Cleco®

Production Tools

mPro400GC(D)

Integrating mPro400GC and mPro400GCD

Cleco

Process programming

☑ Basic   🔧 Tool Setup

🖾 Standard   📚 Archive

▦ Advanced   👥 Diagnostics

🔧 Run Screen   ✏ Utilities

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Tool Group 1: Waiting for Start Signal

mPro400

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Content

1 About this document

This document is intended for all persons who replaces mPro400GC-P/-M by mPro400GCD-P/-M.
It contains information

- on installation
- on configuration and function.

The original language of this document is English.

ℹ️ Observe the safety instructions listed in the respective hardware descriptions!

1.1 Other documents

Number	Document
P2174BA	Hardware Description – mPro400GC
P2280PM	Programming Manual – S168813 mPro400GC(D) & mPro200GC(-AP)
P2300HW	Hardware Description – mPro400GCD-P
P2309HW	Hardware Description – mPro400GCD-M
P2349HW	Hardware Description – mPro400GCD-SH

1.2 Symbols in the text

italic	Menu options (e.g., Diagnostics) input fields, check boxes, radio buttons or dropdown menus.
>	Indicates selection of a menu option from a menu, e.g., *File > Print*.
<...>	Specifies switches, pushbuttons or the keys of an external keyboard, e.g., <F5>.
Courier	Indicates Filenames and paths, e.g., *setup.exe*.
•	Indicates lists, level 1.
–	Indicates lists, level 2.
a) b)	Indicates options.
➢	Indicates results.
1. (...) 2. (...)	Indicates action steps.
►	Indicates single action steps.

2 Distinction of Controller Types

There are two types of Global Controller:

- mPro400GC: only for analog tools
- mPro400GCD: for analog and digital tools

For controllers produced after November 2017, the software automatically recognizes the controller type. If the software does not automatically recognize the controller type, the type has to be confirmed manually. Which controller type is used can be determined on the bottom side:

- for Series on the type plate
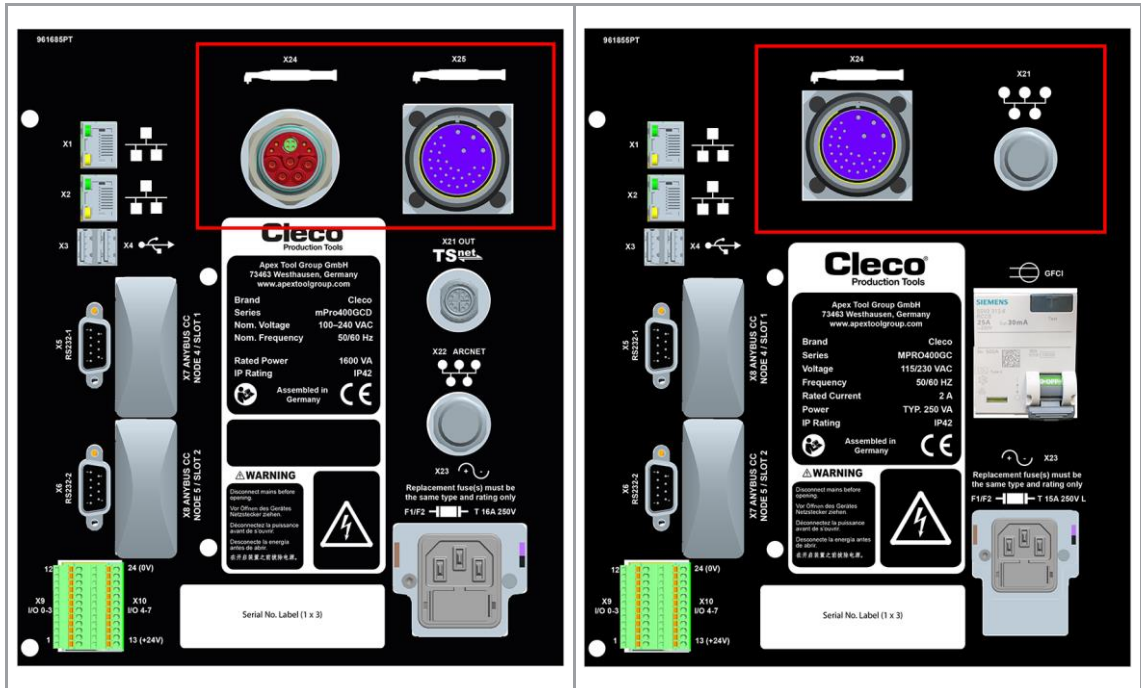- mPro400GCD-P have a second connection for NeoTek tools

Fig. 2-1: mPro400GCD-P   *Fig. 2-2: mPro400GCD-P*

Controller type	mPro400GC	mPro400GCD
Primary	mPro400GC-P	mPro400GCD-P
Master	mPro400GC-M	mPro400GCD-M
Secondary	mPro400GC-S	mPro400GCD-S(H)

Comparison of mPro400GC and mPro400GCD

Feature	mPro400GC	mPro400GCD-P/-M	mPro400GCD-S(H)
TSnet connection	No	Yes	Yes
ARCNet (System Bus) connection: Connection to mPro400GC-S, BTS spindles, System Bus Accessories (socket trays, stack lights, I/O boxes)	Yes	Yes	No
TSnet connection: Connection to mPro400GCD-S(H)	No	Yes	Yes
Range of input power	115 V or 230 V	100 – 240 V AC	100 – 240 V AC
Power supply	GFCI, single-phase	Switch mode power supply with PFC, single-phase	
UL certified	No	Yes	Yes

3 mPro400GC Replaced by mPro400GCD

If mPro400GC-P/-M is replaced by mPro400GCD-P/-M, certain things need to be considered. Below are various scenarios and procedures for exchanging controller types.

