ifm electronic

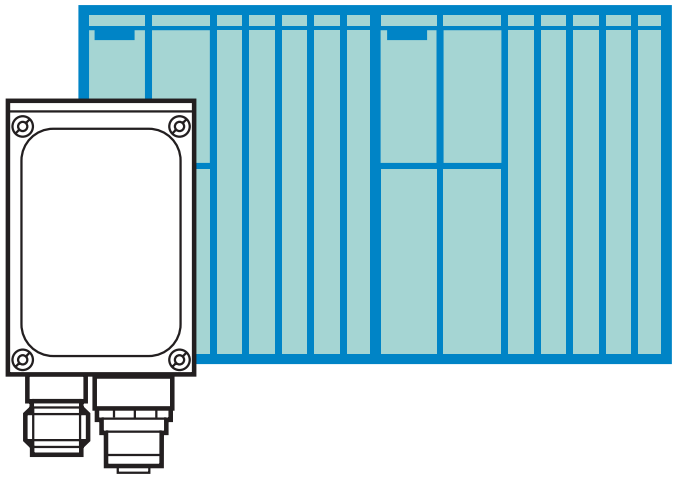
CE

Programming manual Supplement

UK

efector190®

Communication between multicode reader O2I1xx and Siemens Simatic S7



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1 Preliminary note

These instructions serve for the set-up and parameter setting of the communication between the multicode reader O2I1xx from ifm electronic and a Simatic S7 controller from Siemens.

1.1 Symbols used

► Instruction
> Reaction, result
[…] Designation of pushbuttons, buttons or indications
→ Cross-reference

Important note
Non-compliance can result in malfunctions or interference.

Information
Supplementary note

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2 General

Communication via Ethernet or serial communication is possible.

The following functions can be executed:

- Release trigger
  (code read, fail string or match string are provided)
- Select configuration/group
  (confirmation is given)
- Enquire configuration
  (list of all configurations is provided)
- Enquire statistics
  (number of readings is provided)

3 Ethernet connection via TCP protocol

3.1 Principles

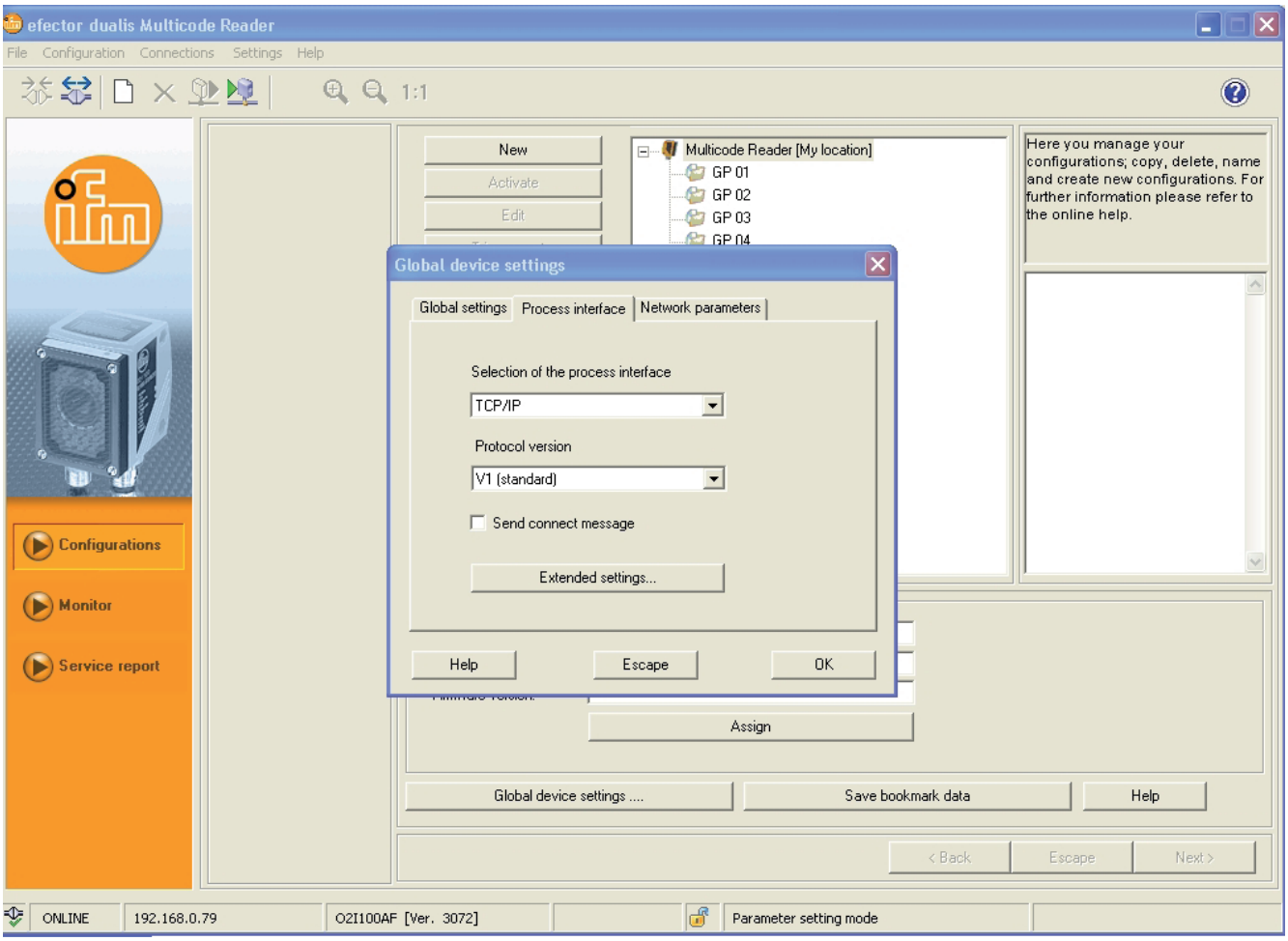
The data of the TCP connection is transmitted as a data flow, i.e. there is no defined start or end character on the protocol level.
The returned data is received byte for byte and stored in the receive buffer.

For communication via Ethernet, all TCP protocol compatible Ethernet CPs can be used.
However, the different selection of the Siemens communication blocks when using controllers of the 300 or 400 series is to be taken into account.

