Quick Start-up Guide for RPBA-01 PROFIBUS-DP Adapter and ACS550/ACS800

Supported PPO message types:
- PPO Type1: PZD 2 words IN/OUT
- PPO Type2: PZD 6 words IN/OUT
- PPO Type3: PZD 2 words IN/OUT
- PPO Type4: PZD 6 words IN/OUT
- PPO Type5: PZD 10 words IN/OUT
(PZD = Process Data)

Supported operation modes:
- PROFIDRIVE = GENERIC
- VENDOR SPECIFIC = ABB DRIVES

The operation mode is set with parameter 98.07 for the ACS800. The ACS550 detects the operation mode automatically.

Example of start-up sequence and parameter settings:

- Install the RPBA-01 GSD file (ABB_0812.gsd) in the PLC
Set the operation mode (PROFIDRIVE or VENDOR SPECIFIC) in the PLC hardware configuration.

Set also the PPO type, baud rate and node number in the PLC.
Mount the module according to the instructions in the manual and set the rotary switches for node address selection before mounting (access to the rotary switches is easier then). If the node address is set by software, set the rotary switches to the position 0.

Connect the fieldbus connector according to instructions in the user's manual.

Activate the fieldbus module with parameter 98.02.

Set the communication profile to ABB Drives or Generic in the ACS800 with parameter 98.07 to match the PLC hardware configuration (not necessary with ACS550).

If the node address is set by software set the required address in parameter 51.02. The baud rate and PPO type is detected automatically by the RPBA-01 module.
Example 1: GENERIC DRIVES PROFILE (PROFIDRIVE) + PPO 1

10.01 EXT1 STRT/STP/DIR   COMM.CW   (COMM in ACS550)
11.03 EXT REF1 SELECT      COMM.REF  (COMM in ACS550)
16.01 RUN ENABLE          COMM.CW   (COMM in ACS550)
16.04 FAULT RESET SEL      COMM.CW   (COMM in ACS550)
98.02 COMM. MODULE LINK    FIELDBUS (COMM PROT SEL and
                          EXT FBA in ACS550)

98.07 COMM PROFILE         GENERIC   (ACS800 only)
51.01 MODULE TYPE          PROFIBUS-DP (Read Only)
51.02 NODE ADDRESS         3
51.03 BAUDRATE             12000
51.04 PPO-type             PPO1
...
51.27 Par. refresh         Refresh

NOTE: The new settings in parameter group 51 will take effect only when the module is
powered up the next time or when the module receives a refresh command
(parameter 51.27).

The RPBA-01 uses data consistent communication, which means that the whole data frame is
from the same program cycle. Some PLC’s handle this internally but some must be programmed
to transmit data consistent telegrams. E.g. in Simatic S7 the special functions SFC15 and SFC14
must be used.

The start/stop commands and reference are according to the PROFIDRIVE profile. See RPBA-01
user’s manual for a description of the Profibus state-machine. The reference value +/- 16384dec
(4000hex) corresponds to motor nominal speed (par.99.8) in forward and reverse direction.
Example 2: ABB DRIVES PROFILE (VENDOR SPECIFIC) + PPO2

10.01 EXT1 COMMANDS
10.02 EXT2 COMMANDS
11.02 EXT1/EXT2 SEL
11.03 REF1 SELECT
16.01 RUN ENABLE
16.04 FAULT RESET SEL
98.02 COMM. MODULE LINK
98.07 COMM PROFILE
51.01 MODULE TYPE
51.02 NODE ADDRESS
51.03 BAUDRATE
51.04 PPO-type
51.05 PZD3 OUT
51.06 PZD3 IN
51.07 PZD4 OUT
51.08 PZD4 IN
51.09 PZD5 OUT
51.10 PZD5 IN
51.11 PZD6 OUT
51.12 PZD6 IN

10.01 EXT1 COMMANDS
10.02 EXT2 COMMANDS
11.02 EXT1/EXT2 SEL
11.03 REF1 SELECT
16.01 RUN ENABLE
16.04 FAULT RESET SEL
98.02 COMM. MODULE LINK
98.07 COMM PROFILE
51.01 MODULE TYPE
51.02 NODE ADDRESS
51.03 BAUDRATE
51.04 PPO-type
51.05 PZD3 OUT
51.06 PZD3 IN
51.07 PZD4 OUT
51.08 PZD4 IN
51.09 PZD5 OUT
51.10 PZD5 IN
51.11 PZD6 OUT
51.12 PZD6 IN

COMM.CW (COMM in ACS550)
COMM.CW (COMM in ACS550)
COMM.CW (COMM in ACS550)
COMM.REF (COMM in ACS550)
COMM.CW (COMM in ACS550)
COMM.CW (COMM in ACS550)
FIELDBUS (COMM PROT SEL and EXT FBA in ACS550)
ABB DRIVES (ACS800 only)
PROFIBUS-DP (Read Only)
4
1500
PPO2
1202 (CONST SPEED 1)
104 (CURRENT)
2501 (CRIT SPEED SEL)
105 (TORQUE)
2502 (CRIT SPEED 1 LO)
106 (POWER)
2503 (CRIT SPEED 1 HI)
107 (DC BUS VOLTAGE)

51.27 Par. refresh Refresh

NOTE: The new settings in parameter group 51 will take effect only when the module is powered up the next time or when the module receives a refresh command (parameter 51.27).

The ABB Drives Profile is from the PLC programming point of view similar as with Example 1.

The start/stop commands and reference value are according to the ABB Drives profile. See ACS800/ACS550 Firmware manual for a description of the ABB Drives Communication profile. The reference value +/- 20000dec corresponds to speed/frequency set with parameter 11.05/11.08 (Ext Ref1 Max / Ext Ref2 Max) in forward and reverse direction. The minimum and maximum reference values (16 bit integer) that can be given through the fieldbus are –32768dec and 32767dec.