

Experion PKS
Series C I/O User's Guide

EPDOC-X126-en-500G
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Release 500

IOM model names	IOM block name	Description	# of chnls	Similar to PMIO type	IOP model names
CU-PAOH01 CC-PAOH01	AO-HART	Analog Output with HART	16	AO16HART	
CC-PAOH51	AO-HART	1 Modem, Analog Output with HART	16	AO16HART	
CU-PDIH01 CC-PDIH01	DI-HV	High Voltage Digital Input (IOM supports both 120 and 240 volts AC)	32	DI	
CU-PDIL01 CC-PDIL01	DI-24	Low Voltage Digital Input (24 volts DC)	32	DI or DI24V	
CC-PDIL51	DI-24	Low Voltage, Digital Input (24 volts DC)	32	DI	
CU-PDIS01 CC-PDIS01	DI-SOE	Low Voltage Digital Input (24 volts DC)	32	DISOE	Mx-PDIS12
CU-PDOB01 CC-PDOB01	DO-24B ²	Bussed Low Voltage Digital Output (24 volts DC)	32	DO_32	
CC-PDOD51	DO-24B	Bussed Low Voltage, Digital Output (24 volts DC)	32	DO32	
CU-PSOE01 CC-PSOE01	DI-SOE	Low Voltage Digital Input SOE (24 volts DC)	32	DISOE	
CC-PSP401	SP	Speed Protection	26		
CC-PSV201	SVP	Servo Valve Positioner	8		
CC-PPIX01	PIM	Pulse Input Module	8	PI IOP	
CC-PUIO01	UIO	Universal Input/Output Module	32		
CC-PUIO31	UIO	Universal Input/Output Module	32		
Series C Mark II IOM					
CC-PAIH01	AI-HART	High Level Analog Input with HART	16		
CC-PAOH01	AO-HART	Analog Output with HART	16		
DC-PDIL51	DI-24V	Digital Input (24 volt DC) without Open Wire Detection	32		
DC-PDIS51	DI-SOE	Low-Voltage Digital Input SOE- Low Resolution (24 volts DC) without Open Wire Detection	32		
DC-PDOD51	DO-24B	Bussed Low Voltage Digital Output (24 volts DC) without Open Wire Detection	32		
CC-PAIH51	AI-HART	1 Modem, High Level Analog Input with HART	16	HLAIHART	
CC-PAOH51	AO-HART	1 Modem, Analog Output with HART	16	AO16HART	
CC-PAIN01	AI-HL	High Level Analog Input with non-HART	16	HLAI	
CC-PAON01	AO	Analog Output with non-HART	16	AO16	

Following Series C IO modules introduced in Experion PKS R410.

HART Analog Input	CC -PAIH51
HART Analog Output	CC-PAOH51
Digital Input 24V DC	CC-PDIL51
Digital Output 24V DC	CC-PDOD51

These modules must be used only with Experion PKS R410 and later. These modules will not work as expected with earlier releases of Experion PKS. Using these with Experion releases prior to R410 by downgrading the firmware may render the module faulty and may not be possible to recover.

NOTES:

1. There are two models of High Level Analog Input such as, CU-PAIX01 and CU-PAIN01. The Module Hardware and the corresponding IOTAs are different and CU-PAIN01 is a new model. From the perspective of configuration and implementation, both High Level Analog Input models use the same IOM Block such as, AI-HL. It must be noted that the two models utilize the same configuration; online migration is not possible as mixed redundant pair is not possible. There are two models of Analog Output such as, CU-PAOX01 and CU-PAON01. Hence, similarly configuration, implementation, and interoperability constraints apply and CU-PAON01 is the new model.
2. Two new models of AI-HART (CC-PAIH02) and AI-HL (CC-PAIX02) modules are introduced to replace the older models of the AI-HART (CC-PAIH01) and AI-HL (CC-PAIX01) modules. The new models support both single-ended and differential inputs.
3. With R410, a new model of HART Analog Input CC-PAIH51 is introduced. The HART Analog Input CC-PAIH51 and Cx-PAIH01 use the same IOM block, that is, AI-HART. The configuration and implementation mentioned in note 1 applies to the HART Analog Input module.
4. With R410, a new model of HART Analog Output CC-PAOH51 is introduced. The HART Analog Output CC-PAOH51 and Cx-PAOH01 use the same IOM block, that is., AO-HART. The configuration and implementation mentioned in note 1 applies to the HART Analog Output module.
5. With R410, a new model of Digital Input 24V DC CC-PDIL51 is introduced. The Digital Input 24V DC CC-PDIL51 and Cx-PDIL01 use the same IOM block, that is, DI-24. The configuration and implementation mentioned in note 1 applies to the Digital Input 24V module.
6. With R410, a new model of Digital Output 24V DC CC-PDOD51 is introduced. The Digital Output 24V DC CC-PDOD51 and Cx-PDOB01 use the same IOM block, that is, DO-24B. . The configuration and implementation mentioned in note 1 applies to the Digital Output 24V module.
7. Starting with R430, a new model of Low Level Analog Input Mux CC-PAIM51 is introduced.
8. The UIO (CC-PUIO01) has 32 configurable input or output channels. Each channel can be configured as one of the following:
 - Analog Input (0-20mA or 4-20mA active)
 - Analog Output (4-20mA active)
 - Digital Input (with or without line monitoring)
 - Digital Output (with or without line monitoring)
9. The UIO (CC-PUIO31) module is introduced with R432 and has 32 configurable input or output channels that are identical to the UIO (CC-PUIO01) module.

