Honeywell

Safety Management Systems
R210.6
Software Change Notice
Version: 1.3

Table of Content

1   Introduction

1.1   Safety Management Systems R210.6

 consists of

- Safety Builder
- Safety Manager SC solution
- Safety Manager solution

1.1.1   Safety Builder

Safety Builder is the common engineering and maintenance platform which configures, loads, and monitors Safety Manager SC controller and Safety Manager Controller.

1.1.2   Safety Manager SC solution

Safety Manager SC is part of the Safety Management Systems Product Family.

Safety Manager SC is a highly reliable, high-integrity safety system for safety-critical control applications. As part of Honeywell's Experion Process Knowledge System (EPKS), integrated or in stand-alone applications, Safety Manager SC forms the basis for functional safety, providing protection of persons, plant equipment, and the environment, combined with optimum availability for continuous plant operation. Safety Manager SC offers safety, reliability, and efficiency from its foundations.

Safety Manager SC is a user-programmable, modular, microprocessor-based safety system, which can perform a wide range of critical process control and safety instrumented functions, including:

- High-integrity process control,
- Burner/boiler management systems,
- Process safeguarding and emergency shutdown,
- Fire and gas detection systems, and
- Pipeline monitoring.

Safety Manager SC is a modular, fault tolerant safety system capable of solving the most challenging Emergency Shutdown (ESD) / Safety Instrumented System (SIS) applications in the Process Control industry. Certified by TUV Rheinland, for use in safety applications up to Safety Integrity Level 3 (SIL3), Safety Manager SC is operationally integrated with Experion® and meets the latest cyber security standards, up to ISA Secure level 2.

The Safety Manager SC system offers key features such as:

    Small footprint / scalable architecture

    Expanded Honeywell LEAP™ and Universal I/O capabilities

    Tight operational integration with Distributed Control Systems (DCS) and SCADA platforms

    IEC 61131-compliant engineering tool for programming and diagnostics

1.1.3   Safety Manager solution

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Safety Manager is a user-programmable, modular, microprocessor-based safety system, which can perform a wide range of critical process control and safety instrumented functions, including:

- High-integrity process control,
- Burner/boiler management systems,
- Process safeguarding and emergency shutdown,
- Turbine and compressor control and safeguarding,
- Fire and gas detection systems, and
- Pipeline monitoring.

Safety Manager is a modular, fault tolerant safety system capable of solving the most challenging Emergency Shutdown (ESD) / Safety Instrumented System (SIS) applications in the Process Control industry. Certified by TUV Rheinland, for use in safety applications up to Safety Integrity Level 3 (SIL3), Safety Manager is operationally integrated with Experion® and meets the latest cyber security standards, up to ISA Secure level 1.

1.2 About this Document

This document describes the new features, resolved problems, known restrictions and special considerations for Safety Management Systems R210.6 (Safety Builder, Safety Manager SC, Safety Manager).

Please read this document in its entirety prior to installation and use of this software.

Safety Management Systems R210.6 dated March 2023

1.2.1 Revision History

Version	Month	Description
1.3	Feb 2023	Updated list of User Assistance documents
1.2	Jan 2023	Updated Versions
1.1	Jan 2023	Added known issues SMSC-48379, SMSC-48378 & SMSC-48121
1.0	Jan 2023	Initial

1.3   Safety Management Systems Status

STATUS SOFTWARE RELEASES:

R210.6	**Safety Management Systems R210.6** is a maintenance release supporting
	• Safety Manager SC – Control Processor solution o SCNT01 Control Processor module o RUSIO-3224 Universal Safety IO module o PDIO01 Safety Digital IO module o PUIO01 Safety Universal IO module • Safety Manager – Control Processor solution o QPP-0002, USI-0002, BKM-0001 o Chassis IO o RUSIO-3224 Universal Safety IO module o RUSLS-3224 Universal Safety Logic Solver • Safety Builder is a set of tools to: o Configure and build the Safety Manager and Safety Manager SC application files. o Load Controller(s), view diagnostics, view system status data, view application data and live FLDs

FOR CURRENT USERS:

Safety Management Systems R210.6 is a maintenance release providing

- 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 the Previous Software Change notices of R16x series when migrating)

- One installation program, installing Safety Builder and its supported components.

Latest versions of Safety Management Systems R210.6 Software Change Notice can be found at process.honeywell.com.

After you log in to process.honeywell.com, Click here or search for "SMSC-MAN" AND "R210.6" including the quotes.

1.4   Conventions

The following symbols are used in Safety Management Systems documentation:

	Tip This symbol is used for useful, but not essential, suggestions.
	Attention This symbol is used for information that emphasizes or supplements important points
	Caution This symbol warns of important facts on Safety Management Systems behavior or architecture.

2   Getting Started

2.1   Supported Hardware

This section describes the supported hardware by Safety Management Systems R210.6

2.1.1   Safety Manager SC Hardware

Safety Management Systems R210.6 supports Safety Manager SC Controller

- FC-SCNT01, SAFETY CONTROLLER SIL3
    - o   FC-TCNT11, SC S300 IOTA CNTRL REDUNDANT
- FC-PUIO01, SC SAFETY UIO IOM 24VDC, 32CH
    - o   FC-TUIO11, SC IOTA SAFETY UIO REDUNDANT
    - o   FC-TUIO51, SC FTA FC-PUIO01 KNIFE, EOL,24VDC,16CH, L
    - o   FC-TUIO52, SC FTA FC-PUIO01 KNIFE, EOL,24VDC,16CH, R
- FC-PDIO01, SC SAFETY DIO IOM 24VDC, 32CH
    - o   FC-TDIO11, SC IOTA PDIO REDUNDANT
    - o   FC-TDIO51, SC SAFETY FTA KNIFE, EOL, 24VDC, 16CH, L
    - o   FC-TDIO52, SC SAFETY FTA KNIFE, EOL, 24VDC, 16CH, R
- FC-RUSIO-3224, SM USIO module 32 ch 24Vdc
    - o   FC-IOTA-R24, SM Universal Safety IO redundant termination assembly
    - o   FC-IOTA-NR24, SM Universal Safety IO non-redundant termination assembly
- UMS (Universal Marshalling Solution) modules are supported by Safety Manager SC
    - o   CC-UPTA01   Feedthrough/Disconnect
    - o   FC-UIR501   SCA DIGITAL INPUT RELAY 5KOHM
    - o   FC-UDI501   Pass thru + 5kOhm
    - o   FC-UDIR01   SCA DIGITAL INPUT RELAY
    - o   FC-UDOR01   SCA DIGITAL OUTPUT RELAY SIL 3
    - o   FC-UDOF01   SCA DIGITAL OUTPUT RELAY SIL 3 F&G
    - o   FC-UAIA01   SCA ANALOG INPUT
    - o   FC-UAIS01   SCA ANALOG INPUT SINK
    - o   FC-UDIN01   SCA DIGITAL INPUT NAMUR
    - o   FC-UDNS01   SCA DIGITAL INPUT SAFETY NAMUR
    - o   FC-UGDA01   Digital IO IS barrier
    - o   FC-UGAI01   Analog Input barrier
    - o   FC-UGAO01   Analog Output Barrier

2.1.2   Safety Manager Hardware

Safety Management Systems R210.6 supports Safety Manager Controller

- QPP-0002, USI-0002, BKM-0001, PSU-240516
    - CPCHAS-000x
- RUSIO-3224, SM Remote Universal Safe IO module 32 ch 24Vdc
  RUSLS-3224, SM Remote Universal Logic Solver 32 ch 24Vdc
    - IOTA-R24, SM Universal Safety IO redundant termination assembly
    - IOTA-NR24, SM Universal Safety IO non-redundant termination assembly
- Safety Manager and FSC IO modules. (see Revision Release List on TUV website)
    - IOCHAS-0001R/ IOCHAS-0003R, IOCHAS-0001S/ IOCHAS-0003S
    - IOCHAS-0002R, IOCHAS-0002S

2.2 Safety Management Systems functionality support

This paragraph provides overview of the hardware required for main functionalities of Safety Manager SC Controller platform and Safety Manager Controller platform

Following table shows Hardware support regarding redundant/non-redundant Safety Manager (SC) (A.R.T.), FC-SCNT01, Chassis-IO, FC-RUSIO-3224/FC-RUSLS-3224, FC-PDIO01 and FC-PUIO01

