



PSS 4000

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SD means Secure Digital

Hardware modifications PSSu H PLC1 FS DP SN SD

Modifications in Version 3.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

Modifications have no effect on the function

Hardware modifications PSSu H PLC1 FS SN SD

Modifications in Version 3.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

The LEDs "EtherNet/IP MS" and "EtherNet/IP NS" for the "EtherNet/IP Adapter" system section are available.

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

The module's RAM memory has been increased.

Hardware modifications PSSu H PLC1 FS SN SD-R

Changes in Version 4.0

The hardware supports the firmware versions 1.6.1, 1.8.0, 1.10.0, 1.12.1 and 1.15.0.

Optimisations

The device is now less sensitive to EMC interference.

Modifications in Version 3.0

The hardware supports the firmware versions 1.5.0, 1.6.1, 1.8.0, 1.10.0, 1.12.1 and 1.15.0.

Optimisations

The LEDs "EtherNet/IP MS" and "EtherNet/IP NS" for the "EtherNet/IP Adapter" system section are available.

The C-rail connection is no longer available.

Hardware modifications PSSu H PLC1 FS SN SD-T**Changes in Version 3.0**

The hardware supports the firmware version 1.4.0. to 1.16.0.

Optimisations

The LEDs "EtherNet/IP MS" and "EtherNet/IP NS" for the "EtherNet/IP Adapter" system section are available.

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.4.0. to 1.16.0.

Optimisations

The module's RAM memory has been increased.

Hardware modifications PSSu H m F DP SN SD**Modifications in Version 3.0**

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

Modifications have no effect on the function

Hardware modifications PSSu H m F DPsafe SN SD**Modifications in Version 3.0**

The hardware supports the firmware version 1.7.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Hardware modifications PSSu H m F DP ETH SD**Modifications in Version 3.0**

The hardware supports the firmware version 1.5.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.5.0. to 1.16.0.

Optimisations

Modifications have no effect on the function

Hardware modifications PSSu H FS SN SD**Modifications in Version 3.0**

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.2.0. to 1.16.0.

Optimisations

Modifications have no effect on the function

Hardware modifications PSSu H FS SN SD-R**Changes in Version 4.0**

The hardware supports the firmware versions 1.6.1, 1.8.0, 1.10.0, 1.12.1 and 1.15.0.

Optimisations

The device is now less sensitive to EMC interference.

Modifications in Version 3.0

The hardware supports the firmware versions 1.5.0, 1.6.1, 1.8.0, 1.10.0, 1.12.1 and 1.15.0.

Optimisations

The C-rail connection is no longer available.

Hardware modifications PSSu H FS SN SD-T**Modifications in Version 3.0**

The hardware supports the firmware version 1.4.0. to 1.16.0.

Optimisations

The C-rail connection is no longer available.

Modifications in Version 2.0

The hardware supports the firmware version 1.4.0. to 1.16.0.

Optimisations

Modifications have no effect on the function

Firmware modifications



NOTICE

With firmware versions below 1.12.1 a restriction of the safety function may occur. This restriction is established when

- process data are transferred from the FS resource to a communication partner **and**
- in the communication partner, the process data are used for safety-related tasks **and one of the two** following constructions has been used:

- The FS control block FS_SafeEthernetConnection from the PAS4000- library is used for the safe transfer of safety-related process data.
- or**
- The system section ST SafetyNET p, ST module bus or a system section for external ST communication is used to transfer the safety-related process data. Following the black channel principle (IEC 61508-2, section 7.4.11) the FS process data to be transferred are safeguarded against transfer errors by additional measures (implemented in the user program).

If your application is affected, we recommend that you update the firmware of the PSSu head modules to the latest firmware version.



NOTICE

With firmware versions below 1.6.0, the safety function may be restricted in the following cases:

- If no FS input modules and no FS output modules are used on a PSSu head module with a firmware version below 1.6.0.
- If FS input modules and FS output modules are present on a PSSu head module with a firmware version below 1.6.0, but neither the PSSu head module itself nor any other PSSu head module within the project both reads the FS inputs and writes to the FS outputs.

If your application is affected we recommend that you update the firmware of the PSSu head modules to the latest firmware version.

**NOTICE**

With firmware version 1.6.0, the safety function may be restricted if the plant has not been commissioned in accordance with the check lists in the PSS 4000 Safety Manual and

- In at least two programs on a PSSu head module (any firmware version), the same digital FS input is read on a different PSSu system (firmware version 1.6.0)
- or in a PSSu head module (any firmware version), digital FS outputs are written on a different PSSu system (firmware version 1.6.0) of performance class PLC or Multi
- or with the same PI variable on a PSSu head module (any firmware version), several digital FS outputs are written on a different PSSu system (firmware version 1.6.0) of performance class I/O.

If your application is affected we recommend that you update the firmware of the PSSu head modules to the latest firmware version.

**NOTICE**

A project that has been created with PAS4000 Version 1.1.x, 1.2.x or 1.3.0 may no longer be used. The project must be opened and built using PAS4000 from Version 1.3.1. The project is migrated as it is opened, i.e. it is fully converted into the new version. If the project is migrated from Version 1.1.x or 1.2.x, the check sum "FS Project" is changed as it is built. A project that has been built with PAS4000 from Version 1.3.1 cannot be run on devices with a firmware version older than 1.3.0. Before downloading the project, therefore, the firmware for all the devices in the project must be updated to a firmware version that is compatible with the used PAS4000 version (see table).

Compatibility

		Firmware version					
		1.1.x	1.2.x	1.3.x	1.4.x	1.5.x	1.6.x ... 1.16.x
PAS4000 version	1.3.x	---	---	◆	◆	◆	◆
	1.4.x	---	---	◆	◆	◆	◆
	1.5.x	---	---	◆	◆	◆	◆
	1.6.x	---	---	◆ ²⁾	◆ ²⁾	◆ ^{1) 2)}	◆
	... 1.16.x						

Versions marked with a diamond symbol (◆) are compatible.

- ▶ Within projects, devices whose firmware version is compatible with the used PAS4000 version are interchangeable. In other words, from firmware version 1.3.0, a defective device within a project can be replaced by a device with a newer firmware version.

- ▶ With PAS4000, online actions can be executed on all devices with compatible firmware versions.
- ▶ Once a project has been opened with a newer PAS4000 version it may no longer be opened using older PAS4000 versions.
- ▶ ¹⁾ If a project only has one device, whose firmware version is 1.5.x, and the firmware version of the device in the project is updated to 1.6.0 or later, the check sum "FS Device Project" and the check sum "FS Project" will change.
- ▶ ²⁾ If a project contains a device with a Diagnostic Server and the project is built with PAS4000 from Version 1.6.x, then the device with the Diagnostic Server must at least have firmware version 1.6.0.
- ▶ With PAS4000 Version 1.11.4 or older, if the firmware on a device without naming data is updated from a version older than 1.12.0 to Version 1.12.0 or newer, the IP address of the device may change. As a result, the confirmation message will not be displayed even though the firmware update has been successful; it takes a long time before you can close the dialogue box.
- ▶ On a PSS 4000-operable device from a third-party manufacturer, if the firmware is updated from a version older than 1.12.0 to Version 1.12.0 or newer, then naming must be performed again.

Please note:

- ▶ We recommend that all devices in a project are operated using the same firmware version.
- ▶ If a project uses devices with different firmware versions, the project should be built using the PAS4000 version that corresponds to the project's most recent firmware version or a newer version of PAS4000. This is the only way to ensure that all entries in the diagnostic list and diagnostic log are displayed correctly.
Exception: If a project is built with PAS4000 Version 1.6.0 or a later version, some diagnostic messages for devices up to firmware version 1.5.1 will not be displayed correctly.

System sections available in the products

Product	FS Resource	ST Resource	FS Module Bus	ST Module Bus	FS SafetyNET p RTFN	ST SafetyNET p RTFN	IP Connections	PROFIBUS-DP Slave	PROFIBUS-DP Slave with PROFIsafe	Ethernet/IP Adapter	PROFINET IO DEVICE	Diagnostic Server	OPC Server (classic)	OPC Server UA
PSSu H PLC1 FS DP SN SD	◆	◆	◆	◆	◆	◆	◆	◆	---	---	---	---	---	---
PSSu H PLC1 FS SN SD	◆	◆	◆	◆	◆	◆	◆	---	---	◆ ¹⁾	◆ ¹⁾	---	---	---
PSSu H m F DP SN SD	◆	---	◆	◆	◆	◆	◆	◆	---	---	---	---	---	---
PSSu H m F DPsafe SN SD	◆	---	◆	◆	◆	◆	◆	---	◆	---	---	---	---	---
PSSu H m F DP ETH SD	◆	---	◆	◆	---	---	◆	◆	---	---	---	---	---	---
PSSu H FS SN SD	---	---	◆	◆	◆	◆	---	---	---	---	---	---	---	---
PSS67 IO1 16FDI	---	---	◆	◆	◆	◆	---	---	---	---	---	---	---	---
PSS 4000 firmware for PMI 5 series	---	---	---	---	---	---	---	---	---	---	---	◆	◆	◆
PSS 4000 firmware for PMI v5 series	---	---	---	---	---	---	---	---	---	---	---	◆	---	◆
PSS 4000 firmware for PC	---	---	---	---	---	---	---	---	---	---	---	◆	◆	◆

¹⁾ Although both system sections for external communication are available on the PSSu H PLC1 FS SN SD, only one system section can be used at a time.

Changes in Version 1.16.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 5 series	◆
PMI v5 series	◆

Note on installing the PSS 4000 Firmware for PC:

The installation of the PSS 4000 Firmware for PC on the Japanese or Chinese version of Windows 8 is not possible.

When the PSS 4000 Firmware for PC is to be installed on the Chinese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.1 first. To do this, please use the URL address "<https://www.microsoft.com/zh-cn/download/details.aspx?id=40773>". When the PSS 4000 Firmware for PC is to be installed on the Japanese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.2 first. To do this, please use the URL address "<https://www.microsoft.com/ja-JP/download/details.aspx?id=42642>".

Note regarding the firmware update on devices in the PMI v5 series:

The firmware on devices in the PMI v5 series cannot be updated using PAS4000.

New functions - General

- ▶ New IP67 device
The device PSS67 IO1 16FDI is supported.
- ▶ New PSSu module
The module PSSu K F EI CV-T is supported.

New functions - FS/ST resource

- ▶ IEC61131 programming: Application parameters
Application parameters can be used to adapt PSS 4000 projects to a plant's specific requirements without changing the user program. All application parameters and their values are listed. If the PSS 4000 project is to be adapted to a plant's requirements, the values of the application parameters are changed and the project rebuilt. The check sum "FS project" is changed in the process. But there is also a check sum "FS project without application parameters", which remains unchanged. There is also a check sum that exclusively contains the values of the application parameters. This can make it easier to have the project approved again.

