Analog I/O PC/104 Modules

	Analog Inputs								
Product	# Inputs	Res	Bip	Uni	Prog	Jump	Max	**Autocal**	FIFO
Hercules	32 SE, 16 DI	16	4	4	√		250KHz	√	2048
Athena	16 SE,8 DI	16	4	2	√		100KHz		48
Elektra	16 SE, 8 DI	16	4	2	√		100KHz	√	512
Prometheus	16 SE	16	4	2	√		100KHz		48
Diamond-MM-32X-AT	32 SE, 16 DI	16	5	4	√		250KHz	√	1024
Diamond-MM-16-AT	16 SE, 8 DI	16	5	4	√		100KHz	√	512
Diamond-DMM-AT	16 SE, 8 DI	12	5	4	√		100KHz	√	512
Diamond-MM	16 SE, 8 DI	12	6	6		√	100KHz		
Diamond-MM-XT	16 SE, 8 DI	12	6	6		√	100KHz		
Ruby-MM-412-XT									
Ruby-MM-812-XT									
Ruby-MM-1612-XT									
Ruby-MM-416-XT									

	Analog Outputs				Miscellaneous		
Product *continued*	# Out	Res	Bip	Uni	# Digital I/O	Clk	XT
Hercules	4	12	2	2	40 I/O	√	√
Athena	4	12	2	2	24 I/O	√	√
Elektra	4	12	2	2	24 I/O	√	√
Prometheus	4	12	2	2	24 I/O	√	√
Diamond-MM-32X-AT	4	12	2	2	24 I/O	√	√
Diamond-MM-16-AT	4	12	2	2	8 In, 8 Out	√	√
Diamond-MM-AT	2	12	2	2	8 In, 8 Out	√	√
Diamond-MM	2	12		2	8 In, 8 Out	√	
Diamond-MM-XT	2	12		2	8 In, 8 Out	√	√
Ruby-MM-412-XT	4	12	4	4	24 I/O		√
Ruby-MM-812-XT	8	12	4	4	24 I/O		√
Ruby-MM-1612-XT	16	12	4	4	24 I/O		√
Ruby-MM-416-XT	4	16	2	1	24 I/O		√

Legend

SE Single-ended analog inputs
DI Differential analog inputs
Res A/D or D/A resolution in bits
Bip Bipolar ranges (for example +/-5V)
Uni Unipolar ranges (for example 0-5V)
Prog Programmable gain
Jump Jumper-selected gain
Max Max A/D sample rate

Autocal Automatic calibration of A/D and D/A circuitry
FIFO A/D sample FIFO buffer on board
I/O Programmable direction digital I/O
In/Out Fixed direction digital I/O
Clk A/D pacer clock on board
XT -40 to +85°C operating temperature

Digital I/O and Counter/Timer I/O PC/104 Modules

	Digital I/O					Counter/Timers			Misc.	
Product	# I/O	Buf	Prog	Opto	Relay	# Ctrs	Res	Max	IRQ	XT
OMM-XT	48 I/O		√			3	16	10MHz	3	√
OMM-DIO-XT	48 I/O		√							√
GPIO-MM	96 I/O	√	√			Prog	Prog	Prog	2	√
PMM-XT					16					√
OPMM-XT				8	8					√
IR104				20	20					

Legend

Buf	Buffered digital outputs for higher current drive
Prog	Programmable direction
Opto	Optocoupler inputs
Relay	Relay outputs
Res	Counter resolution in bits
Max	Max counter clock input rate
IRQ	Interrupt capability
XT	-40 to +85°C operating temperature

Serial Port PC/104 Modules

	Serial Ports							Miscellaneous	
Product	# Ports	RS-232	RS-422	RS-485	Max	Prot Cfg	Addr Cfg	Digital I/O	XT
EMM-XT	4	4	2		115.2K	Jumper	Jumper		√
EMM-4M-XT	4	4	4	4	115.2K	Jumper	Jumper		√
EMM-8P-XT	8	8	8	8	460.8K	Jumper	Software	8	√
EMM-DIO-XT	4	4			115.2K	Fixed	Jumper	48	√

Legend

Max	Max baud rate
Prot Cfg	Protocol configuration method
IRQ	Interrupt Outputs
XT	-40 to +85°C operating temperature

