19/06/17

EM4 MODBUS TCP/IP ADDRESSING

CROUZET TOUCH TUTORIAL

CROUZET AUTOMATION

A BRAND OF INNOVISTA SENSORS

SUMMARY

- Terminology
- Crouzet Touch to em4 ETHERNET (Modbus TCP/IP) Wiring
- em4 ETHERNET (Modbus TCP/IP) Addresses (reminder)
- Crouzet Touch Soft - Defining the Modbus TCP/IP Network
- Crouzet Touch - IP Address Parameters
- Modbus TCP/IP: CTS ⇔ em4 ETHERNET Word Addressing Example
- Modbus TCP/IP: CTS ⇔ em4 ETHERNET Bit Addressing Example
- Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Word Addressing Example and Bit Addressing Example Using BIN/DEC Converter FB’s

TERMINOLOGY

Terminology

- Crouzet Touch → Touchscreen of the Crouzet Automation nano-PLC range
- CTS = Crouzet Touch Soft → Programming software of the Crouzet Touch range
- BIN/DEC Converter → Binary (16-bit) to decimal (16-bit integer) convertor
- TCP/IP → Transmission Control Protocol / Internet Protocol

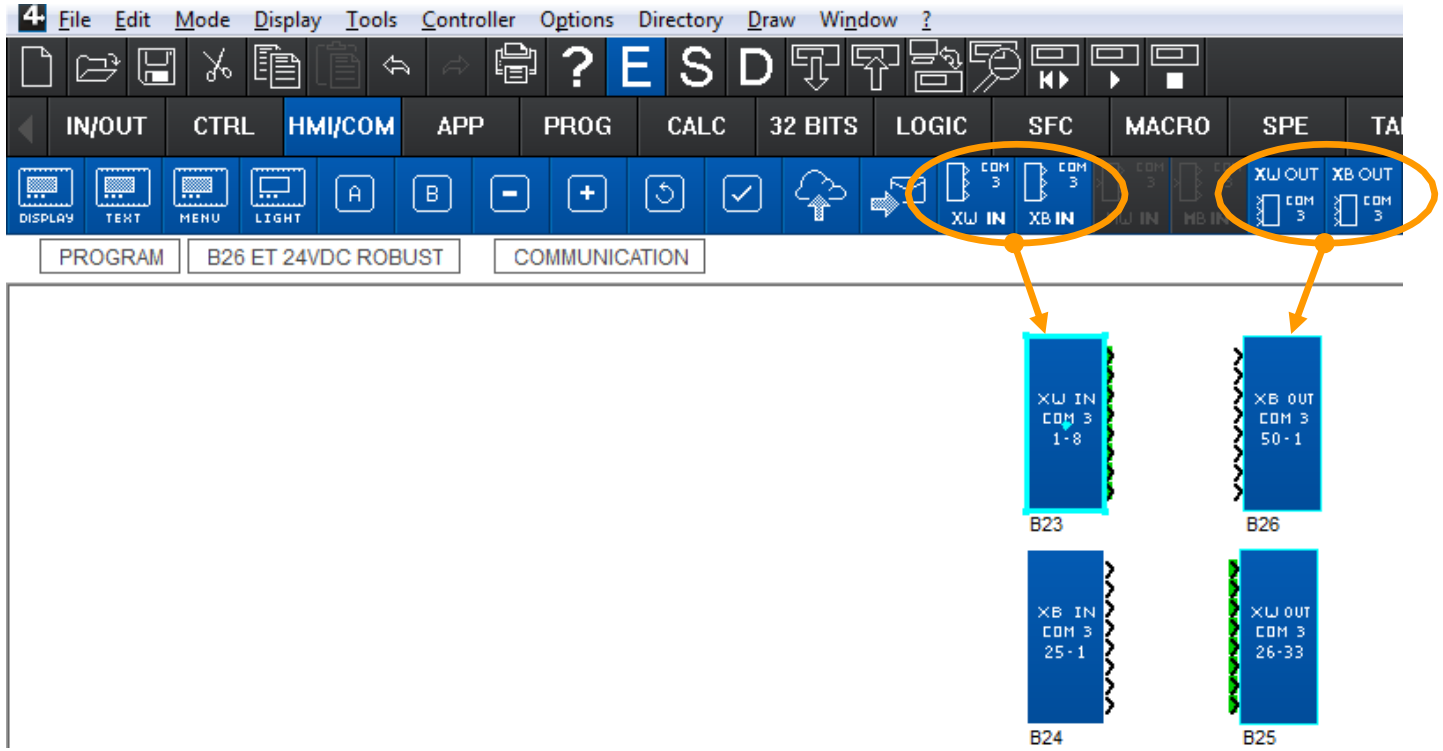
CROUZET TOUCH TO EM4 ETHERNET (MODBUS TCP/IP) WIRING

Crouzet Touch to em4 ETHERNET (Modbus TCP/IP) Wiring

- The screens with Ethernet TCP / IP communication are CTP104-E, CTP107-E and CTP110-E
- To connect the screen to the em4 nano PLC, use a standard Ethernet cable (CAT5e or higher)

EM4 ETHERNET (MODBUS TCP/IP) ADDRESSES (REMINDER)

em4 ETHERNET (Modbus TCP/IP) Addresses (reminder)



Drag and drop the *COM 3* functions into your worksheet.

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

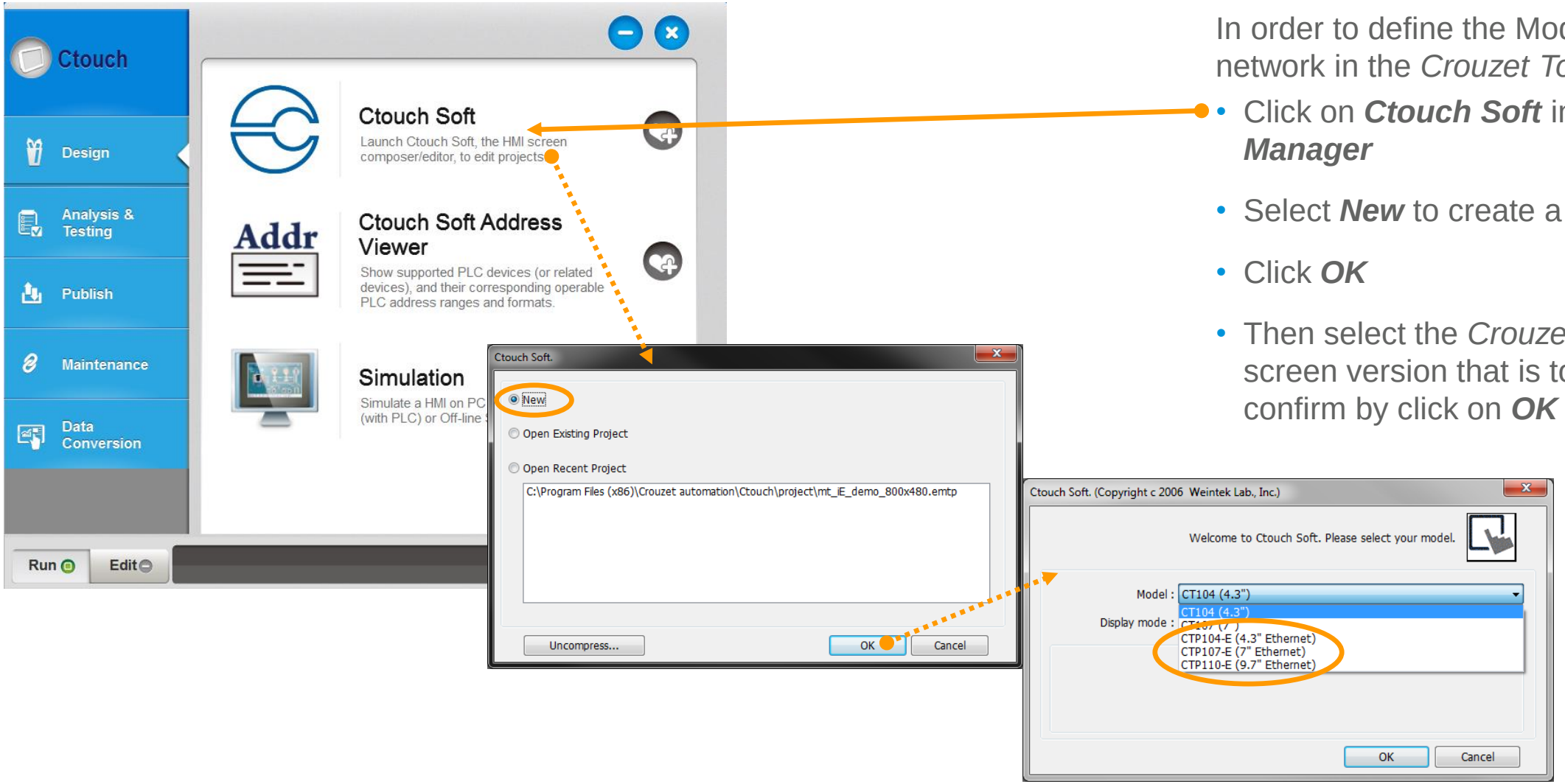
XB IN ⇒ Bit input from network, 8 inputs each, can be used 2 times, allows to enter 16 bit into an em4 program.

