3.2 Serial Expansion Backplanes: IC694CHS392, IC694CHS398

The RX3i system can include any combination of up to seven RX3i Serial Expansion backplane and/or Series 90-30 Expansion/Remote Backplanes. RX3i Serial Expansion Backplanes are available with either five I/O slots (IC694CHS398, displayed in the following figure) or ten I/O slots (IC694CHS392).

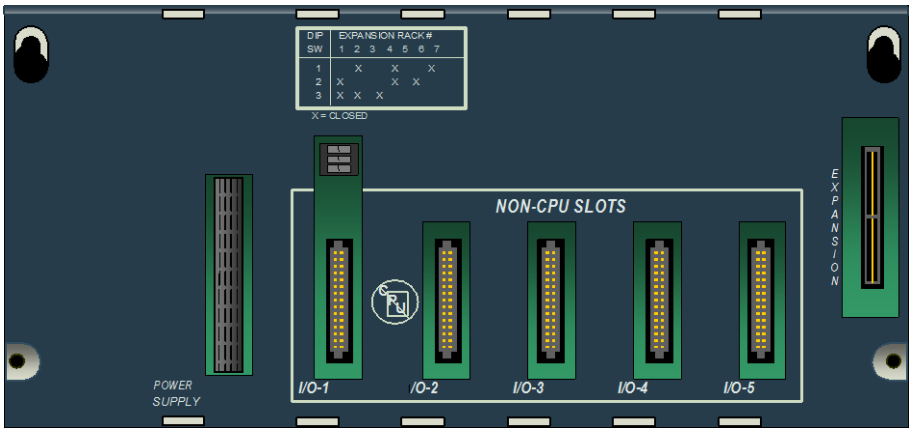

Figure 75: Serial Expansion Backplane

- The leftmost module in an RX3i Serial Expansion Backplane must be a Serial Expansion Power Supply:
  - IC694PWR321: Serial Expansion Power Supply, 120/240 Vac, 125Vdc
  - IC694PWR330: Serial Expansion Power Supply, 120/240 Vac, 125Vdc, High Capacity
  - IC694PWR331: Serial Expansion Power Supply, 24Vdc, High Capacity
- Module Hot Insertion and Removal are NOT permitted on Expansion Backplanes.
- Each Expansion Backplane has a Rack Number Selection DIP switch (Figure 18) that must be set before module installation.
- Each Expansion Backplane has a Bus Expansion connector at its right end for attaching an optional expansion cable. There can be no more than 50 feet (15 meters) of cable connecting Expansion backplanes with the Universal Backplane. If the system includes Series 90-30 Remote Backplanes, the additional requirements summarized in Section 1.3 through Section 1.5 must also be observed.

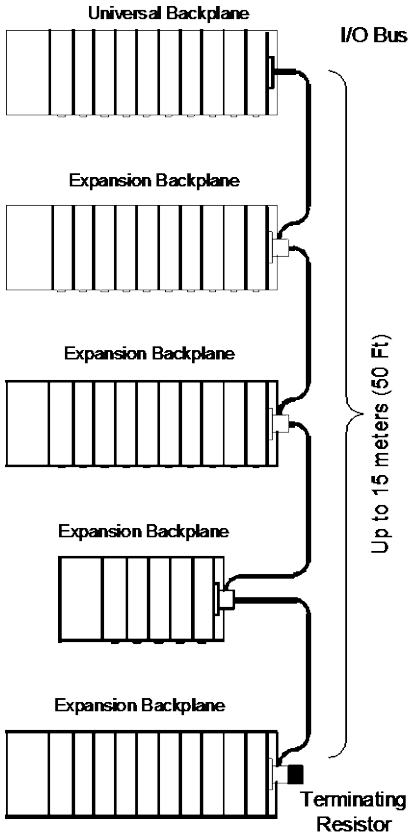

Figure 76: Example RX3i System with Expansion Backplane Racks

Chapter 4 Power Supplies

This chapter describes power supplies for RX3i PACSystems:

Power Supply Description	Catalog Number	Section
120/240 Vac 125Vdc 40 W Power Supply	IC695PSA040	4.4
120/240 Vac 125Vdc 40 W Multi-Purpose Power Supply	IC695PSA140	4.5
24Vdc 40 W Power Supply	IC695PSD040	4.6
24Vdc 40 W Multi-Purpose Power Supply	IC695PSD140	4.7
120/240 Vac 125Vdc 30 W Serial Expansion Power Supply	IC694PWR321	4.8
120/240 Vac 125Vdc 30 W High Capacity Serial Expansion Power Supply	IC694PWR330	4.9
24Vdc 30 W High Capacity Serial Expansion Power Supply	IC694PWR331	4.10

4.1 Power Supply Overview

This section provides a general description of the IC695 Power Supplies, which must be used in RX3i (IC695) Universal Backplanes, and IC694 Power Supplies, which must be used in RX3i Serial Expansion (IC694) Backplanes. Individual power supply specifications are listed in the following sections.

