

Safety Manager
Hardware Reference

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The table below gives an example per group of modules. For each example module element the module name and function is given.

All groups of modules	Example module element	Module name and function
Chassis	CPCHAS-0002	Chassis for redundant Controller (Safety Manager A.R.T.)
Power supplies	PSU-UNI2450U	25—28 Vdc Power supply (1200 W) – UL508 approved
Control Processor modules	QPP-0002	Quad Processor Pack
	Note: The Power Supply module within this group is the exception to the rule. Naming of this module will be in line with the naming convention for Power supplies.	
Input modules	SDI-1624	Safe digital input module (24 Vdc, 16 channels)
Input converter modules	BSN-1608	Digital converter module for Safety sensor signals (16 channels)
Output modules	SDOL-0424	Safe loop-monitored digital output module (24 Vdc, 1 A, 4 channels)
Output converter modules	BSDOL-04UNI	Range setting module
Universal IO modules	RUSIO-3224	Remote Universal Safe IO device (32 channels, 24 Vdc)
IO busses	FS-IOBUS-CPIOX	IO bus in extension cabinet
FTAs for standard functions	TSAI-1620M	Safe 0-20 mA and 4-20 mA analog input FTA (16 channels)
FTAs for special functions	TSHART-1620M	Safe 0-20 mA and 4-20 mA analog input FTA with HART interface (16 channels)
FTAs for communication purposes	DCOM-232/485	RS232/485 communication FTA
IOTAs for remote applications	IOTA-R24	Redundant IO Termination Assembly
Field Terminal Solutions	TERM-NAMUR-01	NAMUR to 0-20mA analog-IN converter terminal
System Interconnection Cables	SICC-0001/L50	System Interconnection Cable terminating on FTAs (SICC)
Communication Cables	CCE-485-05/L10	External communication cable
Power distribution	PDB-0824P	Power Distribution Board (24Vdc, 2 Amp, 8 channel)
5V and watchdog distribution	PDC-CPX05	Power Distribution Board Controller cabinet (5 Vdc, Watchdog)

Chassis

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This chapter describes the following chassis:

Chassis		See
General info about chassis		page 86
Safety Manager		
CPCHAS-0001	Chassis for redundant or non-redundant Controller (Safety Manager)	page 87
IOCHAS-0001S	IO Chassis for non-redundant IO modules (Safety Manager)	page 98
IOCHAS-0001R	IO chassis for redundant IO modules (Safety Manager)	page 107
Safety Manager A.R.T.		
CPCHAS-0002	Chassis for redundant Controller (Safety Manager A.R.T.)	page 116
IOCHAS-0002S	IO Chassis for non-redundant IO modules (Safety Manager A.R.T.)	page 126
IOCHAS-0002R	IO chassis for redundant IO modules (Safety Manager A.R.T.)	page 135

CPCHAS-0001

Chassis for redundant or non-redundant Controller (Safety Manager)

General

The Controller chassis CPCHAS-0001 is used to contain the Control Processor modules. Each Safety Manager has one Controller chassis. The Controller chassis is generally located at the top position in the cabinet, and the IO chassis at lower positions.

A Controller chassis contains the following components:

- Controller housing (see “Controller housing” on page 87)
- Controller backplane CPB-0001 (see “Controller backplane CPB-0001” on page 91)

Controller housing

The Controller housing has been designed specifically for Safety Manager. It is a 19" housing that is open at the front and covered at the back.

Control Processor modules are placed in the chassis through the front of the housing with the use of module guides, which are located at the bottom and top plate of the housing.

The modules are locked in the chassis with the quarter turn fasteners, located below the module-grips.

Figure 43 on page 87 shows the front view of a filled redundant Controller chassis.

