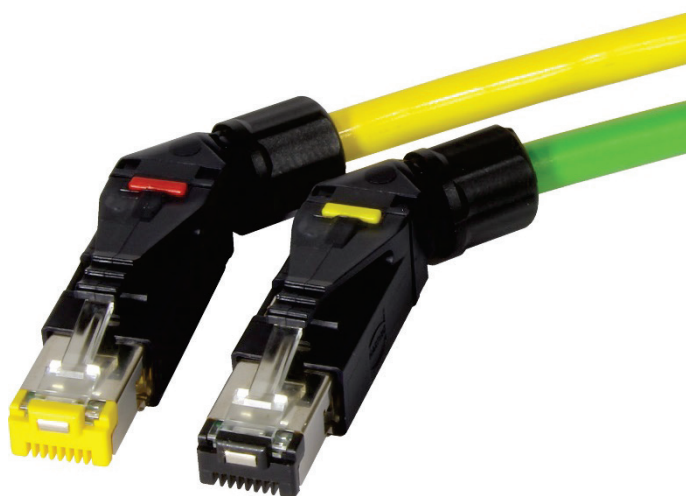
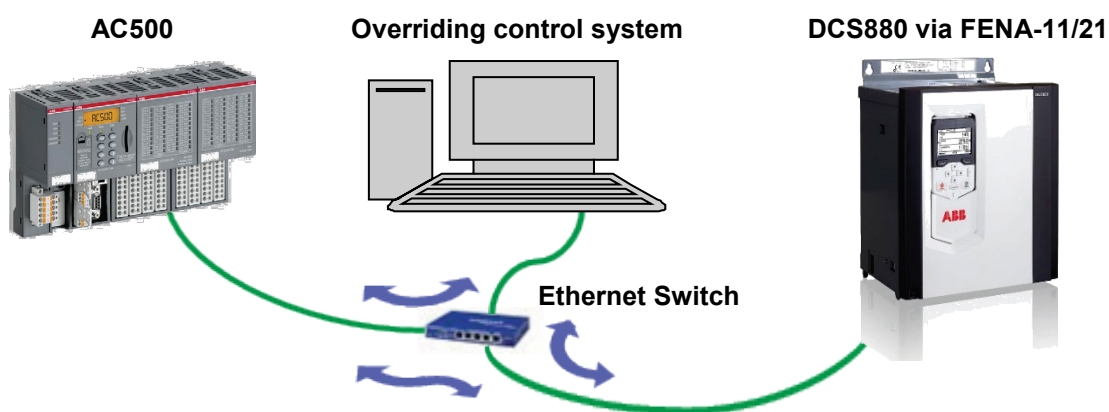


