

## 2.2.1 Safety Manager SC Controller functionality support

Feature	Safety Manager Systems Release		Hardware required			
	From	To	IOTA + Control Processor	Earth Leakage Detection	IOTA + Universal IO	IOTA + Digital IO
Redundant Safety Manager SC	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Experion Scada	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
SafeNet	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Modbus slave	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Modbus Master	R201.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Experion CDA/FTE support	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
SafeNet: Safety Manager to Safety Manager SC	R201.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Redundant FC-RUSIO-3224	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-IOTA-R24 + 2 X FC-RUSIO-3224	
Non Redundant FC-RUSIO-3224	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-IOTA-NR24 + FC-RUSIO-3224	
FC-RUSIO-3224 Earth Leakage Detection	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01	FC-TELD-0001	FC-IOTA-R24 + 2 X FC-RUSIO-3224 or FC-IOTA-NR24 + FC-RUSIO-3224	
HART Handheld	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01			
Low Latency SOE / FC-RUSIO-3224	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-IOTA-R24 + 2 X FC-RUSIO-3224 or FC-IOTA-NR24 + FC-RUSIO-3224	
HART Pass thru / FC-RUSIO-3224	R200.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-IOTA-R24 + 2 X FC-RUSIO-3224 or FC-IOTA-NR24 + FC-RUSIO-3224	
Redundant FC-PDIO01	R200.2	---	FC-TCNT11 + 2 X FC-SCNT01			FC-TDIO11 + 2 X FC-PDIO01 2 X FC-SIC<20/10><Lx> 2 X (FC-TDIO51 OR FC-TDIO52)
Non Redundant FC-PDIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01			FC-TDIO11 + 1 X FC-PDIO01 2 X FC-SIC<20/10><Lx> 2 X (FC-TDIO51 OR FC-TDIO52)
Low Latency SOE / FC-PDIO01	R201.1	---	FC-TCNT11 + 2 X FC-SCNT01			FC-TDIO11 + 2 OR 1 FC-PDIO01
ART+ / FC-PDIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01			FC-TDIO11 + 2 FC-PDIO01
Redundant FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 2 X FC-PUIO01	
Non Redundant FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 1 X FC-PUIO01	
FC-PUIO01 Earth Leakage Detection	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01	FC-TELD-0001	FC-TUIO11 + 2 OR 1 FC-PUIO01	
HART Pass thru / FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 2 OR 1 FC-PUIO01	
A.R.T.+ / FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 2 FC-PUIO01	
Low Latency SOE / FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 +2 OR 1 FC-PUIO01	
UMS / FC-RUSIO-3224	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-IOTA-R24 + 2 X FC-RUSIO-3224 2 X CC-SICC1011/<ly> + UMS	
UMS / FC-PDIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01			FC-TDIO11 + 2 OR 1 FC-PDIO01 + 2 X FC-SIC5<Lx> + UMS
UMS / FC-PUIO01	R210.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 2 OR 1 X FC-PUIO01 2 X FC-SIC5<Lx> + UMS	
IO Ring support / FC-PUIO01	R211.1	---	FC-TCNT11 + 2 X FC-SCNT01		FC-TUIO11 + 2 X FC-PUIO01	

Lx = in decimeters Ly = in meters

	NOT supported		Unsupported Hardware by Safety Manager SC			
	From	To	IOTA + Control Processor	Earth Leakage Detection	Safety Universal IO/ Universal Logic solver	Safety Digital IO
Safety Manager SC	R200	---			FC-RUSLS-3224	

	Discontinued		Hardware Discontinued			
	From	To	IOTA + Control Processor	Earth Leakage Detection	Safety Universal IO/ Universal Logic solver	Safety Digital IO
Safety Manager SC	2022-Q4	---	FC-SCNT01			

## 2.2.2 Safety Manager Controller functionality support

BASE		Hardware required						
		Chassis	Control Processor	Communication	Earth Leakage Detection	Universal Safety IO	Universal Logic Solver	
Safety Manager	R100	FS-CPCHAS-0001 FS-IOCHAS-0001R FS-IOCHAS-0001S	FC-QPP-0001	FC-USI-0001	10310			
Feature	Extra	Extra Hardware requirement compared to BASE						
	Support	From	To	Chassis	Control Processor	Communication	Earth Leakage Detection	Universal Safety IO
Power infrastructure improvement		R100		FS-CPCHAS-0003 FS-IOCHAS-0003R FS-IOCHAS-0003S				
SafeNet		R110						
High performance Processor		R130			FC-QPP-0002			
Universal Safety Interface (FC-USI-0001)		R100	<R160			FC-USI-0001		
Universal Safety Interface (FC-USI-0002)		R100				FC-USI-0002		
Universal Safety Interface (FE-USI-0002)		R130				FE-USI-0002		
Universal Safety Interface (FX-USI-0002)		R140				FX-USI-0002		
Redundant Universal Safety IO		R140	R145		FC-QPP-0002			FC-IOTA-R24 + 2X FC-RUSIO-3224
Redundant Universal Safety IO		R150			FC-QPP-0002			FC-IOTA-R24 + 2X FC-RUSIO-3224
Experion CDA/FTE support		R150			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002		
Advanced Redundancy Technique		R150		FS-CPCHAS-0002 FS-IOCHAS-0002R FS-IOCHAS-0002S	FC-QPP-0002			
Universal Safety Logic Solver (Localized Safeguarding)		R150	<R200		FC-QPP-0002			FC-IOTA-R24 + 2X FC-RUSLS-3224
Non Redundant Universal Safety IO		R150			FC-QPP-0002			FC-IOTA-NR24 + FC-RUSIO-3224 FC-IOTA-NR24 + FC-RUSLS-3224
HART Pass thru		R150			FC-QPP-0002			FC-IOTA-NR24 + FC-RUSIO-3224 or FC-IOTA-R24 + 2X FC-RUSIO-3224 FC-IOTA-NR24 + FC-RUSLS-3224 or FC-IOTA-R24 + 2X FC-RUSLS-3224
Low latency SOE		R150			FC-QPP-0002			FC-IOTA-NR24 + FC-RUSIO-3224 or FC-IOTA-R24 + 2X FC-RUSIO-3224 FC-IOTA-NR24 + FC-RUSLS-3224 or FC-IOTA-R24 + 2X FC-RUSLS-3224
Modbus Master TCP		R150			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002		
HART Handheld		R152			FC-QPP-0002			FC-IOTA-NR24 + FC-RUSIO-3224 or FC-IOTA-R24 + 2X FC-RUSIO-3224 FC-IOTA-NR24 + FC-RUSLS-3224 or FC-IOTA-R24 + 2X FC-RUSLS-3224
USIO/USLS Earth Leakage Detection		R153.3			FC-QPP-0002		FC-TELD-0001	FC-IOTA-NR24 + FC-RUSIO-3224 or FC-IOTA-R24 + 2X FC-RUSIO-3224 FC-IOTA-NR24 + FC-RUSLS-3224 or FC-IOTA-R24 + 2X FC-RUSLS-3224
EUCN		R160.1b			FC-QPP-0002	FE-USI-0002 or FX-USI-0002		
FSC to SM Migration		R160			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002		
SafeNet : SM-FSC		R161			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002		
AutoCom SIL 2 protocol		R162			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002		

