


## 8.4. I/O Expansion Boards






### Overview




One PAC can only plug only one XV-Board or XW-Board.





	XV-Board	XW-Board
PAC Supported	WP-50xx, LP-50xx	uPAC-5000, WP-51xx, LP-51xx
Bus Type	Serial	Parallel
Bus Speed	Slow	Fast
DIO Board	Yes	Yes
Multifunction Board (AI+AO+DIO)	Yes	Yes
RS-232/485 Board	-	Yes






Relay output Board		
Models	XV116	
Pictures		
<b>Relay Output</b>		
Channel	6	
Type	Form A (SPST N.O.)	
Operating Voltage Range	250 V <sub>AC</sub> or 30 V <sub>DC</sub>	
Max. Load Current	Relay 0 ~ 1: 2 A Relay 2 ~ 5: 4 A	
Operating Time	Relay 0 ~ 1: 4 ms Max. Relay 2 ~ 5: 5 ms Max.	
Release Time	Relay 0 ~ 1: 6 ms Max. Relay 2 ~ 5: 1 ms Max.	
Mechanical Life	Relay 0 ~ 1: 100 x 10 <sup>6</sup> cycles Relay 2 ~ 5: 30 x 10 <sup>6</sup> cycles	
On-Resistance	-	
Off-State Leakage Current	-	
Intra-module Isolation, Field to Logic	3750 V <sub>DC</sub>	
<b>Digital Input</b>		
Channel	5	
Contact	Wet	
Sink/Source (NPN/PNP)	Sink/Source	
Wet Contact	On Voltage Level	+10 V <sub>DC</sub> ~ 50 V <sub>DC</sub>
	Off Voltage Level	+4 V <sub>DC</sub> Max.
Input Impedance	10 K $\Omega$	
Overvoltage Protection	60 V <sub>DC</sub>	
Intra-module Isolation, Field to Logic	3750 V <sub>DC</sub>	
<b>Power Requirements</b>		
Consumption	1W	

DIO Board					
Models	XV107i	XV107Ai	XV110i	XV111i	XV111Ai
Pictures					
<b>Digital Input</b>					
Channel	8	8	16		
Contact	Wet	Wet	Dry+Wet		
Sink/Source (NPN/PNP)	Source	Sink	Sink/Source		
Wet Contact	On Voltage Level	+10 V <sub>dc</sub> ~ +50 V <sub>dc</sub>			
	Off Voltage Level	+4 V <sub>dc</sub> Max.			
Dry Contact	On Voltage Level	-	Close to GND	-	-
	Off Voltage Level	-	Open		
Input Impedance	10 K $\Omega$				
Oversvoltage Protection	60 V <sub>dc</sub>				
Intra-module Isolation, Field to Logic	3750 V <sub>dc</sub>				
<b>Digital Output</b>					
Channel	8		-	16	
Type	Open Collector	Open Emitter	-	Open Collector	Open Emitter
Sink/Source (NPN/PNP)	Sink	Source	-	Sink	Source
Load Voltage	+10 V <sub>dc</sub> ~ 40 V <sub>dc</sub>		-	+10 V <sub>dc</sub> ~ 40 V <sub>dc</sub>	
Max. Load Current	700 mA/channel		-	600 mA/channel	
Overload Protection	1.4 A		-	1.4 A	
Intra-module Isolation, Field to Logic	3750 V <sub>dc</sub>		-	3750 V <sub>dc</sub>	
<b>Power Requirements</b>					
Consumption	0.15 W		1 W	0.5 W	

DIO Board			
Models	XW107	XW107i	XW110i
Pictures			
<b>Digital Input</b>			
Channel	8	8	16
Contact	Dry	Wet	Dry + Wet
Sink/Source (NPN/PNP)	Source	Sink/Source (Jumper setting)	Sink/Source
Wet Contact	On Voltage Level	-	+10 V <sub>dc</sub> ~ +50 V <sub>dc</sub>
	Off Voltage Level	-	+4 V <sub>dc</sub> Max.
Dry Contact	On Voltage Level	Close to GND	-
	Off Voltage Level	Open	-
Input Impedance	-	10 K $\Omega$	-
Oversvoltage Protection	30 V <sub>dc</sub>	60 V <sub>dc</sub>	60 V <sub>dc</sub> for Wet Contact
Intra-module Isolation, Field to Logic	-	3750 V <sub>rms</sub>	3750 V <sub>rms</sub>
<b>Digital Output</b>			
Channel	8		
Type	Open Collector		
Sink/Source (NPN/PNP)	Sink		
Load Voltage	+10 V <sub>dc</sub> ~ 40 V <sub>dc</sub>		
Max. Load Current	200 mA/channel		
Overload Protection	1.4 A		
Intra-module Isolation, Field to Logic	-	3750 V <sub>rms</sub>	-
<b>Power Requirements</b>			
Consumption	0.1 W		

