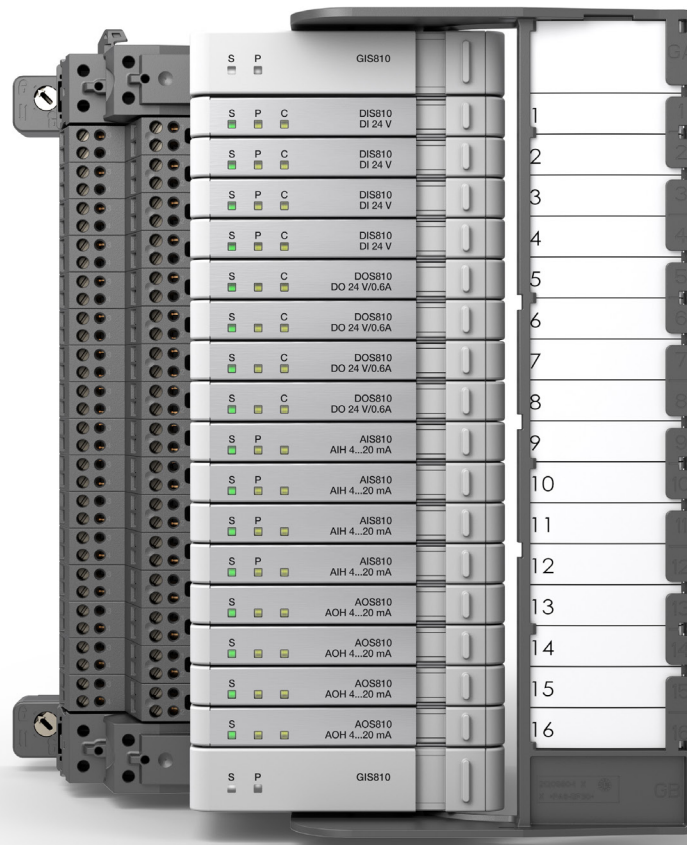# ABB Ability™ System 800xA
Select I/O

Introduction

Select I/O is an Ethernet networked, single channel granular I/O system for the ABB Ability™ System 800xA automation platform. Select I/O helps decouple project tasks, minimizes the impact of late changes and supports standardization of I/O cabinetry ensuring automation projects are delivered on-time and under budget.
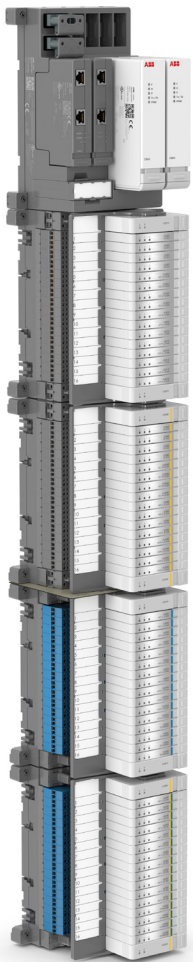
Select I/O provides a comprehensive solution for simplified engineering, installation, commissioning and late changes with features such as built-in disconnect function, field loop current limitation and replaceable terminal blocks. Signal Conditioning Modules (SCMs) are available for both non-SIL, SIL3 and intrinsically safe (IS) applications. The Signal Conditioning Modules (SCMs) are mounted in a Module Termination Unit (MTU) with 16 SCM slots. Each slot includes a removable Field Terminal Block (FTB).

System 800xA's Select I/O is designed to provide a compact and rugged solution e.g. supporting operating temperature of -40 to +70 degrees Celsius, hazardous locations and corrosive gases. The I/O system can be mounted in Zone 2 environments.

Remote and centralized installations are supported via a single or redundant Ethernet Fieldbus Communication Interface with built-in switches. An Ethernet Fieldbus Communication Interface can host up to 192 Signal Conditioning Modules per cluster.

Optimized engineering
Utilizing single channel granular I/O provides, by design, any number of benefits which simplifies the entire engineering process for both large centralized and small remote cabinets.

Since the I/O Module Termination Units can host any signal type in any slot, classic marshalling can be eliminated which means that cabinets can be standardized and pre-fabricated. Standardized cabinets will reduce the design work and testing efforts which will lead to decreased project execution time and cost.

The Select I/O reduces the impact of late changes by reducing the amount of re-work required during the project.

When an I/O type change is needed, insert a new Signal Conditioning Module (SCM) instead of moving the field wire to a different I/O module.

The marshalling concept implies that any controller can access any I/O signal in any Ethernet I/O station. This can be made at a later stage of the project providing full flexibility when designing your control application.

Built-in Redundancy and Diagnostics
Select I/O offers optional redundancy down to the individual Signal Conditioning Modules including redundant 24v power connections, redundant Ethernet Fieldbus Communications Interface, redundant Generic I/O modules, and redundant internal architecture.

Select I/O includes enhanced diagnostic possibilities and self testing, eg. loop supervision for all signal types.

Reduced Footprint and Equipment cost
Built-in disconnect function, field loop current limiting, channel-wise replaceable terminal blocks and the fact that the classic marshalling is no longer needed will significantly reduce the footprint for I/O cabinets by removing ancillary hardware.

In centralized installations, the number of cabinets can be reduced by up to 50% (depending on signal type).

The SCM concept is designed to save footprint. A typical 2000 x 800 x 800 mm cabinet with doors on both sides can include up to 672 I/O channels if mounted on a middle plate in the center of the cabinet.

