QnUDE(H) built-in Ethernet port

KI00278A 2010-02

1 Function and area of use

This startup document describes the functionality of the built-in Ethernet port of the QnUDE(H) range of cpu:s.

2 About this Start Up document

This Start Up document should not be considered as a complete manual. It is an aid to be able to start up a normal application quickly and easily. For further information we refer to the manual of the controller,

QCPU User's manual (Function explanations, Program fundamentals).

In this document the following software and hardware have been used:

Software

- GX IEC Developer 7.04 / GX Developer 8.72A

Hardware

- Q06UDEH CPU

This document and other Start Up documents can be downloaded from our homepage, www.beijer.se. Please use the address *manual@ beijer.se* for feedback on our Start Up documents.

Beijer Electronics Automation AB – *a company in the Beijer Electronics Group*

Parent Company (Reg. office)
Beijer Electronics Automation AB
P.O. Box 426
SE-201 24 MALMÖ, SWEDEN
Telephone +46 40 35 86 00
Fax +46 40 93 23 01
Visitor's address Krangatan 4A, Malmö

Subsidiaries
Norway, Drammen: Beijer Electronics AS, ❩ +47 32 24 30 00
Finland, Helsinki: Beijer Electronics Oy, ❩ +358 207 46 35 40
Denmark, Copenhagen: Beijer Electronics A/S, ❩ +45 70 26 46 46
Estonia, Tallin: Beijer Electronics Eesti Oü, ❩ +372 6 518140
Latvia, Riga: Beijer Electronics SIA, ❩ +371 7 842280
Lithuania, Vilnius: Beijer Electronics UAB, ❩ +370 5 2323101

Reg no. 556701-3965 VAT no SE556701-3965-01, Internet www.beijer.se, e-mail info@beijer.se

3 Table of Contents

4 Overview of functionality

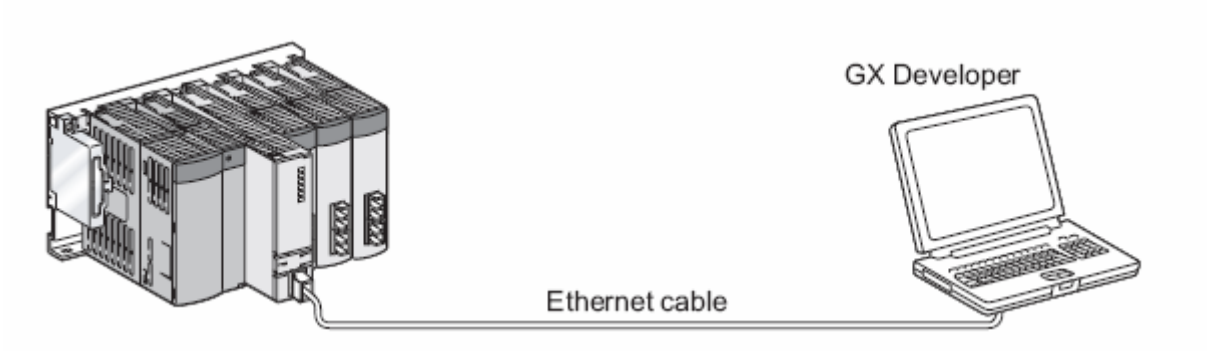
The following functionality is available for the ethernet port

- Programming interface using GX IEC Developer 7.04 / GX Developer 8.72A or later.
- Communication interface using MC-protocol connecting Operator terminal, SCADA etc.
- SNTP Client (Simple Network Time Protocol)
- FTP server

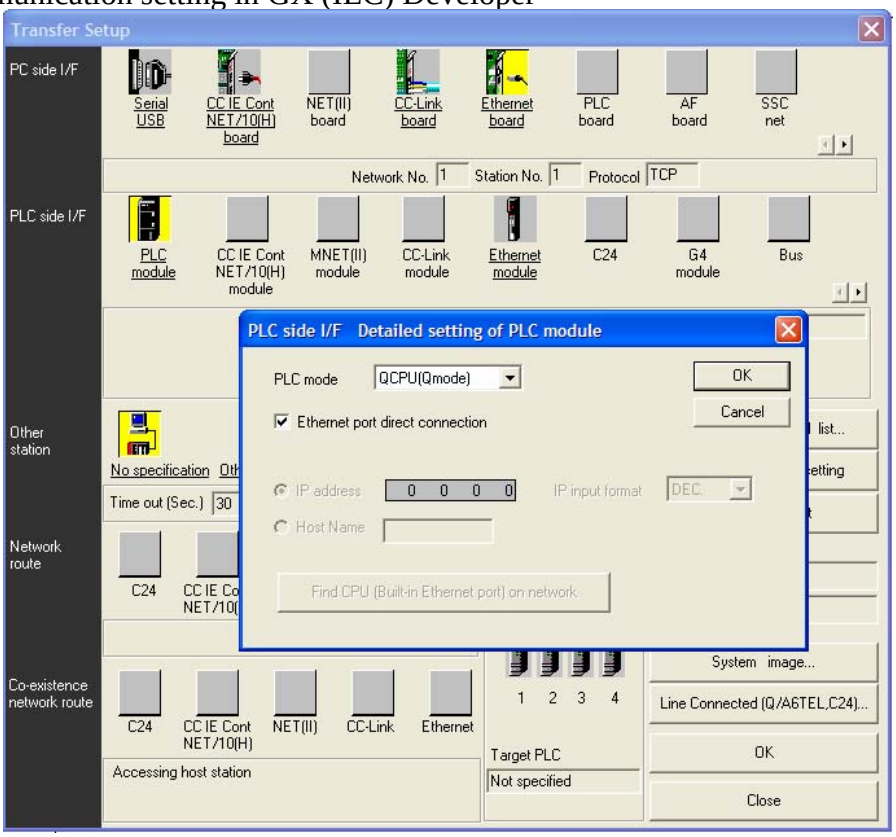
4.1 Using the ethernet port as programming interface

4.1.1 Simple (direct) connection

The simple connection feature allows the user to communicate to the cpu without setting an IP-address. This mode is only available when it is a direct connection without a hub/switch. Both straight or crossed twisted pairs cables can be used.



