

This Quick Start Guide is designed to familiarize the user with the connection and configuration of the DTS-305 DIN rail mounted single / 3 phase power & energy meter with RS-485 or TCP communications. These instructions are given using the Windows XP OS

1. Supplied Items

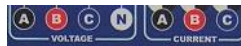
The following component(s) are included in the package:

- Quick Start Guide (**DTS 305 Measurement Circuit Specifications** in section 2)
- DTS 305 power monitor. Check auxiliary power supply, input ranges, and output configuration on the side label of the unit.
- Check that the meter and equipment matches your order specifications and has not been damaged during shipping.

2. Connecting the DTS 305

Voltage Current

Wiring Voltage and Current Inputs



The DTS 305 accepts current and voltage inputs either directly coupled or via CTs (current transformers) and PTs (potential transformers). Please refer to **Application/Connection Examples** for information on wiring conventions.

Input wiring terminals are located on the upper side of the DTS 305 and are clearly indicated on the unit's faceplate. The terminal strip is pluggable to allow easy replacement of the DTS 305 if required. However, to minimize the risk of inadvertent disconnection of the input current circuits, the terminal strip is also fastened to the DTS enclosure by means of two screws. Input wiring terminals accept 2.5 mm² (12 awg) wire. The wires are connected by means of screw terminals that clamp down onto the input wires. The voltage/PT inputs require fuses, not included, (represented by F3-F5 in the diagrams below) rated at 1A 600Vac. Refer to the **DTS 305 Manual MQ-0010 R09A** for more information.

Wiring Auxiliary Power Input (AUX)



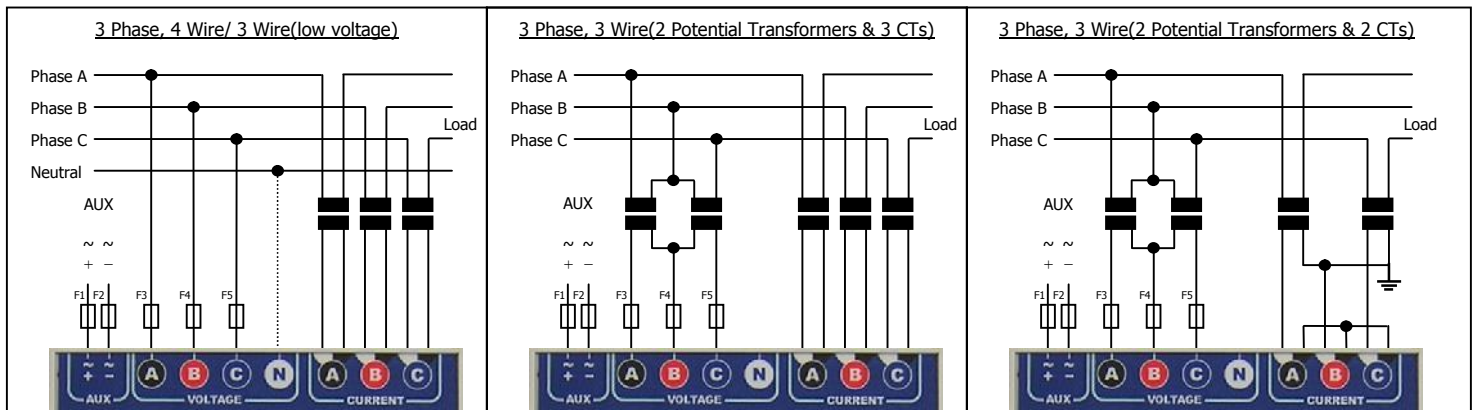
The DTS 305 operates normally when powered by an externally fused auxiliary supply (fuses rated 2A 300Vac) in the following ranges. (Fuses not included with meter). These ranges are model dependant. See the rating label of the unit for more information.

- 90 to 265 Vac 50/60 Hz or Vdc
- 12 Vdc, 24Vdc or 48Vdc

Note: It is important to pay attention to the polarity when using a DC power supply. See the diagrams below for a reference to the polarity.