Figure 43 Front view of a redundant Controller chassis

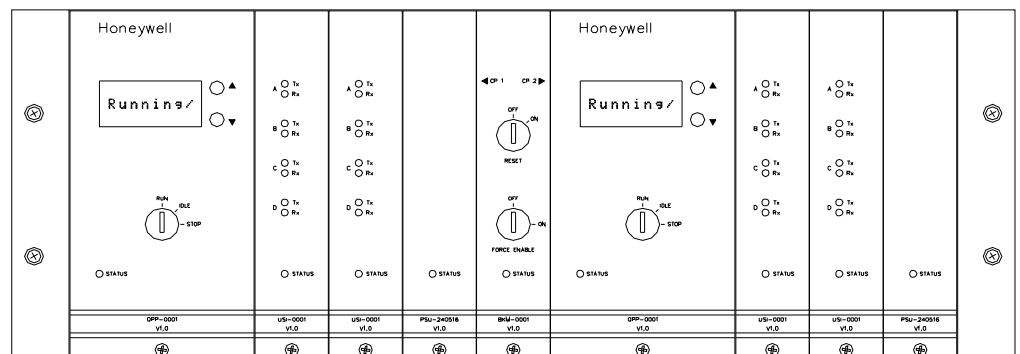
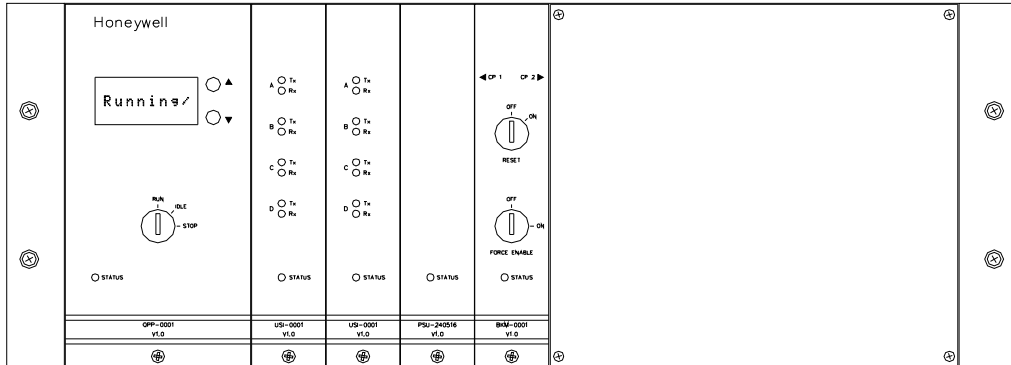


Figure 44 on page 88 shows the front of a filled non-redundant Controller chassis.

Figure 44 Front view of a non-redundant Controller chassis



The back of the housing is covered by a magnetically locked back cover plate, which can be swung upwards to reveal the Controller backplane.

Cables must be tie-wrapped to one of the three horizontal bars at the back of the housing, to lead them towards the side of the chassis.

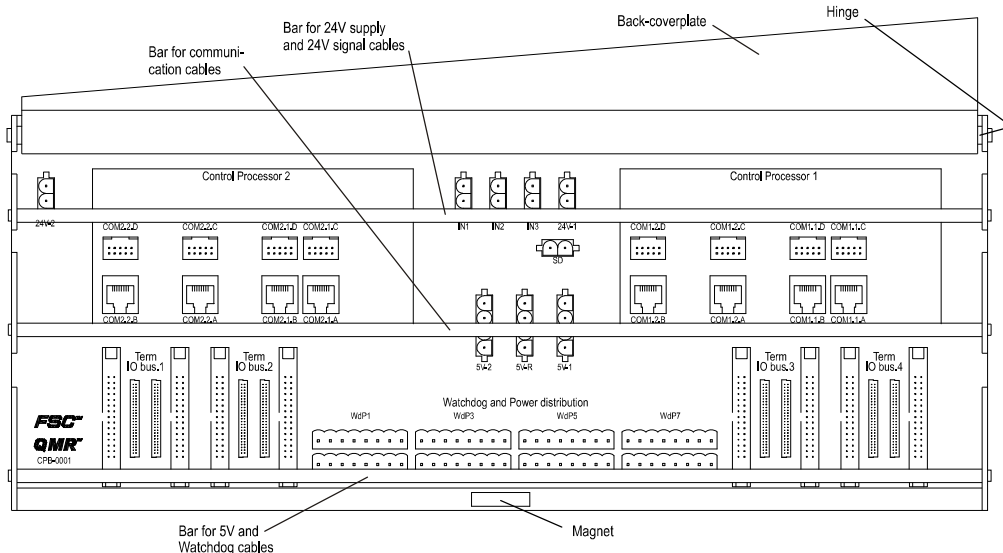
The top bar is reserved for the 24V-supply and 24V-signal wires/cables.

The middle bar is reserved for the communication cables.

The bottom bar is reserved for the 5V and Watchdog cables (WdPx and 5V-x).

Figure 45 on page 88 shows the back of an empty Controller chassis.

Figure 45 Back view of an empty Controller chassis



Location of Control Processor modules

The Controller chassis CPCHAS-0001 contains all Control Processor modules.

Table 5 on page 89 shows the location of the Control Processor modules in a non-redundant and a redundant Controller (as seen from the front of the cabinet). As you can see, all Control Processor modules are doubled in a redundant Controller configuration, with the exception of the Battery and Key switch module, which is shared by both Control Processors.

