Modbus Register Map - Smart-UPS

Models with prefix SMT, SMX, SURTD, and SRT

Part number: 990-9840B

Notes:

1. All data is transmitted MSB first (i.e. big-endian).
2. Modbus Serial RTU is supported on NMC 2 model AP9635, and NMC 3 models AP9641 and AP9643. Modbus TCP is supported on all NMC 2 and NMC 3 models that support Smart-UPS.
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. UPS Models with the prefix SURTD support only read functionality via Modbus.
6. Registers are one word in size.
7. Signed numbers are two's complement.
8. Bit number 0 is least significant bit.
9. Writes to undefined registers will return an error.
10. 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.
11. 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.
12. "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.
13. Individual bit support for the UPS models (SMX/SMT, SRT and SURTD) 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.

Use this Modbus Register Map for UPS models **SRC2KUXI**, **SRC3KUXI**, and **SRC3KUXIX709**. Supported registers for SRT model UPS also apply to those SRC models. For all other UPS models with the prefix SRC, use the Modbus Register Map entitled "*Modbus Register Map for Smart-UPS excluding models with prefix SMT, SMX, SURTD, and SRT"*, available on **www.apc.com**.

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 Managament Card 2 and Network Management Card 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 models with prefix SMT, SMX and SRT, 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	Length # registers	Data Type	Scale (Divide Reading By)	Description	Permission	SMX/SMT	SRT	SURTD
40001	0000	0		UPSStatus_BF	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		StatusChange-Modifier: Toggled as necessary to make the monitoring software aware of status changes that would otherwise not be obvious (so that the change cause usage will be acted upon). Example: changing between commanded bypass and manual bypass. Implementations can choose to toggle this bit at every transition, or only as necessary. Changes from 0 to 1 and from 1 to 0 must be acted upon.				x
			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
			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	
			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	
			14			BOOLEAN		InformationalAlert-Modifier: Indicates that the UPS has an informational alert active (eg. Lifetime Status near end).		x		
			15			BOOLEAN		FaultState-Modifier: Indicates that the UPS is operating in a fault state.		x	x	
			16			BOOLEAN		Reserved				
			17			BOOLEAN		Reserved				
			18			BOOLEAN		Reserved				
			19			BOOLEAN		MainsBadState-Modifier: Indicates that the UPS is operating in a state due to the Mains input not acceptable (eg.TempBypass or due to bad Mains input).			x	
			20			BOOLEAN		FaultRecoveryState-Modifier: Indicates that the UPS is operating in a state due to recovery from a fault state.			x	
			21			BOOLEAN		OverloadState-Modifier: Indicates that the UPS is operating in a state due to an overload.			x	
			22			BOOLEAN		MaintenanceMode-Modifier: Indicates that the system is in Maintenance Mode.				
			23			BOOLEAN		EfficiencyTestMode-Modifier: Indicates that the system is about to enter ETM or is in ETM.				
			24-31			BOOLEAN		Reserved				

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40003	0002	2		UPSStatusChangeCause_EN	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 transistion. 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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40004	0003	3		MOG.OutletStatus_BF	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	
			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			BOOLEAN		MemberGroupProcess1-Modifier: Indicates the outlet is participating in the 1st "group process command".				
			13			BOOLEAN		MemberGroupProcess2-Modifier: Indicates the outlet is participating in the 2nd "group process command".				
			14			BOOLEAN		LowRuntime-Modifier: Indicates the run time is below the setting for the outlet group.				
			15-31			BOOLEAN		Reserved				
40006	0005	5		Reserved	1				ReadOnly			
40007	0006	6		SOG[0].OutletStatus_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly	x	x	
40009	0008	8		Reserved	1				ReadOnly			
40010	0009	9		SOG[1].OutletStatus_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly	x	x	
40012	000B	11		Reserved	1				ReadOnly			
40013	000C	12		SOG[2].OutletStatus_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.OutletStatus_BF.	ReadOnly	x	x	
40015-40018	000E-0011	14-17		Reserved					ReadOnly			
40019	0012	18		SimpleSignalingStatus_BF	1			The Simple Signal Output register. This is what the actual simple signal port should have as output. This usage should only be used for hosting the simple signaling port.	ReadOnly	x	x	x
			0			BOOLEAN		PowerFailure: Indicates that the input power has failed. Signal will be driven with output on or off. Complement of InputStatus.Acceptable.				
			1			BOOLEAN		ShutdownImminent: Indicates that the UPS is committed to disconnecting power from its output(s). The bit is set when UPSStatus_BF.PendingOutputOff is set AND RunTimeRemaining is less than or equal to LowRunTimeWarningSetting OR any of the following depending upon the UPS configuration: * For UPS with an unswitched outlet group - when the MOG.TurnOffCountdown_EN is greater than -1. * For UPS with no unswitched outlet group and with switched outlet group(s) - when the "last commanded" SOG[x].TurnOffCountdown_EN is greater than -1. In response to this bit becoming set, the device using the simple signalling interface should drive request to shutdown, if it hasn't already done so (this ensures that TurnOffCountdown_EN timer will be set to at least the minimum time needed by the simple signaling host).				
			2-15			BOOLEAN		Reserved				

