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Application Note *(internal)* AN1201

WattsOn Re-Commissioning

Summary

The following application note describes the process to verify and re-configure an existing WattsOn unit for use with a new data acquisition system.

In most cases, no changes are necessary, however for proper data scaling, it is imperative that the CT and PT ratios be verified.

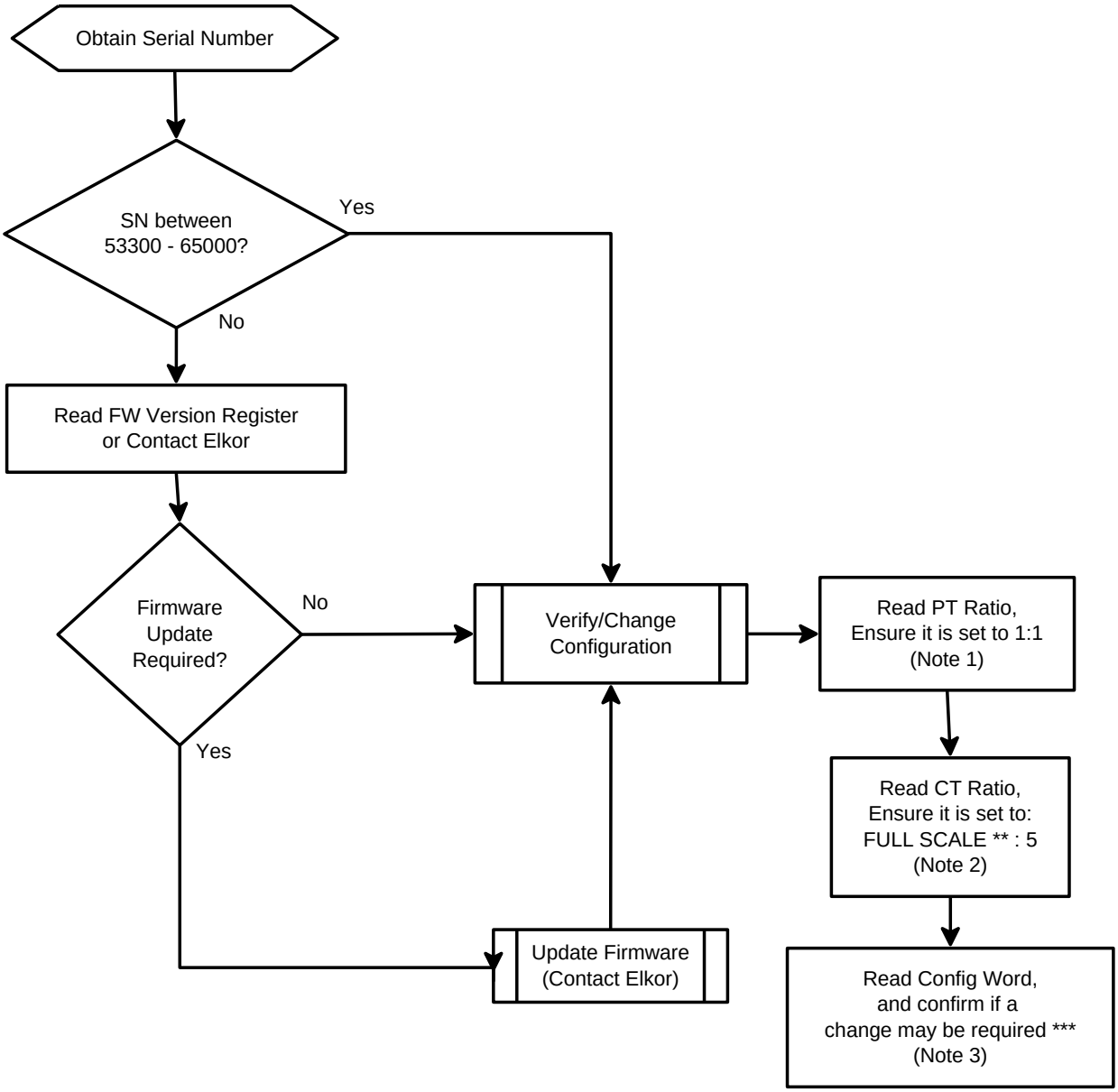
Required Equipment

To verify and make changes to the WattsOn registers, a means of communication with the meter is required. The can be accomplished through most systems that allow Modbus Reads and Writes.

Alternatively, Elkor's free WattsOn Console software may be used to view and configure the various parameters. The software may be used in conjunction with an RS-485 cable, or through a Modbus/RTU to Modbus/TCP gateway such as the ETMBTCP or Obvius Aquisuite.

Caution must be observed to change only the registers required, and this process should not be done without a firm understanding of the changes being applied.

Flowchart for determining meter viability and verification/re-configuration of meter parameters



* In most cases a FW update is not required and not recommended

** FULL SCALE is defined on the calibration sheet, and in the meter part number.

*** Default setting is 0x1510. There should be no reason for this to be changed, but there may be some very specific instances where it was changed for a reason, so ensure the setting before changing

Note 1: In some cases, the PT ratio registers were used by clients as placeholders for data to define the system configuration. When reading the integer registers, the CT/PT ratio have no impact on the data, however when reading the floating point registers (recommended), the CT/PT ratios are used to calculate the proper scaling.