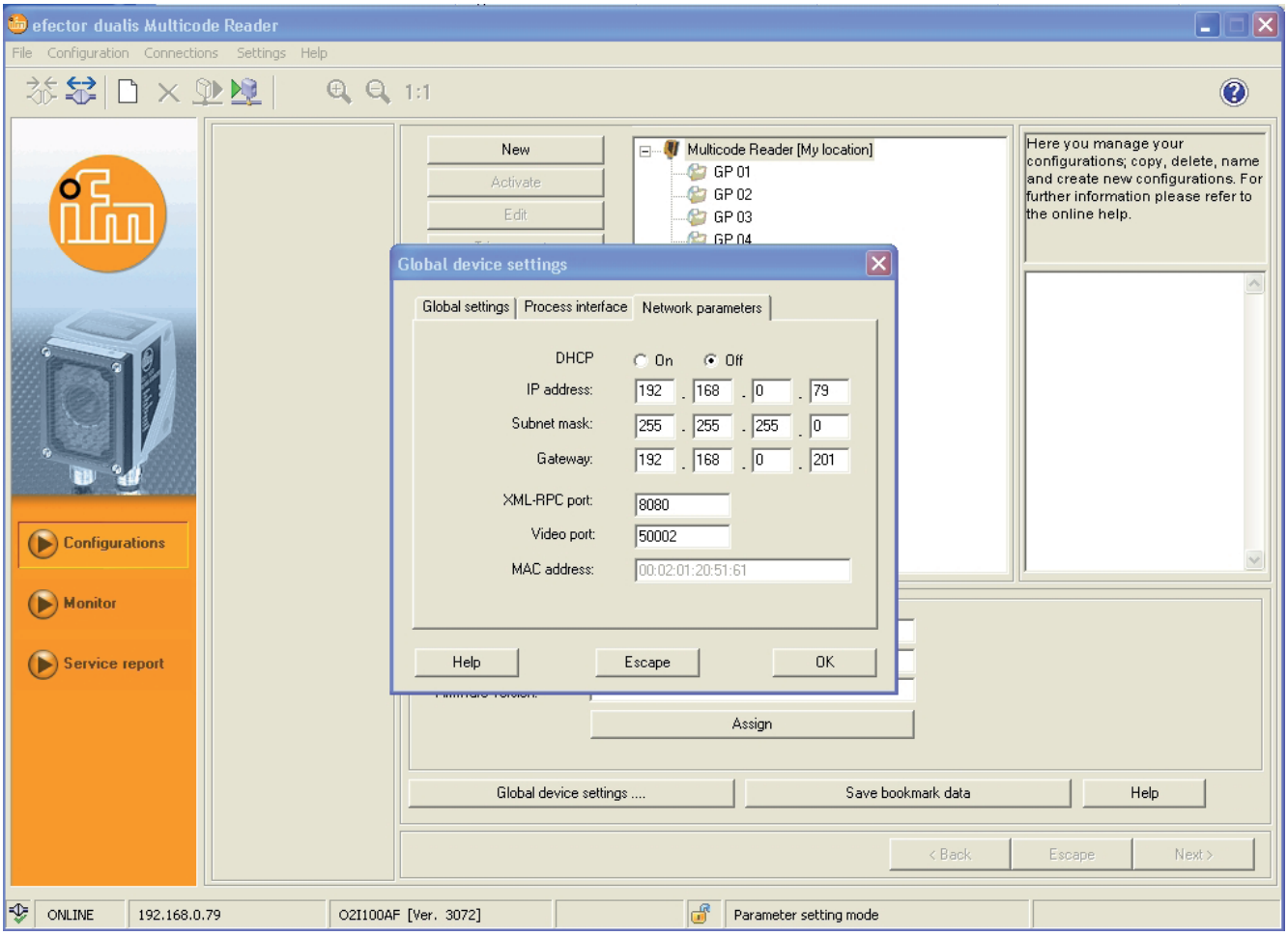
The communication was tested with a CPU 414-2DP and a CP 443-1.

3.2 Set-up of the multicode reader

► Select Global device settings → Process interface → Selection of the process interface → TCP/IP.



► Select Global device settings → Network parameters → set IP address.



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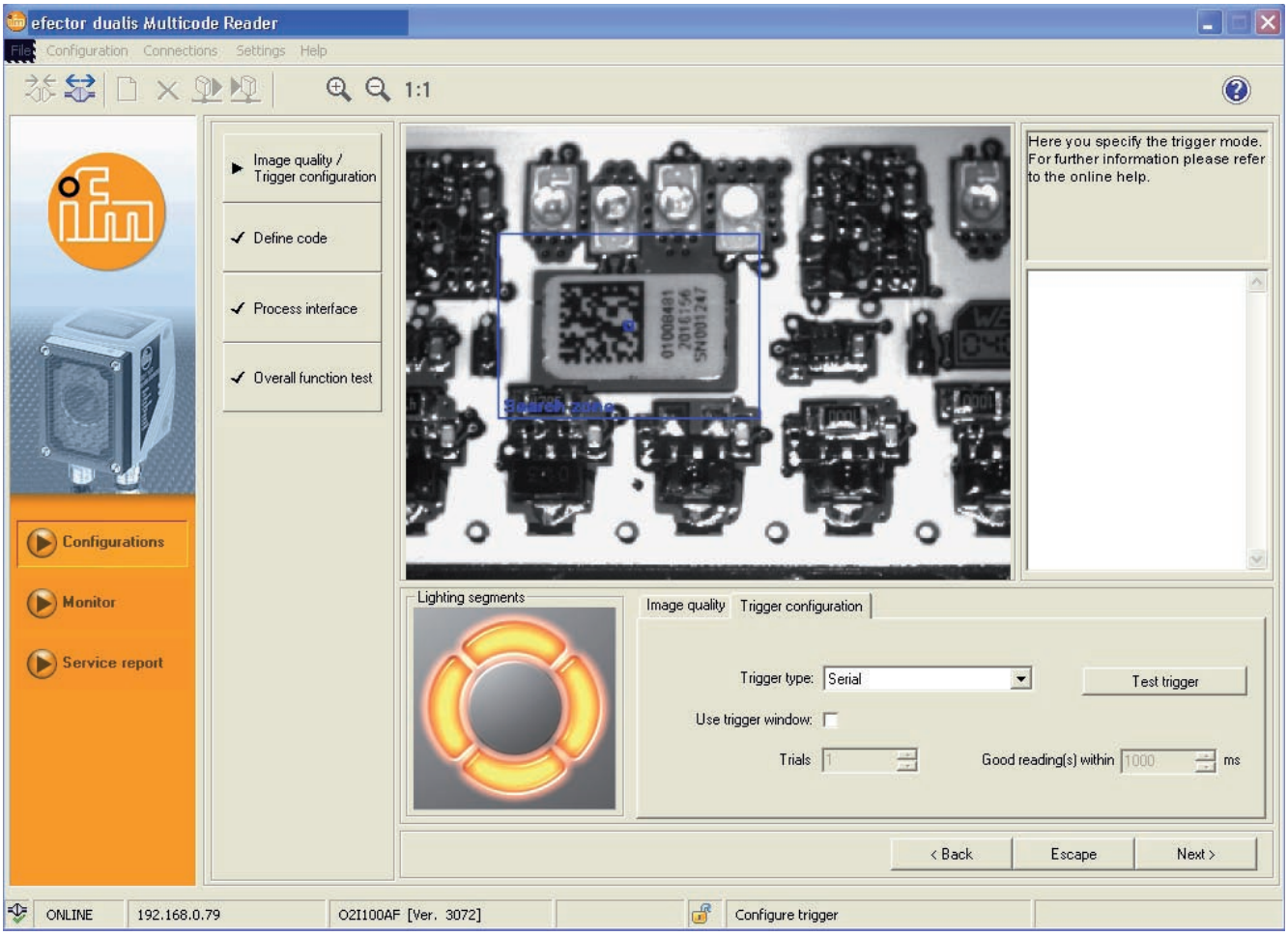
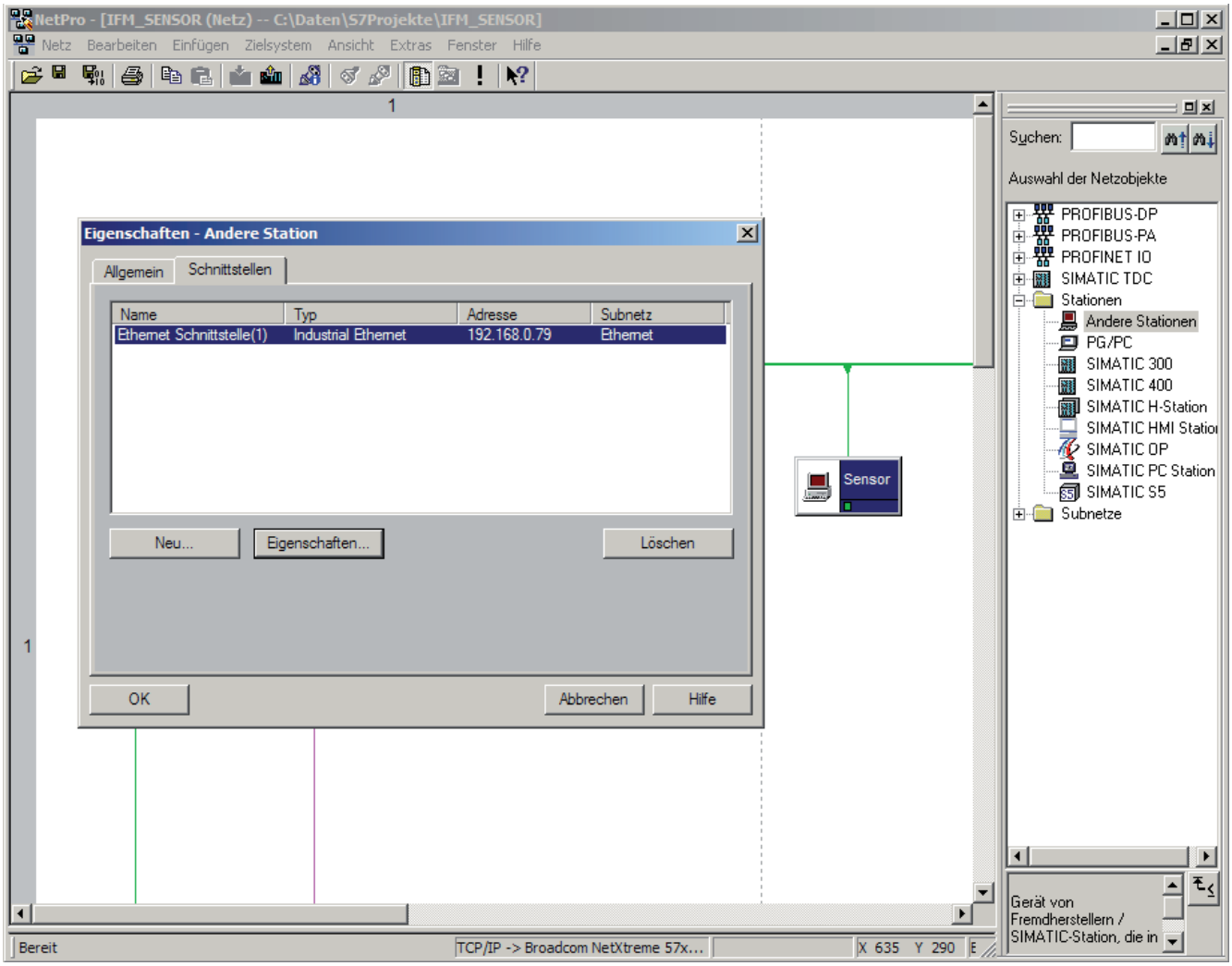
► Select the trigger type "Serial" in the active configuration.



