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## 1 New HIMatrix Operating System Versions V10.x and V15.x

The new versions only support devices with enhanced performance:

- F10 PCI 03
- F30 03
- F31 03
- F35 03
- F60 CPU 03

### 1.1 Operating System Versions for the Various Controllers

The new versions V10.x and V15.x include the following operating system versions:

<b>V10.32</b>	l3cpu_ha1_l3_bs_v10.32	Safety-related CPU operating system for F10 PCI 03, F30 03, F31 03, F35 03, F60 CPU 03
<b>V15.6</b>	l3com_ha1_l3_bs_v15.6	COM operating system for F10 PCI 03, F30 03, F31 03, F35 03, F60 CPU 03

### 1.2 Overview

- Chapter 2 describes the new features.
- Chapter 3 specifies the improvements compared to previous versions.
- Chapter 4 specifies the current restrictions.
- Chapter 5 describes the procedures to migrate from the previous versions.
- Chapter 6 specifies references to other documents

## 1.3 Compatibility

Versions V10.x/V15.x support all the previous version features.

## 2 New Features of Versions V10.x/V15.x

### 2.1 Reload Functionality

HIMatrix V10.x/V15.x and higher feature the following new capabilities:

- Reload of the safe**ethernet** configuration.
- Reload of the configuration for alarms and events.
- Cold Reload

The COM module not capable of reload is set first to stop during the reload procedure and then to run again. This is done automatically with request for confirmation.

## 3 Improvements of V10.x/V15.x Compared to V8.x/V13.x

V10.x/V15.x include the following improvements:

### 3.1 System Functions

- 1 The *Read-Only in RUN* system variable operates properly  
The STOP command is thus rejected if the user has operator rights. [HE22271]
- 2 Watchdog time not exceeded during the reload clean-up phase  
In previous versions, it could very rarely occur that the flash file system caused the watchdog time to be exceeded during the reload clean-up phase. This caused the PES to enter the ERROR STOP state. [HE20739]
- 3 Program states deviating from the system state are displayed as system error or system warning  
Program states deviating from the system state are displayed in the Control Panel as system error or system warning in accordance with their classification. [HE21048]
- 4 Memory occupied by a user program displayed as entire memory blocks  
The CPU operating system manages the storage space occupied by the user program in storage blocks. The value displayed for the storage space occupied by a user program is calculated based on the size of all the storage blocks. In contrast to previous versions, this value includes the unused storage space in the last storage block. [HE18538]
- 5 Statistics data for connections to PADTs and remote I/Os can be reset [HE21180]
- 6 The configured communication time slice *Max.Com. Time Slice ASYNC [ms]* is considered in the displayed *Watchdog Time Reserve [ms]*  
The setting for the communication time slice can be changed through a download and through a reload.  
If the actual residual time is sufficiently high to allow a reload, V10.x accepts a reload even if the displayed *Watchdog Time Reserve [ms]* is = 0. The compatibility with respect to existing projects is kept. [HE23372]
- 7 The reload process resets the parameters changed online in all the user programs  
A reload in the previous version did not reset the parameters changed online in the user programs, for which no change had to be loaded. A reload in V10 sets all the parameters changed online to the value defined in the configuration. [HE23655]

- 8 Retain memory increased up to 32 kB  
The memory available for retain variables was increased from 8 kB to 32 kB.

## 3.2 Communication

- 1 Default Setting of LLDP is now Deactivated  
LLDP must be activated or configured if it is to be used in a project in connection with a processor or communication module.  
In versions up to V10.x/V15.x, LLDP was set to Activated by default.
- 2 The new ComUserTask development environment creates a 64-bit CRC  
The 64-bit CRC is similarly displayed in the CUT development environment and in the SILworX version comparator. SILworX displays the lower 32 bits of the CRC. [HE21921]
- 3 If a fieldbus interface is used, ComUserTask activates the corresponding LED  
If ComUserTask uses the communication module's fieldbus interface, the corresponding LED is activated. [HE20898]
- 4 The minimum value for the ComUserTask schedule interval is 2 ms  
2 ms can be set in ComUserTask as the minimum value for *Schedule Interval [ms]*.