Therefore, it is IMPERATIVE that the PT ratio register be properly set (usually 1:1). Please see the table below for default register configurations.

Note 2: For proper scaling, the CT ratio must be programmed. In most cases, the CT ratio is pre-programmed from the factory and there should be no reason to change it. However, in the case of 5A or 333mV meters, the CT ratio is not programmed at the factory because the CT is matched with the meter later.

In any case, the CT ratio must be verified, and in the case of 333mV or 5A meters, it must be correctly set. It is imperative to the proper operation of the meter that the CT ratio be set to match the CT type and meter full scale configuration.

Please see the Elkor knowledge base article that discusses how to properly configure the CT ratios.

http://support.elkor.net/knowledgebase.php?article=6

Register Name	**Register Offset (Address)**	**Default Value**
PT Ratio Primary	0x80 (40129)	1
PT Ratio Secondary	0x81 (40130)	1
CT Ratio Primary	0x82 (40131)	FULL SCALE **
CT Ratio Secondary	0x83 (40132)	5

Note 3: Unless there is a specific reason to do so, the config word value (register 0x8E – 40143), should not be changed from the factory default of 0x1510.

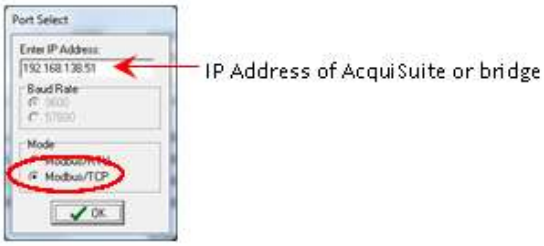
For more information, please see page 19 of the WattsOn User Manual:

http://www.elkor.net/pdfs/WattsOn_Manual.pdf

Using WattsOn Console Software via Obvious AcquiSuite (or other Modbus/RTU - to - Modbus/TCP Bridge)

Click "Port" to configure Port settings.

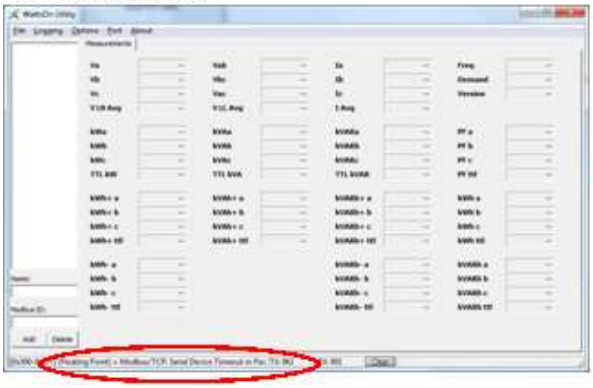
Make sure that the Mode is set to Modbus/TCP and enter the IP Address of the AcquiSuite (or Bridge)



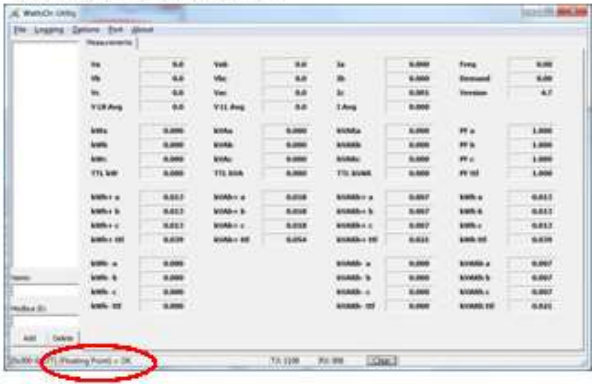
Ensure that the Device Address (Options > Device Address) is set to the same value as the WattsOn DIP switch

If communications is successful, the text "COMM OK!" should appear, and the data values should show something other than "--".

No Communications



Successful Communications



WattsOn Firmware Versions and Major Features Summary

Version	Starting Serial	Major Features
2.0	52278	Implementation of Bootloader
2.2	52307	Implementation of Floating Point Registers
2.3	52422	Implementation of Function 16 Implementation of LSW-MSW Reversal
2.4	52441	Changed/Updated Storage Routines
2.5	52487	Added "Average / Total" bit
2.6	52511	Added Split+Inverter Configuration
3.2	52778	Output pulse resolution enhancements Rollup from above and consolidation of scratchpad registers as per 2.6
4.0 (3.2)	53052	Hardware Revision, requiring new firmware update
4.4 (3.5)	53323	External Display Routines
4.5	53506	** Note as of this FW release, old hardware (running 2.x or 3.x firmware) is no longer supported. Updated External Display (v4.x only) Added Change of State to clicks J2 Protection of revenue mode
4.7	57183	57600 Baud Mode (v4.x only) Improved External Display Output Fixed Pulse Count when Display on Import + Export on both pulse outputs

Flowchart of meter firmware upgrade
(not recommended unless absolutely necessary)