# Product Information

## DCS880 via FENA-11/21

### Connection of DCS880 via FENA-11/21 at Profinet



**Connector:**  
RJ45-Plug, Harting RJ Industrial10G.

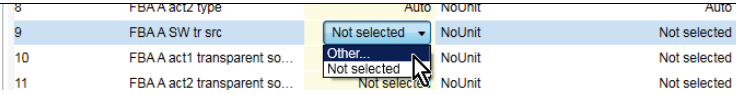
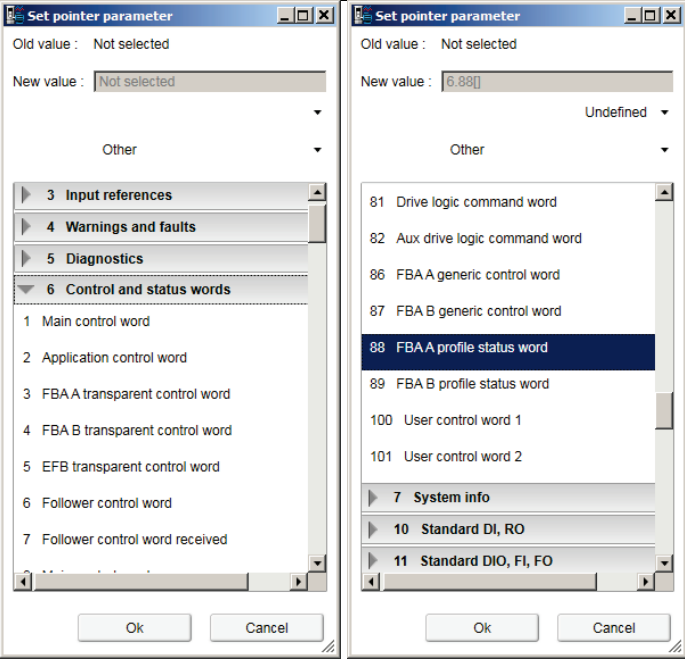
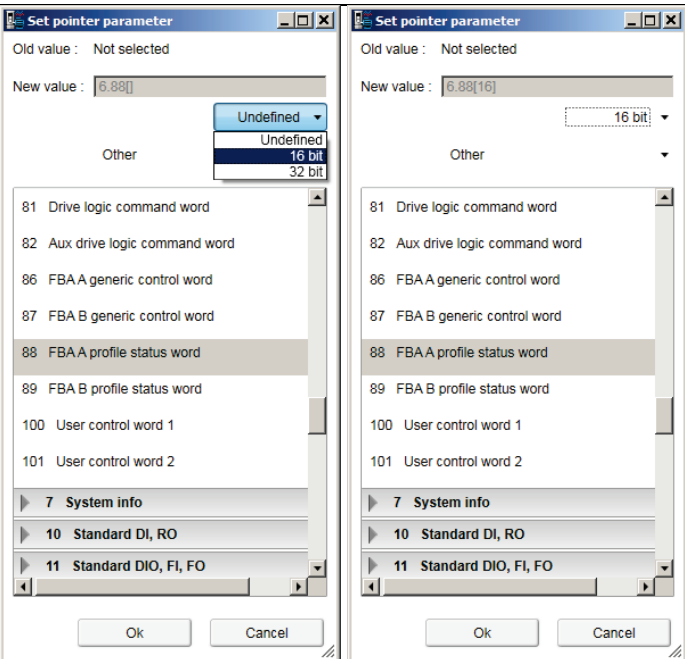
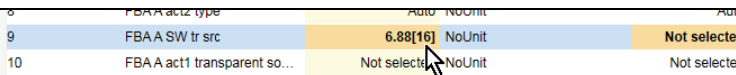
## General information

### Firmware version

2.02.x.x.

### How to use the function Other...

E.g. connect 06.88 FBA A profile status word to 50.09 FBA A SW transparent source.

|                                                             |                                                                                      |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------|
| In 50.09 FBA A SW transparent source choose <b>Other...</b> |    |
| Open <b>group 6</b> and choose parameter <b>06.88</b> :     |   |
| Choose <b>16 bit</b> and press <b>Ok</b> :                  |  |
| Now the connection is done:                                 |  |

## GSDML-File

The GSDML-file can be found here:

<http://new.abb.com/drives/connectivity/fieldbus-connectivity/profinet>

### Adapters

#### FENA-21

The adapter module supports PROFINET IO DP-V1 communication

#### FENA-11

The adapter module for Ethernet/IP, Modbus TCP and Profinet

then

### Links and downloads

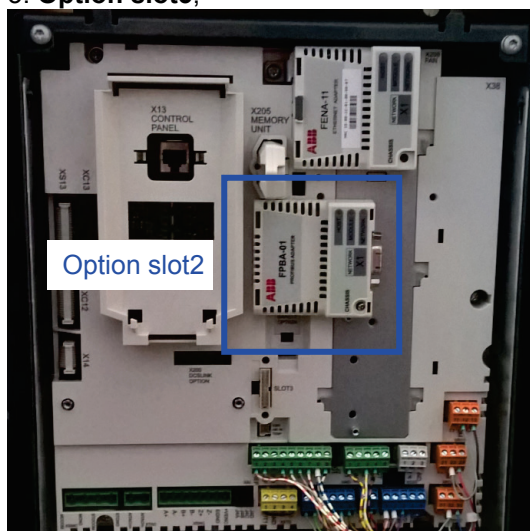


## DCS880 Configuration as fieldbus device

### Parameter Group 50

To connect the DCS880 as fieldbus device, following parameters need to be set:

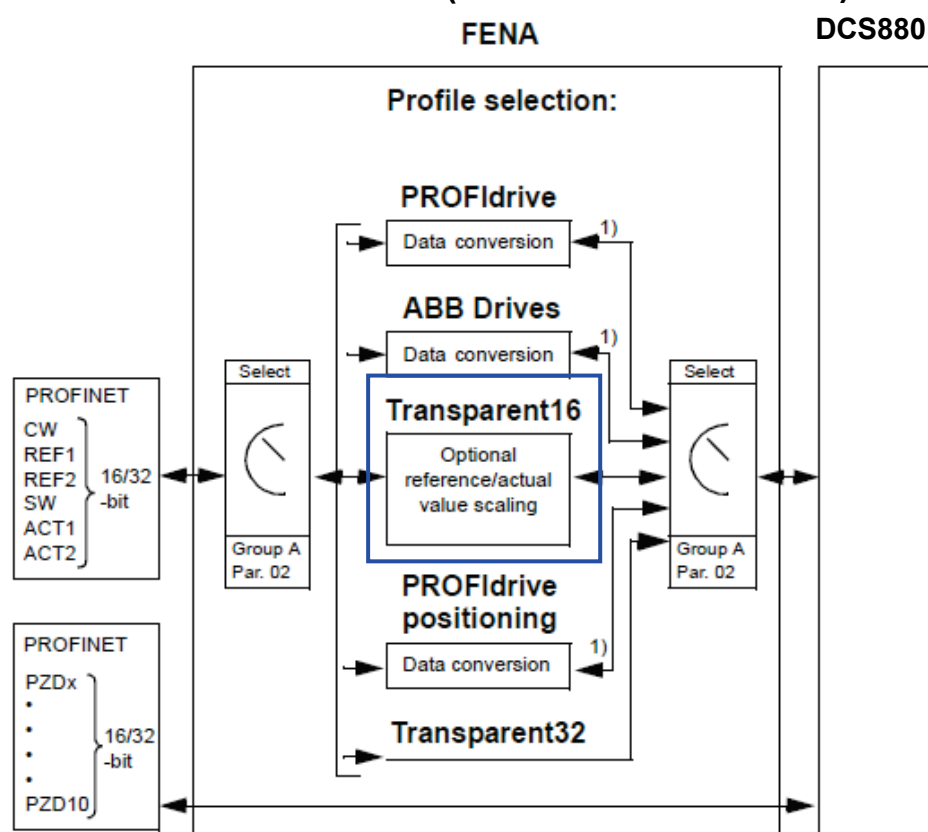
| Parameter                                                                           | Setting                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>50.01 FBA A Enable</b>                                                           | 0: Disable;<br>1: Option slot1;<br>2: Option slot2; recommended.<br>3: Option slot3;                                                                                                                                                 |
| <b>50.02 FBA A comm loss func</b>                                                   | 0: No action;<br>1: Fault; occurs only when the drive is controlled from the fieldbus.<br>2: Warning;<br>3: Last speed;<br>4: Speed reference safe;<br>5: Fault always; occurs even though no control is expected from the fieldbus. |
| <b>50.03 FBA A comm loss timeout</b>                                                | 300 ms.                                                                                                                                                                                                                              |
| <b>50.29 FBA A Profile</b>                                                          | 0: ABB Drive profile;<br>4: DCP;                                                                                                                                                                                                     |
|  | Each change in parameter groups 50, 51, 52 and 53 must be validated using 51.27 FBA A par refresh = Refresh.                                                                                                                         |