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

XB OUT ⇒ 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 TCP/IP NETWORK

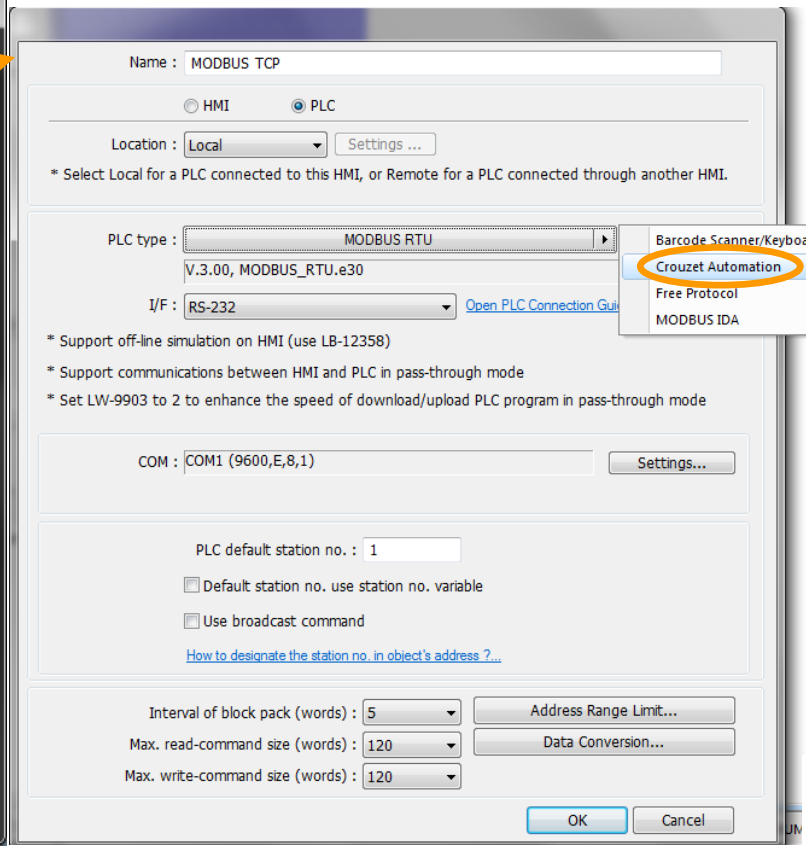
Crouzet Touch Soft - Defining the Modbus TCP/IP Network

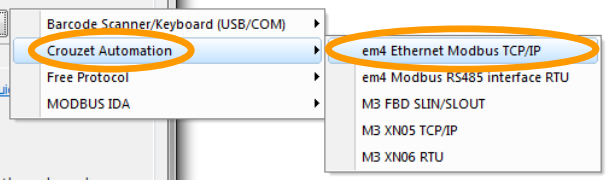


In order to define the Modbus TCP/IP network in the *Crouzet Touch Soft*:

- 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 confirm by click on ***OK***

Crouzet Touch Soft - Defining the Modbus TCP/IP Network





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 Ethernet Modbus TCP/IP***

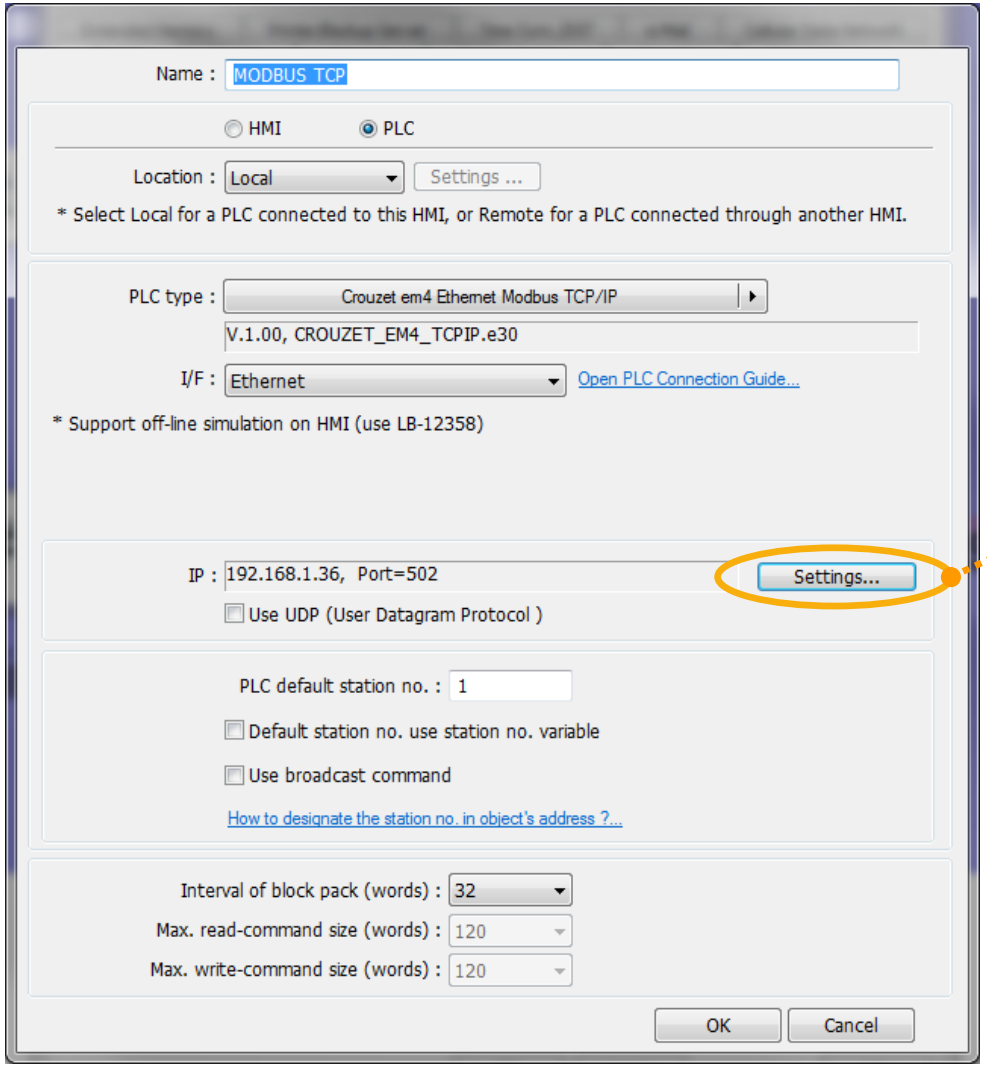
In case of bit communication only:

