

This table compares SNAP PAC controllers and brains using version 9.5 firmware and 9.5 PAC Project software (or higher).

FEATURE	SNAP PAC Controllers										SNAP PAC Brains																																																																											
	SW	Standalone				Rack-mounted						Ethernet				Serial																																																																						
	SoftPAC	SNAP-PAC-S1	SNAP-PAC-S1-FIM	SNAP-PAC-S2	SNAP-PAC-S1-W	SNAP-PAC-S2-W	SNAP-PAC-R1	SNAP-PAC-R1-FIM	SNAP-PAC-R1-B	SNAP-PAC-R2	SNAP-PAC-R2-FIM	SNAP-PAC-R1-W	SNAP-PAC-R2-W	SNAP-PAC-EB1	SNAP-PAC-EB1-FIM	SNAP-PAC-EB2	SNAP-PAC-EB2-FIM	SNAP-PAC-EB1-W	SNAP-PAC-EB2-W	SNAP-PAC-SB1	SNAP-PAC-SB2																																																																	
Two independent Ethernet network interfaces (two IP addresses) for Ethernet link redundancy or segmenting networks	aa	●	●	●	●	●	●	●	●	●	●	●	●																																																																									
Wireless LAN interface (802.11a, b, or g)	aa				●	●						●	●					●	●																																																																			
Two switched Ethernet network interfaces (one IP address) for multi-drop (daisy-chain) network configuration														●	●	●	●																																																																					
Works with PAC Project software	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																	
Runs PAC Control strategies	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																									
Maximum PAC Control charts running at once (plus host task)	64	32	32	32	32	16	16	16	16	16	16	16	16	n/a																																																																								
Compatible brains <sup>a</sup>	SNAP PAC EB brains	●	●	●	●	●	●	●	●	●	●	●	●									n/a																																																																
	SNAP PAC SB brains		●	●	●	●																								n/a																																																								
	Onboard I/O processor (brain)						●	●	●	●	●	●	●																									n/a																																																
Controller-to-brain communication	Ethernet (UDP/IP, 10/100 Mbps)	●	●	●	●	●	●	●	●	●	●	●	●																																	n/a																																								
	Wireless LAN (802.11a, b, or g)	aa			●	●						●	●																																									n/a																																
	Serial (RS-485)		●	●	●	●																																																								n/a																								
Controller-to-PC communication	Ethernet (TCP/IP, 10/100 Mbps)	●	●	●	●	●	●	●	●	●	●	●	●																																																									n/a																
	Wireless LAN (802.11a, b, or g)	aa			●	●						●	●																																																																	n/a								
	PPP over dial-up modem, with hardware handshaking		●	●	●	●	●	●	●	●	●	●	●																																																																									n/a
Brain-to-host (PC or controller) communication	Ethernet (10/100 Mbps)		n/a				n/a						●	●	●	●																																																																						
	Wireless LAN (802.11a, b, or g)	n/a	n/a				n/a								●	●					●	●																																																																
	Serial (RS-485)		n/a				n/a														●	●																																																																
Total number of RS-232 serial ports	bb	2	4 <sup>b</sup>	2	4 <sup>b</sup>	1	1	1	1	1	1	1	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-																																																																	
Number of RS-232 serial ports usable for PPP (on dial-up modem)	bb	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	1 <sup>c</sup>	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-																																																																	
Total number of RS-485 serial ports	bb	1	4 <sup>b</sup>	1	4 <sup>b</sup>	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	1	1																																																																	
EtherNet/IP™ (Allen-Bradley® RSLogix® systems and others)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			
Modbus®/TCP (slave; maximum 8 master connections) <sup>cc</sup>		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			
OPC driver support	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	● <sup>d</sup>	● <sup>d</sup>																																																																
RESTful API		●	●	●	●	●	●	●	●	●	●	●	●																																																																									
HTTP/HTTPS		●	●	●	●	●	●	●	●	●	●	●	●																																																																									
OptoMMP memory-mapped protocol	● <sup>e</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																	
SNMP (network management)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			
FTP server, file system		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			
FTP client	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																									
PPP (for use with dial-up modems)		●	●	●	●	●	●	●	●	●	●	●	●																																																																									
Email (SMTP client with authentication and attachments)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			
Scratch Pad area for peer-to-peer data (bits, floats, 32-bit integers, 64-bit integers, and strings)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																	
Security for wireless network (WPA2-AES, WPA-TKIP, WEP)	aa				●	●						●	●					●	●																																																																			
Security for wired Ethernet network (IP filtering, port access)	aa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																			