Controller			Safety Manager		Safety Manager A.R.T.	Safety Manager SC	Safety Manager SC A.R.T.	Safety Manager SC A.R.T.+
	Safety System		FC-QPP-0002		FC-QPP-0002	FC-SCNT01/ FC-SCNT02	FC-SCNT01/ FC-SCNT02	FC-SCNT01/ FC-SCNT02
	Controller ID							
	Chassis/IOTA		CPCHAS-0001/ CPCHAS-0003		CPCHAS-0002	FC-TCNT11	FC-TCNT11	FC-TCNT11
	Size (Inch)		19" rack/ 4HE	19" rack/ 4HE	19" rack/ 4HE	15"	15"	15"
			Non-Redundant	Redundant	Redundant	Redundant	Redundant	Redundant
Chassis IO								
Redundant	19" rack/ 4HE			■	■			
Non-Redundant	19" rack/ 4HE		■	■	■			
FC-RUSIO-3224 (Universal Safety IO)								
Redundant	18"			■	■	■	■	
Non-Redundant	12"		■	■	■	■	■	
FC-RUSLS-3224 (Universal Safety Logic Solver)								
Redundant	18"			■	■			
Non-Redundant	12"		■	■	■			
FC-PDIO01 (Safety Digital IO)								
Redundant	12"					■	■	■
Non-Redundant	12"					■	■	
FC-PUIO01 (Safety Universal IO)								
Redundant	12"					■	■	■
Non-Redundant	12"					■	■	

Cell Empty   : Not supported.

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 X 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 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	R100		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		

Extra	Support		Extra Hardware requirement compared to BASE					
Feature	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			
AutroCom SIL 2 protocol	R162			FC-QPP-0002	FC-USI-0002, FE-USI-0002 or FX-USI-0002			

NOT supported	From	To	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	From	To	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 Boolean Property Output	R200.1	---			✓	✓	✓	✓
FLD Export to Unisim	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
P	Partially supported by Experion

New SM modules are not known in older Experion releases, Diagnostics will report unknown modules.

2.2.3.2   Experion Station

Safety Builder of Safety Management Systems R210.6 can be installed on Experion 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					
Microsoft Windows (Safety Manager)	**R200.1 to R200.3**	**R201.1 R201.2**	**R210.1 to R210.5**	**R210.6**	**R211.1 R211.2**
Windows 10 Enterprise LTSB 2015					
Windows 10 Enterprise LTSB 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)

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

From \ To	R146.2	R154.5	R162.8	R201.2	R210.6	R211.2	R212.1
R146.2	a	p	p		p	p	p
R154.5		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

FROM \ To	R146.2	R154.5	R162.9	R201.2	R210.6	R211.2	R212.1
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	✓	✓	✓	✓	✓	✓	✓
R154.5			✓	✓	✓	✓	✓
R160.2		✓	✓	✓	✓	✓	✓
R160.3		✓	✓	✓	✓	✓	✓
R161.1		✓	✓	✓	✓	✓	✓
R162.1		✓	✓	✓	✓	✓	✓
R162.2		✓	✓	✓	✓	✓	✓
R162.3		✓	✓	✓	✓	✓	✓
R162.4		✓	✓	✓	✓	✓	✓
R162.5		✓	✓	✓	✓	✓	✓
R162.6		✓	✓	✓	✓	✓	✓
R162.9				✓	✓	✓	✓
R200.1			✓	✓	✓	✓	✓
R200.2			✓	✓	✓	✓	✓
R200.3			✓	✓	✓	✓	✓
R201.1			✓	✓	✓	✓	✓
R201.2					✓	✓	✓
R210.1				✓	✓	✓	✓
R210.2				✓	✓	✓	✓
R210.3				✓	✓	✓	✓
R210.4				✓	✓	✓	✓
R210.5				✓	✓	✓	✓
R210.6						✓	✓
R211.2							✓
R212.1							

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… .
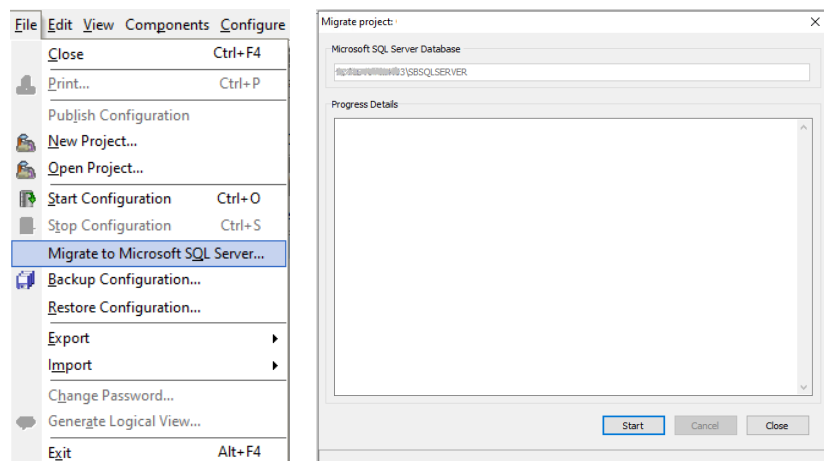
The Migrate projects Dialog box shows progress and result.

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 = 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

398	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.
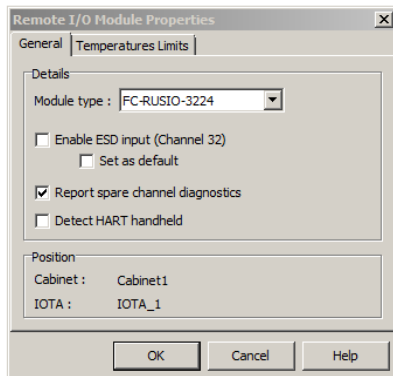
2.6.5.2 Safety Manager Peer to Peer (SafeNet)

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 <u>not</u> 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.

```
┌─────────────────────┐
│ Refer FSC R80x      │         ( Start
│ release note and    │          Migration )◄──────────────┐
│ Safety Manager      │               │                     │
│ systems SCN         │               ▼                     │
└─────────────────────┘                            ┌──────────────────────────────────┐
                          ◇ FSC Controller ◇  No   │ 1. Backup FSC Database            │
                          ◇ Database is in >= ◇────►│ 2. Migrate FSC Application to    │
                          ◇ FSC R420 ◇              │    FSC R420                       │
                                 │                  │ 3. Run "Verify Application" for  │
                                Yes                 │    all controllers running on    │
                                 ▼                  │    FSC R420 software and         │
              ┌────────────────────────────────┐   │    save the VA Report            │
              │ 4A. Backup FSC Database         │   └──────────────────────────────────┘
              │ 4B. Install Latest FSC Navigator│
              │     R80x                        │
              │ 4C. Upgrade complete application│
              │     (all the controllers) to    │
              │     FSC R80x                     │
              │ 4D. Run "Verify Application" for│
              │     all controllers running on  │
              │     FSC >=R420 software and Save │
              │     the VA Report               │
              └────────────────────────────────┘
```

Phased Migration
5A. Upgrade complete application (all the controllers) to FSC R80x
5B. Run "Verify Application" for all controllers running on FSC >=R420 software and Save the VA report
5C. Create the FSC system(s) migration phases/plan.

◇ Single step? ◇ — No → (Phased Migration box above)

6. Run Migration Audit Tool for all the controllers in the application upgraded in step 4C, find Un-Supported Features/Hardware using "FSC to SM Migration Audit Tool" and remove them from the FSC application

◇ keep existing FSC I/Os ◇

No, Rip and Replace Change to SM I/O's

7A. Migrate the FSC Controller using Safety Builder option "Migrate to SM Controller", **Uncheck** "Change to SM IO Chassis" Option

7B. Migrate the FSC Controller using Safety Builder option "Migrate to SM Controller...", **check** "Change to SM IO Chassis" Option

◇ All Controllers done? ◇ — Yes

8. Compile & Load All SM Controllers with Migrated Application
9A. Run "Verify Application" from FSC Navigator R80x for all the migrated Safety Manager Controllers
9B. Compare "Verify Application" report with "Verify Application" Report of FSC R80x
9C Check FSC to SM Migration Report

┌─────────────────────┐
│ Refer to   │
│ Migration   │
│ document   │
└─────────────────────┘

◇ Can all differences be explained? ◇ — No → 10. Check & Re-Test Application (As required)

Yes →

(Migration Complete)

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)

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 (PN2021-08)	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 AutroSafe 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)

4.7   FX-USI-0002 firmware

Following table indicates anomalies resolved for **FX-USI-0002 firmware** resolved for Safety Manager Controller