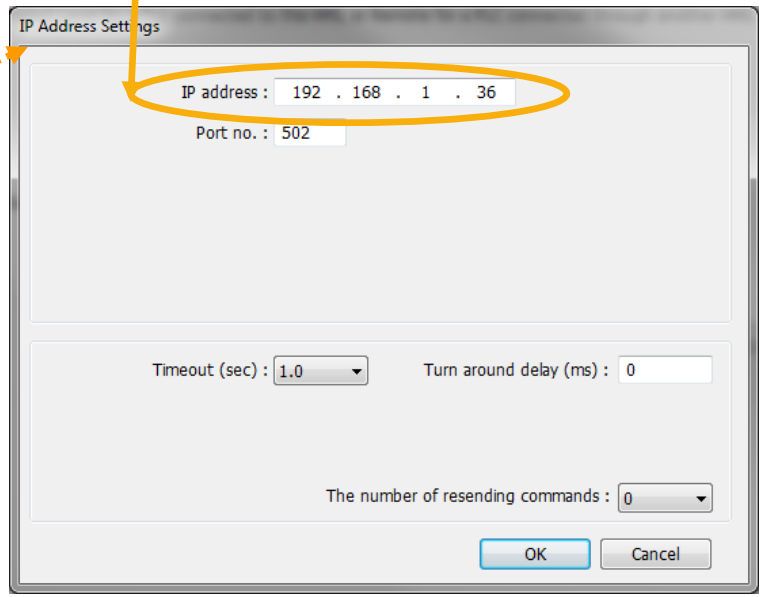
If your application requires to exchange more than 16 bit in or 16 bit out with the Crouzet Touch, select *MODBUS TCP/IP (Zero-based Addressing*) which is listed under *MODBUS IDA.*

It includes the *4x_bit* function allowing to read/write a bit in a register.

See chapter page 27

Crouzet Touch Soft - Defining the Modbus TCP/IP Network





- Click ***Settings*** to define the communication parameters (IP address)
- The **IP address** of Crouzet Touch, em4 and the computer need to be **different** but part of the **same subnet**

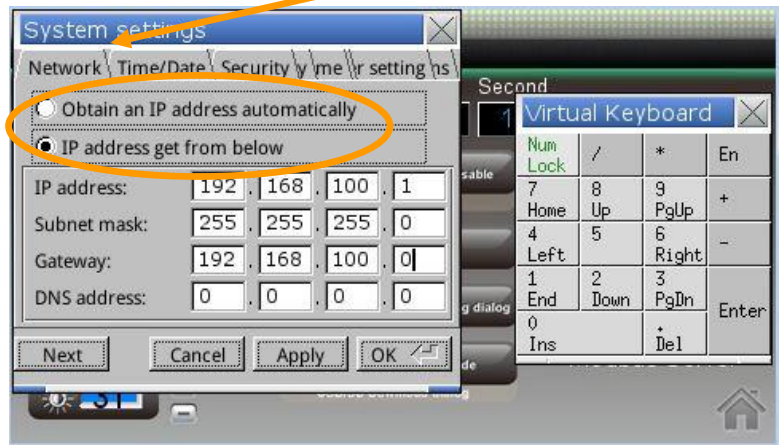
CROUZET TOUCH – IP ADDRESS PARAMETERS

Crouzet Touch – IP Address Parameters

- Click on the ***tool icon*** on the home page

- Click on ***Open hardware setting dialog*** button

Crouzet Touch – IP Address Parameters



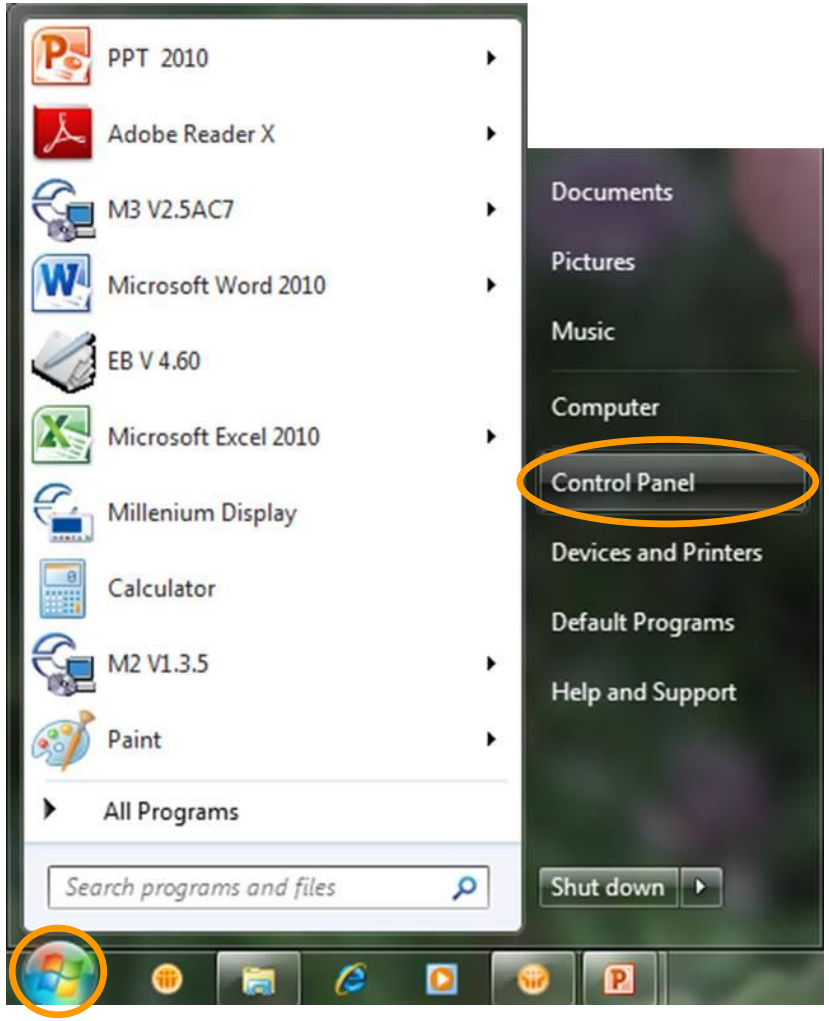
- Enter default password 111111 using the virtual keyboard on the Crouzet Touch and press ***OK***

- Select the ***Network*** tab :
  - When we choose ***Obtain an IP adress automatically*** we don't have to configure the IP adress for the screen and computer.
  - If we select the option ***IP address get from below,*** then enter the IP, subnet mask and gateway. After click on ***Apply*** button and ***OK***

The **IP address** of Crouzet Touch, em4 and the computer need to be **different** but part of the **same subnet**

