

Technical Description

PBDTM-FBP

Device Type Manager (DTM)

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Please note the following

Target group

This description is intended for use by trained specialists in electrical installation and control and automation engineering, who are familiar with the applicable national standards.

Safety requirements

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Using this Handbook

Symbols

This technical document contains markers to point the reader to important information, potential risks and precautionary information. The following symbols are used:

	Symbol to indicate a potentially dangerous situation that can cause damage to the UMC or connected devices or to the environment
	Symbol to indicate important information and conditions.
	Symbol that indicates a potentially dangerous situation that can cause personal injury

Terminology

Term/Acronym	Description
Device Type Manager (DTM)	Software component (device driver) for configuring, diagnosing, forcing, displaying the measured variables, etc. of a field device. It is familiar with the way the device works and supplies device specific documentation.
Frame Application (FA)	Frame application (run time environment) in accordance with the FDT specification for operating DTMs
Field Device Tool (FDT)	The FDT concept describes the interface between a frame application and the device-specific software (DTM = Device Type Manager) of the device manufacturer. It enables devices produced by different manufacturers and different fieldbuses to be integrated in a single system. Currently supporting fieldbus protocols for PROFIBUS and HART.
DCS	Distributed Control System

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Version History - Device Type Manager (DTM) PBDTM-FBP		
PBDTM	Ident No. (CD)	Changes
V2.2	1SAJ924012R0002	DTM Applications for Softstarters (PST) added
V3.0	1SAJ924012R0003	DTM Applications for UMC100 added. New setup which automates the installation of the different packages.
V4.0	1SAJ924012R0004	Update of the UMC100 DTM to support the VI15x module.
V5.0	1SAJ924012R0005	Windows 7/64 Bit supported

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1 Introduction

The PBDTM allows to configure FBP devices based on the FDT (Field Device Tool) technology. The installation and features are described in this manual.

FDT/DTM Technology

FDT technology makes an important contribution towards ensuring unrestricted utilization of the fieldbus potential by standardizing the communication interface between the field devices and the systems.

A key feature is its independence from the communications protocol, the software environment for the devices, and the host systems.

The heart of the FDT concept lies in the Device Type Manager (DTM), a component offered by ABB for a multitude of devices. It can be used in any system that supports the FDT interface. The DTM is the configuration and management component of a field device. It is familiar with all the rules governing devices (plausibility checks), and contains all graphical user dialogues, the device configuration, diagnostics, and maintenance. DTMs are loaded into the libraries of the automation system or of stand-alone tools, in a similar way to a printer driver in an office environment.

Benefits at a Glance

The FDT/DTM technology offers the following benefits for intelligent low voltage devices like the UMC:

- Efficient configuration of devices in workshops or during factory commissioning or in the service case.
- Storing of reference configurations
- Upload of the configuration into the control system.
- The configuration data can be stored in a central place (either control system's database or service laptop). If a device must be replaced the previous configuration can just be downloaded to the device
- Possibility to offer an own parameterisation and monitoring tool for the electrical staff.
- Because a standard technology which is supported by many manufacturers is used also other devices providing a DTM can be configured the same way. Often end users are already familiar with the concept because it is widely used in the instrumentation world.

Use Case: Pre-Configuration

A panel builder wants to test and pre-configure a Motor Control Center (MCC) equipped with FBP devices (e.g. UMC22 or UMC100) connected to PROFIBUS. Therefore a PC with a PROFIBUS interface card must be connected with the MCC's PROFIBUS line. The device configuration - as required for the application - can be done in a comfortable way using the graphical user applications. The configuration can be prepared off-line without any devices connected and then downloaded into the FBP device when they are installed. The project file with all the parameters remains as reference at the panel builder side.

The PROFIBUS communication DTM provides tools to check the bus line. E.g. a life-list can be created on request where all nodes with their PROFIBUS identifier and bus address are listed.

As next step the pre-configured MCC gets shipped to the customer. During commissioning the configuration can be uploaded from the FBP devices into the control system's data base if it supports the FDT/DTM technology. For a list of companies supporting FDT/DTM please consult the FDT Foundation's web site.

Use Case: Commissioning

During plant commissioning it is very valuable to be able to monitor the PROFIBUS command telegram sent from the control system to the UMC and the monitoring telegram sent from the UMC to the control system. This can help to find out possible problems in the control application or other communication problems. In addition the option to read out the present device configuration allows to verify that the parameters stored in the control system are correct.

Use Case: Service

By displaying all operating, service and diagnostics data, FBP devices provides meaningful information and thus helps to prevent faults and to quickly locate and correct them. The information presented in the dialogues includes warnings, faults, operating hours, number of starts, number of trips, motor current as trend curve etc. The option of on-line configuration during operation avoids additional plant downtime.

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Supplier (e.g. panel builder)

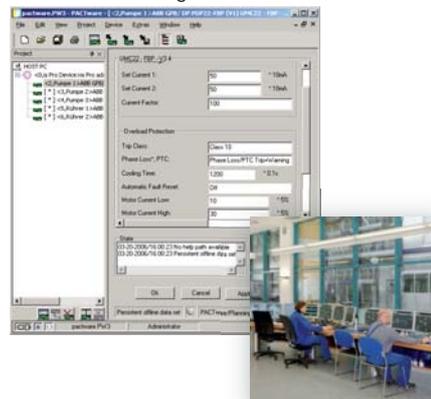
Configuration window



Transport to the
Operating company

Operating company

Configuration window

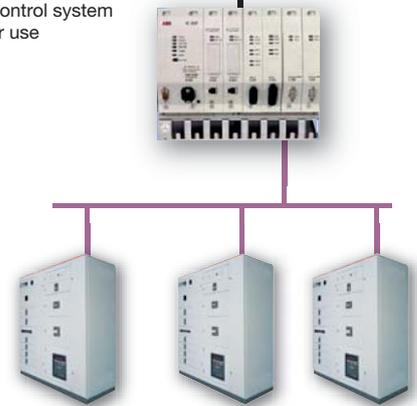


Save reference
configuration

Download
to UMC

Motor control center
equipped with UMCs

Upload and configuration
into the control system
for further use



- ▲ Usage scenario of the FDT/DTM technology in the context of intelligent low voltage devices such as the Universal Motor Controller UMC-FBP.

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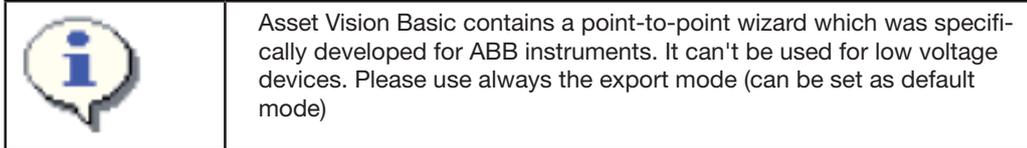
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Asset Vision Basic

General

Asset Vision Basic is an FDT frame application used for configuration, diagnostics, and maintenance tasks on intelligent devices. The tool is also used by other ABB companies like ABB instrumentation.



Asset Vision Basic offers support for devices using different communication protocols. Presently communication DTMs for PROFIBUS (UTP22) and the serial communication DTM UTF21 can be used to parameterise low voltage devices.

Asset Vision Basic conforms to FDT Specification 1.2.1. and supports FDT 1.2. Asset Vision Basic is supported by .Net 2.0.

Applications

- Provides the FDT frame for DTMs (device DTMs, communication DTMs, remote I/O DTMs, and so on)
- Straightforward tool for quick device parameterization
- Visual device overview that maps device communication links in systems (project tree)
- Storage/management of device data
- Device measuring point planning and management

Management

- Management of devices and networks in projects
- Display and management of a device catalog, incl. a filter function for sorting according to device type, manufacturer, group and protocol
- Assignment of measuring point names in the project manager (network)
- Simultaneous communication (online) with several devices
- Scanning of devices connected via communication DTMs
- Automatic generation of a project tree in the project manager (network) via communication DTMs

Archiving

- Back up & load project-related data
- Print project related data

Other features

- Password protection available for user accounts with fixed roles
- Language settings
- Configuration of frame window and shortcuts
- Option of connecting FDT and error monitor
- Adaptable tool bar
- Application view can be switched to a tab or window
- Comprehensive on-line help available throughout the DTM

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2 Installation and Configuration

2.1 Requirements:

- A version for Windows XP with service Pack 2 onwards or Windows 7 is available. Choose the right setup on the installation CD for each system.
- 1GB RAM
- PROFIBUS interface card UPT22-FBP to configure devices via PROFIBUS or the UTF21-FBP interface to configure one FBP device.
- Full administrator rights.

The installation includes the following steps:

- Installation of the PROFIBUS hardware interface and DTMs (UTP22) or the UTF21-FBP.
- Installation of the Frame Application
- Installation of the device DTMs

The following sections describe the required installation steps in detail.

2.2 Installation

- Make sure that the minimum PC/Notebook requirements are met.
- Start Windows (with administrator rights!). Disable intrusion prevention software beforehand to ensure the installer has sufficient privileges. On Windows 7 disable the ACL.
- Cancel all running programs.
- Insert data medium
- Start „Setup.exe“ in the software directory of the data medium
- Follow the instructions.
- The .NET 2.0 Framework will be installed if required.
- You must update the device catalogue after the first start of AssetVisionBasic, in order that the installed DTMs are available.

2.3 Upgrading from a previous version

Before upgrading from a previous version of the PBDTM it is necessary to uninstall the previous version. Disable intrusion prevention software beforehand to ensure the installer has sufficient privileges. On Windows 7 disable the UAC.

For uninstalling go in the operating system: Start -> Settings -> Control Panel -> Software -> Install/Uninstall

1. Uninstall "ABB Asset Vision Basic", "ABB Shared Components", "ABB Basic PROFIBUS DTM", "ABB Custom Application Editor", UTF21 COMDTM and isPro COM DTM.
Project files will not be uninstalled.
2. Reboot your computer!
3. Go on with section 2.4 (Installation)



Upgrading from DTM Builder Version 4.1.1 to later DTM Builder Versions

- Existing DTM instances can still be used and parameterized
- If the configured module should be changed (e.g. from UMC22 V3.3 to UMC22 V4) a new instance must be created.
In this case the parameters of the existing DTM instance gets lost.

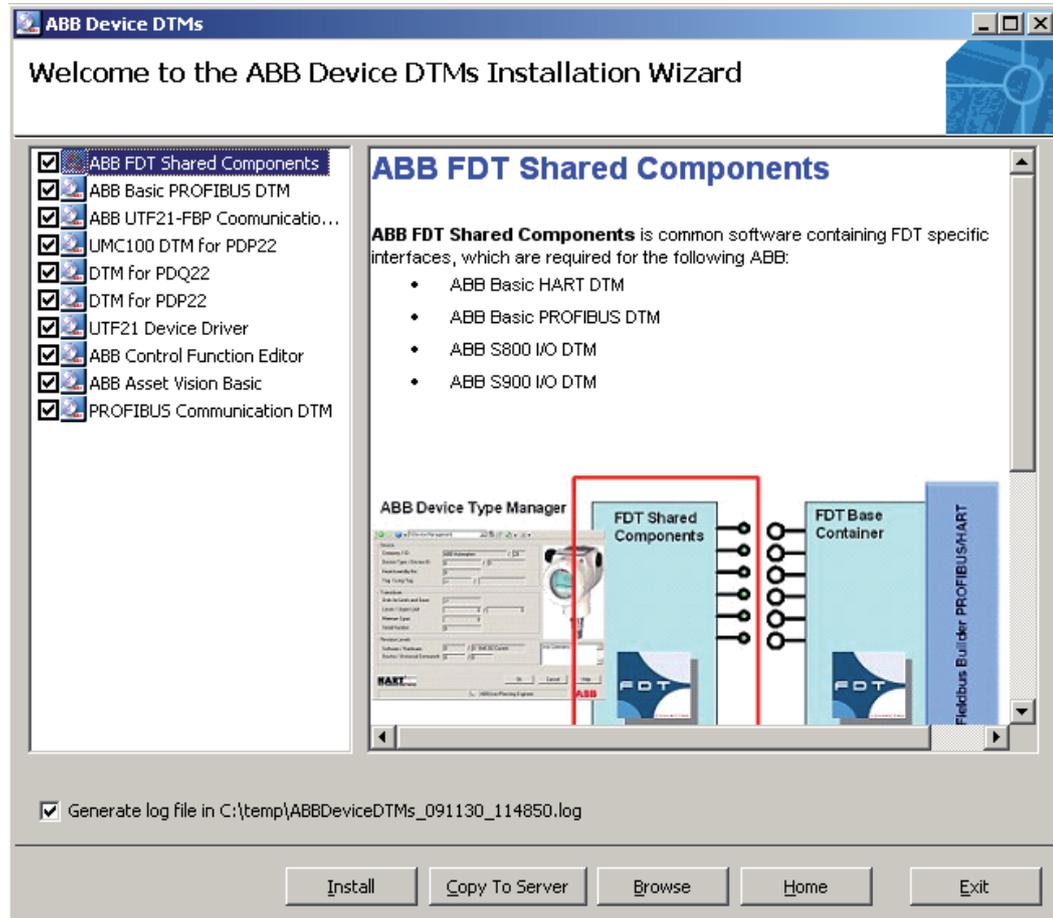
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2.4 Starting the Installation

Insert the PBDTM CD into the CD drive. The setup starts automatically. If it does not start automatically, execute the installation program (software/setup.exe) manually.



	<p>The setup program calls several other setup programs during the installation. It is recommended to keep the default values if your input is required.</p> <p>When the Communication DTM for the PROFIBUS USB adapter is installed (UTP22), a license key is requested. It can be found on the CD in file "license.key" but it is also displayed in the information window.</p> <p>Reboot your PC after the installation is complete.</p> <p>If only parts of the software shall be installed, select only the required packages.</p>
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3 Getting Started

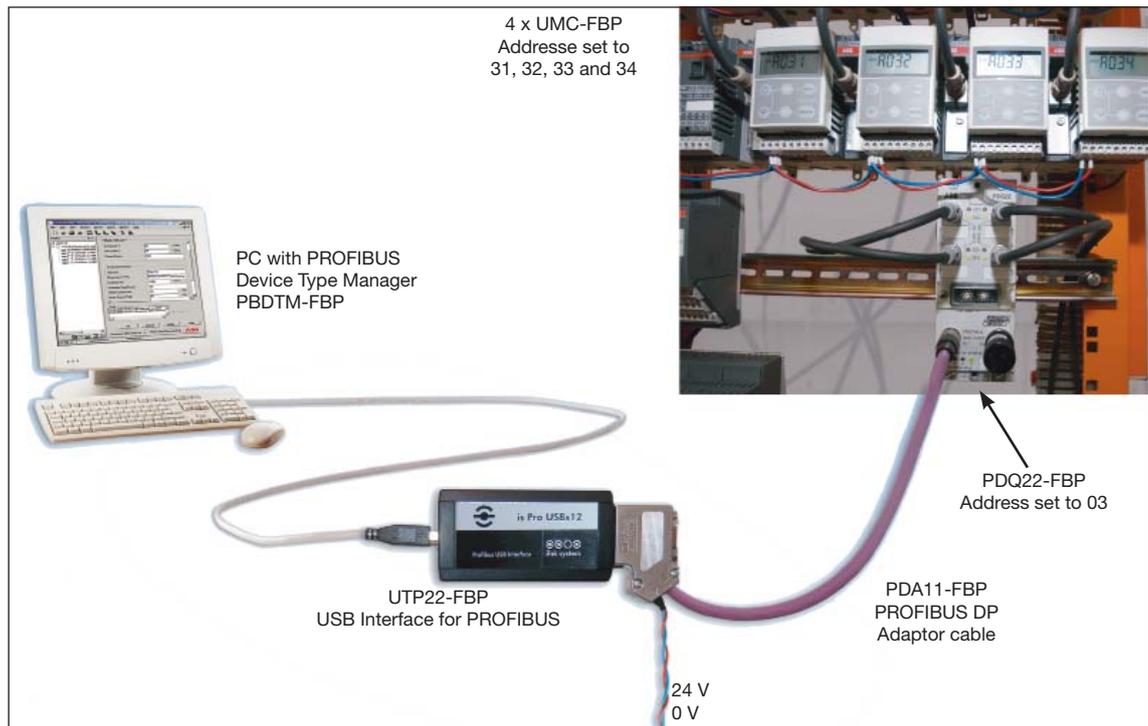
3.1 Getting Started with Asset Vision Basic

Please use the online help for an introduction on how to use Asset Vision Basic.