3.1 Primary/Master Controller

Scenario

- mPro400GC-P/-M is replaced by mPro400GCD-P/-M
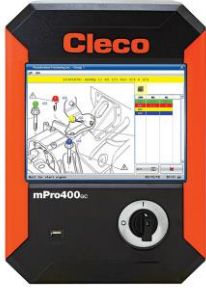- No Secondary controllers connected

Old system layout	New system layout
mPro400GC-P/ mPro400GC-M	mPro400GCD-P/ mPro400GCD-M

Abb. 3-1: Primary/Master controller mPro400GC   *Abb. 3-2: Primary/Master controller mPro400GCD*

Conditions for New System Layout

Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer.
Operating system	2.7

Procedure

Save parameters from mPro400GC-P/-M
1. Select *Navigator > Administration > Save Parameters*.
   ➢ The *Save Parameters* dialog opens.
2. Select the storage location and confirm with <OK>. The parameters can be stored on an internal storage device (CF card) or a connected USB drive.
3. Press <All> to save all parameters.
4. Disconnect mPro400GC-P/-M and connect mPro400GCD-P/-M. See documentation P2300HW or P2309HW.

Set up mPro400GCD-P/-M
1. Start mPro400GCD-P/-M.
2. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
3. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Load parameters from an internal storage device (CF card) or a connected USB drive to mPro400GCD-P/-M
1. If the parameters have been saved on the CF card, insert the old CF card into mPro400GCD-P/-M. If the parameters have been saved on the USB drive, insert the USB drive into mPro400GCD-P/-M.
2. Select *Navigator > Administration > Load Parameters*.
   ➢ The Load Parameters dialog opens.
3. Select the previously saved parameters and confirm with <OK>.
4. Press <All> to load all parameters.

Adjust Programmable I/O Mapping

1. Select *Navigator > Tool Setup > I/O*.
2. Confirm the messages with <Run it> and <Continue>.
   ➢ The *Programmable I/O Mapping* dialog opens.
3. Re-parameterize the start switch and the tool light. All signals from PM_DIDO have to be changed to TM_DIDO.

Signal	Input/Output	Bit PM_DIDO	Bit TM_DIDO
Tool Group Start (SA)	Input	0	0
Reverse (TM_LL)	Input	1	1
Function button 2	Input	-	6
Status (Yellow LED)	Output	4	4
Tool OK 1 (Green LED)	Output	3	3
Tool NOK 1 (Red LED)	Output	2	2
Blue LED	Output	-	5

4. Confirm the change with <OK> and <Accept>.

3.2 Install Primary/Master Controller with Existing Secondary Controllers

Scenario

- mPro400GC-P/-M is replaced by mPro400GCD-P/-M
- Existing mPro400GC-S used

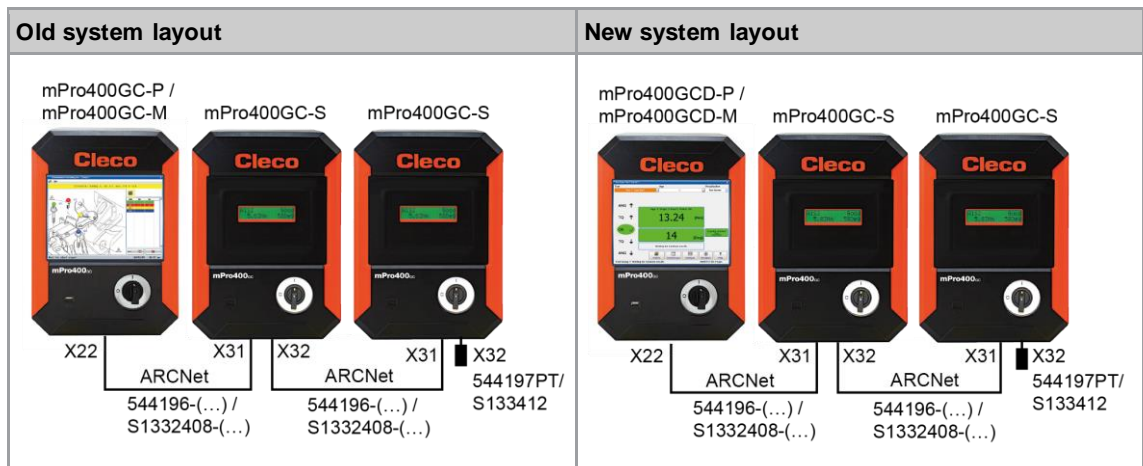| Old system layout	New system layout

Abb. 3-3: Primary/Master controller mPro400GC with Secondary controller mPro400GC

Abb. 3-4: Primary/Master controller mPro400GCD with Secondary controller mPro400GC

Conditions for New System Layout

Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer. mPro400GC-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GC-S. System Bus cable: • Order no. US: 544196-(...) • Order no. EU: S1332408-(...)
System Bus terminator	Only required for mPro400GC-S: • Order no. US: 544197PT • Order no. EU: S133412

Procedure

Save parameters from mPro400GC-P/-M

1. Select *Navigator > Administration > Save Parameters*.
   ➢ The *Save Parameters* dialog opens.
2. Select the storage location and confirm with <OK>. The parameters can be stored on an internal storage device (CF card) or a connected USB drive.
3. Press <All> to save all parameters.
4. Disconnect mPro400GC-P/-M and connect mPro400GCD-P/-M. See documentation P2300HW or P2309HW.

Set up mPro400GCD-P/-M

1. Use the System Bus cable to connect mPro400GCD-P/-M and mPro400GC-S. See documentation P2300HW or P2309HW. Use following inputs and outputs:
2. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
3. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

   - mPro400GCD-P/-M: output X22
   - mPro400GC-S: input X31

4. Use the System Bus cable to connect additional mPro400GC-S to the previous mPro400GC-S if necessary. Use following inputs and outputs:

   - Previous mPro400GC-S: output X32
   - Following mPro400GC-S: input X31

5. Connect the System Bus terminator to X32 at the last mPro400GC-S.
6. Start mPro400GCD-P/-M.
7. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
8. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Load parameters from an internal storage device (CF card) or a connected USB drive to mPro400GCD-P/-M

1. If the parameters have been saved on the CF card, insert the old CF card into mPro400GCD-P/-M. If the parameters have been saved on the USB drive, insert the USB drive into mPro400GCD-P/-M.
2. Select *Navigator > Administration > Load Parameters*.
   ➢ The Load Parameters dialog opens.
3. Select the previously saved parameters and confirm with <OK>.
4. Press <All> to load all parameters.