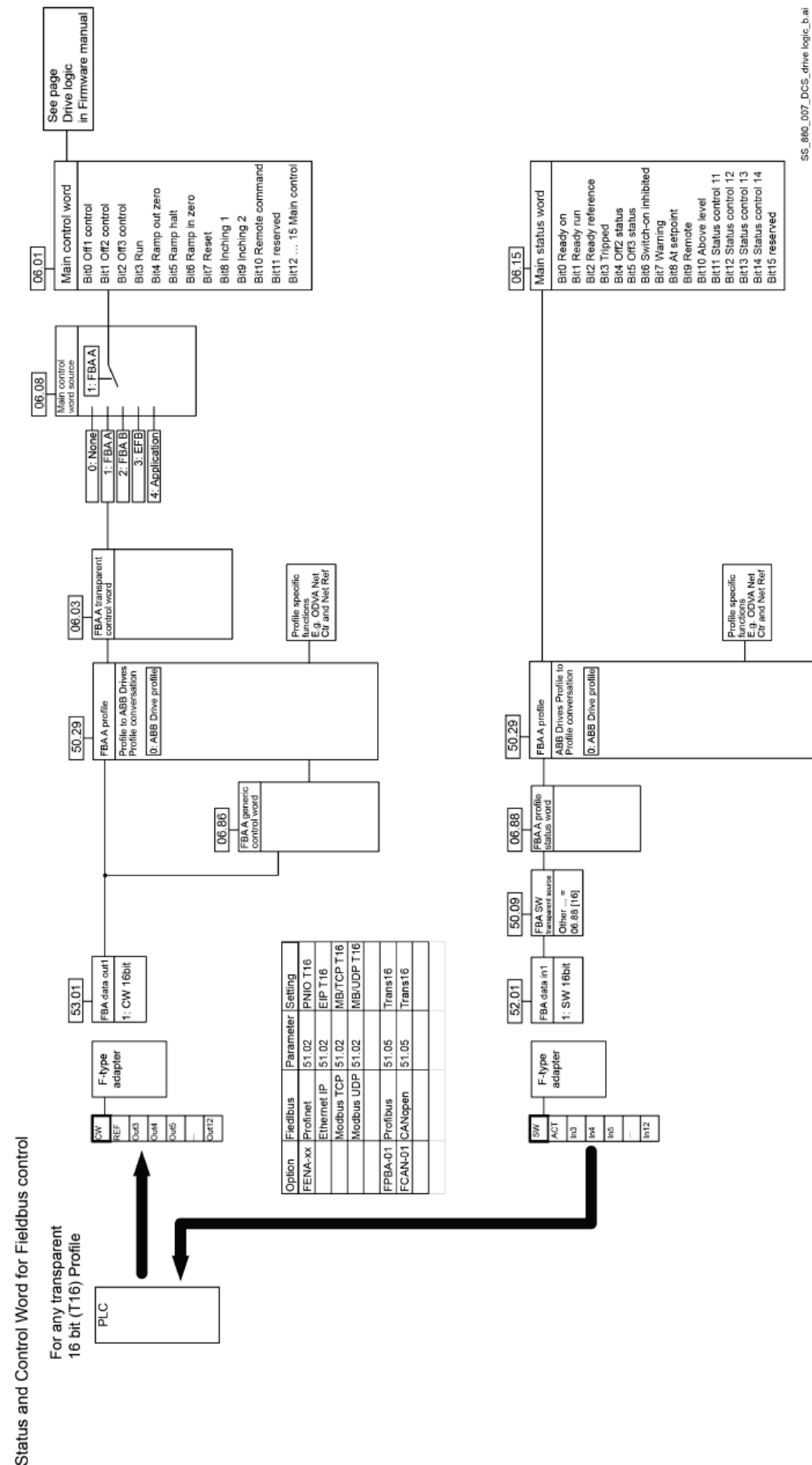
## Parameter Group 51

| Parameter              | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|-----------------|----|-----------------|----|-----------------|----|-----------------|----|-----------------|----|-----------------|----|-----------------|----|---------------|----|---------------|----|---------------|----|---------------|----|---------------|----|---------------|----|---------------|----|---------------|----|-------------|----|
| 51.01 FBA A type       | 128: <b>FENA-11/21</b> ; signal thus, read-only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.02 Protocol/Profile | For PROFINET IO:<br>10: <b>PNIO Pdrive</b> ; not recommended.<br>11: <b>PNIO ABB Pro</b> ; not recommended.<br>12: <b>PNIO T16</b> ; scaling via 50.29 FBA A profile.<br>13: <b>PNIO T32</b> ;<br>14: <b>PNIO PdriveM</b> ; NOT supported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.03 Commrate         | 0: <b>Auto</b> ; sets the bit rate for the Ethernet interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.04 IP configuration | 0: <b>Static IP</b> ; example.<br>1: <b>Dyn IP DHCP</b> ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.05 IP address 1     | 192; example.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.06 IP address 2     | 168; example.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.07 IP address 3     | 1; example.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.08 IP address 4     | 10; example.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 51.08 Subnet CIDR      | 24; example.<br><table border="1"> <thead> <tr> <th>Dotted decimal</th><th>CIDR</th></tr> </thead> <tbody> <tr><td>255.255.255.254</td><td>31</td></tr> <tr><td>255.255.255.252</td><td>30</td></tr> <tr><td>255.255.255.248</td><td>29</td></tr> <tr><td>255.255.255.240</td><td>28</td></tr> <tr><td>255.255.255.224</td><td>27</td></tr> <tr><td>255.255.255.192</td><td>26</td></tr> <tr><td>255.255.255.128</td><td>25</td></tr> <tr><td>255.255.255.0</td><td>24</td></tr> <tr><td>255.255.254.0</td><td>23</td></tr> <tr><td>255.255.252.0</td><td>22</td></tr> <tr><td>255.255.248.0</td><td>21</td></tr> <tr><td>255.255.240.0</td><td>20</td></tr> <tr><td>255.255.224.0</td><td>19</td></tr> <tr><td>255.255.192.0</td><td>18</td></tr> <tr><td>255.255.128.0</td><td>17</td></tr> <tr><td>255.255.0.0</td><td>16</td></tr> </tbody> </table> | Dotted decimal | CIDR | 255.255.255.254 | 31 | 255.255.255.252 | 30 | 255.255.255.248 | 29 | 255.255.255.240 | 28 | 255.255.255.224 | 27 | 255.255.255.192 | 26 | 255.255.255.128 | 25 | 255.255.255.0 | 24 | 255.255.254.0 | 23 | 255.255.252.0 | 22 | 255.255.248.0 | 21 | 255.255.240.0 | 20 | 255.255.224.0 | 19 | 255.255.192.0 | 18 | 255.255.128.0 | 17 | 255.255.0.0 | 16 |
| Dotted decimal         | CIDR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.254        | 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.252        | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.248        | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.240        | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.224        | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.192        | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.128        | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.255.0          | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.254.0          | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.252.0          | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.248.0          | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.240.0          | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.224.0          | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.192.0          | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.128.0          | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |
| 255.255.0.0            | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |                 |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |               |    |             |    |