Crouzet Touch – IP Address Parameters

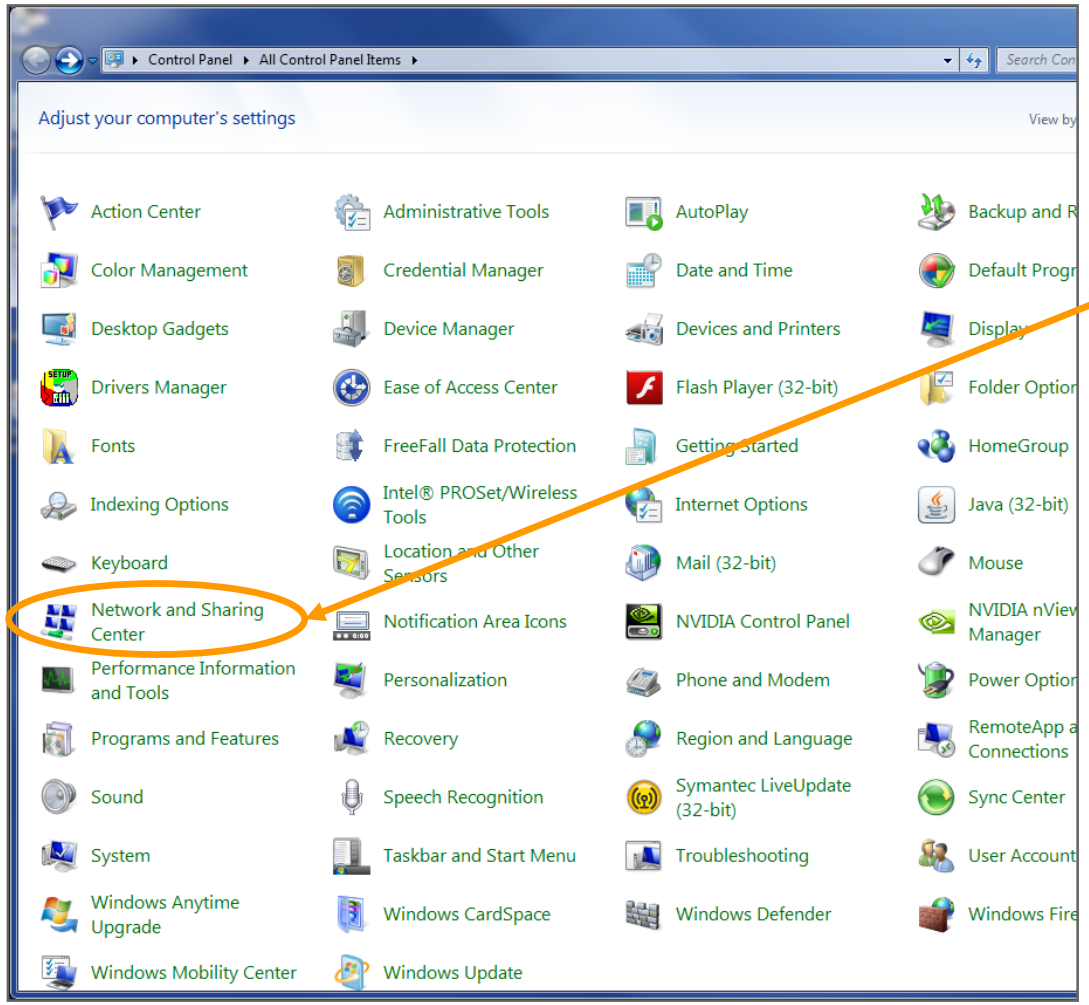
- Setting the IP address of the PC under Win7



- Click ***start menu***, then ***Control Panel***

Crouzet Touch – IP Address Parameters

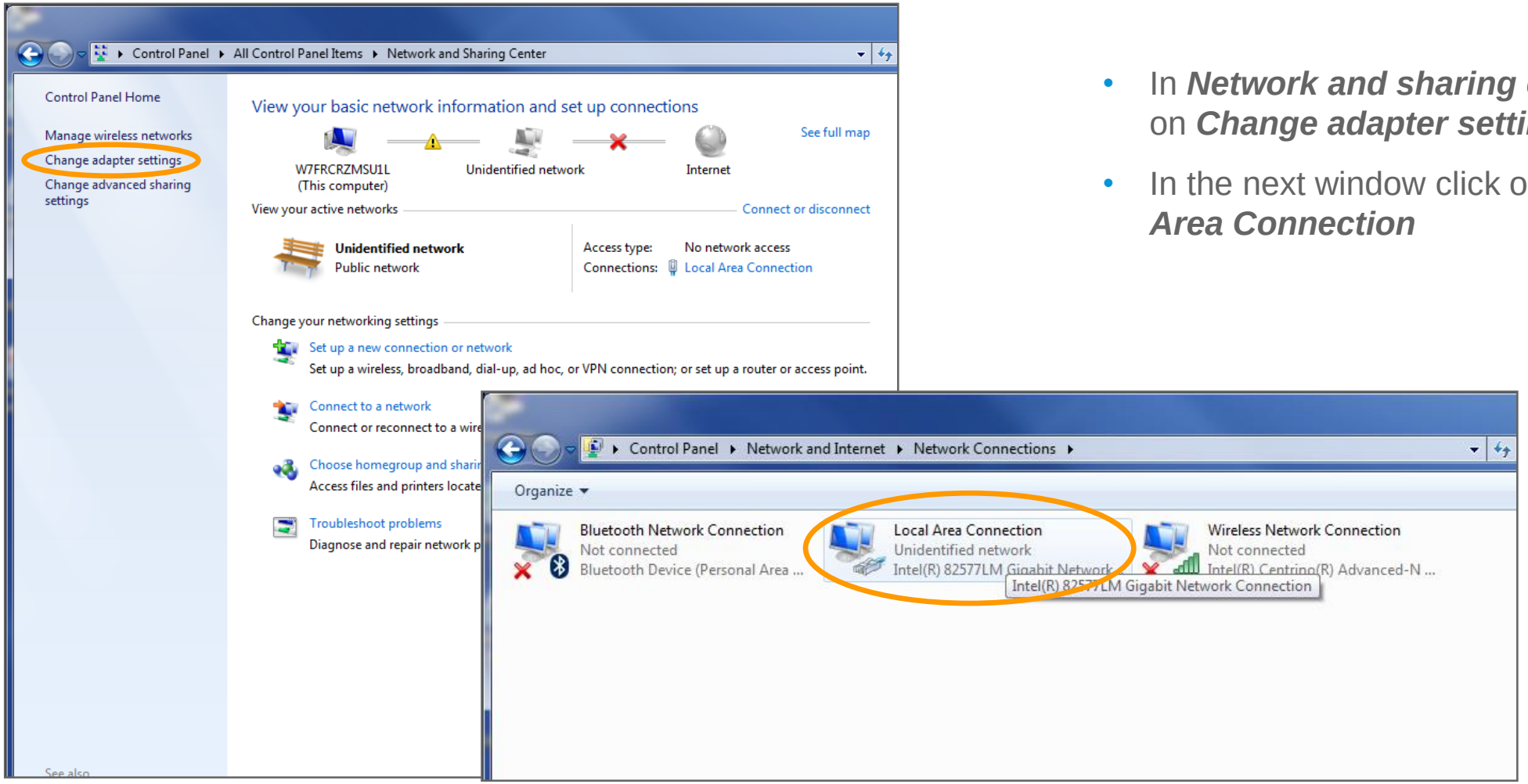
- Setting the IP address of the PC under Win7



- If you are on *View Icons* click on ***Network and Sharing Center*** in the window that opens