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40020	0013	19		GeneralError_BF	1			Faults that are not contained in a more specific system fault usage. These may indicate current status or latched status depending upon the mode of operation of the UPS	ReadOnly	x	x	x
			0			BOOLEAN		SiteWiring: A site wiring fault exists.				
			1			BOOLEAN		EEPROM: A eeprom fault exists.				
			2			BOOLEAN		ADConverter: An A/D converter fault exists.				
			3			BOOLEAN		LogicPowerSupply: A logic power supply fault exists.				
			4			BOOLEAN		InternalCommunication: A fault in the processor communication system.				
			5			BOOLEAN		UIButton: One (or more) of the Front Panel Buttons is not working properly.				
			6			BOOLEAN		NeedsFactorySetup: Factory setup is required. Example: Board sets are mismatched.				
			7			BOOLEAN		EPOActive: There is an active or unacknowledged Emergency Power Off signal.				
			8			BOOLEAN		FirmwareMismatch: There is a mismatched firmware version, firmware upgrade is required.				
			9			BOOLEAN		Oscillator: The clock source for one or more microprocessors has failed.				
			10			BOOLEAN		MeasurementMismatch: There is a discrepancy between two or more redundant measurements.				
			11			BOOLEAN		Subsystem: A subsystem fault exists.				
			12			BOOLEAN		LogicPowerSupplyRelay: A logic power supply relay error exists.				
			13			BOOLEAN		NetworkWarning: A warning condition exists in the network subsystem.				
			14			BOOLEAN		InputContactOutputRelay: A fault exists in the communication input contact / output relay subsystem.				
			15			BOOLEAN		AirFilterWarning: An air filter warning fault exists.				
40021	0014	20		PowerSystemError_BF	2			Faults in the power processing system. These may indicate current status or latched status depending upon the mode of operation of the UPS.	ReadOnly	x	x	x
			0			BOOLEAN		OutputOverload:The output is overloaded (either real or apparent power).				
			1			BOOLEAN		OutputShortCircuit: The output is short circuited.				
			2			BOOLEAN		OutputOvervoltage: The output voltage is too high.				
			3			BOOLEAN		TransformerDCImbalance: The DC component of the transformer's current is too high.				
			4			BOOLEAN		Overtemperature: Indicates that a component's temperature is too high.				
			5			BOOLEAN		BackfeedRelay: The backfeed relay (or its driver) has a fault.				
			6			BOOLEAN		AVRRelay: An AVR relay (or its driver) has a fault.				
			7			BOOLEAN		PFCInputRelay: A PFC input relay (or its driver) has a fault.				
			8			BOOLEAN		OutputRelay: An output relay (or its driver) has a fault.				
			9			BOOLEAN		BypassRelay: A bypass relay (or its driver) has a fault.				
			10			BOOLEAN		Fan: A fan fault exists.				
			11			BOOLEAN		PFC: A PFC fault exists.				
			12			BOOLEAN		DCBusOvervoltage: A DC bus voltage is too high.				
			13			BOOLEAN		Inverter: An inverter fault exists.				
			14			BOOLEAN		OverCurrent: Bang-Bang or IGBT fault.				
			15			BOOLEAN		BypassPFCRelay: A Bypass PFC input relay (or its driver) has a fault.				
			16			BOOLEAN		BusSoftStart: A DC bus soft start fault exists.				
			17			BOOLEAN		GreenRelay: A green relay (or driver) fault exists.				
			18			BOOLEAN		DCOutput: A DC output fault exists. (eg. over or under voltage)				
			19			BOOLEAN		DCBusConverter: A DC bus converter fault exists.				
			20			BOOLEAN		Sensor: A sensor fault exists. (eg. heatsink temperature sensor is disconnected)				
			21-31			BOOLEAN		Reserved				
40023	0016	22		BatterySystemError_BF	1			Faults in the battery system. These may indicate current status or latched status depending upon the mode of operation of the UPS.	ReadOnly	x	x	x
			0			BOOLEAN		Disconnected: Indicates that the battery is electrically disconnected (missing).				
			1			BOOLEAN		Overvoltage: Indicates that the battery voltage is too high.				
			2			BOOLEAN		NeedsReplacement: Indicates that the battery is at the end of its service life.				
			3			BOOLEAN		OvertemperatureCritical: Indicates that the battery temperature has exceeded a critical level. (Exclusive with OvertemperatureWarning)				
			4			BOOLEAN		Charger: A battery charger fault exists.				
			5			BOOLEAN		TemperatureSensor: A battery temperature sensor fault exists.				
			6			BOOLEAN		BusSoftStart: A battery bus soft start fault exists.				
			7			BOOLEAN		OvertemperatureWarning: Indicates that the battery temperature has exceeded a warning level. (Exclusive with OvertemperatureCritical)				
			8			BOOLEAN		GeneralError: A specific error cannot be determined.				
			9			BOOLEAN		Communication: A communication error between the battery subsystem and the host.				
			10			BOOLEAN		DisconnectedFrame: Indicates that one or more battery frames are electrically disconnected (missing).				
			11			BOOLEAN		FirmwareMismatch: There is a mismatched firmware version, firmware upgrade is required.				