Adjust Programmable I/O Mapping

1. Select *Navigator > Tool Setup > I/O*.
2. Confirm the messages with <Run it> and <Continue>.
   ➢ The *Programmable I/O Mapping* dialog opens.
3. Re-parameterize the start switch and the tool light. All signals from PM_DIDO have to be changed to TM_DIDO.

Signal	Input/Output	Bit PM_DIDO	Bit TM_DIDO
Tool Group Start (SA)	Input	0	0
Reverse (TM_LL)	Input	1	1
Function button 2	Input	-	6
Status (Yellow LED)	Output	4	4
Tool OK 1 (Green LED)	Output	3	3
Tool NOK 1 (Red LED)	Output	2	2
Blue LED	Output	-	5

4. Confirm the change with <OK> and <Accept>.

3.3   Install Primary/Master Controller with New Secondary Controllers

Scenario

- mPro400GC-P/-M is maintained
- mPro400GCD-S(H) is added

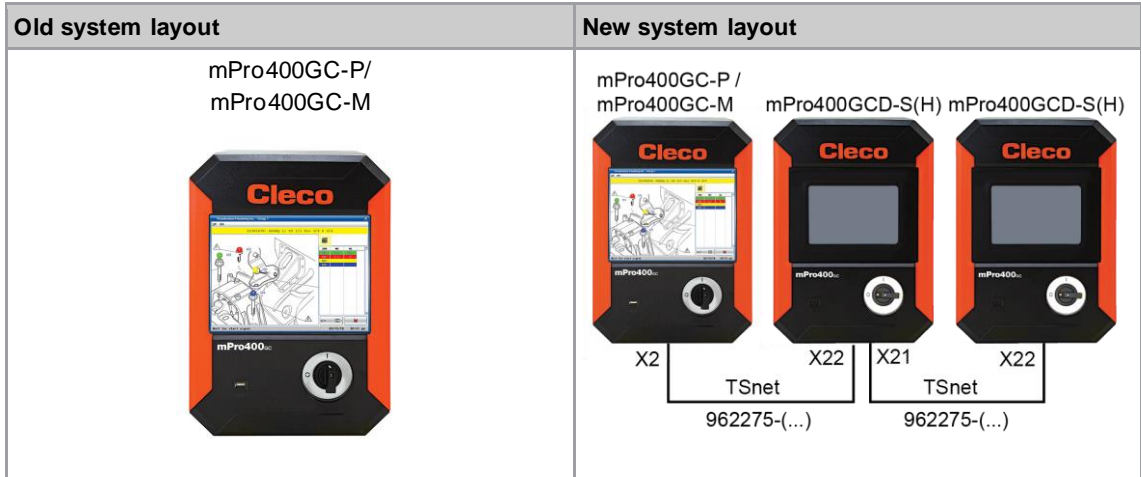| Old system layout	New system layout

Abb. 3-5: Primary/Master controller mPro400GC

Abb. 3-6: Primary/Master controller mPro400GCwith Secondary controller mPro400GCD

Conditions for New System Layout

Type	Indication
Software version	mPro400GC-P/-M: S168813-1.8.0 or newer mPro400GCD-S(H): S168025-510
Operating system	2.7
Cables	mPro400GC-P/-M to mPro400GCD-S(H) RJ45 to TSnet cable: Order no. 962275-(...)
	mPro400GCD-S(H) to mPro400GCD-S(H) TSnet cable: Order no 962037-(...)

Procedure

Parameterize ethernet interface

1. Select *Navigator > Communication > Network Settings*.
2. Enter the ethernet settings in Ethernet Card 2:

Parameter	Value
IP Address	192 168 245 200
Subnet Mask	255 255 255 0

Set up mPro400GC-P/-M

1. Use the *RJ45 to TSnet* cable to connect mPro400GC-P/-M and mPro400GCD-S(H). See documentation P2174HW. Use following inputs and outputs:

   - mPro400GC-P/-M: output X1
   - mPro400GCD-S(H): input X22 (TSnet in)

The TSnet cable may not be connected to the infrastructure network.
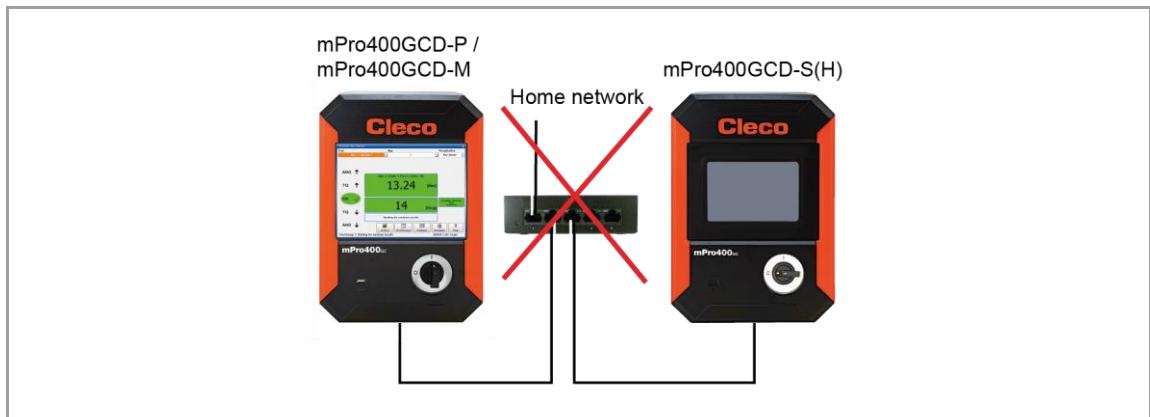
2. Use the TSnet cable to connect additional mPro400GCD-S(H) to the previous mPro400GCD-S(H) if necessary. Use following inputs and outputs:

   – Previous mPro400GCD-S(H): output X21 (TSnet out)
   – Following mPro400GCD-S(H): input X22 (TSnet in)

3. Start mPro400GC-P/-M.
4. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
5. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Install Secondary controllers
1. Select *Navigator > Tool Setup > Install.*
   ➢ The *Assign Tool* dialog opens.
2. The following settings are required:

Parameter	Description
Group Name	Select tool group. It is possible to select up to 16 tool groups.
Name	Assign a name to the Secondary.
Type	Select *Secondary*.

