Schneider Electric

Modbus Register Map - Symmetra Single Phase UPS

Notes:

1. 16-bit registers are transmitted MSB first (i.e. big-endian).

2. Modbus Serial RTU is supported on NMC model AP9635, and Modbus TCP is supported on NMC models AP9635, AP9630 and AP9631.

3. Status bits are atomic within a single Modbus register. User should not look for consistency across multiple registers, only within a single register.

4. Single-register reads of reserved or undefined registers will return an error. Block reads that begin with a valid register will not return an error but will return zeros for undefined registers.

5. Registers are one word in size.

6. Strings are one character per register.

7. Bit number 0 is least significant bit.

8. Data Type column: "INT16" = signed 16-bit integer, "UINT16" = unsigned 16-bit integer, "INT32" = signed 32-bit integer, "UINT32" = unsigned 32-bit integer, "ENUM" is a UINT16 value that maps to a defined list of states, "ASCII" = the printable ASCII subset from 0x20 - 0x7E, "BOOLEAN" = a single bit, 0 or 1.

9. "Absolute Starting Register Address" = 0 (the column heading used in this table) is equivalent to "Register 40001" in Modicon terminology, which is address zero when transmitted over the wire.

(!) **Note**: Temperature and Humidity sensors attached to the UIO port(s) of the AP9631 and AP9635 NMC are not supported via Modbus.

For more information on the Modbus protocol, Modbus data formats, and Modbus troubleshooting, see **Application Note #168** "*Modbus Installation and Troubleshooting for AP9635 Network Management Card*", available on **www.apc.com**.

For detailed Modbus configuration settings, see the *AP9635 User Guide*, and the *Modbus Documentation Addendum* on the APC website, **www.apc.com**.