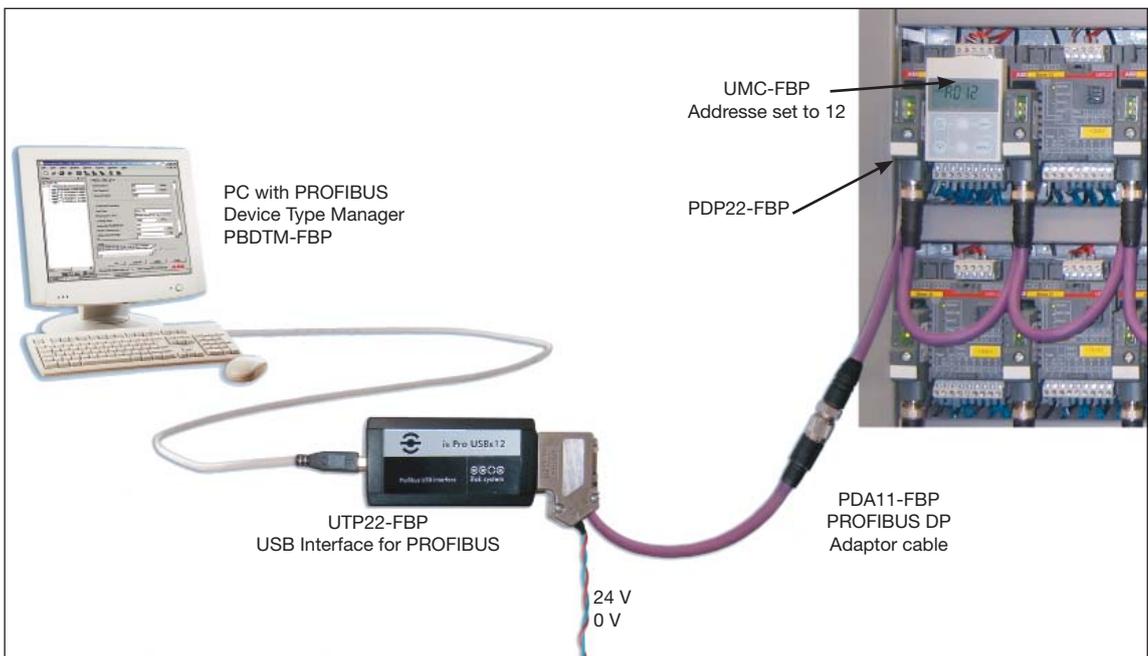
Basic Configuration

Within this section you learn how to create and configure a single device. A UMC22 is used as an example which is connected via UTP22 or directly via UTF21 to your Laptop.

The following three figures show the hardware setups for the different options that can be used to follow this tutorial. Ensure that the device address is set as shown.

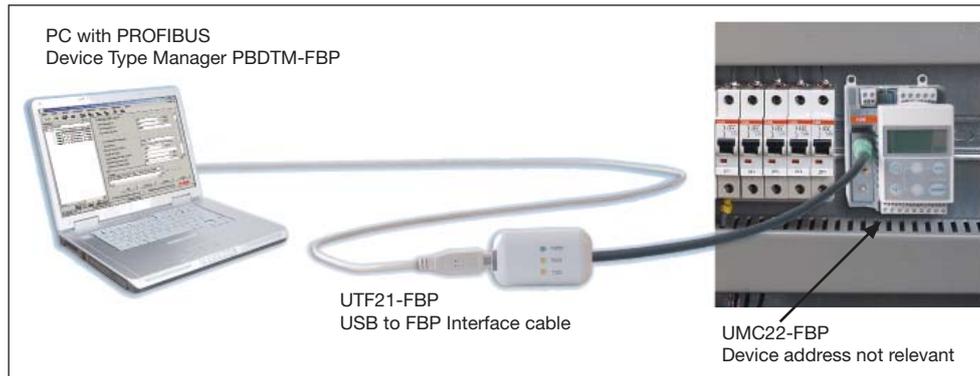


▲ Test setup when using the PDQ22 Fieldbus-Plug with PDA11-FBP.



▲ Test setup when using the PDP22 with PDA11-FBP.

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▲ Test setup when using the UTF21-FBP Plug.

Starting Asset Vision Basic

When Asset Vision Basic starts-up it is possible to choose between "Expert Mode" or "Point to Point" mode. For FBP devices always select the "Expert Mode" even when using the UTF21 communication adapter. The "Point to Point" mode can only be used with devices from ABB Instrumentation.

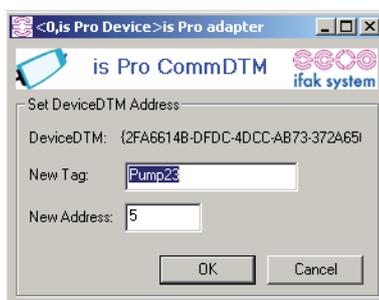
Preparing Basic PROFIBUS DTM

After installation of the Basic PROFIBUS DTM the frame application's DTM catalog needs to be updated once.

Create the DTM topology

Perform the following steps to create your device topology:

1. Select the root node „MyNetwork“ to add a device to the top level of the tree.
2. Press the right mouse button to display the context menu for the device. Select [Add]
3. Choose the PROFIBUS Communication DTM from ifak systems and click on OK. You can also choose a device in the Device Catalogue and drag & drop it to the destination device in the topology.
4. Press the right mouse button on the PROFIBUS Communication DTM and insert a device DTM (e.g. PDP22 with UMC100). If you use the UTF21-FBP only DTMs starting with PDP22-* can be used.
5. The FDT frame application will ask for a PROFIBUS address that the slave is using. The address entered here must match the address set in the UMC when using a PDP22. When using a PDQ22 the address must match the one set at the PDQ22 address switches.
Use the figure below-mentioned as an example on how to set the addresses.



6. The new PDP22 or PDQ22 is included in the topology tree of the FDT frame application as shown below.

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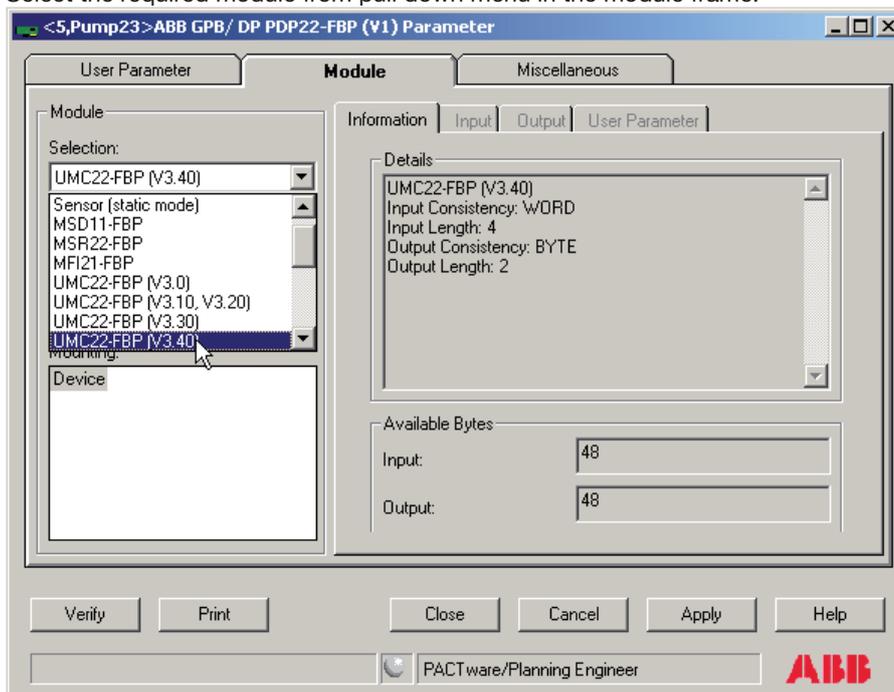
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Configuring the PBDTM

After instantiation of the PBDTM select the connected device.

1. Select the device in the topology tree and to start the DTM Configuration application (e.g. by right clicking on the device and selecting the menu item [Parameter]).
2. Switch to the Module tab
3. Select the required module from pull down menu in the module frame.



4. Select in the next step the position for the specific module from the pull down menu. In case of PDP22 only one module can be inserted. In case of PDQ22 four modules can be inserted. Please note that the DTM modules count from 0-3. In case not all four modules are used on the PDQ22 empty modules must be inserted.
5. Click the [Insert] button to add the module to the device. Now all the module details are shown in the right part of the dialog box (in-/output data, ...). Click the [Apply] button or the [Close] button to confirm and close the configuration dialog.

The following table shows which DTM/Module must be selected for a specific UMC device type.

DTM	Module Name	Supported device (Identnumber)
ABB GPB/DP PDP22-FBP (V1)	UMC22-FBP (V3.4)	1SAJ510000R0400, 1SAJ510000R0500
	UMC22-FBP (V4.0)	1SAJ510000R0600
ABB GPB/ DP PDP22-FBP with UMC100.1_0	UMC100-FBP (V1.13)	1SAJ520000R0100, 1SAJ520000R0200
ABB GPB/DP PDP22-FBP with UMC100.2_0	UMC100-FBP (V1.13)	1SAJ520000R0100, 1SAJ520000R0200
	UMC100-FBP (R0101_ R0201)	1SAJ520000R0101, 1SAJ520000R0201
ABB GPB/DP PDQ22-FBP.0	UMC22-FBP (V4.0)	1SAJ510000R0600

The configuration window as shown above provides three main tab cards each equipped with several sub-tabcards.

- The tab-card "User Parameter" offers access to user parameters related to the PDP22.
- The tab-card "Module" offers access to module related data - e.g. module related user parameters.
- The tab-card "Miscellaneous" collects other relevant settings.

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3.3 User Roles

In FDT/DTM a number of user roles are defined. Users have different rights and therefore can only perform actions allowed at the specific user level. The following list below shows the defined user roles.

- **Observer:** A user logged in with this role may only observe the current process
- **Operator:** A user logged in with this role has the ability to observe and manage the current process.
- **Maintenance Engineer:** A user logged in with this role is able to perform all necessary maintenance operations including device exchange, teaching, calibration, adjustment, etc. This user can download verified parameter sets, modify a subset of parameters on-line or off-line, perform device-specific on-line operations and at the end of the processing, has the permission to upload the complete parameter set.
- **Planning Engineer:** A user logged in with this role is a specialist. This user plans the whole project. He has access to the complete set of functions of the application and installed devices.
- **Administrator:** A user logged in with this role is responsible for administrative operations within an engineering environment. This user is the only one who can edit the User Accounts.

Higher user roles include the rights of the lower user roles. To open the User Accounts settings click on [Tools / Options] in the application menu bar. For more details about user roles read the on-line help of Asset Vision Basic.

The following user roles are used in the PBDTM:

Application	Observer	Operator	Maintenance Engineer	Planning Engineer	Administrator
UMC22 - FPB - V3.30/3.31	-	-	-	x	x
UMC22 - FPB - V3.10, V3.20 (ATEX)	-	-	-	x	x
UMC22 - FBP - V3.4/3.41/3.5	-	-	-	x	x
UMC22 - FBP - V3.41/3.5 (Monitoring)	x	x	x	x	x
UMC22 - FBP - V4.0	-	-	-	x	x
UMC22 - FBP - V4.0 (Monitoring, Service info)	x	x	x	x	x
PR122 / PR123 / PR332 / PR333 (General Information, Measures, Protection Parameters)	x	x	x	x	x
PR122 / PR123 / PR332 / PR333 (Commands)				x	x
PR222DS (General Information, Manual protection parameters, Electronic protection parameters)	x	x	x	x	x
PR222DS (Commands)				x	x
PST CU 05.03.03, CU 05.02.02, CU 05.04.04	-	-	-	x	x
UMC100	x	x	x	x	x

x = This function is available for this user role.

- = This function is not available for this user role.

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4 Graphical User Applications

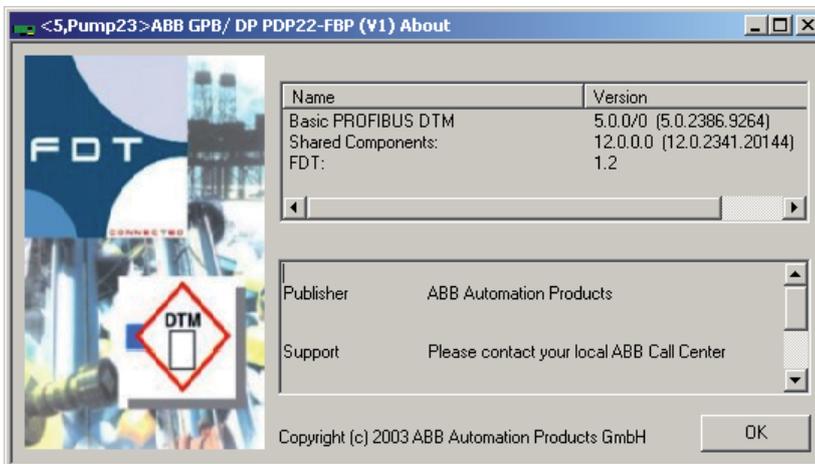
One of the biggest features of the FDT/DTM technology is that a device can offer a user friendly graphical interface for configuration and monitoring. There are certain functions supported by the PBDTM, which do have a dedicated graphical user interface available via a context menu from the frame application.



PDQ22: Please note that the graphical user applications described in this section provide access to the data of all connected devices in a flat manner. From which device data is provided is indicated with the suffix *.M0 - *.M4. E.g. the "online compare" application compares parameters of all connected UMCs with the internal database.

About Dialog

For general information directly related to the product software, please select the About menu item. It contains all the information you need to identify the PBDTM software version and user data entered during software installation.



Name/Version: Should you have any queries about the product, it is essential to provide the name of the internal software component and the version. The build indices in brackets are also important.

Basic PROFIBUS DTM	Version and build index of the Basic PROFIBUS DTM
Shared Components	Version and build index of the FDT Shared Component
FDT	The DTM was developed in accordance with specification FDT1.2

Details: This field contains important information about DTM vendor, support, installation path and the licensee, which was entered during installation.

Identification Dialog

The Identification dialog provides to the user basic information about the device. It consists of three tab windows showing details about PROFIBUS specific features supported from the device (e.g. supported baud rates etc.)

Online Compare

Online compare is a great feature to know the difference between the values residing in the instance database of the frame application and the device. Instance database is the storage place that is used by the DTM to store the persistent parameters. The user can invoke online compare to compare the values in the local database and the device.

As the next figure shows, the user gets a list of the DPV1 parameters configured (only readable and persistent). Their data type, slot and index are shown too. The next two columns are for the local data and device data. Of course, the device data is empty up to now and it is required to start a read request to get all the values from the device (via the [Read Data] button). The general status box displays the status of the read. Once the connection is established the LED in the centre of the status bar flashes. Once the

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values are read they are displayed in the device data column.

If the values of the two columns (instance data and device data) differ, the extreme left column "State" highlights it via an icon (explanation mark).

State	Name	Data Type	Slot	Index	Inst. Database	Device Data
	Bus fault reaction dummy	VisibleString	0	20		
!	Check-back	UserDS	0	13		
!	Check-back value	Byte	0	13	2	3
	Check-back dummy	VisibleString	0	13		
	Control Function	UserDS	0	12		
!	Control Function value	Byte	0	12	1	3
	Control Function dummy	VisibleString	0	12		



Please note that in case of PDQ22 the data of all connected devices are shown here. The parameters are postfixed so that the user knows to what device they belong.

5 Non-Graphical User Applications

There are certain functions that are supported by the DTM but are available from the frame application. They do not have a dedicated graphical user interface but are available via a context menu from the frame application. Following are the ones that do not have a dedicated graphical user interface but are still available.

Upload

During an upload, all DPV1 parameters are read from the field device and saved to the corresponding instance data record. An upload can be used for commissioning (initial startup) if a device-specific configuration is not available (planning phase), meaning that the instance data record only contains the default values. An upload during commissioning reads the factory-set data from the field device and writes it to the instance data record. The application has no GUI and it is called directly by the frame application e.g. for bulk data management. An upload completely overwrites the data in the instance data record.



The upload function tries to upload all parameters of a node.

This means in case of PDQ22 that the parameters of all all configured devices are uploaded. If a device is configured but not available the upload is stopped with an error message. If only data of a single device shall be uploaded the read feature of the device specific application can be used.

Download

If concrete parameter values have already been loaded to the database (instance data record) during the planning phase by means of the configuration, these can be written to the field device by performing a

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download. The online parameterization application can be used to write data selectively. This application is useful if factory-set data such as the process point, serial numbers, etc. is not to be overwritten with the default values from the instance data record. The application has no GUI and it is called directly by the frame application e.g. for bulk data management. A download completely overwrites the data in the field device.



The download function tries to download all parameters of a node.

This means in case of PDQ22 that the parameters of all all configured devices are downloaded. If a device is configured but not available the download is stopped with an error message. If only a single device shall be loaded the write feature of the device specific application can be used.

OPC Access

If the OPC access flag within the DPV1 parameter grid is set, these parameters can be accessed from the ABB OPC Server PROFIBUS/HART (only available in ABB 800xA Systems). The OPC Server will request a list of accessible DPV1 parameters from the DTM, then it will start the reading and/or writing of these parameters.

Print

If supported by the frame application, the DTM allows the user to print out the actual set of persistent stored data and their actual values.

Audit Trail

For purposes of data logging within the frame applications audit trail function, the DTM provides in offline mode as well as in online mode the changed data with time stamp and user information. Additionally the start and end of complete functions such as download and upload of the device are logged.



