

Modulus Selection Guide

January 1, 2019

Industrial Control Links, Inc.



DIGITAL I/O and COMBINATION DIGITAL/ANALOG I/O MODULES

Digital I/O modules have 24 I/O points in 24/0, 12/12, 16/8, and 20/4 DI/DO combinations

Combo I/O modules have 24 I/O points: 8 Discrete Inputs, 4 Discrete (relay) Outputs, up to 12 Analog Inputs and/or 4 Analog Outputs

Analog Inputs (AI and UI) are isolated or optionally individually isolated (IAI)

Analog inputs (AI) support process sensors (mA/V) while universal analog inputs (UI) support process and temperature sensors (thermocouples, RTDs, thermistors)

Model#	DI		DO		AI			AO	Serial ²		Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI				
DIGITAL I/O [12/24V DIs]											
8x-1002	24										
8x-1004	12		12								
8x-1006	16		8								
8x-1008	20		4								
DIGITAL I/O [120/240V DIs]											
8x-1102	24										
8x-1104	12		12								
8x-1106	16		8								
8x-1108	20		4								

Model#	DI		DO		AI			AO	Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI				
COMBO I/O [12/24V DIs]											
8x-3002	8		4		8				1		
8x-3003	8		4		8	4 ¹			1		
8x-3004	8		4			8			1		
8x-3005	8		4			8+4 ¹			1		
8x-3006	8		4				4		1		
8x-3007	8		4			4 ¹	4		1		
8x-3008	8		4				4(HV ³)		1		
8x-3009	8		4			4 ¹	4(HV ³)		1		
8x-3010	8		4					4	1		
8x-3012	8		4		8			4	1		
8x-3014	8		4			8		4	1		
8x-3016	8		4				4	4	1		
8x-3018	8		4				4(HV ³)	4	1		
COMBO I/O [120/240V DIs]											
8x-3102	8		4		8				1		
8x-3103	8		4		8	4 ¹			1		
8x-3104	8		4			8			1		
8x-3105	8		4			8 + 4 ¹			1		
8x-3106	8		4				4		1		
8x-3107	8		4			4 ¹	4		1		
8x-3108	8		4				4(HV ³)		1		
8x-3109	8		4			4 ¹	4(HV ³)		1		
8x-3110	8		4					4	1		
8x-3112	8		4		8			4	1		
8x-3114	8		4			8		4	1		
8x-3116	8		4				4	4	1		
8x-3118	8		4				4(HV ³)	4	1		

Notes

- (1) Add-on UIs do not support 3-wire RTDs (all other UIs do)
- (2) Serial ports in addition to Bus Port which every module has
- (3) HV models have 100V voltage range but no current range

COMMUNICATIONS MODULES - Type 2110

2110 Base [2 DI/PI, 1 DO (FET), 1 AI (20mA/V)]

2110 Base with DIs plus Audio Out [2 DI/PI, 4 DI (opto), 1 DO, 1 AI (20mA/V)] with MP3/WAV Audio Playback (PA or voice radio)

2110 Base with DI/DO plus Battery Backup [2 DI/PI, 4 DI (opto), 3 DO, 1 AI (20mA/V)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)