Communication setting in GX (IEC) Developer

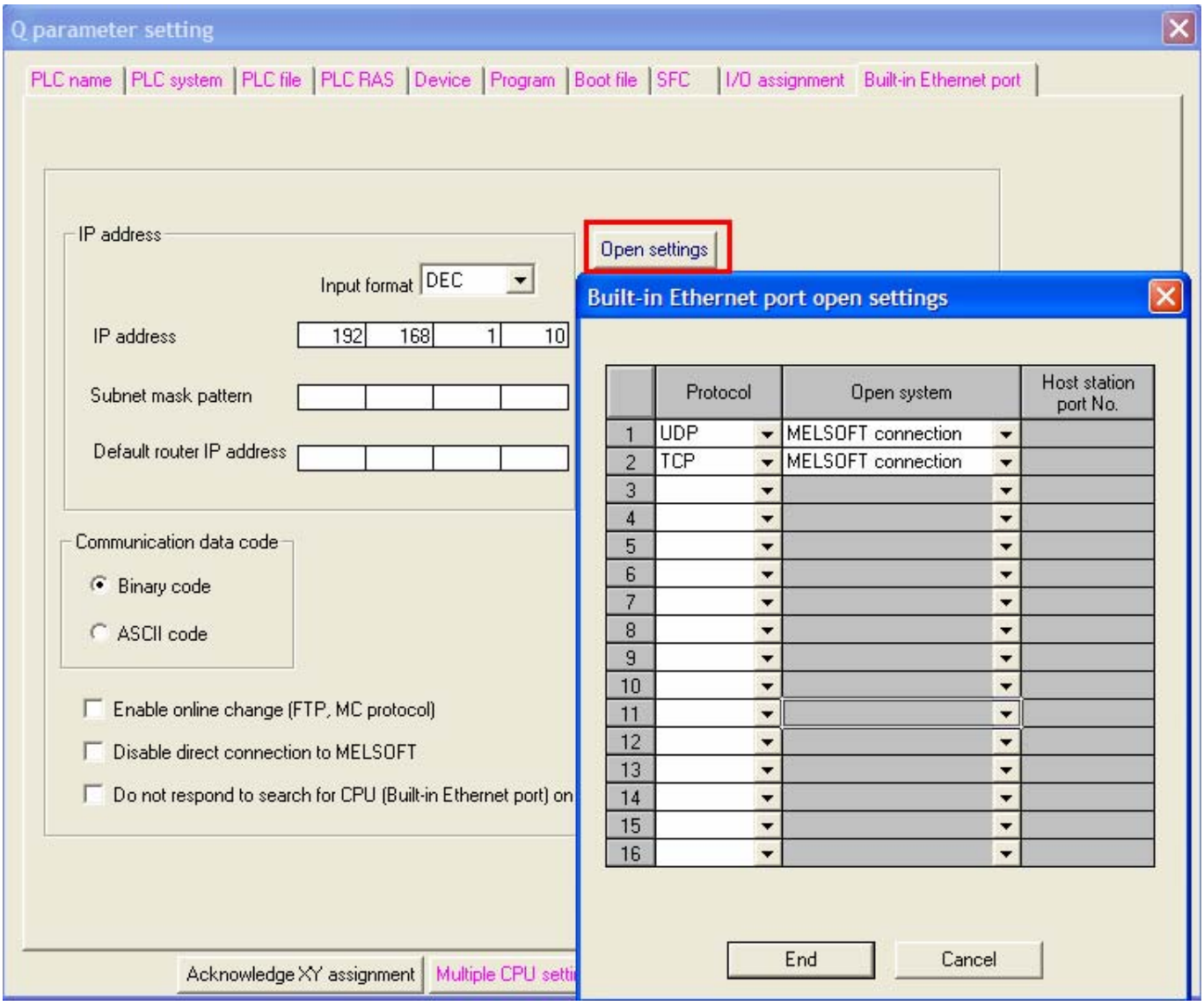


4.1.2 Network connection

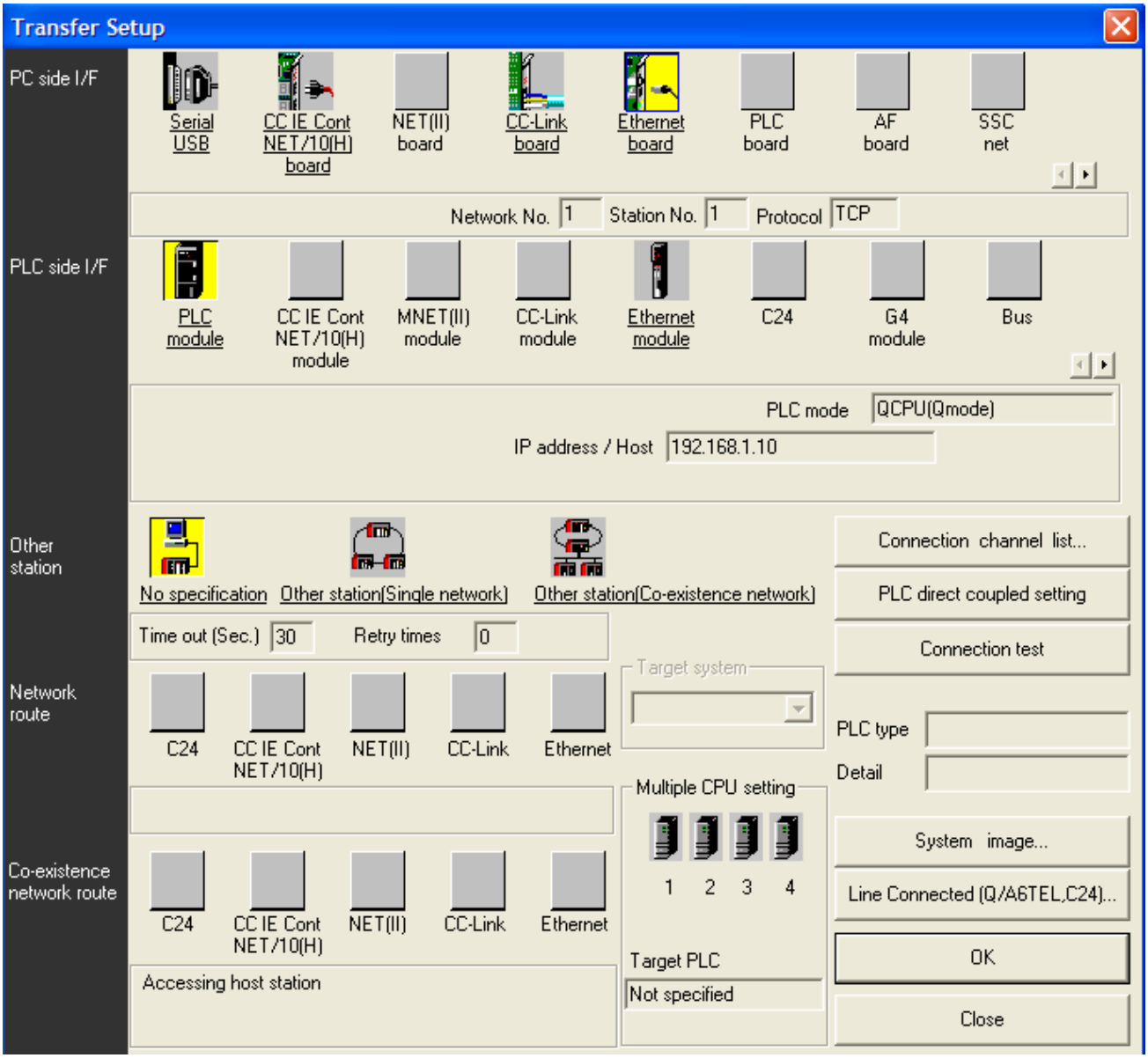
To be able to program and monitor the cpu over a network the Ethernet parameters must be set.