Embedded CPU Modules

Product	Form Factor	Processor	Speed (MHz)	Memory	Video	Audio
HRC750-5A256	EBX: 8.0" x 5.75"	VIA Eden	750	256MB	CRT/LCD	AC97
HRC750-5N256	EBX: 8.0" x 5.75"	VIA Eden	750	256MB	CRT/LCD	AC97
HRC550-5A128	EBX: 8.0" x 5.75"	VIA Eden	550	128MB	CRT/LCD	AC97
HRC550-5N128	EBX: 8.0" x 5.75"	VIA Eden	550	128MB	CRT/LCD	AC97
ATH660-128	Custom: 4.2" x 4.5"	VIA Eden	660	128MB	CRT/LCD	AC97
ATH660-128N	Custom: 4.2" x 4.5"	VIA Eden	660	128MB	CRT/LCD	AC97
ATH400-128	Custom: 4.2" x 4.5"	VIA Eden	400	128MB	CRT/LCD	AC97
ATH400-128N	Custom: 4.2" x 4.5"	VIA Eden	400	128MB	CRT/LCD	AC97
ELK200-EA-XT	PC/104: 3.55" x 3.775"	ST Micro Vega	200	128MB		
ELK200-E-XT	PC/104: 3.55" x 3.775"	ST Micro Vega	200	128MB		
PR-Z32-EA-ST	PC/104: 3.55" x 3.775"	ZFMicro ZFx86	100	32MB		
PR-Z32-E-ST	PC/104: 3.55" x 3.775"	ZFMicro ZFx86	100	32MB		
PR-Z16-LC-ST	PC/104: 3.55" x 3.775"	ZFMicro ZFx86	100	16MB		
MOR-400	PC/104: 3.55" x 3.775"	Intel ULV Celeron	400	SODIMM	CRT/LCD	
MOR-650	PC/104: 3.55" x 3.775"	Intel ULV Celeron	650	SODIMM	CRT/LCD	

Product *continued*	Ethernet	DAQ	Expansion	XT
HRC750-5A256	10/100Mbps	√	PC/104-*Plus*	√
HRC750-5N256	10/100Mbps		PC/104-*Plus*	√
HRC550-5A128	10/100Mbps	√	PC/104-*Plus*	√
HRC550-5N128	10/100Mbps		PC/104-*Plus*	√
ATH660-128	10/100Mbps	√	PC/104	√
ATH660-128N	10/100Mbps		PC/104	√
ATH400-128	10/100Mbps	√	PC/104	√
ATH400-128N	10/100Mbps		PC/104	√
ELK200-EA-XT	10/100Mbps	√	PC/104	√
ELK200-E-XT	10/100Mbps		PC/104	√
PR-Z32-EA-ST	10/100Mbps	√	PC/104	√
PR-Z32-E-ST	10/100Mbps		PC/104	√
PR-Z16-LC-ST			PC/104	√
MOR-400	10/100Mbps		PC/104	
MOR-650	10/100Mbps		PC/104	

Legend

DAQ Data acquisition integrated on board
XT -40 to +85°C operating temperature

Product Transition Guide

The list below provides a summary of old / obsolete products, their replacements, and the key differences. For detailed information on each product please refer to Product Change Notices.

Old Model	New Model	Description / Key Differences
DMM-32-AT	DMM-32X-AT	**PC/104 Analog I/O Module** • Auto-autocalibration of A/D and D/A • 250KHz A/D sample rate vs. 200KHz • 1,024-sample A/D FIFO vs. 512 samples • D/A waveform generator with 100KHz data rate
GMM-24 **GMM-48** **QMM-5** **QMM-5-XT** **QMM-10** **QMM-10-XT**	GPIO-MM-XT	**PC/104 Counter/Timer and Digital I/O Module** • Combines QMM-10-XT and GMM-48 onto one board for total 10 counter/timers + 64 digital I/O • 48 I/O have buffers as on GMM-48 • 48 DIO are on one 50-pin connector vs. 2 connectors on GMM-48
EMM-8M-XT **EMM-8232-XT**	EMM-8P-XT	**PC/104 Serial Port Module** • All ports have programmable protocols (no single-protocol version) • All ports are multi-protocol RS-232/422/485 • RS-485 offers both local-echo and no-echo modes
CMM-HP-12 **CMM-HP-EX**	CMM-HP-5	**PC/104 Audio I/O Module** • Amplifier power is +5VDC from PC/104 bus • Stereo amplifier output limited to 0.5W per channel x 2
RMM-4-XT **RMM-8-XT**	RMM-412-XT RMM-812-XT	**PC/104 Analog Output + Digital I/O Module** • I/O connector pinout change for digital I/O • No external reference for D/A output range • Single output range for all channels both models (range is jumper selectable)
PB-Z32-xxx **PNL-Z32-E/EA**	PB-EAP-xxx PNL-EAP-01	**Pandora PC/14 Enclosure and Panel I/O Board** • New panel I/O connector layout • Total of 4 USB ports vs. 2 • Data acquisition connectors are 50-pin Centronics style vs. IDC • Holes in case front for improved ventilation • Panel board supports 2 internal PC/104 modules in addition to CPU