	NOT supported		Unsupported Hardware by Safety Manager					
	From	To	Chassis	Control Processor	Communication	Earth Leakage Detection	Safety Universal IO	Universal Logic solver
Safety Manager	R146	R146					FC-IOTA-NR24 + FC-RUSIO-3224 or FC-IOTA-R24 + 2X FC-RUSIO-3224	FC-IOTA-NR24 + FC-RUSLS-3224 or FC-IOTA-R24 + 2X FC-RUSLS-3224
Safety Manager	R160	---		FC-QPP-0001	FC-USI-0001			

	Discontinued		Hardware Discontinued					
	From	To	Chassis	Control Processor	Communication	Earth Leakage Detection	Safety Universal IO	Universal Logic solver
Safety Manager	2012-Q1	---		FC-QPP-0001				
Safety Manager	2014-Q2	---			FC-USI-0001 FC-USI-0002			
Safety Manager	2019-Q3	---			FE-USI-0002			
Safety Manager	2019-Q4	---	FS-IOCHAS-0001R FS-IOCHAS-0001S					
Safety Manager	2020-Q2	---	FS-CPCHAS-0001					

## 2.2.3 Experion compatibility

### 2.2.3.1 Experion releases

Table below shows compatibility and dependency between Experion/FDM/UNISIM and Safety Manager SC functionality:

Safety Manager SC Controller			Experion					
Relevant function	From	To	R43x	R500	R501	R510	R511	R520
Experion Protocol (SCADA)	R200.1	---	p	p	✓	✓	✓	✓
CDA Integration (FTE)	R200.1	---			✓	✓	✓	✓
Sequence of Event	R200.1	---			✓	✓	✓	✓
Universal Safety I/O	R200.1	---	p	p	✓	✓	✓	✓
FC-PDIO01	R201.1	---	p	p	✓	✓	✓	✓
FC-PUIO01	R210.1	---	p	p	✓	✓	✓	✓

Safety Manager SC Controller			Experion LX					
Relevant function	From	To					R500	R510
Sequence of Event	R200.3	---						✓
Universal Safety I/O	R200.3	---						✓
FC-PDIO01	R201.1	---						✓
FC-PDIO01	R210.1	---						✓
CDA Integration (FTE)	R200.3	---						✓

Safety Manager SC Controller			Experion HS					
Relevant function	From	To		R43x	R430	R500	R510	R510
Experion Protocol (SCADA)	R200.3	---						✓
Sequence of Event	R200.3	---						✓

Safety Manager SC Controller			Field Device Manager (FDM)					
Relevant function	From	To		R500	R501	R510	R511.1	R511.2 and later
FC-RUSIO-3224 HART Pass thru	R200.1	---			✓	✓	✓	✓
FC-RUSIO-3224 HART handheld support	R200.1	---			✓	✓	✓	✓
FC-PUIO01 HART Pass thru	R210.1	---						✓
FC-PUIO01 HART handheld support	R210.1	---						✓



  

Safety Manager SC Controller			UNISIM / Workforce Competency					
Relevant function	From	To			R46x	R470	R471	R520
Smoke & Heat Adapters	R200.1	---			✓	✓	✓	✓
Boolean Property Output	R200.1	---			✓	✓	✓	✓
FLD Export to Unisim	R201.1	---				✓	✓	✓
FLD Export to Unisim	R210.1	---					✓	✓
FLD Export to Unisim	R211.1	---						✓

Safety Manager SC Controller			Process, Machinery, and Drives (PMD)					
Relevant function	From	To				R8xx	R90x	R92x
CDA Integration (FTE)	R210.1	---					✓	✓

 Fully supported  
 Partially supported by Experion  
 New SM modules are not known in older Experion releases.  
 Diagnostics will report unknown modules.

### 2.2.3.2 Experiion Station

Safety Builder of Safety Management Systems R210.6 can be installed on Experiion Stations that comply with the requirements as defined in section 2.2.4 Operating system.

### 2.2.4 Operating system

Safety Builder of Safety Management Systems R210.6 is developed to run on, Windows 10 Enterprise LTSC 2019 operating system.

Following table indicates Microsoft Windows operating system version compliance for Safety Builder of Safety Management Systems R210.6

Safety Builder - Microsoft Windows - Compliance					
Safety Manager Microsoft Windows	R200.1 to R200.3	R201.1 to R201.2	R210.1 to R210.5	R210.6	R211.1 to R211.2
	Windows 10 Enterprise LTSC 2015				
Windows 10 Enterprise LTSC 2016	✓	✓	✓		✓
Windows 10 Enterprise LTSC 2019			✓	✓	✓
Windows 10 Enterprise LTSC 2021					
Windows Server 2016 Standard edition	✓	✓	✓	✓	✓
Windows Server 2019 Standard edition				✓	

✓	Supported
✓	Recommended

Supported operating systems are available online in "Safety Systems Software Support Guidelines" on the Honeywell support guidelines.

This guideline can be found at MyHPS ([https://process.honeywell.com/us/en/services-and-support/support-center/technical-support/technical-solutions/article-detail.ka\\_000135672](https://process.honeywell.com/us/en/services-and-support/support-center/technical-support/technical-solutions/article-detail.ka_000135672) )

Login, Select "Support" → "Knowledge Articles", and search for "Safety Systems Software Support Guidelines"

## 2.3 Supported Safety Manager Releases

The tool to be used for Configuring **Safety Manager** and **Safety Manager SC** is Safety Builder of Safety Management Systems R210.6

## 2.4 On-line Modifications

### 2.4.1 Safety Management Systems Software migration matrix

Following table shows migration matrix Safety Management Systems R210.6

		Migration Matrix Safety Management Systems													
		To													
FROM		R144.2		R154.3		R162.8		R201.2		R210.6		R211.2		R212.1	
		R140.2	a		p		p				p		p		p
				R154.3	a		p			p		p		p	
						R162.9	a			p		p		p	
								R200.1		u4		u4		u4	
								R200.2		u4		u4		u4	
								R200.3		u4		u4		u4	
								R201.1		u4		u4		u4	
								R201.2	a	u4		u4		u4	
										R210.1	p		p		p
									R210.2	p		p		p	
									R210.3	p		p		p	
									R210.4	p		p		p	
									R210.5	p		p		p	
									R210.6	a		p		p	
											R211.1	p		p	
											R211.2	a		p	
													R212.1	a	

LEGENDA	
	No support
a	Application upgrade
u	Conditional On-line Migration, Check note
p	On-line Migration possible, Use OLM procedure
n	Off-line migration only