2110 Base with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 1 AI (20mA/V), 2 AO (20 mA)]

Model#	DI		DO		AI			AO	Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI				
COMMUNICATIONS - 2110 Base [2 DI/PI, 1 DO (FET), 1 AI (20mA/V)]											
8x-5000		2		1	1				2		
8x-5001		2		1	1				1		1/4W 900MHz Mesh Radio
8x-5002		2		1	1				1		1/4 W 900MHz Radio
8x-5003		2		1	1				1		1 W 900MHz Radio (Xtend compatible)
8x-5004		2		1	1				1		1 W 900MHz Radio (SX - for new designs)
8x-5011		2		1	1				1		Verizon LTE Cellular
8x-5012		2		1	1				1		AT&T/Int'l LTE Cellular
COMMUNICATIONS - 2110 Base with DIs plus Audio Out [2 DI/PI, 4 DI (opto), 1 DO, 1 AI (20mA/V)] with MP3/WAV Audio Playback (PA or voice radio)											
8x-5020	4	2		1	1				2	1	
8x-5021	4	2		1	1				1	1	1/4W 900MHz Mesh Radio
8x-5022	4	2		1	1				1	1	1/4 W 900MHz Radio
8x-5023	4	2		1	1				1	1	1 W 900MHz Radio (Xtend compatible)
8x-5024	4	2		1	1				1	1	1 W 900MHz Radio (SX - for new designs)
8x-5031	4	2		1	1					1	Verizon LTE Cellular
8x-5032	4	2		1	1					1	AT&T/Int'l LTE Cellular
COMMUNICATIONS - 2110 Base with DI/DO plus Battery Backup [2 DI/PI, 4 DI (opto), 3 DO, 1 AI (20mA/V)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)											
8x-5040	4	2		3	1				2		
8x-5041	4	2		3	1				1		1/4W 900MHz Mesh Radio
8x-5042	4	2		3	1				1		1/4 W 900MHz Radio
8x-5043	4	2		3	1				1		1 W 900MHz Radio (Xtend compatible)
8x-5044	4	2		3	1				1		1 W 900MHz Radio (SX - for new designs)
8x-5051	4	2		3	1						Verizon LTE Cellular
8x-5052	4	2		3	1						AT&T/Int'l LTE Cellular
COMMUNICATIONS - 2110 Base with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 1 AI (20mA/V), 2 AO (20 mA)]											
8x-5060	4	2		3	1			2	2		
8x-5061	4	2		3	1			2	1		1/4W 900MHz Mesh Radio
8x-5062	4	2		3	1			2	1		1/4 W 900MHz Radio
8x-5063	4	2		3	1			2	1		1 W 900MHz Radio (Xtend compatible)
8x-5064	4	2		3	1			2	1		1 W 900MHz Radio (SX - for new designs)
8x-5071	4	2		3	1			2			Verizon LTE Cellular
8x-5072	4	2		3	1			2			AT&T/Int'l LTE Cellular

Notes

(2) Serial ports in addition to Bus Port which every module has

COMMUNICATIONS MODULES - Type 1120MA

1120MA Base [1 DI/PI, 1 DO (FET), 2 AI (20mA)]

1120MA Base with DIs plus Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (20mA)] with MP3/WAV Audio Playback (PA or voice radio)

1120MA Base with DI/DO plus Battery Backup [1 DI/PI, 4 DI (opto), 3 DO, 2 AI (20mA)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)

1120MA Base with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (20mA), 2 AO (20 mA)]

1120MA Base with Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 4 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)

Model#	DI	DO	AI	AO	Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI
COMMUNICATIONS - 1120MA [1 DI/PI, 1 DO (FET), 2 AI (20mA)]							
8x-5100	1			1	2		
8x-5101	1			1	2		1/4W 900MHz Mesh Radio
8x-5102	1			1	2		1/4 W 900MHz Radio
8x-5103	1			1	2		1 W 900MHz Radio (Xtend compatible)
8x-5104	1			1	2		1 W 900MHz Radio (SX - for new designs)
8x-5111	1			1	2		Verizon LTE Cellular
8x-5112	1			1	2		AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120MA with Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (20mA)] with MP3/WAV Audio Playback (PA or voice radio)							
8x-5120	4	1		1	2		2 1
8x-5121	4	1		1	2		1/4W 900MHz Mesh Radio
8x-5122	4	1		1	2		1/4 W 900MHz Radio
8x-5123	4	1		1	2		1 W 900MHz Radio (Xtend compatible)
8x-5124	4	1		1	2		1 W 900MHz Radio (SX - for new designs)
8x-5131	4	1		1	2		Verizon LTE Cellular
8x-5132	4	1		1	2		AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120MA Base with DI/DO plus Battery Backup [1 DI/PI, 4 DI (opto), 3 DO, 2 AI (20mA)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)							
8x-5140	4	1		3	2		2
8x-5141	4	1		3	2		1/4W 900MHz Mesh Radio
8x-5142	4	1		3	2		1/4 W 900MHz Radio
8x-5143	4	1		3	2		1 W 900MHz Radio (Xtend compatible)
8x-5144	4	1		3	2		1 W 900MHz Radio (SX - for new designs)
8x-5151	4	1		3	2		Verizon LTE Cellular
8x-5152	4	1		3	2		AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120MA with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (20mA), 2 AO (20 mA)]							
8x-5160	4	1		3	2		2 2
8x-5161	4	1		3	2		1/4W 900MHz Mesh Radio
8x-5162	4	1		3	2		1/4 W 900MHz Radio
8x-5163	4	1		3	2		1 W 900MHz Radio (Xtend compatible)
8x-5164	4	1		3	2		1 W 900MHz Radio (SX - for new designs)
8x-5171	4	1		3	2		Verizon LTE Cellular
8x-5172	4	1		3	2		AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120MA with Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 4 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)							
8x-5180	16	1	5	1	4		4 2
8x-5181	16	1	5	1	4		4 1
8x-5182	16	1	5	1	4		4 1
8x-5183	16	1	5	1	4		4 1
8x-5184	16	1	5	1	4		4 1
8x-5191	16	1	5	1	4		4 1
8x-5192	16	1	5	1	4		4 1