Optimisations - General

- ▶ Control and force variables
When the "Control variables" or "Force variables" action is performed very frequently on a head module, a situation in which the head module fails to react to online actions or access from the OPC Server no longer arises.
(31363)

- ▶ **Project download to PMI**
When a PMI was configured as an OPC UA Server and the port of the OPC UA Server was being used by another service, the project would still be downloaded to the PMI but the diagnostic log would show that the download had failed (S-9000-0038 and S-9000-0015). This problem has now been rectified.
(31370)
- ▶ **PMI not found during network scan**
When a PMI was disconnected from the network and then reconnected, it could no longer be found when the network was scanned in PAS4000. This problem has now been rectified.
(30258)

Optimisations - IP connections

- ▶ **Generate debug data for Pilz**
When the "IP connections" system section was used, in rare cases an internal error occurred on an IP connection when generating debug data (diagnostic message S-0911-0003). This problem has now been rectified.
(31489)

Optimisations - PROFINET IO DEVICE

- ▶ **Sending PROFINET process data**
PROFINET process data is now no longer sent via both network connections when only one is used for PROFINET communication.
(31563)

Optimisations - OPC Server classic

- ▶ **Polling check sums**
When a Client on the OPC Server polls the check sum "FS project" and not all of the devices in the project are accessible, the response time is now shorter.
(31549)

Optimisations - OPC Server UA

- ▶ **Installation on a PMI**
The certificates for authentication of the PSS 4000 OPC Server UA and PSS 4000 Diag Control were regenerated each time the PSS 4000 firmware was installed and updated on a PMI. This no longer happens. The existing certificates are no longer overwritten.
(31539)
- ▶ **Authentication with remote installation**
When the PSS 4000 OPC Server UA rejects a Client's certificate it generates a file called "<CN>@<DC>_[Fingerprint].der" in the directory "<...>\pki\rejected". There were two problems when generating the file:
 - **Special characters**
Previously the name that was generated did not conform to the specifications. The specifications are now met and any characters in CN and DC that are not in the range A ... Z, a ... z and 0 ... 9 are now replaced with an underscore.
(31476)

- CN and DC with long name
When the file name including path is longer than 260 characters, the certificate file is not saved. To ensure that this generally no longer happens, CN and DC are now truncated after 64 characters.
(31478)

Known problems - General

- ▶ Write protection on the SD card
Even if a device's SD card is write-protected, a project download to the device and device naming can still be performed.
(31696)
- ▶ Project download
When a PSS4000 project contains many devices and a large number of these devices are not accessible during project download, then the download to the available devices may fail.
(31465)
- ▶ Major FS error after download
In very rare cases, the cycle time may be exceeded (S-0100-0037) after a project download, leading to a major FS error. This could even occur up to 6 hours after the event.
Remedy: After a project download, restart the devices or run the reboot command on the devices.
(31249, 31564)

Known problems - FS/ST resource

- ▶ Major FS error due to long FS tasks
In rare cases, FS tasks with an execution time of more than 1 second result in a major FS error.
(31557)

Known problems - FS/ST module bus

- ▶ Generate debug data for Pilz
In rare cases, the module bus cycle time may be exceeded when generating debug data (diagnostic message S-0120-0002).
(31609)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)
- ▶ Project download
When the OPC Server classic is used in projects containing many devices, the project download may fail.
Remedy: Before the project download, stop all the FS and ST resources in the project (run "Scan project" in the Online Network Editor, then right-click on a device and stop the resources) and close all OPC Clients.
(30587)

Known problems - OPC Server UA

▶ Client authentication

When a Client's certificate is copied to the "\trusted" directory and thereafter the Client attempts to establish a connection very quickly (within 20 seconds), the PSS 4000 OPC Server UA rejects the Client's certificate.

Remedy: Try to establish the connection again.
(31646)

▶ Internal error due to different firmware versions

When the PSS 4000 OPC Server UA is used in a project, where devices with firmware versions < 1.15.x are present, then the internal error S-0101-0080 can occur on these devices.

Remedy: Perform a firmware update of all devices in the project to at least firmware version 1.15.x.
(31703)

Changes in Version 1.15.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	---
PMI 5 series	---
PMI v5 series	---

Optimisations - General

- ▶ Communication via SafetyNET p/ETH interface
The stability of communication via the SafetyNET p/ETH interface of PSSu systems has been optimised.
(31498)

Changes in Version 1.15.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 5 series	◆
PMI v5 series	◆

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When the PSS 4000 Firmware for PC is to be installed on the Chinese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.1 first. To do this, please use the URL address "<https://www.microsoft.com/zh-cn/download/details.aspx?id=40773>". When the PSS 4000 Firmware for PC is to be installed on the Japanese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.2 first. To do this, please use the URL address "<https://www.microsoft.com/ja-JP/download/details.aspx?id=42642>".

New functions - General

- ▶ New system section
There is a new system section: "PSS 4000 OPC Server UA".
- ▶ 4 OPC Servers
A PSS 4000 project may now have a maximum of 4 OPC Servers. These may be PSS 4000 OPC Servers (classic) and PSS 4000 OPC Servers UA.
- ▶ UDP communication using blocks
Data transfer controlled through the user program via the User Datagram Protocol (UDP) is supported.
- ▶ New PSSu module
The module PSSu K F EI CV is supported.

New functions - FS/ST resource

- ▶ IEC61131 programming: Permitted online changes to functions
In the declaration part of functions, local variables (VAR) may now also be changed. (29438)

Optimisations - FS/ST module bus

- ▶ Diagnostic message S-0101-0011
EMC interference on the FS module bus has led to a sporadic internal error (diagnostic message S0101-0011). This problem has now been rectified. (30016)

Optimisations - PROFINET IO DEVICE

- ▶ Major FS error after project download
When the system section PROFINET IO DEVICE is used, in rare cases a project download resulted in a major FS error (diagnostic message S-9001-0030). This error no longer occurs.
(30056)
- ▶ High network load
When using the system section PROFINET IO DEVICE on a PSSu system, the PSSu system will no longer send unnecessary ICMP telegrams. The network load will no longer be increased unnecessarily.
(31395)

Optimisations - OPC Server classic

- ▶ OPC Server crashes after project download
A project download no longer causes the OPC Server on the PC to crash.
(30564)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)
- ▶ Project download
When the OPC Server classic is used in projects containing many devices, the project download may fail.
Remedy: Before the project download, stop all the FS and ST resources in the project (run "Scan project" in the Online Network Editor, then right-click on a device and stop the resources) and close all OPC Clients.
(30587)

Changes in Version 1.14.3

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	---
PMI 5 series, PMI v5 series	---

Optimisations - FS/ST resource

- ▶ Access to resource global variables
When resource global variables have been written in more than one FS task, an internal error occurred in rare cases and the device switched to a safe condition. This problem has now been rectified.
(30563)

Changes in Version 1.14.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	---
PSSu head modules: R-type	---
PC	◆
PMI 5 series, PMI v5 series	---

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Optimisations - OPC Server classic

- ▶ Data access
In projects with many devices the PSS 4000 OPC Server displayed only the "Quality bad" status instead of the data. This problem has now been rectified.
(30433, 30510)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.14.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 5 series, PMI v5 series	◆

Note on installing the PSS 4000 Firmware for PC:

The installation of the PSS 4000 Firmware for PC on the Japanese or Chinese version of Windows 8 is not possible.

When the PSS 4000 Firmware for PC is to be installed on the Chinese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.1 first. To do this, please use the URL address "<https://www.microsoft.com/zh-cn/download/details.aspx?id=40773>". When the PSS 4000 Firmware for PC is to be installed on the Japanese version of Windows 7, it is necessary to install Microsoft .NET Framework Version 4.5.2 first. To do this, please use the URL address "<https://www.microsoft.com/ja-JP/download/details.aspx?id=42642>".

New functions - General

- ▶ Bind device projects to devices
This function is used to guarantee that a project can only be executed on devices that have previously been prepared using the appropriate device key for the project. Plant builders (OEMs) in particular, who use the PSS 4000 devices in their plants and sell them on to their customers, can use this function to guarantee that their customers always buy their PSS 4000 devices from them.
- ▶ PMI v507 and PMI v512
The PSS 4000 firmware is now also available for the devices PMI v507 and PMI v512.

Optimisations - General

- ▶ Information about SNTP in the PSS 4000 namespace
The value of the namespace element `pss4000.net.<device name>.Device.Network.SNTP` is now correct. It contains information as to whether the device is configured as an SNTP Server.
(29809)

Optimisations - FS/ST module bus

- ▶ System behaviour when there is an error on the module PSSu K F FCU
The firmware of the module PSSu K F FCU has been changed so that if there is an error on one FS output on the module, all FS outputs on the PSSu system now switch to a safe condition in all cases. This is also the case when a PSSu system is restarted or reset without rectifying the cause of the error.
(25455)

Optimisations - FS/ST resource

- ▶ Blocks MIN, MAX and MUX
With the blocks MIN, MAX and MUX, the number of used I-variables *IN1 ... INn* can continue to be determined by the user. However, the I-variables must now be used in consecutive ascending order.
(21748)
- ▶ Values for variable watch and dynamic program display
During a block's variable watch or dynamic program display, if there are a great many variables polled, which have a data type requiring more than 1 bit of memory space, then values for all variables are now watched.
(29826)
- ▶ Internal fault on a device during online changes
If the FS resource is stopped or a project download is executed while an online change is active on the FS resource, an internal fault on the device no longer occurs.
(29786)
- ▶ Block "PssGetChecksumFSProject"
If the block "PssGetChecksumFSProject" was used on a device and this device had connection problems with other devices in the project, in rare cases a project download to the device was no longer possible. This fault has been rectified.
(29844)
- ▶ Major FS error when using array elements or structure elements as VAR_IN_OUT
In rare cases, a major FS error occurred when individual array elements or structure elements were used in VAR_IN_OUT type variables. This fault has now been rectified.
(29970)

Optimisations - FS/ST SafetyNET p RTFN

- ▶ VLAN 0
With SafetyNET p communication, Ethernet frames are no longer tagged with VLAN 0 because this designation led to problems on many infrastructure components (e.g. switches).
(30044)

Optimisations - IP connections

- ▶ Modbus/TCP connection
 - The data received from the Modbus Server is now read correctly, even if Function Code FC 03 or FC 04 is used, the "Optimise transmission with multiple telegrams" option is activated and more than 125 registers are read.
(29655)
 - In rare cases, Modbus/TCP connections could not be re-established when a project download was executed several times in succession. This fault has now been rectified.
(29976)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.13.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 5 series	◆

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New functions - General

▶ New system section

There is a new system section "PROFINET IO DEVICE".

The system section is available only on new head modules PSSu H PLC1 FS SN SD(-T)(-R). You can recognise such a device by the fact that it has a common status LED for PROFINET and Ethernet/IP. The status LED is labelled with "BF" for PROFINET and "NS" for Ethernet/IP.

New functions - FS/ST resource

▶ Online changes

Online changes are supported. After a project download, individual POU's in the user program can be changed (application part and temporary variables in the declaration part), without the need to repeat the download. The POU's are transferred directly to the RAM of the affected devices.

Online changes may be disabled for applications in accordance with the code NFPA 85.

New functions - FS/ST module bus

▶ Pulse stretching on PSSu K F FCU

"Pulse stretching" mode on the PSSu module PSSu K F FCU is supported.

