

This Quick Start Guide is designed to familiarize the user with the connection and configuration of the DTS DC3 DIN rail mounted 3-channel DC power & energy meter with Ethernet or RS-485 communications.

1. Supplied Items

Check that the meter and equipment matches your order specifications and has not been damaged during shipping. The following component(s) are included in the package:

- Quick Start Guide (**DTS DC3 Application / Connection Examples** in section 2).
- Pluggable screw terminals – 10-pin (4 pins pulled) for V and C terminals, 6-pin for Current 1-3, and 3-pin for RS-485 if ordered as such.
- DTS DC3 power monitor. Check input ranges, output configuration and auxiliary power supply (if applicable) on the label of the unit. For a more detailed explanation of the part number please download the latest version of the DTS DC3 datasheet from <https://www.measurlogic.com/product/dts-dc/>

2. Connecting the DTS DC3

Wiring Voltage and Current Inputs



The DTS DC3 accepts a DC voltage input directly up to 1000Vdc (**model dependent**). The current inputs accept shunt connections from 50mV up to and including 100mV. As detailed below, special care must be taken in connecting the DTS DC3 with shunt connections so as to avoid ground loop or accuracy issues. Refer to **Application/Connection Examples** below for information on these wiring conventions.

If there are any questions please contact Measurlogic before applying any measured or auxiliary power to the unit.

Input wiring terminals are clearly indicated and located on the upper side of the DTS DC3 label. The Current and Voltage terminal strips are pluggable to allow easy replacement of the DTS DC3, if required. **Removing the terminal strip should only be done once all power has been removed from the DTS DC3.** Input wiring terminals accept up to 2.5 mm² (12 AWG) wire. The wires are connected by means of screw terminals that clamp down onto the input wires. The voltage input requires fusing (**NOT INCLUDED – see diagrams below**) and should be rated at ≤ 1A. Please check with local code requirements to ensure correct installation.

Wiring the DC Auxiliary Power Input (AUX)



The DTS DC3 meter is powered from a DC auxiliary input in the following (**model dependent**) ranges. See the label of the unit for more information on which input range it has fitted. Fuses are NOT INCLUDED with the meter, but are offered as an option at the time of ordering.

- 12 Vdc **OR** 24 Vdc **OR** 48 Vdc

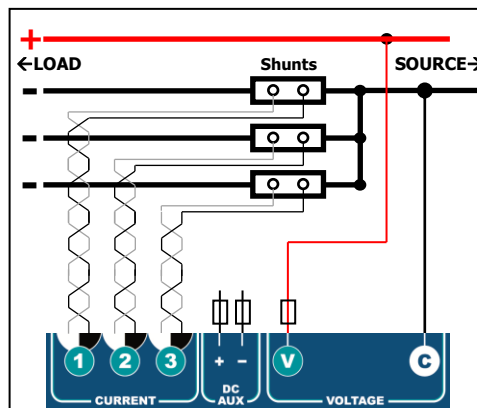
Note: It is important to pay attention to the polarity when using a DC power supply. See label above for a reference to the polarity. Incorrect connection **will** damage the DTS DC3.

The following connection diagrams depict some examples of typical applications.
If there are any variances please consult Measurlogic

Application/Connection Examples

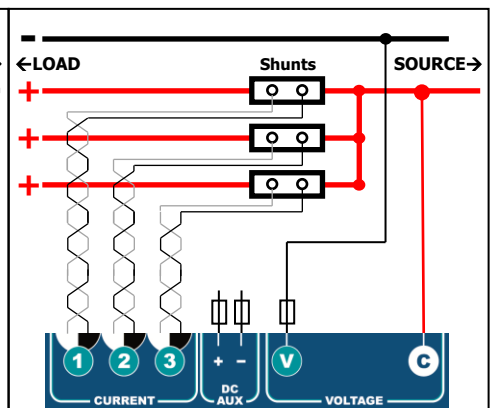
SHUNT – Current Measurement in -VE Leg (RECOMMENDED)

Measurements Read: +Voltage, +Current, +Power



SHUNT – Current Measurement in +VE Leg

Measurements Read: -Voltage, -Current, +Power

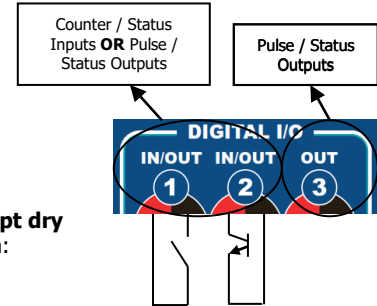


IMPORTANT NOTES

- **ALL** shunt output wires should be in twisted pairs, with roughly 1 twist per inch.
- **ALL** shunts must be located near to each other with no more than 1ft. of conductor between the common terminals.
- **ALL** shunt output wires must be kept at roughly consistent lengths between the shunts and DTS DC3 input terminals.

