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.

Use the DX80 Performance 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 DX80 Performance 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.