## 4 Enhancements of the Version V10.32/V15.6 in contrast to V10.16/V15.6

- 1 Proper behavior when exchanging the roles of timing master and timing slave for **safeethernet**  
A reload for a **safeethernet** connection behaves properly, if the following actions are simultaneously performed:
  - The roles of timing master and timing slave are exchanged.
  - The configured times are changed.[HE25053]
- 2 New **safeethernet** connection after changing the timing master and disconnection  
After the following procedure, the version V10.16/V15.6 could not establish a new **safeethernet** connection:
  - a Reload with change of the timing master and increasing the resend timeout
  - b Both partners are loaded and restarted
  - c Short-time interruption of the **safeethernet** connecting by external influence, e.g. Ethernet cable removed and plugged in again[HE25410]
- 3 Proper behavior after changes performed to a **safeethernet** connection  
The following actions caused the HIMatrix system malfunction:
  - a The code generation setting for a **safeethernet** connection is changed from **Prior to V6** to **V6 and Higher**.
  - b Code is generated with activated **Prepare Reload** option.
  - c The resource configuration is loaded into the PES.The malfunction depended on the loading process type:
  - Loading through **Download** resulted in the **subsequent** system stop.
  - Loading through **Reload** caused the system to no longer enter system operation after a later restart if the supply voltage had been switched off and on again. In this case, the PES configuration had to be deleted and loaded again. [HE25343]

## 5 Restrictions of V10.16/V15.6

- 1 Changing the roles of timing master and timing slave in connection with **safeethernet** reload  
 If a **safeethernet** reload simultaneously changes the roles of timing master and timing slave as well as the configured times, the new times set for the new timing master become effective immediately after completion of the reload process. This also applies if no reload has yet been performed for the new timing slave, i.e., if the slave configuration has not yet become effective. No consequences such as connection loss have to be expected.  
 Workaround: Change the roles and time values during two separate reload processes.  
 Removed in V6.30 and higher
  
- 2 No new **safeethernet** connection after changing the timing master and disconnection  
 After the following procedure, the system cannot establish a new **safeethernet** connection:
  - a Reload with change of the timing master and increasing the resend timeout
  - b Both partners are updated
  - c Short-time disconnection of the **safeethernet** connecting by external influence, e.g. Ethernet cable removed and plugged in again
 [HE25410]  
 Removed in V10.32
  
- 3 Improper behavior after changes performed to a **safeethernet** connection  
 The following actions cause the HIMatrix system malfunction:
  - a The code generation setting for a **safeethernet** connection is changed from **Prior to V6** to **V6 and Higher**.
  - b Code is generated with activated **Prepare Reload** option.
  - c The resource configuration is loaded into the PES.
 The malfunction depended on the loading process type:
  - Loading through **Download** results in the **subsequent** system stop.
  - Loading through **Reload** causes the system to no longer enter system operation after a later restart if the supply voltage has been switched off and on again. In this case, the PES configuration has to be deleted and loaded again. [HE25343]
 Removed in V6.30 and higher

## 6 Restrictions of V10.x/V15.x

- 1 Switching the fault contact has no effect, false display of the state  
 Switching the fault contact through one of the system variables *Relay contact 1...4* has the following effects:
  - Switching to closed: the relay contact stays open, but the System Overview displays the state as closed.
  - Switching to open: the relay contact is open, but the System Overview displays closed.
 [HE25140]
  
- 2 Resource configuration becomes invalid after operating system upgrade  
 The following procedure results in the resource configuration becoming invalid:
  - a Erasing a user program containing retain data through reload
  - b Adding two user programs containing retain data through the same reload or one or several subsequent reloads
  - c Update of the operating system
 After starting the operating system, the PES enters the state STOP/INVALID CONFIGURATION. The diagnostic history contains the following entry «LS: Program retain variable section exceeds specified memory area.

## **7 Migration from V8.x/V13.x to V10.x/V15.x**

Only processor and communication operating system versions that were released together can be used together. The operating system of processor and communication modules can only be upgraded in STOP.

The OS loader upgrade should not be skipped. If the OS loader is not upgraded for the processor operating system, the OS loader can no longer be reached once the COM operating system is migrated to V15.6.

If the OS loader is not upgraded for the communication operating system, it can only be addressed using the standard IP address and standard SRS. In contrast, if the OS loader was upgraded, the configured IP address and SRS can also be used.

### **7.1 Procedure**

The specified order must be absolutely observed!

#### **Upgrading HIMatrix System to V10.x/V15.x**

1. Connect to the communication module by logging in to the system and upgrade the OS loader to V15. The communication module restarts. Connect to the communication module by logging in to the module (hardware online view).
2. Upgrade the communication operating system to V15. The communication module restarts.
3. Connect to the processor module by logging in to the system and upgrade the OS loader to V10. The processor module restarts.
4. Connect to the processor module and upgrade the processor operating system to V10. The processor module restarts.

The HIMatrix system has been upgraded to V10.x/V15.x.

## **8 References**

- HIMatrix System Manual Compact Systems, Document Number HI 800 141 E
- HIMatrix System Manual Modular Systems, Document Number HI 800 191 E