Table 5 Distribution of the various Control Processor modules in the Controller chassis

Redundant Controller								
Non-Redundant Controller								
C P U 1	C O M 1.1	C O M 1.2	P S U 1	B K M	C P U 2	C O M 2.1	C O M 2.2	P S U 2
Legend:								
Item	Description						See	
CPU1	the processor module of the first Control Processor							
	QPP-0001 Quad Processor Pack						page 240	
	QPP-0002 Quad Processor Pack						page 253	
COM1.1	the first communication module of the first Control Processor							
	USI-0001 Universal Safety Interface, or						page 266	
	USI-0002 Universal Safety Interface, or						page 271	
	BLIND-COM Dummy Communication Module						page 275	
COM1.2	the second communication module of the first Control Processor							
	USI-0001 Universal Safety Interface, or						page 266	
	USI-0002 Universal Safety Interface, or						page 271	
	BLIND-COM Dummy Communication Module						page 275	
PSU1	the power supply module of the first Control Processor							
	PSU-240516 Power Supply Unit 24/5 Vdc, 16A						page 284	
BKM	the battery and key switch module of (both) Control Processor(s)							
	BKM-0001 Battery and Key switch Module						page 277	
CPU2	the processor module of the first Control Processor							
	QPP-0001 Quad Processor Pack						page 240	
	QPP-0002 Quad Processor Pack						page 253	

Table 5 Distribution of the various Control Processor modules in the Controller chassis (*continued*)

Redundant Controller		
Non-Redundant Controller		
COM2.1	the first communication module of the second Control Processor	
	USI-0001 Universal Safety Interface, or	page 266
	USI-0002 Universal Safety Interface, or	page 271
	BLIND-COM Dummy Communication Module	page 275
COM2.2	the second communication module of the second Control Processor	
	USI-0001 Universal Safety Interface, or	page 266
	USI-0002 Universal Safety Interface, or	page 271
	BLIND-COM Dummy Communication Module	page 275
PSU2	the power supply module of the second Control Processor	
	PSU-240516 Power Supply Unit 24/5 Vdc, 16A	page 284

In case of a non-redundant Controller, the unused positions in the Controller chassis (CPU2, COM2.1, COM2.2, and PSU2 are covered by an BLIND-CPS plate (see Figure 44 on page 88).

For each Quad Processor Pack, room is provided for two communication modules in the Controller chassis. Table 6 on page 90 shows possible locations for different combinations of communication modules.

**Note**

If only one communication module is used in a Control Processor, the module is placed in the COM1 slot (see Table 6 on page 90). A blind communication module (BLIND-COM) should be placed in all unused communication slots.

Table 6 Possible locations of communication modules in the Controller chassis

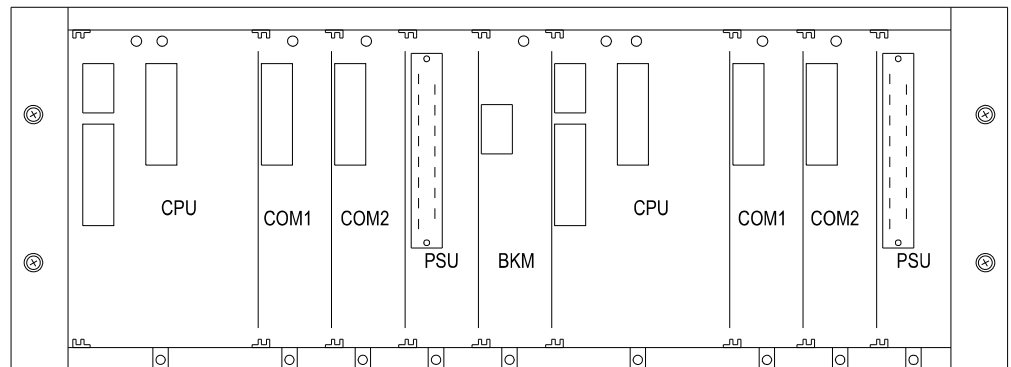
Number of modules	COM1 Slot	COM2 Slot
0	BLIND-COM	BLIND-COM
1	USI-0001 or USI-0002	BLIND-COM
2	USI-0001 or USI-0002	USI-0001 or USI-0002

Controller backplane CPB-0001

The Controller backplane is part of the Controller chassis. The front side contains the connectors for the Control Processor modules. The keying pins in the backplane connect the module housings with ground.

Figure 46 on page 91 shows the front view of an empty redundant Controller chassis, showing the Controller backplane.

Figure 46 Front view of an empty redundant Controller chassis



The back side of the Controller backplane contains all the connectors for signals that go in or out of the (non-)redundant Controller. These connectors are visible when the back cover plate is swung upwards (see Figure 45 on page 88).

