DTS Input/Output Mapping Using DTSConfig
Version R21A

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1 SCOPE

1.1 IDENTIFICATION

This document describes how to set the DTS Input and Output mappings using DTSConfig.

This document applies to DTSConfig version 1.41.0.239 and later.

We recommend that you always use the latest version of DTSConfig, which can be downloaded from:
https://www.measurlogic.com/software-drivers/

1.2 INTRODUCTION

The DTS range of meter can be equipped with various analog and digital inputs and outputs depending on the model ordered. Please consult the datasheet for the DTS meter for an explanation of the Input and Output options that are available for that meter.

ATTENTION

Meter capabilities are model dependant. Some registers may not be applicable to certain meter models, or certain wiring topologies.

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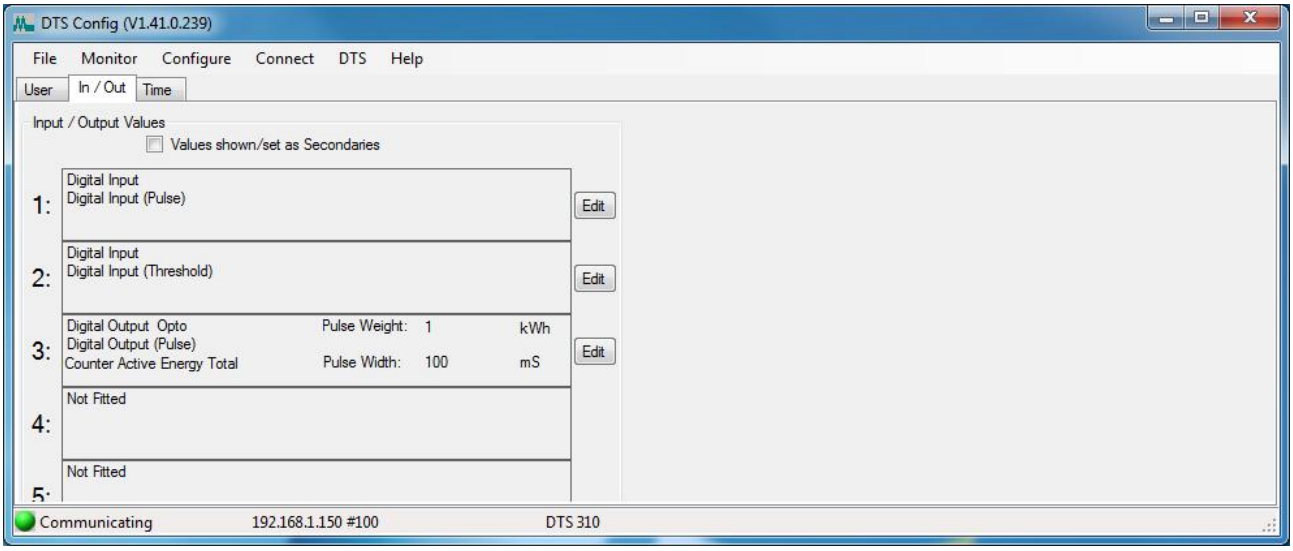
2 DTS I/O MAPPING

The following sections show how to setup the I/O mappings on a DTS meter.

The basic steps are as follows:

1. The mapping dialog page can in found in DTSConfig by going “Configure > In/Out”.
2. The dialog will show how the Input/Output channels are currently configured.
3. Press the “Edit” button associated with the I/O channel that you wish to configure.
4. This will bring up the mapping editor on the right hand side of the dialog.
5. Once the desired values have been entered, press the “Set” button to save to the meter.

Selecting “Configure > In/Out” bring you to this dialog page. Here a summary of the I/O mappings can be seen, as well as the channel type. The “Edit” buttons to the right of each channel block can be pressed to edit and configure the mapping configurations for that channel.



