

21/11/16

# EM4 MODBUS ADDRESSING

## CROUZET TOUCH TUTORIAL



# SUMMARY

- Terminology
- Crouzet Touch to em4 Modbus RTU Wiring
- em4 Modbus Addresses (reminder)
- Crouzet Touch Soft - Defining the Modbus RTU Network
- Modbus RTU: CTS  $\Leftrightarrow$  em4 Word Addressing Example
- Modbus RTU: CTS  $\Leftrightarrow$  em4 Bit Addressing Example
- Modbus RTU: CTS  $\Leftrightarrow$  em4 Bit Addressing Example Using BIN/DEC Converter FB's

# TERMINOLOGY

- em4 Modbus interface → em4 Modbus Slave communication interface
- Crouzet Touch → Touchscreen of the Crouzet Automation nano-PLC range
- CTS = Crouzet Touch Soft → Programming software of the Crouzet Touch range

# CROUZET TOUCH MODBUS RTU WIRING

# Crouzet Touch to em4 Modbus RTU Wiring



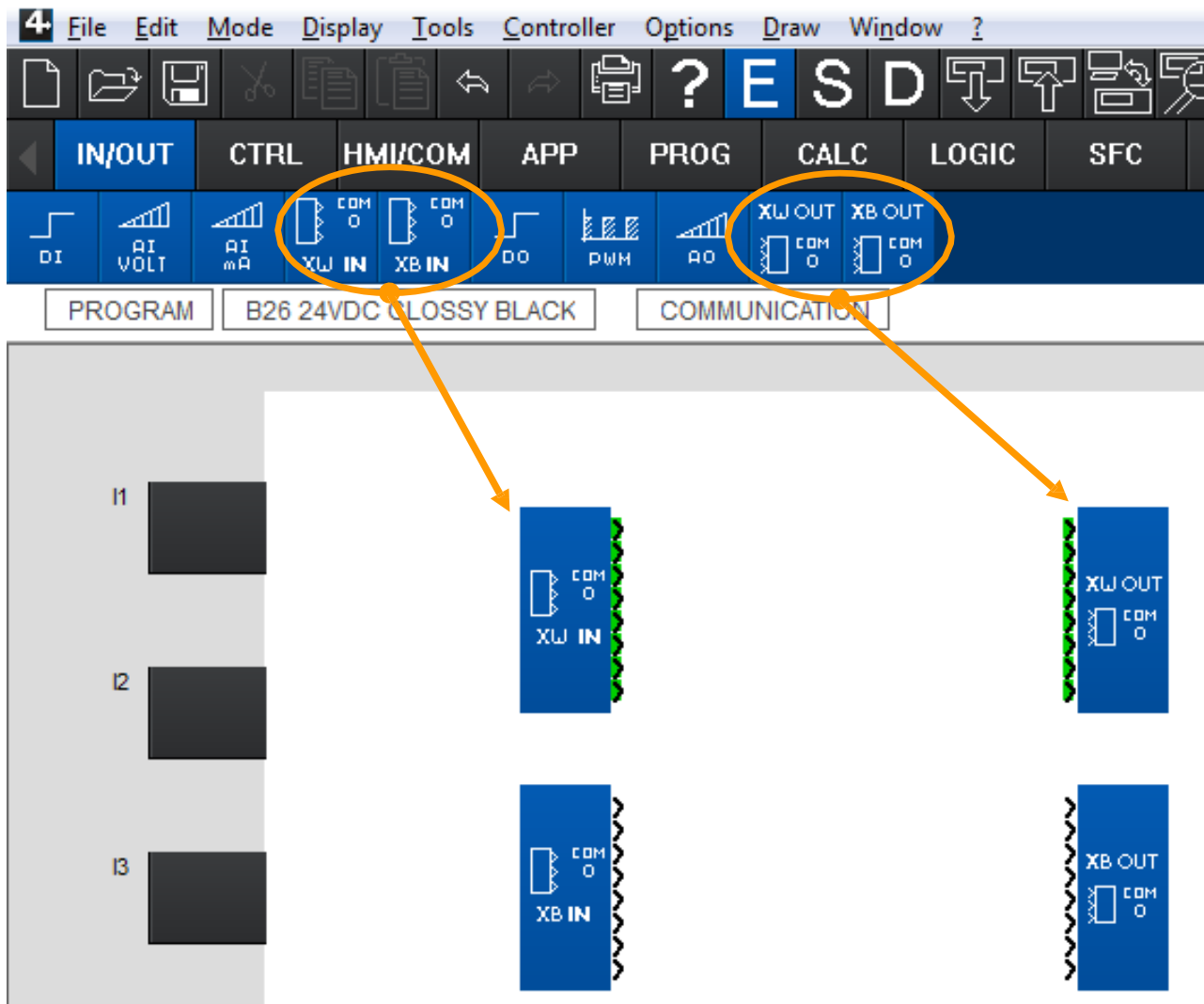
- Use the *88 980 171 Modbus cable* for the Crouzet Touch CT104, CT107 and CTP104-E

or

- Use the *88 980 172 Modbus cable* for the Crouzet Touch CTP107-E and CTP110-E
- Use the *Modbus interface 88 980 120* to connect the cable to em4

# EM4 MODBUS ADDRESSES (REMINDER)

# em4 Modbus Addresses (reminder)



Drag and drop the *COM 0* functions into your worksheet.

