Content

1 The New HIMax Operating System V8

1.1 Operating System Versions of the Module Types

The new V8 includes the following operating system versions of the module types:

OS version	Product designation in the revision list (Device-Type)	Description
V8.8	HIMAXCPU0X_HA1_OS_V8.8	Safety-related operating system for X-CPU 01 processor modules
V8.8	HIMAXCPU3X_HA1_OS_V8.8	Safety-related operating system for X-CPU 31 processor modules
V8.6	HIMAXCOM_HA2_OS_V8.6	Operating system for X-COM 01 communication modules

Table 1: Operating System Versions of the Module Types

The operating system versions not mentioned in Table 1 are referenced in the release notes for HIMax V7.

1.2 Overview

These release notes describe the new functions and improvements of V8 compared to the previous version:

- Chapter 2 describes the new functions of V8.
- Chapter 3 presents the improvements and the resolved problems.
- Chapter 4 specifies the current restrictions.
- Chapters 5 and 6 describe the procedures to migrate from the previous versions.
- Chapter 7 provides references.

1.3 Compatibility

The functions of V8 are compatible with the functions of V2...V7.

In systems with X-CPU 01, I/O modules, system bus modules and communication modules can be operated within one system using different operating system versions (V2.x...V7.x, and V8.x). In systems with X-CPU 31, operating system versions V6.x...V8.x can be used within one system.

HIMA recommends upgrading all modules to the current version.

2 New Functions of V8

1 Support for HIPRO-S V2, the safe communication protocol

The safety-related communication protocol, HIPRO-S V2, is used for communicating with the HIQuad PES.

Notice: The HIQuad PES needs an operating system version that supports HIPRO-S V2; see the HIQuad documentation for details.

2 Reset commands executable with Read and Operator permission

Users with at least *Read and Operator* permission may perform the commands **Reset Cycle Time Statistics** and **Reset Total Number of Errors**, **Faults or Warnings**. In the previous version, the *Read and Write* permission was required.

3 No reload possible if the operating systems have main different versions

HIMax rejects a reload, if all the following conditions are met:

- Processor modules redundant to one another are equipped with processor modules with different main versions, e.g., V5.10 and V7.10.
- At least one of the processor modules is equipped with operating system version V8 or higher.

It is thus no longer necessary to observe the various compatibility restrictions due to different main versions previously appearing during the reload. [HE24860, HE25725]

3 Improvements of V8

1 Reload of a license successful

Inserting and removing a valid license and the enabled functions are possible during one reload process. In the previous version, two reload processes were necessary. [HE27502]

2 System operation maintained during the X-CPU 31 synchronization

In very seldom cases, the previous version lost system operation when synchronizing a X-CPU 31 processor module or was entered by the synchronized modules with restrictions. [HE27463]

3 MAC address of the Ethernet switch port is the MAC address of the sender for LLDP

LLDP uses the MAC addresses of the Ethernet switch port as MAC addresses of the sender. This procedure can prevent network problems potentially occurring if the Ethernet switch is split into separate networks through port-based VLAN. [HE26152]

To ensure that the changes become effective, the following hardware revisions and production revisions are required:

	Hardware revision	Production revision
X-CPU 01	01	06
X-COM 01	02	01

4 MAC addresses of Ethernet ports used for X-CPU 01

The new operating system version uses the MAC addresses of the Ethernet ports for the X-CPU 01 processor module. These MAC addresses are required for LLDP messages. [HE26603]

To ensure that the changes become effective, the following hardware revisions and production revisions are required:

	Hardware revision	Production revision
X-CPU 01	01	06

5 Communication protocols remain functional when unmatching message appears

In the previous version, a safe**ethernet** message not matching the loaded project could block the process data communication of a communication module. This occurred when the protocols only used this communication module to communicate. [HE26525]

6 ComUserTask can use the maximum process data volume

The previous version created an error message when the maximum process data volume was used. [HE25101]

4 Restrictions of V8

1 Autostart triggered by removing and reinserting two system bus modules or by switching the supply voltage off and on again

If both responsible system bus modules are removed and reinserted, an autostart previously set in the project is triggered even if the system was stopped beforehand using the PADT.

This behavior can also be triggered by switching the operating voltage off and on again.