The frame application has to provide the optional FDT audit trail to use this function of the DTM. Standalone Containers like the fdtContainer do typically not support this function. Therefore FDT audit trail related warnings can be ignored.

Export/Import

For purposes of data export and import of the DTM from one project to another project of the same frame application, the DTM provides the functions export and import for the frame application.

The important data of the DTM are exported to a data stream, which is under control of the frame application and imported from this stream.

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6 Device Specific Application for UMC22

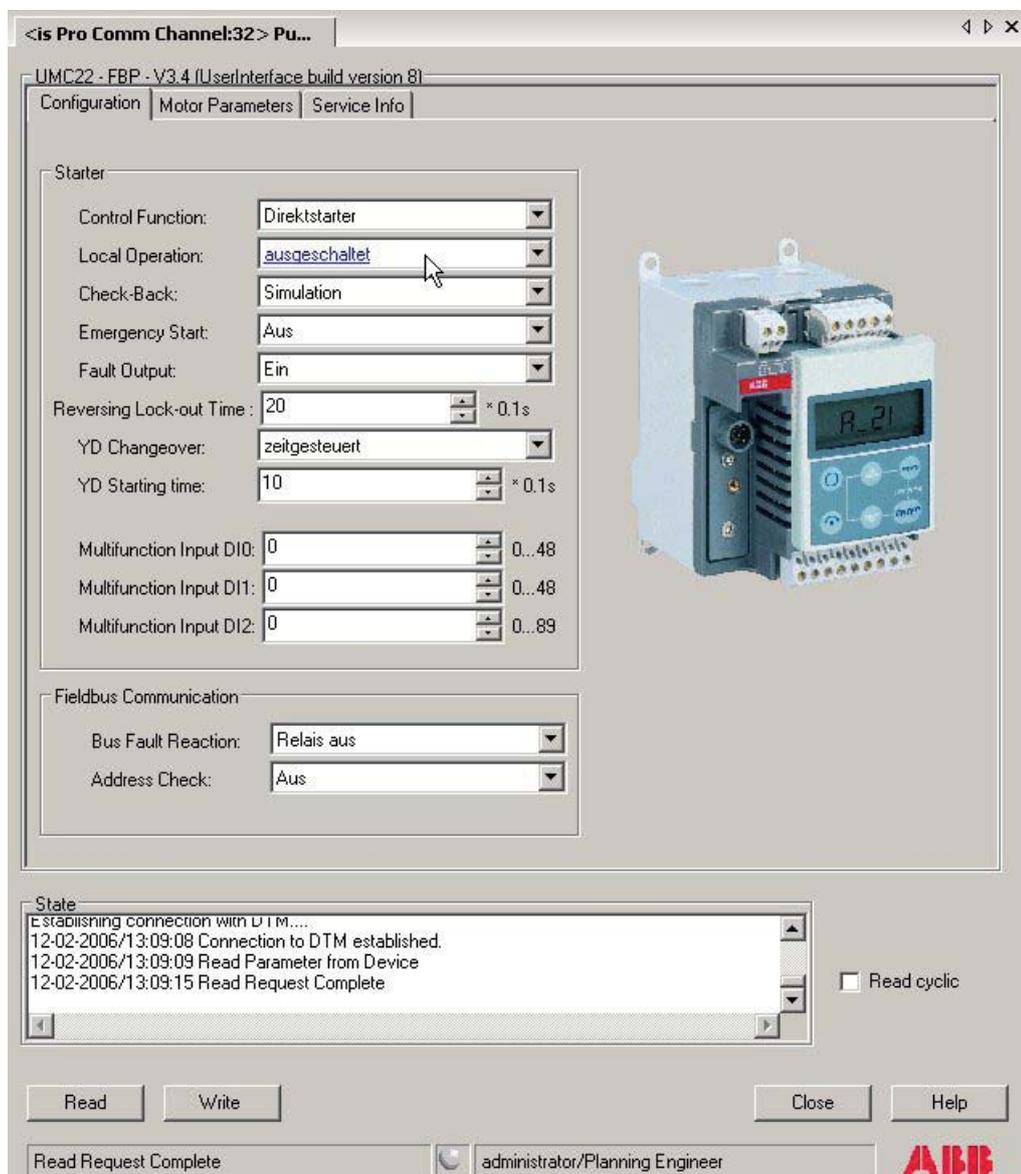
6.1 UMC22 firmware versions V3.2 - 3.41 and V3.51 (ATEX)

The PBDTM provides device specific applications for all UMC22 modules starting from version 3.2. Depending on the actual software version the applications do differ slightly as more features were added in later versions of UMC. This application is available in *online* – and *offline mode* for user level *Planning Engineer*.

In offline mode the [read] and [write] buttons are not shown. Offline configuration allows device parameterization without a real device. The configuration is stored on the PC.

If the device is connected to the PROFIBUS line and the DTM is in online mode parameters can be written down to the device by pressing the write button. It is also possible to read the parameters out of the connected device by pressing the read button.

The application provides three tab windows. The first window allows the user to parameterize the control related settings like the control function, local control mode etc. This is shown below for UMC22 version V3.4.



- ▲ UMC22-V3.4 parameterization application window in online-mode. Following the FDT style guide changed parameters are marked in blue. The graphical user interface follows the style guide of the FDT/DTM users group. I.e. changed parameters are indicated underlined and in blue color. If [Read cyclic] is selected the parameters are read every few seconds from the device.

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In the second tab window the protection and supervision related parameters are collected. In the upper parameter group (*Current Settings*) the nominal currents can be configured. The *current factor* is relevant if an external current transformer is used.

The lower parameter group (*Overload Protection*) provides access to the protection related parameters such as trip class etc.



The parameter *Phase Loss / PTC* offers the possibility to disable the phase loss protection. This can be used in test setups e.g. for demonstration purposes. In real application the phase loss protection must be enabled (factory default). If disabled the motor protection is not guaranteed in case of a phase loss. See the UMC22 manual for more information.

The screenshot shows the 'Motor Parameters' tab of the UMC22-FBP V3.4 application. The 'Current Settings' section has three input fields: 'Set Current 1' (25 * 10mA), 'Set Current 2' (50 * 10mA), and 'Current Factor' (100). The 'Overload Protection' section has several dropdown and input fields: 'Trip Class' (Klasse 20), 'Phase Loss*, PTC' (Aus), 'Cooling Time' (300 * 0.1s), 'Automatic Fault Reset' (Aus), 'Motor Current Low' (10 * 5%), 'Motor Current High' (30 * 5%), 'Start-up time' (10 * 0.1s), and 'Blocking Current' (160 * 5%). A note below the settings states: '*) Please note that during regular operation the phase loss protection must be enabled (factory default)'. At the bottom, there is a 'State' log window with a 'Read cyclic' checkbox and buttons for 'Read', 'Write', 'Close', and 'Help'. The status bar shows 'Read Request Complete', the user 'administrator/Planning Engineer', and the ABB logo.

- ▲ UMC22-V3.4 parameterization application window in online-mode. The motor related protection parameters can be adjusted on this tab page.

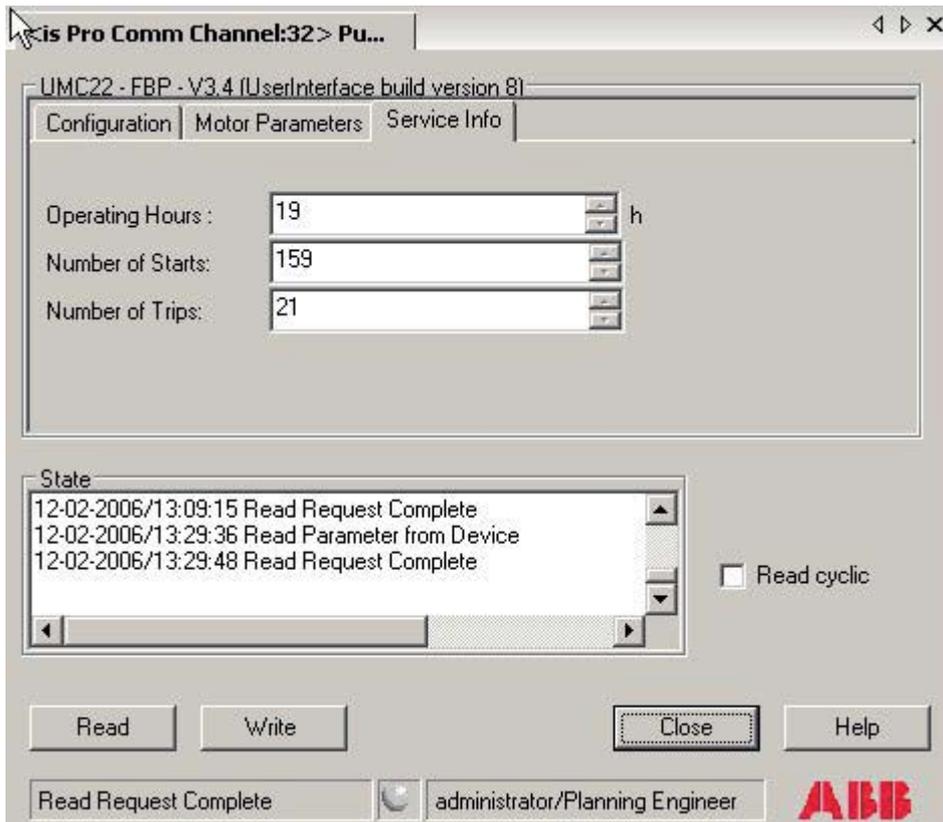
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

The third tab window shows service related data. Data provided here might be used for maintenance planning. The following counters are available:

- Motor operation hours
- Number of starts
- Number of trips



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

6.2 UMC22 firmware version V3.41 and 3.51 (ATEX)

Beginning with the UMC22 firmware version 3.41 a second device specific application for online monitoring purposes was added. This application is only visible in *online mode* and for user level *Observer*. Please note that the values are updated about every 5 seconds. This time might increase if the PROFIBUS is very loaded because of other traffic.

The following color schema is used:

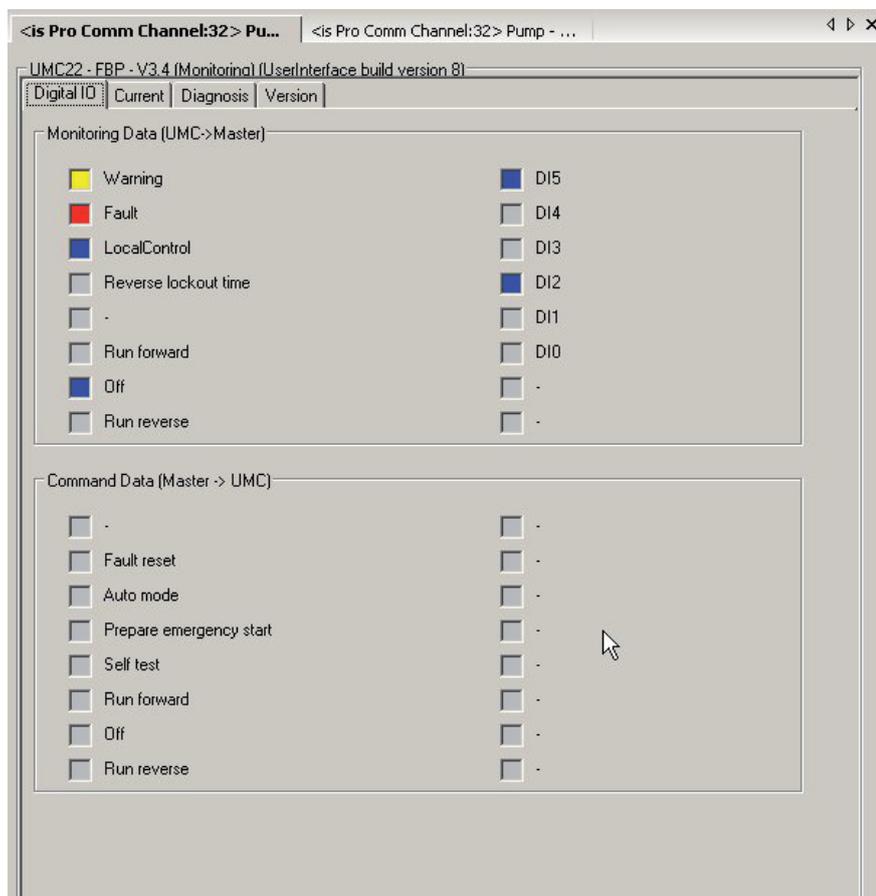
Signal Type	Inactive / False	Active / True
Alarm	Gray	Red
Warning	Grey	Yellow
Inputs/Outputs, Status Signals	Grey	Blue

Presentation of monitoring and command data

This tab card shows the command and monitoring data as it is described in the UMC22 manual in section 4.2 (Bus data - Monitoring, command, diagnosis).

The figure below shows a device with warning and fault signal active. Additionally one can see that the device is in mode 'Local Control' and the motor is not running. Furthermore the digital inputs two and five are active.

There is no active signal in the command data group. This is because no cyclic PROFIBUS master (PLC or DCS) is present.



▲ Monitoring and command data as provided in the tab card *Digital IO* in the *Monitoring Application* of the UMC22.

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Current

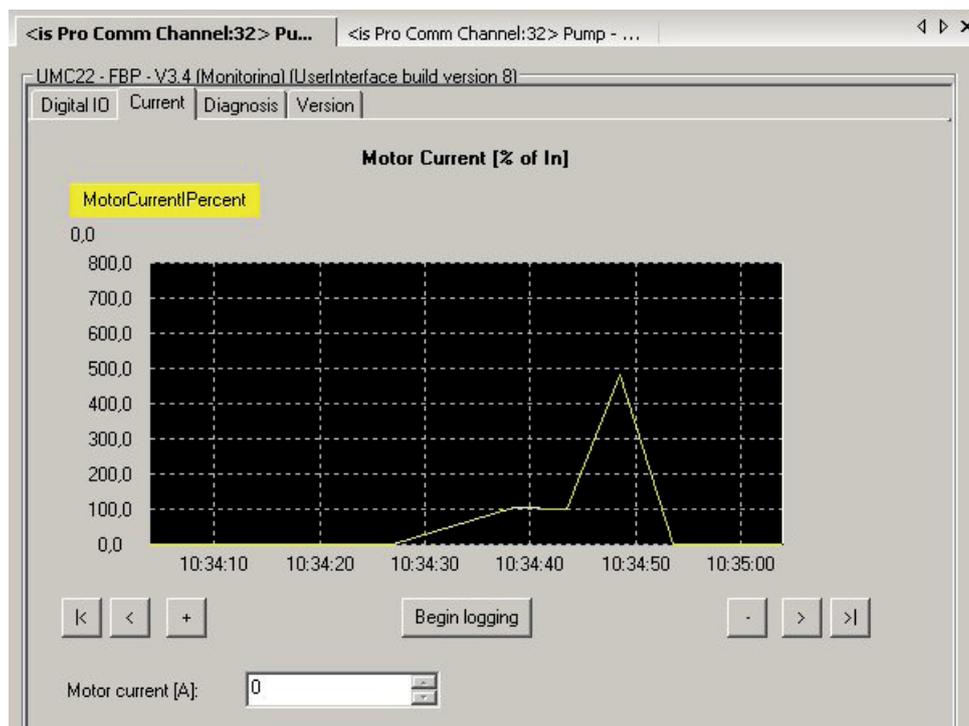
This tab card shows the motor current in two different ways:

- a) in a trend display as percentage of the nominal current over time and
- b) the actual current as absolute value in ampere.

The trend display provides the following functions:

	Click on this button to jump to the first value in the trend display.
	Click on this button to jump to the last value in the trend display.
	Click on this button to scroll the trend view to the left.
	Click on this button to scroll the trend view to the right.
	Click this button to zoom in the trend display to get more details
	Click this button to zoom out the trend display to get a general view of the value (long time values).
	Click this button to start the log file record of the values, which are visible in the trend. After clicking this button the path and the file name in which the values shall be stored must be included.
	Click this button to save the recorded values to a CSV file on the hard disc.

An example trend is shown below.



▲ Motor current display as provided in the tab card *Current* in the *Monitoring Application* of the UMC22. An overload situation is shown that after short time triggers a trip.