**U4:** When planning to migrate contact Honeywell GTAC

Following table defines the supported Safety Manager Database Migrations

		Safety Manager Safety Builder									
		Database Migration Matrix									
		To									
FROM		R146.1	R146.2	R146.3	R146.4	R146.5	R146.6	R146.7	R146.8	R146.9	R146.10
		R146.1	✓								
	R146.2		✓								
	R151.2		✓								
	R151.4		✓								
	R152.2		✓								
	R152.3		✓								
	R153.3		✓								
	R153.4		✓								
	R153.5		✓								
	R153.6		✓								
	R153.7		✓								
	R154.1		✓								
	R154.2		✓								
	R154.3		✓								
	R154.4		✓								
	R160.1			✓							
	R160.2			✓							
	R160.3			✓							
	R161.1			✓							
	R162.1			✓							
	R162.2			✓							
	R162.3			✓							
	R162.4			✓							
	R162.5			✓							
	R162.6			✓							
	R162.7				✓						
	R200.1				✓						
	R200.2				✓						
	R200.3				✓						
	R201.1				✓						
	R201.2					✓					
	R210.1						✓				
	R210.2						✓				
	R210.3						✓				
	R210.4						✓				
	R210.5						✓				
	R210.6							✓			
	R210.7								✓		
	R210.8									✓	
	R210.9										✓
	R210.10										✓



## 2.5 SM OLM differences Chassis IO vs Universal Safety IO

There are behavioral differences during on-line modification between Safety Manager Chassis IO and Safety Manager Universal Safety IO (FC-RUSIO-3224/FC-RUSLS-3224) that need to be understood while planning an On-Line Modification.

- **Safety Manager Chassis IO** modules have pre-defined functionalities which are independent from the Safety Manager firmware and user application. The functionality is available if the module is healthy, and power is applied.

### Important:

- During an on-line modification for redundant Safety Manager controllers, the controller redundancy will ensure that operation is continued. When the first controller of the redundant pair is loaded, the second controller continues operation and vice versa. This applies to configurations with redundant IO, non-redundant IO or a mix of redundant and non-redundant IOs.
  - When an IO module is detected faulty during initialization of the Control Processor with new application loaded, the system blocks online modification
- **Safety Manager Universal Safety IO** modules are flexible and perform additional tasks like communication with Safety Manager, scanning and updating IO, internal diagnostics, SOE generation and HART communication. The Universal IO modules require firmware, configuration, and application program to operate. These three components are automatically updated, when required as soon as the module is powered-up and connection to its Safety Manager is established.
    - firmware changes are normally part of a new software release,
    - configuration changes are for example changes to a channel parameter, and
    - application changes apply to the Universal logic solver when the FLD has been assigned to the Universal Logic Solver.

Be aware that any update to any of these three components will force a reboot of the module. During the update and reboot the Universal IO module will behave as follows:

- system and process data communication between the Universal Safety IO module and its Safety Manager is not active,
- all Universal Safety IO outputs on the module will go to the safe, de-energized state,
- HART communication and SOE event reporting are not active, and
- on a Universal Safety Logic Solver (FC-RUSLS-3224 only) the application is not executed.

### Important:

- During an on-line modification for redundant Universal Safety IO module configurations, the redundancy will ensure that operation is continued. When the first Universal Safety IO module of the redundant pair is loaded, the second Universal Safety IO module continues operation and vice versa.
- During a Safety Manager on-line modification for non-redundant Universal Safety IO modules configurations operation will be discontinued whenever firmware, configuration or application has been changed.
- When an USIO module is detected faulty during initialization of the Safety Manager Control Processor with new application loaded, the Safety Manager Controller will not block online modification. Performing the fault reset to continue OLM will start the Safety Manager Control Processor with a faulty reported USIO.

## 2.6 Migrate Application

### 2.6.1 Backup your application

It is always strongly recommended to create a backup of your application with the previous release of Safety Management Systems before starting the migration to Safety Management Systems R210.6 “Migrate Application” migrates a complete Plant (including all configured controllers). In case the migration fails, the reason will be reported. Go back to the original application, make the required modification, and migrate again.

Safety Management Systems R210.6 can use applications created from Safety Builder Release R146.1

Safety Builder of Safety Management Systems R210.6 will detect and requests to run “Migrate Application” if needed, when a plant is selected via Network Configurator

### 2.6.2 Migrating application

In case a Safety Manager application is opened by Safety Management Systems R210.6 Safety Builder requests to migrate the database to latest version by using the ‘Migrate Application’ option.

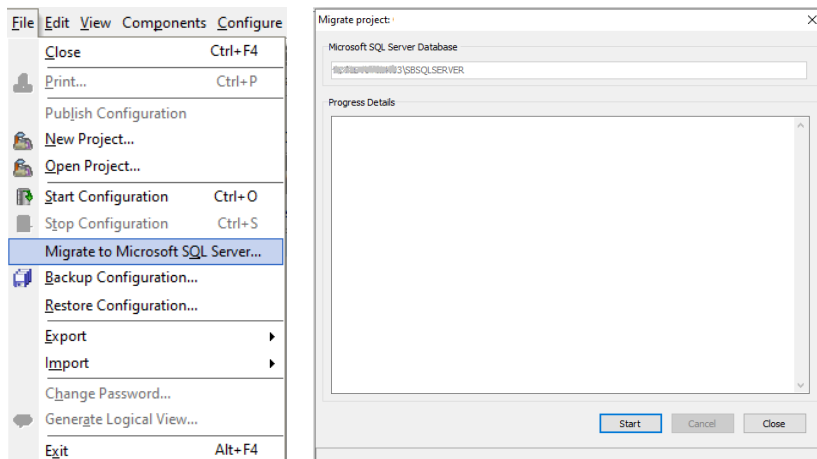
The ‘Migrate application’ function is available via Tools-Configuration-Migrate Application.

‘Migrate Application’ will migrate the complete plant, including all Safety Manager Controllers configured in that plant to latest version.

The ‘Migrate application’ function is not protected by privilege level access

The Migration log file will reflect this.

Before plant and applications can be used by Safety Management Systems R210.6 the Safety Manager Database(s) need to be converted to SQL database using option: File-Migrate to Microsoft SQL Server... .



The Migrate projects Dialog box shows progress and result.

After successful migrate to SQL Server the Plant can be used.

## 2.6.3 Known restrictions

### 2.6.3.1 Safety Manager Fault reset during load.

The On-Line Modification procedure should be followed.

At the start of On-Line Modification: The Safety Manager Safety system should run without IO faults:

- If there are IO Faults on chassis IO, the first Control Processor (CP) will not start-up after loading it .
- If there are IO Faults for USIO, you may loose the module after fault reset



During the actual Load: Do NOT apply a Fault Reset (Direct or Remote). The Safety Manager Controller stops the software loading.

### 2.6.3.2 Password protection

'Migrate Application' is not password protected.

The privileges levels are temporary disabled during the Migrate Application. After the migration the privileges levels are active again.