This applies to processor modules up to V4.x. [HE20023]

2 Lost connections and timing inaccuracies within communication protocols

In communication protocols with time-critical, cyclic transmissions, e.g., PROFINET, the transmissions might reveal timing inaccuracies with very large process data volumes (e.g., 10,000 Modbus register variables). The cause is the load on the communication module. Depending on the setting of the send interval and connection monitoring watchdog, the connection of the protocol and thus of the superordinate protocols (e.g., PROFIsafe) could be aborted.

Workaround: HIMA recommends using multiple communication modules and separating time-critical protocols from protocols exchanging very large process data volumes.

3 Increase of the cycle time due to update to the current version

When updating the operating system version of the PES, the cycle time of the user program may increase, but no more than 6 ms, if the following conditions are met:

- The operating system is upgraded from V2.14 to V6.30 or higher, e.g., to the current version.
- The system parameter *Max. Duration of Configuration Connections [ms]* is set to a value greater than 6 ms.

[HE25684]

5 Migration from V2.x through V7.x to V8

HIMA recommends, if possible, upgrading the operating systems of X-CPU 01, X-CPU 31, X-COM 01, and of the I/O modules when the system is stopped.

Particular care must be taken if the upgrade has to be performed while the system is operating as described in Chapters 5.1 and 5.2. The OS loader upgrade can be skipped to avoid reducing redundancy for an unnecessarily long period. The OS loader should be upgraded when the system is stopped at the next earliest opportunity.

No further actions may be performed on the system during the upgrade process!

Prior to upgrading the operating systems, the HIMax system must be in a fault-free state!

5.1 Upgrading a Module

The section below describes the upgrade procedure for a single module. Since I/O modules have no IP address, the remarks on IP address do not apply to them.

1. Upgrade the operating system of the module.
2. The module restarts.

   If a fault occurs while loading the operating system, the OS loader is started. If the OS loader was not upgraded at this point, the module is only accessible via the standard IP address.

   The HIMax operating system immediately uses the previously configured IP address.
3. Upgrade the OS loader. The OS loader operates again with the configured IP address.
4. Wait until the module is completely running again in system operation. In particular, the process data communication for processor and communication modules should be completely re-established.

This results in the upgrade of a single module.

5.2 Upgrading the Entire System

The next module in the RUN state may only be upgraded if the most recently upgraded module is completely operating again!

The order described below must be absolutely observed!

The entire system is to be upgraded in the upgrading order specified for the modules and described in Table 2. The upgrading procedure described in Chapter 5.1 must be observed for each module.

Step	Modules to be upgraded	Operating System	Operating system version	OS loader version
1.	All I/O modules	HIMaxIO_HA1_BS HIMaxIO_HA2_BS HIMaxIO_HA3_BS	V7.20	V6.0
2.	All processor modules	HIMAXCPU0X_HA1_BS HIMAXCPU3X_HA1_BS	V8.8	V6.0
	Notes: ▪ *The simultaneous use of processor modules with different operating system versions is only allowed for the duration of the upgrade!* ▪ *If safe**ethernet** is used, the processor modules must be upgraded one after the other, without performing any actions in between!*			
3.	All system bus modules	To upgrade, if the operating system version of the X-SB 01 is not V7.24. First upgrade the modules on slots 1 in all racks, and then the modules on slots 2.		
		HIMAXSB_HA2_BS	V7.24	V6.0
4.	All communication modules	HIMAXCOM_HA2_BS	V8.6	V6.0

Table 2: Upgrading Order of the Modules

The downgrade of system bus modules back to a version up to V4.20 is not allowed and may cause the system bus module to permanently lose its functionality.

Processor modules must be upgraded to the same version. Until this is done, this is signaled by a warning.

Observe the restrictions for the operating system versions to be loaded!

6 Migration from V1.x to V8

SILworX version must be changed when migrating from operating system V1.x to V8.

HIMax modules with operating system V1.x cannot be used together with HIMax modules with operating system V2.x and higher!

The migration procedure for SILworX projects corresponds to that described in the release notes for SILworX V2.36 and V2.46 and has to be adhered to.

The upgrade from V1.x to V8 can only be performed if the system is stopped!

7 References

- HIMax system manual, document number HI 801 001 E
- Communication manual, document number HI 801 101 E