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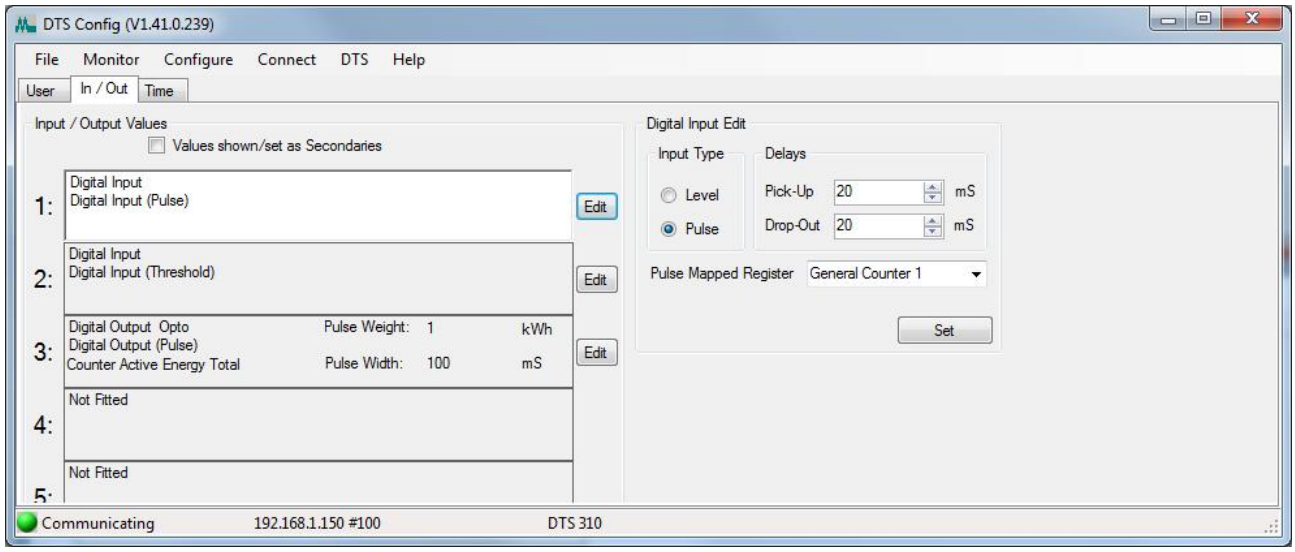
2.1 DIGITAL INPUTS

2.1.1 Digital Pulse Inputs



This screen shows that Digital Input 1 is configured as a Pulse Counter and is associated with "General Counter 1".

Input Type:

- Pulse: A Pulse Input is used to increment a counter whenever the level changes from an OPEN (OFF) to a CLOSED (ON) state. Therefore, the counter is edge triggered and one complete pulse will result in the counter being incremented by 1.

- Pulse Mapped Register: This specified which one of four General Counters is associated with this Pulse Input.

Pick-Up and Drop-Out Delays:

- Pick-Up Delay: The actual Digital Input must CLOSED (ON) for the full duration of the Pick-Up Delay before the registered Status of the Input changes to CLOSED (ON). This delay is used to prevent spurious conditions from triggering false input transitions. You can think of this as debouncing the input. This delay is specified in milliseconds. A suitable Pick-Up Delay for a Digital Input is 20mS.

- Drop-Out Delay: The actual Digital Input must OPEN (OFF) for the full duration of the Drop-Out Delay before the registered Status of the Input changes to OPEN (OFF). This delay is used to prevent spurious conditions from triggering false input transitions. You can think of this as debouncing the input. This delay is specified in milliseconds. A suitable Drop-Out Delay for a Digital Input is 20mS.