3. Confirm with <OK>.

3.4 Install Primary/Master Controller with Secondary Controllers mPro400GC

Scenario
- mPro400GC-P/-M is replaced by mPro400GCD-P/-M
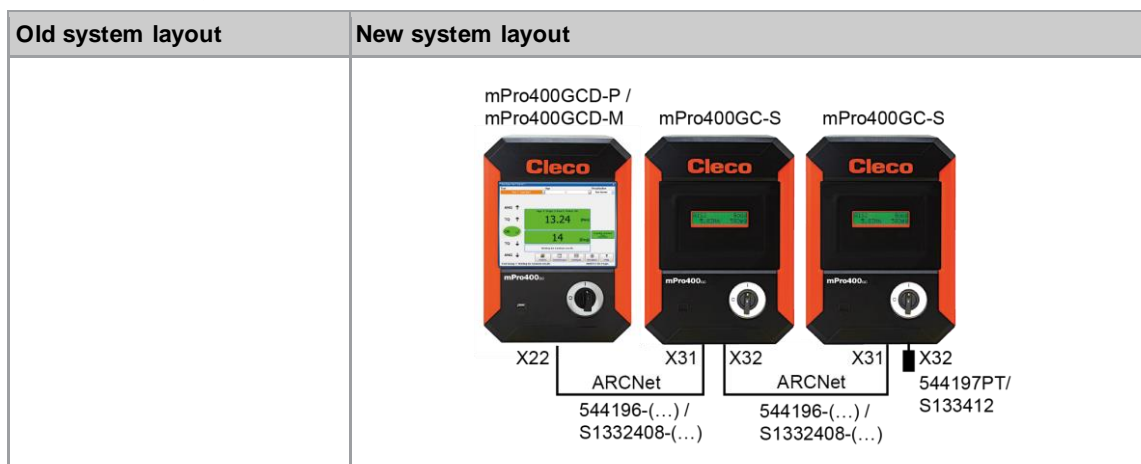- No Secondary controllers connected

Old system layout	New system layout

Abb. 3-7: Primary/Master controller mPro400GCD with Secondary controller mPro400GC

Conditions for New System Layout

Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer. mPro400GC-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GC-S. System Bus cable: • Order no. US: 544196-(...) • Order no. EU: S1332408-(...)
System Bus terminator	Only required for mPro400GC-S: • Order no. US: 544197PT • Order no. EU: S133412

Procedure

Save parameters from mPro400GC-P/-M
1. Select *Navigator > Administration > Save Parameters*.
   ➢ The *Save Parameters* dialog opens.
2. Select the storage location and confirm with <OK>. The parameters can be stored on an internal storage device (CF card) or a connected USB drive.
3. Press <All> to save all parameters.
4. Disconnect mPro400GC-P/-M and connect mPro400GCD-P/-M. See documentation P2300HW or P2309HW.

Set up mPro400GCD-P/-M
1. Use the System Bus cable to connect mPro400GCD-P/-M and mPro400GC-S. See documentation P2300HW or P2309HW. Use following inputs and outputs:
2. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
3. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

   – mPro400GCD-P/-M: output X22
   – mPro400GC-S: input X31

4. Use the System Bus cable to connect additional mPro400GC-S to the previous mPro400GC-S if necessary. Use following inputs and outputs:

   – Previous mPro400GC-S: output X32
   – Following mPro400GC-S: input X31

5. Connect the System Bus terminator to X32 at the last mPro400GC-S.
6. Start mPro400GCD-P/-M.
7. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
8. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Load parameters from an internal storage device (CF card) or a connected USB drive to mPro400GCD-P/-M
1. If the parameters have been saved on the CF card, insert the old CF card into mPro400GCD-P/-M. If the parameters have been saved on the USB drive, insert the USB drive into mPro400GCD-P/-M.
2. Select *Navigator > Administration > Load Parameters*.
   ➢ The Load Parameters dialog opens.
3. Select the previously saved parameters and confirm with <OK>.
4. Press <All> to load all parameters.

Adjust Programmable I/O Mapping
1. Select *Navigator > Tool Setup > I/O*.
2. Confirm the messages with <Run it> and <Continue>.
   ➢ The *Programmable I/O Mapping* dialog opens.
3. Re-parameterize the start switch and the tool light. All signals from PM_DIDO have to be changed to TM_DIDO.

Signal	Input/Output	Bit PM_DIDO	Bit TM_DIDO
Tool Group Start (SA)	Input	0	0
Reverse (TM_LL)	Input	1	1

Signal	Input/Output	Bit PM_DIDO	Bit TM_DIDO
Function button 2	Input	-	6
Status (Yellow LED)	Output	4	4
Tool OK 1 (Green LED)	Output	3	3
Tool NOK 1 (Red LED)	Output	2	2
Blue LED	Output	-	5