## Communication Profiles (51.02 Protocol/Profile)

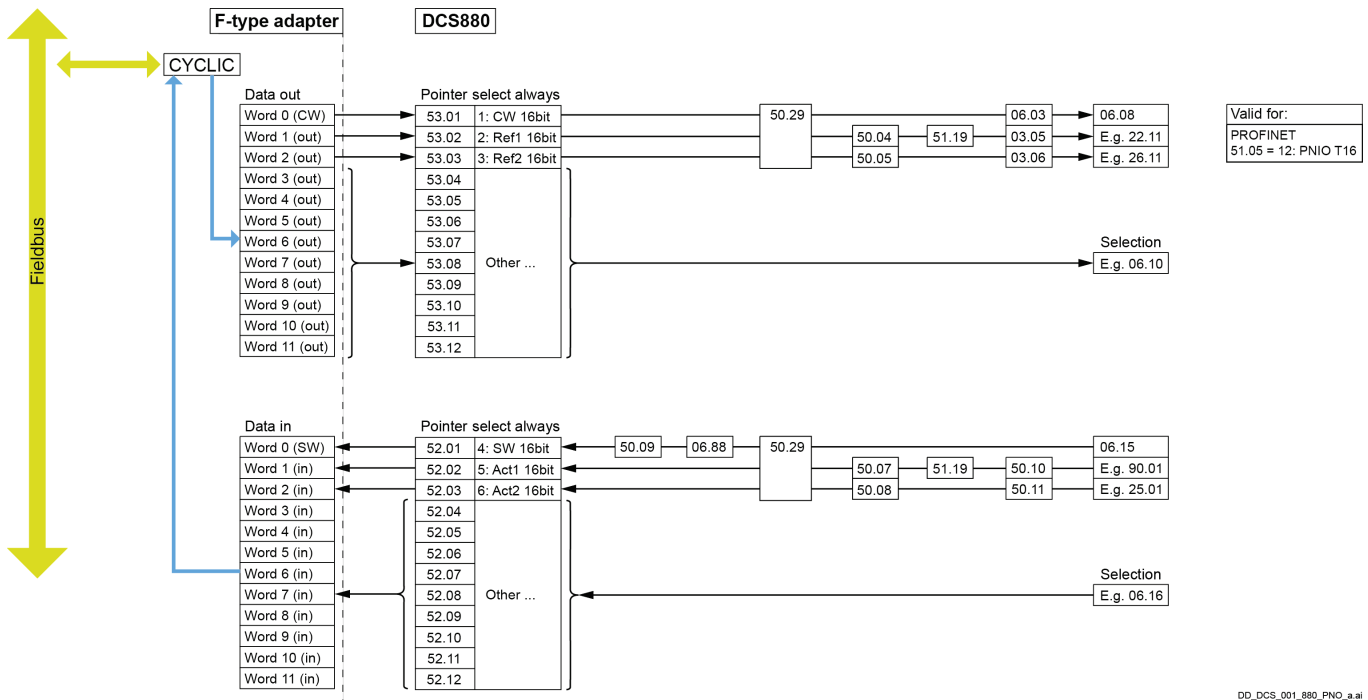


# Profile conversion and SW and CW handling



## Parameter Group 52

Configuration using SW 16bit, Act1 16bit, Act2 16bit and Other...