3.3 Set-up of the hardware configuration / NetPro Step7

► Set up and link the multicode reader as "Andere Stationen" in NetPro.



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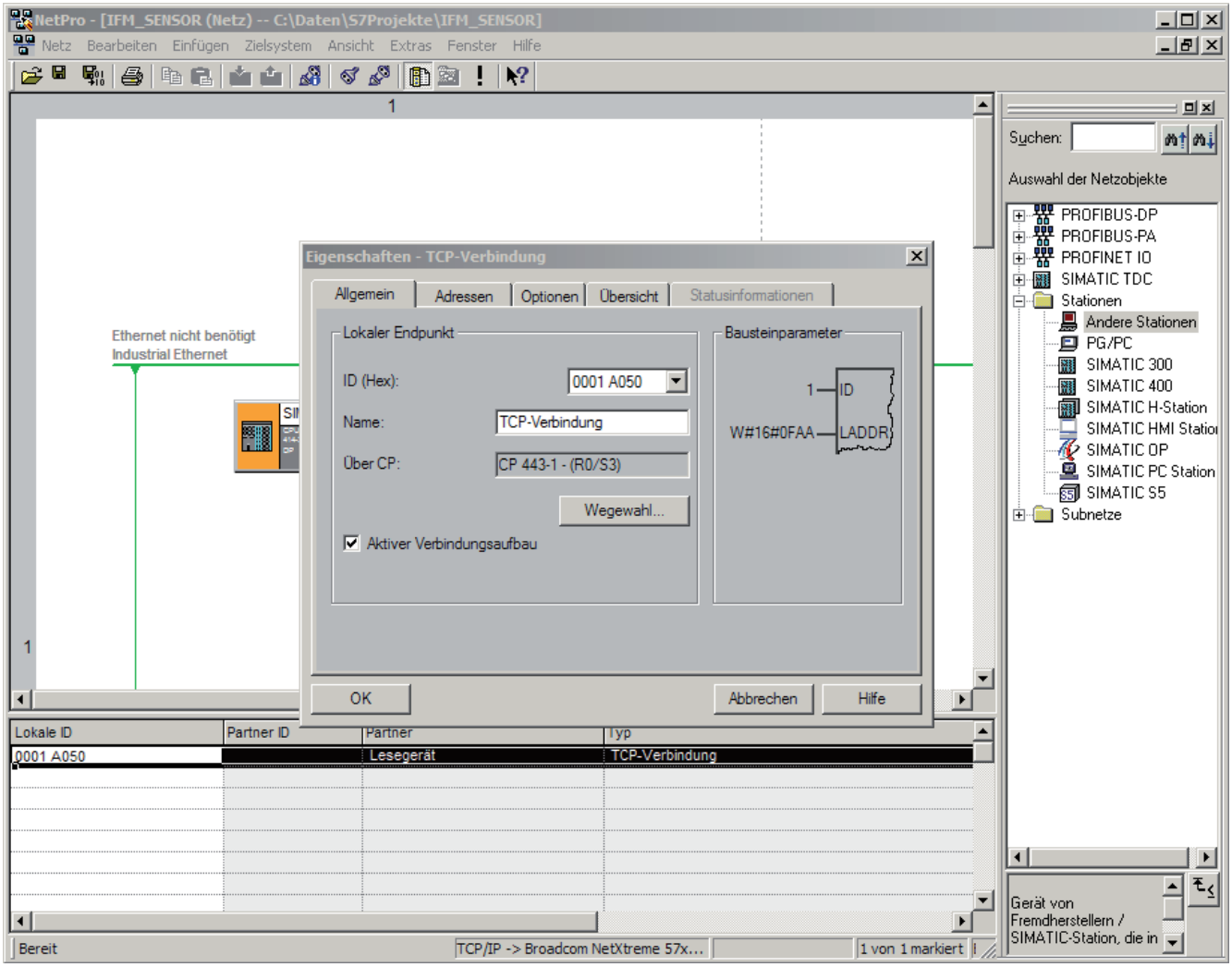
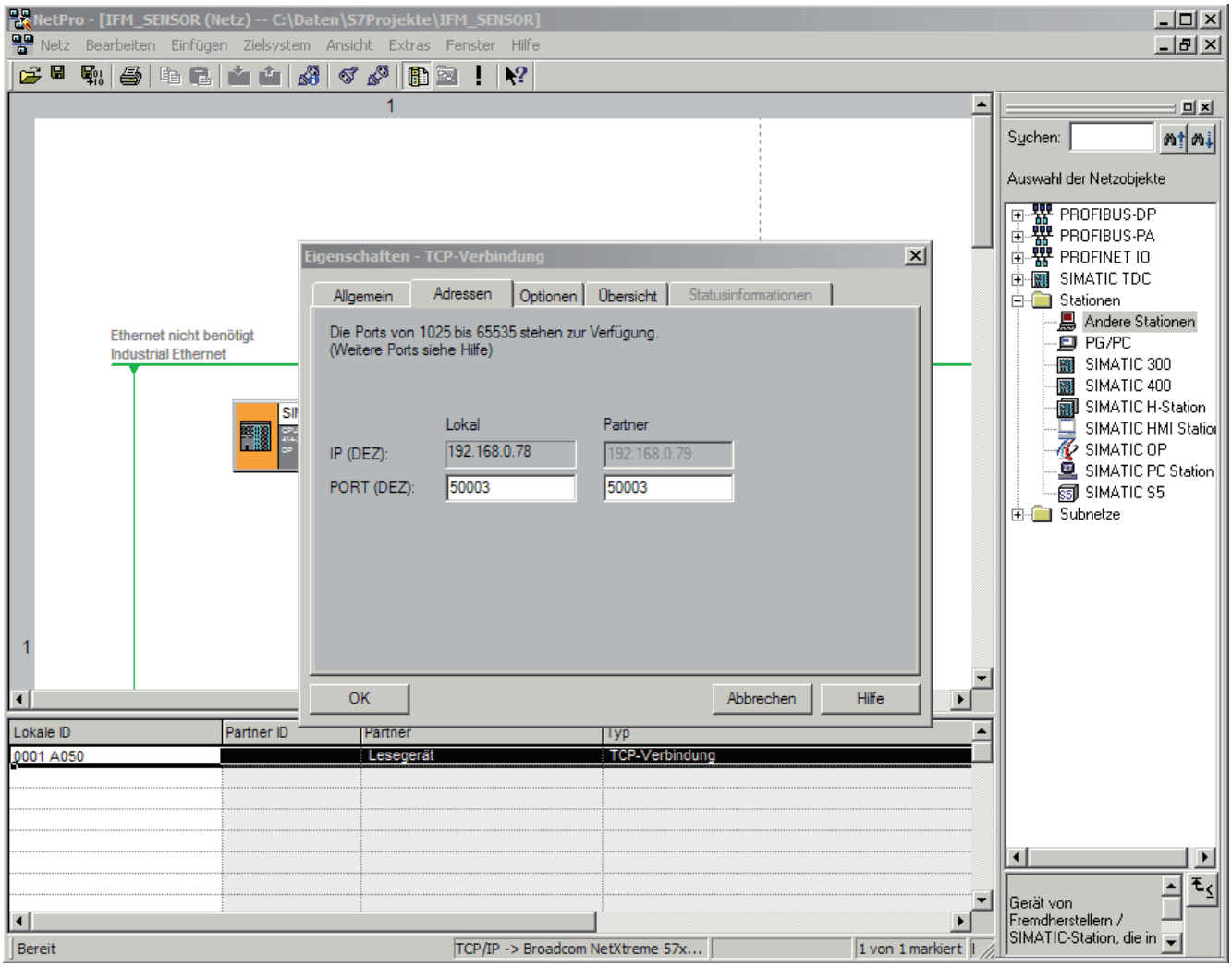
- ► Create TCP connection with multicode reader.
- ► Note down the connection ID and CP address for the function block parameter setting.