*XW IN*  $\Rightarrow$  Word input from network, 8 inputs each, can be used 3 times, allows to enter 24 words into an em4 program.

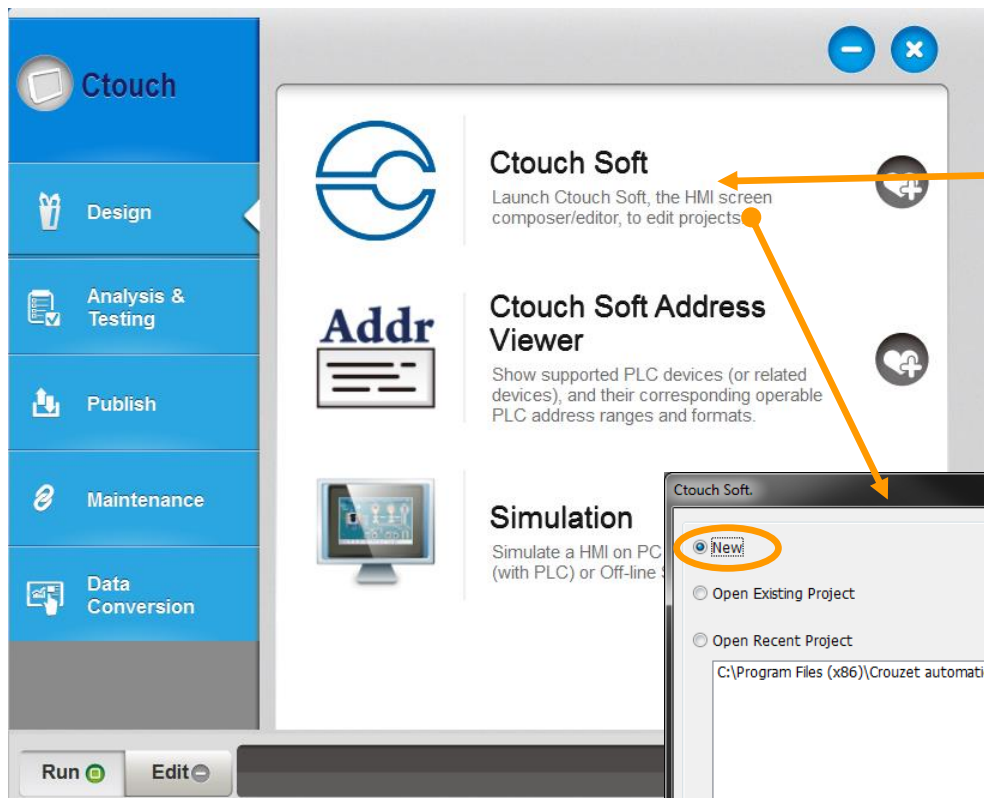
*XB IN*  $\Rightarrow$  Bit input from network, 8 inputs each, can be used 2 times, allows to enter 16 bit into an em4 program.

*XW OUT*  $\Rightarrow$  Word output to network, 8 outputs each, can be used 3 times, allows to make 24 words accessible to a network.

*XB OUT*  $\Rightarrow$  Bit output to network, 8 outputs each, can be used 2 times, allows to make 16 bit accessible to a network.

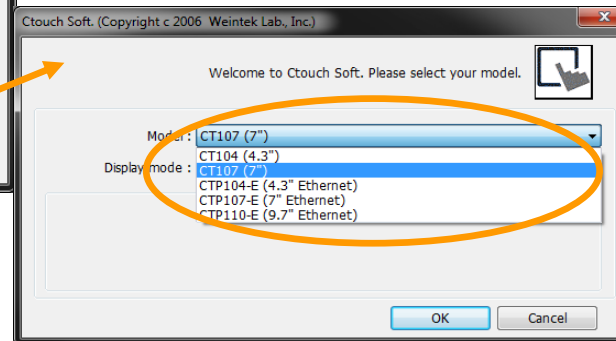
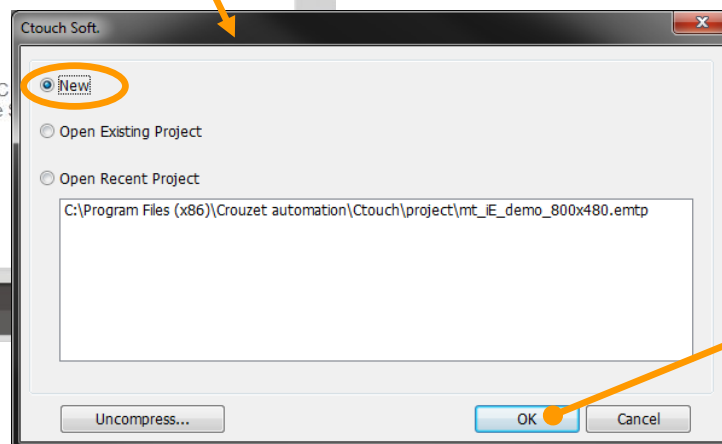


