Modbus Register Map - Smart-UPS Ultra 5-20 kW UPS

1. All data is transmitted MSB first (i.e. big-endian).

2. Modbus Serial RTU is supported on NMC models AP9641, AP9643, and on UPS SRYL models. Modbus TCP is supported on all NMC models.

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

4. Single register reads of 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. Signed numbers are two's complement.

7. Bit number 0 is least significant bit.

8. Writes to undefined registers will return an error.

9. 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 an INT16 or INT32 value (1 or 2 registers) that maps to a defined list of states, "ASCII" = the printable ASCII subset from 0x20 - 0x7E (2 characters per register, see end of map for additional info), "BOOLEAN" = a single bit, 0 or 1.

10. ASCII (Strings)
    - Unsupported strings will be filled with zeros (0x00).
    - Strings are not NULL terminated.
    - Unused characters at the end of a string will be filled with 0x20 (space).
    - When reading strings, the trailing spaces can be stripped.
    - When writing strings:
        - The string should be left-justified and padded with spaces to meet the size requirement.
        - It must only contain ASCII characters and it should not contain a NULL terminator.
        - No partial string writes are allowed.

11. "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.

12. Individual bit support for the UPS models (SRYL, SRTL5K and SRTL10K) is only indicated for the UPSStatus_BF register. For other registers, support can vary among different models and different firmware revisions, so support is only indicated at the register level, not the individual bit level.

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

For detailed modbus configuration settings, please see:
- *The Network Management Card 2 and 3 Modbus Documentation Addendum* on the APC website, **www.apc.com**
- **Application Note #176**, "Modbus Implementation in APC Smart-UPS" on the APC website, **www.apc.com**

For more information on the Modbus protocol, Modbus data formats, and Modbus troubleshooting, see **Application Note #168** "*Modbus Installation and Troubleshooting for AP9635/41/43 Network Management Cards*", available on **www.apc.com**.

For more information on Switched Outlet Group Management with Modbus for Smart-UPS Ultra models, see **Application Note # 177** on the APC website, **www.apc.com**.

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Size (bytes)	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	SRYL	SRTL5K	SRTL10K
40001	0000	0		UPSStatus_BF	4	2			The purpose of this register is to convey the mode of operation of the UPS at macro level. Anytime the value of this usage changes the UPSStatusChangeCause_EN usage will change as well. This usage is NOT intended to be a direct mapping to the internal UPS state machine.	ReadOnly	x	x	x
			0				BOOLEAN		Reserved				
			1				BOOLEAN		StateOnline-State: Indicates that the power for the output is being sourced from the input. Mutually exclusive with other state bits.		x	x	x
			2				BOOLEAN		StateOnBattery-State: Indicates that the power for the output is being sourced from the battery. Mutually exclusive with other state bits.		x	x	x
			3				BOOLEAN		StateBypass-State: Indicates that the output is being powered by the input, without any power being processed through the UPS electronics. Mutually exclusive with other state bits.		x	x	x
			4				BOOLEAN		StateOutputOff-State: Indicates that the output is not powered through the UPS (including any internal bypass paths). Some examples are: Off because of Fault or Low-Battery. Mutually exclusive with other state bits.		x	x	x
			5				BOOLEAN		Fault-Modifier: Indicates that a fault of any severity (Warning, or Critical) is present in the system, which may have caused a transition.		x	x	x
			6				BOOLEAN		InputBad-Modifier: Indicates that the input is not acceptable.		x	x	x
			7				BOOLEAN		Test-Modifier: Indicates that a test is in progress.		x	x	x
			8				BOOLEAN		PendingOutputOn-Modifier: Indicates that the state is pending output on (either on line, on battery, or bypass). Should only be set in combination with StateOutputOff.		x	x	x
			9				BOOLEAN		PendingOutputOff-Modifier: Indicates that the state is pending output off. Set whenever the UPS is in process of turning off, or immediately when on battery for bad input. Will never be set in combination with StateOutputOff. When set, the monitoring software should watch RunTimeRemaining. When / if run time is less than or equal to the software's minimum run time threshold, the software should start the shutdown process. This bit may also be set in conditions other than above, e.g. in bypass due to fault.		x	x	x
			10				BOOLEAN		Commanded-Modifier: Indictates that UPS that user transferred to bypass, but UPS is still functioning. If Bypass fails, the Inverter will start up.		x	x	x
			11				BOOLEAN		Reserved				
			12				BOOLEAN		Reserved				
			13				BOOLEAN		HighEfficiency-Modifier: Indicates that the UPS is operating in a high efficiency mode (eg. green mode, Economy Mode, ECO Mode).		x	x	x
			14				BOOLEAN		Reserved				
			15				BOOLEAN		FaultState-Modifier: Indicates that the UPS is operating in a fault state.		x	x	x
			16				BOOLEAN		Reserved				
			17				BOOLEAN		Reserved				
			18				BOOLEAN		Reserved				
			19				BOOLEAN		Reserved				
			20				BOOLEAN		FaultRecoveryState-Modifier: Indicates that the UPS is operating in a state due to recovery from a fault state.		x	x	x
			21				BOOLEAN		OverloadState-Modifier: Indicates that the UPS is operating in a state due to an overload.		x	x	x
			22				BOOLEAN		Reserved				
			23				BOOLEAN		EfficiencyTestMode-Modifier: Indicates that the system is in EfficiencyTestMode Mode.		x	x	x
			24				BOOLEAN		ForcedInternal-Modifier: Indicates the UPS's internal bypass breaker is activated and therefore the UPS is locked in bypass (e.g., manual bypass). Valid only in StateBypass.		x		
			25-31				BOOLEAN		Reserved				

