



AN-208

Emergency Egress and Lockdown Programming

Application Note



The specifications and descriptions of products and services contained in this document were correct at the time of printing. Integrated Control Technology Limited reserves the right to change specifications or withdraw products without notice. No part of this document may be reproduced, photocopied, or transmitted in any form or by any means (electronic or mechanical), for any purpose, without the express written permission of Integrated Control Technology Limited. Designed and manufactured by Integrated Control Technology Limited, Protege® and the Protege® Logo are registered trademarks of Integrated Control Technology Limited. All other brand or product names are trademarks or registered trademarks of their respective holders.

Copyright © Integrated Control Technology Limited 2003-2022. All rights reserved.

Last Published: 30-Nov-22 11:16 AM

Contents

Introduction	4
Prerequisites	4
Programming Door Control	5
Creating a Door Group	6
Configuring the Control Area	6
Add the Control Output	6
Create an Input Type	7
Configure Inputs	8
Update the Area	8
Automation Programming	8
Emergency Egress	9
Emergency Lockdown	9
Start the Programmable Functions	10
Advanced Options	11
Programming Scenario	12

Introduction

Many sites have specific emergency door control requirements, to either unlock doors for evacuation in emergency situations such as fire, or to lock doors to contain areas or prevent entry and/or exit.

In Protege GX and Protege WX emergency egress and lockdown functionality is achieved by using programmable functions to customize door control in response to defined inputs.

An emergency egress function is typically triggered by the building fire alarm system, connected to the Protege system. Once activated, the programmable function will immediately unlock all doors that are defined in the emergency egress door group, and prevent other functions from locking them again. When the fire alarm is reset, the programmable function secures all doors in the group.

Lockdown functions can be triggered by emergency buttons or switches, and other designated inputs. When the inputs are activated the programmable function will immediately lock all doors that are defined in the lockdown door group, regardless of what unlocked them in the first place. Lockdown can be cleared either from a reset push button or keyswitch, or directly from the user interface.

This application note describes how to configure the Protege programming required to implement automated emergency egress and lockdown door control using programmable functions.

The emergency egress feature is not intended to replace the physical emergency door release. Devices located at individual doors on the egress path must comply with local standards and legal requirements.

Prerequisites

Configuring programmable functions in Protege WX requires access to Advanced Mode.

Programming Door Control

In Protege GX and Protege WX automating door control with programmable functions allows you to lock and unlock a door or door group based on the status of a defined output.

How It Works

A designated input is opened, activating a specifically defined control output (many inputs can be assigned to trigger the same output). The control output is monitored by a programmable function, which is triggered by the output's status change. The programmable function implements the door control function (on or off).

Programmable functions can be activated and deactivated by:

- A physical input such as an emergency button or switch wired into the Protege system
- An input that monitors a device such as the fire alarm panel
- A user login that activates an access level output
- An output activated from a floor plan or status list in the user interface
- An output activated by a function code

Further information on programming function codes is available in the Protege GX Operator Reference Manual and Application Note 240: Function Codes in Protege GX.

Programming Steps

For emergency egress or lockdown, the programming is essentially the same.

1. Create a door group to define the doors that will be controlled.
2. A control area needs to be configured to monitor the emergency inputs.
3. Add an output that will be assigned as the control output to trigger the programmable function.
4. An input type is required to define the control output and alarm behavior.
5. Configure the inputs that will trigger the control output when opened and closed.
6. The control area must be armed and disarmed to apply the input changes.
7. Create two programmable functions; one to activate and one to deactivate the door control.
8. Start the programmable functions.

Creating a Door Group

While door control can be configured to control a single door, typically the programmable function would lock or unlock a group of doors covering an entire section, building or site.

1. Navigate to **Door Groups**:
 - In Protege GX navigate to **Groups | Door Groups**.
 - In Protege WX navigate to **Programming | Door Groups**.
2. Click **Add**.
3. Give the door group a **Name** that describes its purpose or the location it covers.
4. In the **Doors** section, click **Add** to define the doors included in the group.
5. Multi-select the required doors (Control + Click) and click **OK** to add.
6. Click **Save**.

Configuring the Control Area

For the control output to be activated and deactivated, an area must monitor the status of the designated inputs. While any area can be used for this purpose, for these types of programmable functions you will typically want to create a specific control area used only for this purpose.

1. Navigate to **Programming | Areas** and click **Add**.
2. Give the area a **Name** that describes its purpose and the section, building or site that it covers.
3. Click **Save**.