Device Type Manager (DTM)

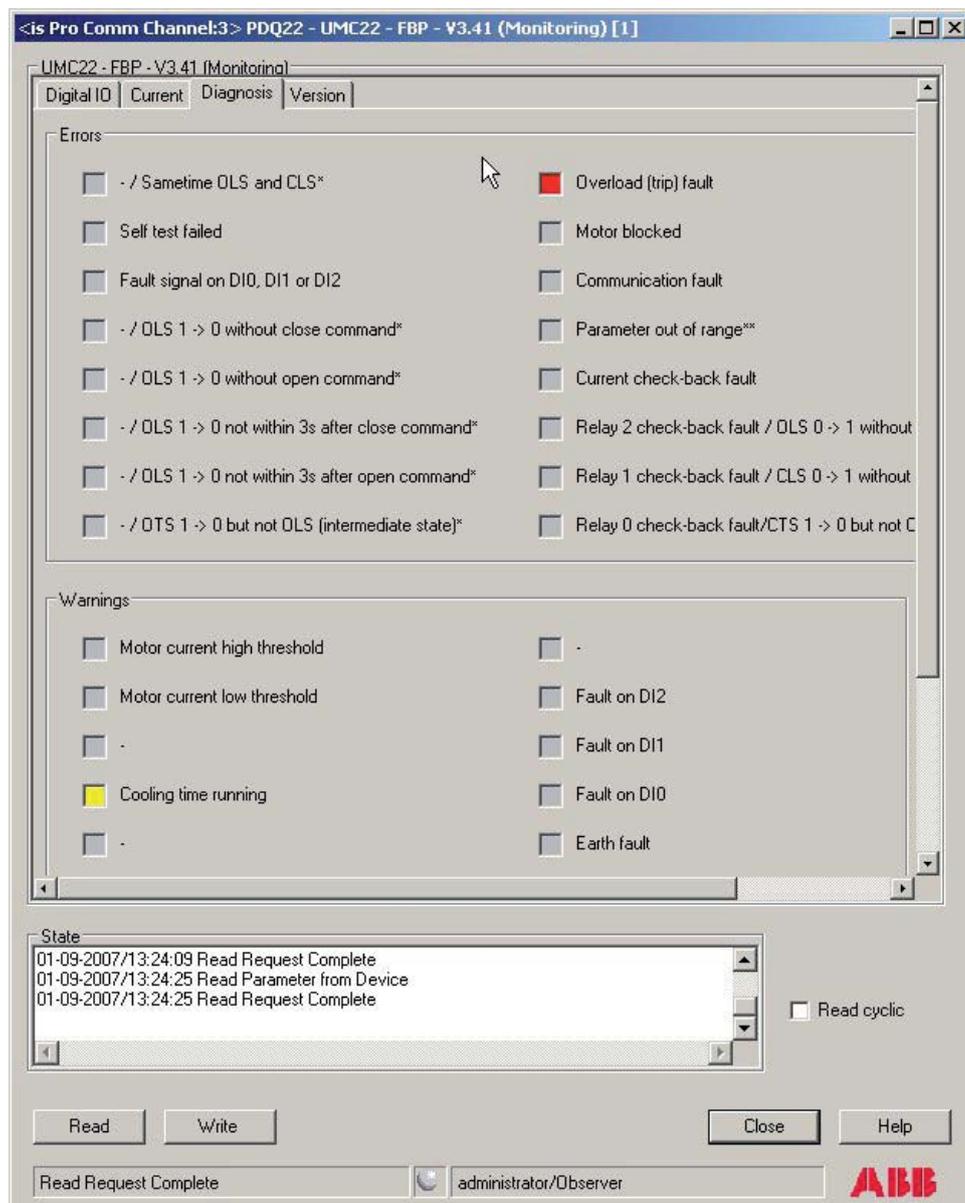
PBDTM-FBP

Technical Description

Diagnosis

This tab card shows all the diagnosis information as it is described in the UMC22 manual in section 4.2 (Bus data - Monitoring, command, diagnosis). The upper signal group shows alarms while the lower signal group shows warnings.

In the four actuator operation modes some of the signals shown here have a different meaning. The meaning in actuator mode is marked with a '*'.
In case of a 'Parameter out of range' fault the parameter number causing the failure is shown in a text field below the warnings group. In all other cases this field can be ignored.



- ▲ Diagnosis data display as provided in the tab card *Diagnosis* in the *Monitoring Application* of the UMC22. The example shows the situation after an overload (trip) fault.

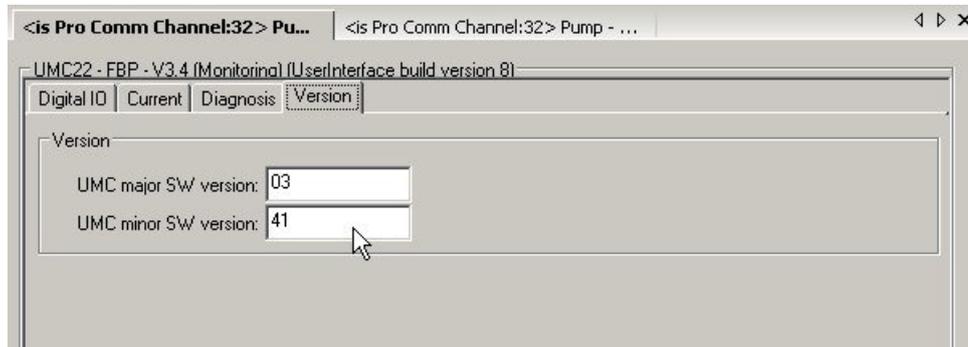
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Software Version

This tab card shows the software version of the connected UMC. The upper field shows the major number. The lower field shows the minor number. In the shown example the software version is 3.41.



- ▲ Version display as provided in the tab card *Version* in the *Monitoring Application* of the UMC22. The example shows the software version 3.41.

6.3 UMC22 firmware versions V4.0

Beginning with firmware version 4.0 a third device specific application for online presentation of service data is available. This application is only visible in *online mode* and for user level *Observer*.

Please note that the values are updated about every 5 seconds.

This time might increase if the PROFIBUS is very loaded because of other traffic.

Note: So far the service data was part of the configuration application that is only accessible in user level *Planning Engineer*. Therefore the service data were moved into a separate application.

The configuration application was extended and now shows if the device has password protection enabled or if the parameters are locked - i.e. can't be changed (see frequently asked questions at the end of this document)

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

7 Device Specific Applications for UMC100

The following sections describe the configuration and monitoring applications for the UMC100. The UMC100 DTM also includes a Custom Application Editor. An own technical manual exists for this part of the DTM. If you want to create your own applications read this section and then the Custom Application Editor manual.

In off-line mode the [read] and [write] buttons are not shown. Off-line configuration allows device parameterisation without a real device. The configuration is stored on the PC.

If the device is connected and the DTM is in on-line mode parameters can be written down to the device by pressing the write button. It is also possible to read the parameters out of the connected device by pressing the read button.

Parameterisation Application

This application is available in on-line and off-line mode and allows to set UMC parameters. It is accessible for users with Engineering access rights. Depending on your configuration some tab cards are hidden or shown. Example: If there is no IO module available the IO module related parameters are hidden.

Related parameters are grouped and wherever possible the location of parameters on the screen is aligned to the signal flow within the UMC100. It is from left (provider) to right (consumer). Example: Motor current (located left) is the basis for all motor current based protection functions (right).

Tab Card Overview:

- **General Settings:** This tab card provides access to general settings of the UMC100. Start parameterisation here.
- **Motor Management:** On this tab card parameters related to motor management are accessible. See section 'Configuring the Motor Management Functions' in the UMC100 technical manual for more information about the parameters.
- **Protections 1/2:** On this tab card the protection functions can be configured. See section 'Configuring the Motor Protection Functions' in the UMC100 technical manual
- **Multifunction Inputs DI0/1/2:** On this tab card the multifunction inputs can be configured.. See section 'Configuring the Motor Management Functions-> Using the Digital UMC Inputs' in the UMC100 technical manual for more information about the parameters.
- **Voltage DIP:** On this tab card the voltage DIP function can be configured. See section 'Configuring the Motor Protection Functions-> Voltage Dips, Load Shedding' in the UMC100 technical manual for more information about the parameters.
- **Fault-Warn Function Block:** On this tab card the function block 'Aux-Fault' can be configured. See section 'Using Expansion Modules' of the UMC100 technical manual for more information about the parameters.
- **DX1xx:** On this tab card the parameters for the expansion modules DX111 and DX122 can be set. See section 'Using Expansion Modules' of the UMC100 technical manual for more information about the parameters.
- **VX1xx Power:** On this tab card the voltage monitoring related parameters for the expansion modules VI15x can be set.
- **VX1xx Voltage:** On this tab card the power related parameters for the expansion modules VI15x can be set.
- **Custom Application Editor:** This tab card allows to create own applications. See the Custom Application Editor manual for more information.

Device Type Manager (DTM) PBDTM-FBP Technical Description

Parameterize [0]

General Settings | Motor Management | Protections 1 | Protections 2 | Multifunction Inputs | Voltage DIP | Aux Fault/Warn | Custom Application Editor

UMC100-PAN Settings

Language: English

Tagname: Pump 23

Backlight:

Password Protection: Off

User defined displays

Display One: Thermal load

Display Two: Max. startup current

Display Three: Real startup time

Display Four: Time to trip

Display Text Four: TTT

Display Five: Time to cool

Display Five Text: TTC

Communication Settings

Busfault Reaction: Off

Address Check:

IO Modules

DX1xx: Digital IO Module

Warning only if an IO-module is missing:

Custom Logic

Enable Custom Logic:

The value provided here is available in the custom application and allows to adjust behaviour during configuration and at runtime.

Custom Application Input: 0

Voltage DIP

This function allows to react in different ways on low voltage situations. An ext. voltage monitor is required. Configure one of the multifunction as input source.

Voltage DIP*: On

^{*) Only for starter types DDL and REV}

▲ Screen-shot of the 'general settings' tab-card for basic UMC parameterization.

General Settings | Motor Control | Protections 1 | Protections 2 | Multifunction Inputs | Voltage DIP | Aux Fault/Warn | Custom Application Editor

Motor Current Measurement

Ie1: 0,25 A

Ie2: 0,25 A

Current Factor: 100

2 to 5: Multiple loops
100: No loops, no ext. CT
>100: Ext. CT

Thermal Overload Protection

Trip Class: Class 5

Thermal Load Pre-Warning: 40 %

Cooling Behaviour after Thermal Overload Trip

Restart Level

theta

theta_r

time

Cooling Mode: Time based

Fix cooling time: 120 s

Thermal Restart Level: 30 %

Current Protection

I [% of Ie]

High Current Trip Level (HCTL)*: 800 % [Ie]

High Current Warn Level (HCWL)*: 150 % [Ie]

High Current Trip Delay: 0,5 s

High Current Warn Delay: 16 s

Low Current Trip Level (LCTL)*: 25 % [Ie]

Low Current Warn Level (LCWL)*: 50 % [Ie]

Low Current Trip Delay: 0,5 s

Low Current Warn Delay: 0 s

Blocked Rotor Trip Delay (Td): 5 s

Blocked Rotor Trip Level (BC): 800 % [Ie]

Starting

Running

BC

HCTL

HCWL

LCWL

LCTL

^{*) 0% = function is switched off}
^{**) 800% = function is switched off}

▲ Screen-shot of the protection tab-card where current based protection functions are parameterized.

Device Type Manager (DTM)

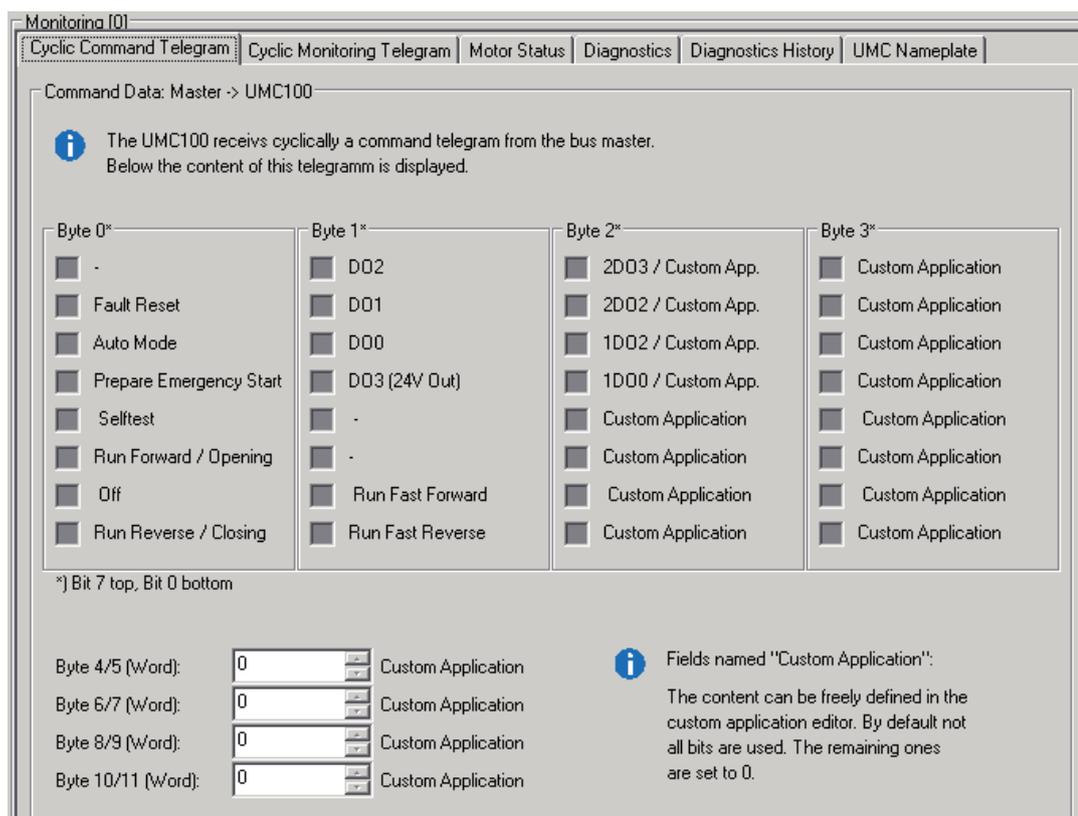
PBDTM-FBP

Technical Description

Monitoring Application

This application is available only in on-line mode and allows to monitor the motor status and display the measurement process data. It is accessible at all user levels.

- **Cyclic Command Data:** This tab card shows the command telegram content that was received from the fieldbus master, This tab can be beneficially used during commissioning to ensure that the PLC/DCS sends the commands correctly
- **Cyclic Monitoring Data:** This tab card shows the monitoring telegram content that was sent back to the bus master, This tab can be beneficially used during commissioning and system integration tests.
- **Motor Status:** This tab card displays the current motor status and a number of service and maintenance counters. The alarm and warning levels of the bar graphs are the ones defined in the protection tab card. The trend display can be used to log the motor current and the thermal load. It is possible to save it the logged data as a comma separated file to disc. The history log stops if the window is closed.
- **Diagnostics:** This tab card displays the diagnostics data as sent to the fieldbus master. See section 'Error Handling, Maintenance and Service' for more information about the presented data.
- **UMC Nameplate:** This tab card allows to read the configured tag name, the software version and other UMC related information.
- **Diagnostics History:** This tab card allows to read the 16 last fault reasons and the time of their occurrence in seconds since UMC power on.
- **Voltage and Power:** This tab card allows to read and display the voltage and power process data.

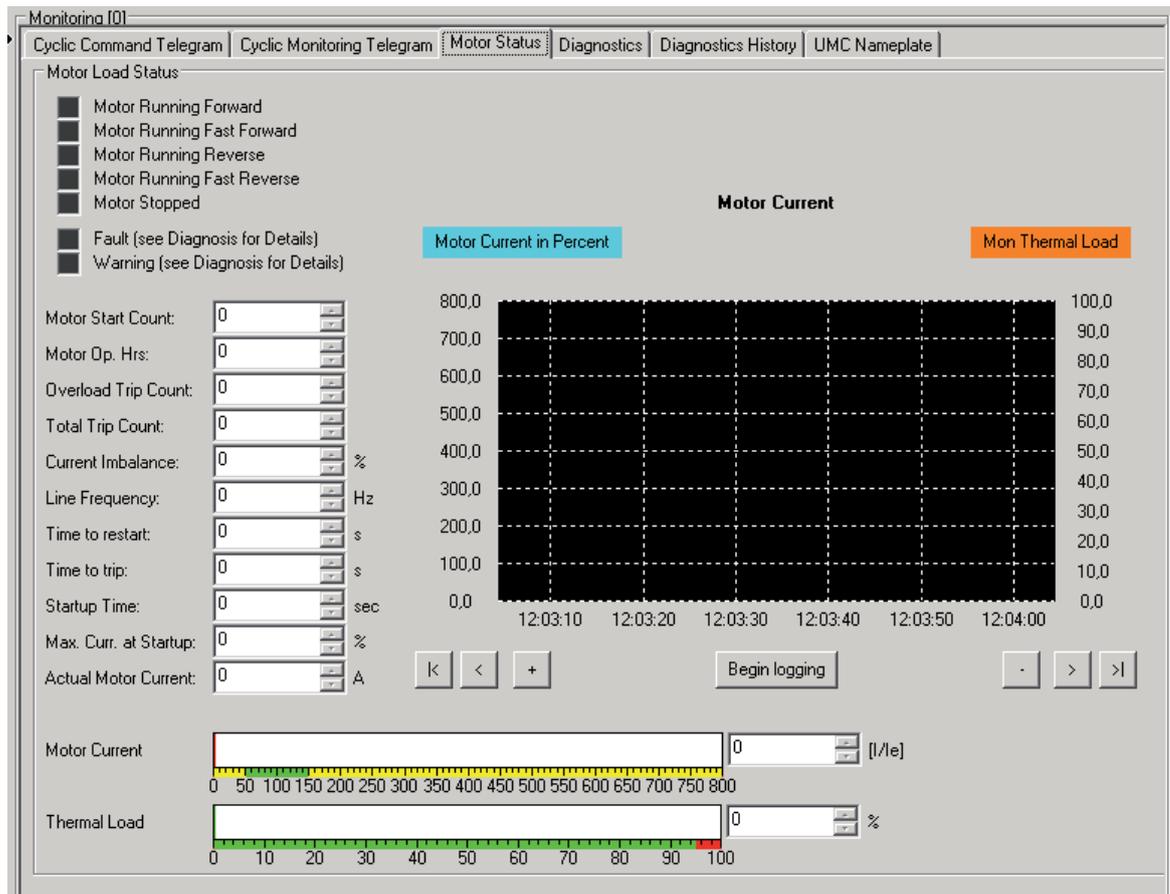


▲ Screen-shot of the monitoring tab card where command data received from the fieldbus master are shown.