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General specification

Operating Temperature	-40 to +70 °C
Storage Temperature	-40 to +85 °C
Humidity	5 … 95 %, non-condensing
Altitude	-100 … 2000 m
Altitude – extended (not supported for Zone 2)	-1000 … 3000 m
Ingress Protection	Class IP20
Corrosive atmosphere	ISA-S71.04 Severity level: G3
Electrical Safety	IEC/EN 61010-1 IEC/EN 61010-2-201 UL 61010-1 UL 61010-2-201 CSA-C22.2 No. 61010-1-12 CSA C22.2 No. 61010-2-201
Pollution degree	Degree 2, IEC 60664-1
Functional Safety and Machinery Safety Certification	IEC 61508 (SIL3) IEC 62061 (SIL3) IEC 60204-1 EN 50156-1 IEC 61511-1 EN ISO 13850 NFPA 72 NFPA 85 EN 60204-1
CE compliance	Yes
RoHS compliance	EN 50581:2012
WEEE compliance	DIRECTIVE/2012/19/EU

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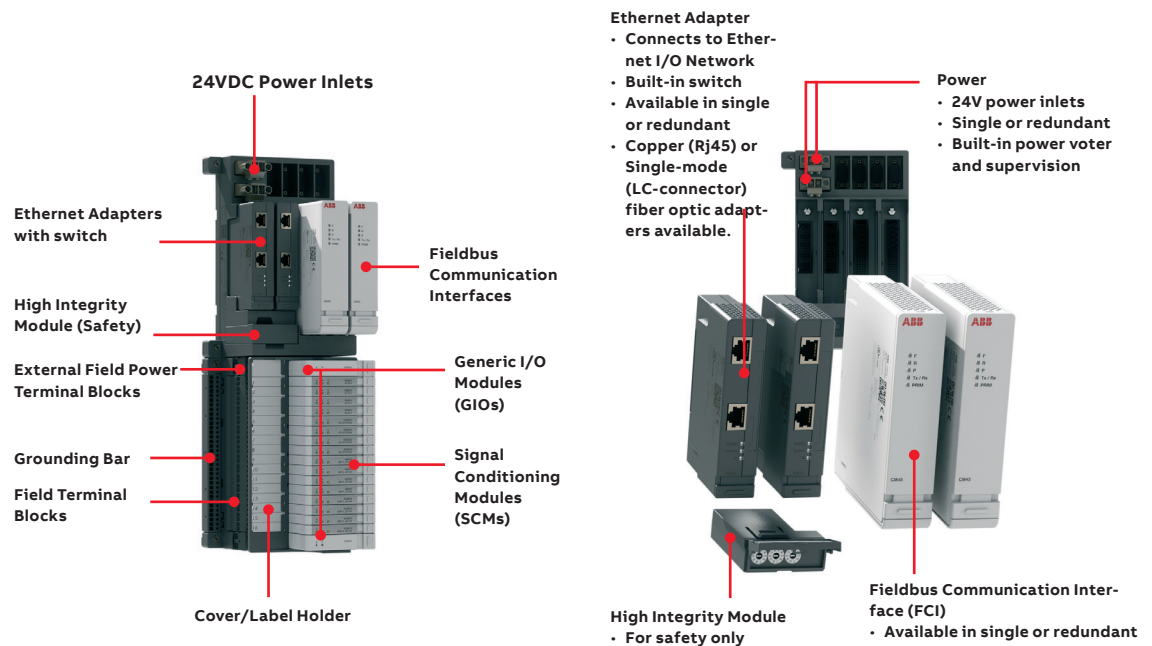Standard cabinets available pre-designed for Select I/O installations.

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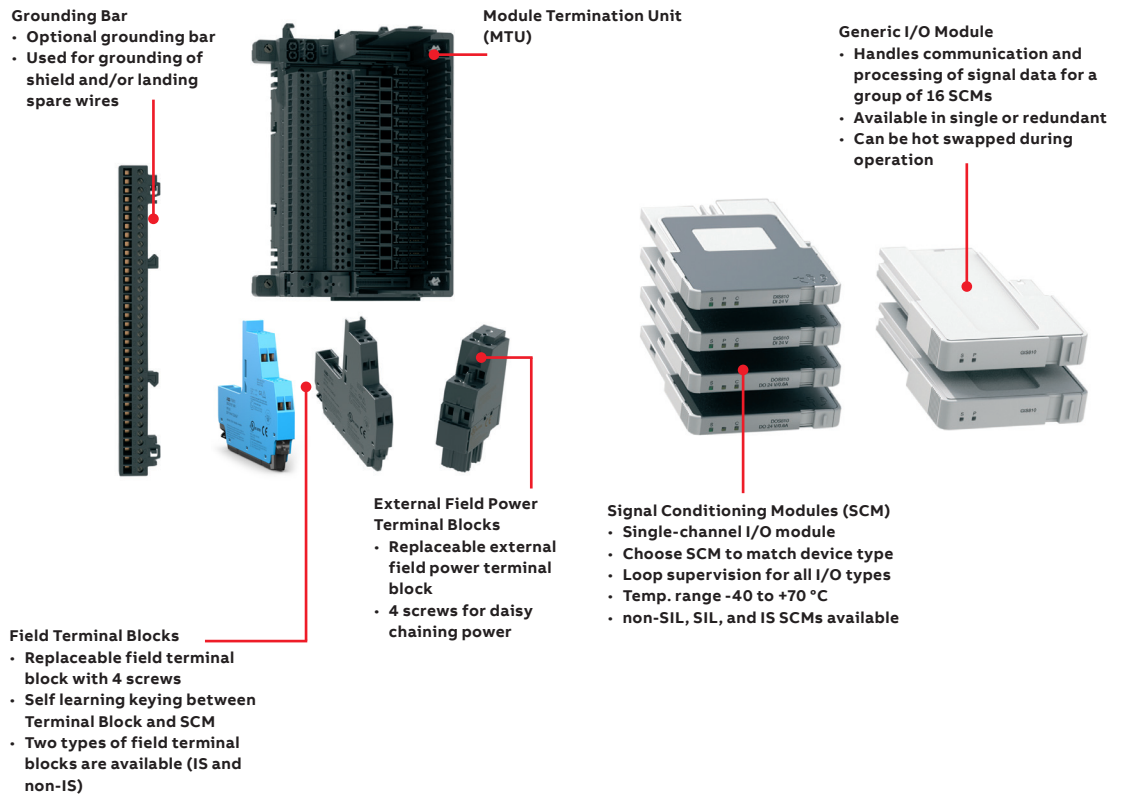TU865 with redundant TC811, redundant CI845 and HI880 module.

Select I/O Overview

Select I/O Details

Select I/O was designed with parallel project execution in mind. Termination units can be installed on site long before the electronics are installed. Site engineering can be done completely independently from application programming.