Crouzet Touch – IP Address Parameters

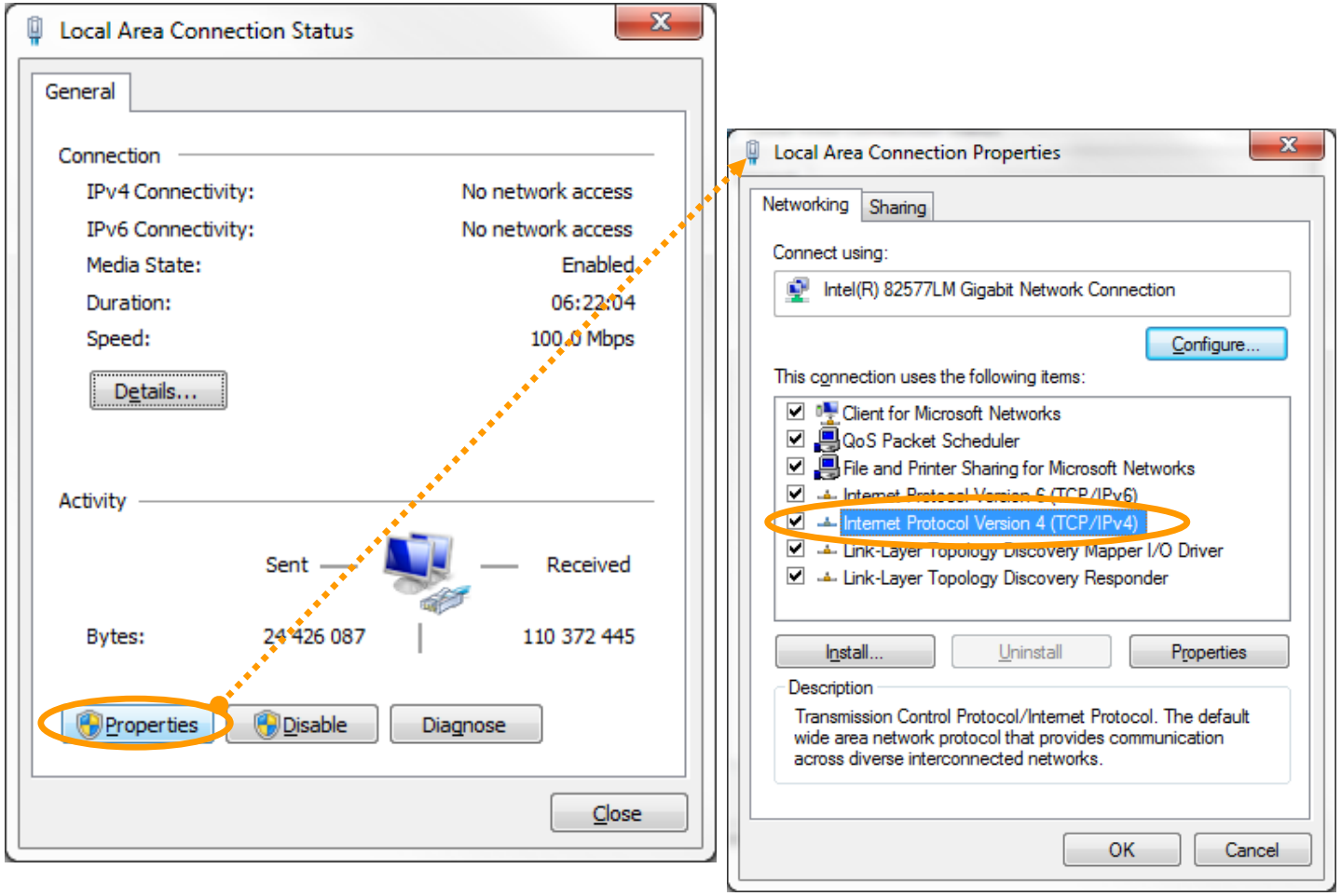
- Setting the IP address of the PC under Win7



- In ***Network and sharing center*** click on ***Change adapter settings***
- In the next window click on ***Local Area Connection***

Crouzet Touch – IP Address Parameters

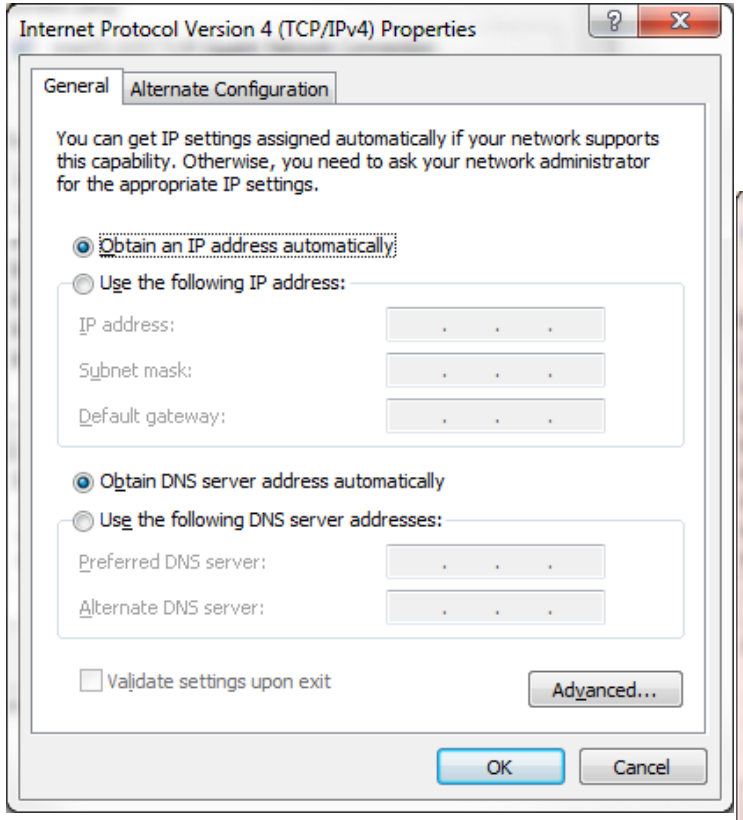
- Setting the IP address of the PC under Win7

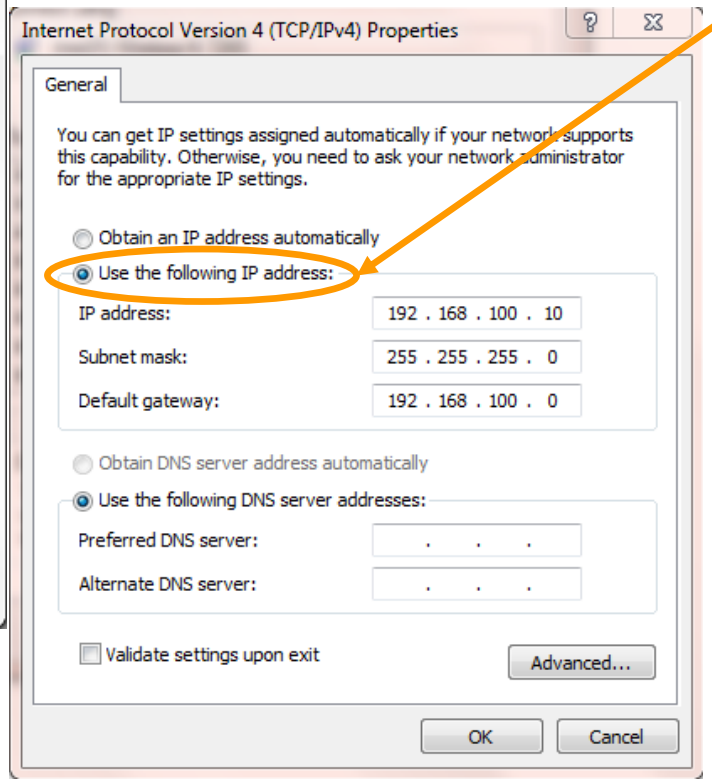


- Click on ***Properties***
- Then double click on ***Internet Protocol Version 4***

Crouzet Touch – IP Address Parameters

- Setting the IP address of the PC under Win7





- To use a static IP address, tick ***Use the following IP address*** then enter the ***IP address, Subnet mask*** and ***Default gateway***

MODBUS TCP/IP: CTS ⇔ EM4 ETHERNET WORD ADDRESSING EXAMPLE

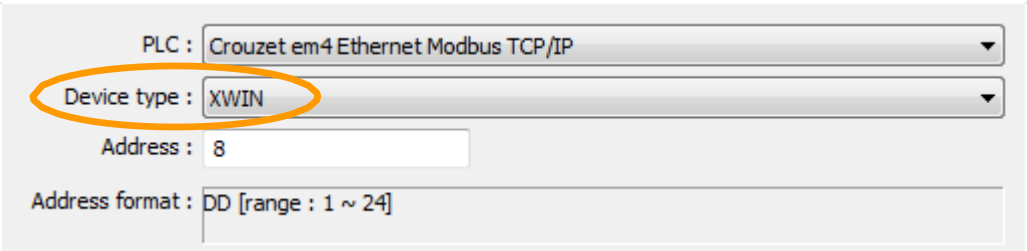
Modbus TCP/IP: CTS ⇔ em4 ETHERNET
Word Addressing Example