Device Type Manager (DTM)

PBDTM-FBP

Technical Description



▲ Screen shot of the monitoring tab card where the motor - and device status is shown.

Device Type Manager (DTM)

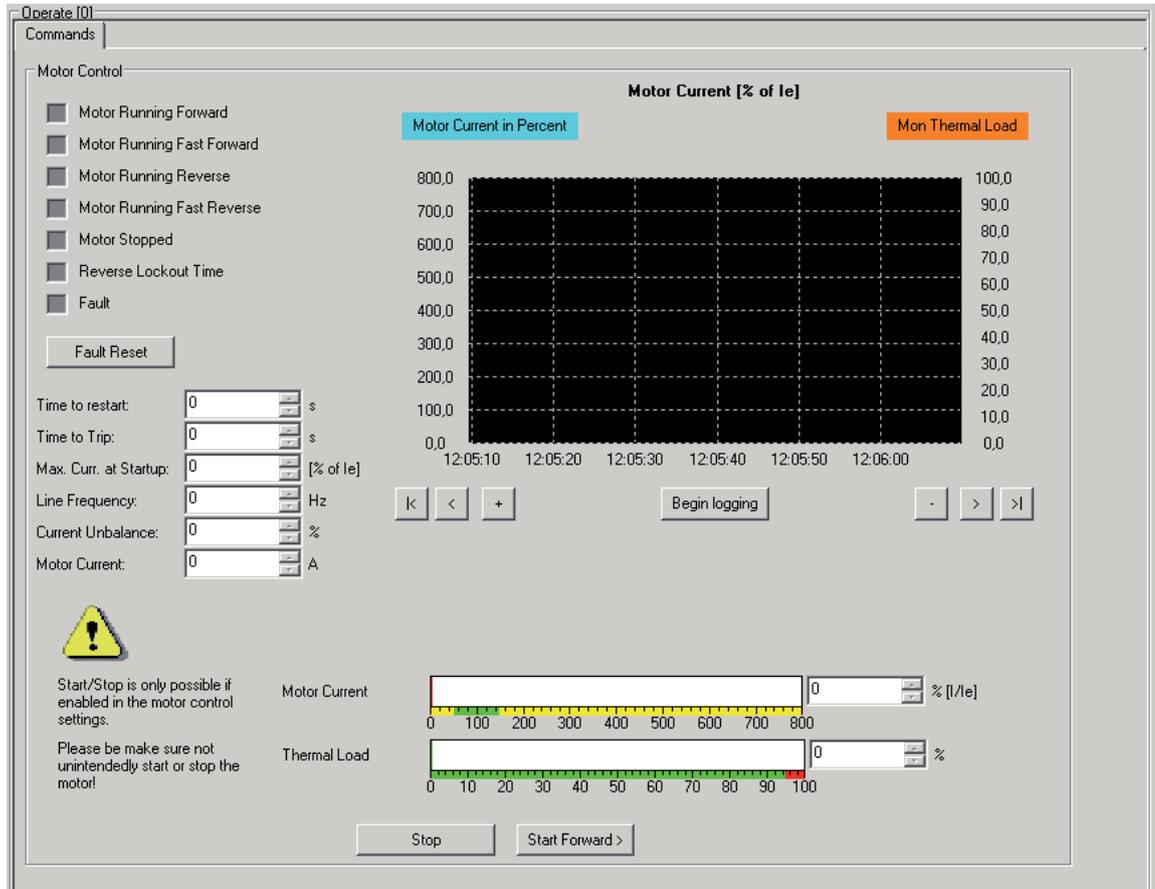
PBDTM-FBP

Technical Description

Operation Application

This application is available in on-line mode and at user level "Operator". It allows to send commands to the motor if enabled in the motor management settings.

Depending on the selected control function possible start buttons are shown. Like in the monitoring application the most relevant status and process data is displayed.



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Set Address and Password

This application is available in on-line mode on user level "Engineering". It allows to set the fieldbus address of the UMC and the UMC-PAN password. This tab card is mainly intended for configuring a new UMC100 in the panel builder factory or a spare part at customer side.

	<p>Be careful with both functions! Changing the bus address in a running system can stop the fieldbus communication!</p>
---	--

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

8 Device Specific Application for PR122 / PR123 / PR332 / PR333

The PBDTM provides device specific applications for the following trip units

- PR122/P (with PR120/D-M COM module)
- PR123/P (with PR120/D-M COM module)
- PR332/P (with PR330/D-M COM module)
- PR333/P (with PR330/D-M COM module)

equipped with EP010 starting from v2.0.

Five different applications are available in *online mode*. If the device is connected to the PROFIBUS line the parameters can be read out of the device by pressing the read button.

8.1 General Information

Available for user level *Observer*, this application contains general information and configuration parameters regarding the trip unit and the circuit breaker. The application provides four tab windows.

Information

- Slave ID indicates the trip unit model type
- SW version indicates the trip unit software version, in the format 'major . minor'
- Product standard reference indicates which standard the trip unit is compliant to (IEC, UL 1066, UL 489)
- Number of poles indicates the number of electric poles in the circuit breaker
- In indicates the trip unit rated current
- CB type indicates the type of circuit breaker
- CB serial number
- CB Tag name and User data are user defined string parameters

PR122/PR123/PR332/PR333 - FBP - EP010 V2.00 - General information

Information | Configuration parameters 1 | Configuration parameters 2 | Configuration parameters 3

Slave ID:	01	PR122
SW version:	2	2
Product standard reference:	IEC	
Number of poles:	4	
In:	400	A
CB type:	E1	B8
	00	
	/	4P
CB serial number:		
CB Tag name:	PR	12
	2-	E4
User data:	Bo	ar
	d	7

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Configuration parameters 1

- Product execution indicates which protection algorithms are implemented by the trip unit (L: long time protection, S: short-time protection, I: instantaneous protection, G:earth-fault protection, Rc: residual current protection)
- Trip unit serial number

The screenshot displays a software window titled "PR122/PR123/PR332/PR333 - FBP - EP010 V2.00 - General information". The window has a tabbed interface with three tabs: "Information", "Configuration parameters 1", and "Configuration parameters 3". The "Configuration parameters 1" tab is active. Inside this tab, there is a form with the following fields:

- "Product execution:" with a dropdown menu showing "LSIG".
- "Trip unit serial number:" with a table of input fields:

G1	80
6Q	06
A	

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Configuration parameters 2

- Local bus unit present if checked the trip unit is configured for being connected to local bus accessories
- VT PR120/V MEASURING module present if checked indicates the trip unit is equipped with the PR120/V MEASURING module
- Neutral protection ON if checked indicates protection on the neutral is activated
- Power direction Top->Bottom if checked the trip unit is configured for sensing power flowing from top to bottom of the circuit breaker. This is useful in case of D (Directional) and RP (Reverse Power) protection.
- Neutral voltage present if checked the trip unit is configured for sensing a current sensor on the external neutral.
- Operating mode remote if checked it is possible to send commands (see 1.3) to the trip unit, if not checked the trip unit is in local operation mode and won't accept remote commands.
- Neutral selection refers to the percentage of In to be used by the trip unit as nominal current for the neutral protection
- Ext. ground toroid indicates the rated current of the external toroid sensor (used for Ext G and Rc protection)
- Un Nominal voltage is the circuit breaker nominal voltage
- VT secondary voltage is the secondary rated voltage of voltage transformers connected to the PR120/V MEASURING module
- Net frequency is the nominal net frequency
- Plant configuration indicates whether the electric plant has 3 phases (3P) or 3 phases plus the neutral (3P+N)

The screenshot displays the 'Configuration parameters 2' window for the PBDTM-FBP device. The window title is 'PR122/PR123/PR332/PR333 - FBP - EP010 V2.00 - General information'. The interface is divided into two main sections: a list of boolean parameters and a set of numerical parameters with dropdown menus.

Parameter	Value
Local bus unit present	<input type="checkbox"/>
VT measuring module present	<input type="checkbox"/>
Neutral protection ON	<input checked="" type="checkbox"/>
Power direction Top->Bottom	<input type="checkbox"/>
Neutral voltage present	<input type="checkbox"/>
Operating mode remote	<input checked="" type="checkbox"/>
Neutral selection	50 %
Ext. ground toroid	100 A
Ext. toroid type	None
Un Nominal voltage	380 V
VT secondary voltage	100 V
Net frequency	50 Hz
Plant configuration	3P

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

Configuration parameters 3

- Harmonic distortion warning if checked the trip unit will issue a warning (alarm) in case of harmonic distortion out of range
- Measures store time indicates the sampling time of run-time measures into historical measures

The information that follows is available only for PR123 and PR333 trip units

- Dual setting active if checked the trip unit is configured for switching protection parameters between Set A and Set B
- Parameter Set B if checked (and Dual setting active is checked too) protection parameters Set B are being used by the trip unit
- Set B on CB close if checked (and Dual setting active is checked too) trip unit will switch to Set B when the CB is closed
- Dual set CB close time indicates the delay used by the trip unit for switching to Set B when the CB is closed (see Set B on CB close)
- Set B on Vaux off if checked (and Dual setting active is checked too) trip unit will switch to Set B in case when Vaux is off
- Set B on Local bus DI on if checked (and Dual setting active is checked too) trip unit will switch to Set B when Local bus digital input channel is active
- Phase rotation warning if checked the trip unit will issue a warning (alarm) in case of erroneous phase rotation
- Phase rotation cycle if checked the nominal phase rotation cycle is 321, if not checked the nominal value is 123
- CosFi module warning if checked the trip unit will issue a warning (alarm) in case of power factor out of range
- CosFi module threshold indicates the threshold for the power factor

PR122/PR123/PR332/PR333 - FBP - EP010 V2.00 - General information

Information | Configuration parameters 1 | Configuration parameters 2 | Configuration parameters 3

Harmonic distortion warning:

Measures store time: 60 min

PR123/PR333 only

Dual setting active:

Parameter Set B:

Set B on CB close:

Dual set CB close time: 0.2 s

Set B on Vaux off:

Set B on Local bus DI on:

PR123/PR333 only

Phase rotation warning:

Phase rotation cycle 321:

CosFi module warning:

CosFi module threshold: 0.9

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

8.2 Measures

This application contains some of the run-time measures available from the trip unit. The required user level is *Observer*. The application provides four tab windows.

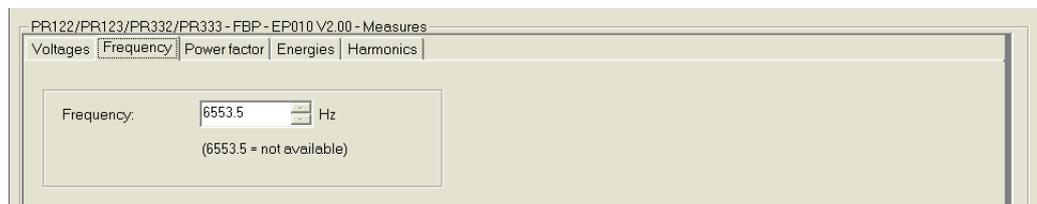
Voltages

Line-to-neutral voltages are shown here. The value 6553.5 indicates the measures are not available (for example, the trip unit is not equipped with the PR120/V MEASURING module)



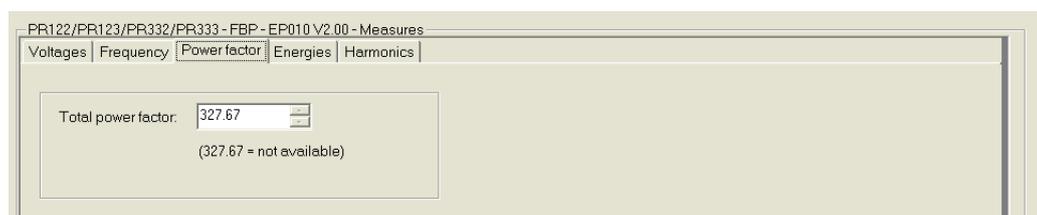
Frequency

The net frequency is shown here. The value 6553.5 indicates the measure is not available (for example, the trip unit is not equipped with the PR120/V MEASURING module)



Power Factor

The total power factor is shown here. The value 327.67 indicates the measures are not available (for example, the trip unit is not equipped with the PR120/V MEASURING module)



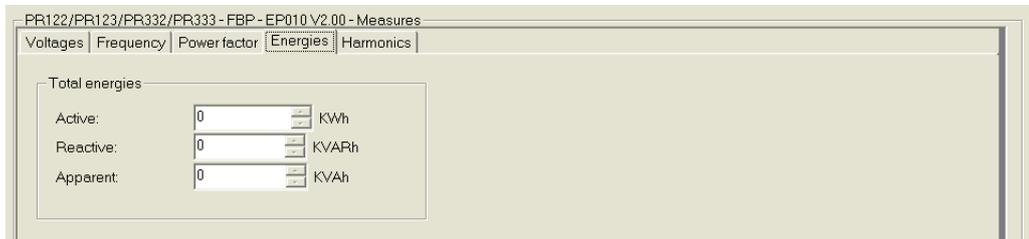
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

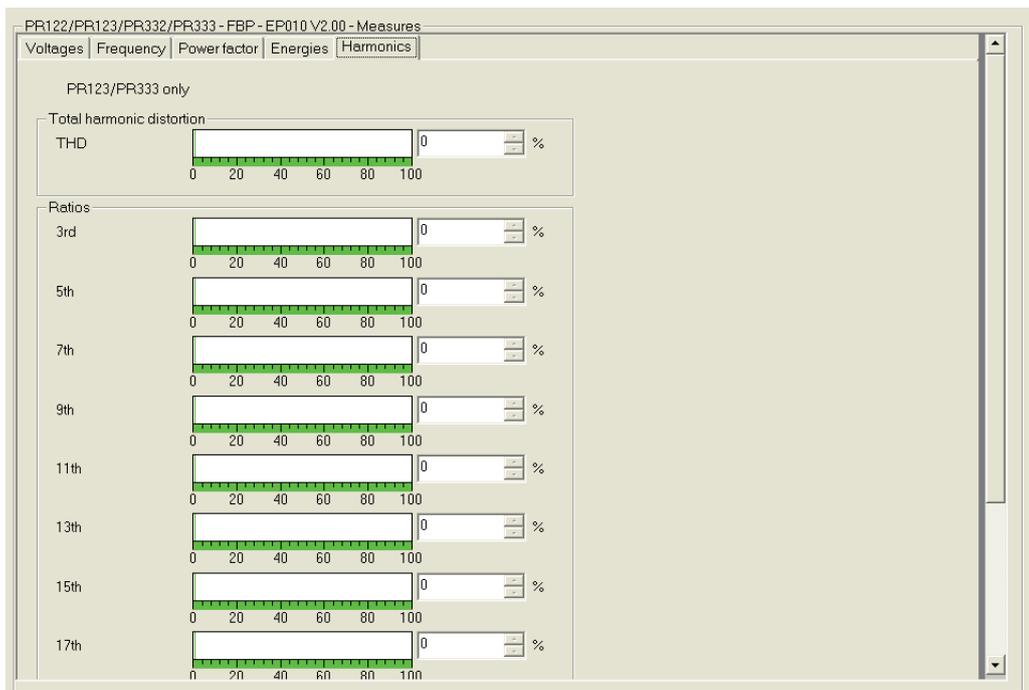
Energies

The total active, reactive and apparent energies are shown here. Energies can be reset issuing the Reset energy counters command (see 7.3)



Harmonics

The total harmonic distortion and the odd harmonic ratios from the 3rd to the 25th are shown here. This information is available only for PR123 and PR333 trip units. The values shown refer to the last *Waveforms and Harmonics acquisition* command sent to the trip unit (see section *Commands*).



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

8.3 Commands

Available for user level *Planning Engineer*, this application allows to send commands to the trip unit.

Commands can be accepted by the trip unit only if the trip unit is in operating mode remote. Press the read button to refresh the *operating mode remote* parameter: if it is checked command can be sent.