DD\_DCS\_001\_880\_PNO\_a.ai



Setting of parameters 52.01 ... 52.03 see above drawing. Do **not** use Other...!

For parameters 52.04 ... 52.12 only mapping **Other...** is valid.

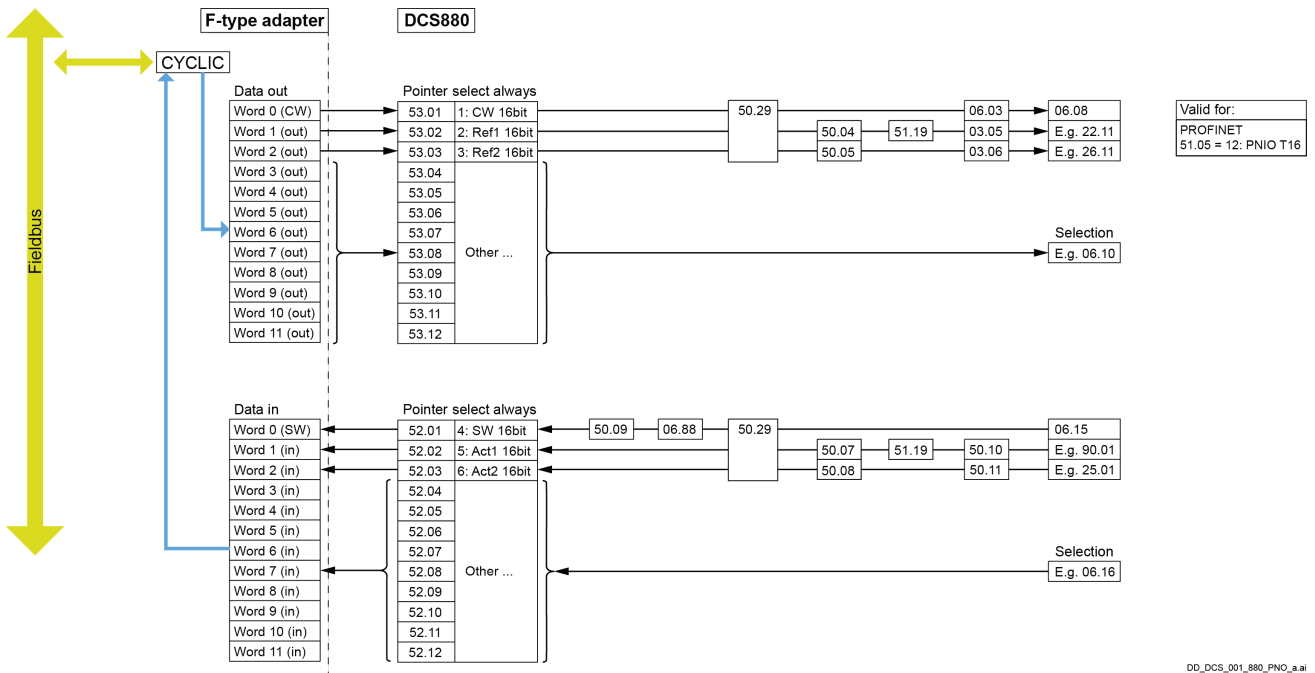
Different mappings like SW 16bit, Act1 16bit or Act2 16bit are not allowed.