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40003	0002	2		UPSStatusChangeCause_EN	2	1	ENUM		Changes in this value without a corresponding change in UPSStatus_BF should be ignored. This usage is meant to capture the reason why the new status was achieved, not the reason why the old status is no longer valid.	ReadOnly	x	x	x
									0: SystemInitialization: Indicates that the present state is achieved due to microprocessor reset. Value at start-up.				
									1: HighInputVoltage:A high input voltage condition caused the transition.				
									2: LowInputVoltage: A low input voltage condition caused the transition.				
									3: DistortedInput: A bad input condition (distorted voltage or unstable frequency, "turbo") caused the transition.				
									4: RapidChangeOfInputVoltage: A rapid change in the input voltage ("dV/dt") caused the transition.				
									5: HighInputFrequency: A high input frequency caused the transition.				
									6: LowInputFrequency: A low input frequency caused the transition.				
									7: FreqAndOrPhaseDifference: A difference in frequency and/or phase between the input and the system caused the transition.				
									8: AcceptableInput: An acceptable input (both voltage and frequency) caused the transition.				
									9: AutomaticTest: Indicates that a test has been initiated via the automatic timer in the UPS (or other programatic determination, e.g., power on). This can be any test, e.g., replace battery test or run time calibration.				
									10: TestEnded: Indicates that a test has been either completed (successfully or unsuccessfully) or aborted to cause the transition. Note that the only aborted causes that will be captured with this value are the ones that result in the same status after the test has been aborted. For example, a load change during a run time calibration that causes the test to abort and the status to return to on-line. As opposed to a local UI command (off button) that causes the run time calibration to be aborted but the status does not change to on-line.				
									11: LocalUICommand: Indicates the user pressed the on/off or other button locally to cause the transition. Includes local terminal mode interface if applicable.				
									12: ProtocolCommand: Indicates that a command received over the smart interface has caused the state change.				
									13: LowBatteryVoltage: A low battery voltage caused the transition. This would be used for low battery shutdown, but may also be used when transitioning between other states due to a low battery voltage criteria.				
									14: GeneralError: A general error caused the transition. GeneralError_BF usage contains the specific fault if still valid.				
									15: PowerSystemError-A power system error caused the transistion. PowerSystemError_BF usage contains the specific fault if still valid.				
									16: BatterySystemError: A battery system error caused the transistion. BatterySystemError_BF usage contains the specific fault if still valid.				
									17: ErrorCleared: Indicates that the system changed states due to an error clearing. (Some errors may still exist but a state change occurred even with those errors present.).				
									18: AutomaticRestart: Indicates that internal conditions have met to allow the output to turn on, after a battery depletion. (8051 may not use this one, because it requires EEPROM storage of the state).				
									19: DistortedInverterOutput: Indicates that the system changed states due to a distorted waveform detected on the output ("turbo").				
									20: InverterOutputAcceptable: Indicates that the system changed states due to no further distortion on the output waveform.				
									21: EPOInterface: Indicates that an input was received at the UPS through the EPO interface to turn off the output.				
									22: InputPhaseDeltaOutOfRange: Indicates input phase delta is out of limit.				
									23: InputNeutralNotConnected: Indicates that neutral leg is missing.				
									24: ATSTransfer: Indicates that state change was caused due to ATS operation.				
									25: ConfigurationChange: Indicates that state change was caused by a configuration change (eg. a change in AllowedOperatingMode_BF).				
									26: AlertAsserted: An informational alert has caused the transistion.				
									27: AlertCleared: Indicates that the system changed states due to an Informational alert acknowledge or cleared.				
									28: PlugRatingExceeded: Indicates transition happened because Input current exceeded plug rating. Example: when operating in "boost" mode when input current exceeds line cord rating transition to battery.				
									29: OutletGroupStateChange: Indicates the transition occured due to Main Outlet Group (MOG) or Switched Outlet Group (SOG) state change.				
									30: FailureBypassExpired: Indicates that load was turned off due to inability to continue operating in failure bypass.				

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40003				UPSStatusChangeCause_EN (Continued)									
									31: InternalCommand: Indicates that a command from an internal source has caused the status change. (e.g. intelligence module or system controller)				
									32: USBCommand: Indicates that a command from the USB port has caused the status change.				
									33: SmartSlot1Command: Indicates that a command from Smart Slot 1 has caused the status change.				
									34: InternalNetwork1Command: Indicates that a command from Internal Network 1 or SmartConnect port has caused the status change.				
									35: FollowingSystemController: Indicates that a self-initiated change is the result of an update from the system controller. (e.g. RIM updated to follow MIM)				
40004	0003	3		MOG.OutletStatus_BF	4	2			The present status of the outlet group. Note: Process bits are defined for sequences of multiple state transitions and are not defined for single transitions. Process bits are mutually exclusive. State bits are mutually exclusive.	ReadOnly	x	x	x
			0				BOOLEAN		StateOn-State: Indicates the outlet is powered. Mutually exclusive with other state bits.				
			1				BOOLEAN		StateOff-State: Indicates the outlet is not powered. Mutually exclusive with other state bits.				
			2				BOOLEAN		ProcessReboot-Modifier: Indicates that a reboot command was issued and is still in progress. A reboot command can be issued by writing to the command bitfield or by writing timers. Mutually exclusive with other process bits.				
			3				BOOLEAN		ProcessShutdown-Modifier: Indicates that shutdown command was issued and is still in progress. A shutdown command can be issued by writing to the command bitfield or by writing timers. Mutually exclusive with other process bits.				
			4				BOOLEAN		ProcessSleep-Modifier: Indicates that a sleep command was issued and is still in progress. A sleep command can be issued by writing to the command bitfield, or by writing timers. Sleep is indicated rather than reboot if the StayOffCountdown_EN timer is initially loaded with a value greater than 300 seconds. Mutually exclusive with other process bits.				
			5				BOOLEAN		Reserved				
			6				BOOLEAN		Reserved				
			7				BOOLEAN		PendingLoadShed-Modifier: Indicates that one or more condition exists that could potentially could turn the outlet off.				
			8				BOOLEAN		PendingOnDelay-Modifier: Indicates the outlet has an active process that requires an on delay when switching an outlet from off to on.				
			9				BOOLEAN		PendingOffDelay-Modifier: Indicates the outlet has an active process that requires an off delay when switching an outlet from on to off.				
			10				BOOLEAN		PendingOnACPresence-Modifier: Indicates the outlet will not turn on unless AC input power is available.				
			11				BOOLEAN		PendingOnMinRuntime-Modifier: Indicates the outlet will not turn on unless sufficient runtime is available.				
			12-31				BOOLEAN		Reserved				
40006	0005	5		Reserved	2	1				ReadOnly			
40007	0006	6		SOG[0].OutletStatus_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly			x
40009	0008	8		Reserved	2	1				ReadOnly			
40010	0009	9		SOG[1].OutletStatus_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly			x
40012	000B	11		Reserved	2	1				ReadOnly			
40013	000C	12		SOG[2].OutletStatus_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly			x
40015	000E	14		Reserved	18	9				ReadOnly			