Notes (2) Serial ports in addition to Bus Port which every module has

COMMUNICATIONS MODULES - Type 1120V

1120V Base [1 DI/PI, 1 DO (FET), 2 AI (V)]

1120V Base plus Dis and Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (V)] with MP3/WAV Audio Playback (PA or voice radio)

1120V Base plus DI, DO and Battery Backup [1 DI/PI, 4 DI (opto), 3DO, 2 AI (V)] with sealed lead-acid battery backup (external battery - purchase seperately)

1120V Base plus Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (V), 2 AO (20 mA)]

1120V Base plus Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 2 AI (V) + 2 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)

Model#	DI		DO		AI		AO		Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI				
COMMUNICATIONS - 1120V [1 DI/PI, 1 DO (FET), 2 AI (V)]											
8x-5200		1		1	2				2		
8x-5201		1		1	2				1		1/4W 900MHz Mesh Radio
8x-5202		1		1	2				1		1/4 W 900MHz Radio
8x-5203		1		1	2				1		1 W 900MHz Radio (Xtend compatible)
8x-5204		1		1	2				1		1 W 900MHz Radio (SX - for new designs)
8x-5211		1		1	2				1		Verizon LTE Cellular
8x-5212		1		1	2				1		AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120V with Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (V)] with MP3/WAV Audio Playback (PA or voice radio)											
8x-5220	4	1		1	2				2	1	
8x-5221	4	1		1	2				1	1	1/4W 900MHz Mesh Radio
8x-5222	4	1		1	2				1	1	1/4 W 900MHz Radio
8x-5223	4	1		1	2				1	1	1 W 900MHz Radio (Xtend compatible)
8x-5224	4	1		1	2				1	1	1 W 900MHz Radio (SX - for new designs)
8x-5231	4	1		1	2					1	Verizon LTE Cellular
8x-5232	4	1		1	2					1	AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120V with Battery Backup [1 DI/PI, 4 DI (opto), 3DO, 2 AI (V)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)											
8x-5240	4	1		3	2				2		
8x-5241	4	1		3	2				1		1/4W 900MHz Mesh Radio
8x-5242	4	1		3	2				1		1/4 W 900MHz Radio
8x-5243	4	1		3	2				1		1 W 900MHz Radio (Xtend compatible)
8x-5244	4	1		3	2				1		1 W 900MHz Radio (SX - for new designs)
8x-5251	4	1		3	2						Verizon LTE Cellular
8x-5252	4	1		3	2						AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120V with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (V), 2 AO (20 mA)]											
8x-5260	4	1		3	2			2	2		
8x-5261	4	1		3	2			2	1		1/4W 900MHz Mesh Radio
8x-5262	4	1		3	2			2	1		1/4 W 900MHz Radio
8x-5263	4	1		3	2			2	1		1 W 900MHz Radio (Xtend compatible)
8x-5264	4	1		3	2			2	1		1 W 900MHz Radio (SX - for new designs)
8x-5271	4	1		3	2			2			Verizon LTE Cellular
8x-5272	4	1		3	2			2			AT&T/Int'l' LTE Cellular
COMMUNICATIONS - 1120V with Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 2 AI (V) + 2 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)											
8x-5280	16	1	5	1	4			4	2		
8x-5281	16	1	5	1	4			4	1		1/4W 900MHz Mesh Radio
8x-5282	16	1	5	1	4			4	1		1/4 W 900MHz Radio
8x-5283	16	1	5	1	4			4	1		1 W 900MHz Radio (Xtend compatible)
8x-5284	16	1	5	1	4			4	1		1 W 900MHz Radio (SX - for new designs)
8x-5291	16	1	5	1	4			4	1		Verizon LTE Cellular
8x-5292	16	1	5	1	4			4	1		AT&T/Int'l' LTE Cellular

Notes (2) Serial ports in addition to Bus Port which every module has

COMMUNICATIONS MODULES - Type 1120R

1120R Base [1 DI/PI, 1 DO, 2 AI (ohms/temp)]