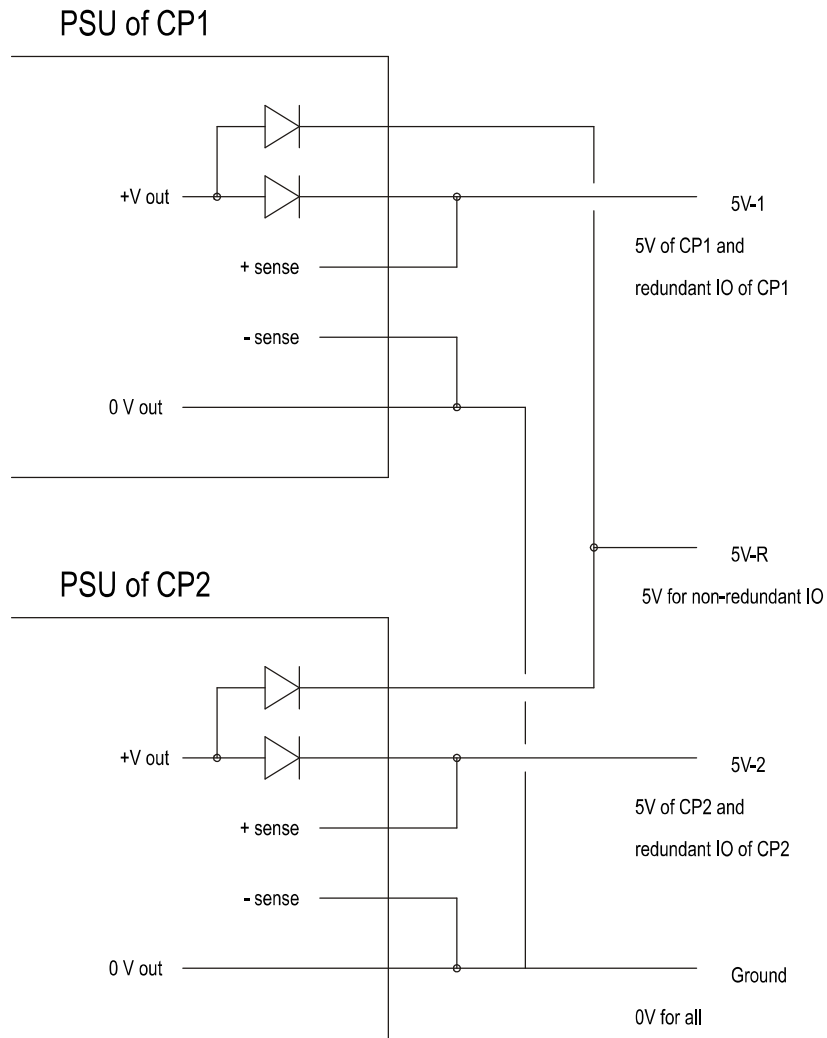
The Controller backplane connects the 5VR output of the PSU of CP1 with the 5VR output of the PSU of CP2.

The resulting 5V-R is used to supply the non-redundant IO.

Thanks to the output diodes in the PSU-240516 (see Figure 168 on page 286) the 5V-R will be available as long as (at least) one of the PSUs is operating.

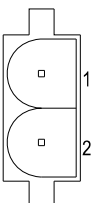
Figure 47 on page 92 shows the 5V connection of the two PSU-240516 modules on the Controller backplane.

Figure 47 5V PSU-connection on the CP backplane

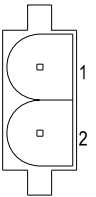


Pin allocation

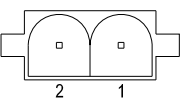
The back view and pin allocation of the 24V-1 and 24V-2 connectors are:

	24V-1		24V-2	
	1	+24V for CP1	+24V for CP2	
2	0V for CP1	0V for CP2		

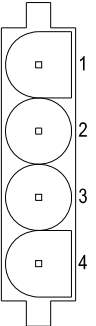
The back view and pin allocation of the IN1, IN2 and IN3 connectors are:

		IN1	IN2	IN3
	1	+24V_red	+24V_red	+24V_red
	2	input1	input2	input3

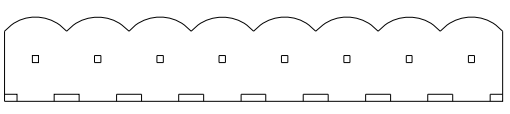
The back view and pin allocation of the SD connector is:

		SD
	1	+24V_sd
	2	input

The back view and pin allocation of the 5V-2, 5V-R and 5V-1 connectors are:

		5V-2	5V-R	5V-1
	1	ground	ground	ground
	2	WD of CP2	WDR of CP1 and CP2	WD of CP1
	3	ground	ground	ground
	4	5V of CP2	5VR of CP1 and CP2	5V of CP1

The back view and pin allocation of the eight WdPx connectors are:

		WdPx
	1	5V of CP2
	2	WD of CP2
	3	ground
	4	5VR of CP1 and CP2
	5	WDR of CP1 and CP2
	6	ground
	7	5V of CP1
	8	WD of CP1

Connector function

Table 7 on page 94 describes the function of the connectors on the back side of the Controller backplane.