FEATURE	SNAP PAC Controllers										SNAP PAC Brains													
	SW	Standalone				Rack-mounted						Ethernet				Serial								
	SoftPAC	SNAP-PAC-S1	SNAP-PAC-S1-FM	SNAP-PAC-S2	SNAP-PAC-S1-W	SNAP-PAC-S2-W	SNAP-PAC-R1	SNAP-PAC-R1-FM	SNAP-PAC-R1-B	SNAP-PAC-R2	SNAP-PAC-R2-FM	SNAP-PAC-R1-W	SNAP-PAC-R2-W	SNAP-PAC-EB1	SNAP-PAC-EB1-FM	SNAP-PAC-EB2	SNAP-PAC-EB2-FM	SNAP-PAC-EB1-W	SNAP-PAC-EB2-W	SNAP-PAC-SB1	SNAP-PAC-SB2			
Realtime clock	aa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Backup battery (recharges when brain has power) <sup>f</sup>		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Physical RAM (MB)	aa	32		128		16		32		16														
RAM available for Strategy (MB)	64	16		64		4		10		--														
Battery-backed RAM (MB)	8	8		8		2		2		--														
Flash memory (MB)	g	16		16		8		8		8														
32-bit processor	aa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Floating-point unit (FPU)	aa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Removable data storage (microSD card slot)	aa	32 GB max. <sup>h</sup>				32 GB max. <sup>h</sup>																		
Power requirements	aa	8–32 VDC <sup>i</sup> 10 W–11.3 W max <sup>k</sup>				5.0 to 5.2 VDC @ 1.2–1.5 A <sup>k</sup>						5.0 to 5.2 VDC @ 750 mA–1.0 A <sup>k</sup>												
Operating Temperature in degrees C	aa	-20 to 60				-20 to 60						-20 to 60												
Storage Temperature in degrees C	aa	-40 to 85				-40 to 85						-40 to 85												
Humidity (non-condensing)	aa	0–95%				0–95%						0–95%												
Uses SNAP PAC mounting rack (4, 8, 12, or 16 modules)	n/a	n/a				●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Uses SNAP B-series mounting rack (4, 8, 12, or 16 modules)	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				● <sup>l</sup>	● <sup>l</sup>	●	●	●	●	●	●	●	●	●	●	●	●	● <sup>m</sup>	● <sup>m</sup>	●		
Digital I/O point features	n/a	n/a	Input latching	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
			On/off status	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Watchdog timer	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			High-speed counting (up to 20 kHz) <sup>n</sup>	●	●		●		●		●		●		●		●		●		●		●	
			Quadrature counting <sup>o</sup>	●	●		●		●		●		●		●		●		●		●		●	
			On-pulse & off-pulse measurement <sup>n</sup>	●	●		●		●		●		●		●		●		●		●		●	
			Frequency & Period measurement <sup>n</sup>	●	●		●		●		●		●		●		●		●		●		●	
			TPO (time-proportional output)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Digital totalizing <sup>n</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Pulse generation (continuous square wave, N pulses, on-pulse, off-pulse)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Analog I/O point features	n/a	n/a	Thermocouple linearization (32-bit floating point for linearized values)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
			Minimum/maximum values	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Offset and gain	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Scaling	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			TPO (Time-proportional output) <sup>q</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Output clamping	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Filter weight	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Watchdog timer	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Analog totalizing <sup>p</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			Ramping <sup>p</sup>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

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	SW	Standalone				Rack-mounted						Ethernet		Serial							
	SoftPAC	SNAP-PAC-S1	SNAP-PAC-S1-FM	SNAP-PAC-S2	SNAP-PAC-S1-W	SNAP-PAC-S2-W	SNAP-PAC-R1	SNAP-PAC-R1-FM	SNAP-PAC-R1-B	SNAP-PAC-R2	SNAP-PAC-R2-FM	SNAP-PAC-R1-W	SNAP-PAC-R2-W	SNAP-PAC-EB1	SNAP-PAC-EB1-FM	SNAP-PAC-EB2	SNAP-PAC-EB2-FM	SNAP-PAC-EB1-W	SNAP-PAC-EB2-W	SNAP-PAC-SB1	SNAP-PAC-SB2
PID logic (maximum 96 PID loops per controller or brain)						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Data logging						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Digital events, alarm events, serial events						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Event messaging						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
UDP streaming of I/O data to host						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
I/O point data mirroring and memory map copying						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- aa As provided by the Microsoft Windows computer the software runs on.
- bb SoftPAC cannot communicate through serial ports on the PC.
- cc With firmware R9.4b & higher, 8 max connections. Lower firmware, 2 max. connections
- a For compatibility with legacy Opto 22 hardware, see form #1693.
- b Serial ports are software configurable for RS-232 or RS-485.
- c One port on SNAP-PAC-S1 supports DTR, DSR, and CD signals and bidirectional flow control on RTS and CTS. All ports on SNAP-PAC-S2 support DTR and DCD signals and bidirectional flow control on RTS and CTS. The port on SNAP-PAC-R1 and -R2 supports DTR and CD signals, and bidirectional flow control on RTS and CTS.
- d Available with OptoOPCServer and PAC Control, through a SNAP PAC controller.
- e SoftPAC includes Status Read, Status Write, and Scratch Pad memory map areas.
- f Models manufactured before August 2007 and S1s with serial numbers 625653 and lower have user- replaceable backup batteries. See original user guide.
- g Function of Flash memory is implemented via a file; size is limited only by disk space.

- h Firmware 9.4a and loader 6.1a or newer. S-series with microSD & manufacture date older than 06/14 supports max. 2 GB microSD.
- i Units with serial numbers lower than 500,000 have an 8–24 VDC input voltage rating. *Verify voltage on the unit's faceplate before applying power.*
- k Higher requirement applies to -W models.
- l SNAP-PAC-R1s with serial numbers lower than 600,000, and all SNAP-PAC-R1-Bs: limited to eight 4-point digital modules per rack.
- m Not supported: serial, motion control, Profibus, & Wiegand modules.
- n Four-channel modules only; not on high-density modules.
- o Requires a SNAP-IDC5Q quadrature input module.
- p Requires a SNAP PAC controller and PAC Control commands.
- q Requires a SNAP analog TPO module (SNAP-AOD-29).
- r Does not support serial events.