24VDC Power Inlets

Ethernet Adapters with switch

High Integrity Module (Safety)

External Field Power Terminal Blocks

Grounding Bar

Field Terminal Blocks

Cover/Label Holder

Fieldbus Communication Interfaces

Generic I/O Modules (GIOs)

Signal Conditioning Modules (SCMs)

Ethernet Adapter
- **Connects to Ethernet I/O Network**
- **Built-in switch**
- **Available in single or redundant**
- **Copper (Rj45) or Single-mode (LC-connector) fiber optic adapters available.**

Power
- **24V power inlets**
- **Single or redundant**
- **Built-in power voter and supervision**

High Integrity Module
- **For safety only**

Fieldbus Communication Interface (FCI)
- **Available in single or redundant**

Select I/O is made up of two main sub-assemblies – the Ethernet FCI and up to 12 Select I/O Modular Termination Units each including up to 16 Signal Conditioning Modules (SCMs)

The Ethernet FCI connects the MTUs, populated with Generic I/O and Signal Conditioning Modules (SCM), with the I/O network.

Grounding Bar
- **Optional grounding bar**
- **Used for grounding of shield and/or landing spare wires**

Module Termination Unit (MTU)

Generic I/O Module
- **Handles communication and processing of signal data for a group of 16 SCMs**
- **Available in single or redundant**
- **Can be hot swapped during operation**

External Field Power Terminal Blocks
- **Replaceable external field power terminal block**
- **4 screws for daisy chaining power**

Signal Conditioning Modules (SCM)
- **Single-channel I/O module**
- **Choose SCM to match device type**
- **Loop supervision for all I/O types**
- **Temp. range -40 to +70 °C**
- **non-SIL, SIL, and IS SCMs available**

Field Terminal Blocks
- **Replaceable field terminal block with 4 screws**
- **Self learning keying between Terminal Block and SCM**
- **Two types of field terminal blocks are available (IS and non-IS)**

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Select I/O SCMs, Field Terminal Blocks and GIOs plug into the MTU assembly which handles field wiring connections.

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SCMs perform conditioning on the field signals. The GIOs handle signal processing and communication with the AC 800M controllers

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TU865 Ethernet FCI MTU

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TUS810 Select I/O MTU
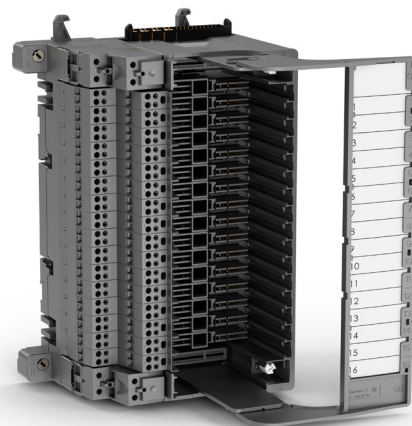
Standard SCMs

AIS810 is an Analog Input Signal Conditioning Module (16 bit) supporting 2/4-wire devices and HART communication

Feature	AIS810 – Analog Input SCM with HART
Type	Analog Input
Supported field devices	2-wire and 4-wire devices (external power required for 4-wire devices)
Signal Range / Signal Specification	4-20 mA 0-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field Power	Current limited to 30 mA
Accuracy	0.1 %
Resolution	16-bit A/D converter
Diagnostics	Loop supervision (short circuit and open circuit) Under range and over range Device Malfunction Low and Device Malfunction High Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.62 W at 20 mA
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

AOS810 is an Analog Output Signal Conditioning Module (16 bit) supporting 2-wire devices and HART communication

Feature	AOS810 – Analog Output SCM with HART
Type	Analog Output
Supported field devices	2-wire
Signal Range / Signal Specification	4-20 mA 0-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field Power	Current limited
Accuracy	0.1 %
Resolution	16-bit D/A converter
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.6 W (at 20 mA and 750 Ω load)
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

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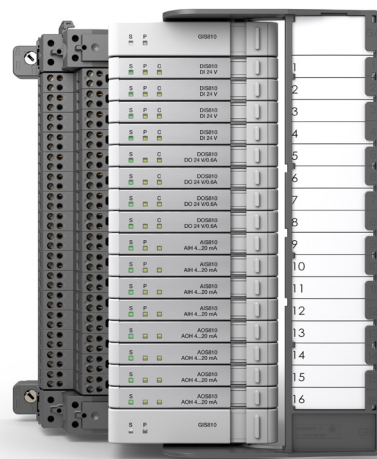AIS810 Analog
input SCM with HART

Standard SCMs

DIS810 is a Digital Input 24V Signal Conditioning Module supporting 2/3/4-wire devices with Sequence of Events (SOE)

Feature	DIS810 – Digital Input SCM with SOE
Type	Digital Input
Supported field devices	2-wire, 3-wire and 4-wire sensors (dry contacts and proximity switches, external power required for 4-wire devices)
Signal Range / Signal Specification	24V DC
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field power	Current limited to 30 mA
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
SOE	Yes
Calibration	Factory calibration
Power dissipation (at 24V)	0.55 W
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

DOS810 is a Digital Output (24V/0.6 A) Signal Conditioning Module supporting 2-wire devices

Feature	DOS810 – Digital Output SCM 0.6A
Type	Digital Output
Supported field devices	2-wire
Signal Range / Signal Specification	24V DC / 0.6 A
Isolation	Galvanic isolation to system. Routine tested at factory with 3060 VDC.
Field Power	Current limited
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.36 W
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-arcing Field wiring acc. to Division model
IS barrier	No

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TUS810K01 with
non-IS SCMs

Intrinsically Safe SCMs

AIS850 is an Analog Input Signal Conditioning Module (16 bit) for intrinsically safe applications (Zone 0) supporting 2-wire devices and HART communication

Feature	AIS850 – Analog Input SCM, IS
Type	Analog Input
Supported field devices	2-wire (loop powered transmitters)
Signal Range / Signal Specification	4-20 mA 0-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 V DC
Field Power	Current limited to 25 mA
Accuracy	0.1 %
Resolution	16 bit A/D converter
Diagnostics	Loop supervision (open circuit and short circuit) Device malfunction low, underrange, overrange and device malfunction high detection Internal hardware supervision Communication supervision Internal power supervision
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.61 W at 20 mA
Installation in Hazardous Locations	ATEX II 3 (1) G Ex ec [ia Ga] IIC T4 Gc II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc II 3 G (1 D) Ex ec [ia IIIC Da] IIC T4 Gc II 3 G (1 D) Ex ic ec [ia IIIC Da] IIC T4 Gc IECEx Ex ec [ia Ga] IIC T4 Gc Ex ic ec [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ic ec [ia IIIC Da] IIC T4 Gc cULus (pending)
IS barrier	Yes