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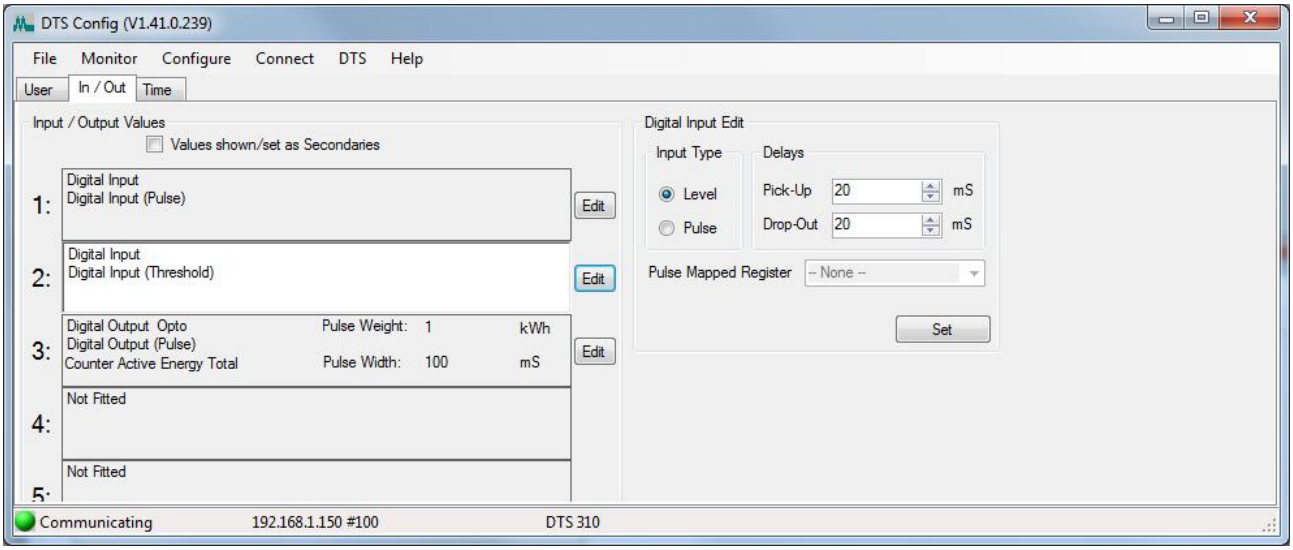
2.1.2 Digital Level Inputs



This screen shows that Digital Input 2 is configured as a Level input only.

Input Type:

- Level: A Level Input only has an OPEN (OFF) or CLOSED (ON) state, and cannot be mapped to a General Counter.

Pick-Up and Drop-Out Delays:

- Pick-Up Delay: The actual Digital Input must CLOSED (ON) for the full duration of the Pick-Up Delay before the registered Status of the Input changes to CLOSED (ON). This delay is used to prevent spurious conditions from triggering false input transitions. You can think of this as debouncing the input. This delay is specified in milliseconds. A suitable Pick-Up Delay for a Digital Input is 20mS.

- Drop-Out Delay: The actual Digital Input must OPEN (OFF) for the full duration of the Drop-Out Delay before the registered Status of the Input changes to OPEN (OFF). This delay is used to prevent spurious conditions from triggering false input transitions. You can think of this as debouncing the input. This delay is specified in milliseconds. A suitable Drop-Out Delay for a Digital Input is 20mS.