New functions - FS/ST SafetyNET p RTFN

▶ SafetyNET p protocol version 2

SafetyNET p protocol version 2 is supported.

▶ Resumption of FS communication with SafetyNET p protocol version 2

Communication via FS SafetyNETp RTFN is resumed automatically after communication errors if the FS SafetyNET p waiting period has elapsed and the fault has been rectified and/or the error is no longer present. The FS SafetyNET p waiting period can be configured.

New functions - OPC Server classic

- ▶ Windows 8
Operation of the PAS4000 firmware for PC (OPC Server) under Windows 8 is supported.

Optimisations - General

- ▶ Line break in version number
If one or more line breaks were entered with the version number in the project properties in PAS4000, the project download could fail or the device project not start up. This error no longer occurs.
If the problem occurs on an older unit, a firmware update to Version 1.13.0 followed by an original reset may help.
(28971, 29031)
- ▶ Major FS error after project download
In rare cases a project download resulted in a major FS error (diagnostic message S-0101-0091, followed by S-0100-0037). This error no longer occurs.
(28183)
- ▶ SD card
Detection of the SD card has been improved. The "SD CARD" LED now lights up red if the SD card is not actually inserted or if it is defective.
(29246)

Optimisations - FS/ST resource

- ▶ Cycle time when using non-volatile variables
The cycle time of FS tasks and ST tasks that use non-volatile variables (attribute RETAIN PERSISTENT) has been optimised.
(28677)
- ▶ Major FS error when cycle time is exceeded
In rare cases a major FS error occurred (diagnostic message S-0100-0037) if a task cycle time was exceeded. This error no longer occurs.
(28430)
- ▶ Block "pssGetChecksumFs"
A device no longer fails if the user program uses the block "pssGetChecksumFs" and the device is restarted or the device is in continuous operation for more than 30 days.
(28940)
- ▶ Forcing global I-PI variables
If an I-PI variable is declared as a global variable and is used in several tasks, then during forcing its value is now set to the required value in all tasks and not just in one task.
(28473)
- ▶ S-0100-0033 after project download
If only Multi programming was used in a project and blocks were assigned to both the FS and ST resource, plus the system control block pssGetFsProjectCrc was only assigned to the ST resource, then the diagnostic message S-0100-0033 was displayed after download. This error no longer occurs.
(29195)

Optimisations - FS/ST module bus

- ▶ Internal error due to the module PSSu K F EI
In rare cases, an internal error occurred after a cold start, reset or download (diagnostic message S-0701-0005) if the module PSSu K F EI was used in a PSSu system. This error no longer occurs.
(28280)

Optimisations - IP connections

- ▶ Device does not start
If IP connections were configured for a PSSu system and data was sent to the device while booting, the device did not start up fully (LEDs on the left side of the head module were dark). This error no longer occurs.
(28665)

Optimisations - OPC Server classic

- ▶ Update rate
Data on the OPC Server can now be updated a maximum of every 200 ms, rather than every 500 ms as before. The update rate is configured in the Client.
(28934)

Known problems - FS/ST module bus

- ▶ System behaviour in the event of an error on the module PSSu K F FCU
If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.
(25455)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.12.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 5 series	◆

Optimisations - General

- ▶ Data exchange of FS process data in accordance with the black channel principle (IEC 61508-2, section 7.4.11)
A FS process datum that has been safely recorded or formed in a safety system of the PSS4000 automation system can now be transferred in accordance with the black channel principle via a non safety-related communication path (e.g. system section ST SafetyNET p, IP connections, PROFIBUS-DP-Slave, Ethernet/IP adapter), to be re-used in the communication partner for safety-relevant tasks. It is the responsibility of the user to protect the transfer from all kinds of transfer errors. As a rule, this is done by implementing suitable measures in the user program. Proof of safety of such a construction also has to be produced by the user.
The FS control block FS_SafeEthernetConnection from the PAS4000 library can be used in accordance with its intended use.
(28710)

Optimisations - IP connections

- ▶ Major FS error when communication partner is missing
In rare cases, a major FS error can suddenly occur when operation is running (diagnostic message S-0100-0037) if the communication partner of an IP connection has not been connected since the control system started up. This error no longer occurs.
(28286)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)

Known problems - FS/ST resource

- ▶ Major FS error when cycle time is exceeded
In rare cases a major FS error occurs (diagnostic message S-0100-0037) if a task cycle time is exceeded.
Remedy: Execute a cold start/reboot command.
(28430)

Known problems - FS/ST module bus

- ▶ System behaviour in the event of an error on the module PSSu K F FCU
If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system

is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.

(25455)

▶ Internal error due to the module PSSu K F EI

In rare cases, an internal error occurs after a cold start, reset or download (diagnostic message S-0701-0005) if the module PSSu K F EI is used in a PSSu system.

Remedy: Cold start the device.

(28280)

Known problems - PROFIBUS-DP Slave with/without PROFIsafe

▶ LED "BF" flashes red

In rare cases, the "BF" LED flashes red after a cold start, reset or download and no communication is possible via Profibus. There is no diagnostic message.

Remedy: Reset the device.

(28024)

Known problems - OPC Server classic

▶ Write access to Multi programming parameter points

The OPC Server can write to ST parameter points in the user program, although this is not permitted.

(22108)

Changes in Version 1.12.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 5 series	◆

New functions - General

- ▶ Log entry when controlling ST variables
An entry is no longer made in the diagnostic log when controlling ST variables.
(22640)
- ▶ IP address of programming interface
If a PC in a project is both a PAS4000-PC (PC on which PAS4000 is installed) and a PSS 4000-PC (PC with OPC Server), the IP address of the programming interface (PAS4000-PC) will also be used as the IP address for the PSS 4000-PC.

New functions - FS/ST module bus

- ▶ New PSSu module
The module PSSu K F EI is supported.

Optimisations - General

- ▶ Internal error on large user programs
An internal system section error used to occur sporadically after downloading a large user program with a total of more than 9000 programs, FB instances, functions and IEC 61131 basic block instances. This error no longer occurs.
(27570)
- ▶ Auto-IP mechanism
The definition of the default IP address has been changed so that two devices do not normally obtain the same IP address.
- ▶ Firmware update
The firmware update no longer fails if it is performed on a device for which device naming has never been performed.
(19748)
- ▶ Firmware update when operation is running
With PAS4000 from Version 1.2.0, a firmware update no longer fails if it is started while the device is running with a high load.
(26857)
- ▶ Download when operation is running
With PAS4000 from Version 1.2.0, a project download no longer fails if it is started while the device is running with a high load.
(26644)

- ▶ **Communication via SafetyNET p/ETH interface**
In rare cases an error used to occur in which communication via the SafetyNET p/ETH interface of a PSSu system was aborted and not restored. This has now been rectified.
(26401, 26649)
- ▶ **Diagnostic message S-0100-0037**
When connection to SafetyNET p was lost, in rare cases a major FS error used to occur (diagnostic message S-0100-0037) when ST data was processed by a device's FS resource and transferred to an FS module on another device. This error no longer occurs.
(27515)
- ▶ **Real-time clock on PSSu systems**
If a PSSu system is separated from the supply voltage for so long that the buffer for the real-time clock is depleted, the device time is now set to the defined date "2009-01-01" when the supply voltage is switched back on.
(27907)

Optimisations - FS/ST resource

- ▶ **Variables with the attribute RETAIN PERSISTENT**
When a project with non-volatile variables is downloaded (attribute RETAIN PERSISTENT), these variables are now also set to their initial values, even if only the project name has changed.
(27434)

Optimisations - FS/ST module bus

- ▶ **Internal error on electronic modules when FS module bus cycle time is 30 ms**
When the cycle time of the FS module bus is 30 ms, a warning is now issued when the project is built, which alerts users to the reduced availability of the control system with this cycle time and recommends a remedy.
(22992, 23311, 23325, 23439)
- ▶ **Module PSSu K F FAU**
Problems that used to occur rarely when operating the module PSSu K F FAU with the PSEnvip R/E and tool shapes from tool classes 2 and 3 have been rectified.
(27350)

Known problems - General

- ▶ **Starting/restarting a project**
It may take more than 1 minute to start/restart a larger project.
(6160)

Known problems - FS/ST resource

- ▶ **Major FS error when cycle time is exceeded**
In rare cases a major FS error occurs (diagnostic message S-0100-0037) if a task cycle time is exceeded.
Remedy: Execute a cold start/reboot command.
(28430)

Known problems - FS/ST module bus

- ▶ System behaviour in the event of an error on the module PSSu K F FCU
If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.
(25455)
- ▶ Internal error due to the module PSSu K F EI
In rare cases, an internal error occurs after a cold start, reset or download (diagnostic message S-0701-0005) if the module PSSu K F EI is used in a PSSu system.
Remedy: Cold start the device.
(28280)

Known problems - IP connections

- ▶ Major FS error when communication partner is missing
In rare cases, a major FS error can suddenly occur when operation is running (diagnostic message S-0100-0037) if the communication partner of an IP connection has not been connected since the control system started up.
Remedy: Establish a connection to the communication partner and execute a cold start/reboot command or delete the configuration of the IP connection and execute a cold start/reboot command.
(28286)

Known problems - PROFIBUS-DP Slave with/without PROFI-safe

- ▶ LED "BF" flashes red
In rare cases, the "BF" LED flashes red after a cold start, reset or download and no communication is possible via Profibus. There is no diagnostic message.
Remedy: Reset the device.
(28024)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.11.2

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	---
PSSu head modules: R-type	---
PC	◆
PMI 5 series	◆

Optimisations - General

Modifications have no effect on the function

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ No communication via SafetyNET p/ETH interface
In rare cases, communication via the SafetyNET p/ETH interface of a PSSu system breaks down and is not restored.
Remedy: Restart device.
(26649)
- ▶ Download during operation
The project download may fail if a device is operated with a high load, e.g.
 - with large user programs and short task cycle times,
 - where there is high data traffic to the OPC Server
 - or where there is a high load on the SafetyNET p/ETH interface.
 Remedy: Before downloading the project, stop the FS and ST resources or delete the device project on the device.
(26644)
- ▶ Update firmware during operation
The firmware update may fail if a device is operated with a high load, e.g.
 - with large user programs and short task cycle times,
 - where there is high data traffic to the OPC Server
 - or where there is a high load on the SafetyNET p/ETH interface.
 Remedy: Before updating the firmware, stop the FS and ST resources or delete the device project on the device.
(26857)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)

- ▶ Internal error on large user programs

An internal system section error occurs sporadically after downloading a large user program with a total of more than 9000 programs, FB instances, functions and IEC 61131 basic block instances.

(27570)

Known problems - FS/ST resource

- ▶ Variables with the attribute RETAIN PERSISTENT

When downloading a project containing non-volatile variables (attribute RETAIN PERSISTENT), these variables are not set to their initial values as they should be, if there are already non-volatile variables on the devices whose full name (FQN) is the same as the new variables, except for the project name.

Remedy: Perform a cold reset on the devices after downloading.

