Troubleshooting Guide

This document is intended to facilitate quick and easy error detection and, in the ideal case, error correction.

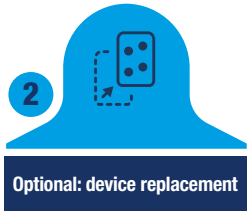
Based on the Best Practice approach, the gateway should be consulted first in the event of a fault, so that the ASi network of a plant can then be surveyed at a glance. The solution approaches in the document are intended specifically for faults that have occurred in a previously fault-free existing plant during operation. If necessary, further support is provided quickly and specifically via diagnostic software or personal support.

BEST PRACTICE

Overview of the steps

1 How do I detect possible errors on my plant?

- Visual inspection at the gateway via LED display
  Chapter “LED Functions”
- Visual inspection of the gateway via display
  Chapter “Trouble Shooting”



- Chapter “Device replacement”

- On-site support via diagnostic software
- or personal support
  Chapter “Where can I get help?”

2 LED Functions

In the event of an error, all errors that occur in an ASi network are quickly visualized on the gateway via the LED display. Possible approaches to troubleshooting can be quickly detected and usually eliminated using a simple exclusion procedure.

Green POWER LED:

- **off:** Is the power supply connected?
  Is the ASi PWR plug connected to the gateway?
- **on:** Everything is okay!

Green U ASI LED:

- **off:** Is the correct power supply being used? 30 V power supplies
  Is a power fail or a short circuit on the ASi circuit detectable?
  See chapter "General "Error Codes""
- **on:** Everything is okay!

Green ASI ACTIVE LED:

- **off:** Is ASi communication or the ASi Gateway active online
- **on:** Everything is okay!

FELDBUS LED:

- **off:** Is the fieldbus cable connected? Is the higher-level control switched on? Is the correct configuration of the fieldbus connection (IP address, etc.) and, if applicable, the GSD configuration available?

  Note: In case of problems with the used control or the fieldbus, please contact directly the respective manufacturer!

Remark: An inactive fieldbus can be signaled e.g. at PROFINET Gateways by a red illuminated LED or at a EtherNet/IP Gateway by a red flashing LED!

- **on (green):** Everything is okay!

red CONFIG ERROR LED:

- **off:** Everything is okay!
- **on:** What information is shown in the gateway display?

No error can be detected based on the LED display, but your existing installation is in error condition?

- see chapter "Where can I get help?"

Note: The status LEDs do NOT indicate error messages. The green PRG ENABLE is on when automatic addressing is enabled. During operation, the yellow PRJ MODE LED is off because the gateway is operating in protected mode and is not configured.

Is a safety monitor installed?

green AUX LED:

- **off:** Is the power supply connected? Is the 24V/0V plug plugged into the gateway?
- **on:** Everything is okay!

yellow SI or SO LED:

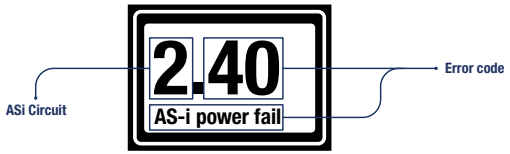
- **off:** no periphery connected.
- **on:** periphery connected!

Note: With 6-channel Safety Monitors, the following error messages can be displayed:

- all LEDs flash: Safety-Error/Fatal Error (see chapter "General "Error Codes"")
- single LED flashes: Is a cross-circuit or an overload at the output detectable?

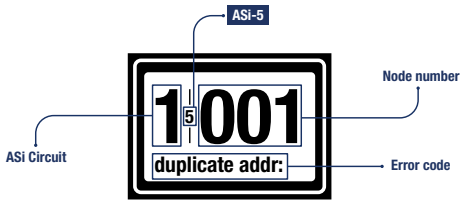
3 Troubleshooting

3.1 Readout of the gateway display



- Error message in display: Error in circuit 2 with error code 40

see chapter “3.2 General “Error Codes”” ↗



- Error message in the display: ASi-5 error in circuit 1 at node address 001

see chapter “3.3 “Configuration Error Codes”” ↗

- Error message in the display: ASi-3 error in circuit 2 on node address 2A

see chapter “3.4 “Safety-Error Codes”” ↗

3.2 General “Error Codes“

40 - Offline phase: ASi power fail	Please check whether the correct power supply is connected to the ASi supply after a replacement in the plant. See chapter “Where can I get help?” ↗
1.40 - Offline by Host	Please check whether the connected gateway has been set offline via the PLC. See chapter “Where can I get help?” ↗
41 - Detection phase: Searching slaves	Please check whether all ASi nodes in the network are connected correctly and if there is no wire break in the profile cable. See chapter “Where can I get help?” ↗
Safety-Error/Fatal Error	See chapter “Where can I get help?” ↗
Earth Fault	Check that the correct grounding is selected on the power supply and gateway. If necessary, please check the ASi cable for possible damage or defects. Ground fault checklist ↗

3.3 “Configuration Error Codes”

Note: The described error codes occur on a node-specific basis.

