SIEMENS

Program Library Karlsruhe

Product Information

PCS 7/TM-EA

Var. **V5.1**   Issue: November, 2014

Descriptors

TELEPERM M , PCS 7 , AS416 , AS417 , I/O Peripherals , Update

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Summary

This Product Information relates to the System Software Packages:

Name	Variant	Issue	Product no. (MLFB)
PCS 7/TM-EA	V	5.1	6ES7 478-2DA10-0AC0
PCS 7/TM-EA update	V	5.1	6DL5 100-8AX00-1XX3

Description:

Manual Connecting TM I/O to PCS 7	English	C79000-G8076-C710
Reference Manual Library of Driver Blocks	English	C79000-G8076-C711

These manuals have to be ordered seperately if required. They are also included as PDF files on the CD (in the DOK directory).

1   Scope

This Product Information contains **supplements** to the product. The product information is part of the product supplied and the information in it should be considered more up-to-date if uncertainties arise.

The delivery consists of:

6ES7 478-2DA10-0AC0 / 6DL5 100-8AX00-1XX3
1 CD with Library of Driver Blocks, FM456 system software, OCX and Object manager
Software contract
Product Information

2   Commissioning

Requirement: PCS 7/TM-EA requires the PCS 7 package version V8.0 for its installation.

If the function 'Configuration in Run' (CiR) which is available up from PCS 7 V6.0 SP3 should be used together with PCS 7/TM-EA an interface module IF961-DIO has to be plugged in the FM456-4.

You need administrator's privileges in order to install the PCS 7/TM software under Windows.

Procedure:
Insert the CD in the drive of the PC/programming device and start the *Setup* program. The files for the library of driver blocks, the FM456 system software, the OCX and the TPM478 object manager are then copied to the PC/programming device and entries are made in the MS Windows files. Important information on handling will be displayed during the Setup process.

Note
PCS 7/TM-EA registers itself in MS Windows system files. With MS Windows utilities such as Explorer, you cannot move PCS 7/TM files or folders, nor can you modify PCS 7/TM data in the MS Windows register. Programs will not run properly after such changes.

Note
Under MS Windows 7 and Server 2003 / 2008, M7 components no longer can be configured. You can continue to use any existing station with M7 components, however.
Making a new configuration is possible by copying the hardware configuration from an example project on the CD (PCS7_Version_8\SW\PCS7_TM_EA\Example_Project).

Caution:
The copied M7 components must not be moved within the same rack! Otherwise the project possibly will be become invalid.

2.1 M7-SYS Realtime

For configuring the memory card of the FM456-4 the operating system software M7-SYS Realtime V4.0 is needed. As this can no longer be ordered since 10/01/2003, it is included on this CD (PCS7_Version_7\SW\M7_SYS).

Attention

The installation of M7-SYS is <u>not</u> allowed with PCS 7 V8!
Otherwise the PCS 7 package has to be installed again after formatting the MC.

For installing M7-SYS please start the *Setup* program from the directory DISK1. After that you have to install the correction version from the directory K40008 additionally.

Note

It is not possible to do a "normal" installation of SIMATIC M7-SYS under MS Windows 2000/XP. To carry out the installation, you must proceed as follows:
- First choose "Start → Run".
- In the "Run" dialog window enter the **full path** of "Setup.exe" with the parameter **"-ntall"** (e.g. "D:\...\disk1\setup.exe" –ntall).
  Important: Make sure the "-ntall" parameter in the "Run" dialog window is **not** enclosed in the quotation marks. Only the file path should be enclosed by quotation marks.
- Then follow the remaining installation instructions
  (see also SIMATIC M7 FAQ Entry ID 9375417).

2.2 Migration of Projects < V5.2 to PCS 7 V6.x

With projects created under PCS 7 V4.x, V5.0 or V5.1 (i.e. with PCS 7/TM-EA V1.x/V2.02) the **Alarmrangierer** wizard had to be started after each transfer of connection data from the PLC to WinCC, for ranking the TELEPERM M I&C alarm messages to the SIMATIC alarm messages, and to set the informations for status transfer correctly.