► Set the port number as in the parameter setting software.



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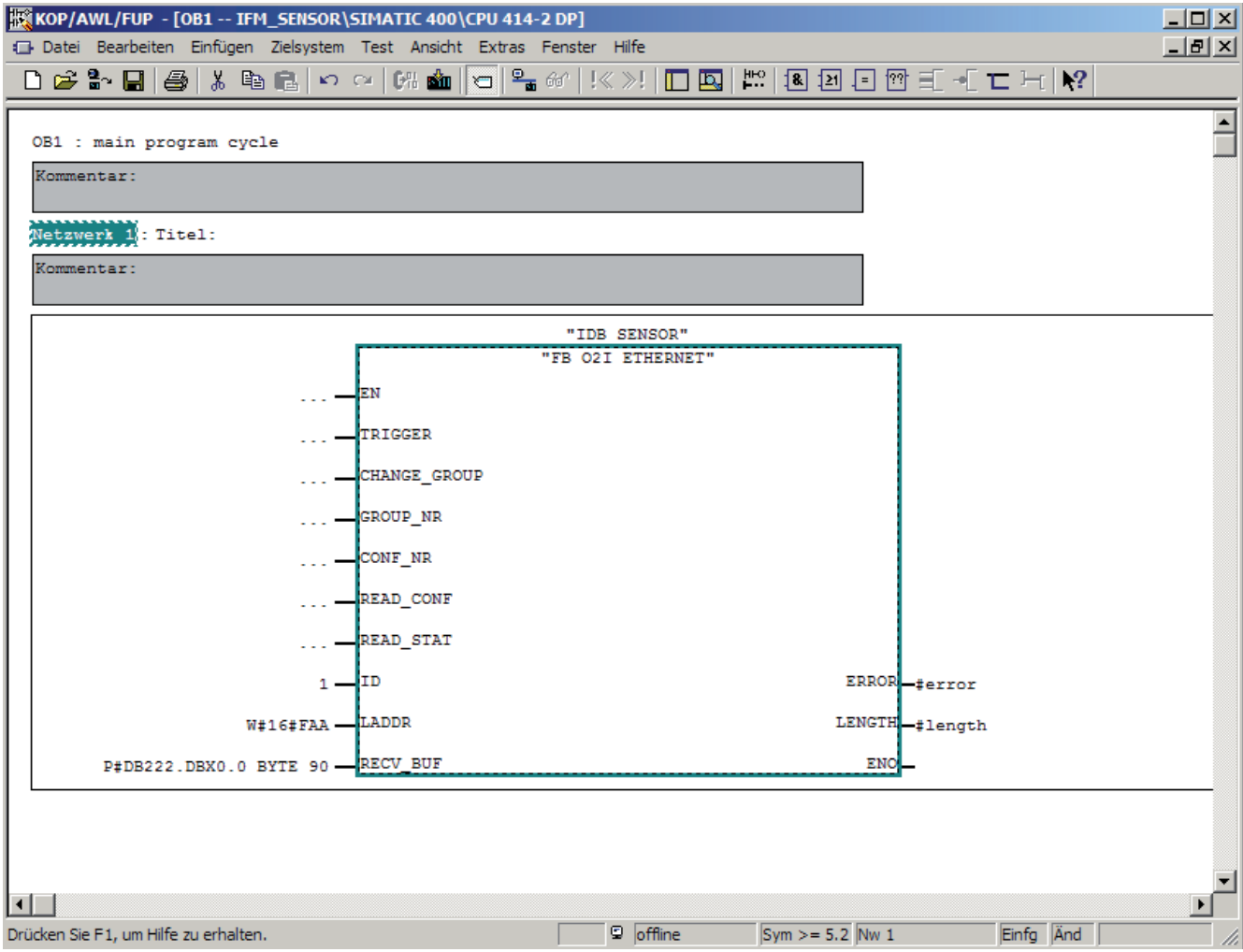
3.4 Setting parameters on function block FB50

► Indicate ID and LADDR as set up in Net-Pro.
(Are forwarded to the communication function blocks.)