The following connection diagrams depict some examples of typical applications. Other connection configurations are possible.

Application/Connection Examples

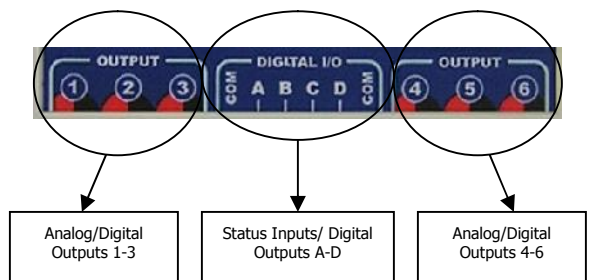


Wiring Analog and Digital Outputs

The DTS 305 can support up to 6 analog outputs and/or 10 digital outputs, depending on model. Output wiring terminals are located on the bottom side of the DTS 305 and are represented on the faceplate as seen in this diagram:

Analog/Digital Outputs (Marked 1-6)

- As analog outputs, terminals 1-6 are capable of all ranges $\pm 20\text{mA}$ (10V optional) and are independently mapped to whichever electrical entity and scale the user wishes, depending on the model of the unit.



Analog/Digital Outputs 1-3

Status Inputs/ Digital Outputs A-D

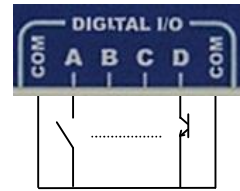
Analog/Digital Outputs 4-6

- As digital outputs, terminals 1-6 can either be potential free solid state relays or open collector transistors, depending on the model. These outputs can be configured for energy pulses or threshold triggers.

Digital Inputs/Outputs (Marked A-D)

- Terminals A-D can be specified on order placement to be either status inputs or digital outputs.
- As status or counter inputs, terminals A-D will accept dry contacts or NPN open collector inputs and must be connected as shown in this diagram:
- As digital outputs, terminals A-D will be potential free open collector transistors.

Terminals A-D as Inputs



DTS 305 Measurement Circuit Specifications

- Voltage range: 120-480Vac L-L, 3 or 4w (600v optional)
- Rated voltage: 280Vac L-N / 485Vac L-L
- Permanent overload: 1.25 x (1.05 x – 600V option)
- Frequency: 45 to 65Hz
- Rated current: 1A to 5A isolated, 333mV for mV CT version
- Permanent overload: 1.5x In for 1A or 5A versions
- Current input burden: 0.5VA @ 5A

3. Communicating with the DTS 305

The DTS 305 can be supplied with either an isolated 2 wire RS-485 or Ethernet RJ-45 communications interface:

2 Wire RS-485 Communications

The RS-485 port communicates using the Modbus RTU protocol. Connection is by means of a pluggable 3 way screw terminal that accepts 2.5 mm² (12 awg) wire. Suggested communications wire is 18-22 AWG 2 core shielded cable. To connect multiple DTS 305 meters on the same 2 wire network the meters should be daisy chained together. **DO NOT connect the meters in a STAR topology.**

- Unless otherwise stated through correspondence or specified on the label of the DTS 305 unit, default parameters for RS-485 Modbus 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.**

RJ45 TCP Communications

TCP / Ethernet communication is available through the RJ45 socket mounted on the DTS305. Modbus TCP or BACnet/IP are the protocols available, depending on model. Connect to an Ethernet switch by means of a straight CAT5 cable. Each DTS305 with TCP connectivity has a unique MAC address which is listed on the label.

The default IP address is 192.168.1.150 and the default Modbus address is 100.

The IP address can be changed to any valid IP address using a utility called **DTSsetupTCP**. Download the latest version of **DTSsetupTCP** from <http://www.measurlogic.com/software>. Alternatively, an e-mail can be sent to info@measurlogic.com to request the latest version or its Quick Start Guide.

4. Installation of DTS Config Configuration and Monitoring Software

- DTS Config** is a program used to easily monitor and configure meters from the DTS family from your PC.
- Download the latest version of DTS Config from <http://www.measurlogic.com/software>. Alternatively, an e-mail can be sent to info@measurlogic.com to request the latest version of DTS Config.
- Access the **DTSTConfigSetup** file to begin the installation process
- Follow the instructions on the screen.