Up from PCS 7 V5.2 the 'Alarmrangierer' wizard is only needed for generating the TELEPERM M message class. The alarm and status ranking of all driver blocks has already been set correctly within the library.
That means, after creating a new project, or after upgrading a project to V6.x the wizard has to be run once.

In projects created with previous versions, these settings have to be corrected for all block instances in the Engineering System.
For this please contact the Technical Support for TELEPERM M:

    Phone: +49 (180) 5050 222
    Fax: +49 (180) 5050 223
    Support Request: http://www.siemens.de/automation/support-request

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2.3 Migration of Projects to PCS 7 V8.x

For this "STEP 7" has to be selected instead of "PCS 7" under "Use" in the project properties in Simatic Manager, otherwise the DB1/DB2 blocks from the block container of the FM456-4 M7 program cannot be loaded on the FM module.

2.4 Memory Card Jobs when Updating Projects

- Check the TM_EA_S7.EXE firmware on the MC of the FM456-4:
  This file must have the date 02/21/2006.
  The firmware can be updated by copying the files from the CD
  (PCS7_Version_8\SW\PCS7_TM_EA\FM456-Firmware) on the MC (romdir).

For this a Programming Device with build-in S7 Prommer is needed, e.g. a FieldPG.

The version V6.1 SP1 of PCS 7 is sufficient, as the last firmware modification was done in PCS 7/TM-EA V3.1 SP2.

Further information:

If using the TM_S5KS block, the functions FC10, FC26 and FC29 have to be copied from the PCS 7 library into the PCS7_TM library after installing the block library of PCS 7/TM-EA. With this the CFC will find the FCs when defining a TM_S5KS.

If the cycle monitoring time of the S7-CPU, configured with HW Config, exceeds, the CPU wents into STOP, if no OB80 is defined. To avoid this, the function SFC39 DIS_IRT should be installed in OB100 (MODE=2, OB_NR=80). But the CPU wents into STOP yet, if the monitoring time is exceeded more than 100%. Therefore the CPU capacity should be monitored with the CFC function **PLC → Module Information → Scan Cycle Time**. Detailed informations may be taken from the SIMATIC documentation.

If using a programming device with Pentium ≥ 266 MHz and MPI on Board, within WinCC in the menue **MPI → System Parameter** you have to adjust „**CP5611(MPI)**" as **Logical Device Name**. This menue is reachable in the MCP under **Tag Management → SIMATIC S7 PROTOCOL SUITE → MPI** by clicking on **MPI** with the right mouse key.
The same setting has to be done in STEP 7 for installing the MPI interface under **Start → Settings → System Control → PG/PC Interface**. Here the CP5611 has to be selected.

After creating a new project the wizard **Alarmrangierer** has to be started once for creating the TELEPERM M message class (see also the enclosed description: **Alarmrangierer.pdf** in the **\Dok** directory).

Communication connections after general resetting the CPU

After a general reset of the S7-CPU only the system data and the blocks must be loaded into the CPU, i.e. the entire block container, but not the connection data. Then the connections are active after a restart of the CPU immediately.

After loading a new connection always a STOP/RUN of the FM456-4 is necessary.

Setting up the Memory Card for FM456-4

Please consider the extended chapter 4.2 (Input of Configuration) of the manual, and the chapters 2.1 and 2.4 of this product information.

For programming the Memory Card only a Programming Device with integrated MC interface can be used, but no external EPROM programming device.

Display blocks S7/TM-OCX (NORA)

The present CD also includes display blocks in TELEPERM M NORA style.
These are located in the directory sw\OCX_S7M together with the authorization DLL TelepermOCX.dll, necessary for regulary working. The authorization is delivered on a separate disk (A7TMFP50 for PCS 7 V5.x or A7TMFP60 for V6.x or SISLA7TMFP0700 for V7.x or SISLA7TMFP0800 for V8.x).

In the PCS 7/TM-EA setup you can select and install both the block library (S7_TM_EA) and the S7-OCX. The S7/TM-OCX(NORA) setup can be used to install the S7-OCX separately (e.g. on a client).

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Needed Interrupt OBs

For these two configurations of the I/O peripherals have to be reflected:

TELEPERM M I/O modules only:

In a TELEPERM M system migrated to PCS 7/TM-EA without any extension by S7-300 or S7-400 components, OB 82 (Diagnostic Interrupt), OB 83 (Insert/Remove Module Interrupt), OB 86 (Rack Failure) and OB 122 (I/O Access Error) were not needed. These functions as well as the communication will be done by the FM456-4.