Table 7 Connectors at the back side of the Controller backplane

Group	Name	Connector type	Used for
Control Processor 1	Com1.1.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM1 location
	Com1.1.B	RJ45	
	Com1.1.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM1 location
	Com1.1.D	10-pin male	
	Com1.2.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM2 location
	Com1.2.B	RJ45	
	Com1.2.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM2 location
	Com1.2.D	10-pin male	
Control Processor 2	Com2.1.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM1 location
	Com2.1.B	RJ45	
	Com2.1.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM1 location
	Com2.1.D	10-pin male	
	Com2.2.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM2 location
	Com2.2.B	RJ45	
	Com2.2.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM2 location
	Com2.2.D	10-pin male	
IO bus 1	IO bus1.1	Flat cable connector	first IO bus of Control Processor 1
	IO bus2.1	Flat cable connector	first IO bus of Control Processor 2
	Term IO bus1	2 × 50-pin connector	IO bus terminator for the first IO bus(es) Type: TERM-0001 or TERM-0002, see page 485 for details.
IO bus 2	IO bus1.2	Flat cable connector	second IO bus of Control Processor 1
	IO bus2.2	Flat cable connector	second IO bus of Control Processor 2
	Term IO bus2	2 × 50-pin connector	IO bus terminator for the second IO bus(es) Type: TERM-0001 or TERM-0002, see page 485 for details.

Table 7 Connectors at the back side of the Controller backplane (*continued*)

Group	Name	Connector type	Used for
IO bus 3	IO bus1.3	Flat cable connector	third IO bus of Control Processor 1
	IO bus2.3	Flat cable connector	third IO bus of Control Processor 2
	Term IO bus3	2 × 50-pin connector	IO bus terminator for the third IO bus(es) Type: TERM-0001 or TERM-0002, see page 485 for details.
IO bus 4	IO bus1.4	Flat cable connector	fourth IO bus of Control Processor 1
	IO bus2.4	Flat cable connector	fourth IO bus of Control Processor 2
	Term IO bus4	2 × 50-pin connector	IO bus terminator for the fourth IO bus(es) Type: TERM-0001 or TERM-0002, see page 485 for details.
Watchdog and Power ¹ distribution	WdP1	8-pin male connector	Watchdog and Power to IO chassis 1 ²
	WdP2	8-pin male connector	Watchdog and Power to IO chassis 2
	WdP3	8-pin male connector	Watchdog and Power to IO chassis 3
	WdP4	8-pin male connector	Watchdog and Power to IO chassis 4
	WdP5	8-pin male connector	Watchdog and Power to IO chassis 5
	WdP6	8-pin male connector	Watchdog and Power to IO chassis 6
	WdP7	8-pin male connector	Watchdog and Power to IO chassis 7
	WdP8	8-pin male connector	Watchdog and Power to IO chassis 8

Table 7 Connectors at the back side of the Controller backplane (continued)

Group	Name	Connector type	Used for
Power	24V-1	2-pin male connector	24V for Control Processor 1 (for cable details see “PDC-CP24” on page 807).
	24V-2	2-pin male connector	24V for Control Processor 2 (for cable details see “PDC-CP24” on page 807).
	5V-1	4-pin male connector	5V and Watchdog of Control Processor 1. This connector is used to distribute these signals to other (extension) cabinets using an PDB-IOX05 (for more information see “PDB-IOX05” on page 830).
	5V-2	4-pin male connector	5V and Watchdog of Control Processor 2. This connector is used to distribute these signals to other (extension) cabinets using an PDB-IOX05 (for more information see “PDB-IOX05” on page 830).
	5V-R	4-pin male connector	Redundant 5V and redundant Watchdog. This connector is used to distribute these signals to other (extension) cabinets using an PDB-IOX05 (for more information see “PDB-IOX05” on page 830).
Various	SD	2-pin male connector	Connector for an Emergency Shut Down system. The chassis is delivered with the LINK-SD link placed. This link is required if the Emergency Shut Down function is not used (see also QPP data sheets “QPP-0001” on page 240 and “QPP-0002” on page 253 and “SICP-0002/L3” on page 722).
	IN1	2-pin male connector	24 Volt non-safety related general purpose input. This input can generate an interrupt (on the rising edge) e.g. for external clock synchronization (see also “BKM-0001” on page 277 and “SICP-0002/L3” on page 722).
	IN2	2-pin male connector	24 Volt non-safety related general purpose input (see also “BKM-0001” on page 277 and “SICP-0002/L3” on page 722).
	IN3	2-pin male connector	24 Volt non-safety related general purpose input (see also “BKM-0001” on page 277 and “SICP-0002/L3” on page 722).

- 1 Watchdog and 5 Volt of Control Processor 1, Control Processor 2 and the redundant Watchdog and 5 Volt.
- 2 The chassis numbers mentioned here are defined by jumpers on the IO backplane

Technical data

General	Type number ¹ :	FS-CPCHAS-0001 V1.1
	Approvals:	CE, UL, CSA, TUV, FM
Power	5V-1:	0.05 A
	5V-2:	0.05 A
Dimensions	Height:	4 HE (177 mm, 7 in)
	Width:	482.6 mm, 19 in
	Depth:	280 mm, 11 in
	Weight:	5.8 kg, 12.8 lb

- ¹ Chassis with suffix code V1.1 and higher have an improved cover plate design and reduced power consumption. (Chassis with suffix code V1.0 consume 0.5A per feeder.)
There are no functional changes.