All the commands are sent by simply pressing the corresponding push button.

Dummy command is useful for resetting EP010 (the fault LED signaling) when an invalid command is sent or a command is sent when the trip unit is in operating mode local.

- CB open sends a command for opening the circuit breaker
- CB close sends a command for closing the circuit breaker
- Trip reset sends a command for resetting the trip unit after a trip has occurred
- Reset signalling sends a command for resetting outputs of the SIGNALLING module
- Reset energy counters is used for resetting the energy measured values
- Reset historical measures clears the whole list of sampled measures
- Reset event logs clears the whole event log list
- Start – current / voltage sends a command for beginning the acquisition of waveforms and harmonics for the specified channel
- Stop send a command for terminating the waveforms and harmonics acquisition



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

8.4 Protection parameters (Set A and Set B)

Available for user level *Observer*, these two applications shows the settings for protection algorithms L, S, I and G. Set A is the default set, available for all trip units Set B is available only for PR123 and PR333. It contains a specular set of protection parameters that can be used in alternative to Set A. Automatic switching between Set A and Set B following determined events is possible

Here is a description of the main information contained in this application:

- Enable if checked indicates the protection algorithm is running
- Curve type, Threshold and Time are used for determining the time-current curve implemented by the protection.
- Start up if checked indicates the protection algorithm uses a different time-current curve at start up
- Zone selectivity if checked indicates the protection performs zone selectivity
- Zone selectivity time indicates the delay the protection waits for a zone selectivity signal before tripping
- Thermal memory if checked indicated the protection performs thermal memory

PR122/PR123/PR332/PR333 - FBP - EP010 V2.00 - Protection parameters Set A
L, S, I, G

Protection L	Protection I	Protection S	Protection G
Curve type: $t = k/I^2$	Enabled: <input checked="" type="checkbox"/>	Enabled: <input checked="" type="checkbox"/>	Enabled: <input type="checkbox"/>
Threshold: 1 In	Threshold: 4 In	Threshold $t = k/I^2$: 6 In	Trip enabled: <input checked="" type="checkbox"/>
Time: 144 s	Start up: <input type="checkbox"/>	Time $t = k/I^2$: 0.05 s	Curve type: $t = k$
Threshold IEC255: 0.4 In	Start up threshold: 4 In	Threshold $t = k$: 2 In	Threshold $t = k/I^2$: 1 In
Time IEC255: 12 s	Start up time: 0.1 s	Time $t = k$: 0.05 s	Time $t = k/I^2$: 0.4 s
Thermal memory: <input type="checkbox"/>		Start up: <input type="checkbox"/>	Threshold $t = k$: 1 In
		Start up threshold: 6 In	Time $t = k$: 0.4 s
		Start up time: 0.1 s	Start up: <input type="checkbox"/>
		Zone selectivity: <input type="checkbox"/>	Start up threshold: 0.2 In
		Zone selectivity time: 0.04 s	Start up time: 0.1 s
		Thermal memory: <input type="checkbox"/>	Zone selectivity: <input type="checkbox"/>
			Zone selectivity time: 0.04 s

Device Type Manager (DTM)

PBDTM-FBP

Technical Description

9 Device Specific Application for PR222DS

The PBDTM provides device specific applications for the PR222DS-PD trip unit, equipped with EP010 starting from v2.0.

Four different applications are available in online mode. If the device is connected to the PROFIBUS line the parameters can be read out of the device by pressing the read button.

9.1 General information

Available for user level *Observer*, this application contains general information and configuration parameters regarding the trip unit and the circuit breaker.

- SW version indicates the trip unit software version, in the format 'major . minor'
- In indicates the trip unit rated current
- CB type indicates the type of circuit breaker
- Product execution indicates which protection algorithms are implemented by the trip unit (L: long time protection, S: short-time protection, I: instantaneous protection, G:earth-fault protection, Rc: residual current protection)
- System disconnection timeout indicates the delay before disconnecting the communication when PR010/T is connected to the trip unit
- Trip unit serial number



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

9.2 Commands

Available for user level *Planning Engineer*, this application allows to send commands to the trip unit. Commands can be accepted by the trip unit only if the trip unit is in operating mode remote. It is possible to switch between local and remote operating mode by moving the corresponding dip-switch on the trip unit human-machine interface.

All the commands are sent by simply pressing the corresponding push button.

- Dummy command is useful for resetting EP010 (the fault LED signaling) when an invalid command is sent or a command is sent when the trip unit is in operating mode local.
- CB open sends a command for opening the circuit breaker
- CB close sends a command for closing the circuit breaker
- Trip reset sends a command for resetting the trip unit after a trip has occurred
- CB reset sends a command for resetting both the trip unit (after a trip has occurred) and the circuit breaker (putting it from the trip to the open position)



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

9.3 Manual protection parameters

Available for user level Observer, this application shows the manual dip-switch settings for protection algorithms L, S, I and G. It is possible to switch between manual protection parameters and electronic protection parameters by moving the corresponding dip-switch on the trip unit human-machine interface

Here is a description of the main information contained in this application:

- Disabled (protection) if checked indicated the protection algorithm is not running
- Trip level, Trip delay and Curve type inverse time are used for determining the time-current curve implemented by the protection
- Neutral Enabled if checked the protection on the neutral is enable
- Neutral Selection 100% if checked the rated current for neutral protection is 100% I_n , if not checked it is 50% I_n



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

9.4 Electric protection parameters

Available for user level Observer, this application shows the electronic settings for protection algorithms L, S, I and G. See the previous section for details.

PR222DS - FBP - EP010 V2.00 - Electronic protection parameters

Protection L
Pre-alarm disabled:
Trip level: A
Trip delay: s

Protection S
Disabled:
Trip level: A
Trip delay: s
Curve type inverse time:

Protection I
Disabled:
Trip level: A

Protection G
Disabled:
Trip level: A
Trip delay: s



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

10 Device specific Application for Softstarter PST(B)

The PBDTM provides device specific applications for all PST(B) softstarters starting from CU-version 05.02.02. Depending on the actual software version the applications do differ slightly as more features were added in later versions. These differences will be noted here below.

For more detailed information regarding the parameters of the softstarter, please see the PST(B) Installation and Commissioning Manual, 1SFC132003M0201. This application is available in *online-* and *offline mode* for user level *Planning Engineer*.

To be able to write data to the softstarter, it is necessary to activate the Fieldbus control. This is done on the softstarter by entering the menu "Menu->Settings->Functional Settings->Fieldbus" and there setting the parameter 'Fieldbus Ctrl' to **Yes**.

The application provides nine tab windows.

The first one allows the user to read and change the basic softstarter settings like start- and stop ramp, torque control and kick start.

The screenshot displays the PBDTM-FBP software interface for configuring a softstarter. The window title is "PST CU 05.04.04". The interface features a tabbed menu at the top with the following options: Start/Stop, Sequence start, Protections, Warning settings, Fault handling, Input settings, Output settings, Fieldbus, and Presentation Settings. The main configuration area is divided into several sections:

- Basic Parameters:**
 - 106. PST(B) size: [] A
 - 1. Setting Current (Ie): 30 A
 - 7. Current Limit Level: 7 x Ie
 - 2. Start Ramp: 10 sec
 - 3. Stop Ramp: 0 sec
 - 4. Initial Voltage: 30 %
 - 5. End Voltage: 30 %
 - 6. Step Down Voltage: 100 %
 - 11. Start Range: 1-30 sec
 - 12. Stop Range: 0-30 sec
 - 35. External Bypass:
- Torque Control:**
 - 114. Start Mode: Volt
 - 115. Stop Mode: Volt
 - 117. Tune Torque Control: 100 %
 - 116. Torque Limit: 150 %
- Kick Start:**
 - 8. Kick Start:
 - 10. Kick Time: 0.2 sec
 - 9. Kick Level: 50 %

On the right side of the interface, there is a 3D image of an ABB PST(B) softstarter device. Below the configuration area, a "State" window shows a log of events:

```
07-18-2008/12:42:37 Write Request Complete
07-18-2008/12:43:02 Write Parameter to Device
07-18-2008/12:43:04 Write Request Complete
```

There is a "Read cyclic" checkbox which is currently unchecked. At the bottom of the interface, there are "Read" and "Write" buttons, a status bar showing "Write Request Complete", a user login field with "administrator/Maintenance", and "Close" and "Help" buttons. The ABB logo is visible in the bottom right corner.

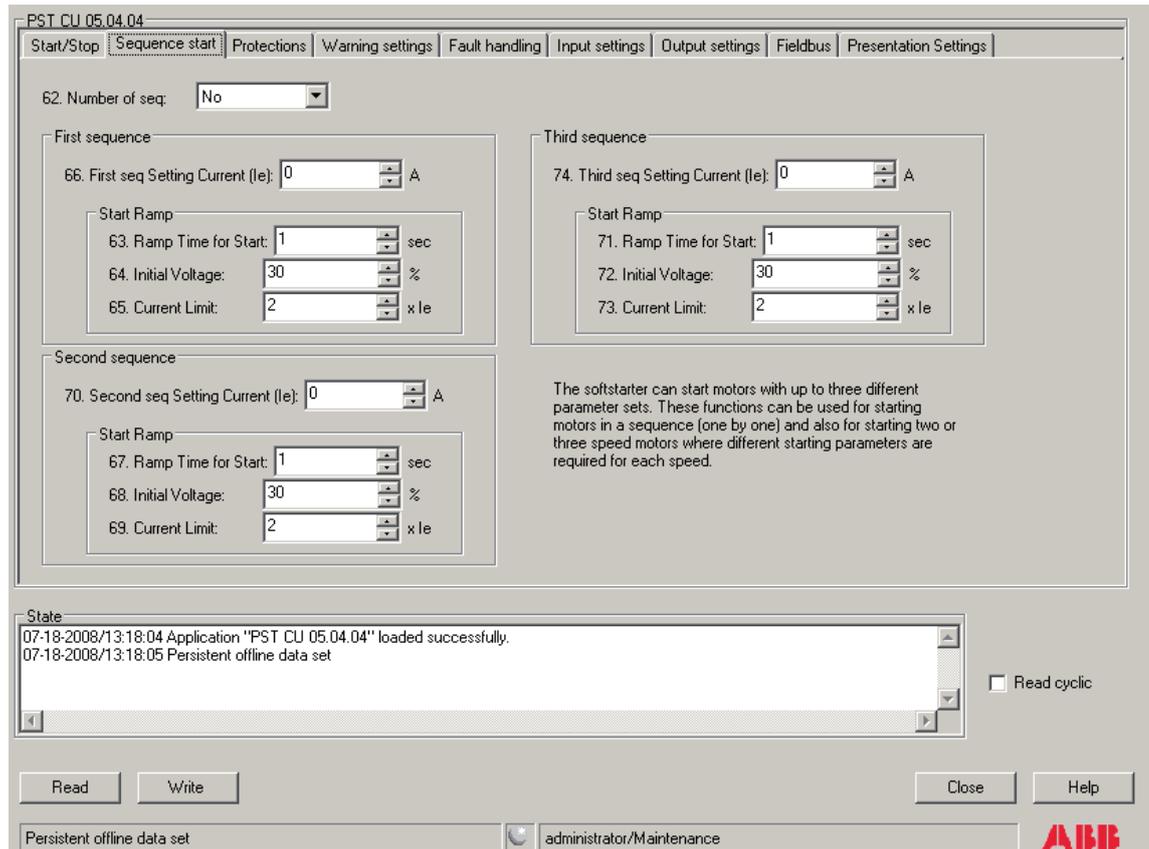
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

The second tab window contains the parameters related to sequence start.

With the sequence start function it is possible to store up to three different parameter sets in the softstarter. These can be used for starting several different motors, starting 2- or 3-speed motors or just to have different types of starts on one motor, like normal start and emergency start



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

In the third tab it is possible to enable and adjust the protections that are included in the softstarter.

The overload protection can either be in normal mode with the same OL-class both during start and running, or in dual mode with different classes for start and running.

For most of the protections both the level before trip, the delay before trip and the operation at trip can be set.

The screenshot displays the 'PST CU 05.04.04' software interface, specifically the 'Protections' tab. The interface is organized into several sections for configuring protection parameters:

- Overload Protection:** Includes a dropdown for '13. Overload protection' (set to 'Normal'). Below it, explanatory text for 'No', 'Normal', and 'Dual' modes is provided. Further down, there are settings for '14. Overload Class' (30), '17. Type of Operation' (Stop-M), and 'Dual' mode settings for '15. Overload Start Class' (30) and '16. Overload Run Class' (20).
- Locked Rotor Protection:** '18. Locked Rotor Protection' is checked. Settings include '19. Locked Rotor Level' (4 x I_{le}), '20. Locked Rotor Time' (1 sec), and '21. Type of Operation' (Stop-M).
- Underload Protection:** '22. Underload Protection' is unchecked. Settings include '23. Underload Level' (0,5 x I_{le}), '24. Underload Time' (10 sec), and '25. Type of Operation' (Stop-M).
- Phase Imbalance Protection:** '26. Phase Imbalance Protection' is unchecked. Settings include '27. Phase Imbalance Level' (80 %) and '28. Type of Operation' (Stop-M).
- High Current Protection:** '29. High Current Protection' is unchecked. Setting is '30. Type of Operation' (Stop-M).
- Phase Reversal Protection:** '31. Phase Reversal Protection' is unchecked. Setting is '32. Type of Operation' (Stop-M).
- PTC Protection:** '33. PTC Protection' is unchecked. Setting is '34. Type of Operation' (Stop-M).

On the right side, there are definitions for 'Stop-M' (manual reset required) and 'Stop-A' (automatic reset performed). A 'Read cyclic' checkbox is also present.

The 'State' window at the bottom shows a log of events: '07-18-2008/12:42:37 Write Request Complete', '07-18-2008/12:43:02 Write Parameter to Device', and '07-18-2008/12:43:04 Write Request Complete'. The status bar at the bottom indicates 'Write Request Complete' and the user is logged in as 'administrator/Maintenance'. The ABB logo is visible in the bottom right corner.

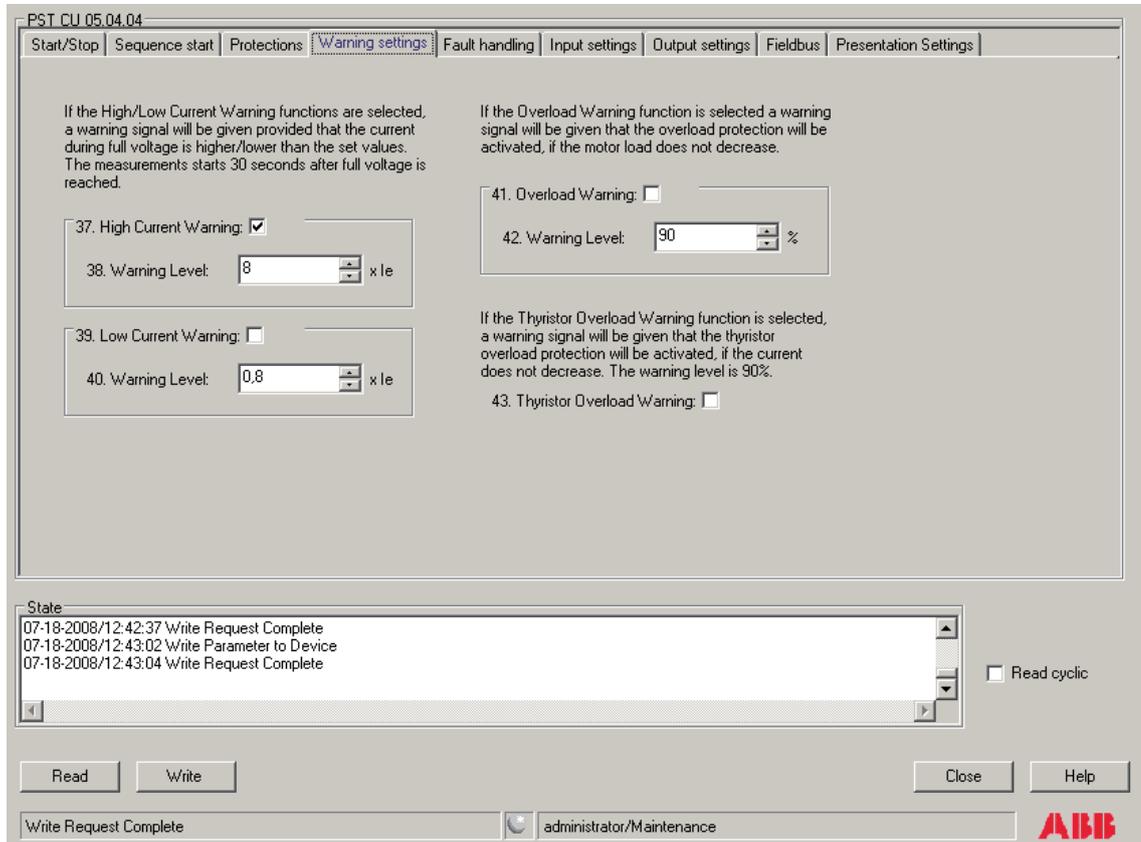
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

The fourth tab contains the parameters related to warnings.