But this is only valid for the TELEPERM M I/O modules, not for the central S7 components in the migration rack.
For monitoring the power supply and the CPU appropriate OBs have to be configured if required; i.e. define OB in block list, and set a corresponding action (as with standard PCS 7).

Mixed configuration with TELEPERM I/O modules and S7 peripherals:

When using TELEPERM M and SIMATIC S7 I/O modules at the same time, the organization blocks OB 81 (Power Supply Error), OB 82 (Diagnostic Interrupt), OB 83 (Insert/Remove Module Interrupt), OB 86 (Rack Failure) and OB 122 (I/O Access Error) were needed for the S7 components.

To forget none of this OBs the option „Generate Module Drivers" should be selected during translation.

Further OBs may be configured as well:
- OB 80   Time Error
- OB 84   CPU Hardware Fault
- OB 85   Priority Class Error
- OB 87   Communication Error
- OB 88   Processing Interrupt
- OB 121   Programming Error
- OB 40...47   Hardware Interrupts

Loading the Hardware Configuration via Communication Module CP 443-1:

The hardware configuration of PCS 7/TM-EA includes data for the S7-CPU and for the application module FM 456-4. When the hardware configuration is loaded via communication module CP 443-1 and Industrial Ethernet, the CP 443-1 acts as gateway and transmits the data partially over the backplane bus into S7-CPU and FM 456-4.

During further development extended communication connections have been implemented in CP 443-1 which are not supported by FM 456-4. Consequently FM 456-4 limits the loading of hardware configuration via CP 443-1 to 32 loading processes.
After starting PCS 7/TM-EA the identifications of the communication connections are set to 0. At each connection establishment used for loading the hardware configuration this id is incremented by one. After 32 loading processes loading the hardware configuration via CP 443-1 is no longer possible. But if PCS 7/TM-EA was switched off and on, 32 loading processes are available once again.

Following versions of the PCS 7/TM-EA migration package are concerned by these restrictions:

- Order no. 6DL2100-..... with CP 443-1, order no. 6GK7 443-1EX11-0XE0,
                                                          from firmware V2.5.5

- Order no. 6DL4000-..... with CP 443-1, order no. 6GK7 443-1EX20-0XE0,
                                                          independent of the firmware release

As remedy for PCS 7/TM-EA customers a firmware update is available for the CP 443-1 (6GK7 443-1EX20-0XE0) → please look at page 18.

The restriction above doesn't exist if the hardware configuration is loaded via the MPI interface of the S7-CPU.

AS-wide Interconnections in CFC:

AS-wide interconnections are not allowed together with PCS 7/TM-EA. Otherwise over-writing of data blocks used for communication may happen.

3   Removed Errors

3.1 Removed Errors from Version V1.00 to V1.01

F: Function concerned
A: Appearance
M: Modification

- F: Driver block TM_DZ
  A: The communication of all drivers build in behind the TM_DZ is disturbed.
  M: Handing-over of the channel number to the FM456-4 and length of receive data at the communication PCS 7 driver with FM456-4 corrected.

- F: Driver block TM_S5KE
  M: Length of receive data at communication PCS 7 driver with FM456-4 optimized.

- F: Driver block TM_EU
  M: The signal S80 will now be send additional in the low status no. 3, so that the old block EM also may be replaced compatible.

- F: Driver block TM_MELD
  A: The signal output 6 supplies no watch-dog trigger signal.
  M: The input MA6 has been removed. Instead of this an inverted trigger signal is given to the DIO module with each cycle (sign of life).

- F: Driver block TM_BU16
  A: At this driver low and high byte are exchanged at the outputs.
  M: Block corrected.

- F: Communication block TM_KOM
  A: Break-off of the communication between S7-CPU and FM456 (all connections are blocked). Cause: Internal configuration lists are faulty.
  M: Interpretation of the modules configured in DB1 corrected.

- F: Driver blocks TM_EG, TM_EK, TM_EU
  A: The feedback signals of the unit controls should be visible from the operator system (OS), because grafic displays may be controlled by this signals.
  M: Outputs made visible.