PAR #	*Abstract	Release
1-EJCT8SL	Safety Manager having EUCN configuration running on <=R162.8 might run into EUCN communication loss, when EUCN configured communication module encounters EC34 diagnostic (PN2022-12A).	R210.6/ R163.1
1-E89DTHL	UCN noise reported continuously in TPS journal logs reported by Safety Manager. (PN2022-12A)	R210.6/ R163.1
1-E3PTQ31	Safety Manager having CDA configuration and BI or BO points configured for CDA alarms may experience points are stuck in Active state and Return to Normal (RTN) will not occur.	R210.6/ R163.1
1-E3QUQRF	SM-EUCN: Time drift on ENB causes "partfail" for 6 seconds randomly Safety Manager customer having EUCN configuration and having ENB in network, might experience SMTSFLT part fail alarms in system journal	R210.6/ R163.1
1-D2KUCHG	Any customer configuration having FSC as Primary node, Safety Manager and FSC as Secondary node with Device clock is configured (using UCN, Modbus or DBM) at FSC Primary node can have SafeNet link high level retries resulting in alarms. In some cases, FSC-SM SafeNet logical link failure might be observed.	R210.6/ R163.1
1-E1DVZKR	SMM (Safety Manager Module) may not failover when universal safety interface (USI) fails with error code 34. (PN2022-12A)	R210.6/ R163.1
1-D3NU95N	In situations where two IP addresses are configured on SM (that is IP configuration on port A and port B) and with different protocols configured on port A and port B, then it is possible to communicate to protocols configured on port B via communication from port A and vice versa, with simple addition of "route" command.	R210.6/ R163.1

4.8   Safety Builder

Following table indicates anomalies resolved for the **Safety Builder**

PAR #	*Abstract	Release
SMSC-47507	SM Controller's CP2 Load Fails when the Safety Builder is only in the View only Mode during the Firmware/Application Download	R210.6
1-DV6J6DX	Tool requires to resolve alarm stuck issue on SM - Experion CDA integration	R210.6
1-DDO10FF	Decimal value not correctly displayed in online FLD after Function Blocks and division.	R210.6
1-DZMXZHW	Remote Reset is enabled in View Only credential of safety Builder during Point Viewer option.	R210.6
1-E2WMZGP	FNG DI point connected to function block symbol not working when directly connected without logic	R210.6
1-DZJRTVH	Application Viewer: Safety Manager having PID configuration may show "NaN" while reading the output of PID in point viewer or in online FLD page	R210.6
1-CQTOMA3	Safety Builder stopped when right click on FLD during FLD selection in application viewer	R210.3
1-C81RRID	Migration aborted due to Maximum number of Points that can be allocated to EUCN protocol	R210.3
1-AUIE97W	Urgent alarms from SM are termed as Critical alarms in Experion server R500.1	R210.3
1-CAZYRAP	Copy Controller" functionality is broken: All addresses changed, and OLM is not possible	R210.3
1-C2R8HJB	1 DO tag forced causing another ANN tag to force as well	R210.3
1-C1DDKP7	Range Check Error during compilation. (Unable to compile application)	R210.3
1-B3AO76P	On sheet marker directly connected to an input is missing all properties of that input	R210.3

PAR #	*Abstract	Release
1-CQBECT7	Safety Builder stopped during migration of FSC-SM database after 6 hours	R162.5
SMSC-8349	On sheet marker directly connected to an input is missing all properties of that input	R210.3
SMSC-8399	Not able to retrieve controller logs via Safety Builder	R210.3
SMSC-5761	Clicking and changing between FB in online view renders SB unresponsive	R210.1
SMSC-6044	Deallocated points are not showing in the Select Point list from the Hardware Configurator	R210.1
SMSC-6200	Safety Builder on a standalone remote PC stops when the SQL Server to which it is connected is turned off.	R210.1
SMSC-6213	Retrieving diagnostics in OLM procedure takes relative long: 1,5 minutes	R210.1
SMSC-6214	Universal Safety IO (System Info tab) does not update when modules are changed/added/removed	R210.1
SMSC-6219	"Nervous cursor" when being in online environment	R210.1
SMSC-6220	No confirmation from Safety Builder that backup is successfully created and completed	R210.1
SMSC-6630	On sheet marker directly connected to an input is missing all properties of that input	R210.1
SMSC-6647	Compiler did not address SM SC with non-used max repair time configuration.	R210.1
SMSC-6739	Builder reports "DISK WRITE ERROR" when load block and save block used on comment FLD	R210.1
SMSC-6145	Copy controller when Modbus Responder configured may show "host IP address invalid".	R210.1

4.9   Experion Integration

Following table indicates anomalies resolved for the **Experion Integration**

PAR #	*Abstract	Release
1-4A9KBKH	TFS_COM1-Firstup Status events reported in Safety Historian & not reported in Experion CDA	R210.6

Safety Management Systems R210.6 provides Safety Manager Controller version R163.1
For more detail information regarding updates for Safety Manager Controller, check the Software Change Notices for Safety Manager R162.x, which can be found at MyHPS website
  (https://process.honeywell.com/us/en)
Search for   "Safety Manager - SoftwareChangeNotification – R162"

5   Known Restrictions

Safety Management Systems R210.6 has following known restrictions for:
- Safety Manager SC controller and
- Safety Manager controller

5.1 Safety Manager SC Controller

5.1.1   Temporary connect

In case the FC-SCNT01 controller application is cleared and then then a controller load operation is performed, then a controller reboot occurs and temporary connect operation needs to be performed to establish communication with the controller again.

5.1.2   Considerations for HART-communication

5.1.2.1   Performance

FC-RUSIO-3224 has one HART modem serving channels 1-16 and a second HART modem serving channels 17-32. In a redundant configuration, the two HART modems assigned to the same group of channels are sharing the HART communication load.
Communication with the HART enabled channels is scheduled round-robin. With a typical HART request-response communication cycle of 800ms, this implies that when running non-redundant, each HART configured channel is on average serviced 800ms x (number of HART enabled channels in the same group – 1). When running redundant, this will be approximately 800ms x (number of HART enabled channels in the same group / 2 – 1). If communication retries are requested, the performance will be lower.

5.1.2.2   Signal levels and quality

The minimum HART signal amplitude for low-impedance devices is specified at 120mVpp. It is observed that devices connected between the FC-RUSIO-3224 and the field device (intermediate device) sometimes attenuate or malform the HART signal. Especially isolating barriers using a transformer attenuate the HART signal a factor 2 to 5. Even if the intermediate device is HART-compliant, a perfectly healthy HART signal with 200mVpp at the device side may be attenuated well below the minimum HART specification after it passed the barrier. At the FC-RUSIO-3224 side a too low signal amplitude may lead to retries, resulting in a slow response, or no HART communication. Poor cable quality, long cables, poor cable connections and intermediate devices like barriers, may cause excessive noise or malformed HART signals. This may result in a slow response, or no HART communication.
The HART specification defines the Mark and Space frequency tolerance at ±1%. It is observed that some field devices deviate 2% or more. FC-RUSIO-3224 HART firmware pre R210.5 is designed against the ±1% specification. When running firmware versions older than R210.5, these out of bound frequencies are not always decoded properly and may lead to no HART communication. Firmware version R210.5 and higher also support out of bound device frequencies up to ±3%.

5.1.2.3 Differences between FC-RUSIO-3224 and FC-PUIO01

The FC-PUIO01 has 32 HART modems, one for each IO channel whereas FC-RUSIO-3224 has 1 HART modem serving a group of 16 channels. From a performance point of view, FC-PUIO01 has a higher throughput.
In general, the hardware design provided with FC-PUIO01 is more forgiving for out-of-bound frequencies and poor signal quality compared to FC-RUSIO-3224. If HART communication is important for operations, and if module selection is an option, it is recommended to use FC-PUIO01.

5.1.3   Known anomalies

This section provides an overview of the not yet resolved anomaly with high priority confirmed to be an issue with Safety Management Systems R210.6.