# CROUZET TOUCH SOFT- DEFINING THE MODBUS RTU NETWORK



In order to define the Modbus network in the *Crouzet Touch Soft*.

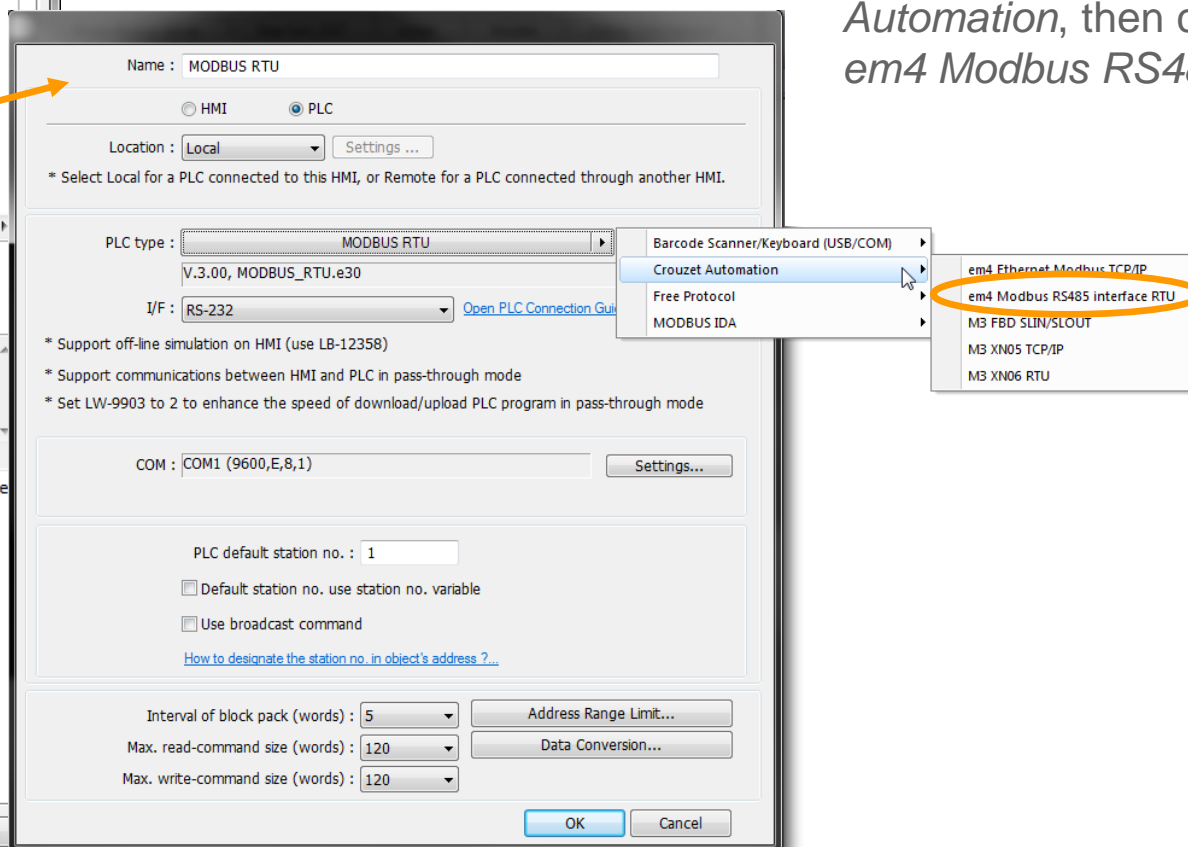
- Click on *Ctouch Soft* in the *Utility Manager*
- Select *New* to create a new project
- Click *OK*
- Then select the *Crouzet Touch* screen version that is to be used and verify by click on *OK*