AOS850 is an Analog Output Signal Conditioning Module (16 bit) for intrinsically safe applications (Zone 0) supporting 2-wire field devices and HART communication

Feature	AOS850 – Analog Output SCM with HART, IS
Type	Analog Output
Supported field devices	2-wire
Signal Range / Signal Specification	4-20 mA 0-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power Routine tested at factory with 3060 V DC
Field Power	Current limited
Accuracy	0.1 %
Resolution	16 bit A/D converter
Diagnostics	Loop supervision (open circuit and short circuit) Internal hardware supervision Communication supervision Internal power supervision
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.7 W
Installation in Hazardous Locations	ATEX II 3 (1) G Ex ec [ia Ga] IIC T4 Gc II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc II 3 G (1 D) Ex ec [ia IIIC Da] IIC T4 Gc II 3 G (1 D) Ex ic ec [ia IIIC Da] IIC T4 Gc IECEx Ex ec [ia Ga] IIC T4 Gc Ex ic ec [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ic ec [ia IIIC Da] IIC T4 Gc cULus (pending)
IS barrier	Yes

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AIS850 Analog
input intrinsically
safe I/O module

Intrinsically Safe SCMs

DIS850 is a Digital Input Signal Conditioning Module for intrinsically safe applications (Zone 0) supporting 2-wire NAMUR field devices with SOE

Feature	DIS850 – Digital Input SCM, NAMUR, IS
Type	NAMUR Input (EN 60947-5-6)
Supported field devices	2-wire (NAMUR proximity switch) Voltage-free contact[1]
Signal Range / Signal Specification	0… 8.4 mA 9.3 V DC (open-circuit voltage)
Isolation	Galvanic isolation to system and between each channel. Routine tested at factory with 3060 VDC.
Field power	Current limited
Diagnostics	Loop supervision (open circuit and short circuit) Internal hardware supervision Communication supervision Internal power supervision
SOE	Yes
Calibration	Factory calibration
Power dissipation (at 24V)	0.4 W
Installation in Hazardous Locations	ATEX II 3 (1) G Ex ec [ia Ga] IIC T4 Gc II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc II 3 G (1 D) Ex ec [ia IIIC Da] IIC T4 Gc II 3 G (1 D) Ex ic ec [ia IIIC Da] IIC T4 Gc IECEx Ex ec [ia Ga] IIC T4 Gc Ex ic ec [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ic ec [ia IIIC Da] IIC T4 Gc cULus (pending)
IS barrier	Yes

(1) Open-/Short-Circuit supervision with voltage-free contacts requires external 1 k series and 10 k parallel resistors

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Redundant TU865 FCI with a TUS810K02 Select I/O MTU with IS and SIL3 SCMs
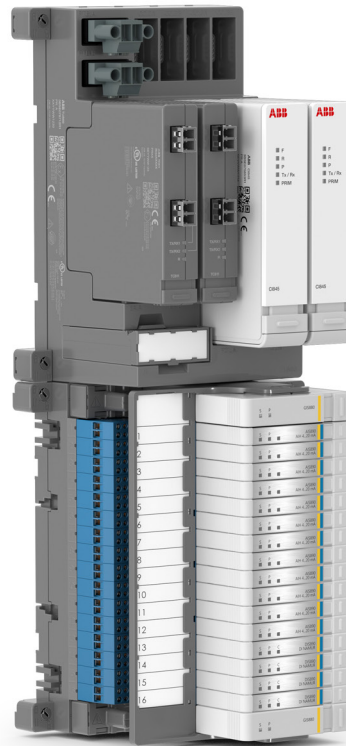
SIL3 SCMs

AIS880 is an Analog Input Signal Conditioning Module (16 bit) for use in High Integrity applications (certified for SIL3) supporting 2/4-wire devices and HART communication

Feature	AIS880 – Analog Input SCM with HART, SIL3
Type	Analog Input
Supported field devices	2-wire and 4-wire devices (external power required for 4-wire devices)
Signal Range / Signal Specification	4-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field Power	Current limited to 30 mA
Accuracy	0.1 %
Resolution	16-bit A/D converter
Diagnostics	Loop supervision (short circuit and open circuit) Under range and over range Device Malfunction Low and Device Malfunction High Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.62 W at 20 mA
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC lIC T4 Gc Class I, Zone 2, lIC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

AIS885 is an Analog Input Signal Conditioning Module (16 bit) for use in High Integrity applications (certified for SIL3) supporting 2/3/4-wire devices (1.2 amp) and HART communication

Feature	AIS885 – Analog Input SCM with HART, 1.2 A, SIL3
Type	Analog Input
Supported field devices	2-wire (loop powered transmitters) 3-wire (transmitters powered by SCM) 4-wire (transmitters powered by SCM)
Signal Range / Signal Specification	4…20 mA
Isolation	Galvanic isolation to system. Routine tested at factory with 3060 VDC.
Field Power	Current limited (configurable)
Accuracy	0.1 %
Resolution	16 bit A/D converter
Diagnostics	Loop supervision (open circuit and short circuit) Power injection supervision Device malfunction low, underrange, overrange and device malfunction high detection Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
HART	HART v7, HART pass-through and HART variables to the application.
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.65 W
Installation in Hazardous Locations	ATEX II 3G Ex ec IIC T4 Gc cULus (pending)
IS barrier	No

SIL3 SCMs

AOS880 is an Analog Output Signal Conditioning Module (16 bit) for use in High Integrity applications (certified for SIL 3) supporting 2-wire devices and HART communication

Feature	AOS880 – Analog Output SCM with HART, SIL3
Type	Analog Output
Supported field devices	2-wire ESD valve positioner
Signal Range / Signal Specification	4-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field Power	Current limited
Accuracy	0.1 %
Resolution	16-bit D/A converter
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.6 W (at 20 mA and 750 Ω)
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

DIS880 is a Digital Input 24V Signal Conditioning Module for use in High Integrity applications (certified for SIL3) supporting 2/3/4-wire devices with SOE

Feature	DIS880 – Digital Input SCM with SOE, SIL3
Type	Digital Input
Supported field devices	2-wire, 3-wire and 4-wire sensors (dry contacts and proximity switches, external power required for 4-wire devices)
Signal Range / Signal Specification	24V DC
Isolation	Galvanic isolation to system and between each channel (including field power). Routine tested at factory with 3060 VDC.
Field power	Current limited to 30 mA
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
SOE	Yes
Calibration	Factory calibration
Power dissipation (at 24V)	0.55 W
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-incendive or non-arcing field wiring acc. to Division model
IS barrier	No