5.1.3.1   Safety Manager SC Controller

PARID#	Abstract
SMSC-4816	Experion CDA Module status shows incorrect module status for SM modules for various fault states of Safety Manager
SMSC-5613	Safety Manager SC release <R210 the Endianness property in DCS (Modbus TCP) dialog is default blank. To avoid compilation errors, Users should configure this property.
SMSC-5703	Nuisance EC147 (Cycle Time is different for Redundant Module) reported while newly placed FC-SCNT01 from stock gets equalized.
SMSC-6763	Safety Historian cannot be configured on port C or port D. It is recommended to configure DCS or Safety builder node on port C or port D and use same physical network to connect to Safety Historian.
SMSC-7498	The SOE Buffer full system marker covers the SOE buffer and the Alarm buffer, while the name suggests it only covers the SOE buffer.
SMSC-7632	Forces are accepted in idle, but will be cleared at start-up
SMSC-7710	Automatic cold start does not work reliably under all conditions. It is recommended to leave the Automatic cold start unchecked.
SMSC-8621	SOE Buffer full and Clock Source System Points goes to Low during upgrade SMSC Controller reboot
SMSC-8546	During switchover after load, the maximum cycle time shown on System – Information - SM-SC Controller statistics screen increases and at times may show vast difference between cycle time or min cycle time and maximum cycle time. Toggle fault reset after load ensures that all three values are showing accurate data.
SMSC-43054	S300 - SOE: CDA process alarm list size limit reached.
SMSC-8675	Safety Manager SC CDA points show trip value as 0 or 1 in EPKS Alarm/Event Summary
SMSC-43679	If alarms/returns to normal are generated at a rate of > 10/second for an extended period, this can cause the S300 process alarm list (and Experion) to get stuck with alarms that cannot be returned to normal. The alarm list could also eventually fill up and result in EC44. If this happens, rebooting both S300s at the same time is the only way to restore the alarm list to normal. If EC43 occurs (SOE generation overrun), this could also result in stuck alarms in the S300 process alarm list.
SMSC-45951	Loss of communication when SM-SC controller name and the asset name inside the FLD properties are equal
SMSC-45397	Fault Reset applied to Safety Manager SC system not always listed in Diagnostics.

PARID#	Abstract
SMSC-48378 SMSC-48379	Already reported ACTIVE alarms might get stuck in Experion side in case - Some tags have ACTIVE alarms reported and - Both the Control Processor (CP) modules are rebooted at same time and - the Power UP values of those tags are in Normal range This scenario will not be corrected using "Clear Alarm" functionality. Workaround: Initiate manual recovery from Experion side once both CPs of the Safety Manager are in Running condition

5.1.3.2 Safety Universal IO module

PARID#	Abstract
SMSC-5346	FC-RUSIO-3224 sometimes generates 2 low-latency (1ms) events for the same DI transition
SMSC-7164	For systems with more than one IO module in the power supply group, FC-RUSIO-3224 and FC-PUIO01 may not be able to localize earth faults which occur on Digital Output channels. "Earth Fault detected on cabinet" (EC251) will be reported. For details on tracing earth faults, see section "Checking for earth faults" in the Safety Manager Troubleshooting and Maintenance Guide.
SMSC-7517	Any single Ethernet cable fault Universal IO module FC-PUIO01 will set both RIOLA and RIOLB system markers faulty for this module.
SMSC-7671	FC-PDIO01 Digital Output channel high with beacon connected may report EC60
SMSC-7783	Safety Manager SC ART and ART+ Supports 32 IO modules. The IO modules node number must be less than or equal to 32.
SMSC-7778	A nuisance External Communication Failure (EC228) can be observed while performing an on-line modification on IO module FC-PUIO01 if this module does not have the IO network cross-wiring between redundant CP. It is advised to check the Remote IO status in System Information to confirm all IO links are healthy
SMSC-7134	Intermittent Earth Fault on the DI_LM channel of the FC-PUIO01 module in the same power supply group may report EC63
SMSC-7419	Power cycle both FC-RUSIO-3224's having Analog Output channels configured and device connected, may report EC58
SMSC-7709	Power cycling FC-PDIO01 or FC-PUIO01 module during OLM may report EC102, EC95 for the redundant FC-PDIO01 / FC-PUIO01.
SMSC-7779	Adding AI having load on spare channel of FC-PUIO01 may report EC62/EC63 after doing application OLM. Fault reset will clear EC62/EC63
SMSC-8130	RIOLAFault & RIOLBFault set to high when communication to RUSIO module is lost
SMSC-8098	Analog Input value may shift approx. 2-3% during module replacement.
SMSC-43145	Issues with loading out of the box RUSIO modules with R210.x (PN2021-10A)
SMSC-8788	FC-PDIO01 reports EC60 on DO HIGH for Asco redhat solenoid valve
SMSC-43731	New FC-RUSIO-3224 installed on IOTA running R2xx will not be loaded. (PN2021-10A)
SMSC-44882	FC-PUIO01 HMI display shows ESD activated all time while no ESD is activated.
SMSC-45927	On Powering off FC-RUSIO-3224 / FC-PDIO01 / FC-PUIO01 module, Experion displays for this module shows healthy status.
SMSC-43144	FC-RUSIO-3224 connected to Safety Manager SC controller reports EC56 after upgrade.
1-ECKOM3V	ART RUSIO1-Slot2 module not able to join partner module RUSIO1-Slot1 and come to running state.

5.1.3.4 SafeNet

PARID#	Abstract
SMSC-6437	Adding/deleting an intermediate SMSC master both SafeNet links may fail
SMSC-6170 SMSC-5603	Incorrect "Fault Reaction Applied (Own/Peer)" on SafeNet Status screen. Fault Reaction Applied Peer value attempts to assist the operator but is not definitive. Operator should check the SafeNet link status from the peer controller's SafeNet Status Details
SMSC-7352	SafeNet communication links between a Safety Manager and a Safety Manager SC is not supported on the FTE network.
SMSC-6943	Elevated numbers of low level retry may be recorded on SafeNet links because of delays in sending message acknowledgements, not adverse network conditions. High level SafeNet retry counts are not affected.
SMSC-7512	A SafeNet link will recover automatically if its redundant link is healthy. However, the External Communication Fault system marker associated with that SafeNet channel (ExtComfaultCCx) will keep its alarm state until fault reset.
SMSC-45740	Time sync via SafeNet not supported but able to configure in Safety Builder

5.1.3.5 License and install

PARID#	Abstract
SMSC-4856	After installing Flexera licensing, acrobat Pro stops working. Acrobat should be re-installed after Flexera, or you must run the repair tool
SMSC-6066	License Activation Utility shortcut is created in Start Menu, but it is a blank icon.
SMSC-48121	"Honeywell CLL UI' service may not be available after Install. Uninstall and reinstall the 'Honeywell license activation utility' again as administrator.
SMSC-47809	Installing on Windows 2016 LTSB, not all security settings may be applied. Make sure security settings are applied as defined in Chapter - SQL SERVER DEFAULT SETTINGS RECOMMENDATIONS of the Safety Management Systems R210.6 Installation and Upgrade guide.

5.1.3.7 Safety Builder

PARID#	Abstract
SMSC-4395	Not able to export points in case more than 40 Logical links are configured, Safety Builder fails with message "unable to create external database"

SMSC-5885	After a Copy controller is done, some controllers may fail to open. This is due to inconsistent data related to SafeNet allocations that is already present in the database.
	Workaround: re-create the SafeNet allocations after Copy controller is done.
	    - Export the points
	    - Remove the SafeNet allocations
	    - Import the points again

SMSC-6029	Safety Historian doesn't work when installed with Safety Builder on same windows 10 machine. (SQL server related)
SMSC-8763	Unable to create .BAK and .SBX files
SMSC-6740	The value for the Maximum Repair Timer which is configured as "Not Used" in Safety Builder (for Safety Manager) is not shown as "Not Used" in Experion Native Window.
SMSC-6754	Importing large number of FLDs is causing Safety builder to hang. It is recommended to import in a set of 750 FLDs at a time.
SMSC-7312	Project Plant-Backup Configuration or Export option may fail with Query Timeout. Expired/Command Timeout error when plant configured with more than 40 controllers and more than 70 logic connection.
SMSC-43178	No Print option Safety Builder Hardware Configurator
SMSC-43175	incorrect text shown in column "unit" in Experion alarm display
SMSC-42966	"Publish to Experion" Window: Word "Enumerations" to be replaced with "Enumerations"
SMSC-42964	NTP & Experion server host name change does not change the Controller Status to Blue or Red.
SMSC-42919	When selecting a sheet which is available bit visible in appl. viewer, Safety Builder stops
SMSC-45586	Not able to import the Autronica *.xml files on Safety Builder
SMSC-44882	Controller management: System Information: incorrect quantity "Number of faults" reported
SMSC-43037	Incorrect Audit Trail Message "Remote Reset Confirmation Failed": Reset is performed successfully

5.2   Safety Manager Controller

5.2.1   SDOL-0424 limits in Safety Manager A.R.T. system (1-DHN0Z5D)

Maximum number of SDOL-0424 modules supported since Safety Manager R162.7 in an SM A.R.T. configuration is 108 SDOL-0424 modules in a non-redundant IO configuration and 54 pair of redundant SDOL-0424 modules in a redundant IO configuration.