(27434)

Known problems - FS/ST module bus

- ▶ Internal error on electronic modules with FS module bus cycle time of 30 ms

If the cycle time of the FS module bus is 30 ms, in rare cases the diagnostic message S-0101-0019 is displayed for the FS modules. For most FS modules, the diagnostic message is deactivated again after 5 seconds; however, for FS output modules the diagnostic message may remain permanently active. The outputs on the FS output modules are in a safe state (diagnostic message S-0700-0007).

Remedy: Reduce the task cycle times for blocks that write to FS outputs, so that a cycle time of less than 30 ms is achieved for the FS module bus. The cycle time of the FS module bus is displayed when the project is built.

(22992, 23311, 23325, 23439)

- ▶ System behaviour in the event of an error on the module PSSu K F FCU

If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.

(25455)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points

The OPC Server can write to ST parameter points in the user program, although this is not permitted.

(22108)

Changes in Version 1.11.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	---
PMI 5 series	---

Optimisations - General

- ▶ Internal error on large user programs
An internal system section error could occur sporadically after downloading a large user program. This behaviour now only occurs with a total of more than 9000 programs, FB instances, functions and IEC 61131 basic block instances; with a total of 4000 it no longer occurs.
(27341)

Optimisations - FS/ST resource

- ▶ Diagnostic message S-0101-0091
There was a sporadic error that led to the internal error S-0101-0091 when non-volatile variables of type VAR, VAR_INPUT or VAR_OUTPUT were accessed in two FS tasks on a head module of the PLC performance class. This error has been rectified.
(27326)
- ▶ Major FS error on long FS cycle times
In firmware version 1.11.0, a major FS error occurred on the device sporadically with FS cycle times of more than 100 ms. This error has been rectified.
(27412)

Optimisations - FS/ST module bus

- ▶ Internal error on 16 byte modules
After downloading or booting, the internal error S-0101-0093 no longer occurs when 16 FS byte modules or 16 ST byte modules are configured for the PSSu system.
(27428)

Optimisations - FS/ST SafetyNET p RTFN

- ▶ Diagnostic message S-0908-0004
There was a sporadic error that caused the diagnostic message S-0908-0004 to be displayed and the SafetyNET p connection to be constantly interrupted. This error has been rectified.
(26835)
- ▶ Interruption to the FS SafetyNET p connection
After a single interruption to an FS SafetyNET p connection (< 30 s), the connection is now restored automatically in all cases.
(24518)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ No communication via SafetyNET p/ETH interface
In rare cases, communication via the SafetyNET p/ETH interface of a PSSu system breaks down and is not restored.
Remedy: Restart device.
(26649)
- ▶ Download during operation
The project download may fail if a device is operated with a high load, e.g.
 - with large user programs and short task cycle times,
 - where there is high data traffic to the OPC Server
 - or where there is a high load on the SafetyNET p/ETH interface.Remedy: Before downloading the project, stop the FS and ST resources or delete the device project on the device.
(26644)
- ▶ Update firmware during operation
The firmware update may fail if a device is operated with a high load, e.g.
 - with large user programs and short task cycle times,
 - where there is high data traffic to the OPC Server
 - or where there is a high load on the SafetyNET p/ETH interface.Remedy: Before updating the firmware, stop the FS and ST resources or delete the device project on the device.
(26857)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ Internal error on large user programs
An internal system section error occurs sporadically after downloading a large user program with a total of more than 9000 programs, FB instances, functions and IEC 61131 basic block instances.
(27570)

Known problems - FS/ST resource

- ▶ Variables with the attribute RETAIN PERSISTENT
When downloading a project containing non-volatile variables (attribute RETAIN PERSISTENT), these variables are not set to their initial values as they should be, if there are already non-volatile variables on the devices whose full name (FQN) is the same as the new variables, except for the project name.
Remedy: Perform a cold reset on the devices after downloading.
(27434)

Known problems - FS/ST module bus

- ▶ Internal error on electronic modules with FS module bus cycle time of 30 ms
If the cycle time of the FS module bus is 30 ms, in rare cases the diagnostic message S-0101-0019 is displayed for the FS modules. For most FS modules, the diagnostic message is deactivated again after 5 seconds; however, for FS output modules the diagnostic message may remain permanently active. The outputs on the FS output modules are in a safe state (diagnostic message S-0700-0007).
Remedy: Reduce the task cycle times for blocks that write to FS outputs, so that a cycle time of less than 30 ms is achieved for the FS module bus. The cycle time of the FS module bus is displayed when the project is built.
(22992, 23311, 23325, 23439)
- ▶ System behaviour in the event of an error on the module PSSu K F FCU
If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.
(25455)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.11.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 5 series	◆

Optimisations - General

- ▶ Availability
Several errors have been rectified, which could lead to availability problems on start-up and during operation, particularly with a heavy system load and large user programs.
(24878, 25493, 25733, 26206, 26391, 26579, 26772)
- ▶ Downloading projects with more than 4 devices
The download of projects with more than 4 devices no longer fails when a project is already being executed on the devices or when some of the devices are inaccessible.
(21834)
- ▶ Starting up large device projects
An error has been rectified, which prevented large device projects from starting up after the firmware had been updated.
(27170)

Optimisations - FS/ST module bus

- ▶ Diagnostic message S-0101-0081
On start-up, the internal error on the head module (S-0101-0081) is no longer displayed when the 65th digital FS output is exactly the first output on the last digital FS output module.
(26692)
- ▶ Analogue FS input modules
If the analogue digital converter of an analogue FS input module is defective, a diagnostic message now appears.
(26664)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ No communication via SafetyNET p/ETH interface
In rare cases, communication via the SafetyNET p/ETH interface of a PSSu system breaks down and is not restored.
Remedy: Restart device.
(26649)
- ▶ Download during operation
The project download may fail if a device is operated with a high load, e.g.
 - with large user programs and short task cycle times,

- where there is high data traffic to the OPC Server
- or where there is a high load on the SafetyNET p/ETH interface.

Remedy: Before downloading the project, stop the FS and ST resources or delete the device project on the device.

(26644)

► Update firmware during operation

The firmware update may fail if a device is operated with a high load, e.g.

- with large user programs and short task cycle times,
- where there is high data traffic to the OPC Server
- or where there is a high load on the SafetyNET p/ETH interface.

Remedy: Before updating the firmware, stop the FS and ST resources or delete the device project on the device.

(26857)

► Firmware update

The firmware update may fail if it is performed on a device for which device naming has never been performed.

Remedy: Perform device naming before updating the firmware.

(19748)

Known problems - FS/ST module bus

► Internal error on electronic modules with FS module bus cycle time of 30 ms

If the cycle time of the FS module bus is 30 ms, in rare cases the diagnostic message S-0101-0019 is displayed for the FS modules. For most FS modules, the diagnostic message is deactivated again after 5 seconds; however, for FS output modules the diagnostic message may remain permanently active. The outputs on the FS output modules are in a safe state (diagnostic message S-0700-0007).

Remedy: Reduce the task cycle times for blocks that write to FS outputs, so that a cycle time of less than 30 ms is achieved for the FS module bus. The cycle time of the FS module bus is displayed when the project is built.

(22992, 23311, 23325, 23439)

► System behaviour in the event of an error on the module PSSu K F FCU

If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.

(25455)

Known problems - FS/ST SafetyNET p RTFN

► Interruption of the FS SafetyNET p connection

In the event of a single interruption of an FS SafetyNET p connection (< 30 s), in rare cases the connection may not be restored automatically and may remain permanently interrupted.

(24518)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)

Changes in Version 1.10.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 5 series	◆

Note about "PC": As Microsoft has stopped supporting Windows XP, Pilz no longer provides support for the PSS 4000 firmware under Windows XP.

New functions - FS/ST resource

- ▶ New blocks from the elementary library can be executed:
 - pssGetChecksumFsProject
 - *_BCD_TO_**
 - *_TO_BCD_**
- ▶ Memory for the user program
The separation between data and program memory has been removed. As a result the memory can be used more variably.

New functions - FS/ST module bus

- ▶ New PSSu modules
The following modules are supported:
 - PSSu K F FAU B
 - PSSu K F FAU P

New functions - IP connections

- ▶ Raw TCP
External communication via Raw TCP is supported.
- ▶ Raw UDP
For each connection with send data (transmission type "send", "send/receive") it is possible to configure whether the send operation should only occur if the send data has changed.

Optimisations - General

- ▶ No system overload due to process diagnostics
If so many process diagnostic messages occur in a short space of time that they cannot be saved quickly enough, a corresponding diagnostic message is entered in the device diagnostic list and all further process diagnostic messages are ignored.
As a result, the situation no longer arises in which communication with the device is impossible due to too many process diagnostic messages.
(16288, 17035)

- ▶ **Stable SafetyNET p connection**
The SafetyNET p basic cycle time has been limited to a maximum of 1000 ms.
As a result, the configuration of the FS and ST task cycle times can no longer lead to unstable SafetyNET p connections.
(22943, 22944, 22945, 24444)
- ▶ **Diagnostic message S-0101-0081**
The internal error on the head module (S-0101-0081) and possibly other diagnostic messages are no longer displayed on start-up, without errors being present.
(24463)
- ▶ **Diagnostic message S-0100-0037**
In rare cases, a major FS error occurred during download (diagnostic message S-0100-0037). This error no longer occurs.
(24967)
- ▶ **Diagnostic message S-0100-0019**
On PSSu systems of performance class PLC, if the supply voltage was interrupted or was too weak as the base systems were booting up, in some cases the diagnostic message S-0100-0019 was displayed when voltage was returned and the PSSu system failed to start. This no longer occurs.
(25086)
- ▶ **Diagnostic message S-0602-0001**
In rare cases, a problem occurred when cold starting or restarting an individual PSSu system with only incoming SafetyNET p connections and diagnostic message S-0602-0001 was displayed. This no longer occurs.
(25738)

Optimisations - FS/ST module bus

- ▶ **High periphery supply**
If the periphery supply on the head module is too high, a diagnostic message is now always displayed.
(25422)

Optimisations - IP connections

- ▶ **Modbus/TCP connection**
If a PSSu system receives the following data from another PSSu system via a Modbus/TCP connection, it no longer results in a self test error:
 - 8 or more O-PI variables of BOOL data type or
 - 8 or more module bus I-data of BOOL data type
(24882)

Known problems - General

- ▶ **Starting/restarting a project**
It may take more than 1 minute to start/restart a larger project.
(6160)

▶ Firmware update

The firmware update may fail if it is performed on a device for which device naming has never been performed.

Remedy: Perform device naming before updating the firmware.

(19748)

Known problems - FS/ST module bus

▶ Internal error on electronic modules with FS module bus cycle time of 30 ms

If the cycle time of the FS module bus is 30 ms, in rare cases the diagnostic message S-0101-0019 is displayed for the FS modules. For most FS modules, the diagnostic message is deactivated again after 5 seconds; however, for FS output modules the diagnostic message may remain permanently active. The outputs on the FS output modules are in a safe state (diagnostic message S-0700-0007).

Remedy: Reduce the task cycle times for blocks that write to FS outputs, so that a cycle time of less than 30 ms is achieved for the FS module bus. The cycle time of the FS module bus is displayed when the project is built.