The IC695 Power Supplies provide up to 40 W each. The IC694 (Expansion) Power Supplies provide up to 30 W each. However, IC694PWR321 is limited to 15 Watts on the +5Vdc output.

The total of all outputs combined cannot exceed the stated load capacity in Watts. PME Logic Developer will automatically calculate the power consumption of modules as they are added to the system configuration. Power requirements of system modules are shown in this section, for reference when planning the system.

The maximum load for each type of power supply is displayed in the following table.

Catalog Number	Can be Located In	Nominal Input	Load Capacity[6]	Load Sharing, Redund-ancy	Max +3.3Vdc	Max +5Vdc	Max +24Vdc Isolated	Max +24Vdc Relay
IC695PSA040	Universal Backplane	120/240 Vac or 125Vdc	40 W	No	30 W	30 W	–	40 W
IC695PSA140	Universal Backplane	120/240 Vac or 125Vdc	40 W	Yes	30 W	30 W	–	40 W
IC695PSD040	Universal Backplane	24Vdc	40 W	No	30 W	30 W	–	40 W
IC695PSD140	Universal Backplane	24Vdc	40 W	Yes	30 W	30 W	–	40 W
IC694PWR321	Serial Expansion Backplane	100/240 Vac or 125Vdc	30 W	No	–	15 W	20 W	15 W
IC694PWR330	Serial Expansion Backplane	100/240 Vac or 125Vdc	30 W	No	–	30 W	20 W	15 W
IC694PWR331	Serial Expansion Backplane	24Vdc	30 W	No	–	30 W	20 W	15 W

4.1.1 Power Supply Field Wiring

Refer to *Power Supply Field Wiring*, Section 2.6.6.1. See also AC Power Source Connections (Section 2.6.6.2) or DC Power Source Connections (Section 2.6.6.3) as appropriate for how each power supply is being applied.

4.1.2 24Vdc Isolated Power

The IC695 Power Supplies do not have Isolated +24Vdc output terminals. The RX3i Universal Backplane provides external input terminals (TB1) for connecting an optional Isolated +24Vdc external supply. Modules that draw +24Vdc from the backplane are listed in the table *Module Load Requirements*, Section 4.2. Refer to *Universal Backplane TB1 Input Terminals* for details on how to wire to terminal TB1.

[6] A power supply must be able to provide the total of the internal and external loads that may be placed upon it by all the hardware components in the backplane as well as by all the loads that may be connected to the Isolated +24Vdc supply on an expansion backplane.

4.1.3 RX3i IC695 Power Supply Outputs

The IC695 power supplies have +5.1Vdc, +24Vdc Relay, and 3.3Vdc outputs that are connected internally on the backplane. The voltage and power required by modules installed on the backplane is supplied through the backplane connectors.