### 2.6.3.3 Experion integration

Safety Manager Controller of Safety Management Systems R210.6 supports two integration methods with Experion, namely:

- Via the SCADA protocol using Dual LAN connectivity to the FTE network, and
- Via the CDA protocol using full FTE connectivity to the FTE network.

Existing Experion / Safety Manager Installations migrating to Safety Management Systems R210.6 will continue to use the Experion protocol and dual LAN method. For new controllers, the customer can choose the desired integration method.

Existing FSC Installations using Experion SCADA migrating to Safety Management Systems R210.6 will use the Experion protocol and dual LAN method.

Existing TPS/FSC Installations using UCN migrating to Safety Management Systems R210.6 will use the Experion EUCN protocol.

#### **Safety Manager Controller - Experion integration via SCADA and PCDI protocol over Dual LAN**

The Experion communication link can only be configured on channel A of the USI communication module. This means that Experion links configured on channel B cannot be migrated.

Before starting the migration, change the configuration of the Experion link to channel A.


## Safety Manager with advanced Experion integration (CDA)

The FTE support provides maximum communication availability for Safety Manager being an FTE node within the Experion communication architecture. It provides detailed node diagnostics and transparent availability within the Experion architecture. Full FTE support is coupled with CDA integration in Experion.

Upgrading from dual LAN connectivity to full FTE requires specific hardware changes and changes to the Experion point database and custom graphics.

For migration to full FTE node:

- Requires Experion R410.2 or higher
- The impact to existing custom graphics and point database must be evaluated as well as the impact to point licenses on Experion server
- Two communication channels (A and B) of the USI communication module must be configured. Experion communication link can only be configured on channel A of the USI communication module. Channel B of the same USI will automatically be occupied. This means that Experion links configured on channel B cannot be migrated. Before starting the migration, change the configuration of the Experion link to channel A.

 **NOTE:** The Safety Management Systems R210.6 Experion Components.msi is a standalone installer. For CDA Experion integration, the detail displays must be installed using this installer, before starting Experion.

### 2.6.3.4 Universal Safety I/O connection

Safety Manager controller of Safety Management Systems R210.6 supports Universal Safety I/O communication (SM IO Link) only via dedicated channels 1B and/or 2B of the Control Processor.

Safety Builder of Safety Management Systems R210.6 A.R.T. supports Universal Safety I/O communication (SM IO Link) via dedicated channels 1A+1B and 2A+2B

### 2.6.3.5 I/O property “Safety Related”

When the property “Safety Related” of a point is left to “Undefined” this will be reported as a warning by Application Compiler.

To avoid those warnings, configure the property “Safety Related” of a point to “Yes” or “No”. This can be done after the project is migrated. The “Safety Related” property of points is for documentation purposes only, except Digital Input points where it influences the Line monitoring setting.

### 2.6.3.6 Safety Historian on same channel as Experion SCADA

Safety Manager of Safety Management Systems R210.6 does not support Safety Historian and Experion SCADA on same Channel.

Before Migrating from release older than Safety Manager R160, the configuration of Safety Historian should be different from Experion SCADA.

## 2.6.4 Considerations

### 2.6.4.1 OLM report – Deleted points

Scenario: Migrating from a previous release of Safety Management Systems Compiling and Loading the application may result in unexpected report of deleted points by the OLM report.

This is the result of the application compiler cleaning up points that have been left in the database by a previous release of Safety Manager.

To be able to verify the “unexpected” items in the OLM report the following actions must be taken:

1. Before migrating to Safety Management Systems R210.6:
  - a. Export the IO points in the version the Safety Manager (SC) Controller is running.
  - b. To clean up the audit trail, archive the audit trail from the Safety Manager (SC) Controller that is about to be migrated.
2. Migrate the Safety Manager (SC) Controller to Safety Management Systems R210.6.
3. Compile the application.
4. Display the audit trail of the compiled Safety Manager (SC) Controller.
5. Note: Both documents mentioned in item 1a and 4 needs to be checked for “unexpected” items in the OLM report.
6. The unexpected items mentioned in the OLM report have an application address which can be found also in the export file of the IO points. The export file of the IO points shows the related Tag numbers, which can verify against the audit trail that they have been cleaned up by the compiler.

Example: Verify if point mentioned in OLM report with Application address 178 is one of the points that the compiler has cleaned up.

### Part of the OLM Report

M	Deleted or no point allocated (Application address = 167)
M	Deleted or no point allocated (Application address = 168)
M	Deleted or no point allocated (Application address = 169)
M	Deleted or no point allocated (Application address = 170)
M	Deleted or no point allocated (Application address = 178)
M	Deleted or no point allocated (Application address = 179)
M	Deleted or no point allocated (Application address = 180)
M	Deleted or no point allocated (Application address = 181)
M	Deleted or no point allocated (Application address = 663)
M	Deleted or no point allocated (Application address = 664)
M	Deleted or no point allocated (Application address = 3092)
M	Deleted or no point allocated (Application address = 3093)
M	Deleted or no point allocated (Application address = 3971)
M	Deleted or no point allocated (Application address = 3976)
M	Deleted or no point allocated (Application address = 3994)
M	Deleted or no point allocated (Application address = 3999)
M	Deleted or no point allocated (Application address = 4160)
M	Deleted or no point allocated (Application address = 4161)

TagNumb	PointType	ApplicationAddress
403_1	M	178
403_10	M	2126
403_1051	M	2429
403_1051_M		166
403_1061_M		177
403_1061_M		174
403_1071_M		172
403_1071_M		182

### Part of the IO Export Database

399	Point "295_6 (Point type = M)" has been deleted.
399	Point "299_1 (Point type = M)" has been deleted.
400	Point "459_3 (Point type = M)" has been deleted.
401	Point "403_3 (Point type = M)" has been deleted.
402	Point "295_5 (Point type = M)" has been deleted.
403	Point "401_2 (Point type = M)" has been deleted.
404	Point "401_4 (Point type = M)" has been deleted.
405	Point "401_1 (Point type = M)" has been deleted.
406	Point "403_1 (Point type = M)" has been deleted.
407	Point "403_2 (Point type = M)" has been deleted.
408	Point "251_2 (Point type = M)" has been deleted.
409	Point "309_4 (Point type = M)" has been deleted.
410	Point "401_3 (Point type = M)" has been deleted.
411	Point "251_1 (Point type = M)" has been deleted.
412	Point "459_4 (Point type = M)" has been deleted.
413	Point "309_3 (Point type = M)" has been deleted.
414	Point "299_2 (Point type = M)" has been deleted.
415	Point "403_4 (Point type = M)" has been deleted.

### Part of the Audit Trail

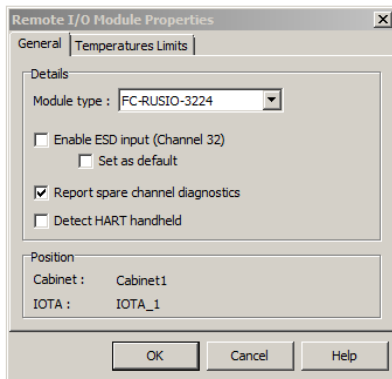
## 2.6.5 On-line modification

### 2.6.5.1 Universal Safety IO module channel option

Universal Safety IO modules (PUIO01, PDIO01, RUSIO-3224, RUSLS-3224) can detect if a device is connected to a spare channel. This can be enabled or disabled with the check box “Report spare channel diagnostics” located on the properties dialog box.