- F: TM_EK, TM_EU, TM_RK
  A: At these driver blocks the S interference bits cannot be read from the OS.
  M: Outputs made visible.

- F: TM_EG and TM_RK
  A: At these driver blocks some inputs with text for the OCX are missing:
       (TM_EG: TEI, TAU, TA, TH; TM_RK: TH, TA, TC).
       The output BGF is not visible from the operator system.
  M: Missing inputs added and BGF made visible.

- F: Driver block TM_EU
  A: In the status the signal S16 is send instead of S31 for the status bit command interlocking.
  M: Block corrected.

- F: Group acknowledgement of the I&C messages
  A: The I&C messages of the drivers cannot be acknowledged with the group acknowledgement key in WinCC, but only individual.
  M: Attribute in the library changed for all driver blocks.

  Note:
  Because this attribute is specific for each instance, the attribute "Individual Message" has to be changed to "Group Message" for all instances already defined in the project (menue "Edit → Special Object Properties → Message...").

- F: Alarm archives
  A: Status bits are put violet into the alarm archives in spite of the alarm ranking wizard and are acknowledged automatically at going. I.e. a status bit cannot be acknowledged while it is 1.
  M: The alarm ranking wizard has been expanded in the way that status messages were put into the alarm archives no more.

- F: OCX for all drivers
  A: In the OCX a wrong status word is calculated if the highest bit is set in a status variable EventRaw within WinCC/TM. Because of that wrong operating modes may be displayed.
  M: Calculation corrected within the OCX.

- F: All Driver blocks with status
  A: At these drivers (TM_DZ, TM_EG, TM_EK, TM_EU, TM_RK, TM_MSB) wrong values were send to the OCX at status transfer.
  M: Status transfer of the blocks corrected and alarm ranking wizard expanded.

- F: Installation
  A: There is no possibility in the setup to install the OCX without PCS 7/TM-EA. Because of that an installation is only possible if the SIMATIC Manager is installed.
  M: New setup with the possibility to install the OCX separate (e.g. on an OS).

- F: README
  A: There is no readme file on the delivered CD for the OCX.
  M: File Readme.txt added on the CD for the PCS 7/TM-EA OCX.

- F: Communication block TM_KOM
  A: Very sporadically break-off of the communication between S7-CPU and FM456-4 (one or several OBs are blocked). Remedy: Restart of the CPU.
  M: Calling of the internal sending blocks changed.

- F: Boot procedure
  A: During the boot procedure of the FM456-4 all outputs of the TM I/O modules were resetted, even if they are configured to hold. Cause: The TPM478-2 clears his process image when it gets a new configuration.
  M: The restart reaction has been changed as shown below:
      Boot: As before, e.g. the TPM478-2 is resetted (HW) and supplied with new configuration data.
      Restart: If DB1 or DB2 has been changed, a soft reset of the TPM478-2 is performed (with new configuration data).
                 The output on the I/O bus is released only after all connections (OBs) have run once.

  Note:
  This function requires the release 2 of the TPM478-2.

3.2 Hotfix 1 for Version V1.01:

- F: Operation of the Interrupt Collecting Module
  A: The blocks in the Interrupt Organization Block OB40 didn't work. Therefore no interupt working was given.
  M: The firmware program for the FM456-4 module was corrected.

3.3 Hotfix 2 for Version V1.01:

- F: Communication on the K-Bus between S7 CPU and FM456-4
  A: If the communication on the K-Bus was very strained by WinCC and CFC it could be possible in rare cases that the data transfer between S7 CPU and FM456-4 was stopped, and the IO peripherals were no more actualized.
  M: Expansion of the recovery functions in the firmware program for the FM456-4 module.

3.4 Removed Errors from Version V1.01+HF2 to V2.00:

F: Function concerned
A: Appearance
M: Modification

- F: Driver block TM_DZ
  A: The analog values (final value, intermediate value, correction factor, measuring time) are not transmitted to the DZ module. Additional the inputs ZS and ZR are not set back.
  M: Transmission of the analog values corrected. Internal marker for ZS and ZR are deleted after one cycle. Status bits ZL, ES and SP corrected.