3.3.1 Compatibility matrix between AI modules and differential AI modules

You can choose the AI modules based on your functionality requirements. The following table lists the functionalities and the respective AI modules.

If you want...	Then you must select...
AI HART/GIIS functionality	CC-PAIH02 module

If you want...	Then you must select...
Non-HART and Non-GIIS standard 2 wire transmitter (4-20mA input)	CC-PAIN01 module
Non-HART and Non-GIIS (1-5V input)	PAIX02 module

The following table lists the compatibility matrix between AI modules and differential AI modules for redundant and non-redundant configuration.

IOM	Redundant IOTA	Non-Redundant IOTA	AI			HART	No. of differential inputs
			4-20ma	1-5V	0-5V		
CC-PAIN01	CC-TAIN11	CC-TAIN01	X				None
CC-PAIH02	CC-TAIX11	CC-TAIX01	X	X	X	X	Channels 13 through 16
CC-PAIH02	CC-TAID11	CC-TAID01	X	X	X	X	Channels 1 through 16 ⁽¹⁾
CC-PAIX02	CC-TAIX11	CC-TAIX01	X	X	X		Channels 13 through 16
CC-PAIX02	CC-TAID11	CC-TAID01	X	X	X		Channels 1 through 16
CC-PAIH51	CC-TAIX61	CC-TAIX51		X			None

IOM	Redundant IOTA	Non-Redundant IOTA	IS	No. of differential inputs
CC-PAIH02	CC-GAIX11	CC-GAIX21	X	Not applicable
CC-PAIX02	CC-GAIX11	CC-GAIX21	X	Not applicable

⚠ Attention

- The following module types are superseded by a new version of the module.
 - CC-PAIH01 superseded by CC-PAIH02
 - CC-PAIX01 superseded by CC-PAIX02
 - CC-PAOX01 superseded by CC-PAON01

3.3.2 Compatibility matrix between AO modules and differential AO modules

The following table lists the compatibility matrix between AO modules and differential AO modules for redundant and non-redundant configuration.

IOM	Redundant IOTA	Non-Redundant IOTA	AO 4-20mA	HART	IS
CC-PAOH01	CC-TAOX11	CC-TAOX01	X	X	
CC-PAOH01	CC-GAOX11	CC-GAOX21	X	X	X
CC-PAOX01	CC-TAOX11	CC-TAOX01	X		
CC-PAOX01	CC-GAOX11	CC-GAOX21	X		X
CC-PAON01	CC-TAON11	CC-TAON01	X		

3.3.3 Difference between AI-HART modules Cx-PAIH01 and Cx-PAIH51

AI-HART module Cx-PAIH01	AI-HART module Cx-PAIH51
Supports Open Wire detection.	Does not support Open Wire detection.
Supports 64-HART Communication units.	Supports 16- HART Communication units.
Supports the following sensor types. <ul style="list-style-type: none"> • 1-5 V • 0-5V • 0.4-2V 	Supports only 1-5 V sensor type.
Supports the following input types. <ul style="list-style-type: none"> • Voltage • Current (2-wire or self-powered transmitters) 	Supports only current (2-wire or self-powered transmitters) input type.
Supports 16 input channels (single ended or differential).	Supports all single-ended input channels.
Supports the following input range. <ul style="list-style-type: none"> • 0 to 5V • 1 to 5V • 0.4 to 2V • 4-20 mA (through 250 Ω) 	Supports only 4-20 mA (through 200 Ω) inputs.
Supports all HART scan rates.	Supports all HART scan rates except 1 Sec Dynamic, 1 Sec Device, 2 Sec Device and Dynamic.
Supports differential voltage inputs.	Does not support differential voltage inputs.
Supports field calibration	Field calibration is not required.

3.3.4 Difference between AO-HART modules Cx-PAOH01 and Cx-PAOH51

AO-HART module Cx-PAOH01	AO-HART module Cx-PAOH51
Supports 64-HART Communication units.	Supports 16- HART Communication units.
Supports all HART scan rates.	Supports all HART scan rates except 1 Sec Dynamic, 1 Sec Device, 2 Sec Device and Dynamic.
Supports field calibration.	Field calibration is not required.
Supports OUTPUT READBACK.	Does not support OUTPUT READBACK.

3.3.5 Difference between bussed low voltage Digital Input modules Cx-PDIL01 and Cx-PDIL51

Digital Input module Cx-PDIL01	Digital Input module Cx-PDIL51
Supports Open Wire detection.	Does not support Open Wire detection.