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	Unit
40001	0000	0		Status Word 0	1				ReadOnly	None
			0			BOOLEAN		UPS turning on		
			1			BOOLEAN		UPS in bypass due to an internal fault (indicated through register 0002 or 0003)		
			2			BOOLEAN		Reserved		
			3			BOOLEAN		UPS in bypass due to command		
			4			BOOLEAN		UPS returning from bypass		
			5			BOOLEAN		UPS in bypass mode as a result of manual bypass control		
			6			BOOLEAN		UPS ready to power load upon user command		
			7			BOOLEAN		UPS ready to power load upon return of normal line or upon user command		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Reserved		
			10			BOOLEAN		Reserved		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		
40002	0001	1		Status Word 1	1				ReadOnly	None
			0			BOOLEAN		UPS output not powered due to low battery shut down		
			1			BOOLEAN		UPS unable to transfer to on-battery operation due to overload		
			2			BOOLEAN		Reserved		
			3			BOOLEAN		UPS in sleep mode		
			4			BOOLEAN		UPS in shutdown mode		
			5			BOOLEAN		UPS fault - battery charger failure		
			6			BOOLEAN		Reserved		
			7			BOOLEAN		UPS fault - internal temperature has exceeded nominal limits		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Reserved		
			10			BOOLEAN		Reserved		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	Unit
40003	0002	2		Status Word 2	1				ReadOnly	None
			0			BOOLEAN		Reserved		
			1			BOOLEAN		Isolation unit fan failure		
			2			BOOLEAN		Reserved		
			3			BOOLEAN		Reserved		
			4			BOOLEAN		Reserved		
			5			BOOLEAN		Reserved		
			6			BOOLEAN		Reserved		
			7			BOOLEAN		Reserved		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Reserved		
			10			BOOLEAN		Reserved		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		
40004	0003	3		Status Word 3	1				ReadOnly	None
			0			BOOLEAN		Performing battery calibration discharge		
			1			BOOLEAN		Condition / fault found in register 0001		
			2			BOOLEAN		Reserved		
			3			BOOLEAN		On line		
			4			BOOLEAN		On battery		
			5			BOOLEAN		Overload		
			6			BOOLEAN		Low battery (runtime remaining <= low battery duration)		
			7			BOOLEAN		Replace battery		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Reserved		
			10			BOOLEAN		Reserved		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		
40005	0004	4		Status Word 4	1				ReadOnly	None
			0			BOOLEAN		Internal communication failure		
			1			BOOLEAN		No good power modules present		
			2			BOOLEAN		Load shutdown from bypass – Input frequency / voltage outside limits		
			3			BOOLEAN		Runtime below alarm threshold		
			4			BOOLEAN		XR frame fault		
			5			BOOLEAN		Output voltage out of range		
			6			BOOLEAN		Reserved		
			7			BOOLEAN		Reserved		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Fault found in register 0033, 0034, 0035, or 0036		
			10			BOOLEAN		Site wiring fault		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	Unit
40006	0005	5		Status Word 5	1				ReadOnly	None
			0			BOOLEAN		An installed power module has failed		
			1			BOOLEAN		MIM is installed and failed		
			2			BOOLEAN		RIM is installed and failed		
			3			BOOLEAN		An installed battery has failed		
			4			BOOLEAN		Load is above alarm threshold		
			5			BOOLEAN		Loss of redundancy		
			6			BOOLEAN		Redundancy below threshold		
			7			BOOLEAN		Bypass not in range (either frequency or voltage unacceptable)		
			8			BOOLEAN		Bypass contactor stuck in bypass position		
			9			BOOLEAN		Bypass contactor stuck in on-line position		
			10			BOOLEAN		UPS in bypass due to internal fault		
			11			BOOLEAN		UPS in bypass due to overload		
			12			BOOLEAN		System is in maintenance bypass (not a fault)		
			13			BOOLEAN		Input circuit breaker tripped open		
			14			BOOLEAN		System level fan failed		
			15			BOOLEAN		RIM is in control		
40007	0006	6		Line Quality	1	ENUM		00FF = acceptable utility line quality 0000 = unacceptable utility line quality	ReadOnly	None
40008	0007	7		% Battery State of Charge (0-100)	1	UINT16	1		ReadOnly	%
40009	0008	8		Runtime Remaining	1	UINT16	1		ReadOnly	Minutes
40010	0009	9		Battery Voltage	1	UINT16	1		ReadOnly	V
40011	000A	10		UPS Internal Temperature	1	UINT16	1		ReadOnly	°C
40012	000B	11		Amps Drawn by Load	1	UINT16	1		ReadOnly	A
40013	000C	12		Quantity of battery packs with bad batteries	1	UINT16	1		ReadOnly	Each
40014	000D	13		Quantity of battery packs	1	UINT16	1		ReadOnly	Each
40015	000E	14		% Power drawn by load	1	UINT16	1		ReadOnly	%
40016	000F	15		Maximum Input Voltage Since Last Reading	1	UINT16	1		ReadOnly	V
40017	0010	16		Minimum Input Voltage Since Last Reading	1	UINT16	1		ReadOnly	V
40018	0011	17		Nominal Battery Voltage	1	UINT16	1		ReadOnly	V
40019	0012	18		Actual Battery Voltage	1	UINT16	1		ReadOnly	V
40020	0013	19		Utility Input Frequency	1	UINT16	1		ReadOnly	Hz
40021	0014	20		Utility Input Voltage Phase A	1	UINT16	1		ReadOnly	V
40022	0015	21		Reserved	1				ReadOnly	None
40023	0016	22		Reserved	1				ReadOnly	None
40024	0017	23		Percent of Maximum Output VA's Phase A @ n+0	1	UINT16	1		ReadOnly	%
40025	0018	24		Percent of Maximum Output VA's Phase A @ n+x	1	UINT16	1		ReadOnly	%
40026	0019	25		Phase A Output	1	UINT16	1		ReadOnly	kVA
40027	001A	26		Output Voltage Phase A	1	UINT16	1		ReadOnly	V
40028	001B	27		Output Current Phase A	1	UINT16	1		ReadOnly	A
40029	001C	28		Reserved	1				ReadOnly	None
40030	001D	29		Utility Input Voltage Phase B*	1	UINT16	1		ReadOnly	V
40031	001E	30		Reserved	1				ReadOnly	None
40032	001F	31		Reserved	1				ReadOnly	None
40033	0020	32		Percent of Maximum Output VA's Phase B @ n+0*	1	UINT16	1		ReadOnly	%
40034	0021	33		Percent of Maximum Output VA's Phase B @ n+x*	1	UINT16	1		ReadOnly	%
40035	0022	34		Phase B Output*	1	UINT16	1		ReadOnly	kVA
40036	0023	35		Output Voltage Phase B*	1	UINT16	1		ReadOnly	V
40037	0024	36		Output Current Phase B*	1	UINT16	1		ReadOnly	A
40038	0025	37		Reserved	1				ReadOnly	None
40039	0026	38		Utility Input Voltage Phase C or Phase A - B*	1	UINT16	1		ReadOnly	V