CPCHAS-0002

Chassis for redundant Controller (Safety Manager A.R.T.)

General

The Controller chassis CPCHAS-0002 is used to contain the Control Processor modules. Each Safety Manager has one Controller chassis. The Controller chassis is generally located at the top position in the cabinet, and the IO chassis at lower positions.

A Controller chassis contains the following components:

- Controller housing (see “Controller housing” on page 116)
- Controller backplane CPB-0002 (see “Controller backplane CPB-0002” on page 120)

Controller housing

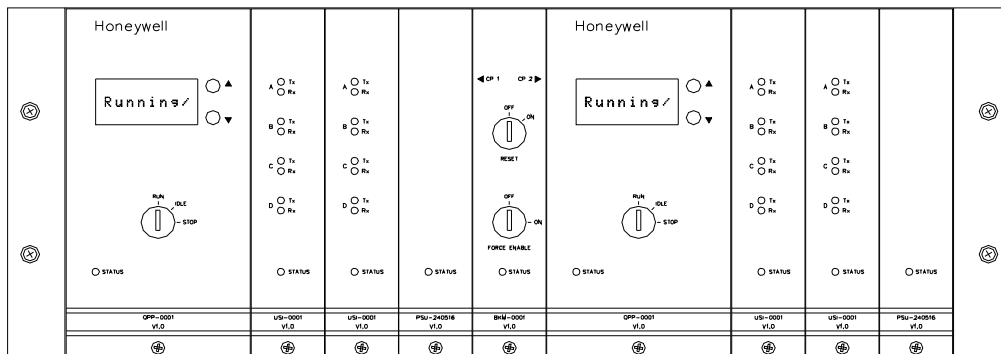
The Controller housing has been designed specifically for Safety Manager. It is a 19" housing that is open at the front and covered at the back.

Control Processor modules are placed in the chassis through the front of the housing with the use of module guides, which are located at the bottom and top plate of the housing.

The modules are locked in the chassis with the quarter turn fasteners, located below the module-grips.

Figure 62 on page 116 shows the front of a filled redundant Controller chassis.

Figure 62 Front view of a redundant Controller chassis



The back of the housing is covered by a magnetically locked back cover plate, which can be swung upwards to reveal the Controller backplane.

Cables must be tie-wrapped to one of the three horizontal bars at the back of the housing, to lead them towards the side of the chassis.

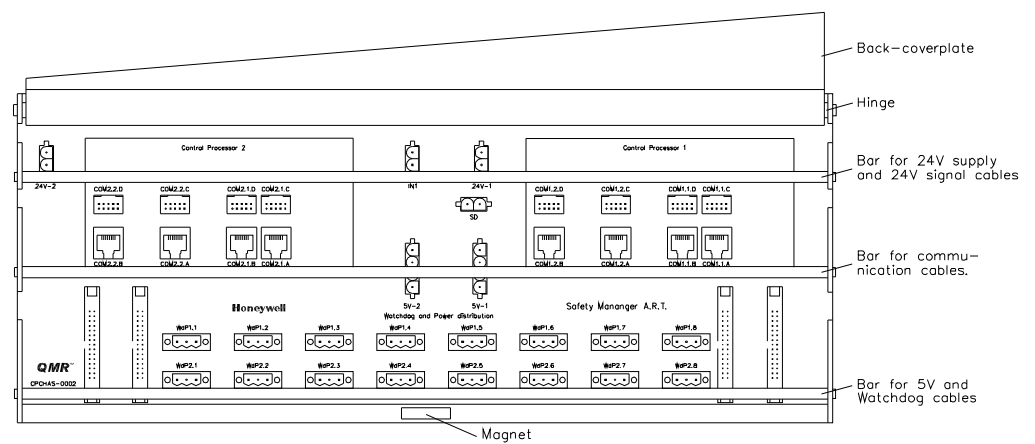
The top bar is reserved for the 24V-supply and 24V-signal wires/cables.

The middle bar is reserved for the communication cables.

The bottom bar is reserved for the 5V and Watchdog cables (WdPx and 5V-x).

Figure 63 on page 117 shows the back of an empty Controller chassis.

Figure 63 Back view of an empty Controller chassis



Location of Control Processor modules

The Controller chassis CPCHAS-0002 contains all Control Processor modules.

Table 16 on page 118 shows the location of the Control Processor modules in a redundant Controller (as seen from the front of the cabinet). As you can see, all Control Processor modules are doubled in a redundant Controller configuration, with the exception of the Battery and Key switch module, which is shared by both Control Processors.