| Defining the <b>actual values</b> in group 52: PLC ← DCS880.                                                 |         |                        |                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------|---------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PZD                                                                                                          | Pointer | Setting                | Remarks                                                                                                                                                                                                                                                                               |
| 1                                                                                                            | 52.01   | 4: <b>SW 16bit</b> ;   | 50.09 FBA A SW transparent source = <b>Other... = 06.88[16]</b> , for e.g. 06.88 FBA A profile status word.<br>50.29 FBA A profile = <b>ABB Drive profile</b> .<br>06.88 FBA A profile status word. Main Status Word after conversion with FBA A profile.                             |
| 2                                                                                                            | 52.02   | 5: <b>ACT1 16bit</b> ; | 50.10 FBA A act1 transparent source = <b>Other... = 90.01[16]</b> , for e.g. 90.01 Motor speed for control.<br>51.19 T16 scale = <b>0</b> ; sets the divisor (divisor = 51.19 + 1).<br>50.07 FBA A actual 1 type = <b>Speed</b> .<br>50.29 FBA A profile = <b>ABB Drive profile</b> . |
| 3                                                                                                            | 52.03   | 6: <b>ACT2 16bit</b> ; | 50.11 FBA A act2 transparent source = <b>Other... = 25.01[16]</b> , for e.g. 25.01 Torque reference speed control.<br>50.08 FBA A actual 2 type = <b>Torque</b> .<br>50.29 FBA A profile = <b>ABB Drive profile</b> .                                                                 |
| 4                                                                                                            | 52.04   | <b>Other...</b> ;      | 52.04 FBA data in4 = <b>Other... = 06.16[16]</b> , for e.g. 06.16 Drive status word 1 (actual value 4).<br>Scaling depends on signal/parameter.                                                                                                                                       |
|                                                                                                              | ...     | ...                    | ...                                                                                                                                                                                                                                                                                   |
| 12                                                                                                           | 52.12   | <b>Other...</b> ;      | 52.12 FBA data in12 (actual value 12).<br>Scaling depends on signal/parameter.                                                                                                                                                                                                        |
| Each change in parameter groups 50, 51, 52 and 53 must be validated using 51.27 FBA A par refresh = Refresh. |         |                        |                                                                                                                                                                                                                                                                                       |

|             |                |                  |                |     |     |     |     |     |     |                 |    |
|-------------|----------------|------------------|----------------|-----|-----|-----|-----|-----|-----|-----------------|----|
| 01          | 02             | 03               | 04             | 05  | 06  | 07  | 08  | ... | ... | 23              | 24 |
| Status Word | Speed feedback | Torque reference | Actual value 4 | ... | ... | ... | ... | ... | ... | Actual value 12 |    |

## Parameter Group 53

### Configuration using SW 16bit, Act1 16bit, Act2 16bit and Other...



|                                                                                    |                                                                                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Setting of parameters 52.01 ... 52.03 see above drawing. Do <b>not</b> use Other...!                                                                 |
|                                                                                    | For parameters 52.04 ... 52.12 only mapping <b>Other...</b> is valid.<br>Different mappings like SW 16bit, Act1 16bit or Act2 16bit are not allowed. |

| Defining the <a href="#">reference values</a> in group 53: PLC    ➔    DCS880.      |                                                                                                              |                       |                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PZD                                                                                 | Pointer                                                                                                      | Setting               | Remarks                                                                                                                                                                                                                                                                                                                     |
| 1                                                                                   | <b>53.01</b>                                                                                                 | <b>1: CW 16bit;</b>   | 50.29 FBA A profile = <b>ABB Drive profile</b> .<br>Control Word, visible in 06.03 FBA A transparent control word.<br>Select by 06.08 Main control word source = <b>FBA A</b> .                                                                                                                                             |
| 2                                                                                   | <b>53.02</b>                                                                                                 | <b>2: Ref1 16bit;</b> | 50.29 FBA A profile = <b>ABB Drive profile</b> .<br>Scaling by 50.04 FBA A ref1 type = <b>Speed</b> .<br>51.19 T16 scale = <b>0</b> ; sets the multiplier (multiplier = 51.19 + 1).<br>Reference value 1, visible in 03.05 FBA A reference 1.<br>Select e.g. by 22.11 Speed reference 1 source = <b>FBA A reference 1</b> . |
| 3                                                                                   | <b>53.03</b>                                                                                                 | <b>3: Ref2 16bit;</b> | 50.29 FBA A profile = <b>ABB Drive profile</b> .<br>Scaling by 50.05 FBA A ref2 type = <b>Torque</b> .<br>Reference value 2; visible in 03.06 FBA A reference 2.<br>Select e.g. by 26.11 Torque reference 1 source = <b>FBA A reference 2</b> .                                                                             |
| 4                                                                                   | <b>53.04</b>                                                                                                 | <b>Other...;</b>      | 53.04 FBA data out4 = <b>Other... = 06.10[16]</b> , for, e.g. 06.10 Auxiliary control word 1 (reference value 4).<br>Scaling depends on parameter.                                                                                                                                                                          |
| ...                                                                                 | ...                                                                                                          | ...                   | ...                                                                                                                                                                                                                                                                                                                         |
| 12                                                                                  | <b>53.12</b>                                                                                                 | <b>Other...;</b>      | 53.12 FBA data out12 (reference value 4).<br>Scaling depends on parameter.                                                                                                                                                                                                                                                  |
|  | Each change in parameter groups 50, 51, 52 and 53 must be validated using 51.27 FBA A par refresh = Refresh. |                       |                                                                                                                                                                                                                                                                                                                             |