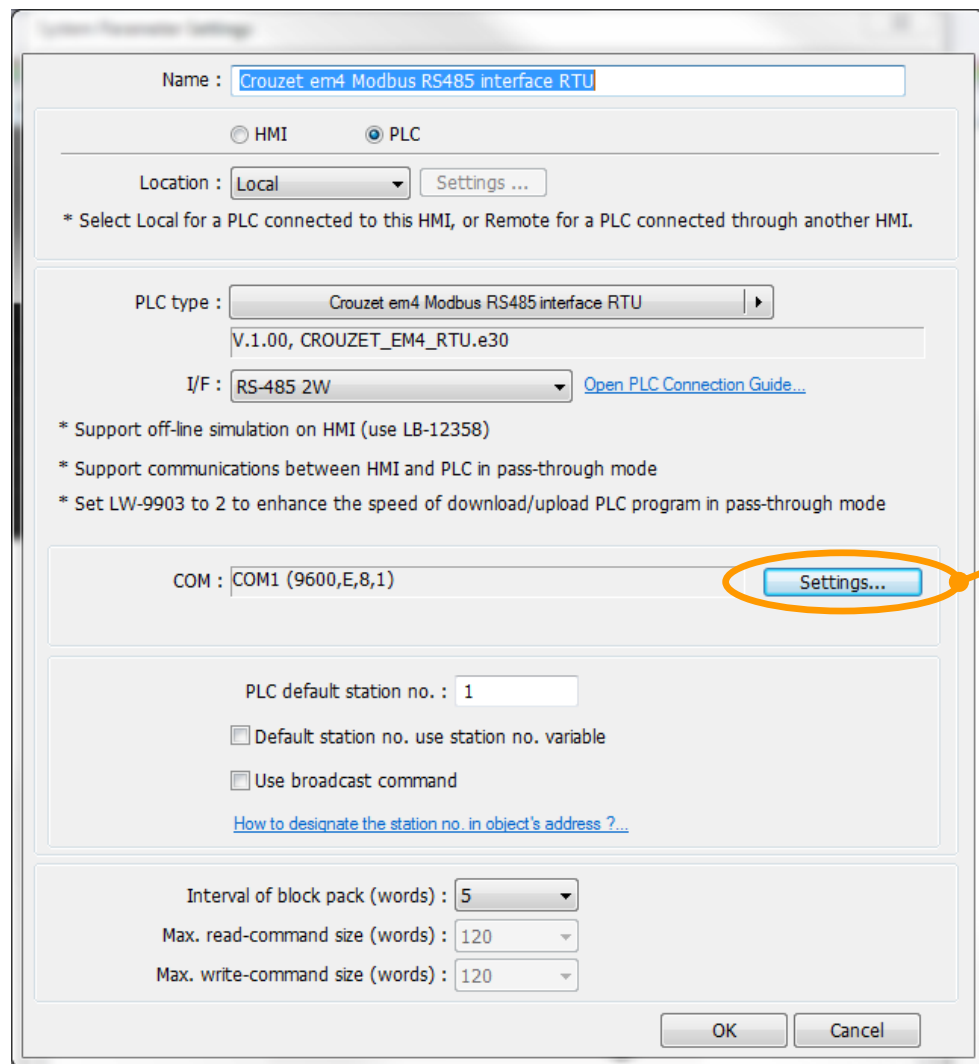




In the *System Parameter Settings* window that opens click *New* to define the *Device* (the network)

- In *PLC type* select *Crouzet Automation*, then click on *em4 Modbus RS485 interface RTU*





Name : Crouzet em4 Modbus RS485 interface RTU

☐ HMI ☒ PLC

Location : Local [Settings ...](#)

\* Select Local for a PLC connected to this HMI, or Remote for a PLC connected through another HMI.

PLC type : Crouzet em4 Modbus RS485 interface RTU  
V.1.00, CROUZET\_EM4\_RTU.e30

I/F : RS-485 2W [Open PLC Connection Guide...](#)

\* Support off-line simulation on HMI (use LB-12358)  
\* Support communications between HMI and PLC in pass-through mode  
\* Set LW-9903 to 2 to enhance the speed of download/upload PLC program in pass-through mode

COM : COM1 (9600,E,8,1) [Settings...](#)