It is possible to activate or deactivate the warnings and for most of them also to set the level of the warning



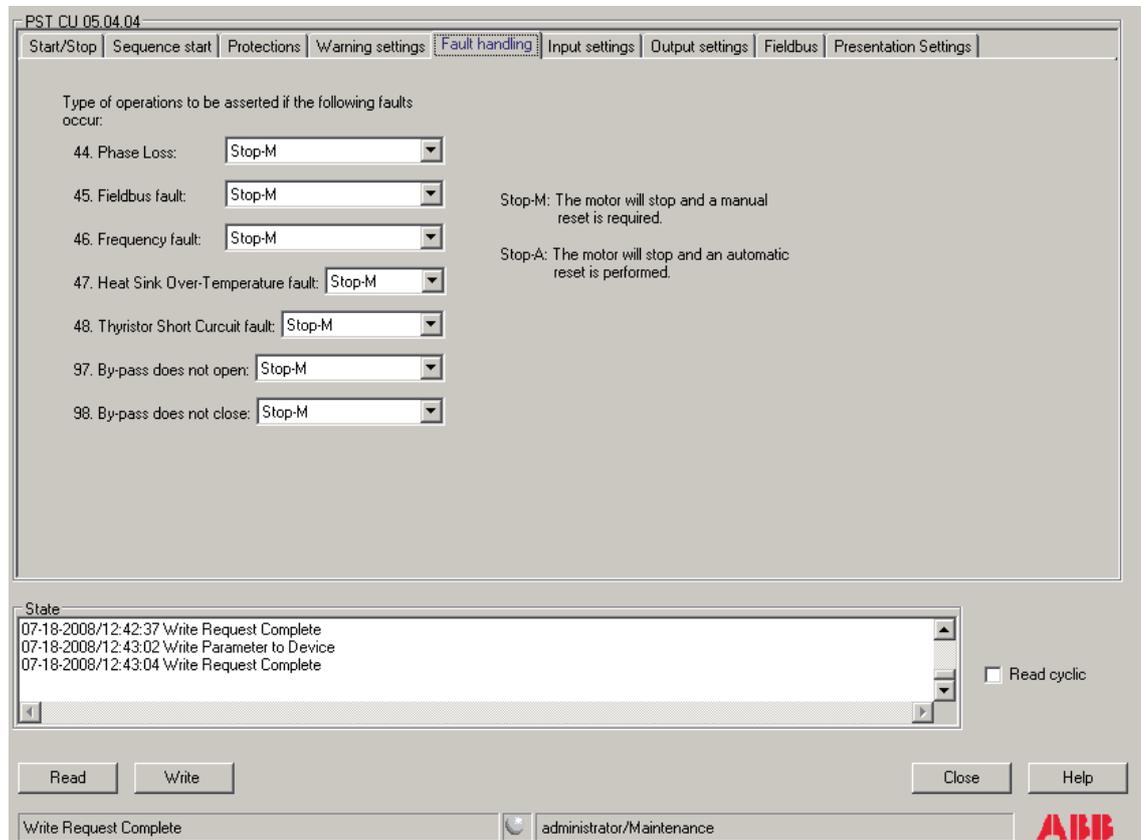
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

In the fifth tab it is possible to set the operation when a fault occurs.

Since these are faults, the softstarter will always stop the motor when they occur, but the user can select between automatic reset of the fault or manual reset.



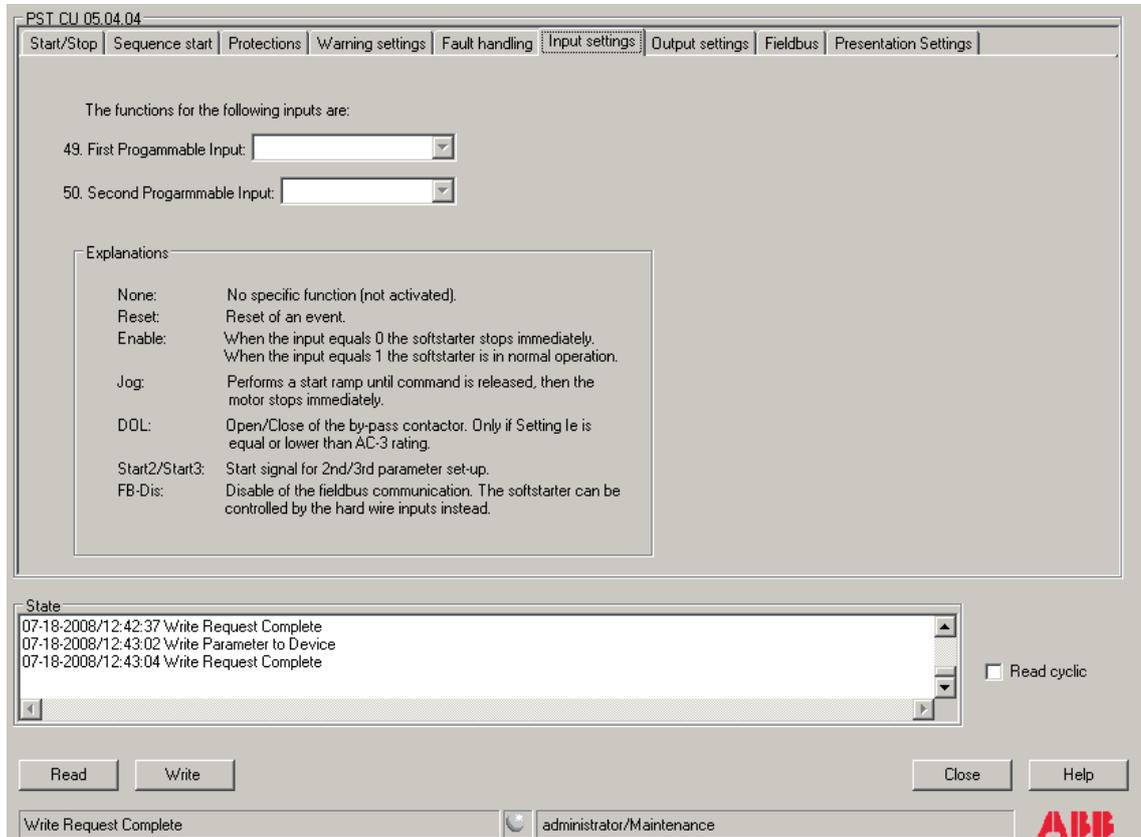
Device Type Manager (DTM)

PBDTM-FBP

Technical Description

In the sixth tab window the user can set the function of the two programmable inputs on the PST(B) softstarter.

The options are described briefly in the application



Device Type Manager (DTM)

PBDTM-FBP

Technical Description

This seventh tab contains all the parameters related to the output relays and the analog output.

The softstarter is equipped with three programmable output relays and one software relay in the fieldbus which independent of each other can be set to **Run**, **Top of Ramp** or **Event**. If set to **Event**, it is possible to include or exclude most of the warnings, protections and faults in the event.

For the analog output it is possible to select both the reference signal, the type of value displayed and the range of that value

PST CU 05.04.04

Start/Stop | Sequence start | Protections | Warning settings | Fault handling | Input settings | **Output settings** | Fieldbus | Presentation Settings

The functions of the output relays of the softstarter can be set to:

Run - The signal is given during ramp up, TOR and ramp down and can be used to control a line contactor.

TOR - The signal is given during Top of ramp and can be used to control a by-pass contactor.

Event - Has several alternatives that can be switched on/off as required.

51. Output Relay K4: Run

55. Event K4: 0

52. Output Relay K5: Top of ramp

56. Event K5: 0

53. Output Relay K6: Event

57. Event K6: 7

If the softstarter is used with fieldbus communication, a fourth output is available (V7). This is a software output only and the signal can be taken only through the fieldbus interface.

54. Software Output V7: Event

58. Event V7: 7

The softstarter has one analogue output. Since the terminals used for the analogue output are used for the PTC protection as well, only one of these functions can be used at once.

123. Analogue Output:

The range that will be the physical output from the softstarter:

124. Reference: 4-20 mA

The type of value to output from the analogue output:

125. Type of Value: I Amp

The max values of the value types available:

126. I Range Max:	30	A
127. U Range Max:	600	V
128. kW Range Max:	15	kW
129. hp Range Max:	20	hp
130. Q Range Max:	14	kVAr
131. S Range Max:	21	kVA

TmpSCR Range: 0-100%, TmpMot Range: 0-100%, cosPhi Range: 0-1

State

07-18-2008/12:42:37 Write Request Complete
07-18-2008/12:43:02 Write Parameter to Device
07-18-2008/12:43:04 Write Request Complete

Read cyclic

Read Write Close Help

Write Request Complete administrator/Maintenance **AIBB**

Device Type Manager (DTM)

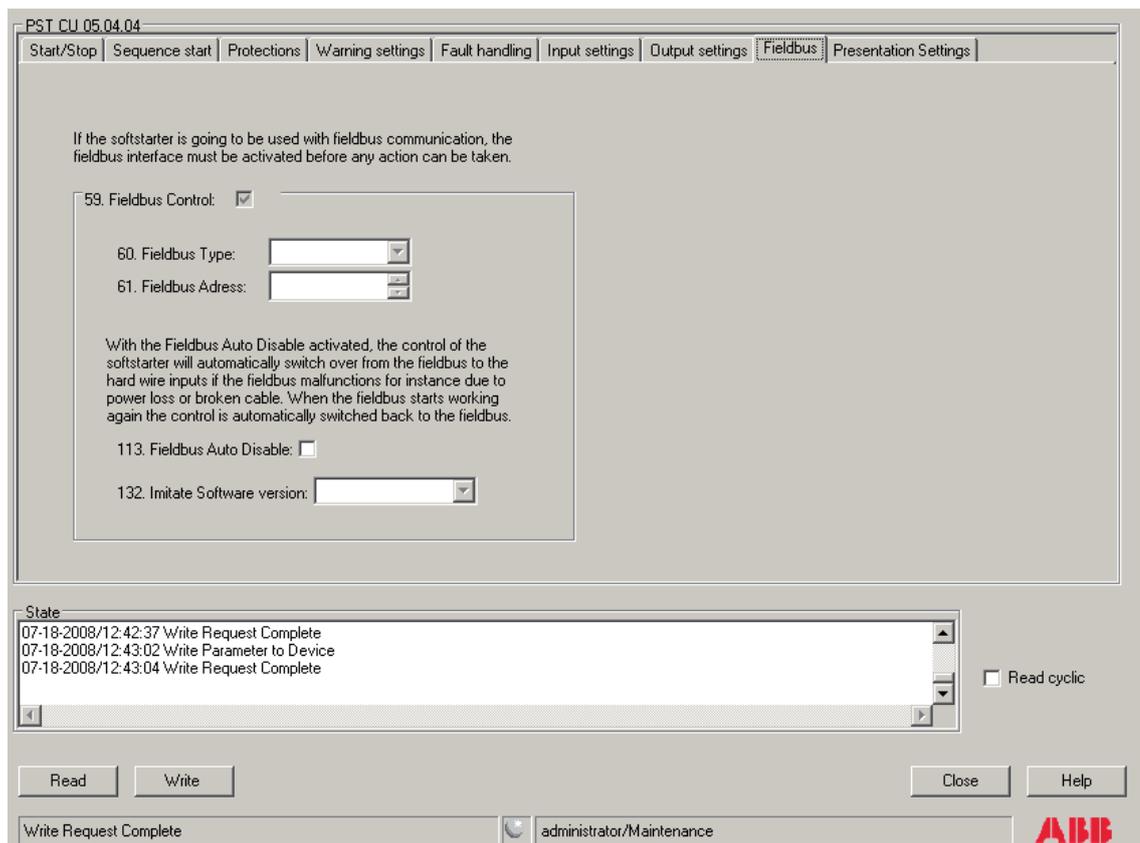
PBDTM-FBP

Technical Description

The eighth tab window is related to the fieldbus.

It contains information about whether the fieldbus control is activated, which type of fieldbus protocol is used, the address and whether the fieldbus auto disable is activated or not.

The parameter “Imitate Software version” is only available from Softstarter CU-version 05.04.04 and later.

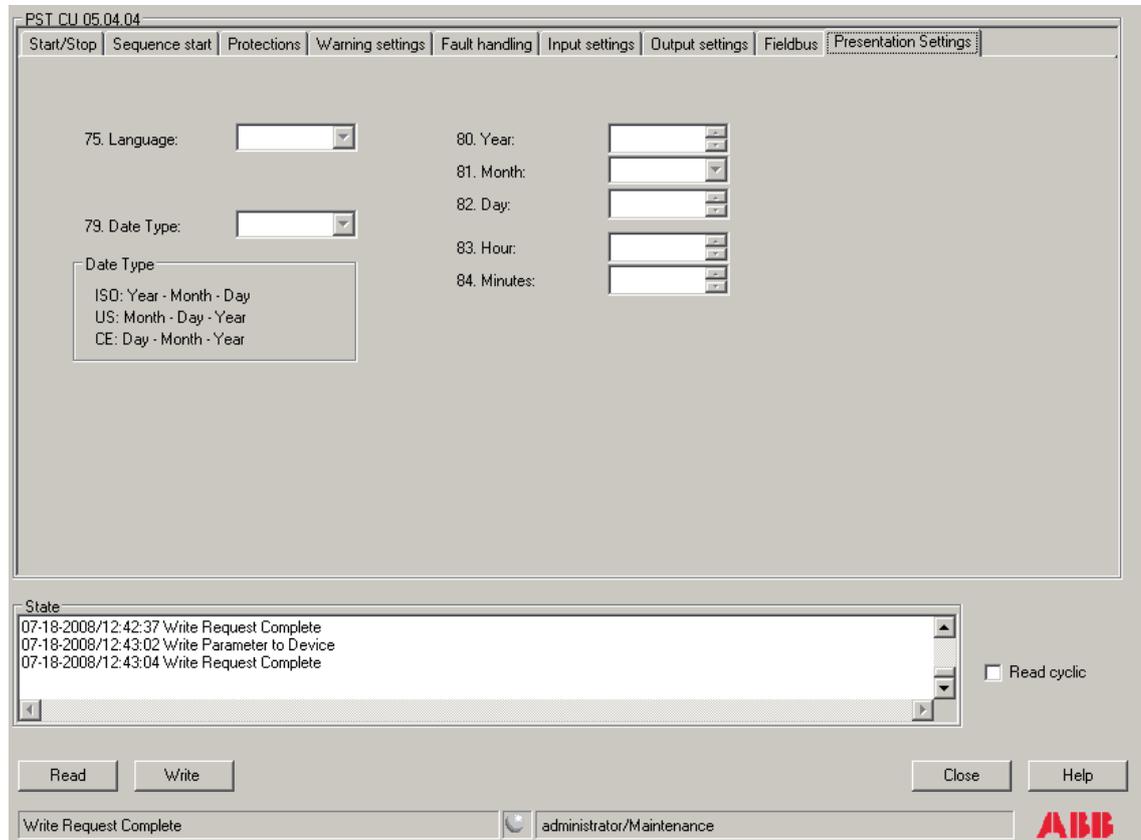


Device Type Manager (DTM)

PBDTM-FBP

Technical Description

The ninth and final tab contains information about which language the softstarter is set to and the date and time of the softstarter.



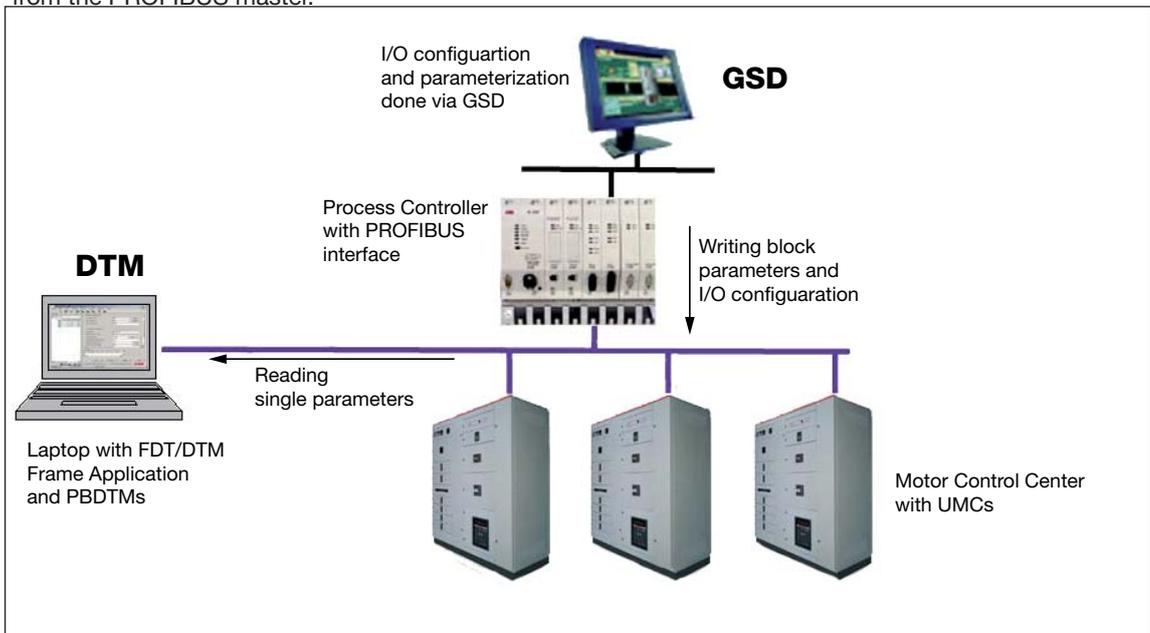
11 Avoiding Configuration Conflicts

The PBDTM can be used in different scenarios. Often a service laptop should be connected to the PROFIBUS network in parallel to the control system. In this situation there are separate possibilities to parameterise a device (from the control system or from the laptop or both) it is important to consider some points to not create configuration conflicts. Therefore carefully read the following subsections and decide what scenario describes your project setup in the best way and thereof what points must be considered as a consequence. In the following section the UMC22 is used as an example. For other devices the same rules apply.