The cumulated maximum number of open loops on SDOL-0424 modules in an SM A.R.T. configuration is 10.

5.2.2   Changing Function Block gives an error during compilation (PAR1420, 1-12IVDA2)

Safety Manager Release

R100.1 and higher

Configurations:
Changing Function Block (FB)

Descriptions & Conditions:
When changing an FB which is used on one or more FLDs, these FLDs are not refreshed with the latest changes. Translate Application reports all FLDs with the changed Function Block.

Changes on a function block that require a refresh on the FLD's that use these function blocks are

- Interface signal types
- Timer set points
- Counter
- Cycle-pulse

Work around:
Use 'Change' option from the pop-up menu to update the FLD's that use this changed Function Block.

5.2.3   Remove "Force enable" procedure (1-14UOTT/1-14UOWF)

Configurations:
All

Descriptions & Conditions:
If a point is forced in a running redundant SM Controller and during a modification this point is set to force enable 'No', after the on-line modification (OLM) the point is still forced. The force of this point can only be cleared via the Safety Builder "Clear all forces" option or by disabling the FORCE ENABLE key. When trying to start-up the "View all Forces", while having this point forced the Safety Builder will terminate.

Work around:
Do not use "View all Forces" until the point is cleared.

5.2.4   FE-USI-0002 compatibility limitations (1-3WZT0DJ)

Configurations:

FE-USI-0002 with EUCN configuration

Descriptions & Conditions:

If an FE-USI-0002 module which was working in R16x with EUCN configured (having EUCN authentication files) is swapped as spare USI to Safety Manager Release < R130.1, the FE-USI-0002 or loses its EUCN certificate. This might result in loss of communication with EUCN (ENIM does not accept Safety Manager node) and/or the FE-USI-0002 module reporting diagnostic message EC75.

Restriction:

Do not use FE-USI-0002 in a Safety Manager Solution < R130.1.

5.2.5   FX-USI-0002 compatibility limitations (1-BZ1LQP7)

Configurations:

FX-USI-0002

Descriptions & Conditions:

The FX-USI-0002 module only supports a QPP that is running >= R140.1,

Positioning the FX-USI-0002 with a QPP running older firmware than R140.1 will leave the FX-USI-0002 not operational. (PN2019-31)

Restriction:

Do not use FX-USI-0002 with a QPP that is running Firmware older than R140.1.

5.2.6   Noise reported on EUCN during startup (1-3ZPP4MR)

Configurations:

Safety Manager – EUCN integration

Descriptions & Conditions:

The startup time of EUCN protocol in USI is a bit slower compared to SMM because all components run in USI (LLC, TBC emulator). Therefore, the context switch time between these tasks cause the delay at startup.

Work around:

Ignore any cable alarms and Return-To-Normal at startup/state change.

When doing online modification, verify there is no noise before starting this exercise

5.2.7   EUCN and Advanced Experion Integration protocols.

Configurations:

Safety Manager – EUCN integration and CDA

Descriptions & Conditions:

Due to the USI memory capacity the EUCN and Advanced Experion Integration (CDA) protocols cannot be used both in the same Safety Manager Controller

Work around:

None

5.2.8   Universal Safety IO HART

Configurations:
Applications having Universal Safety IO with HART enabled channels also configured for Smoke/Heat detection.

Descriptions & Conditions:
When a HART enabled channel is also configured for Smoke/Heat detection, HART communication may be lost temporarily when that HART device is reset.

Workaround:
Not applicable.

5.2.9   Able to configure 2 SOE devices while not allowed (1-5JZQLKU)

Configurations:
Safety Manager having a SOE channel configured

Descriptions & Conditions:
Safety Manager with SCADA link to Experion, check the box SOE enable.

Configure a link for Safety Historian. Configuration can compile.

Loading Safety Manager results in EC65 (USI -0002, configuration error)

Workaround:
Not applicable.

5.2.10   Not able to temporary connect in case BootP active (1-82X5JIV)

Configurations:
Safety Builder is installed on Experion server or another node having BootP service running

Descriptions & Conditions:
BootP service to be disabled on Experion node to allow temporary connect to SM

Workaround:
BootP service to be disabled before the temporary connect on controller (without IP address, and node number) is performed.

5.2.11   Migrating an application gives error code EC180 (1-8R4I2TN)

Configurations:
Application having SCADA and Safety Historian protocol on same USI

Descriptions & Conditions:
Migrating an application that has Experion SCADA and Safety Historian protocol on same USI reports error code EC180.

Workaround:
Change original application

5.2.12 QPP-0002 as spare Part in pre R16x System (1-474GAS9)

Configurations:
Safety Manager Controller running release prior to R160 and configured as QPP-0001 where QPP-0002 from Safety Manager system running R160 or later release is applied as spare part.

Descriptions & Conditions:
After applying QPP-0002 in system Manager Controller running release prior to R160 the USI will end up in continuous restart.

Workaround:
Before using a QPP-0002 from SM R16x system as spare part in system running release prior to R160.

Remove the USI modules before the QPP-0002 is inserted. Once the QPP-0002 has been loaded with the firmware of the controller the USI's can be re-inserted.

5.2.13 Known anomalies

This section provides an overview of the not yet resolved problems with high priority reported by customers and confirmed to be an issue with Safety Management Systems R210.6

PAR#	Abstract
1-11MGURO	Migration of Safety Manager < R15x to Safety Manager R16x may takes long time.
1-EA8GM1U	Migration stops without error message
1-DHPO6WR	Safety builder Boolean on sheet marker sequence number reported incorrect when trying to create new
1-EBW9ZCN	Forced DI or AI signals of RUSIO-3224 are overwritten by Field Value when power cycling both RUSIO's
1-DJM9XWN	RUSIO-3224 connected to Safety Manager controller reports EC56 after upgrade
1-DWRW6DD	NTP & Experion server host name change does not change the Controller Status to Blue or Red.
1-ECKOM5T	Loss of comm to RUSIO-3224 on one link when Control Processor halt and multiple RUSIO-3224 nodes fail at different slots in RUSIO ART configuration
1-DAHOE2L	USI EC 3, 34 and 13 reported spuriously, resulting in loss of communication.
1-EPZ7R1H	FSC migrated to SM with EUCN. The USI-0002 reports EC34.
1-DV6U0ER	Seconds timer shows the value in minutes in UNISIM, When UNISIM uses export to UNISIM function of Safety Builder
1-DJCXEYL	Printout of logic diagrams shows 30-Dec-1899 while revision tab shows a dash at the date field.
1-DXUNCXH 1-CRQKR13	Safety Builder becomes nonresponsive after selecting Function Block in application Viewer.
1-CD4ENF5	After migration controller reported error code 35: too many SOE points configured
1-E4QAJIZ	Logical Routes missing when configure multiple EUCNs per TPS device in Safety Builder
1-CZJ28R3	SIM-SM publish deletes points from Experion when "delete before update" is not selected
1-DS7ASRN	After migration from FSC to Safety Manager verify reports a record not regenerated
SMSC-48509	Clear Alarm functionality is only available when Safety Builder is configured on same USI module where Experion CDA protocol is configured, and Safety Builder communicates via Safety Builder-FTE physical path.

6 Special Considerations

With Safety Management Systems R210.6, users will need to take the following special considerations into account:

- Safety Manager SC controller
- Safety Manager controller
- Universal Safety IO (FC-RUSIO-3224/FC-RUSLS-3224)

6.1 Safety Manager SC Controller

6.1.1 FC-PDIO01 special considerations

6.1.1.1 FC-PDIO01 Migration might take long time (SMSC-6733)

Upgrading Safety Manager SC having FC-PDIO01 may take up to 90 minutes while at some stages of the upgrade it may appear that no progress is made.

Safety Builder R210 indicates an update is in progress.

It is **strongly** recommended to wait at least 90 minutes before manually aborting the download or power cycle the IO modules. Power cycling FC-PDIO01, while the upgrade is in progress, may result in an unusable module.

6.1.1.2 Replacement FC-PDIO01 may not startup (SMSC-43398)

Replacement part Universal Safety Digital IO module FC-PDIO01 may not startup immediately.

Remove the FC-PDIO01 and place back on FC-TDIO11.

