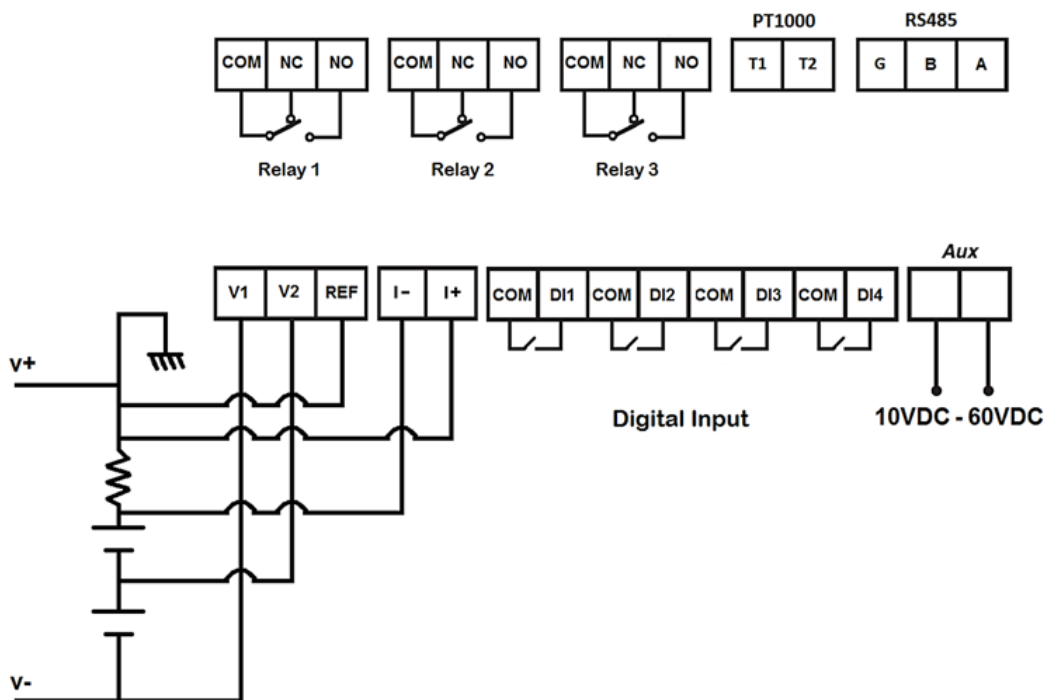
This procedure covers the specification, wiring connections and parameters of the Measure Box.

Specification snapshot

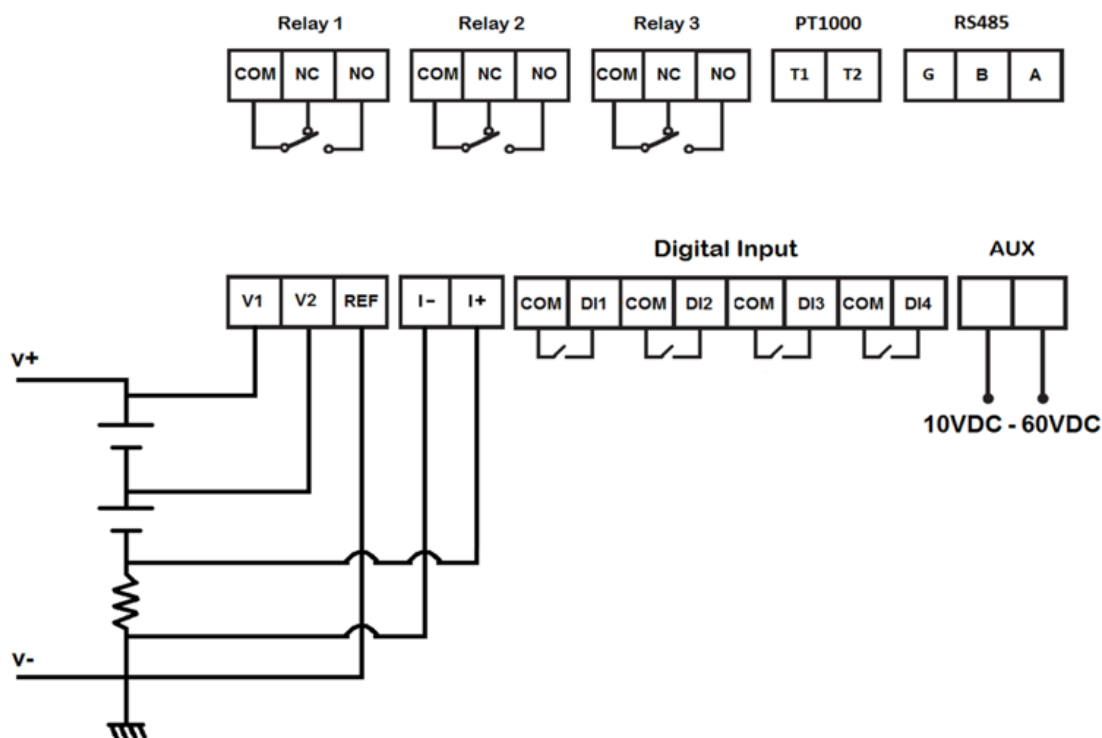
- 2 DC Voltage measurement inputs
- 1 DC Current measurement input (shunts)
- Isolated 1 Temperature measurement input - PT1000
- 3 Relays outputs
- 4 Digital inputs - Customer will use potential free contact
- Communication Port with monitoring - RS485 communication port, Modbus Protocol
- Power Supply - 10Vdc to 60Vdc Power supply
- Status Display - In display and communication



Wiring diagram (Measured on Positive Pole)



Wiring diagram (Measured on Negative Pole)



Communication Parameters and Register Map

All the parameters declared in the communication map are either float or long inverse and follows the standard Modbus RTU protocol. The data can be retrieved individually or together as a block with the function ID 3 - Read holding registers.