|              |    |                 |    |                  |    |                   |    |     |     |                    |    |
|--------------|----|-----------------|----|------------------|----|-------------------|----|-----|-----|--------------------|----|
| 01           | 02 | 03              | 04 | 05               | 06 | 07                | 08 | ... | ... | 23                 | 24 |
| Control Word |    | Speed reference |    | Torque reference |    | Reference value 4 |    | ... |     | Reference value 12 |    |

## Additional parameters

### Scaling and profile selection

Reference and actual value scaling depends on profile- and parameter selection.

All reference values are scaled to  $\pm 10000$  (decimal), this equals  $\pm 100.00\%$ . The exception is speed. The scaling value of 46.02 M1 speed scaling actual corresponds to 20000 speed units.

| Parameter             | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50.04 FBA A ref1 type | 0: <b>Auto</b> ; automatic type and scaling according to which reference chain the incoming reference is connected to. If the reference is not connected to any chain, setting Transparent is applied.<br>1: <b>Transparent</b> ; no scaling is applied ( $1 = 1.00$ ).<br>2: <b>General</b> ; generic reference with a scaling of $100 = 1$ (e.g. integer and two decimals).<br>3: <b>Torque</b> ; the scaling is defined by 46.04 M1 torque scaling actual.<br>4: <b>Speed</b> ; the scaling is defined by 46.02 M1 speed scaling actual.<br>5: <b>Current</b> ; the scaling is in percent of 99.11 M1 nominal current: $100 = 1\%$ . |
| 50.05 FBA A ref2 type |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 50.07 FBA A act1 type |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 50.08 FBA A act2 type |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

The DCS880 only supports transparent16 profile for the FPBA-01 fieldbus adapter, so profile adaption according to Profidrive, ABB Drive profile or others are handled inside the firmware of the drive.

| Parameter           | Setting (scaling for Act1/Act2, Ref1/Ref2)                                                                      | Remark                    |
|---------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------|
| 50.29 FBA A Profile | 0: <b>ABB Drive Profile</b> ;<br>Speed: value in 46.02 == 20000 speed units.<br>Any other: $100.00\% = 10000$ . | Supported.                |
|                     | 1: <b>ODVA AC/DC</b> ;                                                                                          | <b>NOT</b> yet supported. |
|                     | 2: <b>Profidrive</b> ;<br>Speed: value in == 46.02 = 4000h.<br>Any other: $100.00\% = 10000$ .                  | <b>NOT</b> yet supported. |
|                     | 3: <b>CIA 402</b> ;                                                                                             | <b>NOT</b> yet supported. |
|                     | 4: <b>DCP</b> ;                                                                                                 | <b>NOT</b> yet supported. |

### Start/Stop

| Parameter              | Setting                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 20.01 Command location | 0: <b>Local I/O</b> ;<br>1: <b>Main control word</b> ;<br>2: <b>Key</b> ;<br>3: <b>12-pulse link</b> ;<br>4: <b>Field exciter link</b> ; |

### Reference Chain

Depending on if speed, torque, current or other reference types are used, for 50.04 FBA A ref1 type/50.05 FBA A ref2 type= **Auto**.

| Parameter                           | Setting                                                        | Auto type and scaling |
|-------------------------------------|----------------------------------------------------------------|-----------------------|
| 22.11 Speed reference 1 source      | 7: <b>FBA A reference 1</b> ;<br>8: <b>FBA A reference 2</b> ; | Speed                 |
| 22.12 Speed reference 2 source      |                                                                |                       |
| 23.32 Direct speed reference        |                                                                |                       |
| 26.11 Torque reference 1 source     |                                                                | Torque                |
| 26.12 Torque reference 2 source     |                                                                |                       |
| 27.22 Current reference source      |                                                                | Current               |
| 28.18 EMF reference source          |                                                                | General               |
| 28.20 EMF voltage correction source |                                                                |                       |
| 28.29 Flux correction source        |                                                                |                       |

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