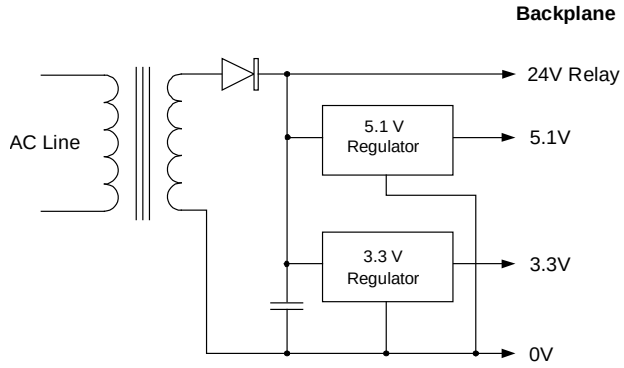

Figure 77: Outputs of Power Supply IC695PSA040

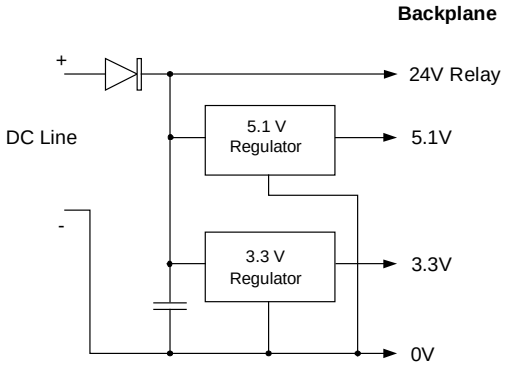

Figure 78: Outputs of Power Supply IC695PSD040 & IC695PSD140

4.1.4 RX3i IC694 Power Supply Outputs

The IC694 power supplies have +5Vdc, Relay +24Vdc and Isolated +24Vdc outputs that are connected internally on the backplane. The voltage and power required by modules installed on the backplane is supplied through the backplane connectors.

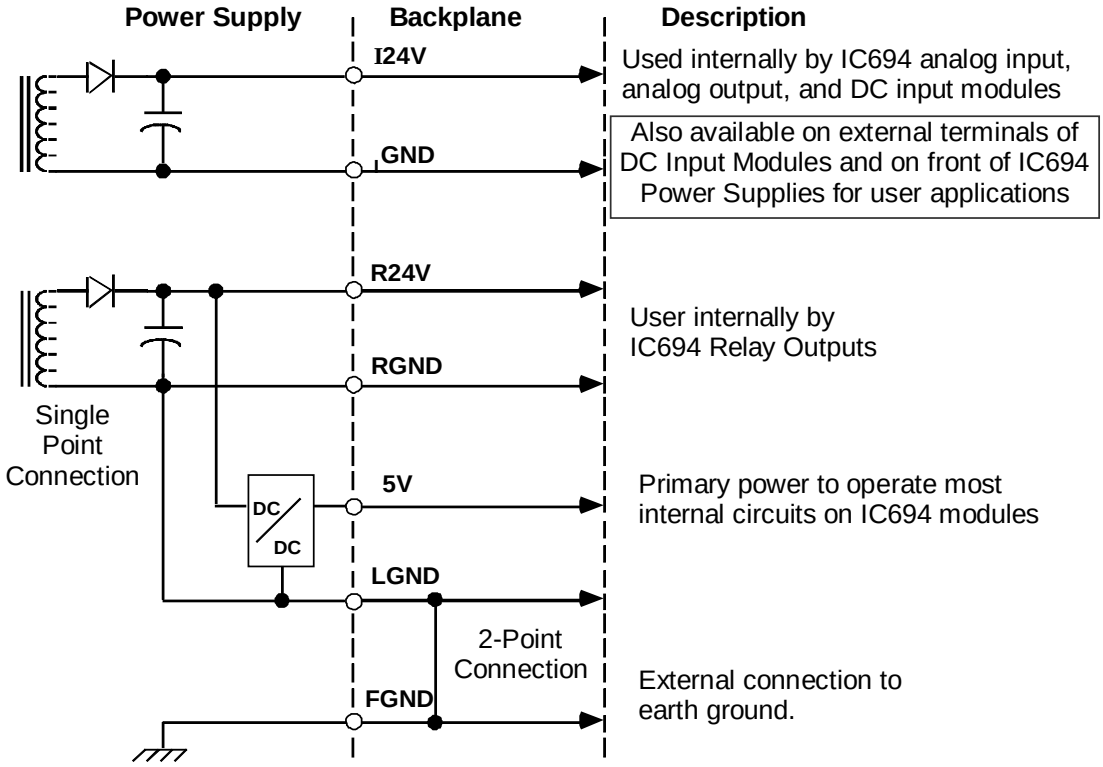

Figure 79: Outputs of Power Supplies IC694PWR321, IC694PWR330, and IC694PWR331

4.2 Module Load Requirements

The following table summarizes the maximum load requirements in milliamps and Watts for RX3i modules. Modules are listed alphabetically by the last six characters of the catalog number. For I/O modules, the actual load may depend on the number of points on at the same time.