Set the IP address and then click the “Open Settings”, Melsoft connection = programming software

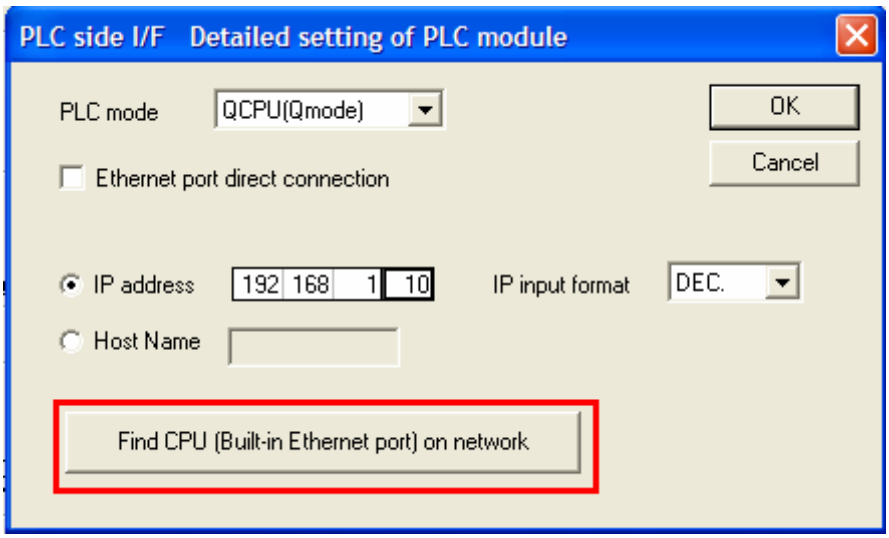
Download the project using the USB interface or the Direct connection described in chapter 4.1.1 and then reset the cpu.