Writing a value from Crouzet Touch to em4 ETHERNET

⇒ em4: COM 3, XW IN 8

⇒ CTS: *Device type* XWIN, *Address* 8

write address XW IN 8

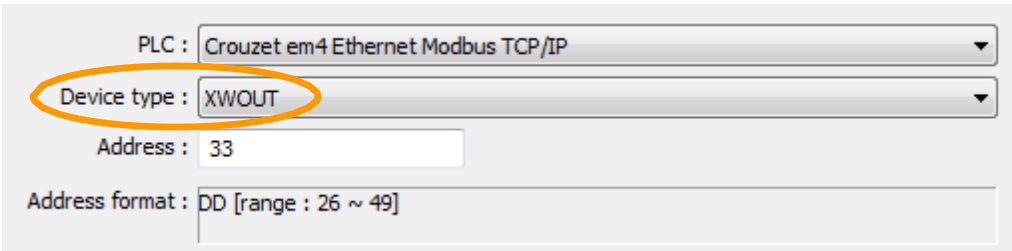


Reading a value by the Crouzet Touch from em4 ETHERNET

⇒ em4: COM 3, XW OUT 33

⇒ CTS: *Device type* XWOUT, *Address* 33

read address XW OUT 33

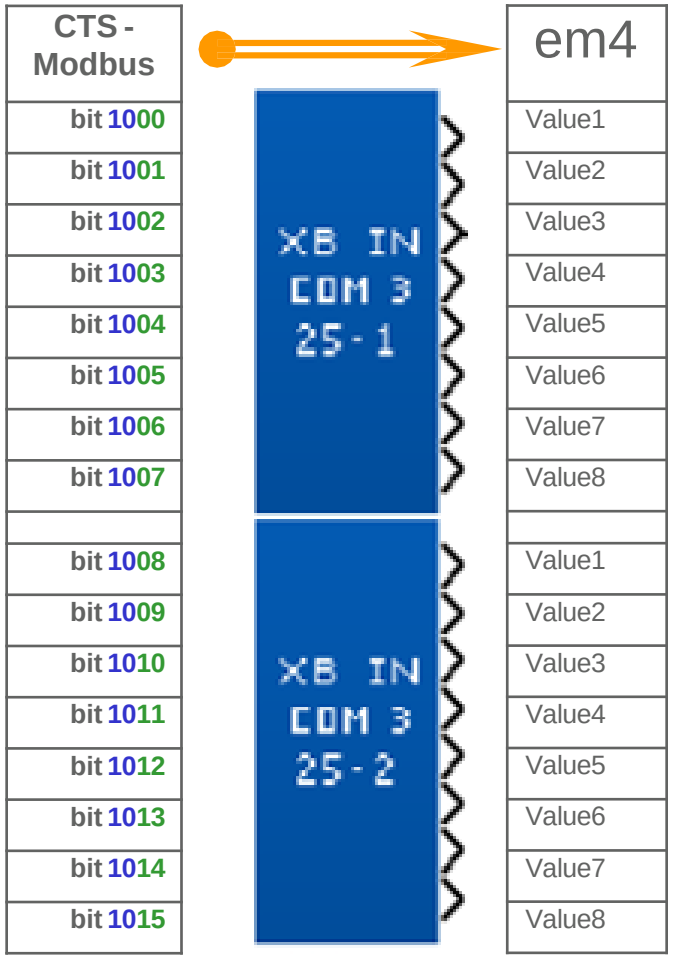


MODBUS TCP/IP: CTS ⇔ EM4 ETHERNET BIT ADDRESSING EXAMPLE

Modbus TCP/IP: CTS ⇔ em4 ETHERNET
Bit Addressing Example

Crouzet Touch soft: write/read a bit to em4 ETHERNET via Modbus TCP/IP

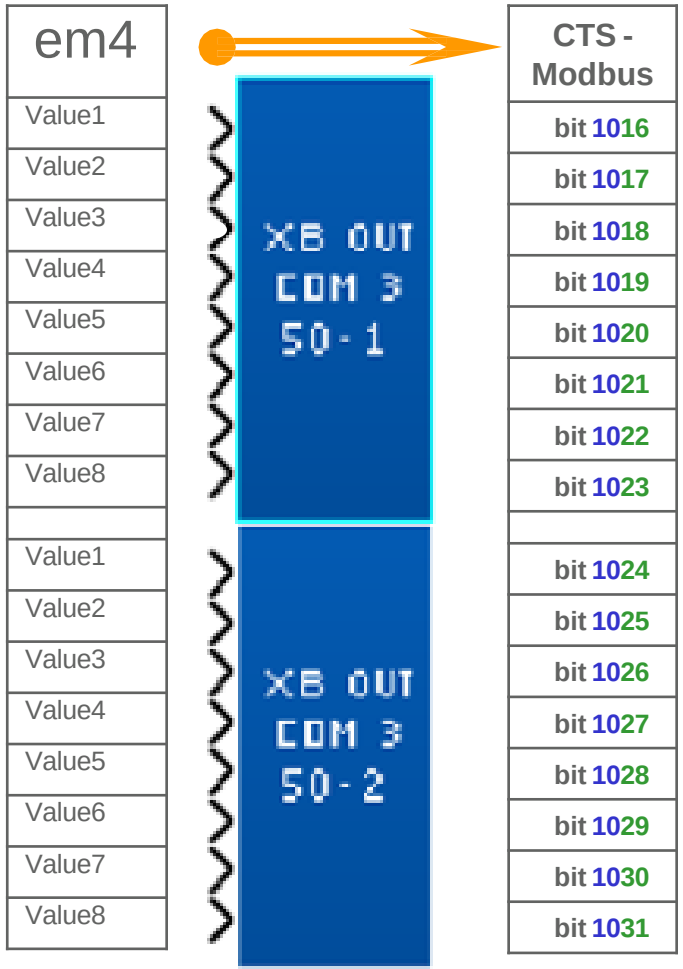
Modbus to em4



Modbus TCP/IP: CTS ⇔ em4 ETHERNET
Bit Addressing Example

Crouzet Touch soft: reading a bit from em4 ETHERNET via Modbus TCP/IP

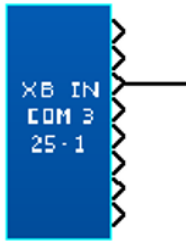
em4 to Modbus



Modbus TCP/IP: CTS ⇔ em4 ETHERNET
Bit Addressing Example

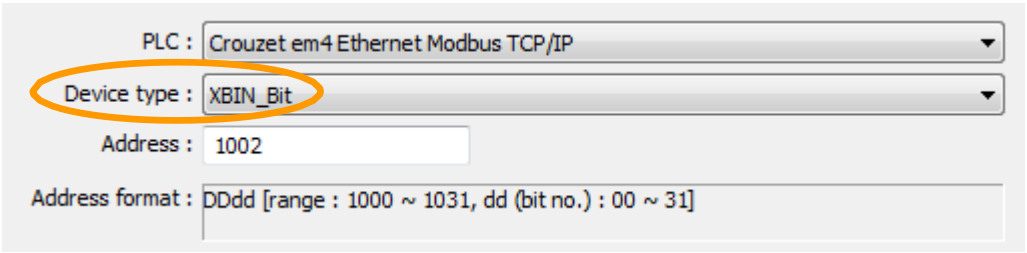
Writing a bit from the Crouzet Touch to em4

⇒ em4: COM 3, XB IN 25-1, output Value 3



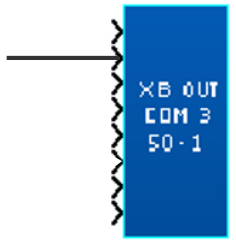
⇒ CTS: *Device type:* XBIN_Bit, *Address:* 1002

write address XB IN 25-1



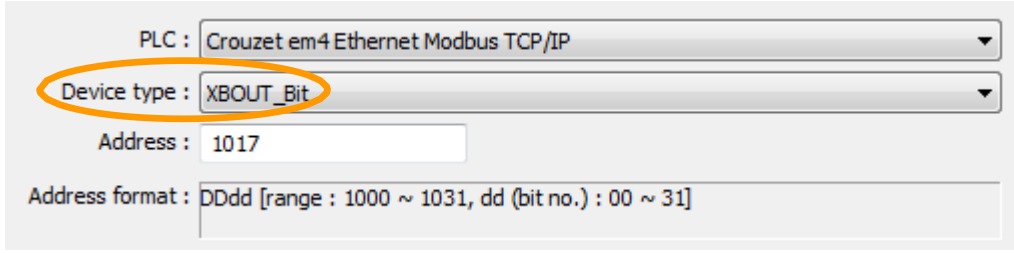
Reading a bit by the Crouzet Touch from em4