In case spare channel detection is enabled adding and/or deleting a point will generate an EC64 ‘Device detected on spare channel’ during On-line Modification. The same message may be generated as soon as field cables are connected to a spare channel, even if the field device is not yet connected, and this may cause an overflow on the diagnostic message buffer.



### 2.6.5.2 Safety Manager Peer to Peer (SafeNet)

For Safety Manager Controller sometimes after loading first Control Processor (CP) an error code 186: “External communication fault with ...” is reported. (E.g. due to not optimal communication infrastructure). Before proceeding make sure the details of this diagnostic message are analyzed. After it is selected to continue, the communication with the peer safety Manager that are reported in details of error code 186 will be lost. To prevent loss of Safety Manager Peer to Peer communication make sure that unexpected error code 186 is resolved before proceeding with On-line modification.

### 2.6.5.3 On-line modification

When executing Online Modification in Safety Manager Controller of Safety Management Systems R210.6 and system is configured with USIO modules, the running USIO module may report EC79 and the stopped Safety Manager QPP module may report EC228. These error codes can be ignored.

#### **2.6.5.4 On-line System software upgrade shows “Controller Too Complex”**

During Safety Manager Controller On-Line system software upgrade to Safety Management Systems R210.6, diagnostics may show EC98: Controller too complex to calculate cycle time within configured DTI .

The DTI should be changed using previous system software version.

- Restore
- Change DTI in previous System Software version
- Compile
- Migrate to Safety Management Systems R210.6

#### **2.6.5.5 On-line software upgrade from Safety Manager R150.1 (1-11FBXRN)**

During On-line system software upgrade from Safety Manager R150.1 Safety Builder Load option may show a “red cross” and On-line software upgrade appears to be blocked. When on-line software upgrade was started the system is running fault free and if no other faults are reported as defined in the On-line Modification Guide the first CP should be cycled to Stop and back to Run. After restarting download the On-line software upgrade will continue and complete.

#### **2.6.5.6 On-line software upgrade from Safety Manager R150.1 shows multiple EC 141**

During On-line software upgrade executed from Safety Manager R150.1 following anomaly may be observed:

Multiple error codes 141 appear. (Internal communication failure or redundant CP degraded)

If this is observed, it is strongly advised to complete the following steps before commencing the on-line modification:

1. Turn the QPP key switch of the non-running QPP to the STOP position. The R150.1 Control Processor remains RUNNING.
2. Toggle the Reset key switch once.
3. Turn the QPP key switch of the non-running QPP to the RUN position. The R150.1 Control Processor remains RUNNING.
4. Wait for the QPP to show “CPReady” on the display,
5. Wait 10 seconds
6. Check Diagnostics,
7. If 0 to 3 error code 141 is reported, **then** all is OK and continue with next step **else** repeat from step 1.
8. Resume the on-line modification procedure at step **C2.i** as defined in the On-line Modification Guide

### **2.6.5.7 On-line adding and removing Universal Safety IO /Universal Safety Logic Solver module**

Safety Manager Controller of Safety Management Systems R210.6 adding Universal Safety IO / Universal Safety Logic Solver module to the application (Topology change) the application must be changed first before Universal Safety IO /Universal Safety Logic Solver module are powered up.



Adding/deleting of Universal Safety IO / Universal Safety Logic solver must not be done as part of a firmware upgrade to Safety Management Systems R210.6 (1-UA45D9)

### **2.6.5.8 System software Upgrade (1-AYDFBKD)**

System software upgrade from Safety Manager R152 may report Sheet differences EC108. All reported sheets contain system markers that represent the health status of the HBus of the IO racks.

### **2.6.5.9 Migrate from Safety Manager R153.3**

System software upgrade of Safety Manager Controller having FC-RUSIO-3224 or FC-RUSLS-3224 and running a DTI of 2 seconds is ONLY supported from Safety Manager R153.3 or higher.

## **2.7 Migrate Fail Safe Controller projects**

### **2.7.1 Compatibility**

Safety Management Systems R210.6 can migrate FSC R80x applications.

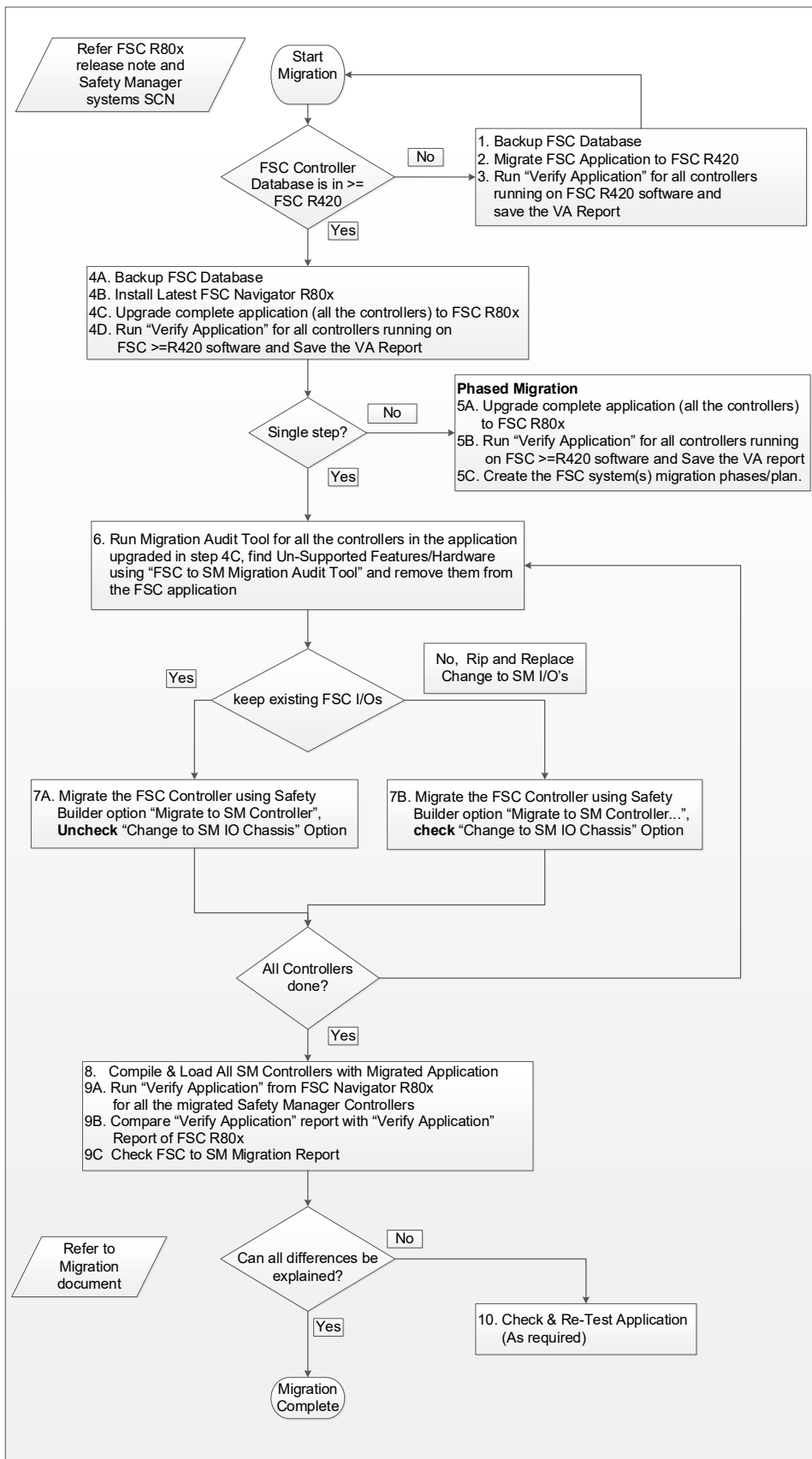
Safety Management Systems R210.6 supports most of FSC IO Modules.