The parameter RECV_BUF must be declared as absolute, because with some controller types the width of access may not be transmitted correctly in case of symbolic declaration.

3.5 Description function block FB50

The function block establishes the telegrams to be sent to the multicode reader and creates a character string from the received data flow.

The "trigger" input sends a trigger command to the multicode reader with each positive edge. In addition the receive buffer is deleted.

The "change_group" input sends a change group command to the multicode reader with each positive edge. The selection is indicated at the "group_nr" and "conf_nr" inputs. In addition the receive buffer is deleted.

The "read_conf" and "read_stat" inputs send the corresponding status query to the multicode reader with each positive edge. In addition the receive buffer is deleted.

The received data is read byte-by-byte from the data flow and then stored consecutively in the receive buffer.

The length of the receive buffer is defined variably as ANY pointer and can be extended or reduced according to the respective requirements.

The character string received from the configuration software after the start and end characters have to be evaluated externally.

4 Serial connection via ASCII driver

4.1 Principles

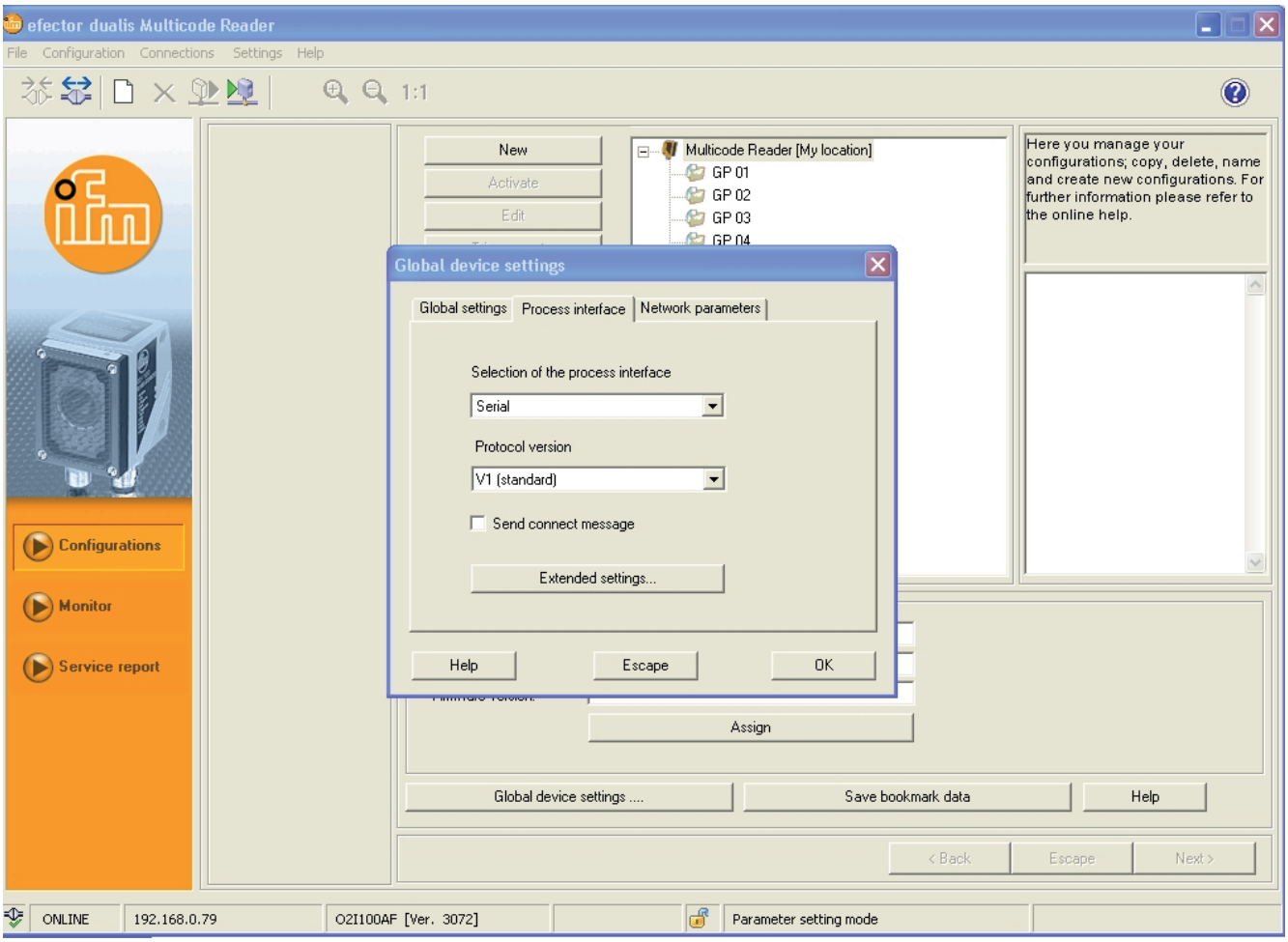
The received data is received byte for byte and stored in the receive buffer.

All PtP CPs with ASCII protocol driver can be used for serial communication. In that case, however, the transmitting and receiving function blocks used in FB49 have to be adapted accordingly.

The communication was tested with a CPU 414-2DP, a CP 440 and an RS-485/ RS-232 interface converter.