Add the Control Output

The control output is activated when a monitored input is opened, and deactivated when the input is closed, triggering the related programmable functions accordingly. Any output (such as a physical siren) can be designated as the control output, but it is often preferred to create a virtual output for this purpose.

Each door control process requires its own control output. The output cannot be shared, for example, between emergency egress and lockdown functions, otherwise both will be triggered when the output is activated.

1. Navigate to **Programming | Outputs** and click **Add**.
2. The **Name** should clearly identify its function (such as Emergency Egress Control or Lockdown Control).
3. Set the **Module Type** to Output (PX).
4. Set the **Module Address** to any available address not used by any physical modules, or alternatively create a virtual output expander to assign the virtual output to.
5. Set the **Module Output** to any available number.
6. It is recommended to disable event logging for virtual outputs to reduce their impact on event storage. In the **Options** tab, disable the **Log Output Events** option.
7. Click **Save**.

Repeat the above steps to create a virtual output for each door control process as required.

In some scenarios it may be preferable to create a virtual output expander to associate virtual outputs with.

Create an Input Type

An input type defines how the related inputs will behave, and the output they will control. It also provides the opportunity to configure alarm and reporting options.

Each door control process requires its own input type, as this defines which control output is activated and deactivated by the associated inputs. The input type cannot be shared between functions.

1. Navigate to **Programming | Input Types** and click **Add**.
2. Enter a **Name** that identifies its function.
3. In the **Configuration** section, set the **Control Output** to the output that will be controlled by inputs with this input type assigned. In this example, these are the virtual outputs for Emergency Egress Control and Lockdown Control created above.

The output can be physical or virtual, but should not be linked to conflicting programmable functions.

4. In the **Options (2)** tab:
 - Enable the **Activate Control Output on Alarm** option.
 - Enable the **Deactivate Control Output on Restore** option.

This configures the control output to be activated when an associated input is opened, and deactivated when the input is closed. The deactivate option may not be suitable in all scenarios, depending on the inputs used to activate the door control functions and the method for deactivation.

5. Click **Save**.

Reporting Options

The above programming configures the output activation requirements for this functionality, however alarm reporting and reporting to a central monitoring station when the input is triggered may also be required.

To enable automated reporting:

1. In the **Options (1)** tab, enable the **Twenty Four Hour Panic Input** option.

With this option enabled the area does not need to be armed for the alarm to be triggered.

2. The **Generate 24HR Alarms** option needs to be enabled in conjunction with the Twenty Four Panic Input.
3. For emergency egress input types, enabling the **Fire Input** option will send a FIRE action code to the reporting station, in addition to any other configured reporting.
4. Enable the following **Reporting Options**:
 - Report Alarms
 - Report Tamper
 - Report Bypass
 - Report Restores

5. In the **General** tab, select the appropriate **Custom Reporting Code** (such as Fire Alarm or Panic Alarm).

The standard configuration will report a default burglary event code to the central monitoring station when the emergency is triggered, but a custom reporting code will typically be more suitable.

6. Click **Save**.

Repeat the above steps to create an input type for each door control process as required.

Configure Inputs

Inputs are the critical triggers that initiate the emergency response process. Almost any input can be configured as the 'break glass in case of emergency' switch that alerts the system there is a problem that needs a response. Further, any number of inputs can be programmed to trigger the same programmable function.

If your inputs, like emergency buttons, do not have an off setting you will need another method to deactivate the control output. This may be another input, or the control output can be deactivated from the user interface.

1. Navigate to **Programming | Inputs**.
2. (In Protege GX only): In the toolbar, select the **Controller** that the input will be controlled by.
3. Select or **Add** an input that will activate the control output.
4. Enter a **Name** that identifies the input's function (such as Lockdown Panic Button).
5. In the **Areas and Input Types** tab:
 - Select the control **Area** configured above.
 - Select the **Input Type** configured above.
6. Click **Save**.

Note: Any time you make a change to the inputs assigned to an area, you need to arm and disarm the area to apply the change.

Update the Area

Once input configuration has been completed, the area needs to be armed and disarmed to apply the changes.

In Protege GX

1. Navigate to **Programming | Areas**.
2. Right click on the area and click **Arm**.
3. Right click on the area and click **Disarm**.

In Protege WX

1. Navigate to **Monitoring | Areas**.
2. Click the **Controls** button for the area and click **Arm**.
3. Click the **Controls** button for the area and click **Disarm**.

After the area is updated it can be armed and disarmed as required for normal operation. Activation of the assigned inputs will trigger the control output regardless. As long as the 24HR portion of the area is armed, any configured reporting will be generated due to the Twenty Four Hour Panic Input option enabled in the associated input type.