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AOS880 Analog Output
SCM with HART, SIL3

SIL3 SCMs

DOS880 is a Digital Output (24 V/0.6 A) Signal Conditioning Module for use in High Integrity applications (certified for SIL3) supporting 2-wire devices

Feature	DOS880 – Digital Output SCM, 0.6 A, SIL3
Type	Digital Output
Supported field devices	2-wire
Signal Range / Signal Specification	24V DC / 0.6 A
Isolation	Galvanic isolation to system. Routine tested at factory with 3060 VDC.
Field Power	Current limited
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.36 W
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-arcing Field wiring acc. to Division model
IS barrier	No

DOS885 is a Digital Output (24 V/3 A) Signal Conditioning Module for use in High Integrity applications (certified for SIL3) supporting 2-wire devices such solenoids, horns, beacons

Feature	DOS885 – Digital Output SCM, 3 A, SIL3
Type	Digital Output
Supported field devices	2-wire Solenoids, Horns and Beacons
Signal Range / Signal Specification	24V DC / 3 A
Isolation	Galvanic isolation to system. Routine tested at factory with 3060 VDC.
Field Power	Current limited
Diagnostics	Loop supervision (short circuit and open circuit) Internal hardware supervision Communication supervision Internal power supervision
Field input robustness	±35 V between all terminals
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.61 W
Installation in Hazardous Locations	ATEX – II 3G Ex nA/eC llC T4 Gc Class I, Zone 2, llC T4 Class I, Div 2, Groups A, B, C, D T4 Non-arcing Field wiring acc. to Division model
IS barrier	No

TU810K01 Select I/O MTU with non-IS SCMs
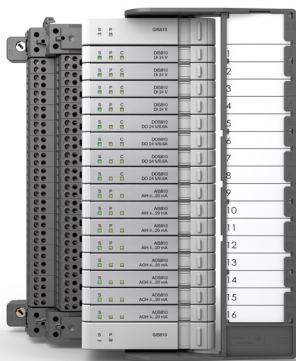
TUS810K02 Select I/O MTU with IS and SIL3 SCMs

Intrinsically Safe SIL3 SCMs

AIS890 is an Analog Input Signal Conditioning Module (16 bit) for use in High Integrity (certified for SIL3) and intrinsically safe applications (Zone 0) supporting 2-wire devices and HART communication

Feature	AIS890 – Analog Input SCM, IS, SIL3 with HART
Type	Analog Input
Supported field devices	2-wire (loop powered transmitters)
Signal Range / Signal Specification	4-20 mA
Isolation	Galvanic isolation to system and between each channel (including field power) Routine tested at factory with 3060 V DC
Field Power	25 mA
Accuracy	0.1 %
Resolution	A/D converter resolution 16 bit
Diagnostics	Loop supervision (open circuit and short circuit) Device malfunction low, underrange, overrange and device malfunction high detection Internal hardware supervision Communication supervision Internal power supervision
HART	HART v7, HART pass-through and HART variables to the application
SOE	No
Calibration	Factory calibration
Power dissipation (at 24V)	0.63 W at 20 mA
Installation in Hazardous Locations	ATEX II 3 (1) G Ex ec [ia Ga] IIC T4 Gc II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc II 3 G (1 D) Ex ec [ia IIIC Da] IIC T4 Gc II 3 G (1 D) Ex ic ec [ia IIIC Da] IIC T4 Gc IECEx Ex ec [ia Ga] IIC T4 Gc Ex ic ec [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ic ec [ia IIIC Da] IIC T4 Gc cULus (pending)
IS barrier	Yes

DIS890 is a Digital Input Signal Conditioning Module for use in High Integrity (certified for SIL3) and intrinsically safe applications (Zone 0) supporting 2-wire NAMUR field devices with SOE

| Feature	DIS890 – Digital Input Module, NAMUR, IS, SIL3
Type	NAMUR Input (EN 60947-5-6)
Supported field devices	2-wire (NAMUR proximity switch) Voltage-free contact[1]
Signal Range / Signal Specification	0…8.4 mA 9.3 V DC (open-circuit voltage)
Isolation	Galvanic isolation to system and between each channel. Routine tested at factory with 3060 V DC.
Field Power	Current limited
Resolution	A/D converter resolution 16 bit
Diagnostics	Loop supervision (open circuit and short circuit) Internal hardware supervision Communication supervision Internal power supervision
SOE	Yes
Calibration	Factory calibration
Power dissipation (at 24V)	0.4 W
Installation in Hazardous Locations	ATEX II 3 (1) G Ex ec [ia Ga] IIC T4 Gc II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc II 3 G (1 D) Ex ec [ia IIIC Da] IIC T4 Gc II 3 G (1 D) Ex ic ec [ia IIIC Da] IIC T4 Gc IECEx Ex ec [ia Ga] IIC T4 Gc Ex ic ec [ia Ga] IIC T4 Gc Ex ec [ia IIIC Da] IIC T4 Gc Ex ic ec [ia IIIC Da] IIC T4 Gc cULus (pending)
IS barrier	**Yes**