6.1.1.3 Placement of FC-PDIO01 module (SMSC-7425)

Universal Safety Digital IO module FC-PDIO01 may report spurious errors if not properly fastened on its IOTA. Make sure that the FC-PDIO01 is inserted properly. Tighten both screws leaving no gap between the IOTA and the module.

6.1.2 Use latest SafeNet timeout calculator tool (SMSC-6019)

In case doing upgrade, both links reported faulty for few seconds and reported EC182 for both CPs.

Make sure to use settings from latest SafeNet timeout calculator tool

6.1.3 Accessing project simultaneously by SQL Server and Remote Safety Builder Machine (SMSC-6146)

To prevent Safety Builder stop when simultaneously accessing same project from SQL Server and Remote Safety Builder Machine, make the user accessing Safety Builder in all the machines part of Safety builder product administrator group.

6.1.4 Offline migration in case Modbus Responder configured (SMSC-5465)

Upgrading Safety Manager SC Controller configured as Modbus Responder from R200.x can only be done offline.

Following procedure to be executed.

1. Make both Control Processors to "NODB" state by setting device index as "0"
2. Power off both Control Processors and set the device index as per configuration
3. Power On both Control Processors.
4. Migrate the application to latest R21x release and compile the application.
5. Load the application to both controllers and bring it Running after successfully loaded.
6. Upgrade to Safety Manager R210

This procedure must be followed in case the configuration of Modbus Responder endianness is started 'undefined', Controller gets loaded and then endianness is changed.

Error code 123 – "Download failure" will be reported if you are not following the above procedure.

This is due to Endianness changes for the Long and Float data type.

6.1.5 User guides

If a user looks for task specific instructions, the following considerations apply:

1. Dedicated instructions for operators have not been identified; tool usage instructions for operators can be extracted from the on-line tools section in the Software Reference.
2. Dedicated instructions for engineers have not been identified; tool usage instructions for engineers can be extracted from the various tool sections in the Software Reference.

6.1.6 Certification EN/ISO 13849-1

Configurations:
Safety Manager Controller or Safety Manager SC Controller having connected the FC-RUSIO-3224, FC-PDIO01 or FC-PUIO01.

Descriptions & Conditions:
To comply with the EN/ISO 13849-1 standard:

1. Digital input signals allocated to the FC-RUSIO-3224, FC-PDIO01 or FC-PUIO01 must be configured as Line monitored Digital Input.
2. Digital output signals allocated to FC-RUSIO-3224, FC-PDIO01 or FC-PUIO01 module must have shielded field wiring.

6.1.7 Fault reset clears Error code 228 (SMSC-7115)

With ART+ connections, a persistent cable fault either single or multiple, a Fault reset will clear the Communication diagnostic (EC228) from the Actual diagnostic page.

It is recommended to check the status on page Controller Management -System information, Tab Remote IO

6.2 Safety Manager Controller

6.2.1 Migrating FSC to SM (1-6VN5EWF)

Migrating an FSC network to Safety Manager network

When migrating an FSC Responder system to Safety Manager Controller the loaded state for all Safety Manager controllers on the same physical network changes.

6.2.2 SafeNet Diagnostics

Fault reset which set SafeNet link healthy on one Safety Manager will automatic clear the actual diagnostics and archive the diagnostic messages including details of systems who have SafeNet connectivity with this system.

Diagnostics on all related SM controller will be cleared.

The system markers are not set to healthy. Safety Manager is running with faults but no diagnostics.

To reset system markers, a reset on all related SM Controllers is still required.

6.2.3 Remove points from TPS point database before removing from Safety Manager Database and online modification (1-44RPJAH)

In case that it is required to remove Points from the Safety Manager application, the following sequence shall be followed:

1. Remove the associated point(s) from the nodes point database at the TPS side.
2. Save the point database to a new checkpoint
3. Remove the Point(s) from the Safety Manager database in safety builder.
   When ready compile the application
4. Perform the online modification

6.2.4 On-line modification (1-AKLE9C)

When performing an On-line Modifications always make use of the OLM procedure.

Do not apply a Fault Reset (Direct or Remote) during the actual download as this may stop the software loading.

6.2.5 Key switch QPP

When the QPP key switch is placed between IDLE, and STOP position the SM Controller will interpret this as key switch is set to the RUN position.

The display of the QPP will show "CPReady". It is possible to start-up the SM Controller in this situation.

6.2.6   Data types within Experion releases

When configuring Safety Manager data types in Experion, use for AI and AO the data types as shown in below table.

Table 1

Point type AI / AO	Experion R210 or lower	Experion R300 and higher
0-20mA	FSC020MA	SM020MA
4-20mA	FSC420MA	SM420MA
0-5 V	FSC05V	SM05V
1-5 V	FSC15V	SM15V
0-10 V	FSC010V	SM010V
2-10 V	FSC210V	SM210V

6.2.7   Safety Manager Controller Sequence of Event

- **System events**
  System events with SOE number 0, 1, 2, 3 and 5 do not exist.
  Safety Manager Controller does not reserve these SOE numbers for system events. The system events must be configured the same way as normal points connected to the SOE Only controller.

- **SOE-ID update**
  The application must be compiled to have all SOE IDs assigned correctly before these can be used by Experion/Safety Historian

6.2.8   Network Time Protocol (NTP) (PAR2035)

The property 'Clock source timeout' must be set to 1 Hour or more.

6.2.9   Writing a point via SafeNet from Safety Builder (PAR3104)

It is not possible to "write" a point of an indirect connected Safety Manager with Safety Builder.

Precondition: Connected **only** via a SafeNet link.
(Safety Builder => Safety Manager Controller 1 => SafeNet => Safety Manager Controller 2)

6.2.10   Multi-site - Bulk Copy (1-B89IZT)

Make sure that before copying multiple FLDs from another Safety Manager Controller the privilege level of this source Safety Manager Controller is disabled.

6.2.11   Clock source configurations (PAR 1790)

It is possible to configure clock source priorities in SafeNet networks which are not supported by the Safety Controller.

The responder Safety Manager Controller will only respond to its direct master Safety Manager Controller, even if a higher master Safety Manager Controller is configured as time master.

Be sure that clock sources configurations are only with direct connected master Safety Manager Controllers.

6.2.12   Unable to set SM Controller to the loaded mode (PAR3466)

In case an IO module is deleted from an application it is necessary to compile the application twice before it can be set to "loaded". An attempt to set the controller to "loaded" after the first compile fails. Controller remains in the modified mode.

6.2.13   Using feedback loops on a sheet (1-AL1SR8)

Using feedback loops on one sheet can result in unexpected behavior.

A function is designed on a sheet using logic symbols.
The designed function on a sheet is executed in a sequence.
The sequence of execution is determined by the Application Compiler function of the Safety Builder.
The Application Compiler has NO knowledge on the sequence of the function that was designed by the user.

With logic as defined in the picture at the right the Application Compiler cannot determine what function (1, 2 or 3) is executed first.

In case the order of execution is 1, 3, 2 then there might be a difference of output
=> Personally analyzing the sheet you expect same results on 1 and 2.

This logic can appear in an unlimited number of variations:
e.g. using registers. Using lots of logic symbols going from 3 to 2
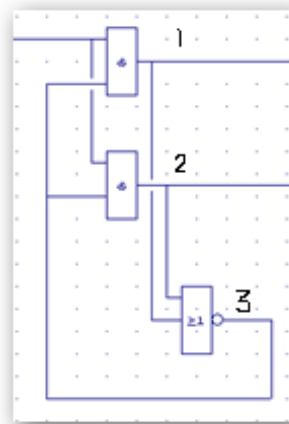
The essence of this issue is multiple feedback of a signal on one sheet.

Note: The Application Compiler is consistent when generating the sequence of execution. If the sheet does NOT change the sequence does NOT change.

The Safety Builder helps to detect ambiguous marker feedback loops.
During compilation a Warning will be generated when it detects an ambiguous execution of the sheet. (in sheet example if execution is 1-3-2, 2-3-1).

e.g.

```
WARNING FLD number: 2480. Logic sequence ambiguous due to feedbacks.
```

In General:
   Be conscious when using "Multiple feedbacks on ONE sheet"
   Feedback loops should be tested thoroughly

Work around.
-        Implement feedback via multiple sheets using off and on sheet references.
-        Prevent the Application compiler to generate internal points to store intermediate
      results. (3)   e.g. In Sheet example connect 3 to off sheet reference.

6.2.14   Adding new SafeNet points on-line (PAR3398/1-FCPGC0)

When adding a new SafeNet inputs on-line, the signal will get the configured power-up value for the first cycle and not the value of the source output. SafeNet Inputs that could cause a process trip through de-activation need to be forced in the application, to avoid such an accidental process stop. It is advisable to first add the points and logic and bypass this with for example a or-gate and a '1'.

