

OPTO 22 SNAP PAC Controller/Brain Comparison

The following table compares SNAP PAC controllers and brains using version 9.4 firmware and 9.4 PAC Project software.

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-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
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											
Compatible brains ^a	SNAP PAC EB brains	●	●	●	●	●	●	●	●											
	SNAP PAC SB brains		●	●	●	●														
	Onboard I/O processor (brain)						●	●	●	●	●									
Controller-to-brain communication	Ethernet (UDP/IP, 10/100 Mbps)	●	●	●	●	●	●	●	●	●	●									
	Wireless LAN (802.11a, b, or g)	aa			●	●				●	●									
	Serial (RS-485)		●	●	●	●														
Controller-to-PC communication	Ethernet (TCP/IP, 10/100 Mbps)	●	●	●	●	●	●	●	●	●	●									
	Wireless LAN (802.11a, b, or g)	aa			●	●				●	●									
	PPP over dial-up modem, with hardware handshaking		●	●	●	●	●	●	●	●	●									
Brain-to-host (PC or controller) communication	Ethernet (10/100 Mbps)											●	●	●	●					
	Wireless LAN (802.11a, b, or g)	n/a	n/a				n/a							●	●					
	Serial (RS-485)																		●	●
Total number of RS-232 serial ports	bb	2	4 ^b	2	4 ^b	1	1	1	1	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Number of RS-232 serial ports usable for PPP (on dial-up modem)	bb	1 ^c	1 ^c	1 ^c	1 ^c	1 ^c	1 ^c	1 ^c	1 ^c	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Total number of RS-485 serial ports	bb	1	4 ^b	1	4 ^b	-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 two master connections)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
OPC driver support	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	● ^d	● ^d
OptoMMP memory-mapped protocol	● ^e	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Realtime clock	aa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Backup battery (recharges when brain has power) ^f		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●	●									

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-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			
Removable data storage (microSD card slot)		aa	32 GB max. ^h			32 GB max. ^h																			
Power requirements		aa	8–32 VDC ^l 10 W–11.3 W max ^k			5.0 to 5.2 VDC @ 1.2–1.5 A ^k			5.0 to 5.2 VDC @ 750 mA–1.0 A ^k																
Operating Temperature in degrees C		aa	0 to 60			0 to 60			0 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			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
Maximum number of modules allowed on largest rack: Any mix of 16 digital, 16 analog, and 8 serial		n/a	n/a			● ^l	●	●	●	●	●	●	●	●	●	●	●	● ^m	●	●	● ^m				
Digital I/O point features	Input latching	n/a	n/a			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				
	On/off status					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Watchdog timer					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	High-speed counting (up to 20 kHz) ⁿ					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Quadrature counting ^o					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	On-pulse & off-pulse measurement ⁿ					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Frequency & Period measurement ⁿ					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TPO (time-proportional output)					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Digital totalizing ⁿ					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
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) ^q					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Output clamping					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Filter weight					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Watchdog timer					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Analog totalizing ^p					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Ramping ^p					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PID logic (maximum 96 PID loops per controller or brain)					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Data logging					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Digital events, alarm events, serial events					●	●	●	●	●	●	●	●	●	●	●	●	● ^r	●	● ^r	● ^r					
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.
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 Requires firmware 9.4a and loader 6.1a or newer. S-series with microSD slot and manufacture date older than 06/14 support a maximum 2 GB microSD card.

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 are limited to eight 4-channel digital modules per rack.
m Does not support serial, motion control, Profibus, or Wiegand modules.
n Four-channel modules only; not on high-density modules.
o Requires a SNAP-IDC5Q quadrature input module.
p Available when used with PAC Control and a SNAP PAC controller.
q Requires a SNAP analog TPO module (SNAP-AOD-29).
r Does not support serial events.