More detail can be obtained by contacting local Honeywell affiliate.

## 2.7.2 FSC to Safety Manager Migration Process

Following are steps to migrate an FSC Controller to Safety Manager controller.

For releases in Flow Diagram use Safety Management Systems R210.6 and latest FSC R80x release.



## **2.8 Safety Builder**

Safety Builder of Safety Management Systems R210.6 is an all-in-one tool for configuring, loading, and monitoring Safety Manager and Safety Manager SC controller.

**Note:** Some tools may not be available, depending on your license and package.

### **2.8.1 Installation**

More details on Installing Safety Management Systems R210.6 is available in Installation and Upgrade Guide EP-SMSC-MAN-7053-210C, Paragraph INSTALLING AND REMOVING SAFETY BUILDER

#### **2.8.1.1 Install IPSEC**

Only for Safety Manager SC Controller solution.

During installation customer has opportunity to install IPSEC.

Installing IPSEC is recommended if secured communication in the plant is required.

For more details, refer the document Safety Manager SC Safety and Security Manual (EP-SMSC-MAN-7054-210A).

## 2.9 User Documentation

The Safety Manager User Assistance Documentation R210 is included as PDF user documentation. Following Safety Management Systems R210 documentation is available.

- Communication Best Practice
- Experion Parameter Reference
- Hardware Reference
- Installation and Upgrade Guide
- License Server Installation and Administration Guide
- Online Modification Guide
- Planning and Design
- Safety and Security Manual
- Safety Manual
- Software Reference
- System Administration Guide
- The Overview Guide
- Troubleshooting and Maintenance
- USC Planning Installation and Service

The latest update of **Safety Manager User Assistance Documentation R210** is available on Honeywell Process website. ([https://process.honeywell.com/us/en/services-and-support/support-center/technical-support/technical-solutions/article-detail.ka\\_000135672](https://process.honeywell.com/us/en/services-and-support/support-center/technical-support/technical-solutions/article-detail.ka_000135672))

## 2.10 Experion Integration Support

### 2.10.1 Experion SCADA: Safety Manager SC diagnostic message files on Experion

To get a correct Safety Management Systems R210.6 diagnostic representation on Experion SCADA the following files will need to be copied (replaced) to the Experion Server:



- `fsc_module.txt`
- `fsc_fault.txt`

Most likely the file location at the Experion server is: `\Experion PKS\Server\Data.`

### 2.10.2 CDA integration in Experion: Safety Manager SC Experion Components Installer

To be able to see the Safety Management Systems R210.6 detail displays, system tree icons and CDA error messages on Experion the Safety Management Systems R210.6 Experion Components.msi should be installed on the Experion Server and Experion stations when file replication is not used.

The Safety Management Systems R210.6 Experion Components.msi is a standalone installer. For CDA Experion integration, the detail displays must be installed using this installer, before starting Experion R501 (or higher).

Experion Components.msi will install the SBPublish tool. SBPublish supports remote publish to Experion.

### 3 Release Overview

Safety Management Systems R210.6 is a maintenance release

- Abandoning separate Safety Builder tool for Safety Manager Controller. Safety Management Systems R210.6 - Safety Builder tool manages Configuration of Safety Manager Controller and Safety Manager SC controller.
- Elevated/enhanced data security.
- Remote Publish support enabling segregated Experion data publication.
- Common engineering and maintenance platform increasing the usability and security of Safety Manager SC and Safety Manager
- Multiple Safety Builder engineering and maintenance enhancements provide easier engineering and more detailed diagnostics and statistics.
- Feature-based license mechanism providing detailed licensing information and status.
- Improved HART communication robustness for HART enabled devices connected to FC-RUSIO-3224/FC-RUSLS-3224 modules.
- For Safety Manager SC solutions IPsec communication for secure data communications.
- Upgrade from Safety Manager releases
- Migration from FSC releases. (Make sure to consult previous Software Change Notices of Safety Manager R16x series when migrating)
- One installation program, installing Safety Builder and its supported components.

## 4 Anomalies Resolved

This section provides an overview of the issues resolved per component in Safety Management Systems R210

### 4.1 S300 Firmware

Following table indicates anomalies resolved for Safety Manager SC Controller - **S300 firmware**