PLC default station no. : 1

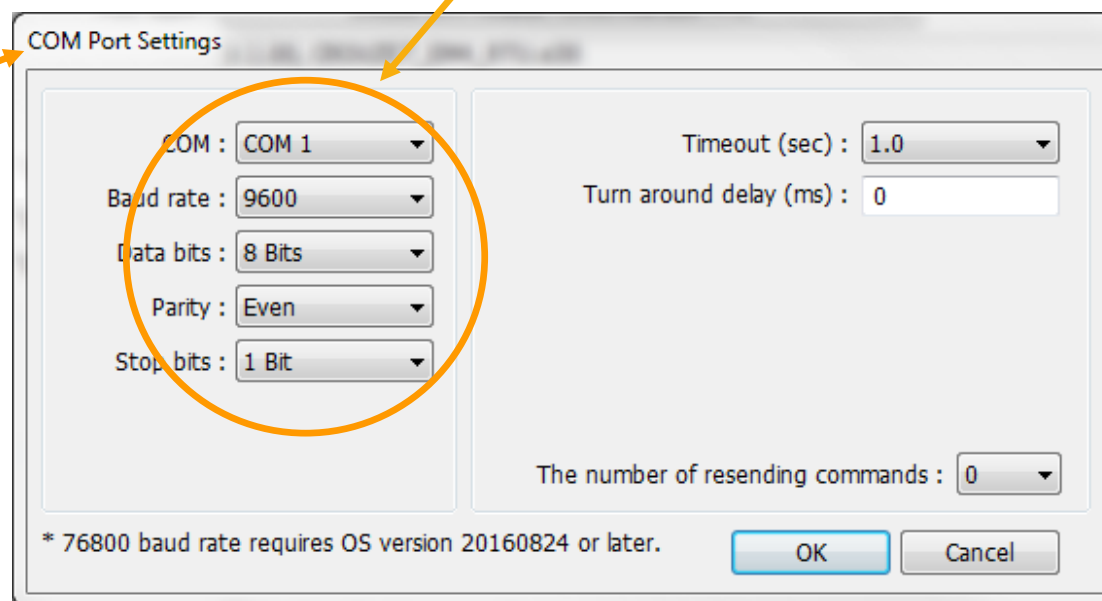
☐ Default station no. use station no. variable  
☐ Use broadcast command  
[How to designate the station no. in object's address ?...](#)

Interval of block pack (words) : 5  
Max. read-command size (words) : 120  
Max. write-command size (words) : 120

OK Cancel

- Click *Settings* to define the communication parameters (Speed, Parity, ...)
- Confirm with *OK*

These parameters have to be *identical* in the Crouzet Touch (**Master**) and the em4 Modbus (**Slave**) settings!



COM Port Settings

COM : COM 1

Baud rate : 9600

Data bits : 8 Bits

Parity : Even

Stop bits : 1 Bit

Timeout (sec) : 1.0

Turn around delay (ms) : 0

The number of resending commands : 0

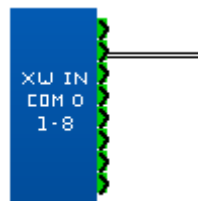
\* 76800 baud rate requires OS version 20160824 or later.

OK Cancel

# MODBUS RTU: CTS $\Leftrightarrow$ EM4 WORD ADDRESSING EXAMPLE

Writing a value from Crouzet Touch to em4 (slave n° 5)

$\Rightarrow$  em4: COM 0, XW IN 2



$\Rightarrow$  CTS: *Device type* XWIN *Address* 5#2  
Slave n°5, write address XW IN 2

PLC : Crouzet em4 Modbus RS485 interface RTU

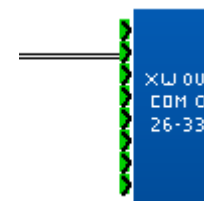
Device type : XWIN

Address : 5#2

Address format : DD [range : 1 ~ 24]

Reading a value by the Crouzet Touch from em4 (slave n° 5)

$\Rightarrow$  em4: COM 0, XW OUT 27



$\Rightarrow$  CTS: *Device type* XWOUT *Address* 5#27  
Slave n°5, read address XW OUT 27

