ProfiTrace Commissioning Checklist for DP (1)

Description: Test cases for the commissioning and functional check of a PROFIBUS DP network with the ProfiTrace Analyzer.

1. Administration

Responsible company:	
Name of the tester:	
Test date:	

2. Installation details

Network/project name:	
Segment name:	
Number of masters:	
Number of slaves:	

3. Test Summary

Successful test cases:

- ❑ Equipment and software setup
- ❑ Case 1: Activity state and physical location
- ❑ Case 2: Retries and illegal messages
- ❑ Case 3: Cycle time
- ❑ Case 4: Diagnostic messages in Data Exchange
- ❑ Case 5: DP parameters
- ❑ Case 6: Others

Final result:

- ❑ PROFIBUS protocol behavior is **acceptable**.
- ❑ PROFIBUS protocol behavior is **NOT** acceptable.

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4. Protocol details

Transmission speed:	[C1]
Typical Cycle time (ms):	[C2]
Alternate Cycle time (ms):	[C3]
Watchdog (ms):	[C4]
MinTSDR (bit times):	[C5]

5. Installation remarks or items to fix

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✓	✗	Na	Equipment and software Setup
❑	❑	❑	Copy the necessary GSD files in the GSD library of the ProfiTrace directory (example: \profitrace\gsd).
❑	❑	❑	Master configuration settings: - HSA = 126 (in order to detect alien slaves or masters) - Retries = at least 1 (3 or more is preferred). - Watchdog = ON (for all the slaves) *Remark: these settings have to be synchronized on all the masters in this network.*
❑	❑	❑	Set the 'message buffer size' to the value 1000000 (Settings -> Preferences -> General).
❑	❑	❑	The PC/Laptop is powered by an external power supply (NOT the battery).
❑	❑	❑	Attach the USB cable to the ProfiCore and the PC/laptop.
❑	❑	❑	Attach the ProfiCore to the installation.
❑	❑	❑	Attach and/or start-up all the masters, slaves and coupling components (it is OK if they are already running). *Remark: some masters and slaves need time to boot up. It is best to wait at least 1 minute.*
❑	❑	❑	Start-up the ProfiTrace software and scan the GSD library (Settings -> Scan GSD library).
❑	❑	❑	Click on Init ProfiCore. The baudrate should be detected and the station numbers in the Live List are recognizable. Fill in [C1] in the Protocol details.
❑	❑	❑	In case of baudrates lower than 500 kbit/s, set the 'Assume station lost after' higher than 6 seconds, otherwise a default value of 5 seconds is enough (Settings -> Preferences -> Live list settings).
❑	❑	❑	The HSA in the Live List has the value 126.
❑	❑	❑	Shutdown the primary masters.
❑	❑	❑	Click on 'Start message recording'.
❑	❑	❑	Restart the primary masters (if possible at the same time).
❑	❑	❑	After start-up all the slaves in the Live List should have 'product names'. If not, some GSD files are missing or different products are installed. Fix this step before proceeding.
			End of checklist: Equipment setup

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✓	✗	Na	**Case 1: Activity state and physical location**
❑	❑	❑	The 'Syncs' In the 'Station statistics view' are static (not counting constantly up). If not static, the master is missing slaves or the signals on the bus are very bad or the busparameters have incorrect values! *Remark: To verify it do File -> New.*
❑	❑	❑	In the Live List, all the required slaves are in the Data Exchange state (green background). *Remark:* *- Red background: slave has a parameter error!* *- Purple background: slave has a configuration error!* *- Yellow background: slave is not reachable!* *- No background: slave is not configured in the master!*
❑	❑	❑	The visible product names in the Live List correspond with the installed devices (check with drawings). *Remark: masters can not be identified on product name from the Live List.*
❑	❑	❑	**[This step is only important if 2 or more slaves of the same type are used.]** To check the physical location of the slaves, all the required slaves have to be shutdown or removed one-by-one. This has to be done in conjunction with the Live List and the drawings of the installation. After removal the Live List will give a yellow background for the respective slave. After insertion the slave should have a green background in the Live List. *Remark: be careful with slaves that are responsible for the terminating resistors.*
			End of checklist: Activity state and physical location