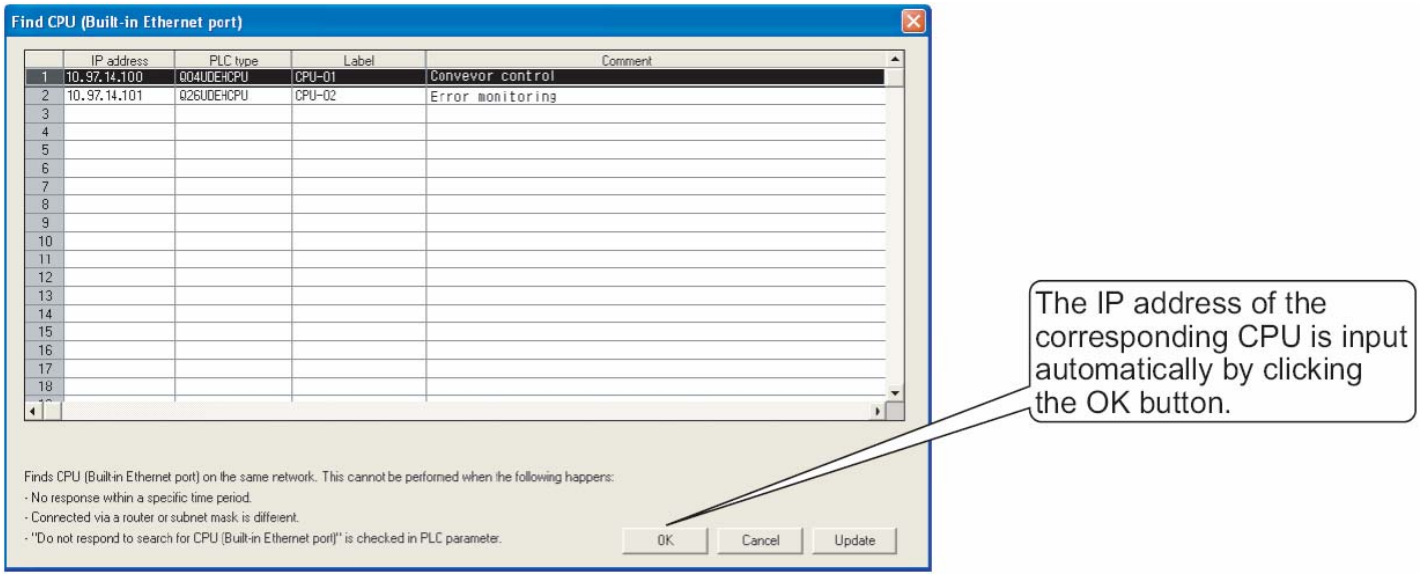
After the reset, set the communication settings in GX (IEC) Developer like this.



It's possible to search for QnUDE(H) cpu:s on the network and display them in a list, by clicking PLC module and then the Find CPU button.



The result is displayed like this.

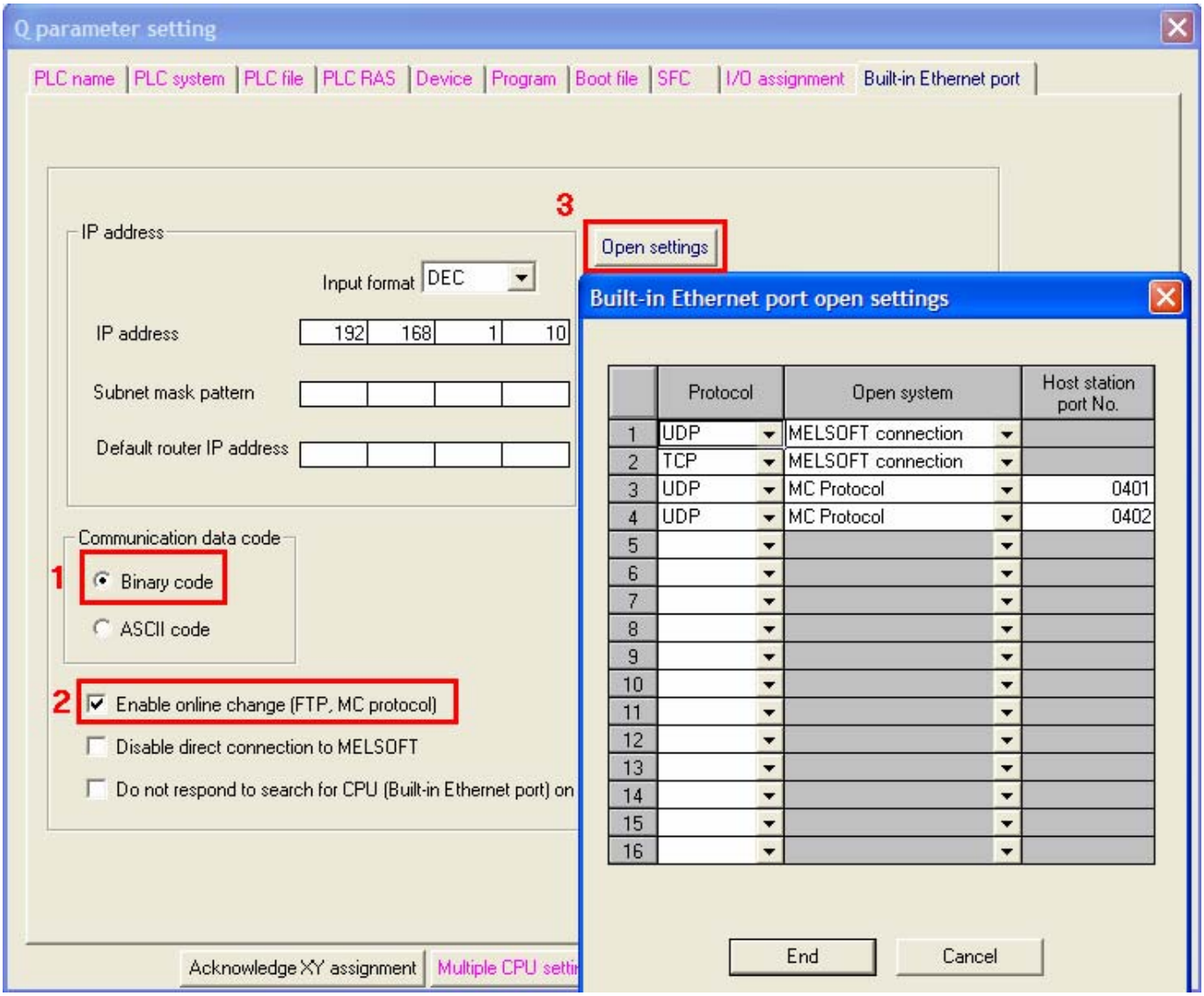


4.2 Communication using the MC-protocol

The MC-protocol makes it possible for external devices such as Operator terminals, OPC-servers and SCADA-systems to communicate with the cpu. The protocol used is the QnA-compatible 3E frame, same as for the QJ71E71-100 with some minor limitations, refer to the *QCPU User's manual (Function explanations, Program fundamentals) chapter 7.4 for details.* To activate the MC-protocol the following must be done.

