GuardLink EtherNet/IP Network Interface

Catalog Number 432ES-IG3

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updated mounting hardware to M3 (#4)</td>
<td>Throughout</td>
</tr>
<tr>
<td>Updated step 3</td>
<td>2</td>
</tr>
<tr>
<td>Updated Wire the Module</td>
<td>2</td>
</tr>
<tr>
<td>Updated Table 5, Table 6, and Table 7</td>
<td>3</td>
</tr>
</tbody>
</table>

Product Overview

Figure 1 - Approximate Dimensions [mm (in.)]

Assign Network Address

The 432ES-IG3 network interface must be assigned a fixed (static) address to maintain continued communication with the network. The network address is set with the three switches: X100, X10, and X1.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>Clear Explicit Protected mode</td>
</tr>
<tr>
<td>001...254</td>
<td>Network address (192.168.1.X100 X10 X1)</td>
</tr>
<tr>
<td>888</td>
<td>Factory reset</td>
</tr>
<tr>
<td>899</td>
<td>Set explicit protected mode</td>
</tr>
<tr>
<td>999</td>
<td>DHCP</td>
</tr>
<tr>
<td>All others</td>
<td>Do not use</td>
</tr>
</tbody>
</table>

(1) When Explicit Protective mode is set, explicit messages that affect the operation of the device are blocked. Examples of blocked messages are changes to the IP address, reset of the module, and update of the firmware. Explicit messages can fetch diagnostic information.
There are four ways of assigning the network address:
1. Use the X100, X10, and X1 rotary switches to set the network address.
2. Use the Rockwell Automation BootP/DHCP tool, version 2.3 or later, which ships with the Studio 5000® environment (RSLogix 5000® software).
3. Use FTLink software.
4. Have your network administrator configure the network interface via the network DHCP server.

If the 432ES-IG3 network interface is replaced, use the BOOTP/DHCP tool to assign the network address to the MAC ID of the new network interface.

Perform the steps in Reset to Factory Default and Protective Mode on page 2 before you change the IP address from a private address to a non-private address, or vice versa.

Reset to Factory Default and Protective Mode

At any time, you can set the 432ES-IG3 network interface to the factory default, or set or clear the Protective mode, by the following steps:
1. Turn off power to the 432ES-IG3 network interface.
2. Set the X100, X10, and X1 rotary switches:
   • 888 to reset to factory default
   • 900 to set explicit Protective mode
   • 000 to clear explicit Protective mode
3. Apply 24V DC to the 432ES-IG3 network interface.
4. After 5 seconds, the module status indicator blinks red. All other indicators are off.
5. Assign the new network address by setting the X100, X10, and X1 rotary switches.
6. Apply 24V to the 432ES-IG3 network interface.

Wire the Module

**ATTENTION:** Disconnect power to the system before installation or device wiring.

**ATTENTION:**
- Calculate the maximum current in each power and common wire.
- Observe all electrical codes that dictate the maximum current allowable for each wire size.
- Current above the maximum ratings can cause wiring to overheat, which can cause damage.
- Do not run signal or communications wiring and power wiring in the same conduit. Route wires with different signal characteristics by separate paths.
- Separate wiring by signal type. Bundle wiring with similar electrical characteristics together.
- Use tape, shrink-tubing, or other means to label wiring to all devices in the system. Use colored insulation to identify wires based on signal characteristics. For example, use blue for DC wiring and red for AC wiring.
- Use the internet switch sealing caps and the M12 protective caps to maintain an IP69K seal and help protect unused ports.

**IMPORTANT** Fault exclusions for conductors and wiring must follow the requirements of EN ISO 13849-2 Table D.3 and D.4. A fault exclusion can reduce the overall safety rating of the related safety function to a maximum of PLd per EN ISO 13849-1.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Output power +24V DC</td>
</tr>
<tr>
<td>2</td>
<td>Module power +24V DC</td>
</tr>
<tr>
<td>3</td>
<td>Module power 0V</td>
</tr>
<tr>
<td>4</td>
<td>Output power 0V</td>
</tr>
</tbody>
</table>