PLC : Crouzet em4 Modbus RS485 interface RTU

Device type : XWOUT

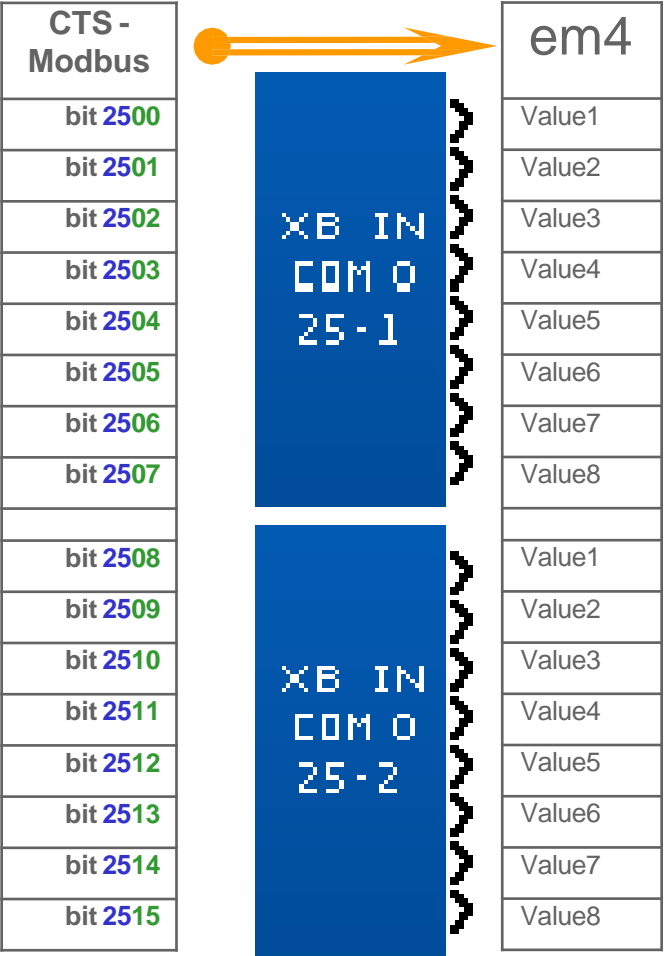
Address : 5#27

Address format : DD [range : 26 ~ 49]

# MODBUS RTU: CTS $\Leftrightarrow$ EM4 BIT ADDRESSING EXAMPLE

Crouzet Touch soft: write/read a bit to em4 via Modbus RTU

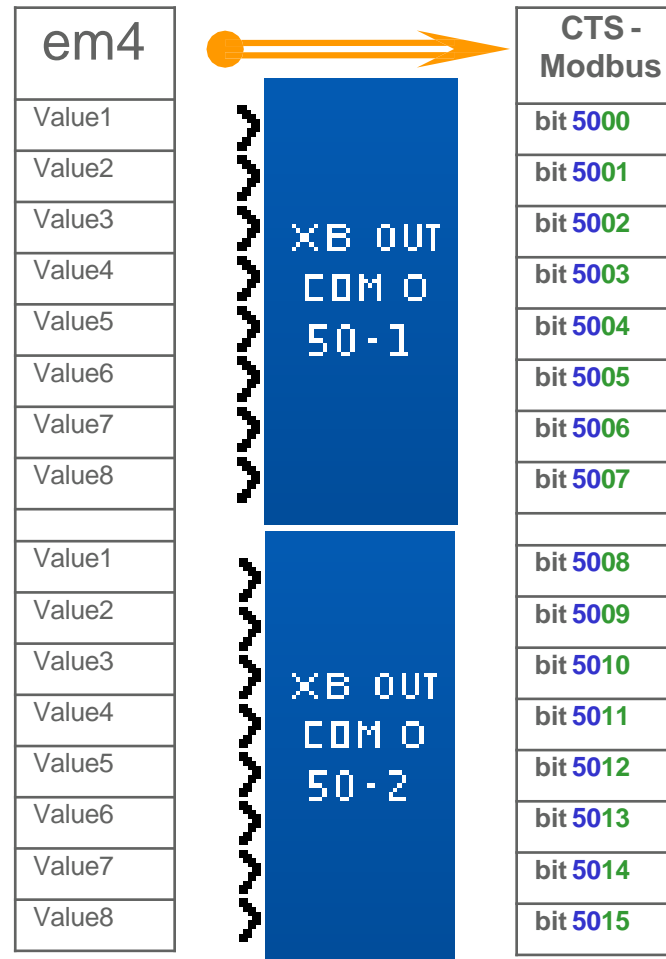
Modbus to em4





Crouzet Touch soft: reading a bit from em4 via Modbus RTU

em4 to Modbus



# Modbus RTU: CTS $\Leftrightarrow$ em4 Bit Addressing Example

Writing a bit from the Crouzet Touch to em4 (slave n° 5)

$\Rightarrow$  em4: COM 0, XB IN 25-1 Value4



$\Rightarrow$  CTS: *Device type*: XBIN *Address*: 5#2503

Slave n°5, write address XB IN 25-1

PLC : Crouzet em4 Modbus RS485 interface RTU

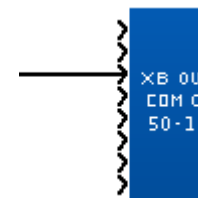
Device type : XBIN\_Bit

Address : 5#2503

Address format : DDdd [range : 2500 ~ 2515, dd (bit no.) : 00 ~ 15]

Reading a bit by the Crouzet Touch from em4 (slave n° 5)

$\Rightarrow$  em4: COM 0, XB OUT 50-1 Value3



$\Rightarrow$  CTS: *Device type*: XBOUT *Address*:

5#5000 Slave n°5, read address XB OUT 50-1

PLC : Crouzet em4 Modbus RS485 interface RTU

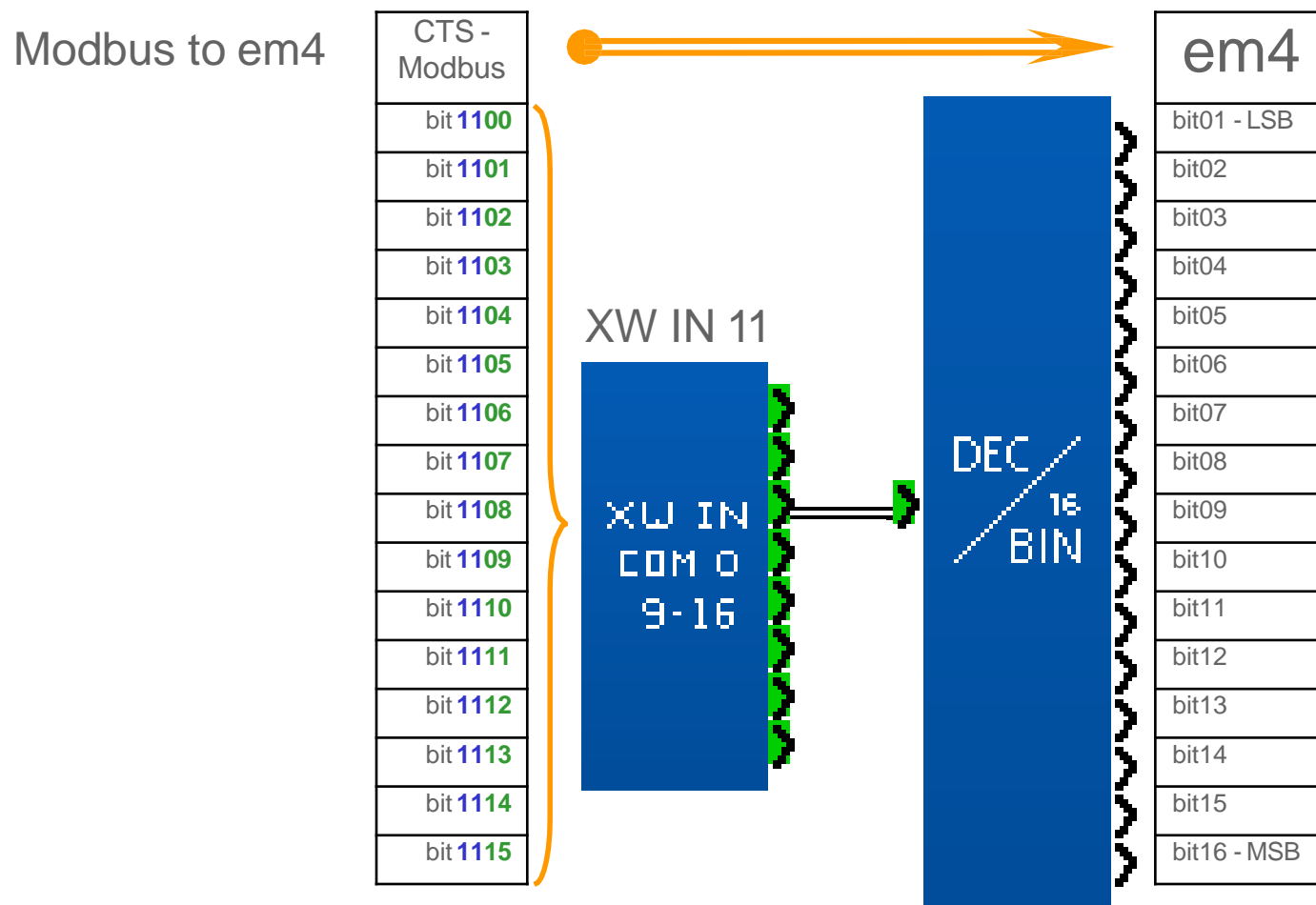
Device type : XBOUT\_Bit

Address : 5#5002

Address format : DDdd [range : 5000 ~ 5015, dd (bit no.) : 00 ~ 15]