✓	✗	Na	**Case 2: Retries and illegal messages**
❑	❑	❑	ProfiTrace: Click on File -> New.
❑	❑	❑	Check the 'Retries (total for this station)' in the 'Station statistics view'. <u>After a 5 minute period</u>, It should comply to the following table:

Baudrate	**Max. retries per slave (A-class application)**	**Max. retries per slave (B-class application)**
9.6 kbit/s	1	3
19.2 kbit/s	1	3
45.45 kbit/s	1	3
93.75 kbit/s	1	3
187.5 kbit/s	1	3
500 kbit/s	1	3

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✓	✗	Na	**Case 2: Retries and illegal messages**
			<table><tr><td>1.5 Mbit/s</td><td>1</td><td>9</td></tr><tr><td>3 Mbit/s</td><td>2</td><td>12</td></tr><tr><td>6 Mbit/s</td><td>3</td><td>16</td></tr><tr><td>12 Mbit/s</td><td>4</td><td>20</td></tr></table> *Remarks:* *- The restriction is that Syncs has no entries!* *- A-class application: demands a low communication fault tolerance.* *- B-class application: has no demands for communication fault tolerance.*
❑	❑	❑	Check the 'Illegal responses to requests' in the 'Station statistics view'. <u>After the 5 minute period</u>, It should also comply to the table above:
❑	❑	❑	After the 5 minute period the 'Retries (worst sequence)' in the 'Station statistics view' should be 2 steps under the configured retries in the masters. *Remarks: This case is only applicable for master which have more than 3 Max Retries (setting in the busparameters).*
			End of checklist: Retry and illegal messages

✓	✗	Na	**Case 3: Cycle time**
❑	❑	❑	Check the 'Data-Exchange interval (msec)' in the 'Station statistics view'. It should have a lower value than the maximum time required by the process. Fill in [C2] in the Protocol details.
❑	❑	❑	Remove at least 80 % of the slaves and check the 'Data-Exchange interval (msec)' again. It should have a lower value than the maximum time required by the process. Fill in [C3] in the Protocol details. *Remark: The value can be lower of higher than the previous measurement.*
			End of checklist: Cycle time

✓	✗	Na	**Case 4: Diagnostic messages in DX**
❑	❑	❑	Clean up 'Diagnostic msg. res. from slaves when in DX' in the 'Station statistics view' (remove all entries).
❑	❑	❑	Wait for 5 minutes and check the fields. In a normal working installation there should be no entries. *Remarks:* *If there are diagnostic entries, the content can be checked by clicking on the*

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✓	✘	Na	Case 4: Diagnostic messages in DX
			specific field. The diagnostic data is displayed in the info panel.
❑	❑	❑	**End of checklist: Diagnostic messages in DX**

✓	✘	Na	Case 5: DP parameters
❑	❑	❑	Click on 'Messages' and search for a 'Set Parameter' Message (SAP 62->61). The info panel should display the parameter information.
❑	❑	❑	The Watchdog should be ON and at least 6 times the typical cycle time [C3]. Fill in [C4] in the Protocol details.
❑	❑	❑	The MinTSDR should be between 11 and 33 bit times. Fill in [C5] in the Protocol details.
			End of checklist: DP parameters

✓	✘	Na	Case 6: Others
❑	❑	❑	After start-up or reconfiguration the first input data of the slaves should contain valid data. In case of non-valid data (e.g. zeros or old values), the application software should be prepared for this.
❑	❑	❑	The output data to the slaves should have control values. If the output data contains zeros or there is no output data being transferred, the application in the masters is not running.
❑	❑	❑	**End of checklist: Others**

Remarks
- At least version 1.4 of ProfiTrace is required (with default settings).
- It should be possible to remove/shutdown masters or slaves during the test cases.

✓: OK or handled

✘: Error

na: Not applicable

What is not covered by this checklist
- Product identification of the masters.
- Physical measurements behind DP/PA couplers.

For the next version
- Min slave intervall (token fdl, status, idle blocks).

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