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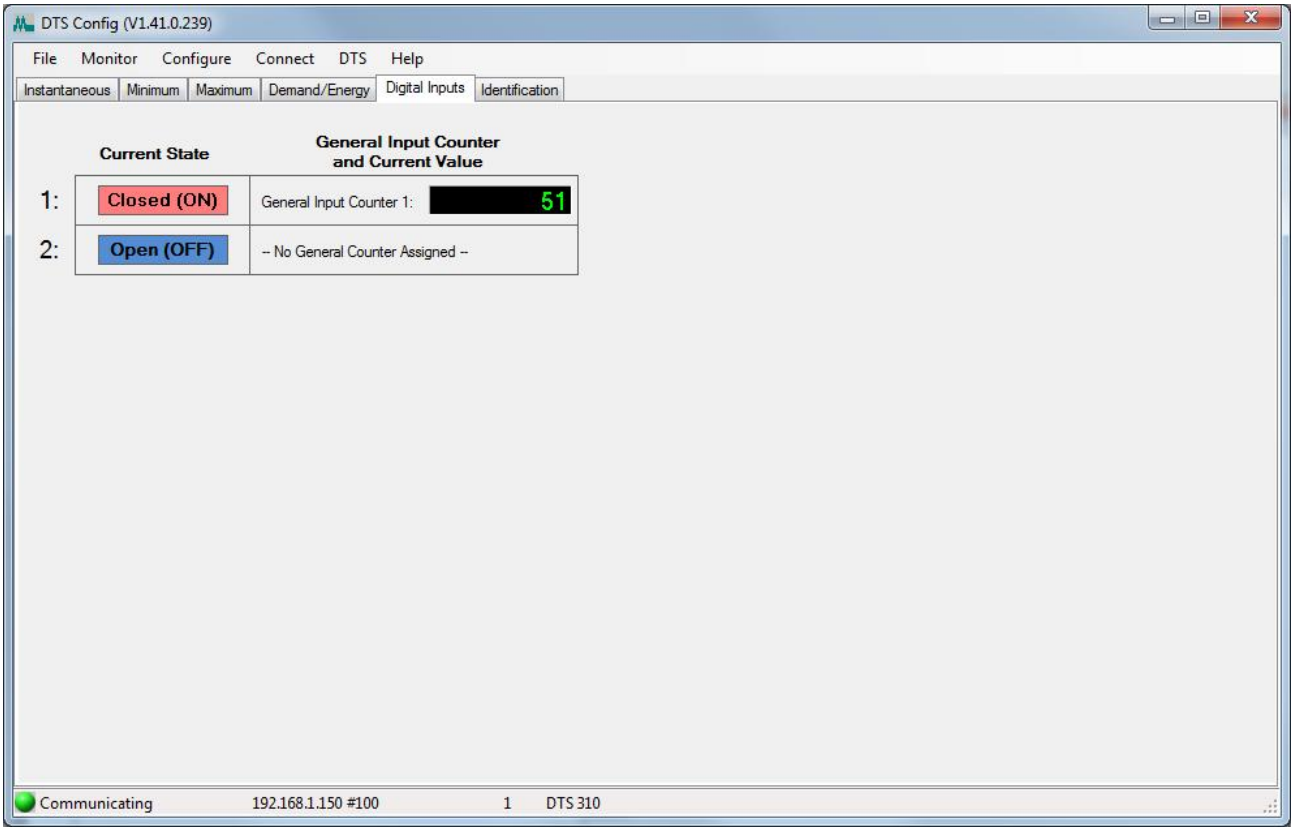
2.1.3 The Monitor > Digital Inputs Dialog

Selecting “Monitor > Digital Inputs” presents a page showing the status of each Digital Input that is fitted to the DTS meter, as well as the count value of any associated counter if the Digital Input is mapped to a “General Counter”.