Table 16 Distribution of the various Control Processor modules in the Controller chassis

Redundant Controller								
C	C	C	P	B	C	C	C	P
P	O	O	S	K	P	O	O	S
U	M	M	U	M	U	M	M	U
1	1.1	1.2	1		2	2.1	2.2	2
Legend:								
Item	Description						See	
CPU1	the processor module of the first Control Processor							
	QPP-0002 Quad Processor Pack						page 253	
COM1.1	the first communication module of the first Control Processor							
	USI-0001 Universal Safety Interface, or						page 266	
	USI-0002 Universal Safety Interface, or						page 271	
	BLIND-COM Dummy Communication Module						page 275	
COM1.2	the second communication module of the first Control Processor							
	USI-0001 Universal Safety Interface, or						page 266	
	USI-0002 Universal Safety Interface, or						page 271	
	BLIND-COM Dummy Communication Module						page 275	
PSU1	the power supply module of the first Control Processor							
	PSU-240516 Power Supply Unit 24/5 Vdc, 16A						page 284	
BKM	the battery and key switch module of (both) Control Processor(s)							
	BKM-0001 Battery and Key switch Module						page 277	
CPU2	the processor module of the first Control Processor							
	QPP-0002 Quad Processor Pack						page 253	
COM2.1	the first communication module of the second Control Processor							
	USI-0001 Universal Safety Interface, or						page 266	
	USI-0002 Universal Safety Interface, or						page 271	
	BLIND-COM Dummy Communication Module						page 275	

Table 16 Distribution of the various Control Processor modules in the Controller chassis (*continued*)

Redundant Controller		
COM2.2	the second communication module of the second Control Processor	
	USI-0001 Universal Safety Interface, or	page 266
	USI-0002 Universal Safety Interface, or	page 271
	BLIND-COM Dummy Communication Module	page 275
PSU2	the power supply module of the second Control Processor	
	PSU-240516 Power Supply Unit 24/5 Vdc, 16A	page 284

For each Quad Processor Pack, room is provided for two communication modules in the Controller chassis. Table 17 on page 119 shows possible locations for different combinations of communication modules.

**Note**

If only one communication module is used in a Control Processor, the module is placed in the COM1 slot (see Table 17 on page 119). A blind communication module (BLIND-COM) should be placed in all unused communication slots.

Table 17 Possible locations of communication modules in the Controller chassis

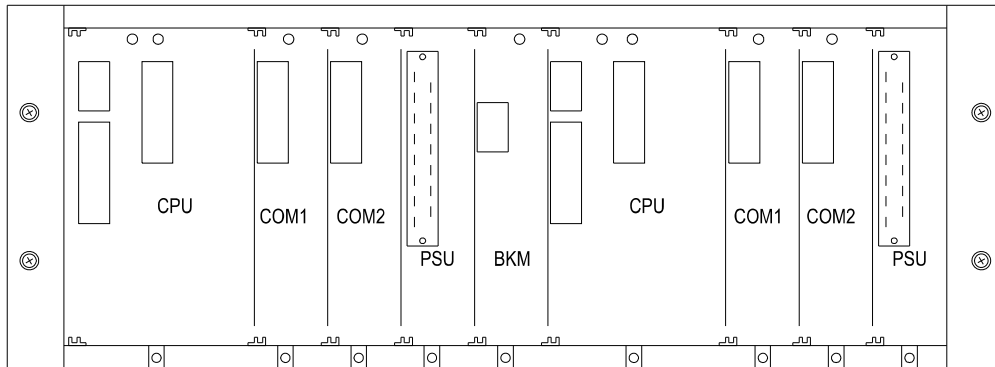
Number of modules	COM1 Slot	COM2 Slot
0	BLIND-COM	BLIND-COM
1	USI-0001 or USI-0002	BLIND-COM
2	USI-0001 or USI-0002	USI-0001 or USI-0002

Controller backplane CPB-0002

The Controller backplane is part of the Controller chassis. The front side contains the connectors for the Control Processor modules. The keying pins in the backplane connect the module housings with ground.

Figure 64 on page 120 shows the front view of an empty redundant Controller chassis, showing the Controller backplane.

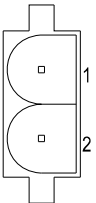
Figure 64 Front view of an empty redundant Controller chassis



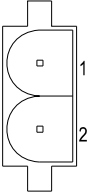
The back side of the Controller backplane contains all the connectors for signals that go in or out of the Controller. These connectors are visible when the back cover plate is swung upwards (see Figure 63 on page 117).

Pin allocation

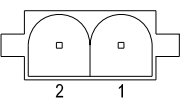
The back view and pin allocation of the 24V-1 and 24V-2 connectors are:

		24V-1	24V-2
	1		+24V for CP1
2		0V for CP1	0V for CP2

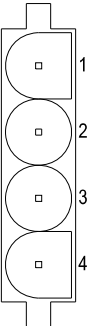
The back view and pin allocation of the IN1 connectors are:

		IN1
	1	+24V_red
	2	input1

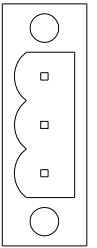
The back view and pin allocation of the SD connector is:

		SD
	1	+24V_sd
	2	input

The back view and pin allocation of the 5V-2 and 5V-1 connectors are:

		5V-2	5V-1
	1	ground	ground
	2	WD of CP2	WD of CP1
	3	ground	ground
	4	5V of CP2	5V of CP1

The back view and pin allocation of the sixteen WdPx connectors are:

		WdP1.x	WdP2.x
	3	WD of CP1	WD of CP2
	2	ground	ground
	1	5V of CP1	5V of CP2

Connector function

Table 18 on page 122 describes the function of the connectors on the back side of the Controller backplane.