Catalog Number	Module	+3.3Vdc		+5Vdc		+24Vdc Relay		+24Vdc Isolated	
		mA	W	mA	W	mA	W	mA	W
IC694ACC300	Input Simulator	–	–	120	0.60	–	–	–	–
IC694ACC307	Expansion Bus Termination Plug	–	–	72	0.36	–	–	–	–
IC695ALG106	Analog Input Module, 6-Channel Isolated Current/Voltage	390	1.287	225	1.125	–	–	–	–
IC695ALG112	Analog Input Module, 12-Channel Isolated Current/Voltage	370	1.221	425	2.125	–	–	–	–
IC694ALG220	Analog Input, Voltage, 4-Channel	–	–	27	0.135	–	–	98	2.352
IC694ALG221	Analog Input, Current, 4-Channel	–	–	25	0.125	–	–	100	2.4
IC694ALG222	Analog Input, 8-/16-Channel Voltage Version -AA Versions –BA and later	 – –	 – –	 112 112	 0.56 0.56	 – –	 – –	 0 41 110	 0.984 2.64
IC694ALG223	Analog Input, 8-/16-Channel Current	–	–	120	0.60	–	–	65	1.56
IC694ALG232	Advanced Diagnostics, 16-Channel Input Analog Voltage Module	–	–	112	0.56	–	–	110	2.64
IC694ALG233	Advanced Diagnostics, 16-Channel Input Analog Current Module	–	–	120	0.60	–	–	65	1.56
IC695ALG306	Thermocouple Input Module, 6-Channel Isolated	400	1.320	225	1.125	–	–	–	–
IC695ALG312	Thermocouple Input Module, 12-Channel Isolated	400	1.320	425	2.125	–	–	–	–
IC694ALG390	Analog Output 2-Channel Voltage	–	–	32	0.16	–	–	120	2.88
IC694ALG391	Analog Output 2-Channel Current	–	–	30	0.15	–	–	215	5.16
IC694ALG392	Analog Output 8-Channel Current/Voltage	–	–	110	0.55	–	–	315	7.56
IC694ALG542	Analog Module 4-Input 2-Output Current /Voltage with Advanced Diagnostics	-	-	95	0.475	-	-	150	3.6
IC695ALG412	Isolated Thermocouple Input Module 12-Channel	400	1.320	425	2.125	–	–	–	–
IC694ALG442	Analog Module 4-Input 2-Output Current/Voltage	–	–	95	0.475	–	–	129	3.096
IC695ALG508	RTD Input Module, 8-Channel Isolated	400	1.320	200	1.00	-	-	-	-
IC695ALG600	Universal Analog Input Module	350	1.155	400	2.00	–	–	–	–
IC695ALG608	Analog Input 8-/4-Channel Current/Voltage	330	1.089	600	3.00	–	–	–	–
IC695ALG616	Analog Input 16-/8-Channel Current/Voltage	450	1.485	600	3.00	–	–	–	–
IC695ALG626	Analog Input 16-/8-Channel Current/Voltage with HART Communications	625	2.063	600	3.00	–	–	–	–
IC695ALG628	Analog Input 8-/4-Channel Current/Voltage with HART Communications	625	2.063	450	2.25	–	–	–	–

Catalog Number	Module	+3.3Vdc		+5Vdc		+24Vdc Relay		+24Vdc Isolated	
		mA	W	mA	W	mA	W	mA	W
IC695ALG704	Analog Output, 4-Channel Current/Voltage	375	1.238	–	–	–	–	150	3.6
IC695ALG708	Analog Output, 8-Channel Current/Voltage	375	1.238	–	–	–	–	250	6
IC695ALG728	Analog Output, 8-Channel Current/Voltage with HART Communications enabled	380	1.255	–	–	–	–	–	–
IC695ALG808	Analog Output 8-Channel Current/Voltage Isolated	450	1.485	25	–	0.138	–	600	14.4
IC694APU300	High-Speed Counter	–	–	250	1.25	–	–	–	–
IC694APU305	Special I/O Processor (360mA module +10mA per output on)	–	–	440	2.2	–	–	80	1.92
IC694BEM320	I/O Link Interface Module with Optical Adapter	–	–	205 405	1.025 2.025	–	–	–	–
IC694BEM321	IO Link Master Module with Optical Adapter	–	–	415 615	2.075 3.075	–	–	–	–
IC694BEM331	Genius Bus Controller Module	–	–	1300	6.50	–	–	–	–
IC695CHS007	Universal Backplane 7-Slot	600	1.98	240	1.20	–	–	–	–
IC695CHS012	Universal Backplane 12-Slot	600	1.98	240	1.20	–	–	–	–
IC695CHS016	Universal Backplane 16-Slot	600	1.98	240	1.20	–	–	–	–
IC694CHS392	Expansion/Remote Backplane 10-Slot	–	–	150	0.75	–	–	–	–
IC694CHS398	Expansion/Remote Backplane 5-Slot	–	–	170	0.85	–	–	–	–
IC695CMM002	Serial Communications Module, 2 Ports	700	2.310	115	0.508	–	–	–	–
IC695CMM004	Serial Communications Module, 4 Ports	700	2.310	150	0.75	–	–	–	–
IC695CMX128	Control Memory Xchange Module	660	2.178	253	1.27	–	–	–	–
IC695CPU310	300MHz CPU, 10 Meg memory	1250	4.125	1000	5.00	–	–	–	–
IC695CPU315	1 GHz CPU, 20 MB of user memory	1000	3.300	1200	6.00	–	–	–	–
IC695CPU320	1 GHz CPU, 64 MB of user memory	1000	3.300	1200	6.00	–	–	–	–
IC695CRU320	1 GHz Redundancy CPU, 64 MB of user memory	1000	3.300	1200	6.00	–	–	–	–
IC694DNM200	DeviceNet Master Module	–	–	450	2.25	-	-	-	-
IC694DSM314	Motion Controller (+ external encoder, if used)	–	–	800 +500	4.00 +2.50	–	–	–	–
IC694DSM324	Motion Controller (+ external encoder, if used)	–	–	860 +500	4.30 +2.50	–	–	–	–
IC695ETM001	Ethernet Module	840	2.772	614	3.07	–	–	–	–
IC695ECM850	IEC 61850 Ethernet Communication Module	1900	6.270	1100	5.500	-	-	-	-
IC695GCG001	Genius Communications Gateway	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IC695HSC304	High-Speed Counter Module, 1.5MHz, 8 inputs, 7 outputs	457	1.51	64	0.32	–	–	–	–
IC695HSC308	High-Speed Counter Module, 1.5MHz, 16 inputs, 14 outputs	561	1.85	94	0.47	–	–	–	–
IC695LRE001	Expansion Module	–	–	132	1.60	–	–	–	–
IC694MDL230	Input 120 Vac Isolated 8-Pt	–	–	60	0.30	–	–	–	–