(22992, 23311, 23325, 23439)

▶ System behaviour in the event of an error on the module PSSu K F FCU

If the module PSSu K F FCU detects an error on an FS output, all FS outputs on the PSSu system will switch to a safe condition. If a cold start or reset of the PSSu system is performed without rectifying the error, the outputs on the module PSSu K F FCU will remain in a safe condition, but all other FS output modules will switch to the condition "FS output module in RUN condition without error" and their outputs will once again switch.

(25455)

Known problems - FS/ST SafetyNET p RTFN

▶ Interruption of the FS SafetyNET p connection

In the event of a single interruption of an FS SafetyNET p connection (< 30 s), in rare cases the connection may not be restored automatically and may remain permanently interrupted.

(24518)

Known problems - OPC Server classic

▶ Write access to Multi programming parameter points

The OPC Server can write to ST parameter points in the user program, although this is not permitted.

(22108)

Changes in Version 1.9.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 5 series	◆

PSS 4000 firmware for the PMI 4 Series is no longer available.

New functions - FS/ST resource

- ▶ Ladder Diagram (LD)
On the FS and ST resource it is now also possible to execute POU's created in the "Ladder Diagram" (LD) programming language.

New functions - IP connections

- ▶ Raw UDP connections: Configuration of Time to Live (TTL)
The number of hops that a Multicast send telegram may pass can now be configured.

Optimisations - General

- ▶ Start-up behaviour and availability
The devices' start-up behaviour has been optimised. If a device has been started up once, it will also start up safely next time. Co-operation between the system sections has been optimised so that the device is more stable when there is a heavy system load (short cycle times).
Note: If a project has been created for devices with a firmware version < 1.9.0 and no longer starts on devices with a firmware version from 1.9.0 and above, please update the firmware versions of the devices in the project and try again. Use the current version of PAS4000 to do this.
- ▶ Availability on tasks with different cycle times
If the FS resource of a device is configured with tasks with a total of more than 2 different cycle times, this no longer reduces the device's availability.
(18277)

Optimisations - FS/ST module bus

- ▶ Diagnostic messages S-0102-0013 and S-0101-0011
In rare cases, the diagnostic messages S-0102-0013 and S-0101-0011 have been displayed without errors being present. This fault has now been rectified.
(23606, 23607)

Optimisations - FS/ST SafetyNET p RTFN

- ▶ Diagnostic message S-0602-0004
The diagnostic message S-0602-0004 is now safely deactivated when the underlying error has been rectified.
(23609)

Optimisations - PROFIBUS-DP Slave with PROFIsafe

- ▶ Operating state "Major FS error"
In the operating state "Major FS error", data exchange via PROFIBUS-DP (ST data) is no longer interrupted.
(22937)

Optimisations - OPC Server classic

- ▶ SIMATIC WinCC Clients
Problems with access from SIMATIC WinCC Clients to the OPC Server have been rectified.
(22124)
- ▶ SIMATIC WinCC Clients
If multiple SIMATIC WinCC Clients access data from the same device via the OPC Server and the display pages in the visualisation devices are changed, the "Quality bad" state is no longer displayed for the data for several minutes before it is updated.
(22903)
- ▶ Data type of check sum "FS Project"
The OPC Server now uses the correct data type VT_UI4 when issuing the check sum "FS Project" and no longer VT_DINT.
(23336)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ System overload due to process diagnostics
If the state of a diagnostic message changes cyclically between "active" and "inactive", a system overload may result. If this is the case it will be impossible to either communicate with or reset the device.
Remedy: Switch off the device, remove the SD card, use the PC to delete the data inside the folder "ps" on the SD card, insert the SD card and switch the device back on. This will delete the current project in the device's RAM so that the device is once again accessible.
In the project, change the condition of the basic diagnostic item so that it does not switch between "TRUE" and "FALSE" as part of each cycle, then download the project.
(16288, 17035)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ No stable SafetyNET p connection
If the FS and ST task cycle times are configured so that the SafetyNET p basic cycle time is more than 1000 ms, the SafetyNET p connection is not stable.
The effects may be as follows: online actions fail (e.g. project download), the FS SNp or ST SNp LED flashes green because the SNp connection is constantly interrupted and then re-established or the SNp connection is permanently interrupted.
(22943, 22944, 22945, 24444)

▶ Diagnostic message S-0101-0081

In rare cases, an internal error on the head module (S-0101-0081) and possibly other diagnostic messages are displayed on start-up, without errors being present.

Remedy: Restart PSSu system.

(24463)

Known problems - FS/ST module bus

▶ Internal error on electronic modules with FS module bus cycle time of 30 ms

If the cycle time of the FS module bus is 30 ms, in rare cases the diagnostic message S-0101-0019 is displayed for the FS modules. For most FS modules, the diagnostic message is deactivated again after 5 seconds; however, for FS output modules the diagnostic message may remain permanently active. The outputs on the FS output modules are in a safe state (diagnostic message S-0700-0007).

Remedy: Reduce the task cycle times for blocks that write to FS outputs, so that a cycle time of less than 30 ms is achieved for the FS module bus. The cycle time of the FS module bus is displayed when the project is built.

(22992, 23311, 23325, 23439)

Known problems - FS/ST SafetyNET p RTFN

▶ Interruption of the FS SafetyNET p connection

In the event of a single interruption of an FS SafetyNET p connection (< 30 s), in rare cases the connection may not be restored automatically and may remain permanently interrupted.

(24518)

Known problems - OPC Server classic

▶ Write access to Multi programming parameter points

The OPC Server can write to ST parameter points in the user program, although this is not permitted.

(22108)

Changes in Version 1.8.2

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	---
PMI 4 series	---
PMI 5 series	---

Optimisations - General

- Major FS error with S-0300-0012 and S-0602-0002
A sporadic error, which caused the device to switch to the operating state "Major FS error" when downloading FS process data via SafetyNET p, has been rectified. Messages S-0300-0012 and S-0602-0002 were displayed in the diagnostic list in this case. (23354)

Known problems - General

- Starting/restarting a project
It may take more than 1 minute to start/restart a larger project. (6160)
- Error after multiple download
If various projects are downloaded in succession to at least two devices, which always belong to the same PSS4000 project and communicate via SNp, the error S-0120-0018 may be displayed incorrectly.
Remedy: Reset the device that is registering the error. (21562)
- System overload due to process diagnostics
If the state of a diagnostic message changes cyclically between "active" and "inactive", a system overload may result. If this is the case it will be impossible to either communicate with or reset the device.
Remedy: Switch off the device, remove the SD card, use the PC to delete the data inside the folder "ps" on the SD card, insert the SD card and switch the device back on. This will delete the current project in the device's RAM so that the device is once again accessible.
In the project, change the condition of the basic diagnostic item so that it does not switch between "TRUE" and "FALSE" as part of each cycle, then download the project. (16288, 17035)
- No stable SafetyNET p connection
If the FS and ST task cycle times are configured so that the SafetyNET p basic cycle time is more than 1000 ms, the SafetyNET p connection is not stable.
The effects may be as follows: online actions fail (e.g. project download), the FS SNp or ST SNp LED flashes green because the SNp connection is constantly interrupted and then re-established or the SNp connection is permanently interrupted. (22943, 22944, 22945, 24444)

- ▶ **Firmware update**

The firmware update may fail if it is performed on a device for which device naming has never been performed.

Remedy: Perform device naming before updating the firmware.

(19748)

Known problems - FS/ST resource

- ▶ **Reduced availability on tasks with different cycle times**

If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.

(18277)

Known problems - OPC Server classic

- ▶ **Write access to Multi programming parameter points**

The OPC Server can write to ST parameter points in the user program, although this is not permitted.

(22108)

- ▶ **SIMATIC WinCC Clients**

If multiple SIMATIC WinCC Clients access data from the same device via the OPC Server and the display pages in the visualisation devices are changed, the "Quality bad" state may be displayed for the data for several minutes before it is updated.

(22903)

Changes in Version 1.8.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 4 series	◆
PMI 5 series	◆

New functions - General

- ▶ New system section
There is a new system section: "EtherNet/IP Adapter".

New functions - FS/ST resource

- ▶ Boolean values from the OPC Server are checked
When the OPC Server has write access to data on the user program, boolean values are now checked in the FS/ST resource to establish whether the value that is written is within the valid value range for the data type.
(22344)

New functions - FS/ST module bus

- ▶ New modules
The following modules are now supported:
 - PSSu E S 2AI RTD
 - PSSu E S 2AI RTD-T
 - PSSu E S 2AI TC
 - PSSu E S 2AI TC-T
 - PSSu E S 4DI-D
 - PSSu E S 4DO 0.5-D
 - PSSu E S 4DO 0.5-TD
 - PSSu E S 2DO 2-D
 - PSSu E S 2DO 2-TD
 - PSSu E S PD-D

Optimisations - General

- ▶ Online actions
Online actions, such as project download, display of the diagnostic list/diagnostic log, variable watch and dynamic program display, are now executed significantly faster.
(21958)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used

by the "Windows Timer" utility. If this is the case, a corresponding error message now appears.

(19066)

▶ SafetyNET p connection after project download

After a project download, reliable SafetyNET p connections are now established between devices.

(21304)

▶ Scan network after project download

After a project download, all devices are now found when the network is scanned, even if SafetyNET p connections to other devices in the network have been removed from the project.

(21769)

▶ S-0100-0010 after project download

After a project download, in rare cases the diagnostic message S-0100-0010 was displayed and the devices had to be reset. This problem has now been rectified.

(21907)

▶ Online actions after variable watch

After performing the actions "Watch variables", "Control variables" or "Force variables", in rare cases the situation could arise in which no more online actions were possible. This problem has now been rectified.

(22095)

▶ Variable watch

In rare cases, the actions "Watch variables", "Control variables" or "Force variables" suddenly became unavailable. This problem has now been rectified.

(22131)

▶ Incorrect diagnostic message

In rare cases, the error S-0101-0074 was displayed for no reason. This has now been rectified.

(22215)

▶ Installing the firmware on a PMI

When the PSS 4000 firmware is installed on a PMI, the entries required in the file pmistart.cmd are now made correctly, even if the file does not end with a line break.

(22369)

▶ Windows 7

The function of IP-based network protocols (e.g. SafetyNET p, Modbus/TCP, Raw UDP) under Windows 7 has been improved.

(22687)

Optimisations - FS/ST module bus

▶ Incorrect diagnostic message

In rare cases, the error S-0410-0008 or S-0102-0010 was displayed and the module bus stopped for no reason. This has now been rectified.

(20806, 22120)

▶ System diagnostics: PSSu E S INC 24V se(-T)

A diagnostic message is now displayed in the event of a short circuit at output S1.