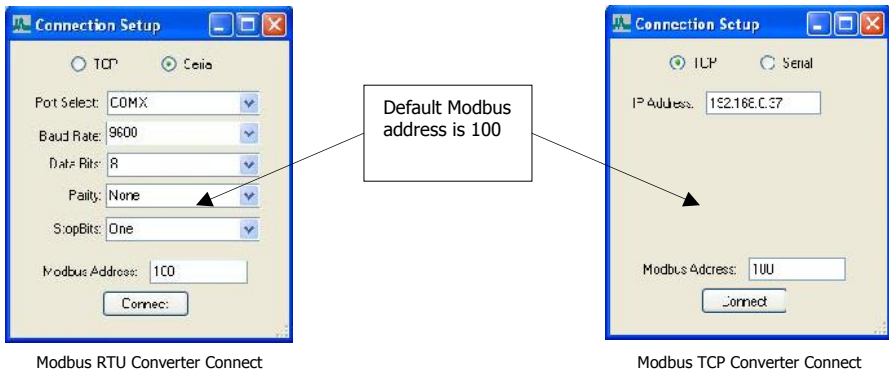
RS-485
Modbus Port



5. Communicating with DTS Config

The DTS 305 is supplied with 2 ports. A serial port for communication to the remote DTS Display module and a 2 wire RS-485 or RJ45 Ethernet port for remote communication. DTS Config will utilize the remote communications port for displaying real-time data and configuring the DTS 305.

- **Unless otherwise stated through correspondence or specified on the side label of the DTS 305 unit, default parameters for communications with a DTS 305 are as follows: Modbus Address: 100, Baud Rate 9600, Parity: None, Data Bits: 8, Stop Bits: 1. This is notated as 9600,N,8,1 100.**
- Open DTS Config (Default installation directory C:\Program Files\Measurlogic\DTS305_Config\)
- Once the program has started, select the "Connect" menu and assign the correct communication parameters of the connected DTS 305 into the Connection Setup window.
- The default Modbus address (also known as Slave ID and Peripheral Number) is 100 for the DTS 305.
 - For RTU communication, COM X in the example below is the COM port that the Modbus RTU Converter has been assigned.
 - For TCP communication, the IP address is the IP address that the Modbus TCP Converter has been assigned. Below is an example of this.
- Note that DTS Config will always retain the last communication parameters that were set into it after closing, and will automatically connect to a DTS 305 if it has matching parameters upon startup.



| Factory Modbus Settings | |
|-------------------------|------|
| Address | 100 |
| Baud Rate | 9600 |
| Parity | None |
| Data Bits | 8 |
| Stop Bits | 1 |

- Allow DTS Config a moment to attempt the initial connection to the DTS 305.
- Select the "Configure" menu to confirm/configure measurement inputs and/or signal outputs (if fitted). Output configuration will be detailed later in this document.
- Select the "Monitor" menu to see all the values being read by the DTS 305.

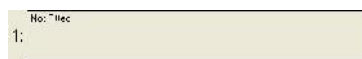
6. Configuring the DTS 305 Power Monitor in DTS Config