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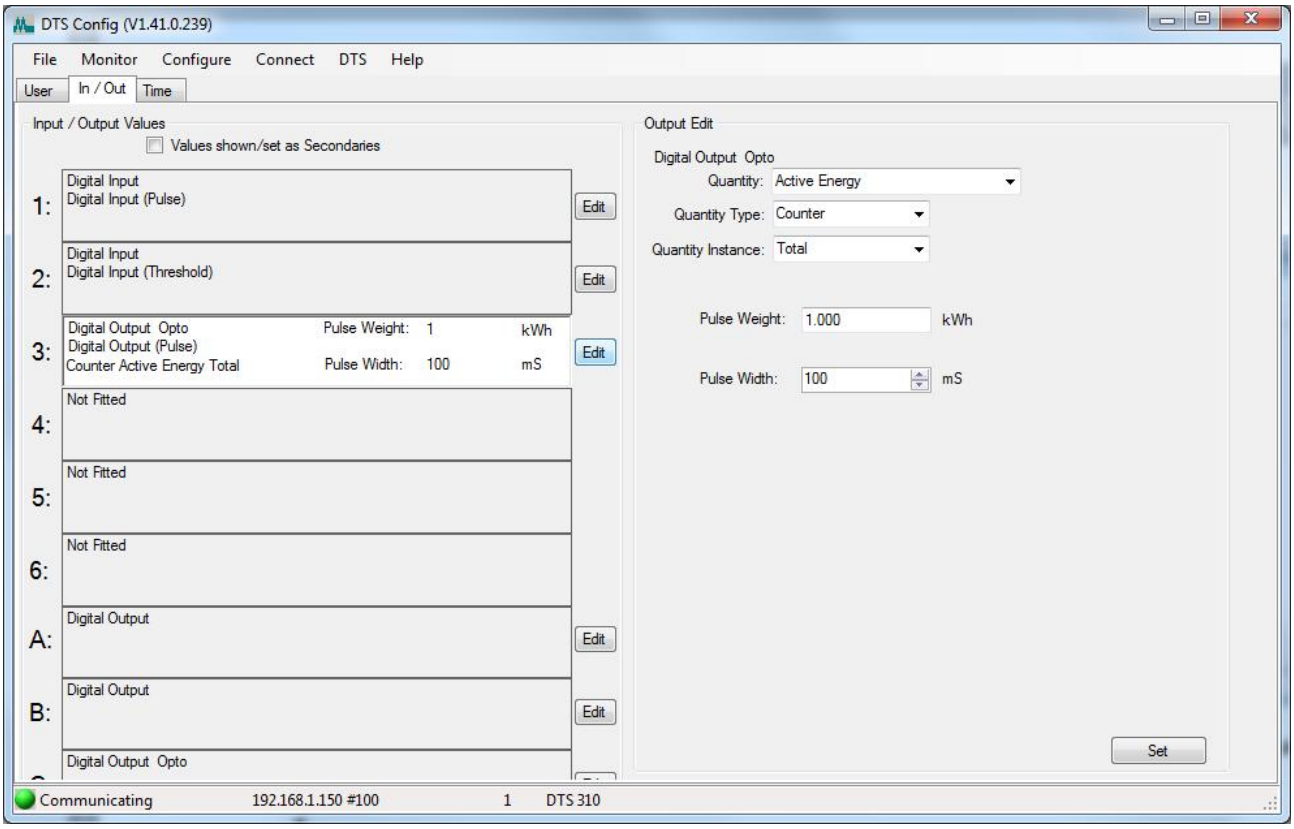
2.2 DIGITAL OUTPUTS

2.2.1 Digital Outputs Pulse



This screen shows that Digital Output 3 is configured as a Pulse Output, where the Output will issue a 100mS pulse for every 1kWh of Total Active Energy that has accumulated.

Parameters:

- Quantity: The source Quantity and accompanying parameters for the mapping are selected from drop-down lists.

- Pulse Weight: The Pulse Weight is the amount of the Quantity that must be accumulated for one pulse to be issued.

- Pulse Width: This is the width of the CLOSED (ON) time of the Pulse. This should be wide enough to give the connected PI module time to register the change. The Pulse Width is specified in milliseconds. A suitable Pulse Width for a Digital Input is 100mS.