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			12			BOOLEAN		VoltageSenseError: Indicates that there is a sensing error with the battery voltage.				
			13			BOOLEAN		IncompatiblePack: There is an incompatible battery pack / frame connected.				
			14-15			BOOLEAN		Reserved				
40024	0017	23		ReplaceBatteryTestStatus_BF	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.				
			12-15			BOOLEAN		Reserved				
40025	0018	24		RunTimeCalibrationStatus_BF	1			This is the result of the RunTimeCalCommand_BF. This usage should be used for logging purposes. This usage is sticky, and remembers last value until a new value is generated. Upon initialization, all bits may be reset.	ReadOnly	x	x	x
			0			BOOLEAN		Pending: Run time calibration is pending (high level acknowledgement of command).				
			1			BOOLEAN		InProgress: Run time calibration is in progress.				
			2			BOOLEAN		Passed: Run time calibration passed (completed successfully).				
			3			BOOLEAN		Failed: Run time calibration failed (completed unsuccessfully).				
			4			BOOLEAN		Refused: Run time calibration was refused (check "result modifier" bits for potential additional details).				
			5			BOOLEAN		Aborted: Run time calibration 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 run time calibration.				
			7			BOOLEAN		LocalUI-Source modifier: the local user interface is the origin for initiation or abortion of the run time calibration. Includes local terminal mode interface if applicable.				
			8			BOOLEAN		Internal-Source modifier: internal control is the origin for initiation or abortion of the run time calibration. Note: Internal should be reported if there is a "scheduled" internal test eg. every 3 months. Internal should also be used when a "natural" test completes successfully.				
			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		LoadChange-Result modifier: the load changed.				
			13			BOOLEAN		ACInputNotAcceptable-Result modifier: the AC input is not acceptable so the run time calibration was aborted.				
			14			BOOLEAN		LoadTooLow-Result modifier: the load is too low to recalibrate the run time accurately.				
			15			BOOLEAN		OverChargeInProgress-Result modifier: a battery overcharge is currently in progress, therefore the run time calibration is refused (to prevent an inaccurate result).				

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40026	0019	25		Battery.LifeTimeStatus_BF	1			Status of predictive maintenance for the battery.	ReadOnly	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	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				
40129	0080	128		RunTimeRemaining	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	1	UINT16	512	The percent state of charge in the battery.	ReadOnly	x	x	x
40132	0083	131		Battery.Positive.VoltageDC	1	INT16	32	Measured battery voltage - positive battery bus.	ReadOnly	x	x	x
40133	0084	132		Battery.Negative.VoltageDC	1	INT16	32	Measured battery voltage - negative battery bus.	ReadOnly		x	
40134	0085	133		Battery.Date	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	1				ReadOnly			
40136	0087	135		Battery.Temperature	1	INT16	128	Battery temperature in Degrees C.	ReadOnly	x	x	x
40137	0088	136		Output[0].RealPower_Pct	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	1	UINT16	256	Phase 2 - Measured real power as a percent of full rating.	ReadOnly			x
40139	008A	138		Output[0].ApparentPower_Pct	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	1	UINT16	256	Phase 2 - Measured apparent power as a percent of full rating.	ReadOnly			x
40141	008C	140		Output[0].CurrentAC	1	UINT16	32	Phase 1 - Measured AC RMS Current.	ReadOnly	x	x	x
40142	008D	141		Output[1].CurrentAC	1	UINT16	32	Phase 2 - Measured AC RMS Current.	ReadOnly			x
40143	008E	142		Output[0].VoltageAC	1	UINT16	64	Phase 1 - Measured Output Voltage.	ReadOnly	x	x	x
40144	008F	143		Output[1].VoltageAC	1	UINT16	64	Phase 2 - Measured Output Voltage.	ReadOnly			x
40145	0090	144		Output.Frequency	1	UINT16	128	Measured frequency on the output.	ReadOnly	x	x	x
40146	0091	145		Output.Energy	2	UINT32	1	This is the number of Watt Hours consumed by the output load.	ReadOnly	x	x	