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40024	0017	23		ReplaceBatteryTestStatus_BF	2	1			This is the result of the ReplaceBatteryTest, or internal test. This usage should be used for logging purposes. The pass / fail result of the replace battery test will directly affect the BatterySystemError_BF -> NeedsReplacement bit. This usage is sticky, and remembers last state until a new status is generated. Upon initialization, all bits may be reset.	ReadOnly	x	x	x
			0				BOOLEAN		Pending: Replace battery test is pending (high level acknowledgement of command).				
			1				BOOLEAN		InProgress: Replace battery test is in progress.				
			2				BOOLEAN		Passed: Replace battery test passed (completed successfully).				
			3				BOOLEAN		Failed: Replace battery test failed (completed unsuccessfully).				
			4				BOOLEAN		Refused: Replace battery test was refused (check "result modifier" bits for potentially additional details).				
			5				BOOLEAN		Aborted: Replace battery test was aborted (check "result modifier" and "source modifier" bits for potentially additional details).				
			6				BOOLEAN		Protocol-Source modifier: the protocol is the origin for initiation or abortion of the replace battery test.				
			7				BOOLEAN		LocalUI-Source modifier: the local user interface is the origin for initiation or abortion of the replace battery test. Includes local terminal mode interface if applicable.				
			8				BOOLEAN		Internal-Source modifier: internal control is the origin for initiation or abortion of the replace battery test.				
			9				BOOLEAN		InvalidState-Result modifier: invalid UPS operating state (e.g., shutdown pending, output off, UPS in bypass, input voltage not acceptable).				
			10				BOOLEAN		InternalFault-Result modifier: an internal fault exists (e.g., battery is missing, inverter failure). Also, overload in progress which is not in the error usages.				
			11				BOOLEAN		StateOfChargeNotAcceptable-Result modifier: the battery state of charge is not acceptable.				
			12				BOOLEAN		USBPort-Source modifier: Command came from a device connected to the USB port.				
			13				BOOLEAN		Reserved				
			14				BOOLEAN		SmartSlot1-Source modifier: Command came from a device in SmartSlot 1.				
			15				BOOLEAN		InternalNetwork1-Source modifier: Command came from the internal network card 1 or SmartConnect port.				
40025	0018	24		Reserved	2	1				ReadOnly			
40026	0019	25		Battery.LifeTimeStatus_BF	2	1			Status of predictive maintenance for the battery.	ReadOnly	x	x	x
			0				BOOLEAN		LifeTimeStatusOK: Lifetime is OK. Mutually exclusive with bits 1 and 2.				
			1				BOOLEAN		LifeTimeNearEnd: Lifetime is near end. Mutually exclusive with bits 0 and 2.				
			2				BOOLEAN		LifeTimeExceeded: Lifetime is exceeded. Mutually exclusive with bits 0 and 1.				
			3				BOOLEAN		LifeTimeNearEndAcknowledged: Alert has been acknowledged but still exists.				
			4				BOOLEAN		LifeTimeExceededAcknowledged: Alert has been acknowledged but still exists.				
			5				BOOLEAN		MeasuredLifeTimeNearEnd: The measured liifetime is near the end. For a battery this is when the capacity is nearing the threshold for replacement. Mutually exclusive with bit 5, and can be indicated independently of bits 1 and 2.				
			6				BOOLEAN		MeasuredLifeTimeNearEndAcknowledged: Alert has been acknowledged but still exists.				
			7-15				BOOLEAN		Reserved				
40027	001A	26		UserInterfaceStatus_BF	2	1			Status of local User Interface (both audible and visible).	ReadOnly	x	x	x
			0				BOOLEAN		ContinuousTestInProgress: The continuous local UI test is in progress.				
			1				BOOLEAN		AudibleAlarmInProgress: There is an active alarm that is causing the local UI beeper to sound. This bit indicates that the command to mute is available.				
			2				BOOLEAN		AudibleAlarmMuted: There is an active alarm that is currently being muted. This bit indicates that the command to cancel mute is available.				
			3				BOOLEAN		AnyButtonPressedRecently: A user interface button has been pressed within the last 10 seconds.				
			4-15				BOOLEAN		Reserved				
40028	001B	27		AlarmRegister	2	1			Selected UPS alarms which may be corrected by user actions.	ReadOnly	x	x	x
			0				BOOLEAN		OutputOverload: Indicates an active overload alarm.				
			1				BOOLEAN		OutputShortCircuit: Indicates a short circuit alarm.				
			2				BOOLEAN		LowRuntime: Indicates runtime below low runtime setting, either on-line or on battery.				
			3				BOOLEAN		UPSOvertemperature: Indicates an active UPS overtemperature alarm.				
			4				BOOLEAN		BatteryOvertemperature: Indicates an active Battery Module overtemperature alarm.				
			5				BOOLEAN		RedundancyAlarm: Indicates an active power module redundancy alarm in the system.				
			6-15				BOOLEAN		Reserved				
40029	001C	28		NumberCriticalAlarms	2	1			The number of critical alarms present in the system.	ReadOnly	x	x	x
40030	001D	29		NumberWarningAlarms	2	1			The number of warning alarms present in the system.	ReadOnly	x	x	x
40031	001E	30		NumberGoodBatteryModules	2	1			The number of good battery modules in the system (includes modules within XR frames). Note: includes modules with lifetime warning alarms but does not include modules that are initializing, etc.	ReadOnly	x	x	x
40032	001F	31		NumberGoodPowerModules	2	1			The number of good power modules in the system. Note: does not include modules that are initializing, etc.	ReadOnly	x		
40033	0020	32		NumberBadBatteryModules	2	1			The number of bad (warning or critical alarm, or lifetime exceeded) battery modules in the system.	ReadOnly	x	x	x
40034	0021	33		NumberBadPowerModules	2	1			The number of bad (warning or critical alarm) power modules in the system.	ReadOnly	x		
40035	0022	34		NumberBadIntelligenceModules	2	1			The number of bad (warning or critical alarm) intelligence modules in the system.	ReadOnly	x		