⇒ em4: COM 3, XB OUT 50-1, input Value 2



⇒ CTS: *Device type:* XBOUT_Bit, *Address:* 1017

read address XB OUT 50-1



MODBUS TCP/IP (ZERO-BASED ADDRESSING): CTS ⇔ EM4 ETHERNET WORD ADDRESSING EXAMPLE AND BIT ADDRESSING EXAMPLE USING BIN/DEC CONVERTER FB'S

Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Word Addressing Example

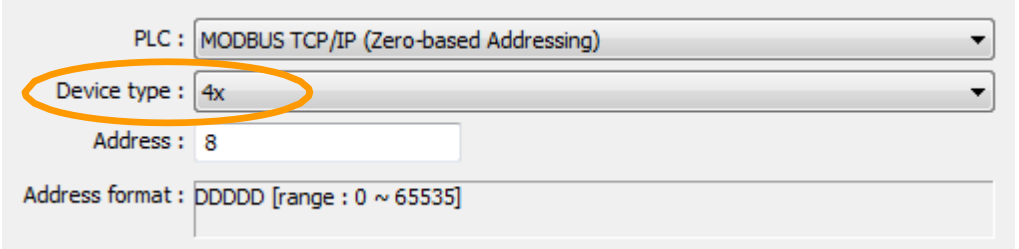
Having chosen MODBUS TCP/IP (Zero-based Addressing) select the 4x function in *Device type* under *Settings* for CTS Objects communicating words, and
the 4x_Bit function in *Device type* for Objects communicating a bit status

Writing a value from Crouzet Touch to em4 ETHERNET

⇒ em4: COM 3, XW IN 8

⇒ CTS: *Device type* 4x, *Address* 8

write address XW IN 8

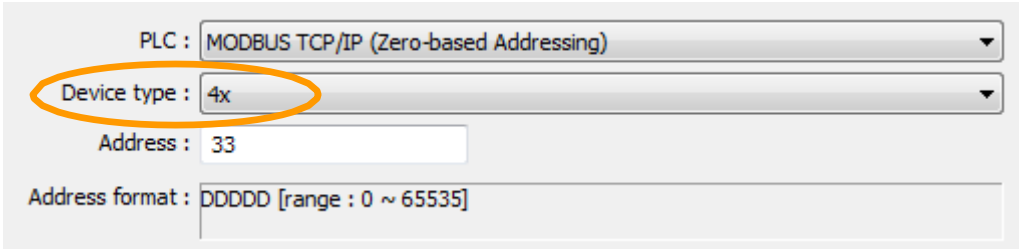


Reading a value by the Crouzet Touch from em4 ETHERNET

⇒ em4: COM 3, XW OUT 33

⇒ CTS: *Device type* 4x, *Address* 33

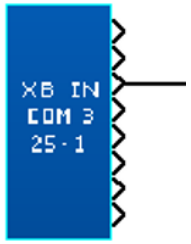
read address XW OUT 33



Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Bit Addressing Example

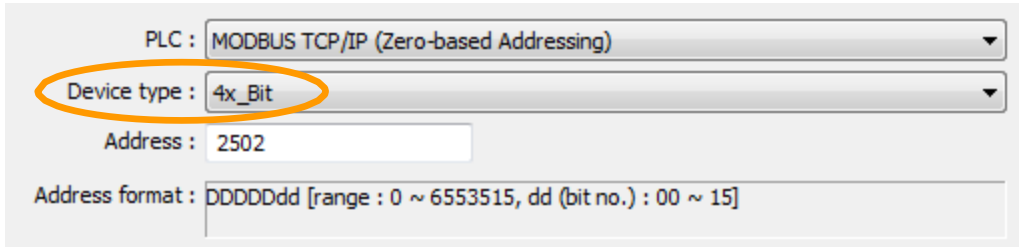
Writing a bit from the Crouzet Touch to em4 ETHERNET

⇒ em4: COM 3, XB IN 25-1, output Value 3



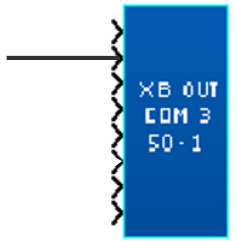
⇒ CTS: *Device type:* 4x_Bit, *Address:* 2502

write address XB IN 25-1



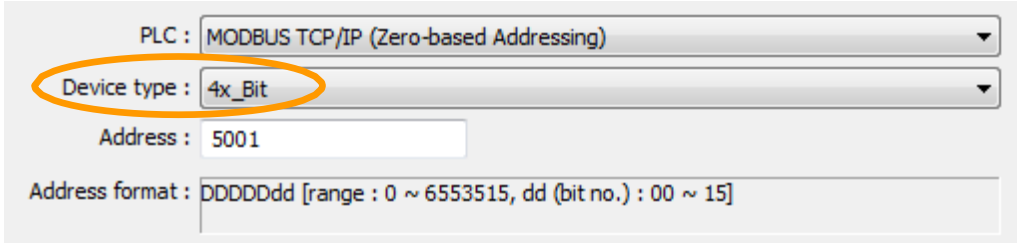
Reading a bit by the Crouzet Touch from em4 ETHERNET

⇒ em4: COM 3, XB OUT 50-1, input Value 2



⇒ CTS: *Device type:* 4x_Bit, *Address:* 5001

read address XB OUT 50-1

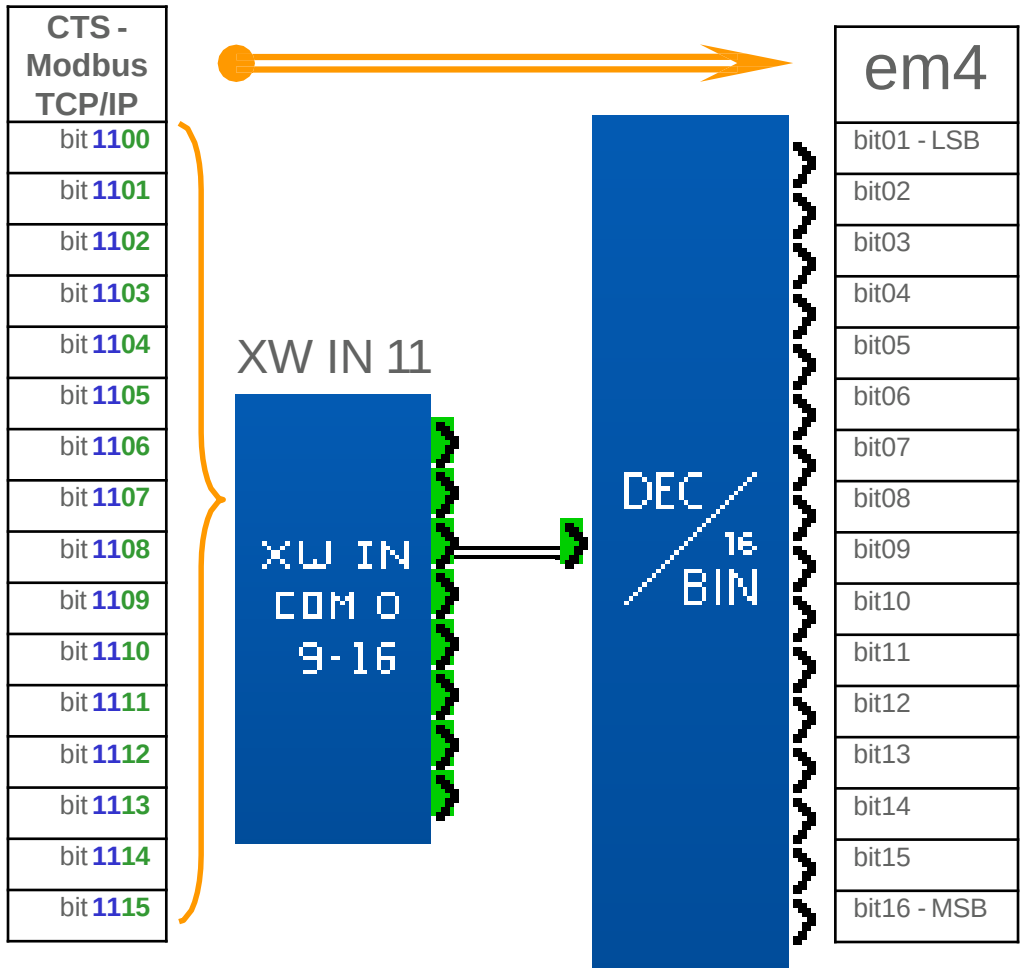


Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Bit Addressing via Converter