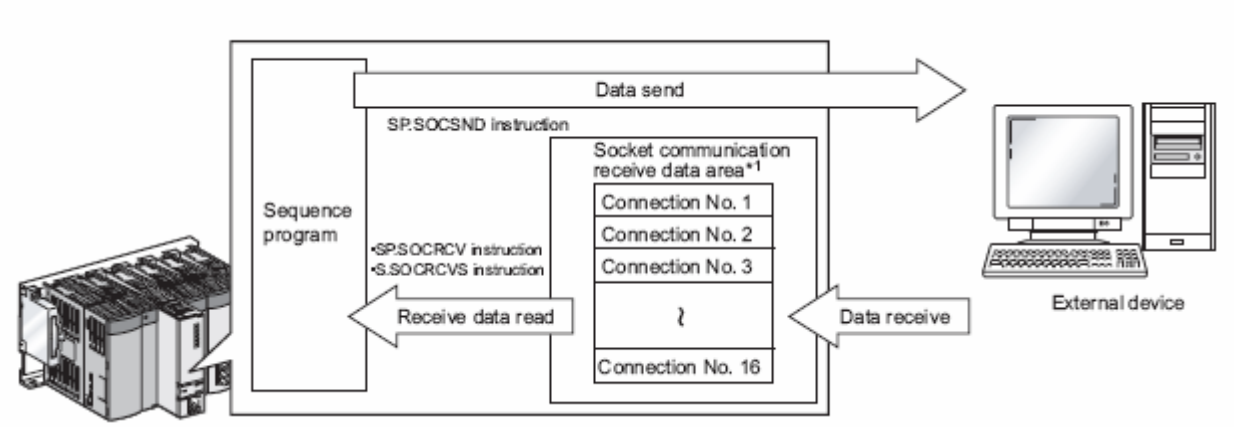
1. Select if the datacode should be Binary or ASCII when using the MC-protocol. The most common is the Binary code. An example of external devices using Binary code is CitectScada, E1000-series and Beijer Electronics OPC-server.
2. Activate the "Enable online change". When this option is ticked the external device is able to write data to the cpu.
3. Click the "Open Setting" and create a connection using the MC Protocol. In this example two UDP ports using portnumber hex 0401/0402 (dec 1025/1026) are opened. Valid range of portnumbers is hex 0401 - 1387 (dec 1025 – 4999) and hex 1392-FFFE (dec 5010 – 65534).
4. Download the project and reset the cpu.

Note! The AutoUDP ports, 5000/5001, is not available as in the QJ71E71-100.



4.3 Communication using the Socket function

The Socket communication function provides data communication with devices connected to the network using dedicated instructions. The socket communication uses an open TCP or UDP frame to communicate with other units. Example of devices could be barcode readers, network printers, PC:s and other units connected to the network.



The following instructions are used for communication. *For details refer to chapter 4 in QnUCPU User's Manual (Communication via Built-in Ethernet Port)*

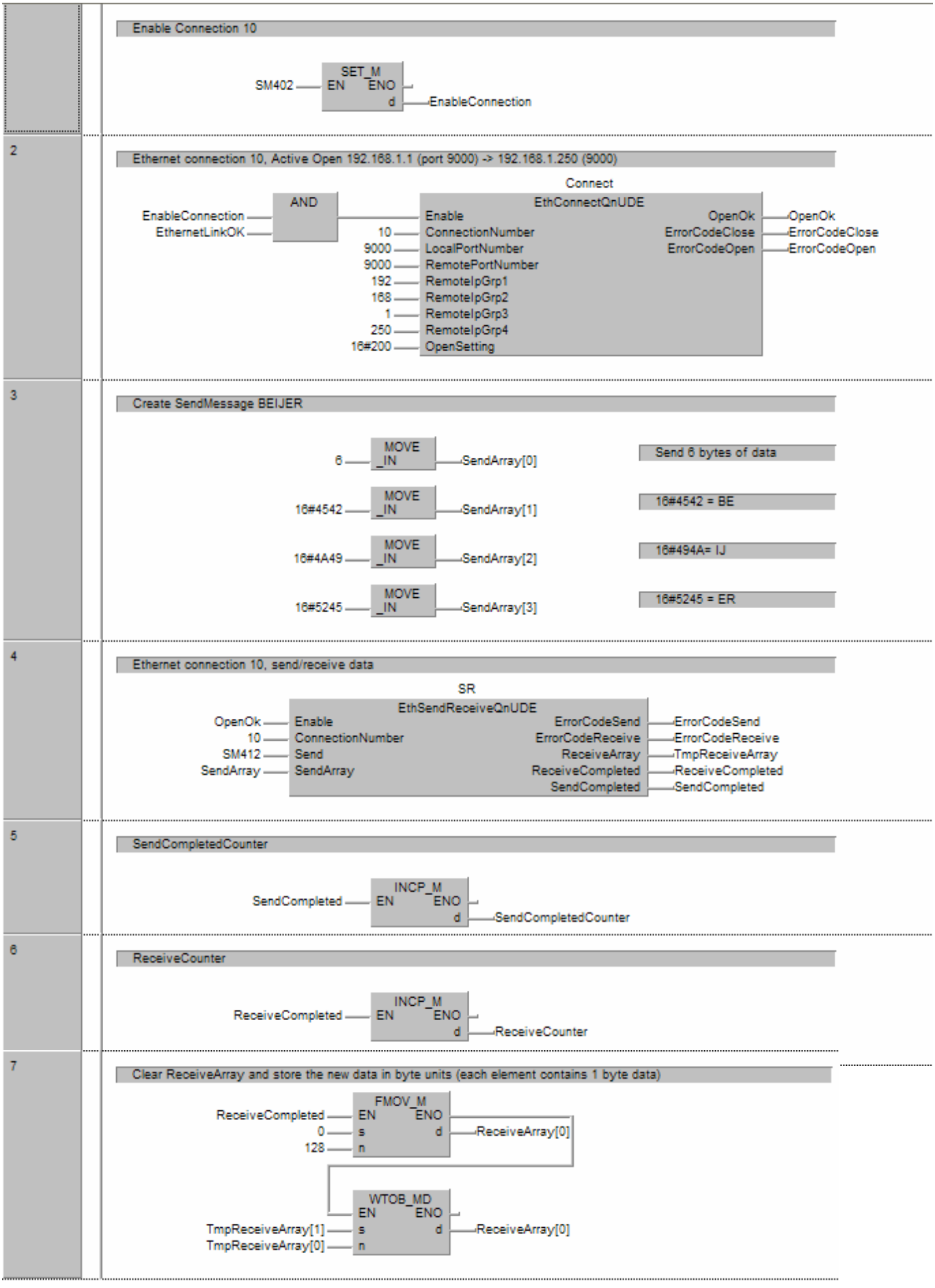
Instruction	Description	Reference section
SP.SOCOPEN	Establishes a connection	Section 4.1
SP.SOCCLOSE	Disconnects a connection	Section 4.2
SP.SOCRCV	Reads out received data (in END processing)	Section 4.3
S.SOCRCVS	Reads out received data (upon execution)	Section 4.4
SP.SOCSND	Sends data	Section 4.5
SP.SOCCINF	Reads out connection information	Section 4.6
SP.SOCCSET	Changes communication target of UDP/IP communication	Section 4.7
SP.SOCRMODE	Changes receive mode of the connection	Section 4.8
S(P).SOCRDATA	Reads out data in the Socket communication receive data area	Section 4.9