4. Confirm the change with <OK> and <Accept>.

3.5 Install Primary/Master Controller with Secondary Controllers mPro400GCD
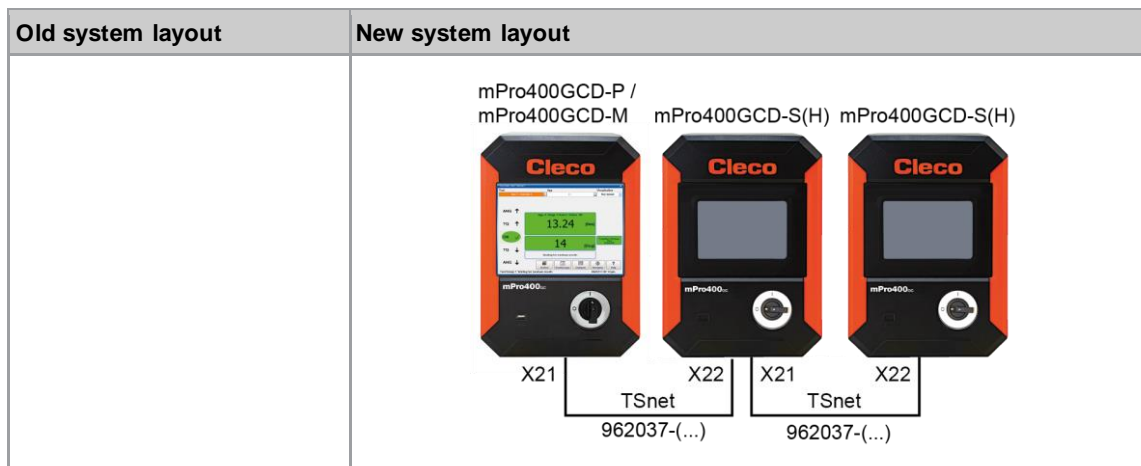
Scenario

- mPro400GCD-P/-M
- mPro400GCD-S(H) is added

Old system layout	New system layout

Abb. 3-8: Primary/Master controller mPro400GCD with Secondary controller mPro400GCD

Conditions for New System Layout

| Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer mPro400GCD-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GCD-S(H) TSnet cable: Order no. 962037-(...)

Procedure

Set up mPro400GCD-P/-M

1. Use the TSnet cable to connect mPro400GCD-P/-M and mPro400GCD-S(H). See documentation P2300HW or P2309HW. Use following inputs and outputs:

    – mPro400GCD-P/-M: output X21
    – - mPro400GCD-S(H): input X22

The TSnet cable may not be connected to the infrastructure network.
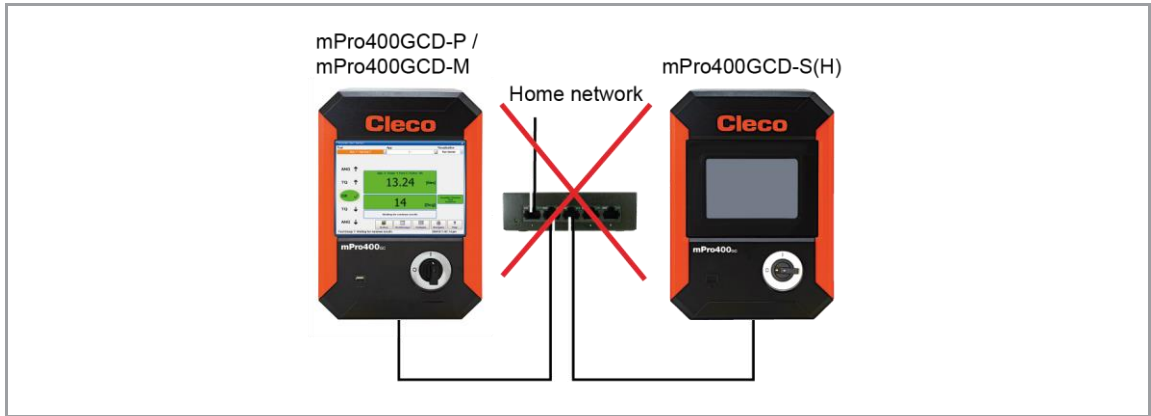
2. Use the TSnet cable to connect additional mPro400GCD-S(H) to the previous mPro400GCD-S(H) if necessary. Use following inputs and outputs:

   – Previous mPro400GC-S: output X22
   – Following mPro400GC-S: input X21

3. Start mPro400GCD-P/-M.
4. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
5. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Install Secondary controllers
1. Select *Navigator > Tool Setup > Install*.
   ➢ The *Assign Tool* dialog opens.
2. The following settings are required:

Parameter	Description
Group Name	Select tool group. It is possible to select up to 16 tool groups.
Name	Assign a name to the Secondary.
Type	Select *Secondary*.

3. Confirm with <OK>.

3.6 Install Primary/Master Controller with Two Types of Secondary Controllers

Scenario
- mPro400GCD-P/-M
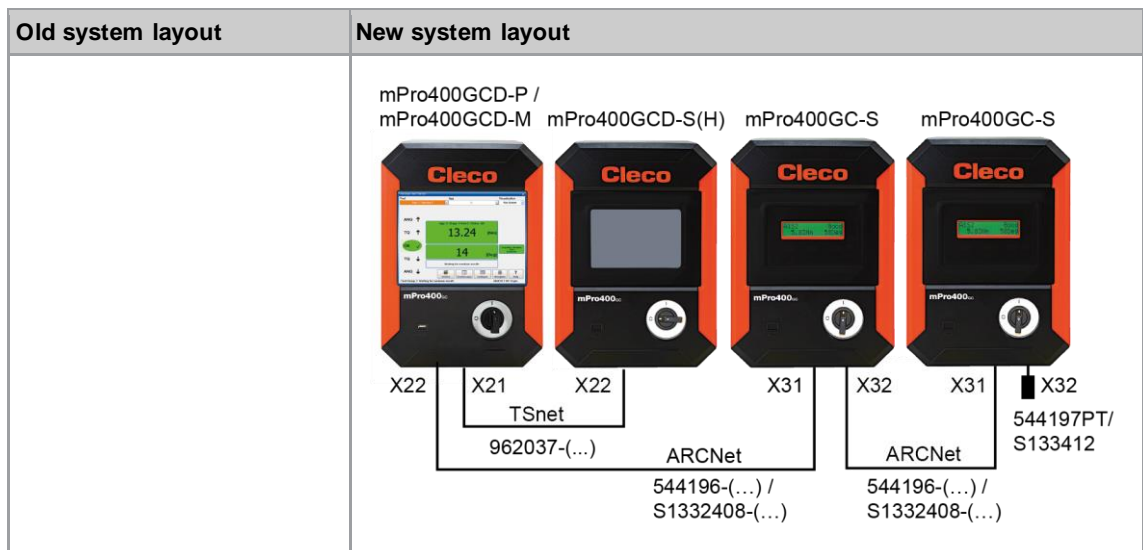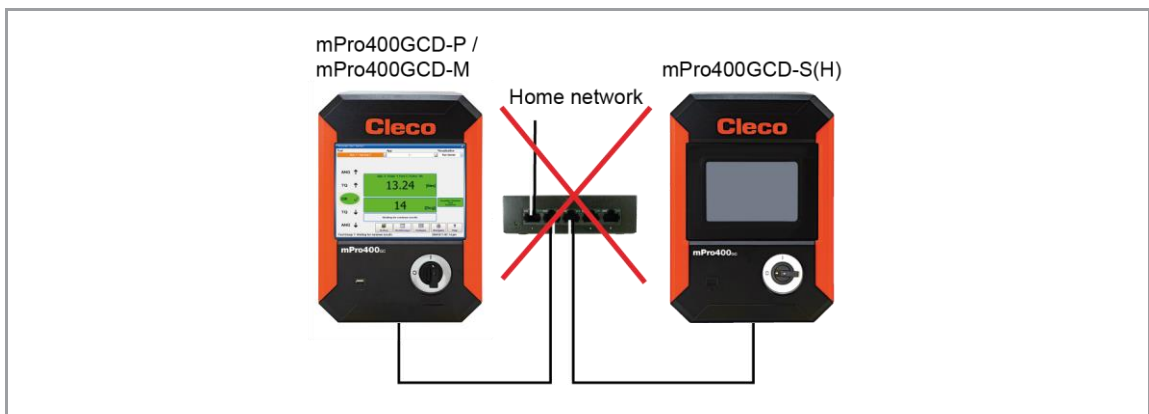- mPro400GC-S and mPro400GCD-S(H) are added