(21807)

- ▶ **System diagnostics: Interruption of Periphery Supply**
Even if a PSSu system has no FS outputs, a diagnostic message is now displayed when the Periphery Supply is interrupted.
(21818)

Optimisations - PROFIBUS-DP Slave (with PROFIsafe)

- ▶ **System-internal diagnostics**
In PAS4000, if diagnostics of the following errors
 - Error message for the device
 - Error in module bus
 - Error in FS SafetyNET p
 - Error in ST SafetyNET p
 were deactivated (device-based PROFIBUS diagnostics) and such an error occurred and was then rectified, previously the "Ext_Diag" bit was not reset in the system-internal diagnostics. This error has now been rectified.
(23033)

Optimisations - OPC Server classic

- ▶ **Data access**
In rare cases, the "Quality bad" state could be displayed for data when Clients accessed a lot of data on the OPC Server while the network load was high. This problem has now been rectified.
(21903)
- ▶ **Check sum "FS Project" for the online projects**
The check sum is now recalculated automatically when the project's devices are connected to or removed from the network and not just when the OPC Client is restarted.
(22018)

Known problems - General

- ▶ **Starting/restarting a project**
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ **Error after multiple download**
If various projects are downloaded in succession to at least two devices, which always belong to the same PSS4000 project and communicate via Snp, the error S-0120-0018 may be displayed incorrectly.
Remedy: Reset the device that is registering the error.
(21562)
- ▶ **System overload due to process diagnostics**
If the state of a diagnostic message changes cyclically between "active" and "inactive", a system overload may result. If this is the case it will be impossible to either communicate with or reset the device.
Remedy: Switch off the device, remove the SD card, use the PC to delete the data inside the folder "ps" on the SD card, insert the SD card and switch the device back on. This will delete the current project in the device's RAM so that the device is once again accessible.
In the project, change the condition of the basic diagnostic item so that it does not switch between "TRUE" and "FALSE" as part of each cycle, then download the project.
(16288, 17035)

- ▶ No stable SafetyNET p connection
If the FS and ST task cycle times are configured so that the SafetyNET p basic cycle time is more than 1000 ms, the SafetyNET p connection is not stable.
The effects may be as follows: online actions fail (e.g. project download), the FS SNp or ST SNp LED flashes green because the SNp connection is constantly interrupted and then re-established or the SNp connection is permanently interrupted.
(22943, 22944, 22945, 24444)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)

Known problems - FS/ST resource

- ▶ Reduced availability on tasks with different cycle times
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)

Known problems - OPC Server classic

- ▶ Write access to Multi programming parameter points
The OPC Server can write to ST parameter points in the user program, although this is not permitted.
(22108)
- ▶ SIMATIC WinCC Clients
If multiple SIMATIC WinCC Clients access data from the same device via the OPC Server and the display pages in the visualisation devices are changed, the "Quality bad" state may be displayed for the data for several minutes before it is updated.
(22903)

Changes in Version 1.7.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	◆
PMI 5 series	◆

New functions - General

- ▶ New system section
There is a new system section "PROFIBUS-DP Slave mit PROFIsafe".

New functions - FS/ST resource

- ▶ REAL and LREAL data types
The ST data types REAL and LREAL are supported on the ST resource.

New functions - FS/ST module bus

- ▶ New modules
The following modules are now supported:
 - PSSu E S 2DOR 2(-T)
 - PSSu E S 2DOR 10(-T)
 - PSSu E S INC 24V se(-T)
 - PSSu K S 16DI
 - PSSu K S 16DO 0.5
 - PSSu K S RS232

New functions - IP connections

- ▶ IP connections on head modules of the "Multi" performance class
The head modules PSSu H m F DP SN SD and PSSu H m F DP ETH SD now also have the "IP connections" system section.

New functions - PROFIBUS-DP Slave

- ▶ Cycle time on head modules of the "Multi" performance class
The lowest possible value of the cycle time t_{ExtCo} for the head modules PSSu H m F DP SN SD and PSSu H m F DP ETH SD is now 2 ms instead of 10 ms.

Optimisations - General

- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the device name and IP address settings that are stored in the device.
(11004)

- ▶ System diagnostics: Log entries after reset or download
After performing a reset or project download, the arrival of each diagnostic message is registered only once.
(16666)
- ▶ System diagnostics: PSSu K F FCU
Unconnected, dual-pole outputs no longer result in the diagnostic message "Short circuit of an output to 0 V" on the module PSSu K F FCU with firmware version 2.
(19960)
- ▶ Download of large-scale device projects
Device projects are made up of many files. The download of large-scale device projects could fail because a device only accepts a limited number of files. The number of files accepted per device has now been increased.
(19628)
- ▶ Memory requirement for diagnostic data
The memory requirement for the diagnostic data required by the Diagnostic Server has been reduced.
(19788, 20992)
- ▶ More stable SafetyNET p connection
A very brief interruption of a SafetyNET p connection sporadically led to the connection being terminated. This error has been rectified.
(21356)
- ▶ Behaviour after a project download
After a project download, the devices are ready for operation more quickly.
(6119, 6146)

Optimisations - FS/ST resource

- ▶ Tasks stopped manually
After a reset or download, tasks that have previously been stopped manually will not be started.
(10074, 10076)
- ▶ Debugging
When performing the variable watch or the dynamic program display, the task cycle time is no longer exceeded.
(18081)
- ▶ PSSu head modules of the PLC performance class
Availability problems no longer arise under the following circumstances:
 - If the cycle time of a lower priority task is longer than the cycle time of a higher priority task.
 - If the cycle time of a lower priority task is greater than 8 ms.
(19952)
- ▶ Major FS error at high load
An error which could lead to a major FS error in the event of a high load on the FS resource (multiple tasks with short cycle times) has been rectified
(20025)

Optimisations - FS/ST module bus

- ▶ Module bus more robust to EMC interference
The module bus is now less sensitive to EMC interference.

Optimisations - OPC Server classic

- ▶ Control of variables
If a variable of the BOOL data type is set to TRUE in the user program via the OPC Server, calculations in which the variable is used are now performed correctly.
(21587)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ SafetyNET p connection after project download
After a project download, if the LED "FS SNp" is still flashing green after a period of time, at least one SafetyNET p connection could not be established.
Remedy: Warm reset or cold start (switch voltage off and on again) the device.
(21304)
- ▶ Error after multiple download
If various projects are downloaded in succession to at least two devices, which always belong to the same PSS4000 project and communicate via SNp, the error S-0120-0018 may be displayed incorrectly.
Remedy: Reset the device that is registering the error.
(21562)

Known problems - FS/ST resource

- ▶ Reduced availability on tasks with different cycle times
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)

Known problems - FS/ST module bus

- ▶ System diagnostics: PSSu E S INC 24V se(-T)
No diagnostic message is displayed in the event of a short circuit at output S1.
(21807)

- ▶ System diagnostics: Interruption of Periphery Supply
If a PSSu system has no FS outputs, no diagnostic message is displayed when the Periphery Supply is interrupted.
(21818)

Changes in Version 1.6.2

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	---
PMI 4 series	---
PMI 5 series	---

Optimisations - FS/ST resource

- ▶ Device start-up after project download
After downloading a device project with a very large user program for the FS resource, in rare cases the device did not start up (DIAG-LED flashed green). This problem has been rectified.
(21598)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)

- ▶ System diagnostics: Incorrect log entries after reset or download
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ System diagnostics: Duplicated log entries after reset or download
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ System diagnostics: PSSu K F FCU
Unconnected, dual-pole outputs result in the diagnostic message "Short circuit of an output to 0 V".
(19960)

Known problems - FS/ST resource

- ▶ Tasks stopped manually
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ Reduced availability on tasks with different cycle times
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)
- ▶ Debugging
When performing the variable watch or the dynamic program display, the task cycle time may be exceeded.
(18081)

Changes in Version 1.6.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	---
PMI 4 series	---
PMI 5 series	---

Optimisations - General

► Restriction of the safety function

On PSSu head modules with firmware version 1.6.0, the safety function may be restricted in the following cases:

If the plant has not been commissioned in accordance with the check lists in the PSS 4000 Safety Manual

- In at least two programs on a PSSu head module (any firmware version), the same digital FS input has been read on a different PSSu system (firmware version 1.6.0)
- or in a PSSu head module (any firmware version), digital FS outputs have been written on a different PSSu system (firmware version 1.6.0) of performance class PLC or Multi
- or with the same PI variable on a PSSu head module (any firmware version), several digital FS outputs have been written on a different PSSu system (firmware version 1.6.0) of performance class I/O .

This problem no longer occurs on head modules with the firmware version 1.6.1.
(21157)

Optimisations - FS/ST module bus

► FS module bus stopped

EMC interference no longer results in the FS module bus coming to a STOP condition and the error S 0701 0013.

(21092)

Known problems - General

► Starting/restarting a project

It may take more than 1 minute to start/restart a larger project.

(6160)

► Duration of download process

It may take longer than 5 minutes to download larger projects.

(6119, 6146)

► Naming data on SD card

If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.

(11004)

- ▶ **SNTP Server on PSS 4000-PC**
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ **Firmware update**
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ **System diagnostics: Log entries when shutting down a PSSu system**
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ **System diagnostics: Incorrect log entries after reset or download**
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: PSSu K F FCU**
Unconnected, dual-pole outputs result in the diagnostic message "Short circuit of an output to 0 V".
(19960)

Known problems - FS/ST resource

- ▶ **Tasks stopped manually**
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ **Reduced availability on tasks with different cycle times**
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)
- ▶ **Debugging**
When performing the variable watch or the dynamic program display, the task cycle time may be exceeded.
(18081)

Changes in Version 1.6.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	◆
PMI 5 series	◆

New functions - General

- ▶ PMI 5
The firmware is now also available for devices of the PMI 5 series.

New functions - FS/ST module bus

- ▶ New modules
The following modules are now supported:
 - PSSu K S RS232 Modbus ASCII
 - PSSu K F FCU

Optimisations - General

- ▶ Restriction of the safety function
On PSSu head modules with a firmware version below 1.6.0, the safety function may be restricted in the following rare cases:
 - On a PSSu head module with a firmware version below 1.6.0, no FS input modules and no FS output modules were used.
 - On a PSSu head module with a firmware version below 1.6.0, FS input modules and FS output modules were present, but neither the PSSu head module itself nor any other PSSu head module within the project **both** read the FS inputs **and** wrote to the FS outputs.