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</tbody>
</table>

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<thead>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24V DC</td>
</tr>
<tr>
<td>2</td>
<td>GuardLink® safety signal</td>
</tr>
<tr>
<td>3</td>
<td>0V</td>
</tr>
<tr>
<td>4</td>
<td>CLU - Control Lock Unlock</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tx Data+</td>
</tr>
<tr>
<td>2</td>
<td>Rx Data+</td>
</tr>
<tr>
<td>3</td>
<td>Tx-</td>
</tr>
<tr>
<td>4</td>
<td>Rx-</td>
</tr>
</tbody>
</table>
Status Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>status (MOD)</td>
<td>Off: Module is not powered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red/green: Module is not configured, or module is in self-test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green: Module is idle. Waiting for connection from controller.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady green: Module is powered, configured, and operating correctly (Running mode).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red: Update in progress (Configuration mode). RPF Target Unique Network Identifier (TUNID) mismatch - reset ownership with controller. Recoverable fault - cycle power to reset. Special modes: 000 - Disable explicit protection 888 - Restore factory default 900 - Set explicit protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady red: Unrecoverable fault detected (Critical Fault mode). Cycle the power and verify that the network is working properly.</td>
</tr>
<tr>
<td>Network</td>
<td>status (NET)</td>
<td>Off: The module does not have an IP address and is operating in DHCP mode. Special modes: 000 - Disable explicit protection 888 - Restore factory default 900 - Set explicit protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red/green: 250 ms flashing - Receiving target unique network identifier 500 ms flashing - Communications fault</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green: The module has an IP address, but no CIP™ connections are established. A module connection can be inhibited.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady green: The module has an IP address and CIP connections are established; operating normally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red: An exclusive owner connection has timed out.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady red: The module detected an error that prevents it from communicating on the network, such as a duplicate IP address is detected.</td>
</tr>
<tr>
<td>LINK1 or</td>
<td>status</td>
<td>Off: No link/no activity.</td>
</tr>
<tr>
<td>LINK2</td>
<td></td>
<td>Steady green: Link established.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing green: Transmit or receive activity.</td>
</tr>
<tr>
<td>Ch0…Ch2</td>
<td>status</td>
<td>Off: No GuardLink communications established.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green: Communication OK, operating normally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red/green: The client is updating on this link. The link is in a safe state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashing red: Incorrect configuration, fault on a tap or client, or short circuit happened on this link. Client number mismatch or GuardLink-enabled device mismatch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red: Channel is in Safe mode. One or more clients are in the off-state.</td>
</tr>
<tr>
<td>Module</td>
<td>power</td>
<td>Off: No power is applied.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady green: Normal operation (20.6...26.4V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady red: Input power out of specification (outside of 20.4...26.4V)</td>
</tr>
</tbody>
</table>

Specifications

Table 5 - General Specifications

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>24.0V DC +10/-15% NEC Class 2 (max 4-amp supply), PELV - use SELV when alternative ground fault detection is used</td>
</tr>
<tr>
<td>Power supply cable length, max</td>
<td>30 m (98.42 ft)</td>
</tr>
<tr>
<td>Current (module)</td>
<td>80 mA/24V</td>
</tr>
<tr>
<td>Comm rate (EtherNet/IP)</td>
<td>10/100 Mbps</td>
</tr>
<tr>
<td>Internet Protocol IPv4 addressing</td>
<td>IPv4 addressing</td>
</tr>
<tr>
<td>CIP Sync™</td>
<td>CIP sync/IEEE 1588 end-to-end transparent clock supported</td>
</tr>
<tr>
<td>CIP (safety) standards</td>
<td>IEC 61784-3-2: Functional safety field buses IEC 61158-1: Overview and guidance IEC 61158-3-2: Datalink layer service definition IEC 61158-4-2: Datalink layer protocol specification IEC 61158-5-2: Application layer service definition IEC 61158-6-2: Application layer protocol specification</td>
</tr>
</tbody>
</table>

Table 6 - Environmental Specifications

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>-20…+60 °C (-4…+140 °F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40…+85 °C (-40…+185 °F)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>Up to 95% (noncondensing)</td>
</tr>
<tr>
<td>Enclosure type rating</td>
<td>IEC 60688-2-6</td>
</tr>
<tr>
<td>Emissions</td>
<td>IEC 60068-27</td>
</tr>
<tr>
<td>ESD immunity</td>
<td>IEC 61000-4-2</td>
</tr>
<tr>
<td>RF immunity</td>
<td>IEC 61000-4-3</td>
</tr>
<tr>
<td>EFT immunity</td>
<td>IEC 61000-4-4</td>
</tr>
<tr>
<td>Surge transient immunity</td>
<td>IEC 61000-4-5</td>
</tr>
<tr>
<td>Conducted RF immunity</td>
<td>IEC 61000-4-6</td>
</tr>
</tbody>
</table>

Table 7 - Mounting Specifications

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw torque</td>
<td>0.68 N•m (6 lb•in)</td>
</tr>
<tr>
<td>Screw size</td>
<td>M3 (#4) pan head</td>
</tr>
<tr>
<td>High vibration</td>
<td>Use a lock washer on top of a flat washer</td>
</tr>
<tr>
<td>Covers torque</td>
<td>0.15 ±0.005 N•m (1.3 ±0.04 lb•in)</td>
</tr>
</tbody>
</table>
Rockwell Automation Support

Use these resources to access support information.

<table>
<thead>
<tr>
<th>Technical Support Center</th>
<th>Find help with how-to videos, FAQs, chat, user forums, and product notification updates. rok.auto/support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledgebase</td>
<td>Access Knowledgebase articles.                                                                      rok.auto/knowledgebase</td>
</tr>
<tr>
<td>Local Technical Support Phone Numbers</td>
<td>Locate the telephone number for your country.                                                      rok.auto/phonesupport</td>
</tr>
<tr>
<td>Literature Library</td>
<td>Find installation instructions, manuals, brochures, and technical data publications.             rok.auto/literature</td>
</tr>
<tr>
<td>Product Compatibility and Download Center (PCDC)</td>
<td>Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes. rok.auto/pcdc</td>
</tr>
</tbody>
</table>

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rockwellautomation.com

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