

This table compares SNAP PAC controllers and brains using PAC firmware R10.0 and PAC Project R10.0 software (or higher). Shaded part numbers are obsolete as of 2024; please contact Pre-Sales Engineering (sales@opto22.com) for more information.

FEATURE		SNAP PAC Controllers							SNAP PAC Brains (Obsolete)				
		SW	Standalone		Rack-mounted			Ethernet		Serial			
		SoftPAC	SNAP-PAC-S1	SNAP-PAC-S2	SNAP-PAC-R1 (GEN2)	SNAP-PAC-R1 (pre-GEN2)	SNAP-PAC-R1-FM	SNAP-PAC-R1-B	SNAP-PAC-R2	SNAP-PAC-EB1 SNAP-PAC-EB1-FM	SNAP-PAC-EB2 SNAP-PAC-EB2-FM	SNAP-PAC-SB1	SNAP-PAC-SB2
Runs PAC Control strategies		●	●	●	●		●	●	●				
Maximum PAC Control charts running at once (plus host task)		64	32	32	32	16	16	16	16				
Communication	Two independent Ethernet network interfaces (two IP addresses)	a	●	●	●		●	●	●				
	Two switched Ethernet network interfaces (one IP address) for multi-drop configuration									●	●		
	Total number of RS-232 serial ports	b	2	4 ^c	1		1	1	1	0	0	0	0
	Total number of RS-485 serial ports	b	1	4 ^c	0		0	0	0	0	0	1	1
Protocols	TCP/IP, UDP/IP	●	●	●	●		●	●	●	●	●		
	EtherNet/IP™ (Allen-Bradley® RSLogix® systems and others)		●	●	●		●	●	●	●	●		
	Modbus®/TCP (slave) ^d		●	●	●		●	●	●	●	●		
	OPC driver support	●	●	●	●		●	●	●	●	●	● ^f	● ^f
	RESTful API		●	●	●		●	●	●				
	HTTP/HTTPS		●	●	●		●	●	●				
	OptoMMP memory-mapped protocol	● ^g	●	●	●		●	●	●	●	●	●	●
	SNMP (network management)		●	●	●		●	●	●	●	●		
	FTP server, file system		●	●	●		●	●	●	●	●		
	FTP client	●	●	●	●		●	●	●				
	SMTP (email client with authentication and attachments)	●	●	●	●		●	●	●				
SNAP-PAC nodes for Node-RED; RESTful API			●	●	●		●	●	●				
Direct access to hard drive & network drives (Dropbox®, etc.)		●											
Realtime clock		a	●	●	●		●	●	●	●	●	●	●
Backup battery (recharges when brain has power) ^h			●	●	●		●	●	●	●	●	●	●

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Physical RAM (MB)		a	32		16 (256 for GEN2)				16		16	
RAM available for Strategy (MB)		64	16		4 (64 for GEN2)				--		--	
Battery-backed RAM (MB)		8	8		2				--		--	
Flash memory (MB)		i	16		8 (16 for GEN2)				8		8	
Removable data storage (microSD card slot)		a	32 GB max. ^k		32 GB max. ^k							
32-bit processor		a	●	●	●	●	●	●	●	●	●	●
Floating-point unit (FPU)		a	●	●	●	●	●	●				
Power requirements		a	8–32 VDC ^l 10W–11.3 W max		5.0 to 5.2 VDC @ 1.2–1.5 A				5.0 to 5.2 VDC @ 750 mA–1.0 A		5.0 to 5.2 VDC @ 750 mA–1.0 A	
Operating Temperature in degrees C		a	-20 to 60		-20 to 60				-20 to 60		-20 to 60	
Storage Temperature in degrees C			-40 to 85		-40 to 85				-40 to 85		-40 to 85	
Humidity (non-condensing)		a	0–95%		0–95%				0–95%		0–95%	
Compatible I/O units ⁿ	SNAP PAC EB brains	●	●	●	●	●	●	●				
	SNAP PAC SB brains		●	●								
	SNAP PAC R-series controllers	●	●	●	●	●	●	●				
	groov EPIC processors	●	●	●	●	●	●	●				
	groov RIO modules	●	●	●	●	●	●	●				
Combination controller and I/O processor					●	●	●	●				
Mounts on SNAP PAC I/O mounting rack		n/a	n/a		●	●		●	●	●	●	●
Mounts on SNAP B-series I/O mounting rack		n/a	n/a				●					
Maximum number of modules allowed on largest rack: Any mix of 16 digital, 16 analog, and 8 serial		n/a	n/a		● ^o	● ^o	● ^o	●	●	●	● ^p	● ^p