Old system layout	New system layout

Fig. 3-9: Primary/Master controller mPro400GCD with Secondary controller mPro400GC and mPro400GCD

Conditions for New System Layout

Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer mPro400GCD-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GCD-S(H) TSnet cable: Order no.: 962037-(...)
	mPro400GCD-P/-M to mPro400GC-S System Bus cable: • Order no. US: 544196-(...) • Order no. EU: S1332408-(...)
System Bus terminator	Only required for mPro400GC-S: • Order no. US: 544197PT • Order no. EU: S133412

Procedure

Set up mPro400GCD-P/-M

1. Use TSnet cable to connect mPro400GCD-P/-M and mPro400GCD-S(H). See documentation 2300HW or P2309HW. Use following inputs and outputs:

   – mPro400GCD-P/-M: output X21
   – mPro400GCD-S(H): input X22

2. Use the System Bus cable to connect mPro400GCD-P/-M and mPro400GC-S. Use following inputs and outputs:

   – mPro400GCD-P/-M: output X22
   – mPro400GC-S: input X31

> ℹ️ The TSnet cable may not be connected to the infrastructure network.

3. Use the System Bus cable to connect additional mPro400GC-S to the previous mPro400GC-S if necessary. Use following inputs and outputs:

   – Previous mPro400GC-S: output X32
   – Following mPro400GC-S: input X31

4. Connect the System Bus terminator to X32 at the last mPro400GC-S.

5. Use the TSnet cable to connect additional mPro400GCD-S(H) to the previous mPro400GCD-S(H) if necessary. Use following inputs and outputs:

   – Previous mPro400GCD-S(H): output X21
   – Following mPro400GCD-S(H): input X22

6. Start mPro400GCD-P/-M.

7. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.

8. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Install Secondary controllers

1. Select *Navigator > Tool Setup > Install*.
   ➢ The *Assign Tool* dialog opens.
2. The following settings are required:

Parameter	Description
Group Name	Select tool group. It is possible to select up to 16 tool groups.
Name	Assign a name to the Secondary.
Type	Select *Secondary*.

3. Confirm with <OK>.

3.7 Install Primary/Master Controller with Secondary Controllers and Stack Lights

In combination with stack lights, mPro400GC and mPro400GCD controllers cannot be mixed.

3.7.1 mPro400GC

Scenario

- mPro400GCD-P/-M
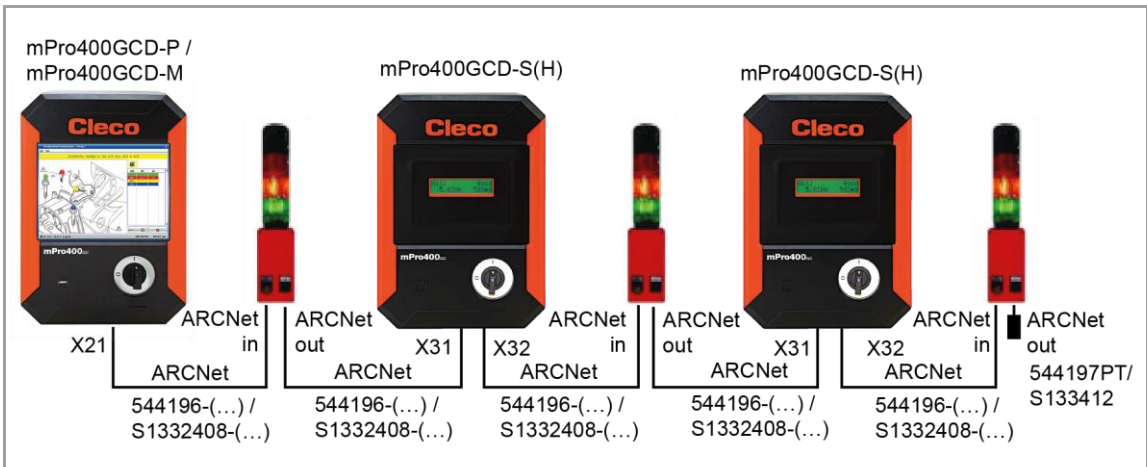- mPro400GC-S and mPro400GCD-S(H) are added

Fig. 3-10: Primary/Master controller mPro400GC with Secondary controller mPro400GC and stack lights