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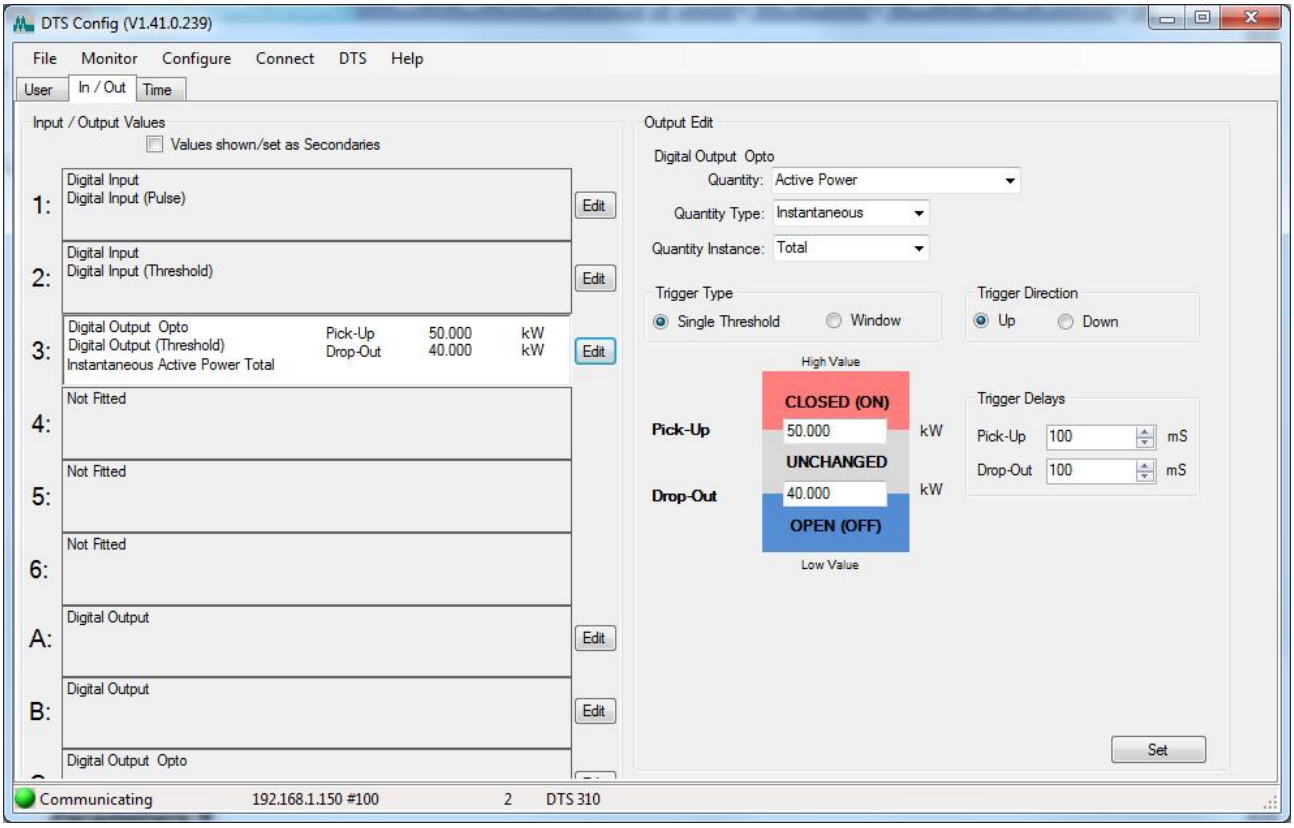
2.2.2 Digital Outputs Threshold Single Level (Up)



This screen shows that Digital Output 3 is configured as a Single Threshold, with the Trigger Direction set to "Up". The Output state will be CLOSED (ON) when the source Quantity level is above the Pick-Up Value, and OPEN (OFF) when the source Quantity level is below the Drop-Out value. The Output state remains unchanged when the source Quantity level is between these values (hysteresis).

Parameters:

- Quantity: The source Quantity and accompanying parameters for the mapping are selected from drop-down lists.
- Pick-Up: The threshold level, above which the output is CLOSED (ON).
- Drop-Out: The threshold level, below which the output is OPEN (OFF).
- Trigger Delays (mS): The level of the source Quantity must be continuously in the respective Pick-Up or Drop-out area for the specified Trigger Delay time before the output will actually change. This provides a timed reaction to the specified event.