Automation Programming

Door control is automated through the configuration of programmable functions.

Programmable functions operate like a service that monitors a designated output and performs the configured door control action whenever the output is activated or deactivated.

Each door control process requires two programmable functions; one to activate the door control, and one to deactivate it. Each process also requires its own dedicated control output, input type and inputs. Door groups and areas can be shared between different processes.

Programmable functions have many door function and door control options available. This application note describes the common settings required for emergency egress and lockdown scenarios. Information on other configuration options can be found under Door Control in the Programmable Functions section of the relevant Protege GX or Protege WX reference manual.

Emergency Egress

Activate Emergency Unlock

The first programmable function is configured to unlock the doors when the monitored output is activated.

1. Navigate to **Automation | Programmable Functions**.
2. (In Protege GX only): In the toolbar, select the **Controller** that will control the automation.
3. Click **Add** to create the activation programmable function.
4. The **Name** should identify its function, such as 'Emergency Egress Activation'.
5. Set the **Type** to Door Control.
6. In the **Door Control** tab:
 - Set the **Door Function Mode** to Follow Pulse On Output
 - Set the **Door Control Mode** to Fire Control Door Unlock
 - Set the **Output to Check** to the output defined as the **Control Output** in the input type configured for this function.

When this output is activated the programmable function will be triggered and the doors unlocked.
 - Set the **Door Group to Control** to the door group configured for this programmable function.
7. Click **Save**.

Deactivate Emergency Unlock

The second programmable function is configured to deactivate the unlock function when the monitored output is deactivated, and return the doors to their programmed state.

1. Click **Add** to create the deactivation programmable function.
2. The **Name** should identify its function, such as 'Emergency Egress Deactivation'.
3. Set the **Type** to Door Control.
4. In the **Door Control** tab:
 - Set the **Door Function Mode** to Inverted Follow Pulse Off Output
 - Set the **Door Control Mode** to Fire Control Door Unlock
 - Set the **Output to Check** to the output defined as the **Control Output** in the input type configured for this function.

When this output is deactivated the programmable function will be triggered and the doors secured.
 - Set the **Door Group to Control** to the door group configured for this programmable function.
5. Click **Save**.

Emergency Lockdown

Activate Emergency Lockdown

The first programmable function is configured to lock down the doors when the monitored output is activated.

1. Navigate to **Automation | Programmable Functions**.
2. (In Protege GX only): In the toolbar, select the **Controller** that will control the automation.
3. Click **Add** to create the activation programmable function.
4. The **Name** should identify its function, such as 'Emergency Lockdown Activation'.
5. Set the **Type** to Door Control.
6. In the **Door Control** tab:
 - Set the **Door Function Mode** to Follow Pulse On Output
 - Set the **Door Control Mode** to Door Lockdown (Deny Entry + Exit)*
 - Set the **Output to Check** to the output defined as the **Control Output** in the input type configured for this function.

When this output is activated the programmable function will be triggered and the doors locked.
 - Set the **Door Group to Control** to the door group configured for this programmable function.
7. Click **Save**.

Deactivate Emergency Lockdown

The second programmable function is configured to deactivate the lockdown when the monitored output is deactivated, and return the doors to their programmed state.

1. Click **Add** to create the deactivation programmable function.
2. The **Name** should identify its function, such as 'Emergency Lockdown Deactivation'.
3. Set the **Type** to Door Control.
4. In the **Door Control** tab:
 - Set the **Door Function Mode** to Inverted Follow Pulse Off Output
 - Set the **Door Control Mode** to Door Lockdown (Deny Entry + Exit)*
 - Set the **Output to Check** to the output defined as the **Control Output** in the input type configured for this function.

When this output is deactivated the programmable function will be triggered and the doors unlocked.
 - Set the **Door Group to Control** to the door group configured for this programmable function.
5. Click **Save**.

* For full lockdown the **Door Control Mode** is set to Deny Entry + Exit to prevent movement in or out of the area, however this may be set to Allow Entry, Allow Exit, or Allow Entry + Exit as lockdown requirements dictate.

Start the Programmable Functions

Programmable functions operate like a service and must be manually started to begin the automated activity.

The controller's health status will display a notification if a programmable function is not running.

In Protege GX

Right click each programmable function and select **Start** to begin the automation.

In Protege WX

Navigate to **Monitoring | Programmable Functions**. For each programmable function, click the **Controls** button then click **Start**.

Advanced Options

Super users can gain access to doors in lockdown.