Conditions for New System Layout

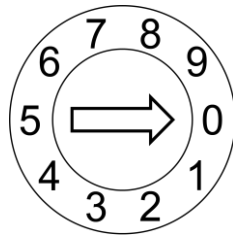| Type	Indication
Software version	mPro400GC-P/-M: S168813-1.8.0 or newer mPro400GC-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GC-S. System Bus cable: • Order no. US: 544196-(...) • Order no. EU: S1332408-(...)
System Bus terminator	Only required for mPro400GC-S or stack lights: • Order no. US: 544197PT • Order no. EU: S133412

Procedure

Set up mPro400GCD-P/-M

1. Use the System Bus cable to connect mPro400GC-P/-M and the first stack light. Use following inputs and outputs:

   – mPro400GC-P/-M: output X21
   – Stack light: input ARCNet in

2. Use the System Bus cable to connect mPro400GC-S to the stack light. Use following inputs and outputs:

   – Stack light: output ARCNet out
   – mPro400GC-S: input X31

3. Use the System Bus cable to connect additional mPro400GC-S or stack lights.
4. Connect the System Bus terminator to the output at the last stack light.
5. Start mPro400GC-P/-M.
6. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
7. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Parameterize stack lights

1. Assign each stack light its own ARCNet address:
   The default ARCNet address is printed on the front of the housing, e.g., 101. If several stack lights are used, screw on the housing and change the ARCNet address at the rotary controls internally with a screwdriver.

The two rotary controls are named LOW and HIGH. The ARCNet address consists of three digits:

- Digit 1: fixed value „1"
- Digit 2: setting of the rotary control „HIGH"
- Digit 3: setting of the rotary control „LOW"

Example:

- Rotary control „HIGH": 0
- Rotary control „LOW": 3

➢ ARCNet address: 103

2. Select *Navigator > Tool Setup > I/O > Run it > Continue* on the controller.
   ➢ It opens the Programmable I/O Mapping.
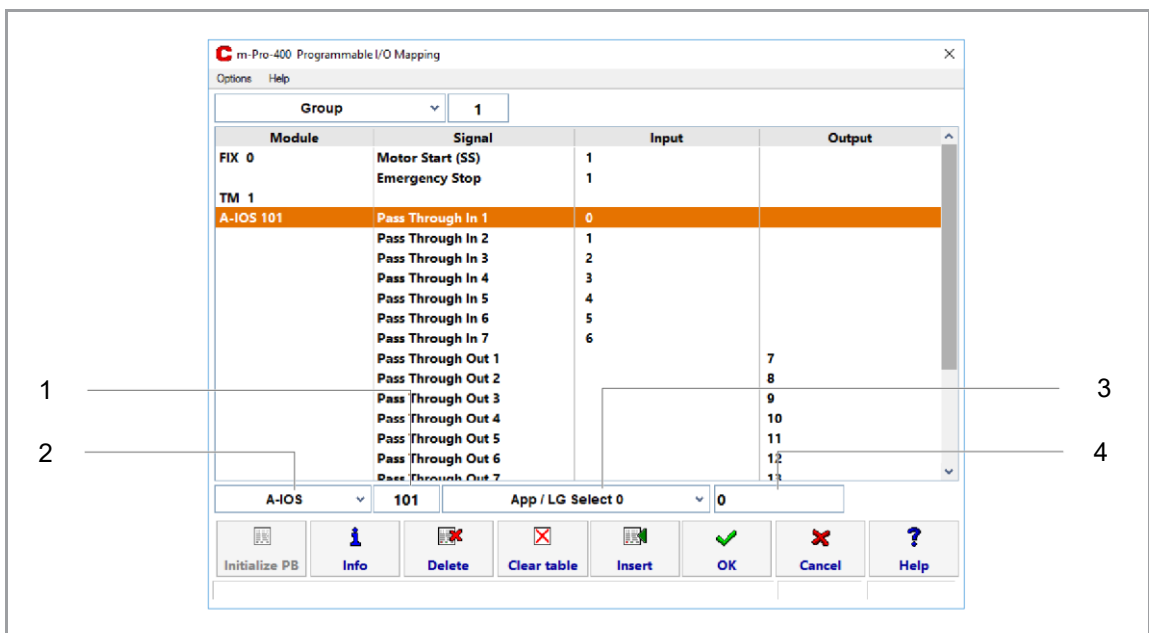3. Parameterize the inputs and outputs of the stack lights.

Fig. 3-11: Programmable I/O Mapping

Item	Setting
1	► Select A-IOS.
2	► Enter ARCNet address.
3	► Select the desired signal.
4	► Enter the bit.

The inputs are from bit 0 - 7, the outputs are from bit 8 - 15. For more information see ON / OUTPUTS A-OK BRIDGE in the supplied BUILDING PLAN of the stack lights.

4. Leave the I/O to save the settings.

3.7.2 mPro400GCD

Scenario

- mPro400GCD-P/-M and mPro400GCD-S(H) are available
- Stack lights are added
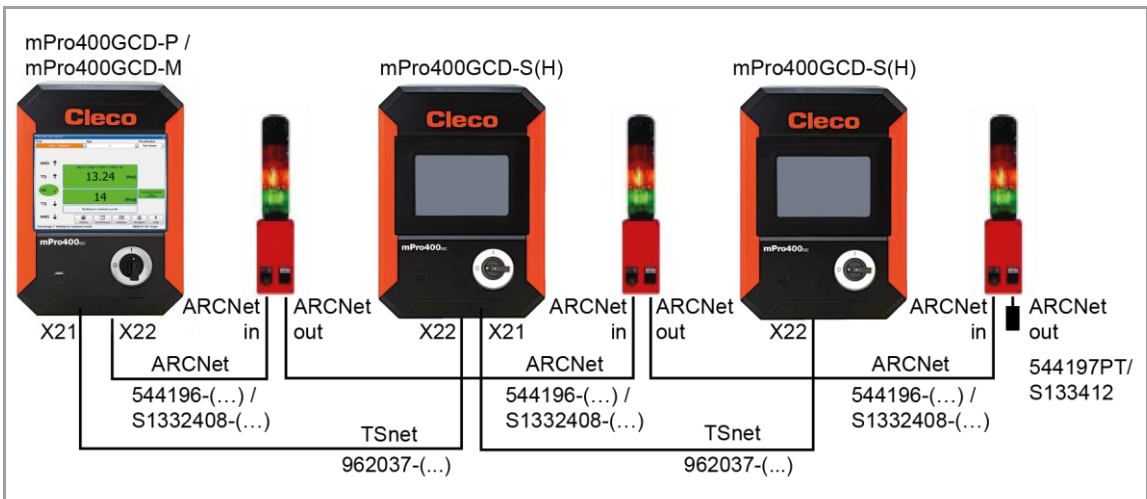
Fig. 3-12: Primary/Master controller mPro400GCD with Secondary controller mPro400GCD and stack lights