- F: Driver block TM_RK
  A: The binary signals for mode and command inhibits are exchanged.
  M: Internal processing corrected.

- F: Driver block TM_RK
  A: The values for YCO and YCU are not shown in the OCX.
  M: Inputs YCO and YCU are now readable from the OCX.

- F: Driver block TM_ZE
  A: The block gives wrong values with channel numbers > 0.
  M: Evaluation of the parametrized KNR corrected.

- F: All driver blocks
  A: English and French texts are missing.
  M: English and French message texts added.

- F: All driver blocks
  A: Up from version 5.0 of PCS 7 exists the function cold restart (OB102) additional to the restart OB100. This OB102 is not supported by the driver blocks.
  M: All driver blocks are now placed in OB102 in addition to OB100 during definition in the CFC. Internal both OBs are evaluated for the block restart.
       Note:
       If a CPU416 is used, which doesn't support the OB102, the driver blocks have to be removed from the OB102 before translating.

- F: Communication CPU – FM456
  A: With very high communication level on the K bus, and a communication factor set too low (within hardware configuration of FM456-4), a remaining connection break-off may appear. The connection restart can be caused by turning the key switch from RUN to STOP and RUN again.
  M: The correction in the FM task guarantees the connection restart after communication trouble on the K bus between S7 CPU and FM456-4.

- F: All driver blocks with status word transmission
  A: If driver blocks are deleted and re-defined in the CFC, gaps and mix-ups may result within the message system.
  M: Because the assignment of system messages (LTM), low status (STL) and high status (STH) to EV_ID1, 2, 3 is not defined, a code is transmitted in the upper 2 bits of each status byte (LTM: 10, STL: 00, STH: 01). For this, status bits were switched from STL to STH with some blocks. At TVB and MSB each 2 x 2 system messages were summarized (see user documentation 'Reference Driver Blocks' C79000-G8076-C711-**03**).

3.4.1 New Block

A new subordinate communication block TM_KIDB (FC 330) is included within the driver library. This block is copied to the block container automatically as soon as a TM_KOM is installed in the chart. The present configuration of the communication blocks TM_KOM and TM_KST remains unchanged.

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3.4.2 Use of PCS 7 Version V5.2

When loading CFC charts which are constructed with PCS 7 V5.2 it is required that the CPU module contains the system block SFC83. This system block exists for the following types of CPU:

> 6ES7 414-3XJ00-0AB0
> 6ES7 416-3XL00-0AB0
> 6ES7 416-2XK02-0AB0
> 6ES7 417-4XL00-0AB0
> 6ES7 417-4HL01-0AB0
> 6ES7 414-4HJ00-0AB0

with firmware version of at least V3.0.

Therefore the use of PCS 7 V5.2 is restricted for these types of CPUs at the moment. It is still open whether this restriction will be changed by PCS 7.

3.5 Hotfix 1 for Version V2.02

- F: TM_AE und TM_BEI: Simulation
  A: The outputs BGF and XF were set if the connection CPU – FM456 doesn't work (if no FM456 is present for example), even if simulation has been selected.
  M: TM_AE: If the simulation input SIMON is set now, BGF and XF were reset, and the simulated value output irrespective of the CPU-FM communication state.
  TM_BEI: Now the corresponding simulated bits can be switched through always via the separate simulation inputs SIMONx (but BGF is set furthermore).

3.6 Hotfix 2 for Version V2.02

- F: ET100 modules via interface module 6DS1327
  A: The S5 sub-modules at the interface module are configured in DB2 as described in the configuring manual. For S5 analog modules this configuration is evaluated faulty. By that the data exchange with the analog modules cannot be achieved in many cases.
  M: Evaluation of the module configuration corrected within the FM456 firmware.

3.7 Removed Errors from Version V2.02+HF1+HF2 to V2.3:

F: Function concerned
A: Appearance
M: Modification

- F: TM_BEI: Reading the interrupt module
  A: The driver TM_BEI can also be used to replace the former BRA block. This could read all 6 bytes of the module 61 via setting the channel number. But the driver TM_BEI allows only BTYP=1 at BGNR=61, i.e. reading byte 2.
  M: Now with the module number BGNR=61 you can select the BTYP parameter at TM_BEI in the same manner as with all other module numbers, i.e. BTYP=1, 2, 3, 4 whether 1, 2, 4, or 6 bytes should be read.