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40129	0080	128		RunTimeRemaining	4	2	UINT32	1	The number of seconds until power will go out, when running on battery. This should never be compared as an actual value, but should be compared as "less than or equal to." Some UPS's will max out at 65535 seconds (18.2 hours).	ReadOnly	x	x	x
40131	0082	130		StateOfCharge_Pct	2	1	UINT16	512	The percent state of charge in the battery.	ReadOnly	x	x	x
40132	0083	131		Battery.Positive.VoltageDC	2	1	INT16	32	Measured battery voltage - positive battery bus.	ReadOnly	x	x	x
40133	0084	132		Reserved	2	1				ReadOnly			
40134	0085	133		Battery.Date	2	1	UINT16	1	Theoretical battery replacement date, days since 1999 (January 1, 2000 = 0). It should not be interpreted to be more accurate than a month.	ReadOnly	x	x	x
40135	0086	134		Reserved	4	2				ReadOnly			
40137	0088	136		Output[0].RealPower_Pct	2	1	UINT16	256	Phase 1 - Measured real power as a percent of full rating.	ReadOnly	x	x	x
40138	0089	137		Output[1].RealPower_Pct	2	1	UINT16	256	Phase 2 - Measured real power as a percent of full rating.	ReadOnly	x		
40139	008A	138		Output[0].ApparentPower_Pct	2	1	UINT16	256	Phase 1 - Measured apparent power as a percent of full rating.	ReadOnly	x	x	x
40140	008B	139		Output[1].ApparentPower_Pct	2	1	UINT16	256	Phase 2 - Measured apparent power as a percent of full rating.	ReadOnly	x		
40141	008C	140		Output[0].CurrentAC	2	1	UINT16	32	Phase 1 - Measured AC RMS Current.	ReadOnly	x	x	x
40142	008D	141		Output[1].CurrentAC	2	1	UINT16	32	Phase 2 - Measured AC RMS Current.	ReadOnly	x		
40143	008E	142		Output[0].VoltageAC	2	1	UINT16	64	Phase 1 - Measured Output Voltage.	ReadOnly	x	x	x
40144	008F	143		Output[1].VoltageAC	2	1	UINT16	64	Phase 2 - Measured Output Voltage.	ReadOnly	x		
40145	0090	144		Output.Frequency	2	1	UINT16	128	Measured frequency on the output.	ReadOnly	x	x	x
40146	0091	145		Reserved	4	2				ReadOnly			
40148	0093	147		Bypass.InputStatus_BF	2	1			Indicates the status of the input voltage for logging data point NOT for event. These bits are not mutually exclusive. Note that there may be times when no bits are set. This usage reflects the status of the input voltage for normal operation when in the input system collection and it reflects the status of the input voltage for bypass operation when in the bypass system collection.	ReadOnly	x	x	x
			0				BOOLEAN		Acceptable: Input (both voltage and frequency) is acceptable and all other system constraints are met so that the UPS can power the output with this input source.				
			1				BOOLEAN		PendingAcceptable: Input (both voltage and frequency) is acceptable but at least one other system constraint is not met preventing the line from being declared acceptable (e.g. line is not stable for a long enough time).				
			2				BOOLEAN		VoltageTooLow: Indicates that the input voltage is too low to be acceptable.				
			3				BOOLEAN		VoltageTooHigh: Indicates that the input voltage is too high to be acceptable.				
			4				BOOLEAN		Distorted: Indicates a distorted input waveform. The input voltage is too different from reference waveform, the frequency is moving too fast to track, or the frequency is out of measurable range.				
			5				BOOLEAN		Reserved				
			6				BOOLEAN		Reserved				
			7				BOOLEAN		FrequencyTooLow: Indicates frequency is measurably too low.				
			8				BOOLEAN		FrequencyTooHigh: Indicates frequency is measurably too high.				
			9				BOOLEAN		FreqAndPhaseNotLocked: Indicates that the system is not frequency and phase locked to the input frequency and phase.				
			10				BOOLEAN		PhaseDeltaOutOfRange: Indicates that the difference in phase angle between phases is out of range.				
			11				BOOLEAN		NeutralNotConnected-Indicates that the Neutral connection is missing.				
			12				BOOLEAN		Reserved				
			13				BOOLEAN		PlugRatingExceeded [This bit is set when the input current has/would exceed the input plug rating. (eg. on a hard-wired unit the input current can be 20A, but when a plug is used the rating should be 15A]				
			14				BOOLEAN		PhaseNotAcceptable [This bit should ONLY be set when the input is acceptable and one or more phases (but not all) become bad. This bit should continue to be set until all phases are acceptable.]				
			15				BOOLEAN		PoweringLoad: This bit indicates that the input is the source of power to the load. eg. BypassSystem.InputStatus_BF.PoweringLoad indicates the power for the load is from the bypass source.				
40149	0094	148		Reserved	4	2				ReadOnly			
40151	0096	150		Input.InputStatus_BF	2	1	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR Bypass.InputStatus_BF.	ReadOnly	x	x	x
40152	0097	151		Input[0].VoltageAC	2	1	UINT16	64	Phase 1 - Measured Input Voltage.	ReadOnly	x	x	x
40153	0098	152		Input[1].VoltageAC	2	1	UINT16	64	Phase 2 - Measured Input Voltage.	ReadOnly	x		
40154	0099	153		Reserved	2	1				ReadOnly			

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40155	009A	154		Efficiency_EN	2	1	ENUM		Efficiency is defined as RealPowerOut / RealPowerIn. Apparent Power (VA) measurements should not be used.	ReadOnly	x	x	x
								128	0-32768: Efficiency percentage (note divisor so for example 12800 is 100%).				
								1	-1: NotAvailable: This is reported when the efficiency is unavailable or extremely low and a more specific reason is not known or supported.				
								1	-2: LoadTooLow: Load is too low to report efficiency.				
								1	-3: OutputOff: The output is off and efficiency is 0.				
								1	-4: OnBattery: Efficiency not measured or calculated in this mode.				
								1	-5: InBypass: Efficiency not measured or calculated in this mode.				
								1	-6: BatteryCharging: Battery is charging and is adversely affecting the efficiency.				
								1	-7: PoorACInput: The main input supply is outside of range which will result in optimal efficiency.				
								1	-8: BatteryDisconnected: The battery is disconnected and is adversely affecting the efficiency.				
40156	009B	155		MOG.TurnOffCountdown_EN	2	1	ENUM	1	Time remaining until output off for Main Outlet Group (MOG). -1: NotActive_Cancel: Reading: no countdown in progress. Writing: cancel shutdown. 0: CountdownExpired, Countdown has ended. (1)-(32767): Seconds remaining for countdown.	ReadOnly	x	x	x
40157	009C	156		MOG.TurnOnCountdown_EN	2	1	ENUM	1	Time remaining until output on for Main Outlet Group (MOG). -1: NotActive_Cancel: Reading: no countdown in progress. Writing: cancel countdown. 0: CountdownExpired, Countdown has ended. (1)-(32767): Seconds remaining for countdown.	ReadOnly	x	x	x
40158	009D	157		MOG.StayOffCountdown_EN	4	2	ENUM	1	Minimum time to remain off after a shutdown for Main Outlet Group (MOG). -1: NotActive. No countdown in progress. 0: CountdownExpired. Countdown has ended. (1)-(2147483647): Seconds remaining for countdown.	ReadWrite	x	x	x
40160	009F	159		SOG[0].TurnOffCountdown_EN	2	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG0. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly			x
40161	00A0	160		SOG[0].TurnOnCountdown_EN	2	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG0. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly			x
40162	00A1	161		SOG[0].StayOffCountdown_EN	4	2	ENUM	1	Minimum time to remain off after a shutdown for Switched Outlet Group SOG0. SEE ENUM DESCRIPTION ABOVE FOR MOG.StayOffCountdown_EN.	ReadWrite			x
40164	00A3	163		SOG[1].TurnOffCountdown_EN	2	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG1. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly			x
40165	00A4	164		SOG[1].TurnOnCountdown_EN	2	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG1. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly			x
40166	00A5	165		SOG[1].StayOffCountdown_EN	4	2	ENUM	1	Minimum time to remain off after a shutdown for Switched Outlet Group SOG1. SEE ENUM DESCRIPTION ABOVE FOR MOG.StayOffCountdown_EN.	ReadWrite			x
40168	00A7	167		SOG[2].TurnOffCountdown_EN	2	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG2. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly			x
40169	00A8	168		SOG[2].TurnOnCountdown_EN	2	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG 2. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly			x
40170	00A9	169		SOG[2].StayOffCountdown_EN	4	2	ENUM	1	Minimum time to remain off after a shutdown for Switched Outlet Group SOG2. SEE ENUM DESCRIPTION ABOVE FOR MOG.StayOffCountdown_EN.	ReadWrite			x
40172	00AB	171		Reserved	8	4				ReadOnly			
40176	00AF	175		Output.PhasePhase.VoltageAC	2	1	UINT16	64	Phase to Phase - Measured Output Voltage.	ReadOnly	x		
40177	00B0	176		Input.PhasePhase.VoltageAC	2	1	UINT16	64	Phase to Phase - Measured Input Voltage.	ReadOnly	x		
40178	00B1	177		Output[0].Energy	4	2	UINT16	1	Phase 1 - Number of Watt Hours consumed by the output load.	ReadOnly	x	x	x
40180	00B3	179		Output[1].Energy	4	2	UINT16	1	Phase 2 - Number of Watt Hours consumed by the output load.	ReadOnly	x		
40182	00B5	181		Output.Total.Energy	4	2	UINT16	1	For split phase UPSs, total number of Watt Hours consumed by the output load.	ReadOnly	x		
40184	00B7	183		Output[0].RealPower	4	2	UINT16	128	Phase 1 - Measured real power in watts.	ReadOnly	x	x	x
40186	00B9	185		Output[1].RealPower	4	2	UINT16	128	Phase 2 - Measured real power in watts.	ReadOnly	x		
40188	00BB	187		Output.Total.RealPower_Pct	2	1	UINT16	256	For split phase UPSs, total measured real power as a percent of full rating.	ReadOnly	x		
40189	00BC	188		Output.Total.RealPower	4	2	UINT16	128	For split phase UPSs, total measured real power in watts.	ReadOnly	x		
40191	00BE	190		Output[0].ApparentPower	4	2	UINT16	128	Phase 1 - Measured apparent power in VA.	ReadOnly	x	x	x
40193	00C0	192		Output[1].ApparentPower	4	2	UINT16	128	Phase 2 - Measured apparent power in VA.	ReadOnly	x		
40195	00C2	194		RedundancyStatus	2	1	UINT16	1	Status for redundancy. Number of modules in redundancy	ReadOnly	x		
40196	00C3	195		Battery.Minimum.Cell.VoltageDC_mV	2	1	UINT16	1	Minimum battery cell voltage across all battery modules, in millivolts DC.	ReadOnly	x	x	x
40197	00C4	196		Battery.Maximum.Cell.VoltageDC_mV	2	1	UINT16	1	Maximum battery cell voltage across all battery modules, in millivolts DC.	ReadOnly	x	x	x
40198	00C5	197		Battery.Minimum.Temperature	2	1	UINT16	128	Minimum battery temperature across all battery modules, in Degrees C.	ReadOnly	x	x	x
40199	00C6	198		Battery.Maximum.Temperature	2	1	UINT16	128	Maximum battery temperature across all battery modules, in Degrees C.	ReadOnly	x	x	x

