

# Convert a Discrete Input into a Synchronous Counter



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Any discrete input can be converted to a synchronous counter, as long as the synchronous counter rate is less than 8 Hz and the pulse width is greater than 62.5 milliseconds. Higher counter rates can be achieved with special settings. Contact the factory for more information.

Use the User Configuration Software to convert a discrete input into a synchronous counter. Before changing any configuration settings, first connect your Gateway to the RS-485 to USB converter cable (BWA-UCT-900) and plug it into your computer.

1. Launch the configuration software.
2. Go to the **Configuration** screen.
3. Click the arrow next to the Node whose discrete inputs you want to convert into a counter.
4. Click the arrow next to the input number you'd like to convert.
5. Select **GET**.  
The software reads the input configuration from the device and loads the settings into the software.
6. Enable this input and from the drop-down list, select the discrete type (PNP or NPN).
7. Change the following parameters in the **I/O Configuration** section.
  - a) **Units**—Select 16-bit Asynchronous Counter or 32-bit Asynchronous Counter.
  - b) **Sample rate**—User-defined, but 62 ms is suggested (hh:mm:ss.sss).
  - c) **Report rate**—User-defined, but 16 seconds is suggested (hh:mm:ss.sss).
  - d) **Report type**—Select Analog for a 16-bit counter or Double for a 32-bit counter.
8. Under **Serial Options**, change the Sync Counter to 16-bit or 32-bit Asynchronous Counter.
9. Disable the next input when configuring a 32-bit counter. (For example, if you just defined input 1, disable input 2.)
10. Click **SEND** to send these configuration changes to the wireless network.
11. Cycle power to the Node after making changes to its configuration.

The counter value is stored in the Modbus registers. Creating a 32-bit counter allocates two Modbus registers, N and N+1. Verify the next Modbus register is not being used by another I/O point. For example, a 32-bit counter created in I/O 1 uses the Node's Modbus registers N and N+1. If the Node is using I/O 2 (Modbus register N+1), there will be a conflict. Disable I/O 2.

Some older Nodes with discrete I/O cannot be configured for the synchronous counter input.

## Clear the Synchronous Counter

Follow these instructions to clear a synchronous counter.

Modbus Holding Register		I/O #	Write this Value to the Node's I/O 15
Gateway	Node		
1	1 + (Node # × 16)	Input 1	5377
2	2 + (Node # × 16)	Input 2	5378
3	3 + (Node # × 16)	Input 3	5380
4	4 + (Node # × 16)	Input 4	5384
5	5 + (Node # × 16)	Input 5	5392
6	6 + (Node # × 16)	Input 6	5408
...	...	...	...
15	15 + (Node # × 16)	Control Message	

1. Calculate the Node's I/O point 15 register number.  
For example, Node 2's IO point 15 is register 47.
2. In the User Configuration Software, go to the **Register View** screen.
3. In the **Write Registers** section, use the Device drop-down list to select which device contains the counter you would like to reset.
4. To clear the counter for a specific input, enter the value shown for that Node's IO point into the Node's I/O point 15.  
For example, to clear Node 2's input 1, write 5377 to register 47.
5. Click **Write Registers**.

Note that when you are using a 32-bit counter, you must write two values to IO point 15. For example, if you are using both input 1 and input 2 to store the counter value, you must write 5377 and 5378 to that Node's IO 15 to reset both sections of the counter register.