Catalog Number	Module	+3.3Vdc		+5Vdc		+24Vdc Relay		+24Vdc Isolated	
		mA	W	mA	W	mA	W	mA	W
IC694MDL231	Input 240 Vac Isolated 8-Pt	–	–	60	0.30	–	–	–	–
IC694MDL240	Input 120 Vac 16-Pt	–	–	90	0.45	–	–	–	–
IC694MDL241	Input 24Vac/Vdc Pos/Neg Logic 16-Pt	–	–	80	0.40	–	–	125	3.00
IC694MDL250	Input 120 Vac 16-Pt Isolated (all inputs on)	–	–	220	1.10	–	–	–	–
IC694MDL260	Input 120 Vac 32-Pt Isolated (all inputs on)	–	–	220	1.10	–	–	–	–
IC694MDL310	Output 120 Vac 0.5A 12-Pt (all outputs on)	–	–	210	1.05	–	–	–	–
IC694MDL330	Output 120/240 Vac 0.5A 16-Pt (all outputs on)	–	–	160	0.80	–	–	–	–
IC694MDL340	Output 120 Vac 0.5A 16-Pt (all outputs on)	–	–	315	1.575	–	–	–	–
IC694MDL350	Output 120/240 Vac Isolated 16-Pt (all outputs on)	–	–	315	1.575	–	–	–	–
IC694MDL390	Output 120/240 Vac Isolated 2A 5-Pt (all outputs on)	–	–	110	0.55	–	–	–	–
IC694MDL632	Input 125Vdc Pos/Neg Logic 8-Pt	–	–	40	0.20	–	–	–	–
IC694MDL634	Input 24Vdc Pos/Neg Logic 8-Pt	–	–	45	0.225	–	–	62	1.488
IC694MDL635	Input 125Vdc Pos/Neg, 16-Pt (all inputs on)	–	–	80	0.40	–	–	–	–
IC694MDL645	Input 24Vdc Pos/Neg Logic 16-Pt	–	–	80	0.40	–	–	125	3.00
IC694MDL646	Input 24Vdc Pos/Neg Logic FAST 16-Pt	–	–	80	0.40	–	–	125	3.00
IC694MDL648	Input 48Vdc 16-Pt Pos/Neg Logic, 1ms filter	-	-	80	0.40	-	-	-	-
IC694MDL654	Input 5/12Vdc (TTL) Pos/Neg 32-Pt 195 = (29mA + 0.5mA/point ON + 4.7mA/LED ON) 440mA (maximum) from +5V bus on backplane (if module isolated +5V supply used to power inputs & all 32 inputs ON)	–	–	195 / 440	0.975 / 2.20	–	–	–	–
IC694MDL655	Input 24Vdc Pos/Neg 32-Pt (29mA +0.5mA/point ON +4.7mA/LED ON)	–	–	195	0.975	–	–	224 (typ)	5.376
IC694MDL658	Input 48Vdc 32-Pt Pos/Neg Logic	–	–	195	0.975	–	–	–	–
IC694MDL660	Input 24Vdc 32-Pt Pos/Neg	–	–	300	1.50	–	–	–	–
IC695MDL664	Input 24Vdc 16-Pt, Pos Logic	95	0.314	225	1.125	-	-	-	-
IC694MDL730	Output 12/24Vdc 2A 8-Pt Pos Logic	-	-	55	0.275	-	-	-	-
IC694MDL732	Output 12/24Vdc 0.5A 8-Pt Pos Logic	–	–	50	0.25	–	–	–	–
IC694MDL734	Output 125Vdc Pos/Neg Logic 6 Pt (all outputs on)	–	–	90	0.45	–	–	–	–
IC694MDL740	Output 12/24Vdc 0.5A 16-Pt Pos Logic (all outputs on)	–	–	110	0.55	–	–	–	–
IC694MDL741	Output 12/24Vdc 0.5A 16-Pt Neg Logic (all outputs on)	–	–	110	0.55	–	–	–	–
IC694MDL742	Output 12/24Vdc 1A 16-Pt Pos Logic ESCP (all outputs on)	–	–	130	0.65	–	–	–	–