Programexamples and functionblocks are available, *EthernetAdvancedQnUDE*.

NOTE! To use the functionsblocks or the dedicated instructions directly GX IEC Developer 7.04 must be used. Also the serialnumber (first five digits) of the QnUDE(H) must be 11012 or later

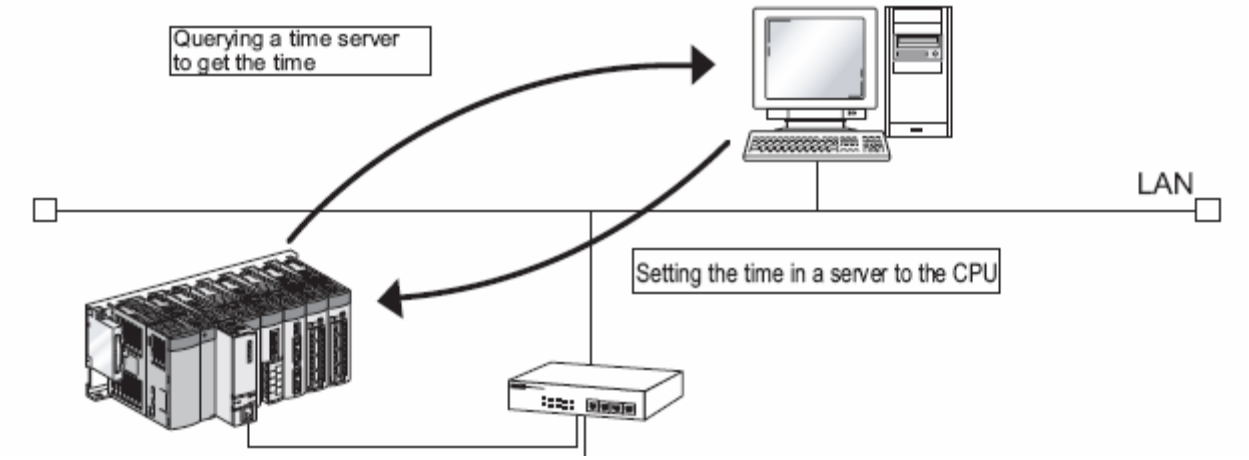
Click here to download

From the example project GX IEC Developer EthAdvancedQnUDE Socket Communication



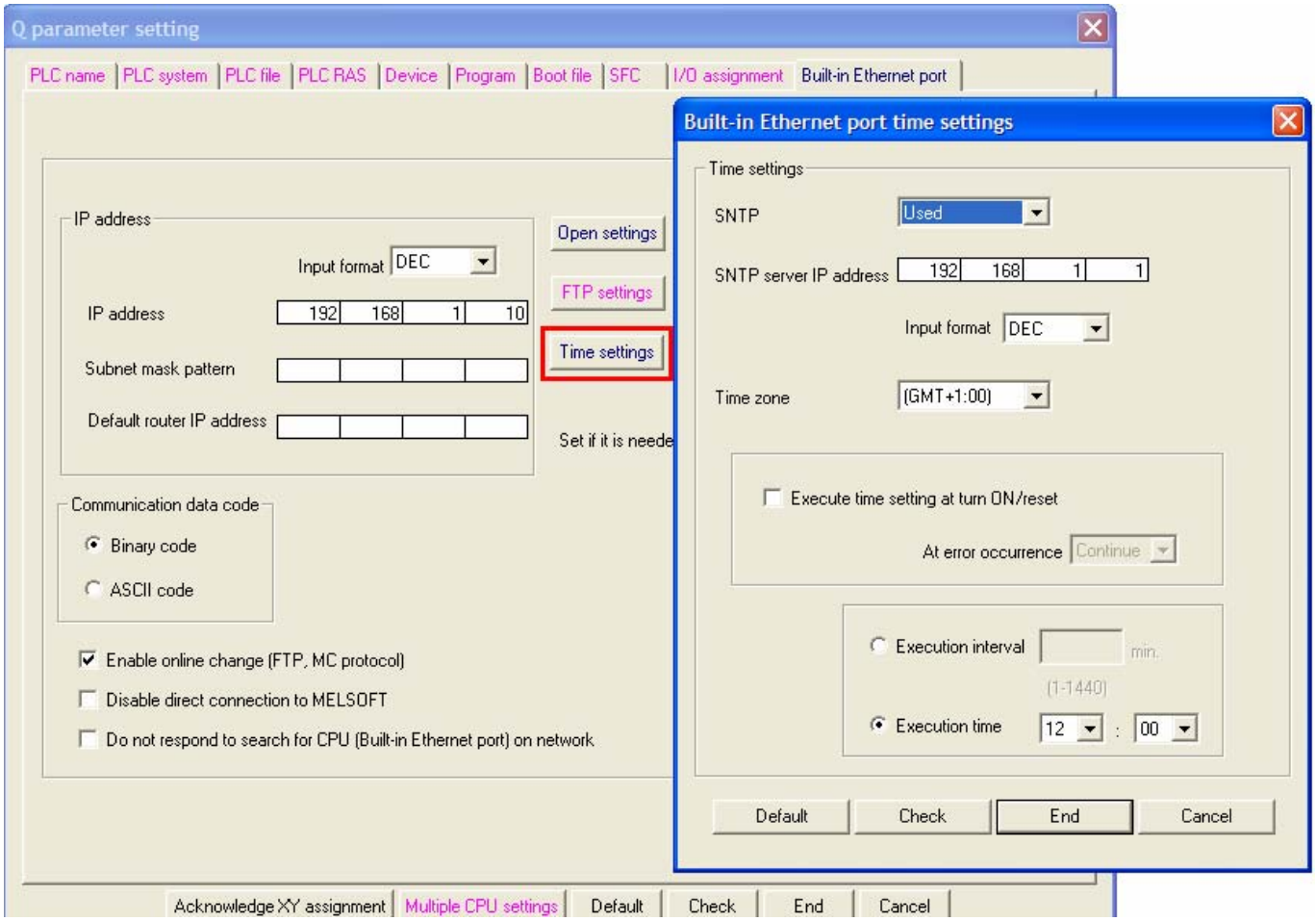
4.4 SNTP Client function

The Built-in Ethernet port QCPU time setting function queries a time information server to get the time at the specified timing and sets the time sent from the time information server as clock data for the CPU module.

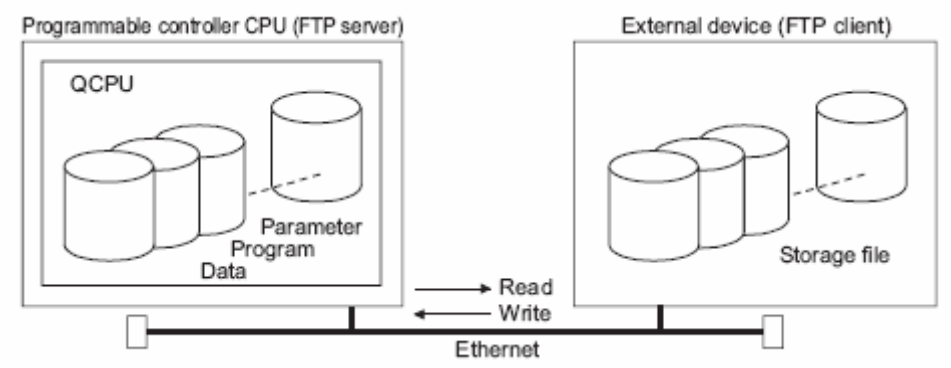


The time setting operation is executed based on the following timing.

- At programmable controller power ON or CPU module reset
- At a specified time interval 1-1440 min or a specified time 00:00 – 23:30
- At special relay ON, SM1270



4.5 FTP Server function



With the built-in FTP server function the following functions are available:

1. Reading (downloading) files from Built-in Ethernet port QCPU
A function for storing CPU module files in an external device.

2. Writing (uploading) files to Built-in Ethernet port QCPU
A function for registering files stored in an external device to the CPU module.

3. Browsing Built-in Ethernet port QCPU file names
A function for checking files registered in the CPU module on the external device side.

To read and write files to the FTP-server the command prompt in Windows has to be used.

For more detailed information about the FTP functionality refer to the *QCPU User's manual (Function explanations, Program fundamentals).*

4.6 Remote password function, (GX Developer only)

The remote password function is a function to prevent unauthorized access (ex. corrupting data and programs) from external devices.

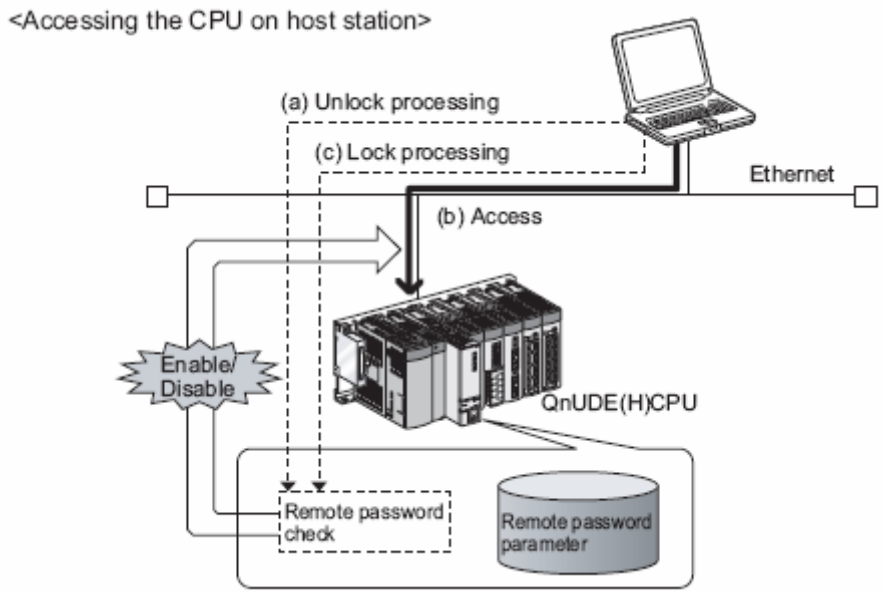
The function is applicable for the following communications methods
• Communication using GX Developer
• Communication using the MC protocol
• File transfer (FTP)

The communication procedure when a Remote password is set is as follows.