(1) Open-/Short-Circuit supervision with voltage-free contacts requires external 1 k series and 10 k parallel resistors.
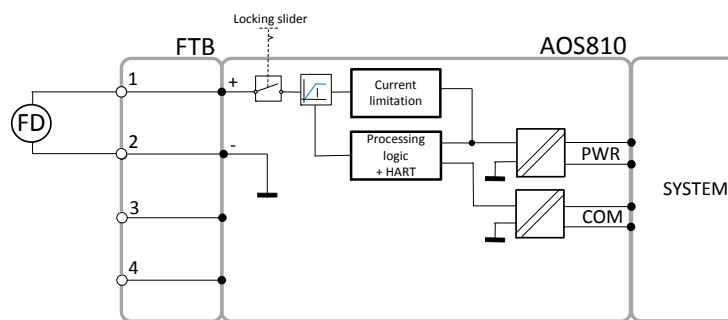
—
DIS890 Digital Input
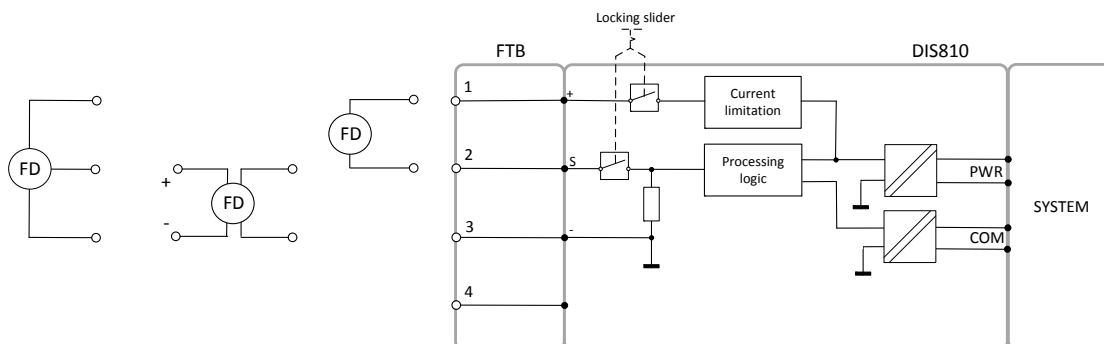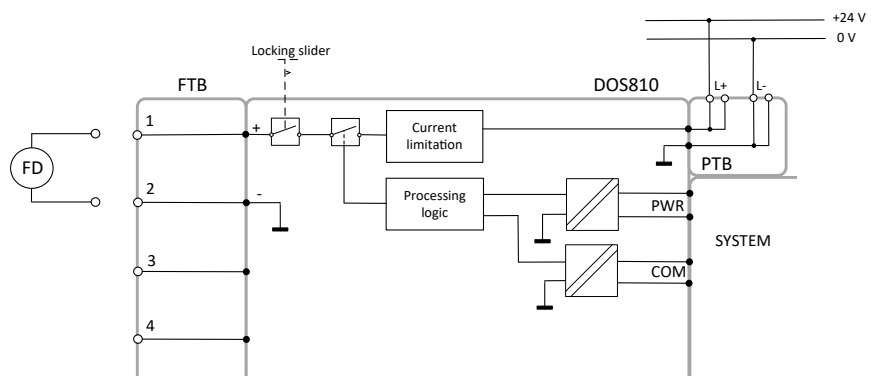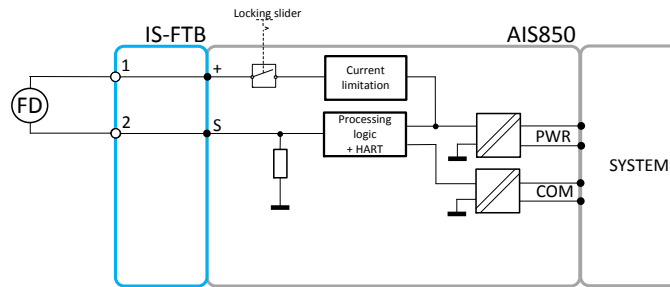SCM with IS, SIL3

Field Loop Diagrams

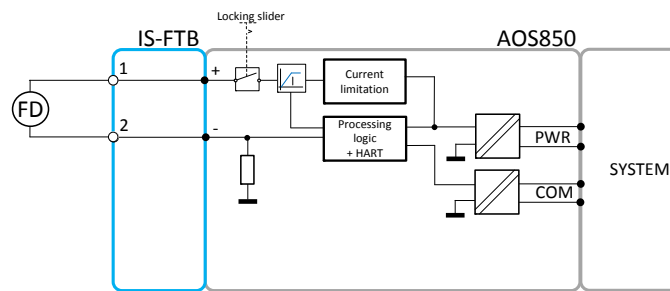### AIS810
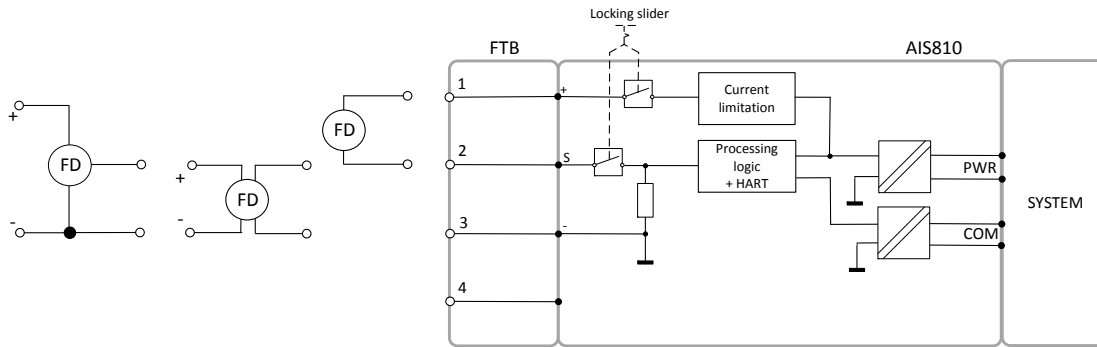
AOS810