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40517	0204	516		FWVersion_STR	16	8	ASCII		UPS Firmware Version.	ReadOnly	x	x	x
40525	020C	524		Reserved	16	8				ReadOnly			
40533	0214	532		Model_STR	32	16	ASCII		UPS Model Name.	ReadOnly	x	x	x
40549	0224	548		SKU_STR	32	16	ASCII		UPS SKU Name.	ReadOnly	x	x	x
40565	0234	564		SerialNumber_STR	16	8	ASCII		UPS Serial Number.	ReadOnly	x	x	x
40573	023C	572		Battery.SKU_STR	16	8	ASCII		The replacement battery pack SKU for the internal battery pack (or the system, if there is only one type).	ReadOnly	x	x	x
40581	0244	580		Reserved	16	8				ReadOnly			
40589	024C	588		Output.ApparentPowerRating	2	1	UINT16	1	The rated apparent full power. For split phase UPSs, apparent full power rating for both phases.	ReadOnly	x	x	x
40590	024D	589		Output.RealPowerRating	2	1	UINT16	1	The rated real full power. For split phase UPSs, the real full power rating for both phases.	ReadOnly	x	x	x
40591	024E	590		SOGRelayConfigSetting_BF	2	1			Indicates UPS's outlet group configuration.	ReadOnly	x	x	x
			0				BOOLEAN		MOGPresent: A user accessible Main Outlet Group (MOG) is present.				
			1				BOOLEAN		SOG0Present: Switched Outlet Group 1 (SOG0) is present.				
			2				BOOLEAN		SOG1Present: Switched Outlet Group 2 (SOG1) is present.				
			3				BOOLEAN		SOG2Present: Switched Outlet Group 3 (SOG2) is present.				
			4-15				BOOLEAN		Reserved				
40592	024F	591		Manufacture.Date	2	1	UINT16	1	Manufacture Date, days since 1999 (January 1, 2000 = 0).	ReadOnly	x	x	x
40593	0250	592		Reserved	2	1				ReadOnly			
40594	0251	593		Output.AcceptableFrequencySetting_BF	2	1	BOOLEAN		This is the output frequency setting including the tolerance. This drives whether the output is in sync with the input.	ReadWrite	x	x	x
			0				BOOLEAN		Auto: Automatic selection of 50/60Hz (47-53, 57-63).				
			1				BOOLEAN		Hz50_0_1: Frequency of 50 Hz +/- 0.1 Hz.				
			2				BOOLEAN		Reserved				
			3				BOOLEAN		Hz50_3_0: Frequency of 50 Hz +/- 3.0 Hz.				
			4				BOOLEAN		Hz60_0_1: Frequency of 60 Hz +/- 0.1 Hz.				
			5				BOOLEAN		Reserved				
			6				BOOLEAN		Hz60_3_0: Frequency of 60 Hz +/- 3.0 Hz.				
			7-15				BOOLEAN		Reserved				
40595	0252	594		Reserved	2	1				ReadOnly			
40596	0253	595		Battery.DateSetting	2	1	UINT16		Battery Installation Date, days since 1999 (January 1, 2000 = 0).	ReadWrite	x	x	x
40597	0254	596		Name_STR	16	8	ASCII		The name assigned to the UPS.	ReadWrite	x	x	x
40605	025C	604		MOG.Name_STR	16	8	ASCII		The name assigned to the Main Outlet Group (MOG).	ReadWrite			x
40613	0264	612		SOG[0].Name_STR	16	8	ASCII		The name assigned to Switched Outlet Group SOG0.	ReadWrite			x
40621	026C	620		SOG[1].Name_STR	16	8	ASCII		The name assigned to SOG 1.	ReadWrite			x
40629	0274	628		SOG[2].Name_STR	16	8	ASCII		The name assigned to SOG 2.	ReadWrite			x
40637	027C	636		Reserved	16	8				ReadOnly			
40645	0284	644		Output.VoltageACSetting_BF	4	2			This is the configured output voltage setting. This is still implemented when there is only one voltage setting.	ReadWrite	x	x	x
			0				BOOLEAN		Reserved				
			1				BOOLEAN		Reserved				
			2				BOOLEAN		VAC200: Single phase UPS - Output voltage is set to 200VAC Phase-Phase.				
			3				BOOLEAN		VAC208: Single phase UPS - Output voltage is set to 208VAC Phase-Phase.				
			4				BOOLEAN		VAC220: Single phase UPS - Output voltage is set to 220VAC Phase-Neutral.				
			5				BOOLEAN		VAC230: Single phase UPS - Output voltage is set to 230VAC Phase-Neutral.				
			6				BOOLEAN		VAC240: Single phase UPS - Output voltage is set to 240VAC Phase-Neutral.				
			7				BOOLEAN		Reserved				
			8				BOOLEAN		Reserved				
			9				BOOLEAN		Reserved				
			10				BOOLEAN		Reserved				
			11				BOOLEAN		Reserved				
			12				BOOLEAN		Reserved				
			13				BOOLEAN		Reserved				
			14				BOOLEAN		VAC120_208: Split or Three phase UPS - Output voltage is set to 120VAC Phase-Neutral and 208VAC Phase-Phase.				
			15				BOOLEAN		VAC120_240: Split phase UPS - Output voltage is set to 120VAC Phase-Neutral and 240VAC Phase-Phase (180 degree phase angle).				
			16				BOOLEAN		VAC100_200: Split phase UPS - Output voltage is set to 100VAC Phase-Neutral and 200VAC Phase-Phase (180 degree phase angle).				
			17-31				BOOLEAN		Reserved				
40647	0286	646		Output.FrequencySlewRateSetting_BF	2	1			Slew rate of the inverter.	ReadWrite	x	x	x
			0				BOOLEAN		Reserved				
			1				BOOLEAN		Hz_s_0_5: Slew rate is 0.5 Hz/s.				
			2				BOOLEAN		Hz_s_1_0: Slew rate is 1 Hz/s.				
			3				BOOLEAN		Hz_s_2_0: Slew rate is 2 Hz/s.				
			4				BOOLEAN		Hz_s_4_0: Slew rate is 4 Hz/s.				
			5-15				BOOLEAN		Reserved				
40648	0287	647		Output.Frame.RealPowerRating	2	1	UINT16	1	For modular UPSs, the frame's rated real full power across all phases.	ReadOnly	x		