This problem no longer occurs on head modules with the firmware version 1.6.0. (20007)
- ▶ Transfer of arrays between devices
The transfer of large arrays between devices has been optimised.
- ▶ System diagnostics: Display of names
The names of tasks and IP connections are now displayed instead of numbers.
- ▶ System diagnostics: Project download
Diagnostic messages and log entries during download have been improved. (14787)
- ▶ System diagnostics: Duplicated diagnostic messages
When the physical connection between the device containing the Diagnostic Server and the project devices has been broken, diagnostic messages are no longer displayed twice in the diagnostic list. (18511)

- ▶ **System diagnostics: Project download**
After a project download, the check sum "FS Device Project" in the diagnostic log is now displayed in hexadecimal format.
(19319)
- ▶ **System diagnostics: Diagnostic message when forcing variables**
If the system stops being forced because the maximum duration has been reached, the diagnostic message that is displayed is now correct.
(19585)

Optimisations - FS/ST resource

- ▶ **Task information on runtime errors**
On runtime errors, the affected task now appears correctly in the diagnostic message.
(19394)
- ▶ **Internal error on empty tasks**
When the user program is executed, the internal error "S-0101-0090" no longer occurs when a resource is configured with a task which has not been assigned a block.
(19520)

Optimisations - FS/ST module bus

- ▶ **PSSu E F DI OZ 2**
If no load is connected to the dual-pole output on the module PSSu E F DI OZ 2, the "MBUS" LED no longer lights up red incorrectly and the input's valid bit is no longer set to "0".
(19664)

Optimisations - IP connections

- ▶ **Modbus/TCP: Access to unknown register**
If the Modbus/TCP Client attempts to read or write to a section of a register that is not configured on the Server, the diagnostic message that appears is now correct.
(17637)
- ▶ **Connection failure**
If the IP connection is interrupted, a diagnostic message is displayed in the diagnostic list. If the IP connection is restored, this message is now promptly removed from the diagnostic list.
(18100)

Optimisations - OPC Server classic

- ▶ **Communication with PSS 4000 Diag Control**
If the OPC Server is installed on a device with Windows 7 Embedded, connection problems no longer occur with the PSS 4000 Diag Control.
(19094)

Known problems - General

- ▶ **Starting/restarting a project**
It may take more than 1 minute to start/restart a larger project.
(6160)

- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ Firmware update
The firmware update may fail if it is performed on a device for which device naming has never been performed.
Remedy: Perform device naming before updating the firmware.
(19748)
- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ System diagnostics: Incorrect log entries after reset or download
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ System diagnostics: Duplicated log entries after reset or download
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ System diagnostics: PSSu K F FCU
Unconnected, dual-pole outputs result in the diagnostic message "Short circuit of an output to 0 V".
(19960)

Known problems - FS/ST resource

- ▶ Tasks stopped manually
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ Reduced availability on tasks with different cycle times
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)

- ▶ Debugging
When performing the variable watch or the dynamic program display, the task cycle time may be exceeded.
(18081)

Changes in Version 1.5.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	---
PSSu head modules: R-type	---
PC	---
PMI 4 series	◆
PMI 5 series	---

New functions - General

- ▶ PMI 4
The firmware is now also available for devices of the PMI 4 series.

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ System diagnostics: Incorrect log entries after reset or download
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ System diagnostics: Project download
Diagnostic messages and log entries during download are not precise enough.
(14787)

- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: Duplicated diagnostic messages**
When the physical connection between the device containing the Diagnostic Server and the project devices has been broken, some diagnostic messages may be displayed twice in the diagnostic list.
Remedy: Restart the device containing the Diagnostic Server or execute a reboot.
(18511)

Known problems - FS/ST resource

- ▶ **Tasks stopped manually**
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ **Reduced availability on tasks with different cycle times**
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)
- ▶ **Debugging**
When performing the variable watch or the dynamic program display, the task cycle time may be exceeded.
(18081)

Known problems - IP connections

- ▶ **Modbus/TCP: Access to unknown register**
If the Modbus/TCP Client attempts to read or write to a section of a register that is not configured on the Server, a diagnostic message appears, saying that the whole register is not available.
(17637)

Changes in Version 1.5.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	◆
PC	◆
PMI 4 series	---
PMI 5 series	---

New functions - General

- ▶ PSSu head modules without Periphery Supply
If no electronic module is connected to a PSSu head module, the head module can be operated without connecting the Periphery Supply. This makes sense, for example, if only the firmware on the head module is to be updated.
- ▶ Installation of the PSS 4000 firmware for PC
The PSS 4000 firmware for PC can now also be installed under the "Microsoft Windows Embedded Standard 7" operating system. Please refer also to the System Description PSS 4000.

New functions - FS/ST module bus

- ▶ New modules
The following modules are now supported:
 - PSSu E S RS485(-T)
 - PSSu E AI SHT1(-T)
 - PSSu E F PS-P-R
 - PSSu E F PS2-R
 - PSSu E F 4DI-R
 - PSSu E F 2DI 60-R
 - PSSu E F DI OZ 2-R
 - PSSu E F 4DO 0.5-R
 - PSSu E F 2DO 2-R
 - PSSu E F 2DOR 8-R
 - PSSu E F AI I-R
 - PSSu E F AI U-R

Optimisations - General

- ▶ System diagnostics: Diagnosing supply errors on the head module
If the supply voltages on the head module are connected incorrectly, a corresponding diagnostic message now appears.
(14291, 15304)

- ▶ **System diagnostics: Diagnostic messages when hardware registry errors are detected**
When a hardware registry error is detected (variations in the set hardware registry from the actual hardware registry) only a diagnostic message is displayed now in the diagnostic list.
(15740)
- ▶ **System diagnostics: Messages are not deleted**
Even if the modules PSSu E F PS1(-T) or PSSu E F PS2(-T) are used in a PSSu system, the messages are now deleted from the diagnostic list when the cause of the fault has been rectified.
(16687)
- ▶ **System diagnostics: Time stamp in the diagnostic log**
The diagnostic log no longer contains entries with a time stamp in the distant future (e.g. 2077-06-21).
(6325)
- ▶ **Process diagnostics**
A text starting with "[DEVELOPER TEXT]" used to be displayed in the diagnostic list and diagnostic log instead of the message text entered by the user. This no longer happens.
(17282)
- ▶ **PMI 4**
The correct firmware version for PMI 4 is now displayed in the PAS4000 Online Network Editor.
(18644)

Optimisations - FS/ST resource

- ▶ **Availability**
The FS resource no longer switches sporadically to a STOP condition after it has been running for several hours.
(18969)

Optimisations - FS/ST module bus

- ▶ **Hardware registry error of the ST module bus**
When a hardware registry error of the ST module bus is detected, the MBUS LED light up red.
(18080)
- ▶ **Extensive hardware registry**
In PSSu systems with a large number of modules the internal error of the head module no longer occurs (S 0101 0016).
(18137)
- ▶ **FS module bus stopped**
When using the FS module bus and an increased load on the Ethernet (e.g. during variable watch), the FS module bus no longer switches to a STOP condition and the internal error of the head module no longer occurs (S 0101 0011).
(18139)

Optimisations - IP connections

- ▶ Connection setup after increased data traffic
After the connection is lost because of excess data traffic on the Ethernet the connection is now re-established automatically.
(18824)

Optimisation - PROFIBUS-DP Slave

- ▶ Behaviour in case of an internal error
If an internal error occurs in a device, and the error does not affect the PROFIBUS-DP Slave, the PROFIBUS-DP Slave continues to work, i.e. data is sent and received.
(18384)
- ▶ Preparing current send data
Updated send data is now usually provided more rapidly to the PROFIBUS-DP Master.
(18915)

Optimisations - OPC Server classic

- ▶ Browsing
It is now possible to always browse in the namespace.
(18765)
- ▶ Behaviour at project download
When clients access data on the OPC Server while a project is being downloaded to the device with the OPC Server, the data status "Quality bad" is now displayed.
(18774)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ SNTP Server on PSS 4000-PC
If a PSS 4000-PC is configured as the SNTP Server, time synchronisation will not work because Port 123, which is used by the PSS 4000 SNTP Server, is already being used by the "Windows Timer" utility.
Remedy: Configure a different device in the project as SNTP Server or deactivate the "Windows Timer" utility.
(19066)
- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)

- ▶ **System diagnostics: Incorrect log entries after reset or download**
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ **System diagnostics: Project download**
Diagnostic messages and log entries during download are not precise enough.
(14787)
- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: Duplicated diagnostic messages**
When the physical connection between the device containing the Diagnostic Server and the project devices has been broken, some diagnostic messages may be displayed twice in the diagnostic list.
Remedy: Restart the device containing the Diagnostic Server or execute a reboot.
(18511)

Known problems - FS/ST resource

- ▶ **Tasks stopped manually**
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ **Reduced availability on tasks with different cycle times**
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)
- ▶ **Debugging**
When performing the variable watch or the dynamic program display, the task cycle time may be exceeded.
(18081)

Known problems - IP connections

- ▶ **Modbus/TCP: Access to unknown register**
If the Modbus/TCP Client attempts to read or write to a section of a register that is not configured on the Server, a diagnostic message appears, saying that the whole register is not available.
(17637)

Changes in Version 1.4.2

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations - General

- ▶ Download after firmware update
After a device's firmware has been updated, there is no problem downloading the device project to a device.
(16937)
- ▶ Increased availability of PROFIBUS-DP enabled devices
The processes in devices operating as PROFIBUS-DP Slaves have been optimised, reducing the number of timeouts that lead to internal errors.
(18293)

Optimisations - FS/ST resource

- ▶ Increased availability with a maximum of two cycle times
The availability has been increased for devices with an FS resource on which tasks with a maximum of 2 different cycle times are configured.
(18113)
- ▶ Increased availability after the boot process
The availability of the FS resource after the boot process has been improved. The internal error S-0101-0090, which occurred in rare cases, has been rectified.
(18327)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ System diagnostics: Time stamp in the diagnostic log
In rare cases, the diagnostic log contains entries with a time stamp in the distant future (e.g. 2077-06-21).
(6325)

- ▶ **System diagnostics: Log entries when shutting down a PSSu system**
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ **System diagnostics: Incorrect log entries after reset or download**
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ **System diagnostics: Diagnosing supply errors on the head module**
If the supply voltages on the head module of a PSSu system are connected incorrectly, the device will not start and internal errors are registered. From these messages it is not clear that the device has been wired incorrectly.
(14291, 15304)
- ▶ **System diagnostics: Several diagnostic messages**
Sometimes, several diagnostic messages are displayed in the diagnostic list as the cause of an error.
(15740)
- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: Messages are not deleted**
If the modules PSSu E F PS1(-T) or PSSu E F PS2(-T) are used in a PSSu system, the circumstance may arise in which a message is not deleted from the diagnostic list, although the error is no longer present.
Remedy: Cold start the device
(16687)

Known problems - FS/ST resource

- ▶ **Tasks stopped manually**
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ **Reduced availability on tasks with different cycle times**
If the FS resource of a device is configured with tasks with more than 2 different cycle times, this will reduce the device's availability.
(18277)

Known problems - IP connections

- ▶ **Modbus/TCP: Access to unknown register**
If the Modbus/TCP Client attempts to read or write to a register that does not exist on the Server, the following diagnostic message appears: "The local system does not support the received protocol." The true reason for the fault is not clear from this message.
(17637)

Changes in Version 1.4.1

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations - General

- ▶ System time synchronisation
Even if a new time is set at the SNTP server which deviates substantially from the previous time, all the devices on the project are correctly synchronised to the new time.
(18000)

Optimisations - FS/ST resource

- ▶ Stop of the FS resource
On extensive projects there is no more stop of the FS resource after several hours of operation .
(18124)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ Download after firmware update
After a device's firmware has been updated, a download to the device may fail.
Remedy: Perform an original reset on the device, perform the naming operation for the device and then download
(16937)
- ▶ System diagnostics: Time stamp in the diagnostic log
In rare cases, the diagnostic log contains entries with a time stamp in the distant future (e.g. 2077-06-21).
(6325)

- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ System diagnostics: Incorrect log entries after reset or download
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ System diagnostics: Diagnosing supply errors on the head module
If the supply voltages on the head module of a PSSu system are connected incorrectly, the device will not start and internal errors are registered. From these messages it is not clear that the device has been wired incorrectly.
(14291, 15304)
- ▶ System diagnostics: Several diagnostic messages
Sometimes, several diagnostic messages are displayed in the diagnostic list as the cause of an error.
(15740)
- ▶ System diagnostics: Duplicated log entries after reset or download
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ System diagnostics: Messages are not deleted
If the modules PSSu E F PS1(-T) or PSSu E F PS2(-T) are used in a PSSu system, the circumstance may arise in which a message is not deleted from the diagnostic list, although the error is no longer present.
Remedy: Cold start the device
(16687)

Known problems - FS/ST resource

- ▶ Tasks stopped manually
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)

Known problems - IP connections

- ▶ Modbus/TCP: Access to unknown register
If the Modbus/TCP Client attempts to read or write to a register that does not exist on the Server, the following diagnostic message appears: "The local system does not support the received protocol." The true reason for the fault is not clear from this message.
(17637)

Changes in Version 1.4.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations - General

- ▶ Reaction times
The times $t_{\text{MBUS_Task_max}}$, $t_{\text{Task_MBUS_max}}$ and $t_{\text{SNp_MBUS_max}}$ have been optimised, see version 8 of the system description PSS 4000.
(17875)
- ▶ Download without functional changes
When a project is re-downloaded after only non-functional changes have been made (e.g. inserting or deleting underscores on figures), the devices now start automatically.
(16725)
- ▶ SNTP Server
If a PC is used simultaneously as SNTP Server and Diagnostic Server, changing the time on the SNTP Server no longer means that SafetyNET p communication problems are registered in the diagnostic list.
(17240)
- ▶ Firmware update
The firmware update now works at the first attempt.
(16280)
- ▶ Project starts after download
Project devices are now started automatically after a project download.
(16653)
- ▶ System diagnostics: Location information
Correct location information is now displayed for diagnostic messages and log entries in system diagnostics.
(14959)

Optimisations - FS/ST resource

- ▶ System diagnostics: Code position on runtime errors
On runtime errors (e.g. division by zero), the position in which the error occurred in a block is indicated.
(10968, 15396)

Optimisations - FS/ST module bus

- ▶ System diagnostics: Diagnostic messages when switching off the periphery supply
When a module is separated from the periphery supply, incorrect diagnostic messages are no longer displayed.
(14016)

Optimisations - IP connections

- ▶ Raw UDP: Connection with cycle time of 500 ms
If a cycle time of 500 ms is configured on a device for a Raw UDP connection, ST tasks with a cycle time of 2 ms are now also executed.
(17773)

Optimisations - OPC Server classic

- ▶ Start time of OPC Server
The OPC Server no longer has to be started before the PSS 4000 Diag Control in order to establish communication between the two.
(16766)

Known problems - General

- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Duration of download process
It may take longer than 5 minutes to download larger projects.
(6119, 6146)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)
- ▶ Download after firmware update
After a device's firmware has been updated, a download to the device may fail.
Remedy: Perform an original reset on the device, perform the naming operation for the device and then download
(16937)
- ▶ System diagnostics: Time stamp in the diagnostic log
In rare cases, the diagnostic log contains entries with a time stamp in the distant future (e.g. 2077-06-21).
(6325)
- ▶ System diagnostics: Log entries when shutting down a PSSu system
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ System diagnostics: Incorrect log entries after reset or download
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ System diagnostics: Diagnosing supply errors on the head module
If the supply voltages on the head module of a PSSu system are connected incorrectly, the device will not start and internal errors are registered. From these messages it is not clear that the device has been wired incorrectly.
(14291, 15304)

- ▶ **System diagnostics: Several diagnostic messages**
Sometimes, several diagnostic messages are displayed in the diagnostic list as the cause of an error.
(15740)
- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: Messages are not deleted**
If the modules PSSu E F PS1(-T) or PSSu E F PS2(-T) are used in a PSSu system, the circumstance may arise in which a message is not deleted from the diagnostic list, although the error is no longer present.
Remedy: Cold start the device
(16687)

Known problems - FS/ST resource

- ▶ **Tasks stopped manually**
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)

Known problems - IP connections

- ▶ **Modbus/TCP: Access to unknown register**
If the Modbus/TCP Client attempts to read or write to a register that does not exist on the Server, the following diagnostic message appears: "The local system does not support the received protocol." The true reason for the fault is not clear from this message.
(17637)

Changes in Version 1.3.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations

- ▶ Status LEDs "DIAG" and "MBUS"
The status LEDs "DIAG" and "MBUS" now indicate when FS outputs on the module bus have switched to a safe state.
(11509)
- ▶ Enable LEDs for enable principle
The enable LEDs on FS output modules now indicate correctly when the enable for an FS output is available.
(13256)
- ▶ Starting the module bus
On larger PSSu systems (more than 15 FS modules and more than 15 ST modules), there are no longer any problems starting the module bus.
(13425, 11139)
- ▶ FS module bus STOPPED due to a module error
If an internal error occurs in the module PSSu E F AI U, this will no longer cause the FS module bus to STOP.
(14473)
- ▶ FS module bus STOPPED due to a short circuit on test pulse T1
A short circuit between the test pulse T1 and 0V on the module PSSu E F 4DI no longer causes the FS module bus to STOP.
(14496)
- ▶ Downloading a large number of FS variables to a device
Up to 4000 FS variables can now be downloaded to a device via SafetyNET p, without the variables becoming invalid and the substitute values being used.
(13855)
- ▶ Changing the SD card
The SD card can now be changed even when the device is switched on, without errors occurring.
(14193, 14274)
- ▶ System diagnostics
 - Log entries when forcing
There is only one entry in the diagnostic log per resource when variable forcing is started.
(10410)

- Starting tasks
If a task cannot be started because it is in a TERMINATED state, a diagnostic message is now displayed.
(15278)
- Original reset
An incorrect diagnostic message: "Internal error on head module" is no longer displayed after an original reset.
(16183)
- ▶ OPC Server
 - Administrator rights in order to run
Administrator rights are no longer required to run the OPC Server.
(15067)
 - Starting the OPC Server
The OPC Server can now be started without first stopping and restarting the PSS 4000 Firmware Controller.
(13889)
 - Communication interruption on the PSS 4000 Diag Control
Communication between the OPC Server and PSS 4000 Diag Control is no longer interrupted when the OPC Server and PAS4000 are running on the same PC.
(14629, 14656)
 - State of diagnostic messages
The state of diagnostic messages is now displayed in the OPC Server namespace.
(15316)
 - Displaying the check sum "FS Project"
The check sum "FS Project" is now displayed correctly in the OPC Server namespace.
(14437, 15119)
 - Quality of data
The OPC Server no longer registers "Quality Bad" for all elements in a group when the state of only a single element is "Quality Bad".
(16488)

Known problems

- ▶ Tasks stopped manually
After a reset or download, tasks that have previously been stopped manually are started when they shouldn't be.
(10074, 10076)
- ▶ Starting/restarting a project
It may take more than 1 minute to start/restart a larger project.
(6160)
- ▶ Naming data on SD card
If the naming data on the SD card does not match the head module on the PSSu system at the time a cold or warm reset is performed, the PSSu system will start with the default settings for the device name and IP address.
(11004)

- ▶ **Project fails to start after download**
In rare cases, project devices are not automatically started after a project download.
Remedy: Cold start all the devices in the project
(16653)
- ▶ **Download without functional changes**
When a project is re-downloaded after only non-functional changes have been made (e.g. inserting or deleting underscores on figures), the devices do not start automatically.
Remedy: Perform the deliberate operator action after downloading
(16725)
- ▶ **OPC Server: Start**
The OPC Server must be started before the PSS 4000 Diag Control in order to establish communication between the two.
(16766)
- ▶ **Download after firmware update**
After a device's firmware has been updated, a download to the device may fail.
Remedy: Perform an original reset on the device, perform the naming operation for the device and then download
(16937)
- ▶ **Firmware update fails**
In some cases the first attempt to update firmware will fail.
Remedy: Try updating the firmware again
(16280)
- ▶ **System diagnostics: Several diagnostic messages**
Sometimes, several diagnostic messages are displayed in the diagnostic list as the cause of an error.
(15740)
- ▶ **System diagnostics: Log entries when shutting down a PSSu system**
If a PSSu system is separated from the module supply and periphery supply, incorrect log entries are displayed.
(10353, 11411)
- ▶ **System diagnostics: Incorrect log entries after reset or download**
Several incorrect log entries are displayed after performing a reset or project download.
(10537)
- ▶ **System diagnostics: Duplicated log entries after reset or download**
After performing a reset or project download, the arrival of some diagnostic messages is re-registered.
(16666)
- ▶ **System diagnostics: Code position on runtime errors**
On runtime errors (e.g. division by zero), there is no indication as to where the error occurred in a block.
(10968, 15396)
- ▶ **System diagnostics: Diagnostic messages when switching off the periphery supply**
When a module is separated from the periphery supply, incorrect diagnostic messages may be displayed.
(14016)

- ▶ System diagnostics: Messages are not deleted
If the modules PSSu E F PS1(-T) or PSSu E F PS2(-T) are used in a PSSu system, the circumstance may arise in which a message is not deleted from the diagnostic list, although the error is no longer present.
Remedy: Cold start the device
(16687)
- ▶ System diagnostics: Diagnosing supply errors on the head module
If the supply voltages on the head module of a PSSu system are connected incorrectly, the device will not start and internal errors are registered. From these messages it is not clear that the device has been wired incorrectly.
(14291, 15304)
- ▶ System diagnostics: Location information
Incorrect location information is displayed for some diagnostic messages and log entries.
(14959)

Changes in Version 1.2.2

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations

▶ Online connection

The online connection between the PSSu system and PAS4000 no longer drops out after it has been running for several hours, e.g. during variable watch. (6938, 14466).

▶ PSSu system start-up

PSSu systems with more than 80 ST Bit outputs and extensive user programs can now be started. (14488, 14523)

▶ SafetyNET p

On SafetyNET p networks with more than 4 devices, the inputs and outputs no longer shut down after an extended period of operation (more than 3 days). (14244)

Known problems

Changing the SD card

Only change the SD card when the supply voltage is switched off.

Changes in Version 1.2.0

Availability of this firmware version:

Products	Availability
PSSu head modules: Base type, T-type	◆
PSSu head modules: R-type	---
PC	◆
PMI 4 series	---
PMI 5 series	---

Optimisations

- ▶ Reaction time
The reaction time has been improved when transferring data via SafetyNET p.
- ▶ Exceeding the module bus cycle time
With certain configurations, e.g. with more than 6 analogue input modules, more than 6 analogue output modules, more than 15 FS modules or more than 15 ST modules, the module bus cycle time is no longer exceeded.
(8186, 8187, 7865, 7866)
- ▶ Arrays (ARRAY)
Arrays of variables of an FS data type with the attribute RETAIN may now be larger than 1024 Bytes.
(9733)
- ▶ Newly supported modules
 - PSSu K S 8DI 8DO 0.5
 - PSSu XB F-T
 - PSSu XR F-T

Known problems

Changing the SD card

Only change the SD card when the supply voltage is switched off.

► Support

Technical support is available from Pilz round the clock.

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