Crouzet Touch soft: write/read a bit to em4 ETHERNET via Modbus TCP/IP (Zero-based Addressing)

Using DEC/BIN converter option

Modbus to em4

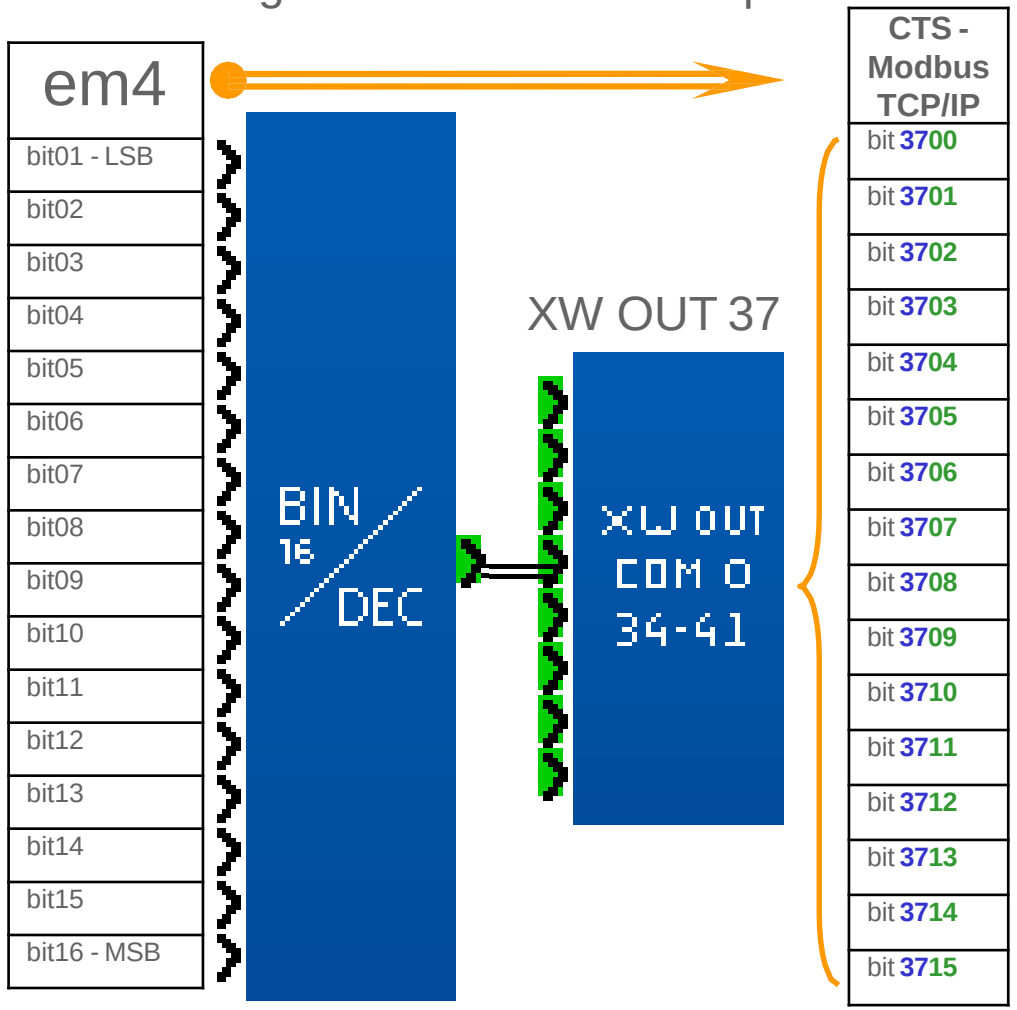


Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Bit Addressing via Converter

Crouzet Touch soft: reading a bit from em4 ETHERNET via Modbus TCP/IP (Zero-based Addressing)

Using BIN/DEC converter option

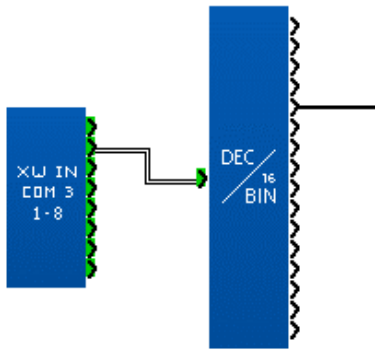
em4 to Modbus



Modbus TCP/IP (Zero-based Addressing): CTS ⇔ em4 ETHERNET Bit Addressing via Converter

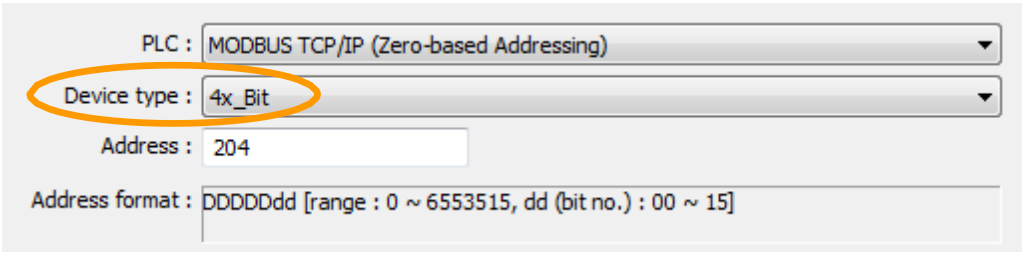
Writing a bit from the Crouzet Touch to em4 ETHERNET

⇒ em4: COM 3, XW IN 2, bit 05



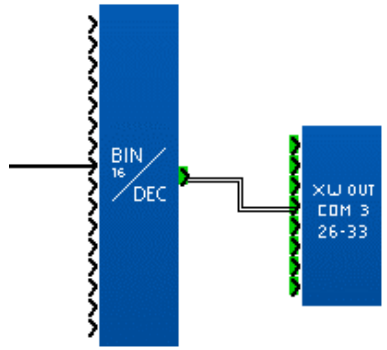
⇒ CTS: *Device type:* 4x_Bit, *Address:* 204

write address XW IN 2



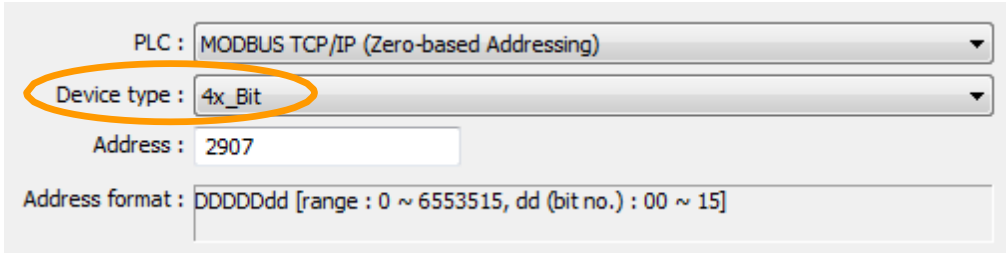
Reading a bit by the Crouzet Touch from em4 ETHERNET

⇒ em4: COM 3, XW OUT 29, bit 08



⇒ CTS: *Device type:* 4x_Bit, *Address:* 2907

read address XW OUT 29



THANK YOU
FOR YOUR ATTENTION

WWW.CROUZET-AUTOMATION.COM

CROUZET AUTOMATION

A BRAND OF INNOVISTA SENSORS