ATTENTION: Read this document and the documents that are listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate or maintain this product. Users are required to familiarize themselves with the installation and wiring instructions and the requirements of all applicable codes, laws, and standards including:

- ISO 14119: Interlocking devices that are associated with guards;
- ISO 14120: General requirements for the design, construction, and selection of guards;
- ISO 13855: For the positioning of safeguards;
- ISO 13857: For the calculation of minimum (safe) distances;
- For functional safety, either IEC 62061 or ISO 13849-1 and ISO 13849-2;
- And other applicable standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to conduct suitably trained personnel in accordance with the applicable code of practice.

This device is intended to be part of the safety-related control system of a machine. Improper selection or installation of the device affects the integrity of the safety-related control system. First, a risk assessment must be performed to determine whether the specifications of this device are suitable for all foreseeable operational and environmental characteristics of the application. Use appropriate screws, bolts, or nuts that are fitted by tools to mount the switch and actuators to avoid the risk of tampering. Do not over torque the mounting hardware.

Management controls, working procedures, training, and extra protective measures should be used to minimize the motivation to defeat and to manage the use and availability of spare actuators.

Personnel injury or death, property damage, or economic loss can result if this document and applicable codes, laws, and standards are not followed.

The Guardmaster 442G Multifunctional Access Box is an electromagnetic interlocking device with guard locking. The device consists of one locking module and one handle assembly. An escape release is optional. The device provides guard position monitoring and lock monitoring in accordance with ISO 14119.

### Locking Module

The locking module includes a locking bar, status/diagnostic LED indicators, DIP switches, terminals X2-X5, and markings on mechanical stop, to aid installation.

### Handle Assembly

The handle assembly features a guard door handle, roll-out bolt locking mechanism, bolt tongue, and automatically extending bolt locking mechanism.

### Escape Release (optional)

The escape release is designed for manual release and includes a cover for manual release, terminals, DIP switches, status/diagnostic LED indicators, and markings on mechanical stop, to aid installation.

**IMPORTANT**

The length of the actuation shaft (115 mm (4.53 in.)) is optimized for mounting on 40 mm (1.57 in.) and 45 mm (1.77 in.) profiles. For mounting on profiles larger than 45 mm (or if using mounting plates on a 45 mm profile), an extended shaft is required (order separately, 442G-MABASHFT). See the user manual for instructions about sizing the extended shaft and mounting the escape release on smaller or larger profiles.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley® distributor or Rockwell Automation sales representative.
Auxiliary/Manual Release

1. Undo locking screw.
2. Lift locking arm using a screwdriver and actuate the guard door handle.

**ATTENTION:** The locking screw must be screwed back in and sealed after assembly and after use of the manual release (for example, with sealing lacquer). Tightening torque is 0.5 Nm.

Clearing Faults

Reset a non-latching fault by opening the guard door and closing it again. Clear latching faults by cycling power or applying 24V to the RST signal for a minimum of three seconds.

Dip Switch Configuration

<table>
<thead>
<tr>
<th>Detail</th>
<th>Switch</th>
<th>Function</th>
</tr>
</thead>
</table>
| A      | 1+2    | on: Device is configured for standalone operation (factory setting)  
        |        | off: Device is configured for series operation |
| B      | 3+4    | on: Guard lock monitoring is deactivated  
        |        | off: Guard lock monitoring is activated (factory setting) |
| C      | 5      | on: DIP switch configuration enabled  
        |        | off: DIP switch configuration inhibited (factory setting) |
| D      | 6      | on: Release monitoring is activated (factory setting)  
        |        | off: Release monitoring is deactivated |

1 See the 442G Multifunctional Access Box User Manual (442G-UM001A-EN-P) for information on changing the default settings.

Inspection and Service

Periodically check the correct operation of the switching function. Also check for signs of abuse or tampering. Inspect the switch casing for damage. Check the safe function of the device particularly after any of the following: set-up work, the installation or replacement of an 442G-MAB module, an extended period without any use, a fault condition, or any change to the DIP switch setting.

**ATTENTION:** If there is a malfunction or damage to the product, attempts at repair must not be made. The unit must be replaced or alternative safeguarding must be implemented before machine-operation is allowed. An exception is allowed for the replacement of the lock module control cover.

Handle Configuration

The unique-coded handle assembly must be assigned to the locking module before the system is functional.

During configuration of the handle, the safety outputs are switched off.
1. Insert bolt tongue in the locking module.
2. Apply operating voltage (U_A and U_B).
3. The State LED flashes green (5 Hz) as the device performs a self-test (up to 8 seconds).
4. Programming begins when the State LED flashes (1 Hz). After approximately 60 seconds, the State LED turns off.
5. To complete the configuration, switch off the operating voltage (U_B) for a minimum of 3 seconds or apply 24V to the input RST for a minimum of 3 seconds.

**IMPORTANT** The locking module disables the code for the previous handle assembly if configuration is conducted for a new handle assembly. A disabled handle assembly can be configured again only after a third handle assembly has been configured.