Missing Slave	Is the displayed module connected to the ASi network? If the same module has been installed more than once, carry out a cross exchange to check the function! Further information in chapter “Device replacement“
Peripheral Fault	Check the connected periphery and the supply (ASi and AUX) at the displayed module. Further module specific information can be found in the data sheet. Please notice the note below.
Duplicate Address	Check at the displayed module whether during a device replacement the defective module has not been removed from the ASi circuit. Further information in chapter “Device replacement“
Type Mismatch	Check at the displayed module whether a replacement module NOT of the same design was used when replacing the module. Requirements for replacement modules
Unknown Zero Address	Check at the displayed module whether the identical replacement module has been addressed correctly in case of a device replacement. Further information in chapter “Slave Addr. Tool“
Unknown Slave	Check at the displayed module whether the identical replacement module has been addressed correctly in case of a device replacement. Further information in chapter “Slave Addr. Tool“

Note Peripheral Fault: First remove all connected peripheries, then reconnect each periphery individually to the module according to the exclusion procedure and thus locate the periphery causing the fault as quickly as possible.
Only then contact the manufacturer!

3.4 “Safety-Error Codes”

Error code in the display menu “Safety-Error” followed by “Safe Input”.
Go to “Safe Input“

Note: Alternative run texts for the “Safety-Error” can also be messages like “try to teach code” or “two-channel independent”.

Error code in the display menu “Safety-Error” followed by “Diagnostic Output”.
Go to “Diagnostic Output”

Error code in the display menu “Safety-Error” followed by “EDM”.
Go to “EDM”

3.4.1 Safe Input

Follow these steps to teach the security code to a gateway:

1. Make sure that all contacts on the defective ASi Safety node are closed and the ASi Safety node is connected to the network.
2. Navigate in the display menu of the gateway to **[ASi Safety]** and press **OK.**
3. Select **[Teach Safety]** and then **[Single Slave]**.
4. Enter the PIN code (default pin is 0000).
5. Select the ASi circuit (if applicable).
6. Select the node address and confirm with **OK.**

3.4.2 Diagnostic Output

If your plant has a “Safety Reset” button, make sure, that it is working. This button is connected to either the “Fault unlock” or “Reset” signal in ASIMON360.

If you do not have a “Safety Reset” button, disconnect the ASi cable from the ASi Safety node to which the diagnostic output is connected and plug it back in again.

3.4.3 EDM (External Device Monitor)

An EDM must be in the opposite state to the safety output it monitors. If the safety output is switched off, the EDM input channel should be on high.

If your plant has a “Safety Reset” button, make sure that it is working. The “Safety Reset” button initializes a global fault unlocking within the ASi program.

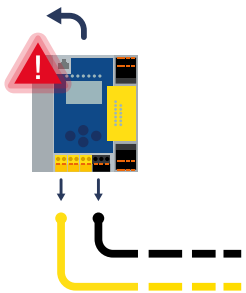
4 Device replacement

Note: In the case of a cross exchange, identical modules from the plant are exchanged with each other. In the case of a device replacement, an identical module is exchange **"out of the box"** for the faulty module.

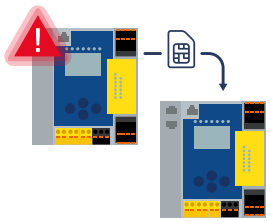
When exchanging an ASi node, make sure that the exchange module has the same profile and address as the ASi node to be exchanged. If you are using an ASi Gateway from Bihl+Wiedemann, then the new ASi node can also have the address 0 when it is replaced.

4.1 Replacement of ASi Gateways and Safety Basic Monitors

1. Remove the old gateway.

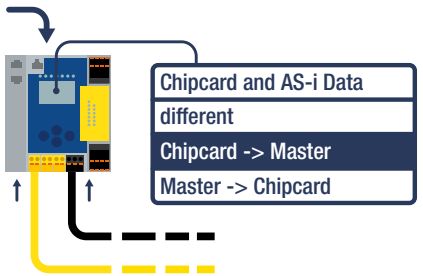


2. Remove the chip card from the old gateway and insert it into the new gateway.



3. Connect the new gateway. If necessary, you will be asked in which direction the memory states are to be exchanged, select **[Chipcard -> Master]**.

Note: If several configurations are available on the chip card, select the desired configuration.