Wiring Digital Inputs and Outputs

Depending on the model, the DTS DC3 can support up to 3 digital outputs and up to 2 digital Inputs across a total of 3 I/O points. The I/O wiring terminals are located on the bottom side of the DTS DC3 and are represented on the label as seen in this diagram.



Counter / Status Inputs (Marked 1, 2)

- Digital inputs function simultaneously as both status indicators and counters. They will **accept dry contacts** or **NPN open collector inputs** and must be connected as shown in this diagram:

Pulse / Status Outputs (Marked 1, 2 or 3)

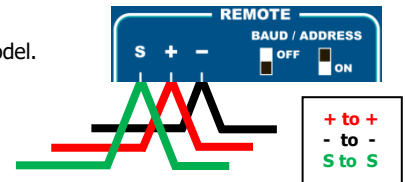
- The digital outputs are **potential free N.O. solid state relays**, depending on the model. They can be configured for energy pulses or threshold / status triggers. They are also forceable through the communications interface.

Wiring Communications Interface

The DTS DC3 has either a RS-485 2-Wire or Ethernet communications interface depending on model.

Modbus RTU over RS-485 2-Wire Communications

The meter communicates through its RS-485 2-Wire port using the Modbus RTU protocol. Connection is by means of a pluggable 3-pin screw terminal that accepts up to 2.5 mm² (12 AWG) wire. Suggested communications cabling is **18-22 AWG, 2-core, shielded, twisted pair cable**. To connect multiple DTS DC3 meters on the same RS-485 2-Wire network the meters should be daisy chained together. **DO NOT connect the meters in a STAR, RING, or other wiring topology that is not a daisy-chained BUS.**



- Unless otherwise stated through correspondence or specified on the label of the DTS DC3 unit, default parameters for Modbus RTU over RS-485 2-Wire communications are: **Modbus Address: 100, Baud Rate 9600, Parity: None, Data Bits: 8, Stop Bits: 1. This is notated as 9600, N, 8, 1 #100.** This is denoted as all DIP switches OFF and is how each DTS DC3 is shipped by default.

Setting of Modbus Address and baud rate

The DTS DC3 with RS-485 communications has an 8-way DIP switch, situated next to the pluggable 3-pin terminal, that provides for flexible yet simple user configuration of the unit and is divided into 2 groups:



- Modbus Address (add each switch value when ON) – Example in picture is 9600 Baud & Modbus 105
- Baud Rate

Description	Switch Position							
	1	2	3	4	5	6	7	8
Modbus Address		64	32	16	8	4	2	1
9600 Baud Rate	Off							
19200 Baud Rate	On							
Modbus Address 100 & 9600 Baud (Default)	Off	Off	Off	Off	Off	Off	Off	Off

Ethernet Communications

Ethernet communication is available through the RJ45 jack mounted on the DTS DC3, depending on the model. Regardless of which Ethernet communications protocol is ordered, the meter will always be accessible through Modbus TCP and can be addressed simultaneously alongside other protocols. Connect to an Ethernet switch by means of a straight CAT5 Ethernet cable. Each DTS DC3 with Ethernet communications has a unique MAC address which is listed on the label of the unit. **The factory default is static (DHCP disabled) IP Address 192.168.1.150 and the default Modbus Address is 100.** The IP address can be changed to any valid IP address using the **DTS Toolbox** utility. Download the latest version of **DTS Toolbox** from <https://www.measurlogic.com/software-drivers/>. Alternatively, an e-mail may be sent to info@measurlogic.com to request the latest version.



3. Installation of DTS Config Configuration and Monitoring Software

- DTS Config** is a program used to easily monitor and configure meters in the DTS product line from your local PC or across the LAN.
- Download the latest version of DTS Config from <https://www.measurlogic.com/software-drivers/>. Alternatively, an e-mail may be sent to info@measurlogic.com to request the latest version of DTS Config.
- Access the **DTSConfigSetup** file to begin the installation process and follow the instructions on the screen.

If there are any questions please contact:

Measurlogic Inc. Toll-Free: 1-877-777-6567 Tel: 1-303-805-5252

Email: info@measurlogic.com