Configuring DTS 305 Inputs and Changing Communication Parameters

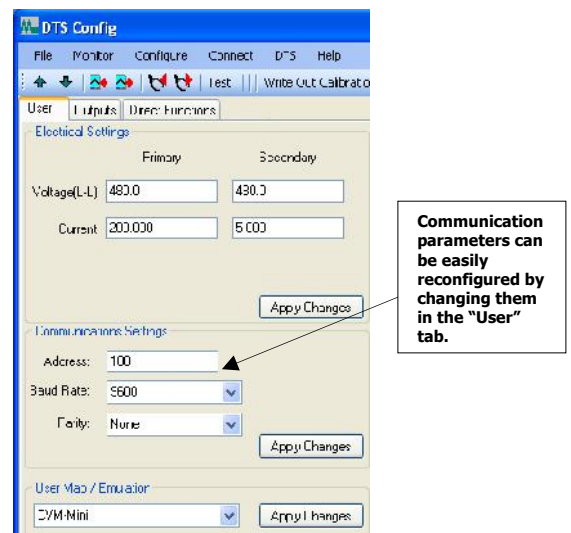
- Open the "Configure" window and select the "User" tab.
- Here the existing input and communications settings can be found and configured.
- To configure the measurement inputs, select the relevant Primary Voltage and Current based on the ratios of the installed PT and CT.
- To configure the communications settings, select the relevant parameters as needed. DTS Config will automatically adjust the DTS 305 to the new settings after clicking "Apply Changes" and will reconnect with the device.

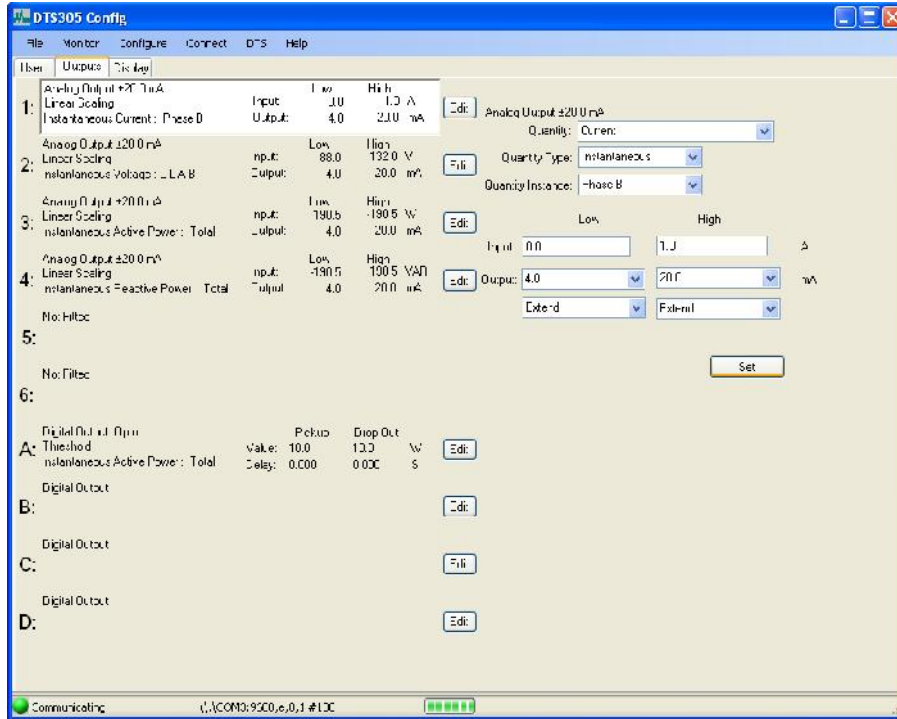
Configuring DTS 305 Outputs

Note that if the DTS 305 is not fitted with analog or digital outputs, the "Outputs" tab will display "Not Fitted" as seen below. Disregard this section if that is the case.

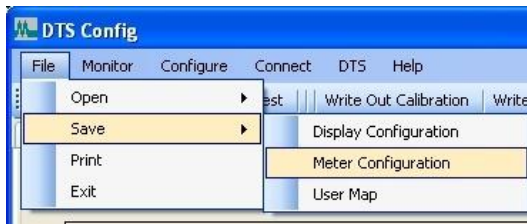


- Open the "Configure" window and select the "Outputs" tab.
- Here the existing analog and digital outputs can be found and configured.
- To configure the signal outputs (if applicable) select the relevant output in the tree view on the right and configure it accordingly to the quantity instance, range, and values needed, as seen below.