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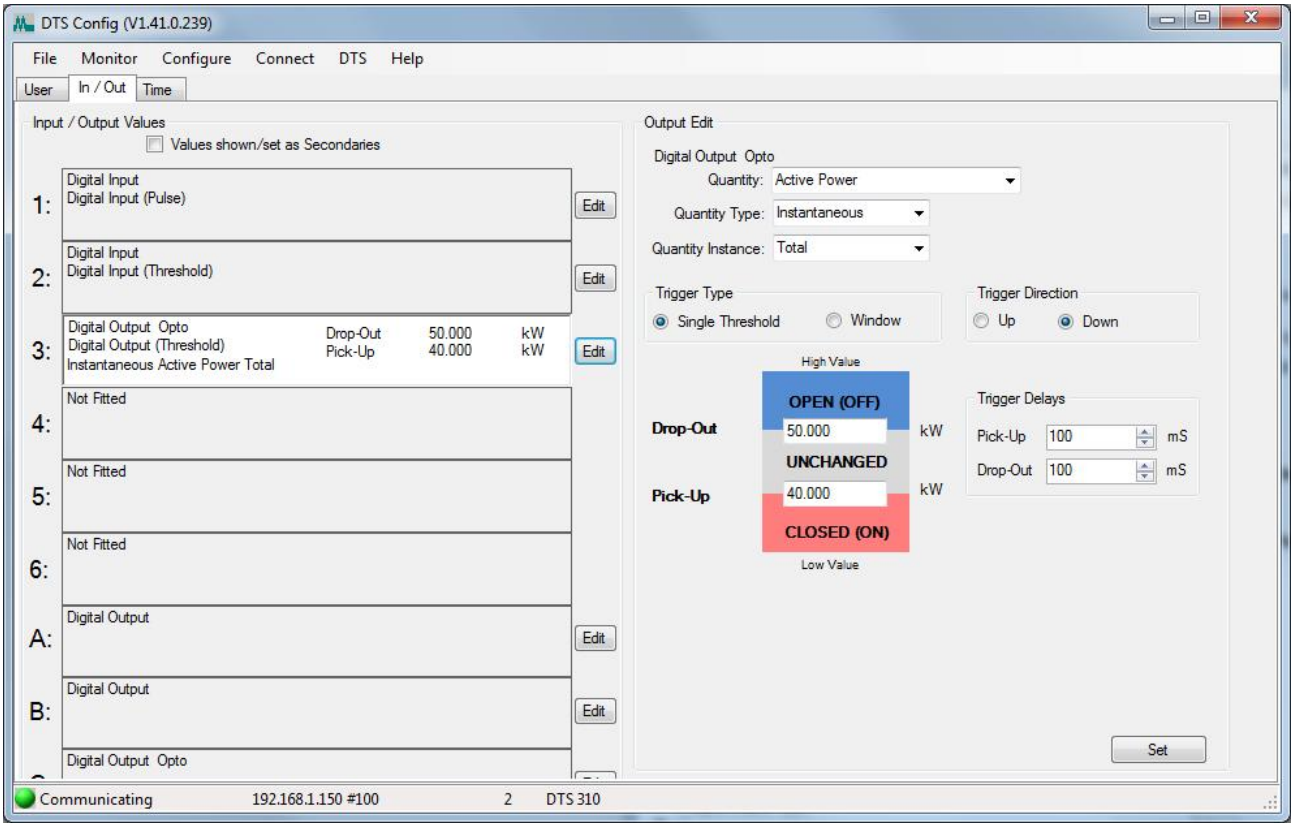
2.2.3 Digital Outputs Threshold Single Level (Down)



This screen shows that Digital Output 3 is configured as a Single Threshold, with the Trigger Direction set to "Down". The Output state will be OPEN (OFF) when the source Quantity level is above the Drop-Out Value, and CLOSED (ON) when the source Quantity level is below the Pick-Up value. The Output state remains unchanged when the source Quantity level is between these values (hysteresis).

Parameters:

- Quantity: The source Quantity and accompanying parameters for the mapping are selected from drop-down lists.
- Pick-Up: The threshold level, above which the output is OPEN (OFF).
- Drop-Out: The threshold level, below which the output is CLOSED (ON).
- Trigger Delays (mS): The level of the source Quantity must be continuously in the respective Pick-Up or Drop-out area for the specified Trigger Delay time before the output will actually change. This provides a timed reaction to the specified event.