Catalog Number	Module	+3.3Vdc		+5Vdc		+24Vdc Relay		+24Vdc Isolated	
		mA	W	mA	W	mA	W	mA	W
IC694MDL752	Output 5/24Vdc (TTL) 0.5A 32-Pt Neg Logic (13mA + 3 mA/point ON + 4.7 mA/LED)	–	–	260	1.30	–	–	–	–
IC694MDL753	Output 12/24Vdc 0.5A 32-Pt Pos Logic (13mA + 3mA/point ON + 4.7mA/LED)	–	–	260	1.3	–	–	–	–
IC694MDL754	Output 24Vdc High-Density 32-Pt (with all outputs on)	–	–	300	1.50	–	–	264	6.336
IC694MDL758	Output 12/24Vdc 0.5A 32-Pt Positive Logic with ESCP per group	-	-	250	1.25	-	-	66	1.584
IC695MDL765	Output Module, 24/125Vdc 16-Pt Pos Logic	152	0.502	540	2.7				
IC694MDL916	Output 4 Amp 16-Pt Relay	–	–	300	1.50	–	–	–	–
IC694MDL930	Relay NO 4A Isolated 8-Pt Output (all outputs on)	–	–	6	0.03	70	1.68	–	–
IC694MDL931	Relay NC and Form C 8 A Isolated 8-Pt Output (all outputs on)	–	–	6	0.03	110	2.64	–	–
IC694MDL940	Relay NO 2A 16-Pt Output (all outputs on)	–	–	7	0.035	135	3.24	–	–
IC694MDR390	Mixed I/O 24Vdc Input (8-Pt) N.O. Relay Output (8-Pt)	-	-	80	0.40	70	1.68	-	-
IC695NIU001	Ethernet Network Interface Unit	1250	4.125	1000	5.00	–	–	–	–
IC695NIU001	Ethernet Network Interface Unit Plus (version AAAA and later)	520	1.716	950	4.750	–	–	–	–
IC695PBM300	PROFIBUS Master Module	440	1.452	–	–	–	–	–	–
IC695PBS301	PROFIBUS Slave Module	440	1.452	–	–	–	–	–	–
IC695PMM335	PACMotion Multi-Axis Motion Controller	1010	3.333	440	2.2	-	-	-	-
IC695PNC001	PROFINET Controller Module (maximum with 2 SFP devices installed, 0.35 A per SFP device)	1200	3.960	1500	7.5	–	–	–	–
IC695PNS001	PROFINET Scanner Module (maximum with 2 SFP devices installed, 0.35 A per SFP device)	1900	6.270	1100	5.5	-	-	-	-
IC695PRS015	Pressure Transducer Module	700	2.310	115	0.575	–	–	–	–
IC695RMX128	Redundancy Memory Xchange Module, Multi-Mode Fiber	580	.264	220	1.1	–	–	–	–
IC695RMX228	Redundancy Memory Xchange Module, Single-Mode Fiber	580	.264	220	1.1	–	–	–	–