1120R Base with DIs plus Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (ohms/temp)] with MP3/WAV Audio Playback (PA or voice radio)

1120R Base with DI/DO plus Battery Backup [1 DI/PI, 4 DI (opto), 3DO, 2 AI (ohms/temp)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)

1120R Base with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (ohms/temp), 2 AO (20 mA)]

1120R Base with Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 2 AI (ohms/temp) + 2 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)

Model#	DI	DO	AI	AO	Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI
COMMUNICATIONS - 1120R [1 DI/PI, 1 DO, 2 AI (ohms/temp)]							
8x-5300	1		1	2			2
8x-5301	1		1	2			1
8x-5302	1		1	2			1
8x-5303	1		1	2			1
8x-5304	1		1	2			1
8x-5311	1		1	2			1
8x-5312	1		1	2			1
COMMUNICATIONS - 1120R with Audio Out [1 DI/PI, 4 DI (opto), 1 DO, 2 AI (ohms/temp)] with MP3/WAV Audio Playback (PA or voice radio)							
8x-5320	4	1		1	2		2
8x-5321	4	1		1	2		1
8x-5322	4	1		1	2		1
8x-5323	4	1		1	2		1
8x-5324	4	1		1	2		1
8x-5331	4	1		1	2		1
8x-5332	4	1		1	2		1
COMMUNICATIONS - 1120R with Battery Backup [1 DI/PI, 4 DI (opto), 3DO, 2 AI (ohms/temp)] with battery backup (external battery - purchase seperately p/n 90-9007 or 90-9012)							
8x-5340	4	1		3	2		2
8x-5341	4	1		3	2		1
8x-5342	4	1		3	2		1
8x-5343	4	1		3	2		1
8x-5344	4	1		3	2		1
8x-5351	4	1		3	2		1
8x-5352	4	1		3	2		1
COMMUNICATIONS - 1120V with Mini I/O [2 DI/PI, 4 DI (opto), 3 DO (FET), 2 AI (ohms/temp), 2 AO (20 mA)]							
8x-5360	4	1		3	2		2
8x-5361	4	1		3	2		1
8x-5362	4	1		3	2		1
8x-5363	4	1		3	2		1
8x-5364	4	1		3	2		1
8x-5371	4	1		3	2		2
8x-5372	4	1		3	2		2
COMMUNICATIONS - 1120R with Extended I/O [1 DI/PI, 16DI (Opto), 1 DO (FET), 5DO (relay), 2 AI (ohms/temp) + 2 AI (20mA), 4 AO (20mA)] Purchase relays separately (p/n 80-1001)							
8x-5380	16	1	5	1	4		4
8x-5381	16	1	5	1	4		4
8x-5382	16	1	5	1	4		4
8x-5383	16	1	5	1	4		4
8x-5384	16	1	5	1	4		4
8x-5391	16	1	5	1	4		4
8x-5392	16	1	5	1	4		4

Notes (2) Serial ports in addition to Bus Port which every module has

ADVANCED COMMUNICATIONS MODULES

Available with and without built-in I/O

Drop-in replacement model offered for upgrade/replacement of legacy Pinnacle Everest controller

Programs and configures with ScadaBuilder/Scadaworks software

Pre-configured alarming system package available - web configured alarming, HMI and logic programming without Scadabuilder/Scadaworks purchase

Model#	DI		DO		AI			AO	Serial ²	Audio	Wireless Option / Notes
	opto iso	hi-speed	relay	FET	AI	UI	IAI				
ADVANCED COMMUNICATIONS (4 DI/PI, 8 AI/UI + optional 4UI or 4AO) except 8x-7000 which is serial only - no I/O											
8x-7000									3		
8x-7002		4			8				3		
8x-7003		4			8	4 ¹			3		
8x-7004		4				8			3		
8x-7005		4				8 + 4 ¹			3		
8x-7012		4			8			4	3		
8x-7014		4				8		4	3		
ADVANCED COMMUNICATIONS EVEREST CONTROLLER (4 DI/PI, 8 AI/UI + optional 4AO) w/Everest terminal block configuration (includes I/O panel and cables)											
8x-7092	20	4	12		8				3		
8x-7094	20	4	12			8			3		
8x-7096	20	4	12		8			4	3		
8x-7098	20	4	12			8		4	3		
ADVANCED COMMUNICATIONS HARDWARE and SOFTWARE ACCESSORIES											
80-7801	External 56K Dialup modem (uses USB port on Advanced Comm module) - for voice alarm dialout and remote access over standard telephone lines										
91-3003	Scadaworks 5 Programming and Configuration Software (with ISaGraf) - includes 10 seat license										
91-3004	ScadaBuilder 5 Programming and Configuration Software (without ISaGraf) - includes 10 seat license										