Multifunction Board					
Models	XV304i	XV308i	XV310i	XV305i	
Pictures					
<b>Analog Input</b>					
Channel	6	8	4	8	
Wiring	Single-Ended			Differential	
Sensor Type	+/- 1 V, +/- 2.5 V, +/- 5 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA, +/-20 mA			<b>Thermistor</b> Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, SI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined	
Resolution	Normal Mode	14-bit		16-bit	
	Fast Mode	12-bit			
Sampling Rate	Normal Mode	10 Hz		8 Hz	
	Fast Mode	200 Hz			
Input Impedance	20 MΩ			-	
Overvoltage Protection	120 V <sub>DC</sub>				
Isolation	2500 V <sub>DC</sub>				
<b>Analog Output</b>					
Channel	1	-	2	-	
Range	0 ~ 10 V <sub>DC</sub>		0 ~ 10 V <sub>DC</sub>		
Resolution	12-bit		12-bit		
Output Capacity	20 mA		20 mA		
Isolation	2500 V <sub>DC</sub>		2500 V <sub>DC</sub>		
<b>Digital Input</b>					
Channel	4	-	4	-	
Contact	Wet		Wet		
Sink/Source (NPN/PNP)	Source		Source		
Wet Contact	On Voltage Level		+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>		+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>
	Off Voltage Level		+4 V <sub>DC</sub> Max.		+4 V <sub>DC</sub> Max.
Overload Protection	60 V <sub>DC</sub>	60 V <sub>DC</sub>			
<b>Digital Output</b>					
Channel	4	8	4	8	
Type	Open Collector				
Sink/Source (NPN/PNP)	Sink				
Load Voltage	+10 V <sub>DC</sub> ~ +40 V <sub>DC</sub>				
Max. Load Current	700 mA/Channel				
Overload Protection	1.4 A				
<b>Power Requirements</b>					
Consumption	1W				

Multifunction Board			
Models	XW304	XW310	XW310C
Pictures			
<b>Analog Input</b>			
Channel	6	4	4/8
Wiring	Single-Ended	Differential	Differential/Single-Ended
Range	+/- 5 V, 0 ~ +5 V	+/- 10 V	0 ~ 20 mA
Resolution		12-bit	
Sampling Rate		4 KHz	
Input Impedance		1 MΩ	
Over voltage Protection		+/- 30 V <sub>DC</sub>	
Isolation		non-isolated	
<b>Analog Output</b>			
Channel	1	2	2
Range	+/- 5 V	+/- 10 V	0 ~ 20 mA
Resolution		12-bit	
Output Capacity	20 mA	30 mA	20 mA
Isolation		non-isolated	
<b>Digital Input</b>			
Channel	4	3	3
Contact		Dry	
Dry Contact	On Voltage Level	Close to GND	
	Off Voltage Level	Open	
Overvoltage Protection		30 V <sub>DC</sub>	
<b>Digital Output</b>			
Channel	4	3	3
Type		Open Collector	
Sink/Source (NPN/PNP)		Sink	
Load Voltage		+10 V <sub>DC</sub> ~ 40 V <sub>DC</sub>	
Max. Load Current		200 mA/channel at 25°C	
Overload Protection		1.4 A	
<b>Power Requirements</b>			
Consumption	0.2 mW Max.	4.5 mW Max.	3.5 mW Max.

## Pin Assignments

### XW304

Vin5	Vin4	Vin3	Vin2	Vin1	Vin0	AGND	Vout0	D13	D12	D11	D10	GND	DO.PWR	DO3	DO2	DO1	DO0
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(XW304)

### XW310

Vin3 -	Vin3+	Vin2 -	Vin2+	Vin1 -	Vin1+	Vin0 -	Vin0+	Vout1	Vout0	GND	D12	D11	D10	DO.PWR	DO2	DO1	DO0
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(XW310)

### XW310C

S/D	Vin7 / Vin3 -	Vin3 / Vin3+	Vin6 / Vin2 -	Vin2 / Vin2+	Vin5 / Vin1 -	Vin1 / Vin1+	Vin4 / Vin0 -	Vin0 / Vin0+	Iout1	Iout0	GND	D12	D11	D10	DO.PWR	DO2	DO1	DO0
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(XW310C)

Serial Port Board						
Models	XW506	XW509	XW507	XW508	XW511i	XW514
Pictures						
<b>Serial Port</b>						
Type	RS-232	RS-232	RS-422/485	RS-232	RS-485	RS-485
Port	6	2	1	8	4	8
Wire	TxD, RxD, GND	TxD, RxD, GND and TxD, RxD, CTS, RTX, GND	TxD+/D+, TxD-/D-, RxD+, RxD-, GND	TxD, RxD, GND	Data+, Data-	
Controller	16C550 compatible		16C950 compatible			
	Speed: 115200 bps Max.					
	Data bit : 7, 8					
	Stop bit : 1, 1.5, 2					
	Parity : None, Even, Odd, Mark, Space					
Intra-module Isolation, Field to Logic	-			2500 V <sub>rms</sub>		-
<b>Digital Input</b>						
Channel		4	5			
Contact		Wet				
Sink/Source (NPN/PNP)		Sink/Source				
Wet Contact	On Voltage Level	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>				
	Off Voltage Level	+4 V <sub>DC</sub> Max.				
Dry Contact	On Voltage Level	-				
	Off Voltage Level	-				
Input Impedance		10 KΩ				
Overvoltage Protection		60 V <sub>DC</sub>				
Intra-module Isolation, Field to Logic		3750 V <sub>rms</sub>				
<b>Digital Output</b>						
Channel		4	5			
Type		Open Collector				
Sink/Source (NPN/PNP)		Sink				
Load Voltage		+10 V <sub>DC</sub> ~ +40 V <sub>DC</sub>				
Max. Load Current		200 mA/channel				
Overload Protection		1.4 A				
Intra-module Isolation, Field to Logic		3750 V <sub>rms</sub>				
<b>Power Requirements</b>						
Consumption	0.2 W Max.	0.5 W Max.	0.4 W Max.	0.2 W Max.	0.8 W Max.	0.6 W Max.

## Pin Assignments