PAR #	Abstract	Release
SMSC-43177	Firmware upgrade sometimes fails because of a synchronization issue between redundant processors on the same Logic Solver (FC-SCNT-01). Nuisance issue.	R210.5
SMSC-44060	S300 reboot needed to purge duplicate process alarms from active alarm list if they exist.	R210.5
SMSC-7598	Having 13, 29, 45, 61, 77, 93, 109, 125, 141, 157, 173, 189, 205, 221, 237, or 253 in the 3rd octet of the IP address may result in a loss of communication, and a potential loss of control during either a FTE yellow switch or FTE yellow cable fault. These 16 Problem IP address values for the 3rd octet end in \$D when converted to Hexadecimal ( <a href="#">PN2021-08</a> )	R210.4
SMSC-43188	Pulling FTE-A cable may result in unstable communication over FTE-B cable.	R210.4
SMSC-43611	CDA process alarms not sent out when CDA recovery/regeneration is in progress for long periods of time	R210.4
SMSC-43715	In the case of a chattering analog alarm, and consecutive analog channels with the same alarm configuration, duplicate alarms for the consecutive channels could be generated. Eventually, this could cause the process alarm list to fill up, which will prevent new alarms from being generated.	R210.4
SMSC-43681	Both SafeNet link lost for the unaffected link after doing application OLM for SafeNet links due to EC181	R210.4
SMSC-43681	EC182 reported between SMSC and SM links for the unaffected link after performing application OLM for the SMSC link	R210.4
SMSC-8461 SMSC-8422	Safety Manager SC shows EC 22 and effected Control Processor goes to safe state	R210.3
SMSC-8397	Non-redundant Safety Manager SC configuration may be incorrectly rejected by the controller due to an incorrect check on a configuration property.	R210.3
SMSC-7670	"EC44 - SOE buffer full" reported while SOE is connected, and no events generated	R210.3
SMSC-7891	An application on-line modification with FC-PUIO01 configured may cause the FC-SCNT01 to spuriously shutdown with EC74.	R210.2
SMSC-7996	Both Safety Manager SC Controllers stopped reporting EC19/EC49/EC53 after few min of application OLM when DTI=1 sec with configured cycle time>=340ms	R210.2
SMSC-8040	Safety Manager SC Controller 1 stopped and reported EC198. Safety Manager SC Controller 2 stopped reporting EC49 at same time while doing application OLM	R210.2
SMSC-3236	Not always possible to write a Write Enabled register symbol	R210.1
SMSC-5700	Restore function may not work	R210.1
SMSC-6140	FDM save history of some devices may be failing	R210.1
SMSC-6922	The FC-SCNT01 report read/write failures	R210.1
SMSC-6967	The FC-SCNT01 may report EC198 during Online Modification	R210.1
SMSC-7100	The FC-SCNT01 may report EC22 and stops	R210.1
SMSC-7132	The Modbus communication may show "Data Corruption Error"	R210.1
SMSC-7345	It is possible to switch from operation mode to simulation mode online	R210.1
SMSC-7433	Automatic cold start may not synchronize directly, need Fault reset	R210.1
SMSC-7449	The FC-SCNT01 may report EC58, EC140 while performing power cycle on one CP.	R210.1

## 4.2 QPP-0002 Firmware

Following table indicates anomalies resolved for Safety Manager Controller - QPP-0002 firmware

PAR #	Abstract	Release
1-EASI3WJ	If any customer having Safety Manager application which does not have HART configured on at least one channel of the connected RUSIO nodes and later application is changed to enable HART configuration on one or more channels, during OLM chances of both RUSIO modules reporting EC228 are high. But once both QPPs (CP1 and CP2) are upgraded with latest applications and post final fault reset, communication will resume. Any further changes to enable more HART channels on any RUSIO nodes will not introduce this effect again	R210.6 (R163.1)
1-ECAAILL	Safety Manager Controller running firmware <=R162.8 can run into communication link failure due to exceptions (in this case due to denormalized floating point) over Modbus protocol.	R210.6 (R163.1)
1-DXQSZRR	Removing Slot 20 IO Extender causes Control Processor to stop. Redundant Control Processor loses all IO in its chassis.	R210.6 (R163.1)
1-EC7TZ09	Safety Manager application having AutoSafe configuration might experience logical link not going to faulty state if there an issue over line disturbing CRC or garbage message.	R210.6 (R163.1)
1-DHN0Z5D	SM A.R.T system with many SDOL-0424 modules (>50) (typically non-redundant) configured, then one CP may stop. See paragraph 5.2.1	R210.6 (R163.1)
1-CV9BSKQ	Any customer configuration having more than 16 SAO-0220m modules configured and if there are more than 16 open loops reported from all these SAO-0220m modules, this will lead to generating multiple Open loops in one cycle leading to EC141, EC147. Cause for Open loop can be either the devices not connected or there is common cause failure like having bad IO Extender.	R210.6 (R163.1)
1-CPYYUEJ	For Safety Manager controllers using SAO-0220m modules having cycle times less than 300 mS in some occasion's issues have been found when disconnecting and reconnecting field devices, when these field devices affect the current send out by the SAO-0220m module. This may result in EC10 for channel 1 and EC11 for channel 2.	R210.6 (R163.1)
1-BP6GKLH	Safety Manager A.R.T having only SDOL-0424 modules in larger number i.e., up to 4-5 chassis of SDOLs configured in combination with RUSIO-3224/RUSLS-3224, EC230 may be reported. Diagnostics might reappear on every Fault Reset.	R210.3 (R162.5)
1-BZUSVA1	The very low probability that both I/O bus flat cables are disconnected on a running controller and without verifying the root cause activating the "Fault Reset" could result in outputs staying active.	R210.3 (R162.5)
1-BP6GKLH	Safety Manager A.R.T having only SDOL-0424 modules in larger number i.e., up to 4-5 chassis of SDOLs configured in combination with RUSIO-3224/RUSLS-3224, EC230 may be reported. Diagnostics might reappear on every Fault Reset.	R210.3 (R162.5)

### 4.3 FC-PDIO01 firmware

Following table indicates anomalies resolved for **FC-PDIO01 firmware**

PAR #	*Abstract	Release
SMSC-8744	Module upgrade failed leaving FC-PDIO01 unresponsive	R210.4
SMSC-42889	FC-PDIO01 may report hardware fault - ADC Range Test failure (EC 142) with high supply voltage or high temperature.	R210.4
SMSC-43183	FC-PDIO01 may report Module Faulty EC149 at runtime followed by short (EC63), open (EC62) and DI hardware error (EC144) on the redundant module when the faulty module rejoins. (PN2021-15)	R210.4
SMSC-43318	FC-PDIO01 may report Module Faulty (EC149) at High temperatures (> 40°C)	R210.4
SMSC-43338	FC-PDIO01 may report ADC Compare Fault (EC152) at very high temperatures (> 60°C)	R210.4
SMSC-43339 SMSC-43353	FC-PDIO01 may report Hardware module fault EC23 or EC34 when startup at very high temperatures (> 60°C)	R210.4
SMSC-8398	After performing a remote reset random IO modules lost communication link with the FC-SCNT01 (EC228)	R210.3
SMSC-8311	EC152/EC153 observed on FC-PDIO01	R210.3
SMSC-8603	FC-PDIO01 may become unresponsive when power is removed during Firmware upgrade	R210.3
SMSC-7464	FC-PDIO01 may report EC148-EC74-EC152 EC149, or EC102.	R210.2
SMSC-7954	The Safety Builder IO module overview screen has the FC-PDIO01 module still showing as "Running/Healthy" instead of "Running/Faulty" even though the module reported a hardware fault. The reported diagnostics and system reaction are correct	R210.2
SMSC-7173 SMSC-7788	Spurious channel fault reported for not-used (spare) channels	R210.2
SMSC-8091	Spurious FC-PDIO01 stop, reporting error code EC148 and EC149.	R210.2
SMSC-8134	IO module reports redundancy synchronization failure (EC102) during OLM, leading to the trip (safe state) of one of the two IO modules	R210.2
SMSC-2747	open loop or short on DI LM channel on FC-PDIO01. Only the "Short AND" system point is set low.	R210.1
SMSC-7032	Test pulse for Digital Output may cause LED blinking on a relay module	R210.1
SMSC-7344	FC-PDIO01 stopped and reported EC23, EC34 and EC74	R210.1
SMSC-7356	Replacing FC-PDIO01 module the redundant module stops and reports EC34 and EC23	R210.1
SMSC-7406	Prevent EC74 for FC-PDIO01	R210.1
SMSC-7448	During upgrade of the FC-PDIO01, the status shows as Unknown instead of Loading	R210.1
SMSC-7241	FC-PDIO01 may report EC148 - Duplicate USIO node address detected	R210.1