Mounting

The 442G-MAB is designed to use on hinged or sliding doors. The use of mounting plates is optional.

**IMPORTANT** With two-wing hinged guard doors, one of the two guard door wings must also be latched mechanically.

**ATTENTION**:

It must be possible to insert the bolt tongue in the locking module. To check, close the safety guard several times and actuate the guard door handle.

If available, check the function of the escape release. It must be possible to operate the escape release from the inside without excessive force (approximately 40 N).

**ATTENTION:** The escape release must ONLY be accessible from inside the safeguarded area. The installation must not allow access to the escape release from outside the safeguarded area.

IMPORTANT

- The guard door must be in the open position to clear a latching fault.
- The locking module disables the code for the previous handle assembly if configuration is conducted for a new handle assembly. A disabled handle assembly can be configured again only after a third handle assembly has been configured.

Installation example for a guard door that is hinged on the right (general view)
Electrical Connection

The electrical connections must either be isolated from the mains supply by a safety transformer according to IEC 61558-2-6 with limited output voltage in the event of a fault, or by other equivalent isolation measures.

For detailed information on the electrical connection, refer to the user manual.

Terminal Assignments and Wiring

Connection of Cover Controls and Indicators

**Important** Connection of this device with a conduit is not allowed. The connection method needs to consist of flexible cord that is connected to the product with a UL Listed cable gland suitable for 22…17 AWG wire sizes (for example, Type HSK-KM20 x 1.5 manufactured by Hummel AG).
Multi-functional Access Box Installation Instructions

Specifications

Safety Ratings

- Standards: IEC 60947-5-3, EN ISO 13849-1, ISO 14119, UL 508 (evaluated for risks of electrical shock and fire; only suitable for NFPA 79 applications only)
- Safety Classification: Type 4 interlocking device with guard locking and high-coded RFID actuators according to ISO 14119
- Functional Safety Data: PFHd: 2.47 x 10^-8, PLe, Cat. 4 (according to ISO 13849-1). Mission time: 20 years. B10d for E-stop: 1.0 x 10^5 cycles
- Certifications: cULus (UL 508) and CE Marked for all applicable EU directives

Outputs

- Safety Outputs (FO1A/FO1B): Semiconductor outputs, PNP
- Output Current, maximum (each): 200 mA
- Output voltage Ud1a/ Ud1b @ 50 mA switching current: On: Ua – 2V … Ua, OFF: 0…1V DC

Monitoring Outputs

- Monitoring Outputs (OD, OL, OI): P-switching and short circuit-proof
- Output Voltage: Ua – 2V … Ua
- Maximum Load (each): 50 mA, maximum

Controls and Indicators

- Operating Voltage: 5…24 V DC
- Operating Current: 1…100 mA
- Breaking Capacity, maximum: 250 mW
- Power Supply LED: 24V DC

Operating Characteristics

- Torque Settings, maximum: 1 Nm lock module cover screws (6x)
- Locking Force Fmax: 2600 N
- Holding Force Fzh: 2000 N
- Maximum Impact Energy Withstand: 300 J
- Locking Bolt Alignment Tolerance: Horizontal: ± 4 mm; Vertical: ± 5 mm
- Operating Voltage Ud: Class 2 PELV 24V DC +10/-15% required
- Auxiliary Power Ua: Class 2 PELV 24V DC +10/-15% required

Status/Diagnostic LED Indicators

<table>
<thead>
<tr>
<th>Operating Mode</th>
<th>Power (Green)</th>
<th>State (Green)</th>
<th>Diagnostic (Red)</th>
<th>Lock (Yellow)</th>
<th>State 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostics</td>
<td>On</td>
<td>Green flash 1 x</td>
<td>On</td>
<td>Off</td>
<td>Error during handle configuration or invalid DIP switch setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green flash 2 x</td>
<td></td>
<td>Off</td>
<td>Input error (only applies when switch is configured for series operation) 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green flash 3 x</td>
<td></td>
<td>Off</td>
<td>Handle assembly read error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green flash 4 x</td>
<td></td>
<td>Off</td>
<td>Output error 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td></td>
<td>Yellow flash 1 x</td>
<td>Signal sequence erroneous, escape release or manual release was actuated 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td></td>
<td>Off</td>
<td>Internal fault 2</td>
</tr>
<tr>
<td>Setup</td>
<td></td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Handle configuration completed. Cycle power to resume normal operation.</td>
</tr>
<tr>
<td>Normal Operation</td>
<td></td>
<td>Flashes green approximately every three seconds</td>
<td>Off</td>
<td>Off</td>
<td>Normal operation, door open</td>
</tr>
</tbody>
</table>

1 See the user manual (pub. no. 442G-UM001A-EN-P) for more information on Troubleshooting.
2 These are latching faults. All other faults are non-latching. Reset according to the “Clearing Faults” section.


Allen-Bradley, Guardmaster, and Rockwell Automation are trademarks of Rockwell Automation, Inc. Trademarks not belonging to Rockwell Automation are property of their respective companies.

www.rockwellautomation.com