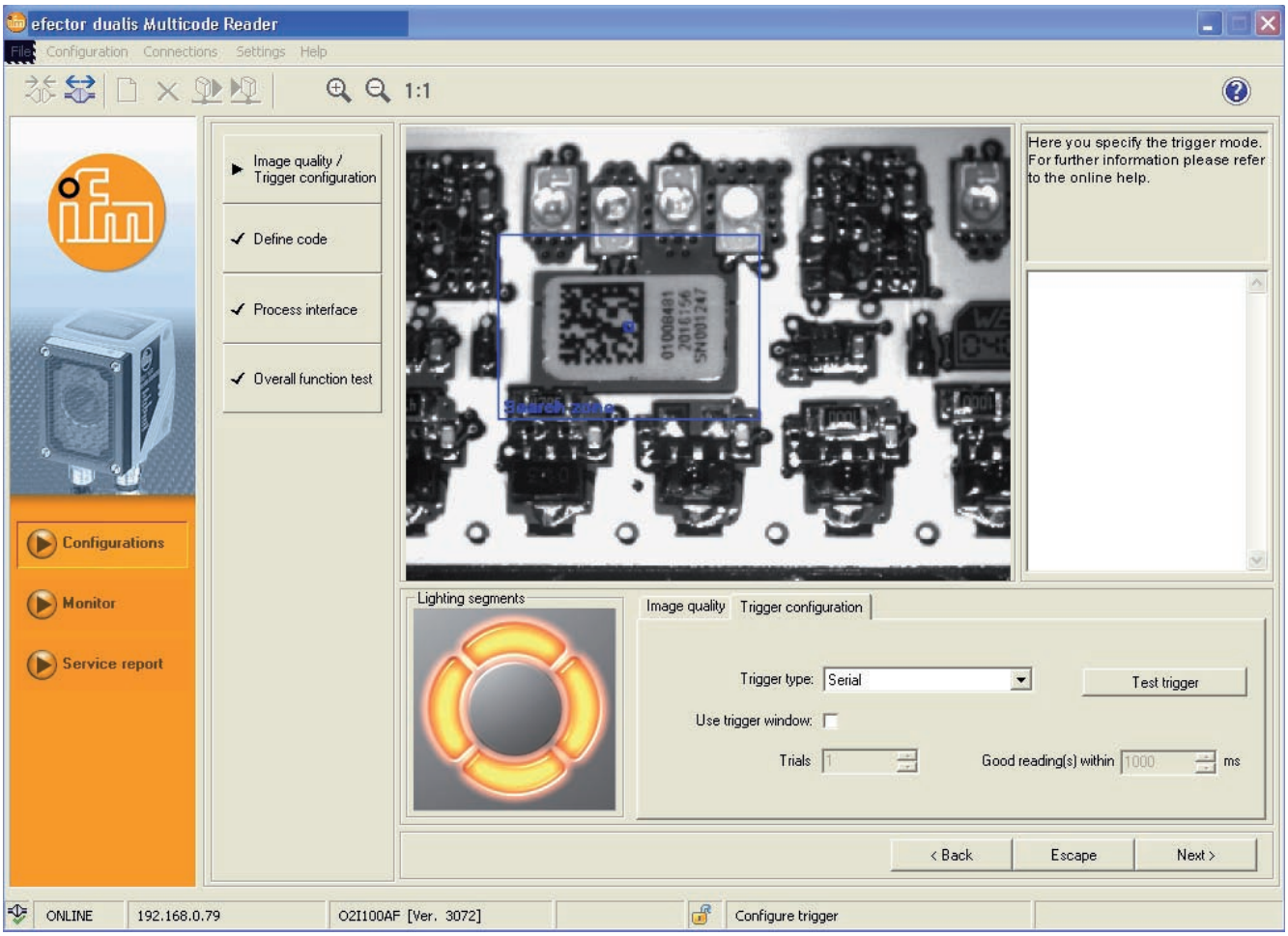
4.2 Set-up of the multicode reader

► Select Global device settings → Process interface → Selection of the process interface → "Serial".



► Select Global device settings → set transfer parameters (here 9600 8N1).

► Select the trigger type "Serial" in the active configuration.



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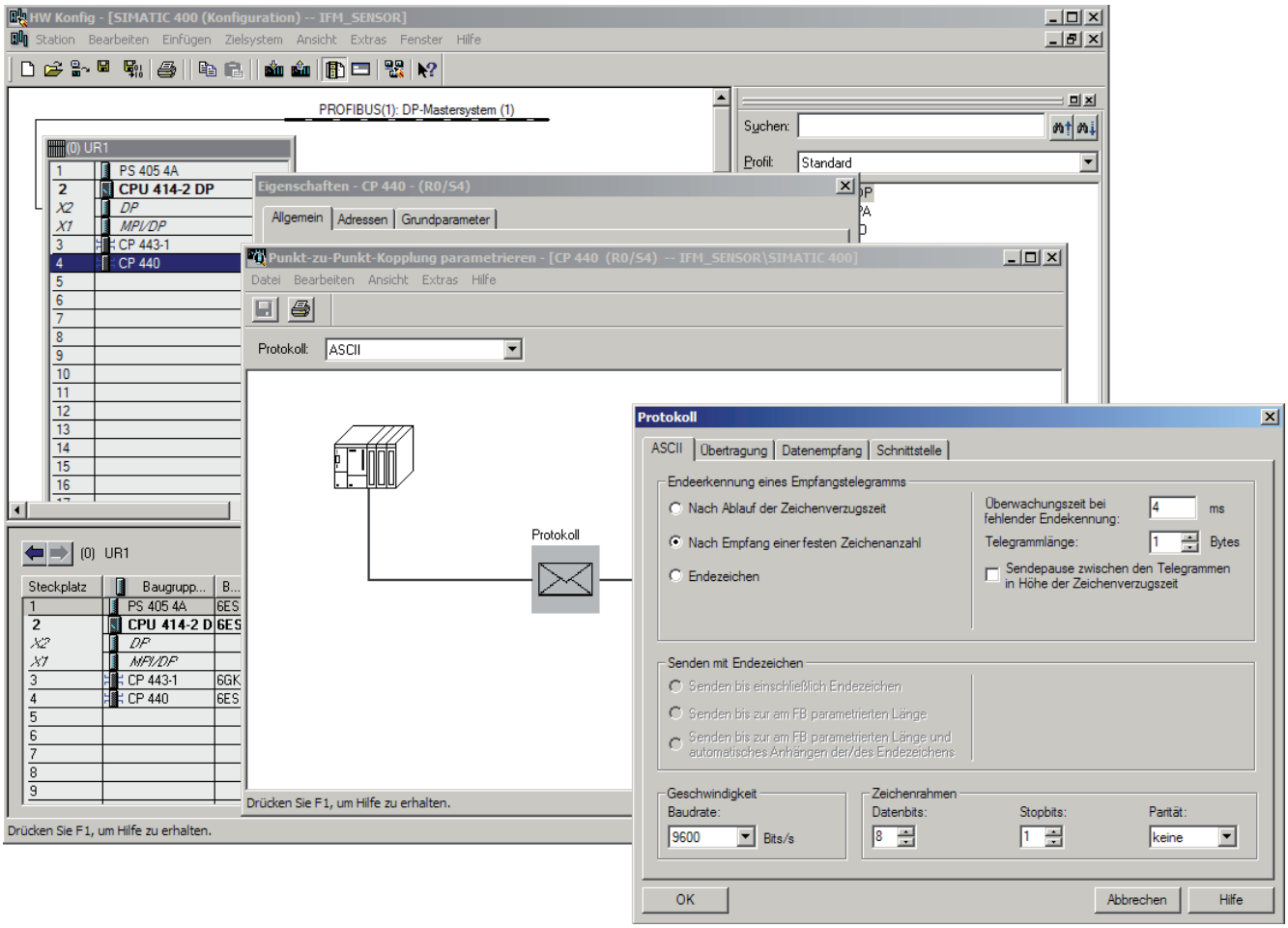
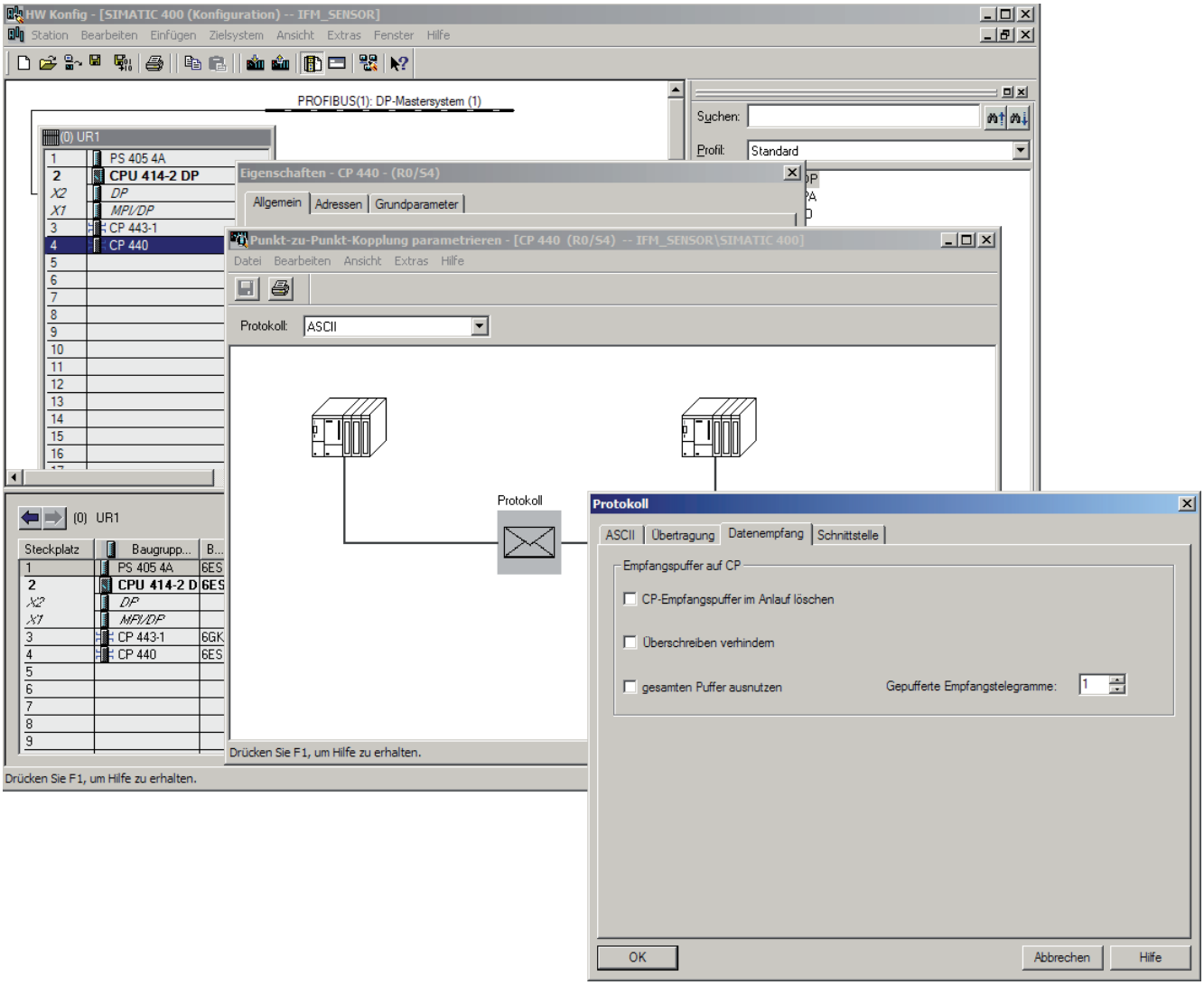
4.3 Set-up in step 7