- F: TM_AE: Open circuit message
  A: If for example the channels of an analog input module 6DS1700-8AA are set to a measuring range of 4 to 20 mA, the driver should report open circuit (S320) with non-wired inputs. But in addition to the XF output also the BGF output (module defective) is set (error message S321).
  M: Evaluation of the error bits corrected within the FM456 firmware.

3.7.1 Extended Function in V2.3:

F: Reaction of the Output Modules in STOP or HALT State
A: With transition from RUN state to STOP or HALT state of the CPU the values at the TELEPERM M output modules normally remain unchanged.
M: With the new configuration 'STOP:NULL_TO_OUT' at the module type of a free module number you can select now, whether the outputs are set to zero if the CPU goes to STOP or HALT, and if a corresponding setting has been done on the module (see chapter 4.9.3 of the manual).

3.8 Hotfix 1 for Version V2.3:

- F: TM_EK: S10
  A: The driver signals S10 for channel 3, when the command from CLOSED to OPEN has been given, even though the 6DS1503 module doesn't signal an error. But this only happens, if a running-time > 0.5 s has been set on the module.
  M: Evaluation of the module data corrected within the FM456 firmware.

3.9 Hotfix 2 for Version V2.3:

- F: TM_RK: the controller oscillates
  A: According to the control parameters and the controlled system it may happen, that the control loop oscillates. Besides this some parameters read from the module are displayed faulty (EBR1/3, K2/K3 and K5).
  M: TM_RK driver and FM456 firmware corrected.

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3.10 Removed Errors from Version V2.3+HF2 to V3.0:

- F: TM_S5KS
  A: If a non-standardized zero in S5 or S7 floating point format is transmitted with the TM_S5KS block, a very large number is generated from it.
  M: Standardization corrected.

- F: Configuration of connections
  A: If the connection configuration has been changed, the new connection data in the FM456-4 is only accepted after power off/on of the CPU. But for the CPU changing to STOP mode and back to RUN is sufficient.
  M: With transition from RUN to STOP and from RUN to HALT, all communication connections between CPU and FM456-4 were disconnected. With transition from STOP to RESTART all possibly changed connections will be established again.

3.10.1 Using Version 3.1 of the S7-CPU Firmware

For PCS 7/TM-EA generally the use of firmware version 3.1 for the S7-CPU41x is recommended. This includes an optimizing of the communication processing, which removes some sporadically appearing communication errors. Such errors have been recognized by the PCS 7/TM-EA communication blocks, and signaled with the alarm message 'Communication error FM'.

For the update of previous firmware versions to V3.1, an appropriate download has been offered since 1/2003 in the intranet of SIMATIC S7 Support.

3.11 Hotfix 1 for Version V3.0:

- F: Module outputs at restart
  A: On rare occasions (using several time interrupts with the same basic cycle and with phase shifting) the outputs of the TELEPERM modules may be reset for a short time at resumption of power supply (i.e. after power off/on).
  M: The FM456 firmware has been corrected to the effect that the outputs will hold their former state or the current state of the driver blocks.

  Note: This hotfix can also be used with former versions 2.x.

3.12 Service Pack 1 for Version V3.0:

- F: Display block for TM_EK
  M: The display block for the TM_EK function block has been extended for the incremental adjustment (Y).

3.13 Removed Errors from Version V3.0 SP1 to V3.1:

- F: TM_RK
  A: The manipulated value can only be adjusted between 20 and 80% at DDC mode.
  M: Division of output value DeltaC can only be done at SPC mode.

Note:

From V3.1 following both new CPUs are released for PCS 7/TM-EA:
- 6ES7416-3XL04-0AB0
- 6ES7414-3XJ04-0AB0

3.14 Removed Errors from Version V3.1 to V3.1 SP1:

- F: TM_AE
  A: Sporadically the analog input driver sends an I&C system message S321 (above all if an interrupt module is used in the automation system).
  M: The FM456 firmware TM_EA_S7.EXE has been corrected.