Table 18 Connectors at the back side of the Controller backplane

Group	Name	Connector type	Used for
Control Processor 1	Com1.1.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM1 location
	Com1.1.B	RJ45	
	Com1.1.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM1 location
	Com1.1.D	10-pin male	
	Com1.2.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM2 location
	Com1.2.B	RJ45	
	Com1.2.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM2 location
	Com1.2.D	10-pin male	
Control Processor 2	Com2.1.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM1 location
	Com2.1.B	RJ45	
	Com2.1.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM1 location
	Com2.1.D	10-pin male	
	Com2.2.A	RJ45	Ethernet communication channels 1 and 2 of the communication module in the COM2 location
	Com2.2.B	RJ45	
	Com2.2.C	10-pin male	General purpose communication channels 3 and 4 of the communication module in the COM2 location
	Com2.2.D	10-pin male	
IO bus 1	IO bus1.1	Flat cable connector	first own IO bus of Control Processor 1 and first redundant IO bus of Control Processor 2
	IO bus2.1	Flat cable connector	first own IO bus of Control Processor 2 and first redundant IO bus of Control Processor 1
IO bus 2	IO bus1.2	Flat cable connector	second own IO bus of Control Processor 1 and second redundant IO bus of Control Processor 2
	IO bus2.2	Flat cable connector	second own IO bus of Control Processor 2 and second redundant IO bus of Control Processor 1

Table 18 Connectors at the back side of the Controller backplane (*continued*)

Group	Name	Connector type	Used for
Watchdog and Power ¹ distribution	WdP1.1	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 1 ²
	WdP2.1	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 1
	WdP1.2	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 2
	WdP2.2	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 2
	WdP1.3	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 3
	WdP2.3	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 3
	WdP1.4	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 4
	WdP2.4	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 4
	WdP1.5	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 5
	WdP2.5	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 5
	WdP1.6	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 6
	WdP2.6	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 6
	WdP1.7	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 7
	WdP2.7	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 7
	WdP1.8	3-pin male connector	Watchdog and Power of CP 1 to IO chassis 8
	WdP2.8	3-pin male connector	Watchdog and Power of CP 2 to IO chassis 8

Table 18 Connectors at the back side of the Controller backplane (*continued*)

Group	Name	Connector type	Used for
Power	24V-1	2-pin male connector	24V for Control Processor 1 (for cable details see “PDC-CP24” on page 807).
	24V-2	2-pin male connector	24V for Control Processor 2 (for cable details see “PDC-CP24” on page 807).
	5V-1	4-pin male connector	5V and Watchdog of Control Processor 1. This connector is used to distribute these signals to other (extension) cabinets using a: <ul style="list-style-type: none"> • PDB-CPX05, for more information see “PDC-CPX05” on page 844, or • PDB-ARTX05, for more information see “PDB-ARTX05” on page 727, or • PDB-ARTF05 (for more information see “PDB-ARTF05” on page 835).
	5V-2	4-pin male connector	5V and Watchdog of Control Processor 2. This connector is used to distribute these signals to other (extension) cabinets using a: <ul style="list-style-type: none"> • PDB-CPX05, for more information see “PDC-CPX05” on page 844, or • PDB-ARTX05, for more information see “PDB-ARTX05” on page 727, or • PDB-ARTF05 (for more information see “PDB-ARTF05” on page 835).
Various	SD	2-pin male connector	Connector for an Emergency Shut Down system. The chassis is delivered with the LINK-SD link placed. This link is required if the Emergency Shut Down function is not used (see also QPP data sheets “QPP-0002” on page 253 and “SICP-0002/L3” on page 722).
	IN1	2-pin male connector	24 Volt non-safety related general purpose input. This input can generate an interrupt (on the rising edge) e.g. for external clock synchronization (see also “BKM-0001” on page 277 and “SICP-0002/L3” on page 722).

1 Watchdog and 5 Volt of Control Processor 1 and Control Processor 2.

2 The chassis numbers mentioned here are defined by jumpers on the IO backplane.

Technical data

General	Type number:	FS-CPCHAS-0002 V1.1
	Approvals:	CE; UL, CSA, TUV, FM pending
Power	5V-1:	0.05 A
	5V-2:	0.05 A
Dimensions	Height:	4 HE (177 mm, 7 in)
	Width:	482.6 mm, 19 in
	Depth:	280 mm, 11 in
	Weight:	5.8 kg, 12.8 lb