Conditions for New System Layout

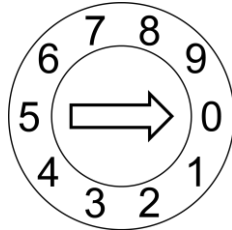| Type	Indication
Software version	mPro400GCD-P/-M: S168813-1.8.0 or newer mPro400GCD-S: S168025-510
Operating system	2.7
Cables	mPro400GCD-P/-M to mPro400GCD-S(H) TSnet cable: Order no. 962037-(...)
	mPro400GCD-P/-M to stack lights. System Bus cable: • Order no. US: 544196-(...) • Order no. EU: S1332408-(...)
System Bus terminator	Only required for stack lights: • Order no. US: 544197PT • Order no. EU: S133412

Procedure

Set up mPro400GCD-P/-M

1. Use the System Bus cable to connect mPro400GCD-P/-M and the first stack light. Use following inputs and outputs:

   - mPro400GC-P/-M: output X22
   - Stack lights: input ARCNet in

2. Use the System Bus cable to connect additional stack lights.
3. Connect the System Bus terminator to X32 at the last mPro400GC-S.
4. Connect mPro400GCD-P/-M and mPro400GCD-S(H). See chapter *see chapter 3.5 Install Primary/Master Controller with Secondary Controllers mPro400GCD, page 12*.
5. Start mPro400GC-P/-M.
6. Ensure that hybrid-capable software is used. The software has to be S168813-1.8.0 or newer.
7. Ensure that the current version of the operating system is used. The operating system has to be 2.7 or newer.

Parameterize stack lights

1. Assign each stack light its own ARCNet address:
The default ARCNet address is printed on the front of the housing, e.g., 101. If several stack lights are used, screw on the housing and change the ARCNet address at the rotary controls internally with a screwdriver.

The two rotary controls are named LOW and HIGH. The ARCNet address consists of three digits:

- Digit 1: fixed value „1"
- Digit 2: setting of the rotary control „HIGH"
- Digit 3: setting of the rotary control „LOW"

Example:
- Rotary control „HIGH": 0
- Rotary control „LOW": 3
- ➢ ARCNet address: 103

2. Select *Navigator > Tool Setup > I/O > Run it > Continue* on the controller.
   ➢ It opens the Programmable I/O Mapping.
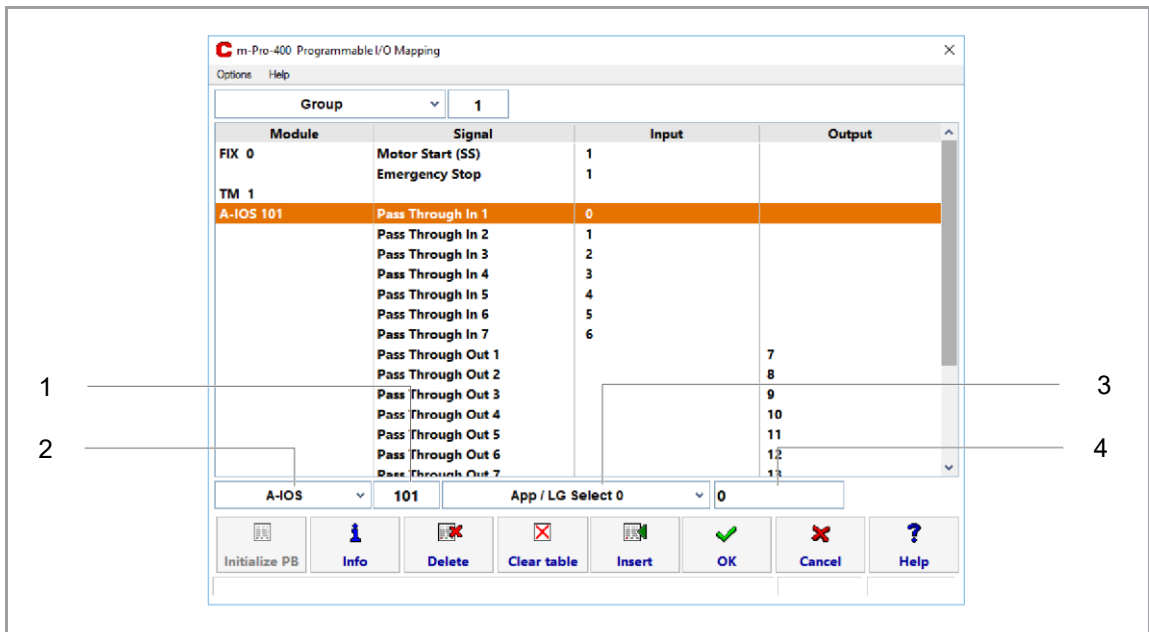3. Parameterize the inputs and outputs of the stack lights.

Fig. 3-13: Programmable I/O Mapping

Item	Setting
5	► Select A-IOS.
6	► Enter ARCNet address.
7	► Select the desired signal.
8	► Enter the bit.

The inputs are from bit 0 - 7, the outputs are from bit 8 - 15. For more information see ON / OUTPUTS A-OK BRIDGE in the supplied BUILDING PLAN of the stack lights.

4. Leave the I/O to save the settings.

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