### **Advantech AE Technical Share Document**

Date	2023/08/31	SR#	1-3364524411	
Category	■FAQ □SOP	Related OS	N/A	
Abstract	What is Counter Width do	efinition for DI O	n WISE-4000 Modbus TCP server?	
Kouwond	WISE, Counter Width, Modbus TCP, Counter period, counter startup value, RTC			
Keyword	value			
Related	elated wise 4012 wise 4012E wise 4050 wise 4051 wise 4060			
Product   WISE-4012, WISE-4012E, WISE-4050, WISE-4051, WISE-4060			/ISE-4031, WISE-4000	

#### Problem Description:

How to setup counter startup value through Modbus address? What is "counter width"? How to R/W "counter width"? How to count the counter period through Modbus address? How to read RTC through Modbus TCP?

User can read counter period, R/W counter value, and read RTC value through "Counter Width" address.

#### Brief Solution:

There is "Counter Width" on the configuration page of Modbus address of web utility (figure 1). User can read counter period, R/W counter value, and read RTC value through this address.

🖋 Configuration				
Information Wireless Network App	Time & Date Time Sync Modbus	Control General Cloud	Firmware Account	
	Coils Status(0X)			Holding Register
Setting Address				
Item		Base Address	Length	
Counter Frequency		1	16	
Module Name		211	4	
DI Status		301	1	
Counter Width		401	48	
Expansion Word		1001	32	·
Expansion Bit Error Code		1101	32	
Expansion Word Error Code		1201	32	
Data Log Status		5101	1	

Figure 1. Counter Width

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The length of Counter Width depends on the number of DI channels of the module, and each DI channel occupies 6 bytes. Such as WISE-4051 has 8-ch of DI, the length of Counter Width is 48. WISE-4012 has 4-ch of DI maximum; the length of Counter Width is 24.

Here, this document explains how it works though channel 3 of WISE-4051.

In figure 2, channel 3 is setup as a counter, the Modbus address is 40419 - 40424, totally 6 bytes.

Status			
Channel	Mode	Status	
0	DI		Address: 0401 Device Id: 1 Number of Polls: 158 MODBUS Point Type Valid Slave Respons
1	DI		Length: 48 03: HOLDING REGISTER • Rest
2	DI		
3	Counter	88888888 <b>8</b> 8	Reset
4	Counter	8888888888 <b>Start</b> 🧿	40402:   0>   40415:   0>   40428:   0>   40441:   0>     40403:   0>   40416:   0>   40429:   0>   40442:   0>     40404:   0>   40417:   0>   40431:   0>   40442:   0>     40404:   0>   40417:   0>   40431:   0>   40442:   0>     40405:   0>   40417:   0>   40431:   0>   40444:   0>     40405:   0>   40441:   0>   40442:   0>   40444:   0>     40405:   0>   40442:   0>   40444:   0>   40444:   0>     40405:   0>   40442:   0>   40444:   0>   40444:   0>
5	Counter	Start 🤉	40407:   0>   40420:   0>   40433:   0>   40446:   0>     Reset   40406:   0>   40420:   71>   40434:   0>   40447:   0>     40407:   0>   40422:   71>   40434:   0>   40447:   0>     40407:   0>   40422:   -15977   4045:   0>   40448:   0>     404011:   0>   40422:   -15977   4045:   0>   40448:   0>
6	Counter		Reset
7	DI		For Help, press F1 Polls: 1

Figure 2. Channel 3 and the corresponding address.

### Section I. Read counter period

The first 2 bytes indicates the period of N<sup>th</sup> pulse and N-1<sup>th</sup> pulse with unit millisecond.

Address: D401 Device Id: 1 Number of Polls: 158. Valid Slave Response   Length: 48 D3: HOLDING REGISTER  Res   40401: 0> 40414: 0> 40427: 0> 40440: 0>   40402: 0> 40415: 0> 40428: 0> 40441: 0>   40403: 0> 40416: 0> 40429: 0> 40443: 0>   40404: 0> 40417: 0> 40430: 0> 40443: 0>   40405: 0> 40417: 0> 40431: 0> 40444: 0>   40406: 0> 40431: 0> 40445: 0> 40444: 0>   40406: 0> 40419: 0> 40431: 0> 40444: 0>   40407: 0> 40420: 0> 40433: 0> 40445: 0>   40408: 0> 40421: 71> 40434: 0> 40446: 0>   40409: 0> 40422: 0> 40445: 0> <th>ModScal</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	ModScal						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			MODBUS	Point Type	V		esponse
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J						Rese
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$							
40409: <	40402: < 40403: <	0> 404 0> 404	15: < 0> 16: < 0>	40428: < 40429: <	0> 0>	40441: < 40442: <	0> 0>
40412: < 0> 40425: < 0> 40438: < 0>	40402: < 40403: < 40404: < 40405: < 40406: < 40406: <	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15: < 0> 16: < 0> 17: < 0> 18: < 0> 18: < 0> 19: < 95> 20: < 0>	40428: < 40429: < 40430: < 40431: < 40432: < 40433: <	0> 0> 0> 0> 0> 0>	40441: < 40442: < 40443: < 40444: < 40445: < 40445: <	0> 0> 0> 0> 0> 0>

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Figure 3. The period of N<sup>th</sup> pulse and N-1<sup>th</sup> pulse with unit millisecond.

#### Section II. R/W counter value

The address 40421 – 40422 indicates the counter value. This value can be written into different value. So, user can setup the startup value through this address.

ModSca1	🖶 Moo	lSca1		
	Number of Pol Valid Slave Re		Device Id: 1 MODBUS Point Type : HOLDING REGISTER •	Number of Pol Valid Slave Re
Node:   1     Address:   421     Value:   1000				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	> 40441: < > 40442: < > 40443: < > 40445: < > 40445: < > 40445: < > 40446: < > 40446: < > 40446: < > 40448: < > 30448: < > 30488: < > 304888: < > 30488885858585858585858585858585858585858

Figure 4. The addresses of counter value.

#### Section III. Read RTC value

The last 2 bytes shows the value of RTC (real-time clock). Suggest using binary to read the value. For example, in figure 5 (a), shows in decimal format, but cannot directly read by human's eyes.

After extract the binary value of figure 5 (b), and convert into decimal format, it is 1519193316. This number is represented as UTC format. Copy-past into website and convert the format into GMT, as shown in figure 6.

Table 1. Example of RTC value.				
Address	40424	40423		
Binary value	101101010001101	0000110011100100		
Decimal value	1519193316			

Table	1.	Examp	le	of R	TC	value.
14010	т.	Linamp	10	01 10		varae.

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40401: 0>40414: 0>40427:   40402: 0>40415: 0>40428:   40402: 0>40416: 0>40429:   40404: 0>40417: 0>40431:   40405: 0>40418: 0>40431:   40407: 0>40418: 0>40431:   40407: 0>40418: 0>40431:   40407: 0>40429: 40402:   40405: 0>40418: 000000000000000000000000000000000000	ModScan32 - ModScal	ModScan32 - ModSca1   File Connection Setup View Window Help   Image: Image
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

Figure 5. (a) RTC in decimal format.

(b) RTC in binary format.



# **Epoch & Unix Timestamp Conversion Tools**

The current Unix epoch time is 1519194164

### Convert epoch to human readable date and vice versa

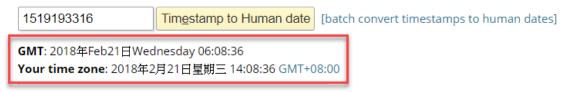


Figure 6. RTC after converted into GMT format.

Example converting website: https://www.epochconverter.com/