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41025	0400	1024		BatteryTestIntervalSetting_BF	2	1			Time between UPS self tests.	ReadWrite	x	x	x
			0				BOOLEAN		Never: Do not perform battery test.				
			1				BOOLEAN		OnStartUpOnly: Only perform battery test on UPS powerup.				
			2				BOOLEAN		Reserved				
			3				BOOLEAN		Reserved				
			4				BOOLEAN		OnStartUp7Since: Perform battery test on UPS powerup and every 7 days after start of last test (if UPS is on line or on battery). 7 day timer is loaded at turn on. It is reloaded upon timeout or when a test is commanded.				
			5				BOOLEAN		OnStartUp14Since: Perform battery test on UPS powerup and every 14 days after start of last test (if UPS is on line or on battery). 14 day timer is loaded at turn on. It is reloaded upon timeout or when a test is commanded.				
			6-15				BOOLEAN		Reserved				
41026	0401	1025		Reserved	2	1				ReadOnly			
41027	0402	1026		Output.UpperAcceptableVoltageSetting	2	1	UINT16	1	This is the upper limit of the acceptable voltage for green mode. The "upper transfer point" (highest voltage load will see). For split phase UPSs, this is the Phase to Neutral limit.	ReadWrite	x	x	x
41028	0403	1027		Output.LowerAcceptableVoltageSetting	2	1	UINT16	1	This is the lower limit of the acceptable voltage for green mode. The "lower transfer point" (lowest voltage load will see). For split phase UPSs, this is the Phase to Neutral limit.	ReadWrite	x	x	x
41029	0404	1028		Reserved	2	1				ReadOnly			
41030	0405	1029		MOG.TurnOffCountdownSetting_EN	2	1	ENUM	1	For Main Outlet Group (MOG): Seconds of delay to use for an off. This value will be loaded into the TurnOffCountdown_EN when a delayed off command is requested.	ReadWrite	x	x	x
41031	0406	1030		MOG.TurnOnCountdownSetting_EN	2	1	ENUM	1	For MOG: Seconds of delay to use for an on. This value will be loaded into the TurnOnCountdown_EN when a delayed on command is requested.	ReadWrite	x	x	x
41032	0407	1031		MOG.StayOffCountdownSetting_4B	4	2	INT32	1	For MOG: Seconds to keep an output off before starting it again. Typically minimum value of 4, maximum of 300.	ReadWrite	x	x	x
41034	0409	1033		MOG.MinimumReturnRuntimeSetting	2	1	UINT16	1	For MOG: The minimum amount of runtime required before the output will be turned on, using power calculation captured at start of last shutdown.	ReadWrite	x	x	x
41035	040A	1034		SOG[0].TurnOffCountdownSetting_EN	2	1	ENUM	1	For Switched Outlet Group SOG0: Seconds of delay to use for an off. This value will be loaded into the TurnOffCountdown_EN when a delayed off command is requested.	ReadWrite			x
41036	040B	1035		SOG[0].TurnOnCountdownSetting_EN	2	1	ENUM	1	For SOG0: Seconds of delay to use for an on. This value will be loaded into the TurnOnCountdown_EN when a delayed on command is requested.	ReadWrite			x
41037	040C	1036		SOG[0].StayOffCountdownSetting_4B	4	2	INT32	1	For SOG0: Seconds to keep an output off before starting it again. Typically minimum value of 4, maximum of 300.	ReadWrite			x
41039	040E	1038		SOG[0].MinimumReturnRuntimeSetting	2	1	UINT16	1	For SOG0: The minimum amount of run time required before the output will be turned on, using power calculation captured at start of last shutdown.	ReadWrite			x
41040	040F	1039		SOG[1].TurnOffCountdownSetting_EN	2	1	ENUM	1	For SOG1: Seconds of delay to use for an off. This value will be loaded into the TurnOffCountdown_EN when a delayed off command is requested.	ReadWrite			x
41041	0410	1040		SOG[1].TurnOnCountdownSetting_EN	2	1	ENUM	1	For SOG1: Seconds of delay to use for an on. This value will be loaded into the TurnOnCountdown_EN when a delayed on command is requested.	ReadWrite			x
41042	0411	1041		SOG[1].StayOffCountdownSetting_4B	4	2	INT32	1	For SOG1: Seconds to keep an output off before starting it again. Typically minimum value of 4, maximum of 300.	ReadWrite			x
41044	0413	1043		SOG[1].MinimumReturnRuntimeSetting	2	1	UINT16	1	For SOG1: The minimum amount of run time required before the output will be turned on, using power calculation captured at start of last shutdown.	ReadWrite			x
41045	0414	1044		SOG[2].TurnOffCountdownSetting_EN	2	1	ENUM	1	For SOG2: Seconds of delay to use for an off. This value will be loaded into the TurnOffCountdown_EN when a delayed off command is requested.	ReadWrite			x
41046	0415	1045		SOG[2].TurnOnCountdownSetting_EN	2	1	ENUM	1	For SOG2: Seconds of delay to use for an on. This value will be loaded into the TurnOnCountdown_EN when a delayed on command is requested.	ReadWrite			x
41047	0416	1046		SOG[2].StayOffCountdownSetting_4B	4	2	INT32	1	For SOG2: Seconds to keep an output off before starting it again. Typically minimum value of 4, maximum of 300.	ReadWrite			x
41049	0418	1048		SOG[2].MinimumReturnRuntimeSetting	2	1	UINT16	1	For SOG2: The minimum amount of run time required before the output will be turned on, using power calculation captured at start of last shutdown.	ReadWrite			x
41050	0419	1049		Reserved	10	5				ReadOnly			