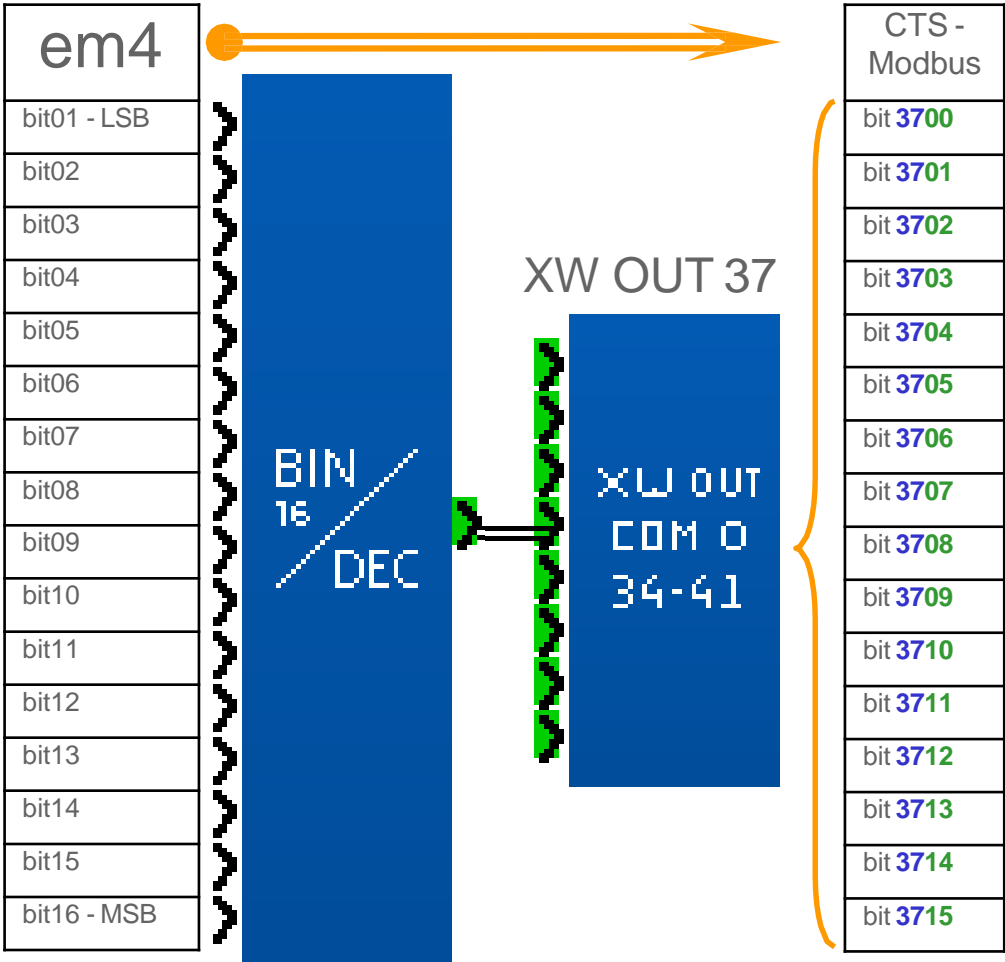
# MODBUS RTU: CTS $\Leftrightarrow$ EM4 BIT ADDRESSING EXAMPLE USING BIN/DEC CONVERTER FB'S

## Crouzet Touch Soft: writing/reading a bit to em4 via Modbus RTU Using DEC/BIN converter option



## Crouzet Touch Soft: reading a bit from em4 via Modbus RTU Using BIN/DEC converter option

em4 to Modbus

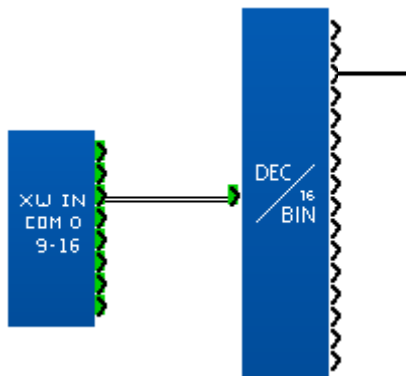


## Example of how to address a bit using DEC/BIN and BIN/DEC converters

Writing a bit from the Crouzet Touch to em4  
(slave n° 1)

⇒ em4: COM 0, XW IN 11, bit 03

⇒ CTS: Device type : *XWIN*, address: 1#1102



PLC : Crouzet em4 Modbus RS485 interface RTU

Device type : **XWIN**

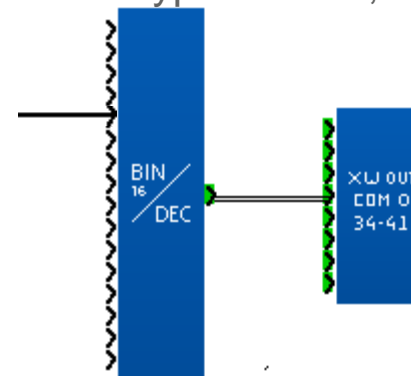
Address : 1#1102

Address format : DD [range : 1 ~ 24]

Reading an em4 bit (slave n° 1) by the Crouzet Touch

⇒ em4: COM 0, XW OUT 37, bit 05

⇒ CTS: Device type : *XWIN*, address : 1#3704



PLC : Crouzet em4 Modbus RS485 interface RTU

Device type : **XWOUT**

Address : 1#3704

Address format : DD [range : 26 ~ 49]

# THANK YOU FOR YOUR ATTENTION

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