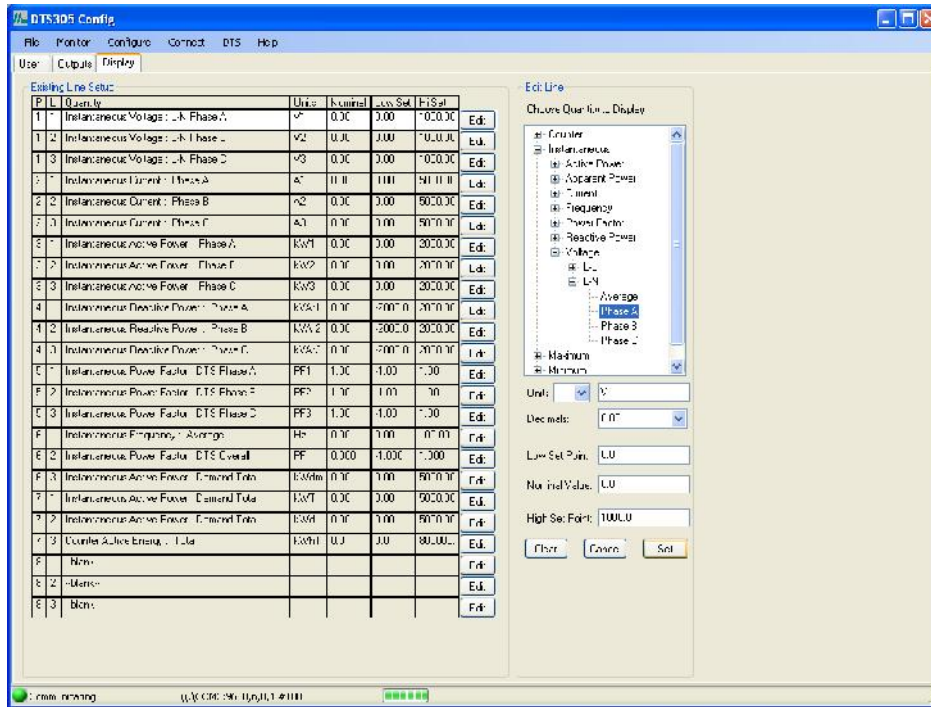
- Outputs will be configured once the "Set" button is pressed.
- In order to save these outputs in a template for future use, select "Save>Meter Configuration" from the "File" menu and save the file in the desired location.



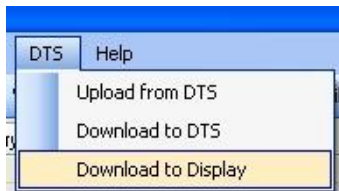
Configuring a DTS Display

This section is only relevant if a DTS 305 is being run in conjunction with a DTS Display peripheral device. If it is not, disregard this section.

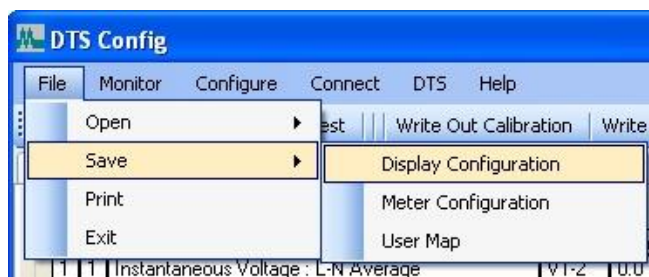
- If a DTS Display requires configuration, first attach the supplied cable between the DTS Display's COMMS port and the DTS 305's LOCAL port.
- Ensure that both devices are powered and functioning. If the DTS Display is reading "No DTS" check that the wiring is correct.
- Run DTS Config.
- After connecting to the DTS 305 in DTS Config (as explained previously), open the "Configure" menu.
- Open the "Display" tab as seen below.
 - Note that if a DTS Display is not connected to the DTS 305 upon starting DTS Config, this tab will not be present until an upload is performed from the "DTS" menu.



- This screen allows simple configuration of the DTS Display parameters.
- Once all desired changes have been made, download the new template to the DTS Display through the "DTS" Menu as seen below.



- After downloading the new template to the DTS display, it is possible to save the template for future use. Select "Save>Display Configuration" from the "File" menu and save the file in the desired location.



If there are any questions please contact:

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