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Digital I/O point features	Input latching	n/a	n/a	●	●	●	●	●	●	●	●	●
	On/off status			●	●	●	●	●	●	●	●	●
	Watchdog timer			●	●	●	●	●	●	●	●	●
	High-speed counting (up to 20 kHz) ^q			●	●	●	●	●	●	●	●	●
	Quadrature counting ^r			●	●	●	●	●	●	●	●	●
	On-pulse & off-pulse measurement ^q			●	●	●	●	●	●	●	●	●
	Frequency & Period measurement ^q			●	●	●	●	●	●	●	●	●
	TPO (time-proportional output)			●	●	●	●	●	●	●	●	●
	Digital totalizing ^q			●	●	●	●	●	●	●	●	●
	Pulse generation (continuous square wave, N pulses, on-pulse, off-pulse)			●	●	●	●	●	●	●	●	●
Analog I/O point features	Thermocouple linearization (32-bit floating point for linearized values)	n/a	n/a	●	●	●	●	●	●	●	●	●
	Minimum/maximum values			●	●	●	●	●	●	●	●	●
	Offset and gain			●	●	●	●	●	●	●	●	●
	Scaling			●	●	●	●	●	●	●	●	●
	TPO (Time-proportional output) ^s			●	●	●	●	●	●	●	●	●
	Output clamping			●	●	●	●	●	●	●	●	●
	Filter weight			●	●	●	●	●	●	●	●	●
	Watchdog timer			●	●	●	●	●	●	●	●	●
	Analog totalizing ^t			●	●	●	●	●	●	●	●	●
	Ramping ^t			●	●	●	●	●	●	●	●	●

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PID logic (maximum 96 PID loops per controller or brain)		n/a		●		●	●	●	●	●	●	●	
Data logging				●		●	●	●	●	●	●	●	●
Digital events, alarm events, serial events				●		●	●	●	●	●	●	u	u
Event messaging				●		●	●	●	●	●	●		
UDP streaming of I/O data to host				●		●	●	●	●	●	●		
I/O point data mirroring and memory map copying				●		●		●	●	●	●	●	
a As provided by the Microsoft Windows computer the software runs on. b SoftPAC cannot communicate through serial ports on the PC. c Serial ports are software configurable for RS-232 or RS-485. d PAC firmware >=R9.4b, 8 max connections. Lower firmware, 2 max connections. f Available with OptoOPCServer and PAC Control, through a SNAP PAC controller. g SoftPAC includes Status Read, Status Write, and Scratch Pad memory map areas. h Models manufactured before August 2007 and S1s with serial numbers 625653 and lower have user-replaceable backup batteries. See original user's guide. i Flash memory function implemented via a file; size is limited only by disk space. k For SNAP-PAC-R1 (GEN2): Requires firmware R10.5g or higher and loader R6.0d. It does not support lower versions. For SNAP-PAC-S1, SNAP-PAC-S2, SNAP-PAC-R1 (pre-GEN2), SNAP-PAC-R1-FM, SNAP-PAC-R1-B, and SNAP-PAC-R2: Requires PAC firmware 9.4a and loader 6.1a or higher. S-series with microSD & manufacture date older than 06/14 supports max. 2 GB microSD. l Units with serial numbers lower than 500,000 have an 8–24 VDC input voltage rating. <i>Verify voltage on the unit's faceplate before applying power.</i> n For compatibility with legacy Opto 22 hardware, see Legacy and Current SNAP Product Comparison and Compatibility Charts (form 1693). o For SNAP-PAC-R1s with serial numbers lower than 600,000, and all SNAP-PAC-R1-Bs: 4-point digital modules are limited to eight per rack and they must be in slots 0-7. p Not supported: serial, motion control, Profibus, & Wiegand modules. q Four-channel modules only; not high-density modules. r Requires a SNAP-IDC5Q quadrature input module. s Requires a SNAP analog TPO module (SNAP-AOD-29 or SNAP-AOD-29-HFi). t Requires a SNAP PAC controller and PAC Control commands. u Does not support serial events.													