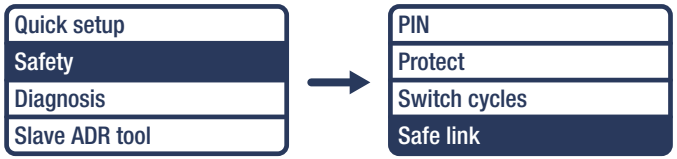
4. Scroll down in the menu using the **[Set]** button and enter in the **[Type Code]** field the **[Release Code]** displayed above and confirm with **OK**.

Teaching of Safe Link directly at the gateway

Note: If Safe Link is used, it is necessary to teach-in the group manager after the exchange!

1. The teach-in process is realized thanks to the Safe Link Manager. Press **OK** on the Safe Link Manager to open the menu.

2. Use the arrow keys to navigate to **[Safety]** and select **[Safe Link]**.



3. Identify the number of the safety monitor to be replaced. Then select **[Teach in]** in the display menu and confirm the process with **OK**, to complete it.

4.2 Exchange of ASi nodes

Subdivided into:

- For Standard ASi nodes
- For Standard ASi nodes with chip card or for Safety ASi nodes with memory card
- For Safety ASi nodes

For Standard ASi nodes

1. Remove the ASi node to be exchanged.

2. Make sure that the new ASi node has the same address as the ASi node to be replaced, or address 0.

3. Connect the new ASi node.

Exchange for Standard or Safety ASi nodes with memory card

Note: For modules with a visible slide switch in the front of the housing, you will find further details about the exchange procedure in the product documentation!

1. Remove the ASi node to be exchanged.

2. Remove the chip card from the ASi node to be replaced and insert it into the new ASi node.

3. Connect the new ASi node.

Exchange of Safety ASi nodes

1. Remove the desired ASi node.

2. Press the **[Service/ESC]** button for more than 5 sec., until a message appears in the display that the new ASi node should be connected.

3. Make sure that the new ASi node has the same address as the ASi node to be replaced, or address 0.

4. Connect the new ASi node (in case of Safety input modules, the contacts must be closed).

5. Press the **[Service/ESC]** button for more than 5 sec.

Note if you are using a Safety Basic Monitor:

Step 2: Press the **[Set]** button for more than 1 sec. until a message appears on the display, that the new ASi node should be connected.

Step 5: Press the **[Set]** button for more than 1 sec.

4.3 "Slave Addr. Tool"

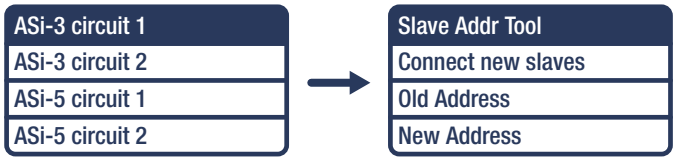
Note: Alternatively, our modules can also be quickly addressed with the modern ASi-5/ASi-3 Addressing Device. You can find more information here.

If you want to address the nodes via the display menu of the gateway, please carry out the following steps:

1. Disconnect the connection to the higher-level fieldbus (remove the communication cable to the higher-level control).

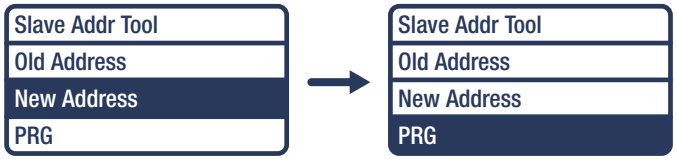
2. To open the display menu at the gateway, press **OK** and then use the arrow keys to navigate to **[Slave Addr Tool].** Confirm with **OK.**

3. Use the arrow keys to select the ASi circuit. Confirm with **OK**. Use the arrow keys to navigate to **[Slave Addr Tool]**. Confirm with **OK**.



4. Connect the node to be addressed. Please note that no other nodes with the same address may be connected to the ASi network.

5. Use the arrow keys under **[new Address]** to assign the new address. Select **[PRG]** with the arrow keys and confirm with **OK.**



Note: ASi-5 nodes are always addressed to the next free node number.

5 Where can I get help?

If you have already installed a diagnostic software, use it to support the troubleshooting on site. If necessary, the report can be sent to our technical support team and thus accelerate the further procedure.

Note: Please send the file with the raw data of the measurement (*result.zip format) to us.

Technical Support
Phone: +49 621 33996-449
Fax: +49 621 3392239
E-Mail: asiexpert@bihl-wiedemann.de

Personal consultation is our top priority. We are pleased if you contact us by telephone or e-mail.

Your request will then be handled directly by your personal contact person. You can find our worldwide contact details here.

Note: Please have the following information ready for optimal support:

- How long has the plant been in operation?
- Which products are used? (Manufacturer name or article numbers)
- Since when does the error occur? How often/regularly does the error occur?
- Is there a measurement with the diagnostic software?

More information on the use of the diagnostic software can be found in the Video tutorial