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41055	041E	1054		MOG.LoadShedConfigSetting_BF	4	2			Actions that cause an outlet or output to turn off. Each bit represents a separate condition.	ReadWrite	x	x	x
			0				BOOLEAN		UseOffDelay- Modifier: When set, the load shed conditions that have this as a valid modifier will use the TurnOffCountdownSetting to shut the outlet off.				
			1				BOOLEAN		ManualRestartRequired - Modifier - When set, the load shed conditions that have this as a valid modifier will use a turn off command instead of shutdown. This results in a manual intervention to restart the outlet.				
			2				BOOLEAN		Reserved				
			3				BOOLEAN		TimeOnBattery: The outlet group will shed based on the LoadShedTimeOnBatterySetting usage. When operating on battery greater than this time, the outlet will turn off. The modifier bits UseOffDelay and ManualRestartRequired are valid with this bit.				
			4				BOOLEAN		RunTimeRemaining: The outlet group will shed based on the LoadShedRuntimeRemainingSetting usage. When operating on battery and the runtime remaining is less than or equal to this value, the outlet will turn off. The modifier bits UseOffDelay and ManualRestartRequired are valid with this bit.				
			5				BOOLEAN		Reserved				
			6-31	SOG[0].LoadShedConfigSetting_BF			BOOLEAN		Reserved				
41057	0420	1056		SOG[0].LoadShedConfigSetting_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite			x
41059	0422	1058		SOG[1].LoadShedConfigSetting_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite			x
41061	0424	1060		SOG[2].LoadShedConfigSetting_BF	4	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite			x
41063	0426	1062		Reserved	4	2				ReadOnly			
41065	0428	1064		SOG[0].LoadShedRunTimeRemainingSetting	2	1	UINT16	1	For Switched Outlet Group SOG0: When the Runtime remaining is less than or equal to this value, the outlet will turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41066	0429	1065		SOG[1].LoadShedRunTimeRemainingSetting	2	1	UINT16	1	For SOG1: When the Runtime remaining is less than or equal to this value, the outlet will turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41067	042A	1066		SOG[2].LoadShedRunTimeRemainingSetting	2	1	UINT16	1	For SOG2: When the Runtime remaining is less than or equal to this value, the outlet will turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41068	042B	1067		Reserved	2	1				ReadOnly			
41069	042C	1068		SOG[0].LoadShedTimeOnBatterySetting	2	1	UINT16	1	For SOG0: The time on battery that will cause the outlet to turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41070	042D	1069		SOG[1].LoadShedTimeOnBatterySetting	2	1	UINT16	1	For SOG1: The time on battery that will cause the outlet to turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41071	042E	1070		SOG[2].LoadShedTimeOnBatterySetting	2	1	UINT16	1	For SOG2: The time on battery that will cause the outlet to turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite			x
41072	042F	1071		Reserved	2	1				ReadOnly			
41073	0430	1072		MOG.LoadShedRunTimeRemainingSetting	2	1	UINT16	1	For Main Outlet Group (MOG): When the Runtime remaining is less than or equal to this value, the outlet will turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF.	ReadWrite	x	x	x
41074	0431	1073		MOG.LoadShedTimeOnBatterySetting	2	1	UINT16	1	For MOG: The time on battery that will cause the outlet to turn off. This condition is enabled and configured with the LoadShedConfigSetting_BF	ReadWrite	x	x	x
41075	0432	1074		Output.PhasePhase.UpperAcceptableVoltageSetting	2	1	UINT16	1	For split phase UPSs, this is the Phase to Phase upper limit of the acceptable voltage for green mode.	ReadWrite	x		
41076	0433	1075		Output.PhasePhase.LowerAcceptableVoltageSetting	2	1	UINT16	1	For split phase UPSs, this is the Phase to Phase lower limit of the acceptable voltage for green mode.	ReadWrite	x		
41077	0434	1076		Bypass.UpperAcceptableVoltageSetting	2	1	UINT16	1	This is the upper limit of the acceptable voltage for bypass. For split phase UPSs, this is the Phase to Neutral limit.	ReadWrite	x	x	x
41078	0435	1077		Bypass.LowerAcceptableVoltageSetting	2	1	UINT16	1	This is the lower limit of the acceptable voltage for bypass. For split phase UPSs, this is the Phase to Neutral limit.	ReadWrite	x	x	x
41079	0436	1078		Bypass.PhasePhase.UpperAcceptableVoltageSetting	2	1	UINT16	1	For split phase UPSs, this is the Phase to Phase upper limit of the acceptable voltage for bypass.	ReadWrite	x		
41080	0437	1079		Bypass.PhasePhase.LowerAcceptableVoltageSetting	2	1	UINT16	1	For split phase UPSs, this is the Phase to Phase lower limit of the acceptable voltage for bypass.	ReadWrite	x		