Scenario 1

In this setup the GSD file is used in the control system to set the UMC parameters and to do the I/O configuration. The PBDTM - installed on a separate service laptop - is used only for monitoring purposes.

Points to consider: Ensure that the UMC configuration is only modified in the control system via the GSD file (or HWD file in case of 800xA) and not via the laptop. Changes done via laptop can't be uploaded into the control system. After the next bus start the configuration changes done via laptop will be overwritten from the PROFIBUS master.



- ▲ In this scenario the complete configuration and parameterisation is done from the control system using the GSD file.

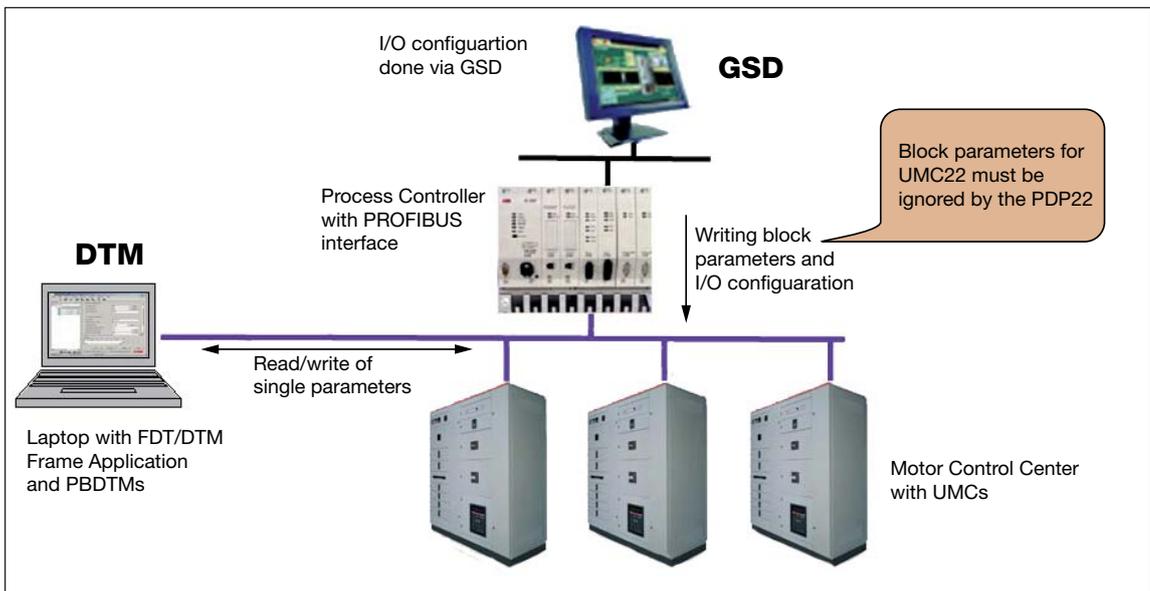
Device Type Manager (DTM) PBDTM-FBP Technical Description

Scenario 2

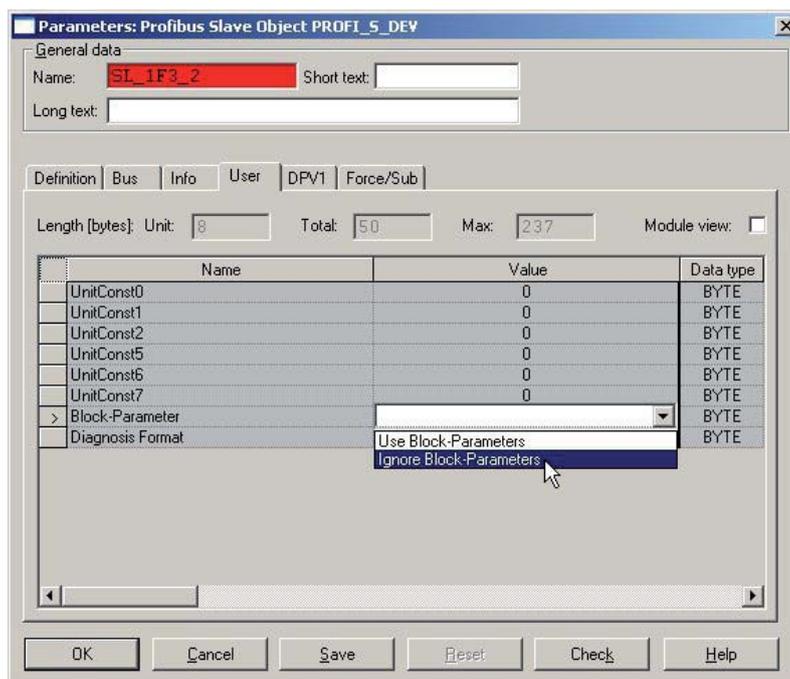
In this setup the GSD file is used in the control system to do the I/O configuration only. The PBDTM - installed on a separate service laptop - is used for parameterisation of the UMCs.

This scenario often applies if electricians want to configure the UMCs but do not have access to the control room and therefore need a control system independent configuration tool.

Points to consider: The PROFIBUS master will always send user parameters to the UMC22 even it is not wanted in this case. It must be ensured that these parameters do not overwrite the parameters set via the PBDTM running on the laptop. This can be achieved by setting the PDP22/PDQ22 parameter called "Block Parameter" to "Ignore Block Parameters". Please note that this must be done using the GSD file in the control system! The screen shot below shows the Freelance configuration window as an example on how to do this.



▲ In this scenario parameterisation shall be done from using a laptop. Only the I/O configuration for the PROFIBUS master is done in the control system using the GSD file.



▲ Parameter window of the PDP22 as it looks like in Freelance. Ensure that the parameter "Block Parameter" is set to "Ignore Block Parameters".

Device Type Manager (DTM)

PBDTM-FBP

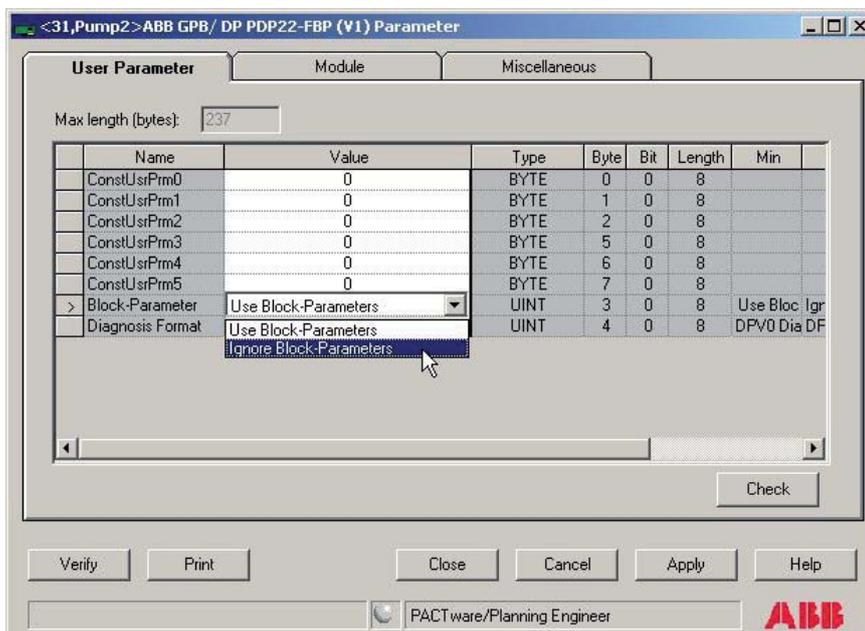
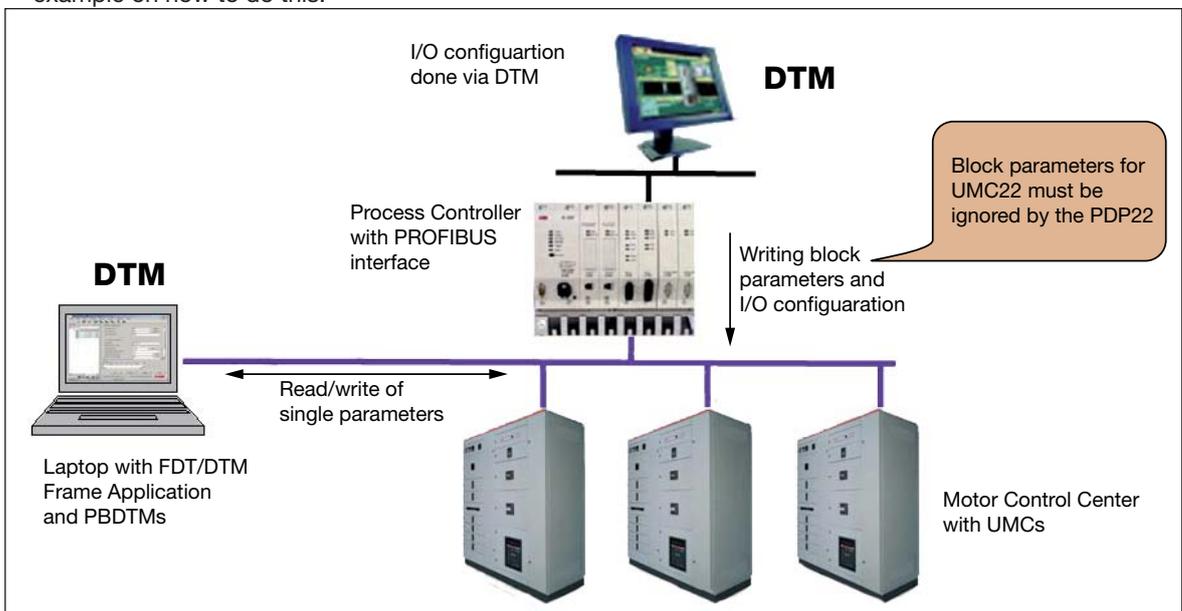
Technical Description

Scenario 3

In this setup the PBDTM is used to do the I/O configuration in the Control System whereas the PBDTM - installed on a separate service laptop - is used for parameterisation of the UMCs.. In addition to the scenario one or scenario two a control system like Freelance can retrieve the detailed I/O signal description from the DTM so no GSD file is necessary anymore.

This scenario often applies if electricians want to configure the UMCs but do not have access to the control room and therefore need a control system independent configuration tool.

Points to consider: The PROFIBUS master will always send user parameters to the UMC22 even if this is not wanted in this case. It must be ensured that these parameters do not overwrite the parameters set via the PBDTM. This can be achieved by setting the PDP22/PDQ22 parameter called "Block Parameter" to "Ignore Block Parameters". Please note that this must be done using the DTM's user parameter window installed in the control system! The screen shot below shows the Freelance configuration window as an example on how to do this.



▲ In this scenario the parameterisation shall be done using a laptop. Only the I/O configuration for the PROFIBUS master is done in the control system using a DTM.

◀ User Parameter window of the PBDTM. Ensure that the parameter "Block Parameter" is set to "Ignore Block Parameters".

Device Type Manager (DTM) PBDTM-FBP Technical Description

Scenario 4

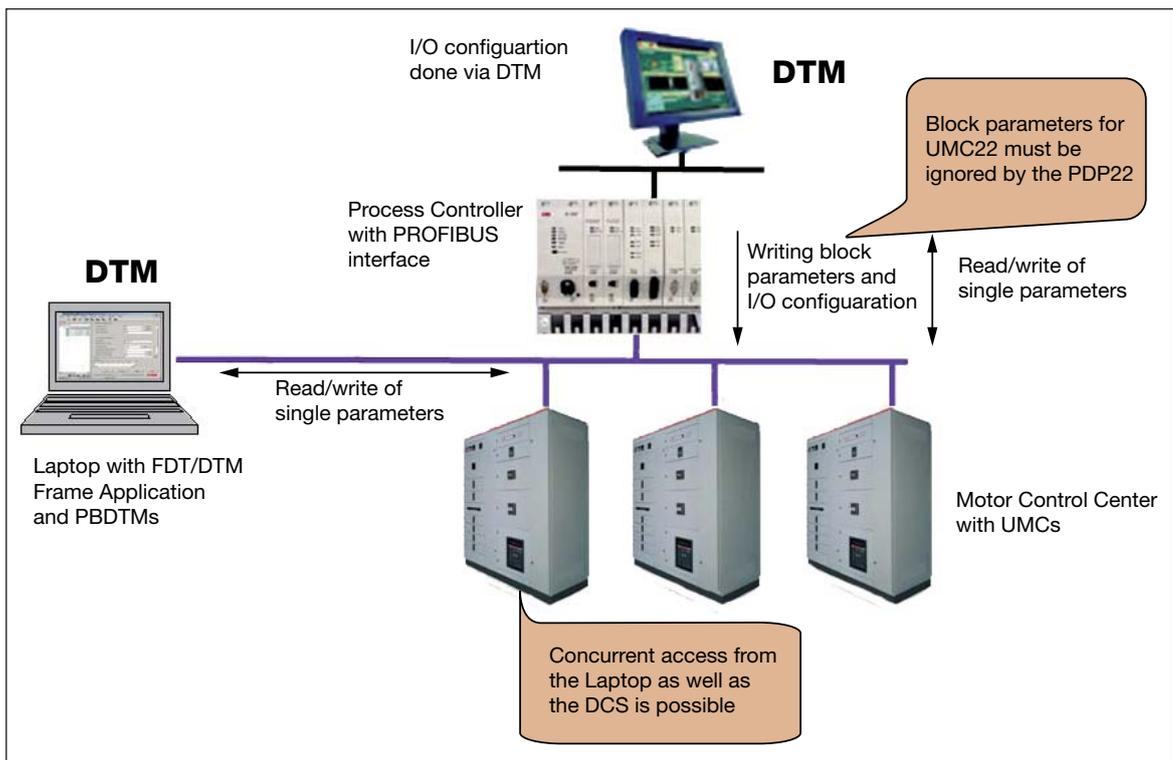
In this scenario the PBDTM is used to do the I/O configuration and the parameterisation of the UMCs from within the Control System. PBDTM - installed on a separate service laptop - is also used for parameterisation of the UMCs.

Points to consider: The PROFIBUS master will always send user parameters to the UMC22 even if this is not wanted in this case. It must be ensured that these parameters do not overwrite the parameters set via the PBDTM. This can be achieved by setting the PDP22/PDQ22 parameter called "Block Parameter" to "Ignore Block Parameters". Please note that this must be done using the DTM's user parameter window installed in the control system! See scenario three for an example screen shot.



In this scenario the UMCs can be deliberately configured from two different sides (DCS, Laptop). Therefore each time the configuration is changed from one side it must be first read back from the UMC to ensure that the latest configuration changes done from the other side are considered.

It is possible to simultaneously parameterize the UMC from both sides at the same time! Such situations shall be avoided.



▲ In this scenario parameterization of the UMCs can be done via laptop or control system

12 Frequently Asked Questions

Q: Establishing a communication to the FBP device does not work i.e. reading or writing of parameters fails with an error message.

A: There might be different reasons.

Ensure that the UTP22 is connected to the PROFIBUS line and the FieldbusPlugs are powered.

The device address does not match the node address in the DTM tree. Ensure both addresses match.

If a cyclic master is active in the network the DP communication settings used in the communication DTM does not match the ones used in the cyclic master. Compare both settings and adjust the settings of the communication DTM accordingly (right-click on the communication DTM and select <Offline Configuration>. If the menu entry is grayed out go offline before. Also ensure that the DP-V1 timeout time is set to 10000.

The communication in the connected device is disabled.

Q: The read and write buttons on the device applications are missing

A: Close the application window and re-open it again.

Q: Reading the parameters is possible but writing the parameters seems to have no effect.

A: The "parameter lock" is set. Remove the lock via the LCD panel and try again.

Q: The UMC Monitoring application does not show any values. All fields are gray.

A: The UMC firmware supports the monitoring beginning with V3.41 and V3.51(ATEX). Earlier firmware versions does not support the monitoring application.

Device Type Manager (DTM)
PBDTM-FBP
Technical Description

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