DIS810

DOS810

AIS850

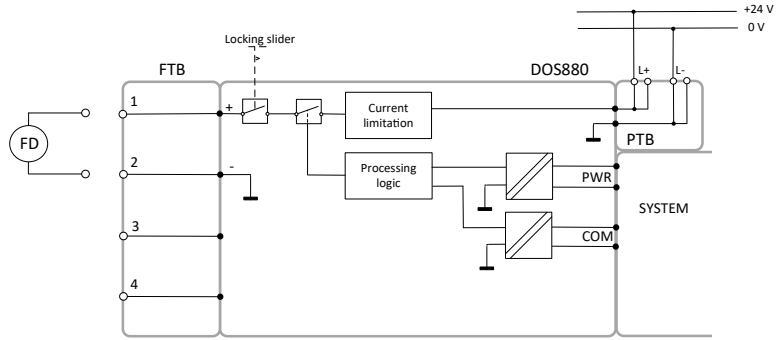**AOS850**

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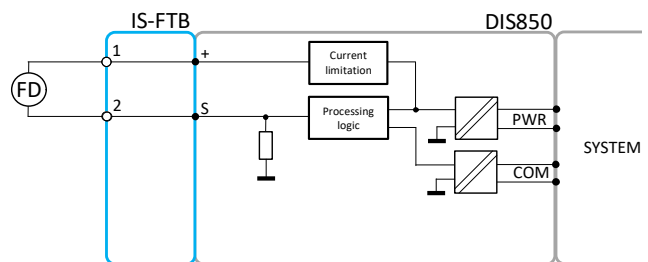
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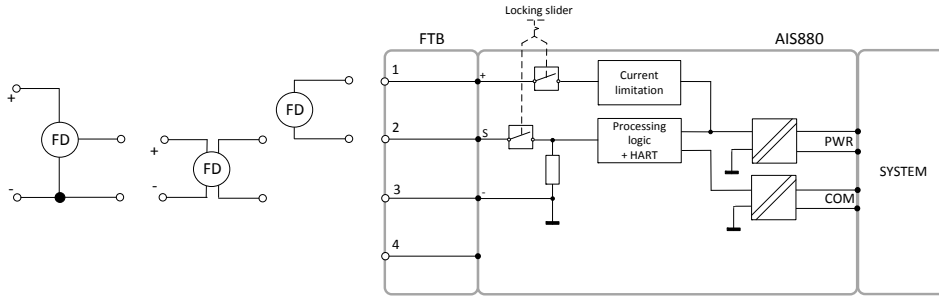
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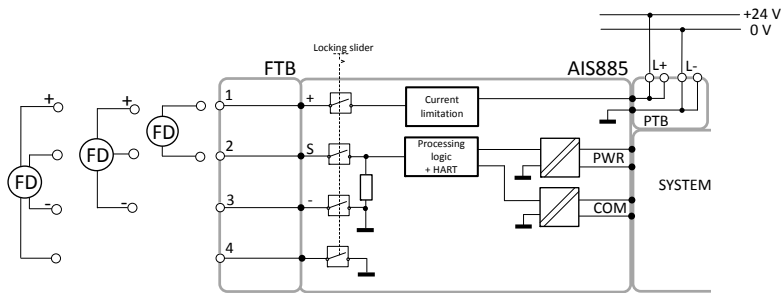
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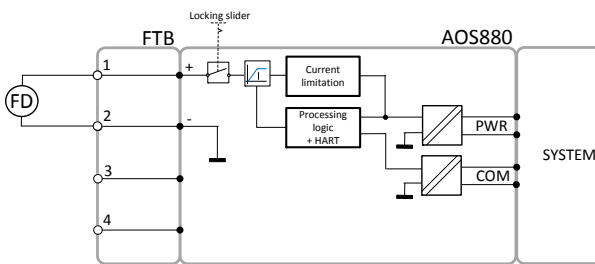
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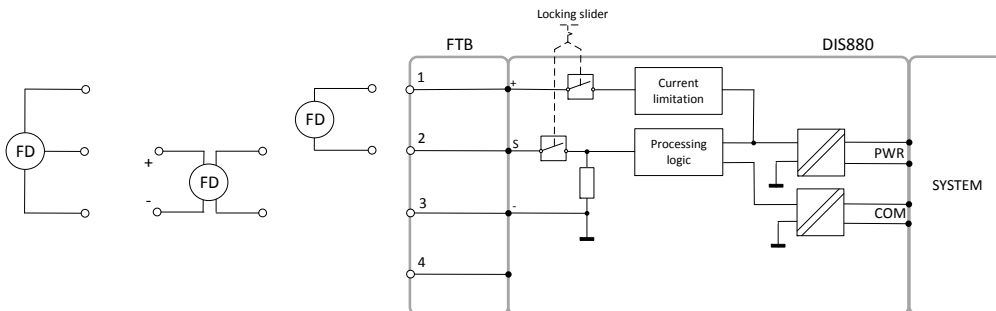
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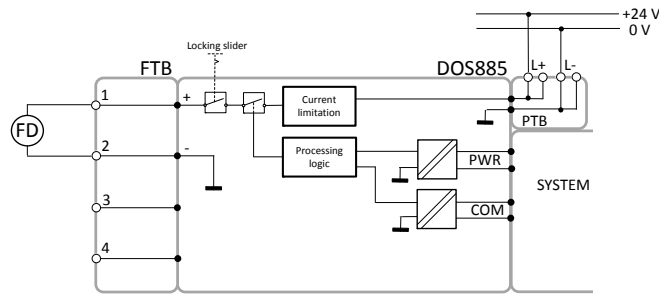
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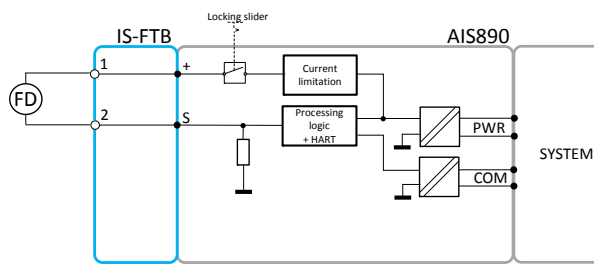
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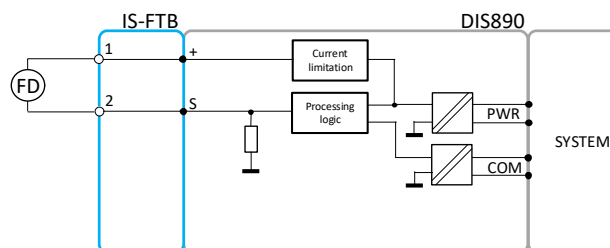
Ordering Data