Notes

(1) Add-on UIs do not support 3-wire RTDs (all other UIs do)

(2) Serial ports in addition to Bus Port which every module has

ACCESSORIES

Right/left bus kits (one required for all modules bussed together on a DIN rail unless powered by a Modulus Power Supply)

Power Supplies

Field Wiring Panels and Labels- eliminate most in-panel wiring and labeling labor

Relays and snubbers (snubbers must be used on all inductive loads driven by relay outputs)

Micro SD memory cards - wide and extended temperature

Batteries for Comm modules with built-in UPS, and UPS power supply

BUS KITS				
81-0001	Right Bus Power - screw terminal block			
81-0002	Left Bus Power - screw terminal block			
POWER SUPPLIES				
8x-9001	+12V, 60W Power Supply with redundancy support			
8x-9002	+24V, 60W Power Supply with redundancy support			
8x-9012	+12V/+24V, 60W Managed Uninterruptable Power Supply (UPS) with redundancy support (requires external battery 90-70xx below)			
BATTERIES				
90-9007	7AH Sealed lead-acid battery for comm modules with built-in UPS and UPS power supply			
90-9012	12AH Sealed lead-acid battery for comm modules with built-in UPS and UPS power supply			
FIELD WIRING PANELS				
82-0012	4-Channel Field Wiring Panel, with 12" cable (5-position lever plug)			
82-0024	4-Channel Field Wiring Panel, with 24" cable (5-position lever plug)			
82-0036	4-Channel Field Wiring Panel, with 36" cable (5-position lever plug)			
82-0112	4-Channel Field Wiring Panel for Modulus COMMUNICATIONS MODULE - 1120MA (loop powered devices) , with 12" cable (5-position lever plug)			
82-0124	4-Channel Field Wiring Panel for Modulus COMMUNICATIONS MODULE - 1120MA (loop powered devices) , with 24" cable (5-position lever plug)			
82-0136	4-Channel Field Wiring Panel for Modulus COMMUNICATIONS MODULE - 1120MA (loop powered devices) , with 36" cable (5-position lever plug)			
82-0212	4-Channel Field Wiring Panel, with 12" cable (4-position lever plug) for Comm Mini I/O (DO/AO)			
82-0224	4-Channel Field Wiring Panel, with 24" cable (4-position lever plug) for Comm Mini I/O (DO/AO)			
82-0236	4-Channel Field Wiring Panel, with 36" cable (4-position lever plug) for Comm Mini I/O (DO/AO)			
82-0412	12-Channel Field Wiring Panel, with 12" cable (5-position lever plugs)			
82-0424	12-Channel Field Wiring Panel, with 24" cable (5-position lever plugs)			
82-0436	12-Channel Field Wiring Panel, with 36" cable (5-position lever plugs)			
80-0025	Field Wiring Panel Labels- 1.25"X.75" Weatherproof Polyester Labels for Laser Printer (25 sheets, 72/sheet)			
80-0050	Field Wiring Panel Labels- 1.25"X.75" Weatherproof Polyester Labels for Laser Printer (50 sheets, 72/sheet)			
80-0100	Field Wiring Panel Labels- 1.25"X.75" Weatherproof Polyester Labels for Laser Printer (100 sheets, 72/sheet)			
RELAYS and SNUBBERS				
80-1000	AC Snubber for inductive loads - required for all relay outputs			
80-1001	5A Relay for Expanded I/O Communications modules Field Wiring Panel			
COMMUNICATIONS CABLES				
81-00xx	5 Position Screw Plug to DB-9 Male RS-232 cable for radios and modems standard length is 12" (add \$5 per ft. for >12")			
MICRO SD CARDS				
80-0300	16GB Mobility Kit - 16GB Micro SD card (Class 10) with USB 2.0 adapter - exchange files from PC to Modulus modules via Micro SD card instead of Ethernet			
80-0316	16GB Micro SD Card - Class 10 - Industrial Temperature Range (-40C to +85C)			
29-0332	32GB Micro SD Card - Class 10 - Extended Temperature Range (-25C to +85C)			