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	Unit
40040	0027	39		Reserved	1				ReadOnly	None
40041	0028	40		Reserved	1				ReadOnly	None
40042	0029	41		Reserved	1				ReadOnly	None
40043	002A	42		Reserved	1				ReadOnly	None
40044	002B	43		Reserved	1				ReadOnly	None
40045	002C	44		Reserved	1				ReadOnly	None
40046	002D	45		Reserved	1				ReadOnly	None
40047	002E	46		Reserved	1				ReadOnly	None
40048	002F	47		Measure-UPS Temperature Reading (Probe 1)	1	UINT16	1	Measure-UPS refers to the discontinued Environmental Monitoring Card AP9612TH	ReadOnly	°C
40049	0030	48		Measure-UPS Humidity Reading (Probe 1)	1	UINT16	1	Measure-UPS refers to the discontinued Environmental Monitoring Card AP9612TH	ReadOnly	%
40050	0031	49		Measure-UPS Temperature Reading (Probe 2)	1	UINT16	1	Measure-UPS refers to the discontinued Environmental Monitoring Card AP9612TH	ReadOnly	°C
40051	0032	50		Measure-UPS Humidity Reading (Probe 2)	1	UINT16	1	Measure-UPS refers to the discontinued Environmental Monitoring Card AP9612TH	ReadOnly	%
40052	0033	51		Status Word 6	1	BOOLEAN		Bits reserved for future use.	ReadOnly	None
40053	0034	52		Status Word 7	1	BOOLEAN		Bits reserved for future use.	ReadOnly	None
40054	0035	53		Status Word 8	1	BOOLEAN		Bits reserved for future use.	ReadOnly	None
40055	0036	54		Status Word 9	1				ReadOnly	None
			0			BOOLEAN		System failure		
			1			BOOLEAN		Bypass relay fault		
			2			BOOLEAN		Power module failed to turn off		
			3			BOOLEAN		Frame identification fault		
			4			BOOLEAN		Reserved		
			5			BOOLEAN		Reserved		
			6			BOOLEAN		Reserved		
			7			BOOLEAN		Reserved		
			8			BOOLEAN		Reserved		
			9			BOOLEAN		Reserved		
			10			BOOLEAN		Reserved		
			11			BOOLEAN		Reserved		
			12			BOOLEAN		Reserved		
			13			BOOLEAN		Reserved		
			14			BOOLEAN		Reserved		
			15			BOOLEAN		Reserved		
40056	0037	55		Measure-UPS Contact Position	1	UINT16	1	Measure-UPS refers to the discontinued Environmental Monitoring Card AP9612TH	ReadOnly	None
40057	0038	56		Minimum Return Battery Capacity	1	UINT16	1		ReadOnly	%
40058	0039	57		Lower Transfer Point	1	UINT16	1		ReadOnly	V
40059	003A	58		Upper Transfer Point	1	UINT16	1		ReadOnly	V
40060	003B	59		Nominal Output Voltage	1	UINT16	1		ReadOnly	V
40061	003C	60		Shutdown Delay	1	UINT16	1		ReadOnly	Seconds
40062	003D	61		Low Battery Duration	1	UINT16	1		ReadOnly	Minutes
40063	003E	62		Turn On Delay	1	UINT16	1		ReadOnly	Seconds
40064	003F	63		Sensitivity	1	ENUM		Fixed response 'A' for Auto.	ReadOnly	None

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	Unit
40065	0040	64		UPS ID Character #1	1	ASCII			ReadOnly	None
40066	0041	65		UPS ID Character #2	1	ASCII			ReadOnly	None
40067	0042	66		UPS ID Character #3	1	ASCII			ReadOnly	None
40068	0043	67		UPS ID Character #4	1	ASCII			ReadOnly	None
40069	0044	68		UPS ID Character #5	1	ASCII			ReadOnly	None
40070	0045	69		UPS ID Character #6	1	ASCII			ReadOnly	None
40071	0046	70		UPS ID Character #7	1	ASCII			ReadOnly	None
40072	0047	71		UPS ID Character #8	1	ASCII			ReadOnly	None
	0049-004F	72-79		Reserved					ReadOnly	None
	0050-FFFF	80-65535		INVALID ADDRESS					ReadOnly	
* Not supported on all UPS models										

END OF MAP

APC Worldwide Customer Support

Customer support for this or any other APC product is available at no charge in any of the following ways:

* Visit the APC Web site to access documents in the APC Knowledge Base and to submit customer support requests.

  - www.apc.com (Corporate Headquarters) Connect to localized APC Web sites for specific countries, each of which provides customer support information.

  - www.apc.com/support/ - Global support searching APC Knowledge Base and using e-support.

* Contact the APC Customer Support Center by telephone or e-mail.

  - Local, country-specific centers: go to www.apc.com/support/contact for contact information.

For information on how to obtain local customer support, contact the APC representative or other distributors from whom you purchased your APC product.