Product ID	Product Name	Product Description
FCI Components		
3BSE075853R1	CI845 Ethernet FCI module	Ethernet Fieldbus Communication Interface Module for connection of S800 I/O or Select I/O to Ethernet. For redundant configuration two Fieldbus Communication Interfaces CI845, two Ethernet Adapters TC810 and one TU860 or one TU865 are needed. For Select I/O High Integrity SIL3 one HI880 is needed.
3BSE078710R1	TU860 MTU for Ethernet FCI S800 I/O	Ethernet Fieldbus Communication Interface Module Termination Unit for connection of single or redundant Select I/O. Supports single or redundant Ethernet Fieldbus Communication Interface Module, single or redundant Ethernet Adapter for S800 on Ethernet. Mounting on vertical DIN-rail.
3BSE078712R1	TU865 MTU for Ethernet FCI Select I/O	Ethernet Fieldbus Communication Interface Module Termination Unit for connection of single or redundant Select I/O. Supports single or redundant Ethernet Fieldbus Communication Interface Module, single or redundant Ethernet Adapter and High Integrity Module. Mounting on vertical DIN-rail.
3BSE076220R1	TC810 Ethernet Adapter for Ethernet FCI	Ethernet Adapter for copper media with built in 2-port switch. Hosts two RJ45 ports. Use as single or redundant.
3BSE078714R1	TC811 Ethernet Adapter for Ethernet FCI	Ethernet Adapter for Ethernet FCI (Single Mode Fiber)
3BSE078701R1	HI880 HI Module for Ethernet FCI	High Integrity Module enables High Integrity SIL3 communication with the Select I/O. Compatible with TU865 FCI MTU for Select I/O.
I/O Unit Components		
3BSE083204R1	TUS810K01 MTU for Select I/O	Select I/O Module Termination Unit TUS810K01 includes 1ps TUS810, 16ps FTB810 Field Terminal Blocks, 2ps PTB810 Power Injection Terminal Blocks and 1ps TUC810 Terminal Cover. Mounting on vertical DIN-rail.
3BSE093004R1	TUS810K02 MTU for Select I/O (IS)	Select I/O Module Termination Unit TUS810K02 for intrinsically safe usage includes 1ps TUS810, 16pcs FTB890 Field Terminal Blocks, 2ps TL820 Empty Slot Protectors and 1ps TUC810 Terminal Cover. Mounting on vertical DIN-rail
3BSE088180R1	FTB810K01	Field Terminal Block
3BSE092175R1	FTB890K01 Field Terminal Block	Field Terminal Block (IS, blue)
3BSE078722R1	GTB810 Grounding Terminal Bar	Grounding Terminal Bar with 34 screw terminals for the Select I/O Module Termination Unit. Used to ground shields and spare cores.
3BSE088182R1	PTB810K01	Power Injection Terminal Block Kit including 10 x PTB810
Generic I/O components		
3BSE078740R1	GIS810 Generic I/O Module	Generic I/O Module. Use as single or redundant.
3BSE075855R1	GIS880 Generic I/O Module High Integrity	Generic I/O Module High Integrity. Certified for SIL3. Use as single or redundant.
Signal Conditioning Modules		
3BSE078762R1	AIS810 Analog Input 4 to 20mA	Analog Input Signal Conditioning Module for 2/4-wire devices. 16 bit. HART communication.
3BSE078764R1	AOS810 Analog Output 4 to 20mA	Analog Output Signal Conditioning Module for 2-wire devices. 16 bit. HART communication.
3BSE078766R1	DIS810 Digital Input 24V	Digital Input 24V Signal Conditioning Module for 2/3/4-wire devices. Sequence of Events (SOE) enabled.

Product ID	Product Name	Product Description
3BSE078768R1	DOS810 Digital Output 24V 0.6A	Digital Output 24V 0.6A Signal Conditioning Module.
3BSE074053R1	AIS880 Analog Input 4 to 20mA HI	Analog Input Signal Conditioning Module High Integrity for 2/4-wire devices. 16 bit. HART communication. Certified for SIL3.
3BSE080108R1	AIS885 Analog Input Module SIL3	Analog Input Module (IS, SIL3) for 2-/3-/4-wire devices
3BSE074055R1	AOS880 Analog Output 4 to 20 mA HI	Analog Output Signal Conditioning Module High Integrity for 2-wire devices. 16 bit. HART communication. Certified for SIL3.
3BSE078770R1	AIS850 Analog Input	Analog Input Module (Intrinsic safety)
3BSE078772R1	AOS850 Analog Output	Analog Output Module (IS)
3BSE078774R1	DIS850 Digital input	Digital Input Module (IS)
3BSE074057R1	DIS880 Digital Input 24V HI	Digital Input 24V Signal Conditioning Module High Integrity for 2/3/4-wire devices. Sequence of Events (SOE) enabled. Certified for SIL3.
3BSE074059R1	DOS880 Digital Output 24V 0.6A HI	Digital Output 24V 0.6A Signal Conditioning Module High Integrity. Certified for SIL3.
3BSE074061R1	DOS885 Digital Output 24V 3A HI	Digital Output 24V 3A Signal Conditioning Module High Integrity. Certified for SIL3.
3BSE074063R1	AIS890 Analog Input	Analog Input Module (IS, SIL3)
3BSE077763R1	DIS890 Digital input	Digital Input Module (IS, SIL3)
3BSE093006R1	GTS810 Grounding Termination	Grounding Termination Module
Accessories		
3BSE088163R1	TB861V009 Compact Modulebus Extension	Extends the Modulebus from one DIN-rail to another. Lenght 0.9m
3BSE090352R1	TB861V011 Compact Modulebus Extension	Extends the Modulebus from one DIN-rail to another. Lenght 1.1m.
3BSE088164R1	TB861V015 Compact Modulebus Extension	Extends the Modulebus from one DIN-rail to another. Lenght 1.5m.
3BSE088162R1	TB868 Modulebus Terminator	One Modulebus Terminator is needed per cluster.
3BSE088170R1	TL810K01	Empty Slot Protector kit including 10 x TL810 – for FCI
3BSE088171R1	TL811K01	Empty Slot Protector kit including 10 x TL811 – for Ethernet FCI
3BSE088172R1	TL812K01	Empty Slot Protector kit including 10 x TL812 – for GIO
3BSE088173R1	TL813K01	Empty Slot Protector kit including 10 x TL813 – for SCM
3BSE088174R1	TL814K01	Empty Slot Protector kit including 10 x TL814 – for HI module (HI880)
3BSE093010R1	TL820 Empty Slot Protector	Empty Slot Protector for Power Injection Terminal Block
3BSE093013R1	TL830 IP30 cover	IP30 cover for used power supply connector of TU865
3BSE088181R1	TUC810K01	Terminal Cover Kit including 10 xTUC810 – for IO-MTU
3BSE090351R1	TS810K01	Screw Lugs kit including 100 x TTS810 – for TU860/TU865 and TUS810
3BSE079084R1	TUW890K01	Separation Wall Kit including 10 x TUW890 – to separate IS and non-IS I/O MTUs
Power Supplies		
3BSE088188R1	SD853	Power Supply – 10 A
3BSE088189R1	SD854	Power Supply – 20 A