In this situation, the signal and logic can be tested before it will be implemented in the real logic. If all is tested, the OR-gate and 1 must be deleted. This needs another OLM.

Another option is to set the power up value correctly. This will set the value correct during the first cycle but may result testing of the logic is not possible.

6.2.15   Universal Safety I/O module status online view (1-T75FTL)

Configurations:
SM Controller with Universal Safety I/O modules running.

Descriptions & Conditions:
During Load of Safety Manager also the USIO modules receive new software. During this time the detailed status of the USIO modules is not updated.

6.2.16 Renamed CDA tag parameters names

Since Safety Manager R151.1 CDA tag parameter names have changed which might have effect on the faceplates designed using Safety Manager R150.1.

Following list contains the changed CDA tag parameter name changes compared to Safety Manager R150.1

Block Name	Parameter Name (R150.1)	Parameter Name (R151.1)
SM_DOCOM	OPFL	PVFL
SM_DOCOM	OP	PV
SM_BOCOM	OP	PV
SM_AI	EngUnits	EUDESC
SM_AI	BOTTOMSCALE	PVEULO
SM_AI	TOPSCALE	PVEUHI
SM_AO	EngUnits	EUDESC
SAI_NR_CHAN	PVPERC	PV
SAI_R_CHAN	PVPERC	PV

To activate the Safety Management Systems R210.6 parameter names when migrating from Safety Manager R150 the "Force Update All" option in the publish dialog box must be selected. (Only first time with Safety Management Systems R210.6)
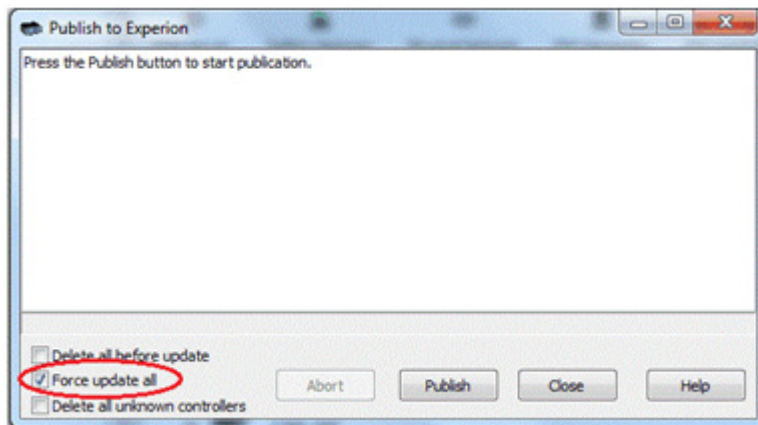
The Experion Custom displays (faceplates), trends, history, peer to peer configurations and all other Experion clients using Safety Manager parameters that have been changed has to be modified according to new parameters names in Safety Management Systems R210.6.

6.2.17 Universal Safety Logic Solver module (FC-RUSLS-3324)

Before changing Execution Environment of an FLD make sure to remove Sheet transfers first to properly de-allocate the sheet transfer allocation.

6.2.18 Universal Safety I/O

Universal Safety I/O does not automatically accept communication infrastructure changes that affect Time synchronization. The Universal Safety I/O module must be power cycled after a change in delay is made for example when a switch level is added. Both Remote IO links require the same number of switches and only tolerate 10 km difference in fiber length.

6.2.19 Export to UNISIM

The UNISIM product is used to simulate the application of Safety Management Systems.

To transfer correct information from Safety Management Systems to UNISIM the option **Export to Unisim** must be used
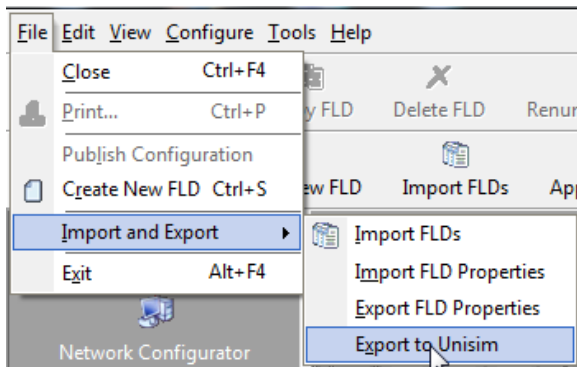
Since Release SM R14x Safety Manager supports Smoke & Heat detectors. The property ('Boolean Property Output" was introduced. The Smoke & Heat detectors of Safety Manager R140 is fully supported by UNISIM R400 or Higher

UNISIM supports FLD Intellectual Property Protection.

Safety Management Systems R210.6 UNISIM export format is fully supported as of UNISIM R430

6.2.20 Universal Safety Logic Solver does not make use of power up values. (1-U0U6RX)

Configured power-up values of Register, counter and flip-flops are not applied in FLD's running on the Universal Safety Logic Solver.

6.2.21 Unexpected points reported in OLM report (1-NBCUL6, 1-T5AGKA, 1-SJCNHR 1-POSKKA, 1-8FOMI7H)

Since Safety Manager R151.1 the Float rounding routine is updated due to Implementation of Universal Safety Logic Solver.

This means when migrating from Safety Manager R150.1 (and older) to Safety Management Systems R210.6 and FLD containing constants of type Float. e.g. Float Constants, Equation Blocks can get rounded differently. This result in FLD's reported in OLM report.

When Safety Manager R150.1 application is migrated on-line to Safety Management Systems R210.6 more Functional Logic Diagrams (FLDs) may be reported as different as expected. This is caused by a minor execution time difference of these FLDs running on the different firmware versions. It is recommended to validate the reported FLDs.

After upgrading CP1 and before reset, The OLM may report unexpected differences in diagnostics (EC108), due to modified processing of a Float value.

6.2.22 Migration from SM R161.1 may show EC13/EC59(1-BCH9QAB)

During migration from Safety Manager R161.1 The USI located in CP which is idle may show EC13 or EC59. This EC13 and EC 59 can be ignored. The USI automatically recovers after "upgrade" is complete.

6.2.23 Safety Manager with advanced Experion integration

- Existing Applications should be compiled before publishing to Experion server.

- Publishing of IO points - Delete all before update.
  This option is **not** recommended to be used for an on-line system. It will require a restart of the communication modules before Experion can receive any alarms and events. The restart can be achieved on-line by restarting the CPs sequentially. After each restart the CPs should be synchronized.

- QPP does not acknowledge writes, hence peers would not get acknowledge when writes are not received by the Safety Manager. (1-O5M3U7)

6.3 Universal Safety IO (FC-RUSIO-3224/FC-RUSLS-3224)

Special considerations applicable for Universal Safety IO FC-RUSIO-3224/FC-RUSLS-3224 controlled by Safety Manager Controller or Safety Manager SC controller

6.3.1 Reliability of HART communication (1-DVJX99H 1-CNGGL19 SMSC-44415)

Universal Safety IO HART communication does not work reliably with a subset of HART-capable analog input and analog output field devices. The Universal Safety IO HART decoding software is sensitive to malformed or noisy HART signals. The HART decoding does not support HART frequencies exceeding 1% of specification, which follows HART specification, but it is noticed that multiple field devices do not comply to this HART specification.

Solution is implemented for HART devices connected to:

- FC-RUSIO-3224 **v1.8** controlled by Safety Manager SC controller.
- FC-RUSIO-3224 controlled by Safety Manager controller.
- FC-RUSLS-3224 controlled by Safety Manager controller.

6.3.2 Connection of complex devices (SMSC-7988, SMSC-7989)

Specific output loads by complex devices on FC-RUSIO-3224 may result in unexpected system behavior.

Due to the complex nature of certain devices (e.g. Relay with open/short circuit diagnostics) and the way self-diagnostics on channels is implemented in the FC-RUSIO-3224 the load of these devices may have unexpected effect.
This may lead to reduced system availability.
Honeywell Safety Management Systems offers the MVIP program to check if devices are compatible with Safety Manager.
Complex devices showing unexpected behavior may be analyzed.

Additional info for Schneider relay XPSAC5121:

Add a resistor of 15k Ohm in parallel to the field wiring, to be mounted as close as possible to the relay, so the loop monitoring function is not defeated.