► Set up an ASCII coupling for the corresponding CP and define the telegram length 1 byte.

All other settings depend on the CP used.
Below as an example the setting of a CP 440 with interface converter:




HW Konfig - [SIMATIC 400 (Konfiguration) -- IFM_SENSOR]
Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe
PROFIBUS(1): DP-Mastersystem (1)
(0) UR1
1 PS 405 4A
2 CPU 414-2 DP
X2 DP
X1 MPI/DP
3 CP 443-1
4 CP 440
Suchen:
Profil: Standard
Eigenschaften - CP 440 - (R0/S4)
Allgemein Adressen Grundparameter
Punkt-zu-Punkt-Kopplung parametrieren - [CP 440 (R0/S4) -- IFM_SENSOR\SIMATIC 400]
Datei Bearbeiten Ansicht Extras Hilfe
Protokoll: ASCII
Protokoll
Steckplatz Baugrupp...
CPU 414-2 D
CP 443-1
CP 440
Drücken Sie F1, um Hilfe zu erhalten.
Protokoll
ASCII Übertragung Datenempfang Schnittstelle
Empfangspuffer auf CP
CP-Empfangspuffer im Anlauf löschen
Überschreiben verhindern
gesamten Puffer ausnutzen
Gepufferte Empfangstelegramme: 1
OK
Abbrechen
Hilfe