## 4.4 FC-PUIO01 firmware

Following table indicates anomalies resolved for **FC-PUIO01 firmware**

PAR #	*Abstract	
SMSC-8457	EC27/EC140 reported on FC-PUIO01.	R210.3
SMSC-8453	IO channel hardware fault not always reported correctly	R210.3
SMSC-8562 SMSC-8533	EC 140 reported on FC-PUIO01	R210.3
SMSC-7792	EC201 of FC-PUIO01 not displayed correctly	R210.2
SMSC-7794	Both FC-PUIO01 modules status LED doesn't blink in Red when any one of CP power cycled whereas RUSIO-3224 and FC-PDIO01 Status LED blinks in RED for both module	R210.2
SMSC-7882	Analog input and output HART device-tree in the Honeywell Field Device Manager (FDM) program may not be displayed correctly	R210.2
SMSC-7896	The "Last status change" timestamp which is displayed on Safety Builder Remote IO page is not correct for FC-PUIO01	R210.2
SMSC-7957	During the FC-PUIO01 module replacement, open loops, short circuit, and PV shifts are observed on the AI and DI_LM channels	R210.2
SMSC-7974	FC-PUIO01 module reported EC95 on DO channel for Inductive Load during module replacement	R210.2
SMSC-7992	Field Device Manager reports load failure due to parity error issue for FC-PUIO01 module.	R210.2
SMSC-8014	FC-PUIO01 LEDs not operational during startup.	R210.2
SMSC-8043	EC62 getting reported during redundant module turning on.	R210.2
SMSC-8106	FC-PUIO01 stops on redundant module power-up reported with error code EC30.	R210.2

## 4.5 Safety Manager SC FC-RUSIO-3224 firmware

Following table indicates anomalies resolved for **Safety Manager SC FC-RUSIO-3224 firmware**

PAR #	*Abstract	Release
SMSC-8105	Channel fault diagnostics (EC91) gets reported for the devices like Smoke/heat detector that has alarm range at 24.3mA. no issues when the devices are within normal operation range. Issue is predominantly seen during the RUSIO-3224 module replacement with Smoke/Heat detector in the alarm range at/above 24.3mA. Since it only reports on the redundant module fault reaction for the point is not applied	R210.4
SMSC-43418	FDM drops off connection with devices connected SMSC FC-RUSIO-3224	R210.4
1-CKZ0ZNB	AI signals operated at a current of 24.3 – 25 mA may report a spurious EC91.	R210.2
1-C1HTY4T	The synchronization of the AI value and the AI loop statuses could be out of synchronization when an FC-TELD-0001 is present in an application with USIO modules. In case (one of) the AI loop statuses are used in the FLD's to generate an automatic override on a logic function it may have happened that this override does not work as intended as the AI loop status is activated up to 2 cycles later as expected.	R210.2
1-C9PRZ7B	Specific output loads on FC-RUSIO-3224/FC-RUSLS-3224 of Safety Manager releases R153.6 to R154.2, R162.1 to R162.4 and specific output loads on FC-RUSIO-3224 of Safety Manager SC releases R200.1 to R210.1, may result in EC56 followed by EC116 being reported on one or both USIO modules. An EC62 can be reported for DO channel in case an Earth Fault occurs on that DO channel when it has a load < 10mA and the number of channels being monitored by the ELD is > 50. EC251 will also be reported in this situation	R210.2
1-C9XNS6T	Specific output loads on FC-RUSIO-3224/FC-RUSLS-3224 of Safety Manager releases and specific output loads on FC-RUSIO-3224 of Safety Manager SC releases R200.1 to R210.1 may result in EC62 and EC56 followed by EC116 being reported on one or both USIO modules.	R210.2
1-B9VNAS1	Safety Manager CDA got stuck in the EPKS alarm summary. The starting point is that one or more points are in alarm condition. When the alarm limits or open / short set point limits are changed in such a way that the previous limits are in the new operating range, then the alarms would not recover. The workaround was to get the point above the new limits and then let it recover.	R210.2
1-BWG78QK	A specific hardware fault on USIO input channel used for DI-LM signal, having a status Low can result in a one cycle duration activation of that DI-LM signal to status High.	R210.2

## 4.6 Safety Manager FC-RUSIO-3224 firmware

Following table indicates anomalies resolved for **Safety Manager FC-RUSIO-3224/FC-RUSLS-3224** firmware

PAR #	*Abstract	Release
1-D3KJ8BS	For AO channels on USIO modules the fault reaction has been updated in case of an Open Loop.	R210.6 (R163.1)
1-DNZ1U61	Application of a forced analog input channel may incorrectly use the field value for one application cycle for Safety Manager with Universal Safety IO (USIO) module type FC-RUSIO-3224 or FC-RUSLS-3224 which include earth fault detector module type FC-TELD-0001. (PN2021-11A)	R210.6 (R163.1)
1-BWG78QK	A specific hardware fault on USIO input channel used for DI-LM signal, having a status Low can result in a one cycle duration activation of that DI-LM signal to status High.	R210.3 (R162.5)
1-CT50VCH	Using the GM relay GMID5096S it could happen that an unexpected EC62 was reported for the channel when the DO channel was in the off state. If the EC62 was not detected at the same by a redundant module setup it could be followed by an EC96/EC116 on the module that reported EC62.	R210.3 (R162.5)
1-B9VNAS1	The starting point is that one or more points are in alarm condition. When the alarm limits or open / short set point limits are changed in such a way that the previous limits are in the new operating range, then the alarms would not recover. The workaround was to get the point above the new limits and then let it recover.	R210.3 (R162.5)
1-C1HTY4T	The synchronization of the AI value and the AI loop statuses could be out of synchronization when an FC-TELD-0001 is present in an application with USIO modules. In case (one of) the AI loop statuses are used in the FLD's to generate an automatic override on a logic function it may have happened that this override does not work as intended as the AI loop status is activated up to 2 cycles later as expected.	R210.3 (R162.5)
1-C9PRZ7B	Specific output loads on releases > R153.6 and < R154.3 and > R162.1 and < R162.5 may result in EC56 followed by EC116 being reported on one or both USIO modules.  An EC62 can be reported for DO channel in case an Earth Fault occurs on that DO channel when it has a load < 10mA and the number of channels being monitored by the ELD is > 50. EC251 will also be reported in this situation	R210.3 (R162.5)
1-CKZ0ZNB	AI signals operated at a current of 24.3 – 25 mA may report a spurious EC91.	R210.3 (R162.5)
1-C9XNS6T	Specific output loads on releases < R154.3 and R160.1 – R162.4 may result in EC62 and EC56 followed by EC116 being reported on one or both USIO modules.	R210.3 (R162.5)