When the **User has Super Rights and can Override Antipassback** option is enabled, the user is considered a 'super user' by the system. This allows them to override dual code functions, ignore antipassback rules and unlock doors in a lockdown situation. This is particularly important for authorized managers, guards and emergency response personnel to be able to access the locked down area.

To enable this feature, navigate to **Users | Users | Options** and select the option in the **Advanced Options** section for each required user.

Programming Scenario

The following scenario demonstrates the programming required to implement emergency egress and emergency lockdown functions for a building consisting of four doors.

Door Group

Create one door group called Emergency Doors and add all four doors to the group. The same door group can be used for both the egress and lockdown functions.

Area

Create one area called Emergency Control Area.

Control Outputs

Add two outputs:

- Fire Egress Control Output
- Panic Lockdown Control Output

Each output will need its own unique **Module Output** number. Both can be assigned the same **Module Address**. Disable the **Log Output Events** option for both outputs.

Input Types

Create two input types:

1. Fire Egress Inputs
 - Set the **Control Output** to Fire Egress Control Output
 - Enable the **Activate Control Output on Alarm** option
 - Enable the **Deactivate Control Output on Restore** option
 - Enable the **Twenty Four Hour Panic Input** option
 - Enable the **Generate 24HR Alarms** option
 - Enable the **Fire Input** option
 - Enable the **Reporting Options**
 - Report Alarms
 - Report Tamper
 - Report Bypass
 - Report Restores
 - In the **General** tab, select the Fire Alarm **Custom Reporting Code**
2. Panic Lockdown Inputs
 - Set the **Control Output** to Panic Lockdown Control Output
 - Enable the **Activate Control Output on Alarm** option
 - Enable the **Deactivate Control Output on Restore** option
 - Enable the **Twenty Four Hour Panic Input** option
 - Enable the **Generate 24HR Alarms** option
 - Enable the **Reporting Options**
 - Report Alarms
 - Report Tamper
 - Report Bypass
 - Report Restores
 - In the **General** tab, select the Panic Alarm **Custom Reporting Code**

Inputs

For simplicity we will add two inputs which are both emergency switches with on/off capabilities:

1. Fire Switch
 - Set the **Area** to Emergency Control Area
 - Set the **Input Type** to Fire Egress Inputs
2. Panic Switch
 - Set the **Area** to Emergency Control Area
 - Set the **Input Type** to Panic Lockdown Inputs

Update the Area

Arm and disarm the Emergency Control Area to apply the input changes.

Fire Egress Programmable Functions

1. Create the Fire Egress Activation programmable function.
 - Set the **Type** to Door Control
 - Set the **Door Function Mode** to Follow Pulse On Output
 - Set the **Door Control Mode** to Fire Control Door Unlock
 - Set the **Output to Check** to Fire Egress Control Output
 - Set the **Door Group to Control** to Emergency Doors
2. Create the Fire Egress Deactivation programmable function.
 - Set the **Type** to Door Control
 - Set the **Door Function Mode** to Inverted Follow Pulse Off Output
 - Set the **Door Control Mode** to Fire Control Door Unlock
 - Set the **Output to Check** to Fire Egress Control Output
 - Set the **Door Group to Control** to Emergency Doors

Panic Lockdown Programmable Functions

1. Create the Panic Lockdown Activation programmable function.
 - Set the **Type** to Door Control
 - Set the **Door Function Mode** to Follow Pulse On Output
 - Set the **Door Control Mode** to Door Lockdown (Deny Entry + Exit)
 - Set the **Output to Check** to Panic Lockdown Control Output
 - Set the **Door Group to Control** to Emergency Doors
2. Create the Panic Lockdown Deactivation programmable function.
 - Set the **Type** to Door Control
 - Set the **Door Function Mode** to Inverted Follow Pulse Off Output
 - Set the **Door Control Mode** to Door Lockdown (Deny Entry + Exit)
 - Set the **Output to Check** to Panic Lockdown Control Output
 - Set the **Door Group to Control** to Emergency Doors

Start the Programmable Functions

Manually start each of the four programmable functions.

Super Users

Remember to enable the **User has Super Rights and can Override Antipassback** option for any users who will need to be able to override doors in lockdown.

Designers & manufacturers of integrated electronic access control, security and automation products.
Designed & manufactured by Integrated Control Technology Ltd.
Copyright © Integrated Control Technology Limited 2003-2022. All rights reserved.

Disclaimer: Whilst every effort has been made to ensure accuracy in the representation of this product, neither Integrated Control Technology Ltd nor its employees shall be liable under any circumstances to any party in respect of decisions or actions they may make as a result of using this information. In accordance with the ICT policy of enhanced development, design and specifications are subject to change without notice.