4 SERIES C I/O INSTALLATION AND UPGRADES

IOM block type	IOM model number	IOTA model number	IOTA description ⁷	IOTA supported FTAs or ancillary cards
DI-HV PROX	Cx-PDIH01	CC-TDII51	DI,120VAC non-redundant	None
DI-24	Cx-PDIL01	Cx-TDIL01	DI-24V, non-redundant	None
		Cx-TDIL11	DI-24V, redundant	None
		Cx-GDIL11	DI-24VDC, GI-IS, redundant	MTL4516 MTL4517
		Cx-GDIL21	DI-24VDC, GI-IS, non-redundant	MTL4510
		Cx-GDIL01	DI-24VDC, GI-IS, redundant (for expander)	MTL4511
		Cx-SDXX01	GI-IS expander	MTL4511
	Cx-PDIL51	Cx-TDIL51	DI-24V, non-redundant	None
			Cx-TDIL61	DI-24V, redundant
DI_SOE	Cx-PSOE01 (note 4)	Cx-TDIL01	DI-24V, non-redundant	None
DO-24B	Cx-PDOB01	Cx-TDOB01	DO-24V, bussed, non-redundant	None
		Cx-TDOB11	DO-24V, bussed, redundant	None
		Cx-TDOR01	DO- High Voltage Relay, non-redundant	Cx-SD0R01 ² (note 2)
		Cx-TDOR11	DO- High Voltage Relay, redundant	Cx-SD0R01 ² (note 2)
		Cx-GDOL01	DO-24VDC, GI-IS, redundant (for expander)	MTL4521
		Cx-SDXX01	GI-IS expander	MTL4521
	Cx-PDOD51	Cx-TDOD51	DO-24V, bussed, non-redundant	None
			Cx-TDOD61	DO-24V, bussed, redundant
SVPM	CC-PSV201	CC-TSV211	Servo Valve Positioner IOTA, Redundant, Coated	None
SPM	CC-PSP401	CC-TSP411	Speed Protection IOTA, Redundant, Coated	None
PI	CC-PPIX01	CC-TPIX11	Pulse Input w/ Fast Cutout, Redundant	None
UIO	CC-PUIO01	CC-TUIO01	UIO, Non-Redundant	None
		CC-TUIO11	UIO, Redundant	
UIO-2	CC-PUIO31	CC-TUIO31	Universal IO-2, non-redundant, coated	None
		CC-TUIO41	Universal IO-2, redundant, coated	
DI-24	DC-PDIL51	DC-TDIL01	DI 24V IOTA (Non-Redundant)	None
		DC-TDIL11	DI 24V IOTA (Redundant)	
DI-SOE	DC-PDIS51	DC-TDIL01	DI 24V IOTA (Non-Redundant)	None
		DC-TDIL11	DI 24V IOTA (Redundant)	
DO-24B	DC-PDOD51	DC-TDOD51	DO 24V Bussed without RB IOTA (Non-Redundant)	None
		DC-TDOD61	DO 24V Bussed without RB IOTA (Redundant)	

NOTES

Part name		Part number		Description	
FUSE, 0.25 Amp, Quick Blo, 5x20mm	51190582-125	4 per IOTA	F3	Power to FTA 1 only	
			F4	Power to FTA 2 only	
			F5	Power to FTA 3 only	
			F6	Power to FTA 4 only	
FUSE, 1 Amp, Quick Blo, 5x20mm	51190582-210	2 per IOTA	F1	Power to module electronics	
			F2	Switched power to all FTAs	
LOW LEVEL ANALOG INPUT					
Series C Low Level AI IOM		CC-PAIL51		Series C Low Level Module	
IOTA					
Low Level AI IOTA			CC--TAIL5 1 513071 92	Low Level AI, non-redundant, coated	
<i>Connector block assembly</i>					
Connector Block Assembly, 6 Position		51195775-100		4 per IOTA	
<i>Fuse</i>					
<i>Description</i>	<i>Part number</i>	<i>Quantity</i>	<i>Reference designator</i>	<i>Function</i>	
FUSE, 0.25 Amp, Quick Blo, 5x20mm	51190582-125	4 per IOTA	F3	Power to FTA 1 only	
			F4	Power to FTA 2 only	
			F5	Power to FTA 3 only	
			F6	Power to FTA 4 only	
FUSE, 1 Amp, Quick Blo, 5x20mm	51190582-210	2 per IOTA	F1	Power to module electronics	
			F2	Switched power to all FTAs	
DIGITAL INPUT 24V					
Series C DI-24 IOM		CC- PDIL01		Series C 24V Digital Input Module	
		CC-PDIL51		Series C 24V Digital Input Module	
IOTA					
DI-24V Non-Redundant. IOTA		CC- TDIL0 51308371-175		24V Digital Input, non-redundant, coated	
		Cx-TDIL51 51306969-175		24V Digital Input, non-redundant, coated	
DI-24V Redundant. IOTA		CC- TDIL11 51308373-175		24V Digital Input, redundant, coated	
		Cx-TDIL61 51306967-175		24V Digital Input, redundant, coated	
<i>Terminal plug-in assembly</i>					
16-terminal plug-in assembly		51506273-216		2 per non-redundant IOTA 2 per redundant IOTA	