6.3.3 Analog value increase during exchange of FC-RUSIO-3224 (1-ACIME37)

In case FC-RUSIO-3224 module 2 must be replaced, the analog values of channels 1 - 16 may increase by as much as 1.1 % depending on the total analog current through channels 1 - 16.
If any of the channels 1 - 16 are operated close to the shutdown limit (difference < 1.1%) it is advised to reduce production such that the difference is **more than** 1.1% to avoid of process shutdown.

6.3.4   Digital Output test pulses with FC-RUSIO-3224

To guarantee the ability to de-energize digital outputs, output channels are turned off periodically. This may lead to a voltage drop in the field with a maximum of 2ms. Some fast reacting field devices, such as pulse-actuated devices, may respond to this test pulse. For safety reasons this test remains enabled even if the "Test Enable" checkbox for that channel is unchecked.

To detect open circuit (in the output stage of the I/O module or the field loop) on de-energized FC-RUSIO-3224 Digital Output channels a test pulse is injected to the field once per DTI. The duration of this test pulse depends on the actual field load. Typical values are around 200us (typical for e.g. valves) with a maximum of 5ms (e.g. for incandescent lamps). In normal situations, this pulse will not be able to activate the field load like actuators but can be detected by fast reacting digital input circuits of connected equipment. This test pulse can be deactivated via configuration for those applications where it can cause a problem. Due to the wide variety of process control equipment configurations the responsibility of each customer to assess the potential impact of this test pulse to their process & facilities.

6.4   Certification EN/ISO 13849-1 (PAR3973)

Configurations:

SM Controller with Universal Safety I/O modules running.

Descriptions & Conditions:

To comply with the EN/ISO 13849-1 standard:

- Digital input signals allocated to the Remote Universal Safe IO module must be configured as Line monitored Digital Input.

- Digital output signals allocated to Remote Universal Safe IO module must have shielded field wiring.

6.5   MSSQL 2019 Installed with Safety Management Systems R210.6

Installation of Safety Management Systems R210.6 comes with MSSQL 2019.

Applications created (or Backup) Using MSSQL 2019 cannot be used on systems running MSSQL 2017.

7 Annex A: Contents of Release

7.1 Software Version Identification

Honeywell components

Safety Management Systems R210.6		Version	CRC
Safety Management Systems installation		319	
Safety Builder		R210.6.0.289	
Safety Manager SC Embedded software			
Safety Related	(FC-SCNT01)	210.5.0.274	$B3F73A3C
Non Safety Related (FC-SCNT01)		210.5.0.274	$58BBC101
FC-RUSIO-3224	(Universal Safety IO)	210.6.0.276	$C181B3E0
FC-PDIO01	(Safety Digital IO)	210.5.0.266	$CD3964B9
FC-PUIO01	(Safety Universal IO)	210.5.0.268	$747DB2F3
Safety Manager embedded software			$E3BF3B0D
Safety Processor	(FC-QPP-0002)	163.1.0.7	$CF56B117
COM System	(USI-0002)	163.1.0.8	$0E35A7AB
FC-RUSIO-3224	(Universal Safety IO)	163.1.0.4	$34114417
FC-RUSLS-3224	(Universal Safety Logic Solver)	163.1.0.4	$34114417

Honeywell Experion Message files

Component	Version
FSC_Fault.txt	210.6.0.289
FSC_Module.txt	210.6.0.289

Honeywell Safety Management Systems Tools

Component	Version
SafeNet Timeout Estimator	210.3
Modbus Master Timeout Estimator	201.1

Honeywell license Server

Component	Version
Honeywell License Activation Utility	123.0
Honeywell License Server	123.0

Third party components

Component	Version
MICROSOFT SQL SERVER 2019 EXPRESS	15.0.2000.5
Microsoft Windows	Windows 10 Enterprise LTSC 2019
Acrobat Reader	DC 2017

7.2 Files in Package

Safety Management Systems R210.6 deployment unit contains following items

Folder		Name
Root		Read Me First.txt
Root		SMS-R210.6-SCN.pdf
Root		HoneywellSETInstallInvoker.exe
Adobe Reader		
		AcroRdr2017Upd1701130078_MUI.msp, AcroRdr20171700830051_MUI.exe
D_HSET		**Folder content**
SafetyEngineeringToolsInstaller.exe		
{108D6D32-F5CC-4953-BA56-A3CE6DDB88DA}		SM_SQL_Express_PRQ.exe
{D4F19809-22FD-431C-86A3-AA55F5EBEE72}		Honeywell License Server.exe
{0A8B3FC3-18A9-4585-92A4-19FF80AE9F5D}		Honeywell License Activation Utility.exe
{F9293491-B507-4859-ADB9-DAFB429E1C94}		Safety Manager Experion components.msi
{B4325027-0821-4A56-9BF6-30D7498DFFC6}		SM-SQLExpress-PostInstall.exe
{64F6BBFC-6B55-4A1D-A2C5-62291BEB6025}		AUTORUN.INF MEDIAINFO.XML PackageId.dat SETUP.EXE SETUP.EXE.CONFIG SQLSETUPBOOTSTRAPPER.DLL
	1033_ENU_LP	SQL server 2019 Installation files
	redist	Visual Studio Installation files
	resources	1022\SETUP.RLL
	x64	SQL Server 2019 configuration
{AAFA7177-856D-4DE5-AED9-5DAD8B2CD770}		**Safety Builder Install files** 0x0409.ini ISSetup.dll Safety Manager.msi setup.exe Setup.ini splash.bmp
	CommonAppData	\Honeywell\CommonLicense\Config.txt
	\Favorites\Honeywell	Hyperlinks www.HoneywellProcess.com and www.Honeywell.com

	ISSetupPrerequisites	{63A88B12-4E66-43FC-8869-2360D32FB05D}
		    \sqlncli.msi
		{125AB5F8-0156-4A9F-B1D1-C2B7E7D82A60}
		    \sqlncli.msi
		{506A420F-1F74-4371-9E84-EFF365724DAA}
		    \NDP46-KB3045557-x86-x64-AllOS-ENU.exe

Folder		Name
	Program files	CRC.INI, DBPermissions.sql, DBPermissions_DiagnosticMessages.sql, ECIClient.dll, ECICommon.dll, EDBTypes.xml, embedded software.bin, embedded software2.bin, FlxComm.dll, FlxCore.dll, Format.xml, FSCad.bpl, FSCLib.bpl, Honeywell.Com.ECI.DataContracts.dll, Honeywell.CommonLicensingLayer.dll, Honeywell_License.rtf, IntermediateStructureV1.xml, IntermediateStructureV2.xml, Metadata.xml, safetybuilder.chm, **SafetyBuilder.exe,** SBExport_Schema.xsd, SBNetLib.dll, SMEDBInterface.dll, SMFSCInterface.dll, sym1.sym, sym2.sym, sym3.sym, sym4.sym, Third_Party_Licenses.rtf, Types.xml, VCompile.bpl, VConfCA.bpl, VConfCC.bpl, VConfVar.bpl, VCore.bpl, VECI.bpl, VFSCMigrate.bpl, VImEx.bpl, VIntf.bpl, VLib.bpl, VLibBP.bpl, VLibD.bpl, VLibUI.bpl, VMigrate.bpl, VOnline.bpl, VShell.bpl, VViewSts.bpl, VViewVar.bpl, WindRiverLinux7.0_ThirdPartyNotices_v3.0.pdf, WindRiverLinuxOpenSourceCode.zip, WindRiverLinuxOpenSourceLicenses.zip, Experion message files\fsc_fault.txt, Experion message files\fsc_module.txt, Experion message files\readme.txt
dotnet		\4.7.2\ndp472-kb4054530-x86-x64-allos-enu.exe
Experion message files		Root
		Fsc_fault.txt, fsc_module.txt, readme.txt
Tools		Root
		SafeNet Timeout Estimator.xls, Modbus Master Timeout Estimator.xlsm
User_Assistance		
	DocumentList_R210.pdf	
	PDF List	Communication_Best_Practice_R210.pdf
		Experion_Parameter_Reference_R210.pdf
		Hardware_Reference_R210.pdf
		Installation_and_Upgrade_Guide_R210.pdf
		License_Server_Installation_and_Administration_Guide_R210.pdf
		Online_Modification_Guide_R210.pdf
		Planning_and_Design_R210.pdf
		Safety_and_Security_Manual_R210.pdf
		Safety_Manual_R210.pdf
		Software_Reference_R210.pdf
		System_Administration_Guide_R210.pdf
		The_Overview_Guide_R210.pdf
		Troubleshooting_and_Maintenance_R210.pdf
		USC_Planning_Installation_and_Service_R210.pdf

8 Notices and Trademarks