3.14.1 Improvement of the Monitoring between CPU and TPM 478-2

The central processing unit of the automation system PCS 7/TM-EA includes besides the CPU module an interface module TPM 478-2. If one of both modules breaks down (e.g. by a HW defect) it may happen that the information about the partial failure of the AS will not be forwarded to the I/O modules or the Operating&Monitoring Systems. This can cause the following incorrect reaction:

- After failure of the TPM 478-2 alone the CPU of the automation system gets no information about the TPM 478's operating state. By this the processing of the TPM 478-2 is blocked without the CPU of the automation system can recognize this. Thus also no I&C system message is generated.

- The PCPLK signal between TPM 478-2 and the I/O modules (control signal 'CPU ready' to the peripherals) is controlled by the TPM 478-2 assisted by the TPM firmware. If the firmware processing fails the PCPKL signal cannot go to 'not ready'. By this the function configured via jumpers on the I/O modules (keep / reset outputs in case of CPU failure) will not be triggered.

- The failure of the CPU module or the system software cannot be recognized by the TPM 478-2, so the PCPKL signal will not be set correspondingly. (Impact like the previous point)

Functional improvement:

As from TPM 478-2 release **7** better use of the HW watchdog causes the PCPKL signal to be set to 'not ready' shortly if the TPM 478-2 fails. Together with PCS 7/TM-EA from version 3.1 SP1 this reaction is further improved by an extended mutual monitoring between both modules.

Note: These new monitoring functions for mutual monitoring can be switched off in PCS 7/TM-EA by configuring "`TPM478:NO_WATCHD`" at the module type of a free module number (see chapter 4.9.5 of the manual).

System behavior (message):

A failure of the interface module TPM 478-2 release ≥ 7 with V3.1 SP1 results in following:

- The failure is signalled by PCS 7/TM-EA with a new entry in the diagnostic buffer of the FM 456-4: Additional info 1 = 16#A007 → TPM broken down. Additionally both LEDs USR1 and USR2 at FM 456-4 are flashing with 2 Hz.
- All driver blocks each give the I&C system message 'Module timeout (S305)'.
- The I/O bus processing is stopped (the PCPKL signal is set to 'not ready' by reset of the TPM 478-2). The complete TELEPERM M I/O peripherals can no longer be read.

A failure of the CPU module or the system software V3.1 SP1 results in following:

- The TPM 478-2 release ≥ 7 sets the PCPKL signal to 'not ready', the I/O bus processing is stopped. The function configured via jumpers on the I/O modules (keep / reset outputs in case of CPU failure) is executed correctly.

Required user activities (restart by operation):

The fault condition (failure of CPU or TPM 478-2) cannot be eliminated automatically. Instead the plant operator has to carry out following actions:

- Bring the process into a save state by hand (configuration by ARS jumpers, main switch, subordinate protective level, etc.) if not already done.
- Switch off and on the power at PCS 7/TM-EA.
- If the fault appears again the TPM 478-2 module or CPU has to be exchanged.

3.14.2 Modified Configuration for the I/O Modules 6DS1500/1501

When using an open-loop control module 6DS1500 or 6DS1501 at unfavorable conditions it may sporadically happen that the general fault indicator lights up without I&C system message. In this case also the indicators at a connected control station were set. In extreme cases this will result in a permanently defect which can only be repaired by shortly removing the module fuse with following restart of the module.

Therefore new configuration strings were adopted for these two I/O modules up from version 3.1 SP1:

> 6DS1500-8AA-**2**
> 6DS1500-8BA-**2**
> 6DS1501-8AA-**2**
> 6DS1501-8AB-**2**
> 6DS1501-8BA-**2**
> 6DS1501-8BB-**2**

Attention: For using this new configuration an interface module TPM 478-2 with version A**7** or later has to exist!

3.15 Removed Errors from Version V3.1 SP1 to V3.1 SP2:

- F: Downloading connections
  A: If net connections are downloaded while running (e.g. in NetPro: PLC / Download to Current Project / Connections and Gateways) the coupling between CPU and FM456-4 gets lost. The new (or unchanged) connections will be activated again first after STOP/RUN of the FM456-4.
  M: The FM456 firmware TM_EA_S7.EXE has been extended:
  If a connection has been modified (deleted, new or overwritten) the communication connection is removed or restarted automatically. Actuating the keyswitch is no longer necessary.
  Note: While establishing the connection again no data exchange between S7-CPU and FM456-4 is possible for a short time.