(a) Access enable processing (unlock processing)
An external device such as a personal computer performs remote password unlock processing for the CPU module.
When unlock processing is not performed, an error occurs in the external device since the CPU module does not accept access.

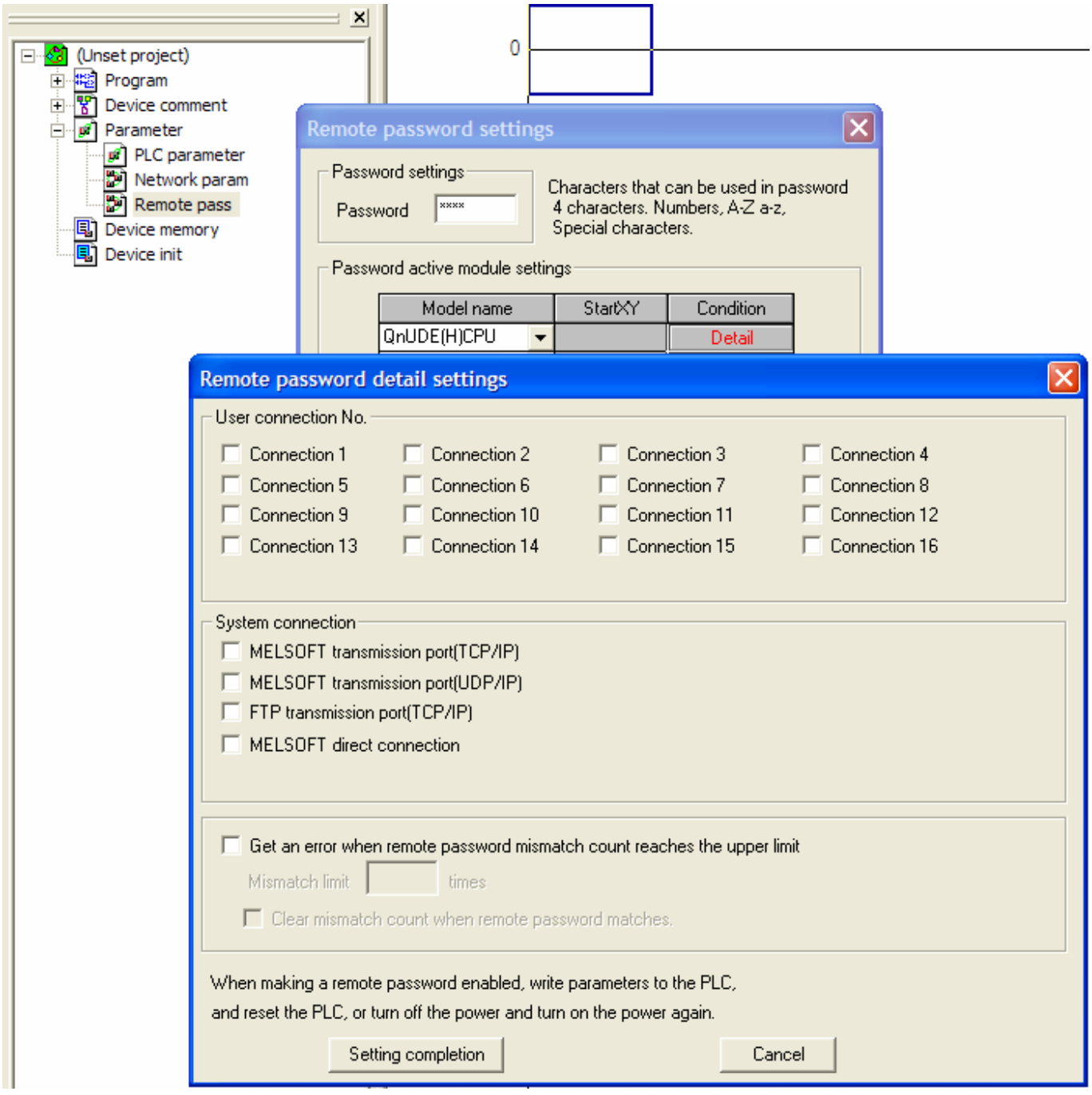
(b) Access processing
Access is enabled after the remote password unlock processing is completed normally.

(c) Access disable processing (lock processing)
Remote password lock processing is performed from the external device to disable subsequent access after the access is completed.



To activate the remote password function the following has to be done.

1. Click the Remote Pass icon
2. Type a password
3. Choose the QnUDE(H)CPU and press the Detail button



User connection No. = selection of which connection the remote password will be activated for.

System connection = selection of which system connection the remote password will be activated for.

Get an error when remote password mismatch count reaches the upper limit. = every connection has it's own internal counter. When the external device fails to unlock the connection by sending the wrong password the counter for that connection will increment every time a wrong password is sent. When the limit is reached the cpu will generate an errorcode, 2700.

Clear mismatch count when remote password matches = when the unlock is successful the internal counter will be reset.

For more information regarding the remote password function refer to the QCPU User's manual (Function explanations, Program fundamentals), chapter 7.7