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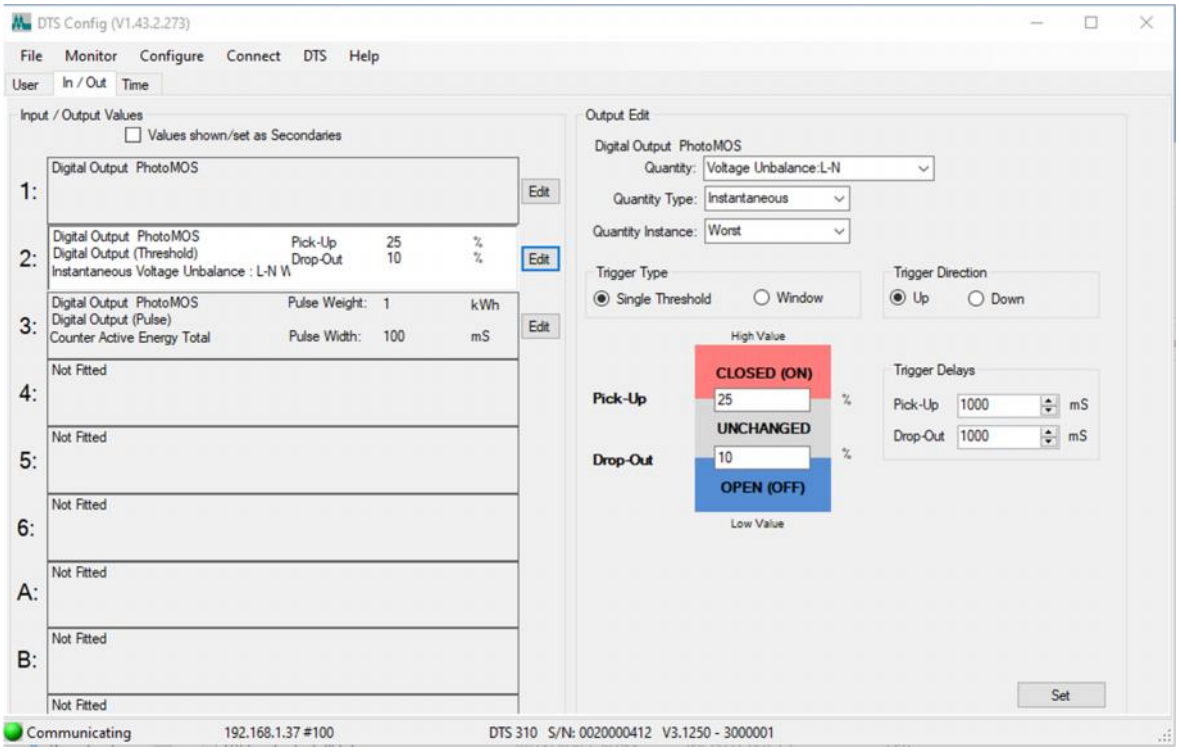
2.2.4 Digital Outputs Threshold Voltage Unbalance

Voltage Unbalance is defined as the difference between “the average voltage for all phases” and “the voltage for a particular phase”, expressed as a percentage. This mapping can be used to detect voltage phase loss.

For a balance system this value is 0%. This percentage increases the more unbalanced the system is up to a maximum of 100%. The digital output can be set to trigger on a particular phase or for the worst unbalance on all the phases.



Example:

This screen shows that Digital Output 2 is configured to be CLOSED (ON) when the Worst “Voltage Unbalance: L-N” exceeds 25% and to be OPEN (OFF) when it is less than 10%. The Output state remains unchanged when the source Quantity level is between these values (hysteresis).

Parameters:

- Quantity: The source Quantity and accompanying parameters for the mapping are selected from drop-down lists. Configure these fields as follows:
  - Quantity: Voltage Unbalance: L-N
  - Quantity Type: Instantaneous
  - Quantity Instance: Worst
- Pick-Up: The threshold level (25% in this example), above which the output is CLOSED (ON).
- Drop-Out: The threshold level (10% in this example), below which the output is OPEN (OFF).
- Trigger Delays (mS): The level of the source Quantity must be continuously in the respective Pick-Up or Drop-out area for the specified Trigger Delay time before the output will actually change. This provides a timed reaction to the specified event. (1 Second in this example).

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