3.16 Removed Errors from Version V4.0 SP1 to V4.1:

- F: OCX
  A: At the OCX image blocks operating could be blocked by:
  - Message acknowledgement during message burst
  - Fast operating
  - A lot of operations for a longer time.
  M: The modules from WinCC IndustrialX delivered for these OCX were now taken from the IndustrialX version compatible with WinCC version V7.0.1.

3.17 Removed Errors from Version V4.1 to V5.0:

- F: TM_EU
  A: End position monitoring ON (S17) could not be acknowledged by the OFF key.
  M: TM_EU driver block corrected (the OFF command will also set the acknowledge bit now).

3.18 Modifications in Update 1 to V5.0:

- M: Adjustment of the OCX to WinCC V7.2.

- F: CP 443-1
  A: The hardware configuration of a migration package PCS 7/TM-EA can be loaded by the engineering software HW Config via the MPI interface of the S7-CPU as well as the CP 443-1 communication module at the Industrial Ethernet system bus. Depending on hardware and firmware version of the CP 443-1 multiple loading the hardware configuration via CP 443-1 in run is limited (please look also at page 7).

  M: A firmware update for the CP 443-1 module (order no. 6GK7443-1EX20-0XE0) is available on the CD of PCS 7/TM V5.0 Update 1:
  \PCS7_Version_8\SW\PCS7_TM_EA\FWV2.2.20\4431Ex20v2220.fwl

  Restrictions:
  1) Version is only released for EX20
  2) Performance of standard communication (S7 and SR) is about 5-10% lower by contrast with V2.2.10
  3) Number of S7 routing connections is limited to 16 in following constellation. The routed S7 connection (actice connection start for example from a CP1543-1 or from a HMI panel) should be routed via the CP with V2.2.20 over the backplane bus to another CP (which hasn't V2.2.20). There is no restriction if the second partner in the "routing rack" is an EX20 with V2.2.20 or a CPU,

  The instructions for firmware update are available at following link:
  http://support.automation.siemens.com/WW/view/en/12213669

4   Restrictions

- If the function 'Configuration in Run' (CiR) which is available up from PCS 7 V6.0 SP3 should be used together with PCS 7/TM-EA an interface module IF961-DIO has to be plugged in the FM456-4.

  If you try to load the FM456-4 module in RUN state this will otherwise be rejected with an error message, i.e. loading will only be possible in STOP state without IF.

- If using the TM_S5KS block, the functions FC10, FC26 and FC29 have to be copied from the PCS 7 library 'Standard Library \ IEC Function Blocks' into the PCS7_TM library after installing the block library of PCS 7/TM-EA.

  Without this copy procedure the CFC will report that he cannot find these three FCs when installing a TM_S5KS block, and will not allow the definition.

- The TM_ZE block (in conjunction with the metering pulse input module 6DS1607) is not suitable for frequency measuring, as the cycle equidistance is not ensured. Cause: The cycles within CPU, FM456-4 and TPM478-2 are not synchronized.

- If driver blocks were installed within a run-time group for which a specific scan rate and/or phase offset has been defined, following restrictions have to be observed:
  - A reducing factor of 4 must not be exceeded.
  - A total cycle of 3 seconds (time interrupt OB + scan rate) must not be exceeded; this would cause restart problems after power OFF/ON or STOP/RUN.
  - A scan rate is not be possible
    - at sub-modules used via an interface module (6DS1310, 6DS1318, 6DS1321, 6DS1322, 6DS1327, 6DS1333).
    - at modules 6DS1717 and 6DS1613.

- A new configuration of the Memory Card for FM456-4 is not possible with PCS 7 V8 (see chapter 2.1). The MC is configured with the M7 operating system when the PCS 7/TM-EA Bundle has been ordered.
  - The current configuration blocks DB1 and DB2 have then to be loaded on the FM456-4 via the MPI interface.
  - This applies also to the connection configuration.
  - To perform loading via CP443-1EX20 a CP firmware update is required (please look at chapter 3.18 of this product information).

- Running the OCX standard displays under Windows Server 2008:
  A blockade occurred with fast operating (S7.G_EK).