For all the read write holding registers, Read (function ID - 0x03), Write multiple (function ID - 0x10, 16) is float and for Write (function ID 6), it will be 2 digits as explained in example of communication. If the device is written outside the range specified it will not return any response.

S.No	Parameter Name	Modbus Address	Data type	Range	Read / Write
1	Voltage 1	40101	Float (BADC format)		Read
2	Voltage 2	40103	Float (BADC format)		Read
3	Current	40105	Float (BADC format)		Read
4	Temperature in °C	40107	Float (BADC format)		Read
5	Voltage range	40109	Float (BADC format)	48V-1000V	Read
6	Shunt Current	40111	Float (BADC format)	0.1A-99kA	Read
7	Shunt Voltage	40113	Float (BADC format)	50-100	Read
8	Baud rate	40115	Float (BADC format)	0-3 ^{Note1}	Read
9	Parity	40117	Float (BADC format)	0-2 ^{Note2}	Read
10	Device Id	40119	Float (BADC format)	1-247	Read
11	Password (this is meant only for the display. this may not be used)	40121	Float (BADC format)	1000-9999	Read
12	Digital input 1 state	40123	Float (BADC format)	1- Close, 0-Open	Read
13	Digital input 2 state	40125	Float (BADC format)	1- Close, 0-Open	Read
14	Digital input 3 state	40127	Float (BADC format)	1- Close, 0-Open	Read
15	Digital input 4 state	40129	Float (BADC format)	1- Close, 0-Open	Read
16	Relay 1 state	40131	Float (BADC format)	1- Close, 0-Open	Read
17	Relay 2 state	40133	Float (BADC format)	1- Close, 0-Open	Read
18	Relay 3 state	40135	Float (BADC format)	1- Close, 0-Open	Read
19	Relay 1 state	40137	Float (BADC format)	1- Close, 0-Open	Read/Write Read - 0x03 Write -0x06/0x10

20	Relay 2 state	40139	Float (BADC format)	1- Close, 0-Open	Read/Write Read - 0x03 Write -0x06/0x10
21	Relay 3 state	40141	Float (BADC format)	1- Close, 0-Open	Read/Write Read - 0x03 Write -0x06/0x10
22	Shunt Current	40143	Float (BADC format)	0.1A-99kA	Read/Write Read - 0x03 Write -0x06/0x10
23	Shunt Voltage	40145	Float (BADC format)	50-100	Read/Write Read - 0x03 Write -0x06/0x10
24	Baud rate	40147	Float (BADC format)	0-3 ^{Note1}	Read/Write Read - 0x03 Write -0x06/0x10
25	Parity	40149	Float (BADC format)	0-2 ^{Note2}	Read/Write Read - 0x03 Write -0x06/0x10
26	Device Id	40151	Float (BADC format)	1-247	Read/Write Read - 0x03 Write -0x06/0x10
27	Password (this is meant only for the display, this may not be used)	40153	Float (BADC format)	1000-9999	Read/Write Read - 0x03 Write -0x06/0x10

NOTE 1: Baud rate (0-4800, 1-9600, 2-19200, and 3-38400) Default: 19200

NOTE 2: Parity (0-None, 1-Odd, and 2-Even) Default: None

Example of communication

For Writing shunt current to 100A and shunt Voltage to 75mV the following approach can be used

Writing individual registers

Address 40143, function ID 0x10 ---- 01 10 00 8E 00 02 04 00 00 42 C8 4B 75

Address 40145, Function ID 0x10 ---- 01 10 00 90 00 02 04 00 00 42 96 4A 0D

Writing together

Address 40143 and 40145, function ID 0x10 -- 01 10 00 8E 00 04 08 00 00 42 C8 00 00 42 96 03 EF

Writing through function ID 6

Address 40143, function ID 0x06 ---- 01 06 00 8E 00 64 E8 0A

Address 40144, function ID 0x06 ---- 01 06 00 90 00 4B C9 D0

Technical Specification

Parameter	Range
Accuracy	Class 0.2 Full scale
No. of channels	2Voltage Channel and 1Current Channel
Voltage Input Range	48VDC, 110V, 220V, 380V (factory settable only)
	48V → ± 0.5 to 70VDC ref T602006048
	110V → ± 1 to 150VDC ref T602006110
	220V → ± 2 to 300 VDC ref T602006220
	380V → ±4 to 450VDC ref T602006380
Current Sensing through	DC Shunt
Shunt Current rating	Programmable up to 99KA

Shunt mV rating	Programmable from 50mV to 100mV
Digital Input	4
	Input Type: Potential free contacts
	Sink current: 4mA
	Insulation: 2.5 kV
Temperature Measurement	Range: -30°C to +100°C
	Accuracy: ±1%
	Sensor type: PT1000
Relay Outputs	3
	Current rating: 1A@60VDC
	Contact Form: Form 1C (NO, COM, NC)
	Contact Insulation: 2.5KV
Aux supply	10 to 60V DC, 5VA
Display Resolution	1 Row 6 digits LED (optional)
Communication	RS 485 serial channel connection Industry standard Modbus RTU protocol.
Baud rate	4800 bps to 38400 bps (preferred 19200bps)
Isolation	2000 volts AC isolation for 1 minute between communication and other circuits.
Humidity	5% to 95% non-condensing
Operating Temperature	-20°C to +65°C
Storage Temperature	-40°C to +85°C
Dimension	90x90mm
Mounting	Din Rail Mount
Connectors	Pluggable screw type
Weight (Approx)	Unpacked : 0.2 kg

For more information, refer to Measuer Box user manual or contact us at customer.support@cet-power.com