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41537	0600	1536		UPSCommand_BF	4	2			Command the UPS to perform the designated function as defined by the individual bits. Only one command bit can be set at a time. Note: If source bits are implemented it is required that one command and one source be selected to make a valid command.	ReadWrite	x	x	x
			0				BOOLEAN		Reserved				
			1				BOOLEAN		Reserved				
			2				BOOLEAN		Reserved				
			3				BOOLEAN		RestoreFactorySettings: Restore factory default settings for all operational parameters that can be safely returned to factory defaults. Output Voltage Setting and Output Frequency Setting are not altered. Strings, User Language settings, logs, and statistical information are not reset with this command.				
			4				BOOLEAN		OutputIntoBypass: Commands the UPS into bypass if conditions allow and bypass is supported.				
			5				BOOLEAN		OutputOutOfBypass: Commands the UPS out of bypass if conditions allow and UPS is currently in bypass.				
			6				BOOLEAN		Reserved				
			7				BOOLEAN		Reserved				
			8				BOOLEAN		Reserved				
			9				BOOLEAN		ClearFaults: Clears any faults that would inhibit a restart. Note: Faults may immediately reoccur if they still exist.				
			10				BOOLEAN		Reserved				
			11				BOOLEAN		Reserved				
			12				BOOLEAN		Reserved				
			13				BOOLEAN		ResetStrings: Resets all user settable strings to their factory default values.				
			14				BOOLEAN		ResetLogs: Resets all logs to their factory default values.				
			15-27				BOOLEAN		Reserved				
			28				BOOLEAN		USBPort-Source: Command came from a device connected to the USB port. Source bits are mutually exclusive (bits 25-31).				
			29				BOOLEAN		LocalUser-Source: Command came from a local user interface. Source bits are mutually exclusive (bits 25-31).				
			30				BOOLEAN		SmartSlot1-Source: Command came from a device in Smart-Slot 1. Source bits are mutually exclusive (bits 25-31).				
			31				BOOLEAN		InternalNetwork1-Source: Command came from the internal network card 1. Source bits are mutually exclusive (bits 25-31).				
41539	0602	1538		OutletCommand_BF	4	2			A command register for performing sequenced timing (or immediate) operations to the switched or unswitched outlets. Note: If source bits are implemented it is required that one action, and one source be selected to make a valid command.	ReadWrite	x	x	x
			0				BOOLEAN		Cancel: Cancels pending actions to the targets selected. No modifiers are allowed.				
			1				BOOLEAN		OutputOn: Command the output to turn on. The only valid modifiers (in any combination) are UseOnDelay and ColdBootAllowed.				
			2				BOOLEAN		OutputOff: Command the output to turn off (and not come back on automatically). The only valid modifier is UseOffDelay.				
			3				BOOLEAN		OutputShutdown: Command the output to turn off and then back on automatically when AC input power is restored. The only valid modifiers (in any combination) are UseOffDelay and UseOnDelay. MinimumReturnRuntimeSetting is enforced when turning on.				
			4				BOOLEAN		OutputReboot: Command the output to turn off and then back on automatically. The only valid modifiers (in any combination) are UseOffDelay, UseOnDelay and ColdBootAllowed. MinimumReturnRuntimeSetting is not enforced when turning on. A Reboot command is interpretted as a sleep command when the stayofftime countdown is greater than 300 seconds.				
			5				BOOLEAN		ColdBootAllowed-Modifier: Allow the output to turn on without AC input power conditions met.				
			6				BOOLEAN		UseOnDelay-Modifier: Use the on delay settings for the applied command.				
			7				BOOLEAN		UseOffDelay-Modifier: Use the off delay settings for the applied command.				
			8				BOOLEAN		UnswitchedOutletGroup-Target: Command applies to the unswitched outlet group Main Outlet Group (MOG).				
			9				BOOLEAN		SwitchedOutletGroup0-Target: Command applies to switched outlet group 0.				
			10				BOOLEAN		SwitchedOutletGroup1-Target: Command applies to switched outlet group 1.				
			11				BOOLEAN		SwitchedOutletGroup2-Target: Command applies to switched outlet group 2.				
			12				BOOLEAN		USBPort-Source: Command came from a device connected to the USB port.				
			13				BOOLEAN		LocalUser-Source: Command came from a local user interface.				
			14				BOOLEAN		Reserved				
			15				BOOLEAN		SmartSlot1-Source: Command came from a device in SmartSlot 1.				
			16				BOOLEAN		Reserved				
			17				BOOLEAN		InternalNetwork1-Source: Command came from the internal network card #1.				
			18				BOOLEAN		Reserved				
			19-31				BOOLEAN		Reserved				
41541	0604	1540		Reserved	2	1				ReadOnly			

Modicon Standard Register Number	Absolute Starting Register Address, (Hexadecimal)	Absolute Starting Register Address, (Decimal)	Bit	Data Point	Size (bytes)	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	SRYL	SRTL5K	SRTL10K
41542	0605	1541		ReplaceBatteryTestCommand_BF	2	1			Begin a battery test to determine if the replace battery signal should be asserted / deasserted. It also proves that the battery can support the load for at least a short time. Note: If source bits are implemented it is required that one command and one source be selected to make a valid command.	ReadWrite	x	x	x
			0				BOOLEAN		Start-Command: Start the test.				
			1				BOOLEAN		Abort-Command: Cancel the test.				
			2-7				BOOLEAN		Reserved				
			8				BOOLEAN		USBPort-Source: Command came from a device connected to the USB port. Source bits are mutually exclusive (bits 8-15).				
			9				BOOLEAN		LocalUser-Source: Command came from a local user interface. Source bits are mutually exclusive (bits 8-15).				
			10				BOOLEAN		Reserved				
			11				BOOLEAN		SmartSlot1-Source: Command came from a device in SmartSlot 1. Source bits are mutually exclusive (bits 8-15).				
			12				BOOLEAN		Reserved				
			13				BOOLEAN		InternalNetwork1-Source: Command came from the internal network card 1. Source bits are mutually exclusive (bits 8-15).				
			14-15				BOOLEAN		Reserved				
41543	0606	1542		Reserved	2	1				ReadOnly			
41544	0607	1543		UserInterfaceCommand_BF	2	1			Commands associated with the local UI lights and beeper.	ReadWrite	x	x	x
			0				BOOLEAN		ShortTest: Perform the momentary local UI test, e.g. light all the LEDs and sound the beeper.				
			1				BOOLEAN		ContinuousTest: Perform the continuous local UI test, e.g., light all the LEDs and sound the beeper until canceled. To cancel, set UICommand_BF.ShortTest. Local muting should cancel this as well.				
			2				BOOLEAN		MuteAllActiveAudibleAlarms: Mute all the active alarms in the UPS. Will not silence the beeper during the short or continuous test or under other implementation specific reasons (for example, key click).				
			3				BOOLEAN		CancelMute: Cancels any muting (same as audible disabled then enabled).				
			4				BOOLEAN		Reserved				
			5				BOOLEAN		AcknowledgeBatteryAlarms: Acknowledge active battery alarms.				
			6				BOOLEAN		Reserved				
			7-15				BOOLEAN		Reserved				
42049	0800	2048		ModbusMapID	4	2	ASCII		Reports the Modbus map ID as a string, no null terminator.	ReadOnly			
42051	0802	2050		TestString	8	4	ASCII		Always reports "12345678" - included to debug end customer protocol byte order.	ReadOnly			
42055	0806	2054		Test4BNumber1	4	2	UINT32	1	Always reports 0x12345678 - included to debug end customer protocol byte order.	ReadOnly			
42057	0808	2056		Test4BNumber2	4	2	INT32	1	Always reports -5 (0xFFFFFFFB) - included to debug end customer protocol byte order.	ReadOnly			
42059	080A	2058		Test2BNumber1	2	1	UINT16	1	Always reports 0x1234 - included to debug end customer protocol byte order.	ReadOnly			
42060	080B	2059		Test2BNumber2	2	1	INT16	1	Always reports -5 (0xFFFB) - included to debug end customer protocol byte order.	ReadOnly			
42061	080C	2060		TestBPINumber1	2	1	INT16	64	Always reports 128.5 (0x2020) - included to debug end customer protocol byte order.	ReadOnly			
42062	080D	2061		TestBPINumber2	2	1	INT16	64	Always reports -128.5 (0xDFE0) - included to debug end customer protocol byte order.	ReadOnly			

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