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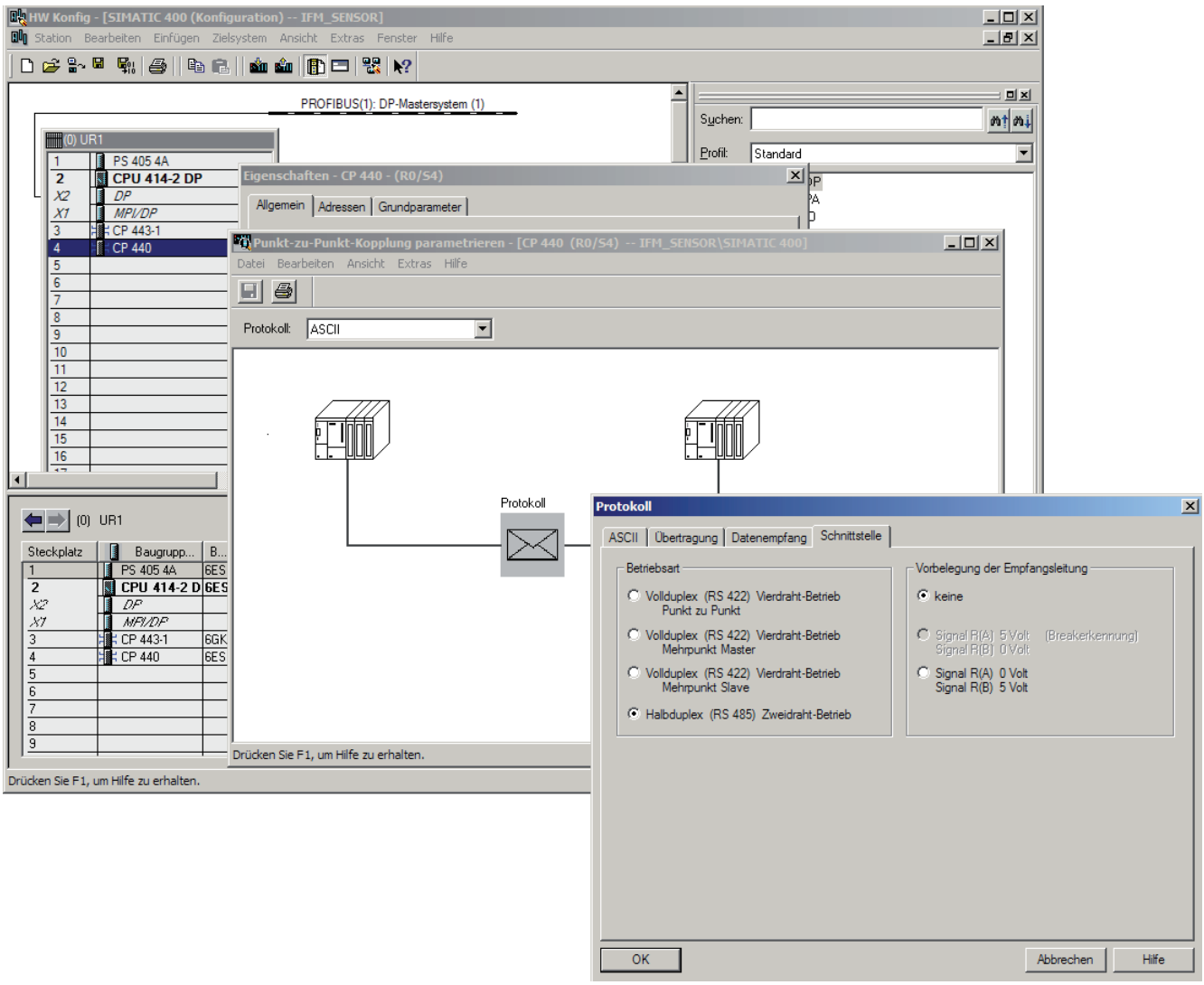
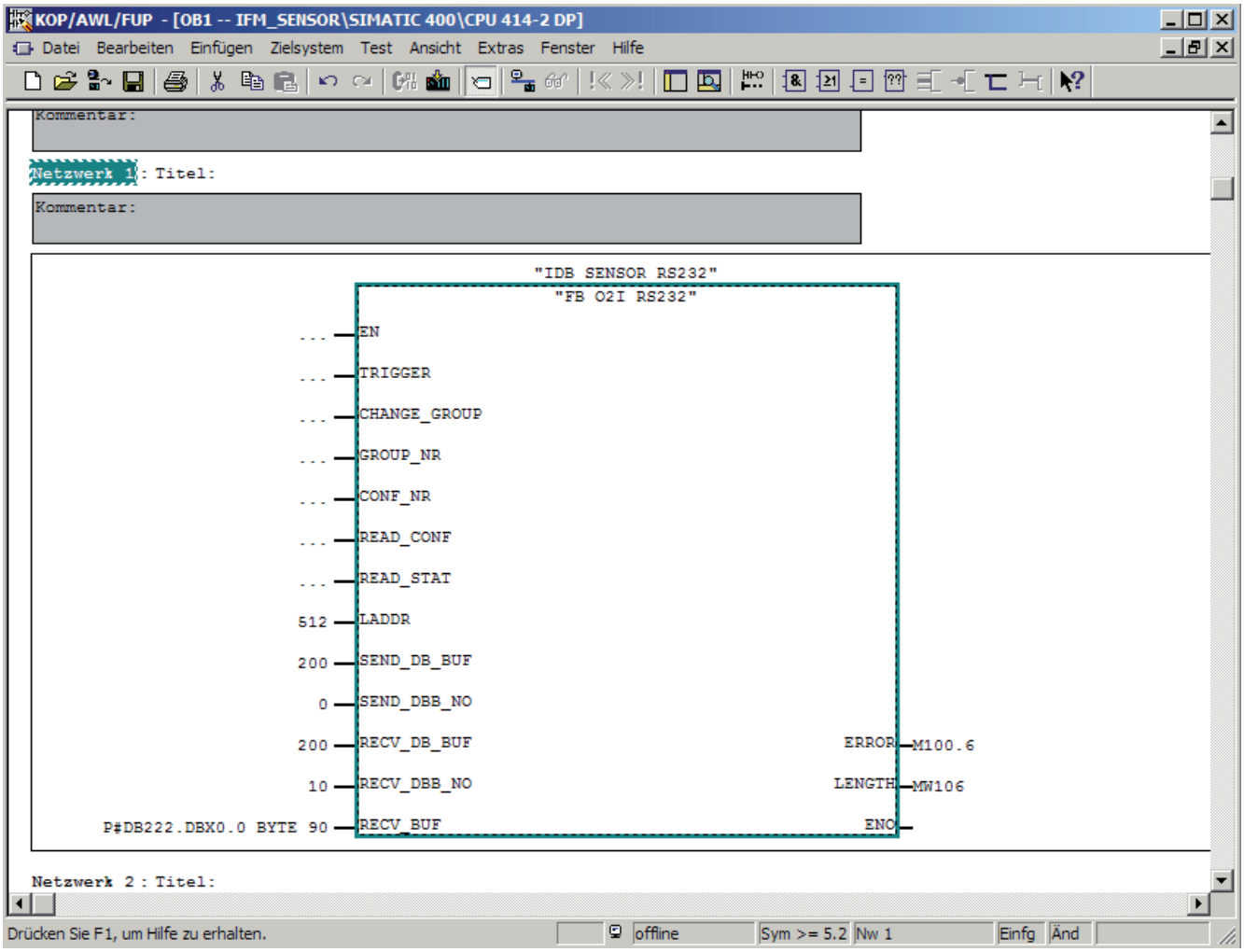

HW Konfig - [SIMATIC 400 (Konfiguration) -- IFM_SENSOR]
Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe
PROFIBUS(1): DP-Mastersystem (1)
(0) UR1
1 PS 405 4A
2 CPU 414-2 DP
X2 DP
X1 MPI/DP
3 CP 443-1
4 CP 440
Suchen:
Profil: Standard
Eigenschaften - CP 440 - (R0/S4)
Allgemein Adressen Grundparameter
Punkt-zu-Punkt-Kopplung parametrieren - [CP 440 (R0/S4) -- IFM_SENSOR\SIMATIC 400]
Datei Bearbeiten Ansicht Extras Hilfe
Protokoll: ASCII
Protokoll
Steckplatz Baugrupp... B...
1 PS 405 4A 6ES
2 CPU 414-2 D 6ES
X2 DP
X1 MPI/DP
3 CP 443-1 6GK
4 CP 440 6ES
Drücken Sie F1, um Hilfe zu erhalten.
Drücken Sie F1, um Hilfe zu erhalten.
Protokoll
ASCII Übertragung Datenempfang Schnittstelle
Betriebsart
Vollduplex (RS 422) Vierdraht-Betrieb Punkt zu Punkt
Vollduplex (RS 422) Vierdraht-Betrieb Mehrpunkt Master
Vollduplex (RS 422) Vierdraht-Betrieb Mehrpunkt Slave
Halbduplex (RS 485) Zweidraht-Betrieb
Vorbelegung der Empfangsleitung
keine
Signal R(A) 5 Volt (Breakerkennung) Signal R(B) 0 Volt
Signal R(A) 0 Volt Signal R(B) 5 Volt
OK
Abbrechen
Hilfe

4.4 Setting parameters on function block FB49

► Enter parameters for the CP address.
(Are forwarded to the communication function blocks.)



The parameters SEND_DB_BUF, SEND_DBB_NO, RECV_DB_BUF und RECF_DBB_NO are the start addresses for an intermediate buffer needed for this coupling.

The parameter RECV_BUF must be declared as absolute, because with some controller types the width of access may not be transmitted correctly in case of symbolic declaration.

4.5 Function block description FB49

The function block establishes the telegrams to be sent to the multicode reader and creates a character string from the received data flow.

The "trigger" input sends a trigger command to the multicode reader with each positive edge. In addition the receive buffer is deleted.

The "change_group" input sends a change group command to the multicode reader with each positive edge. The selection is indicated at the inputs "group_nr" and "conf_nr". In addition the receive buffer is deleted.

The "read_conf" and "read_stat" inputs send the corresponding status query to the multicode reader with each positive edge. In addition the receive buffer is deleted.

The received data is read byte-by-byte from the CP and then stored consecutively in the receive buffer.

The length of the receive buffer is defined variably as ANY pointer and can be extended or reduced according to the respective requirements.

For the serial coupling there is an additional intermediate buffer for the telegram to be sent and the telegram to be received. Stored here in DB200, parameters can be set at the inputs SEND_DB_BUF, SEND_DBB_NO, RECV_DB_BUF and RECF_DBB_NO.

The character string received from the configuration software after the start and end characters have to be evaluated externally.