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	SMX/SMT	SRT	SURTD
40148	0093	147		Bypass.InputStatus_BF	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
			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		Boost: Indicates that the UPS is attempting to amplify the input voltage. Not applicable for bypass input.				
			6			BOOLEAN		Trim: Indicates that the UPS is attempting to attenuate the input voltage. Not applicable for bypass input.				
			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		Reserved				
			14			BOOLEAN		Reserved				
			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		Bypass.VoltageAC	1	UINT16	64	Measured Voltage on the bypass input for separate bypass feed.	ReadOnly		x	
40150	0095	149		Bypass.Frequency	1	UINT16	128	Measured frequency on the bypass input for separate bypass feed.	ReadOnly		x	
40151	0096	150		Input.InputStatus_BF	1	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR Bypass.InputStatus_BF.	ReadOnly	x	x	x
40152	0097	151		Input[0].VoltageAC	1	UINT16	64	Phase 1 - Measured Input Voltage.	ReadOnly	x	x	x
40153	0098	152		Input[1].VoltageAC	1	UINT16	64	Phase 2 - Measured Input Voltage.	ReadOnly		x	x
40154	0099	153		Input[2].VoltageAC	1	UINT16	64	Phase 3 - Measured Input Voltage.	ReadOnly		x	
40155	009A	154		Efficiency_EN	1	ENUM		Efficiency is defined as RealPowerOut / RealPowerIn. Apparent Power (VA) measurements should not be used.	ReadOnly	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	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	

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	SMX/SMT	SRT	SURTD
40157	009C	156		MOG.TurnOnCountdown_EN	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	
40158	009D	157		MOG.StayOffCountdown_EN	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	
40160	009F	159		SOG[0].TurnOffCountdown_EN	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG0. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly	x	x	
40161	00A0	160		SOG[0].TurnOnCountdown_EN	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG0. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly	x	x	
40162	00A1	161		SOG[0].StayOffCountdown_EN	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	x	
40164	00A3	163		SOG[1].TurnOffCountdown_EN	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG1. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly	x	x	
40165	00A4	164		SOG[1].TurnOnCountdown_EN	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG1. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly	x	x	
40166	00A5	165		SOG[1].StayOffCountdown_EN	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	x	
40168	00A7	167		SOG[2].TurnOffCountdown_EN	1	ENUM	1	Time remaining until output off for Switched Outlet Group SOG2. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOffCountdown_EN.	ReadOnly	x	x	
40169	00A8	168		SOG[2].TurnOnCountdown_EN	1	ENUM	1	Time remaining until output on for Switched Outlet Group SOG 2. SEE ENUM DESCRIPTION ABOVE FOR MOG.TurnOnCountdown_EN.	ReadOnly	x	x	
40170	00A9	169		SOG[2].StayOffCountdown_EN	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	x	
40517	0204	516		FWVersion_STR	8	ASCII		UPS Firmware Version.	ReadOnly	x	x	x
40525	020C	524		Reserved	8				ReadOnly			
40533	0214	532		Model_STR	16	ASCII		UPS Model Name.	ReadOnly	x	x	x
40549	0224	548		SKU_STR	16	ASCII		UPS SKU Name.	ReadOnly	x	x	x
40565	0234	564		SerialNumber_STR	8	ASCII		UPS Serial Number.	ReadOnly	x	x	x
40573	023C	572		Battery.SKU_STR	8	ASCII		The replacement battery pack SKU for the internal battery pack (or the system, if there is only one type).	ReadOnly	x	x	
40581	0244	580		Battery.ExternalBattery.SKU_STR	8	ASCII		The replacement battery pack SKU for the external battery pack.	ReadOnly	x		
40589	024C	588		Output.ApparentPowerRating	1	UINT16	1	The rated apparent full power.	ReadOnly	x	x	x
40590	024D	589		Output.RealPowerRating	1	UINT16	1	The rated real full power.	ReadOnly	x	x	x
40591	024E	590		SOGRelayConfigSetting_BF	1			Indicates UPS's outlet group configuration.	ReadOnly	x	x	
			0			BOOLEAN		MOGPresent: A user accessible Main Outlet Group (MOG) is present.				
			1			BOOLEAN		SOG0Present: Switched Outlet Group SOG0 is present.				
			2			BOOLEAN		SOG1Present: SOG 1 is present.				
			3			BOOLEAN		SOG2Present: SOG 2 is present.				
			4			BOOLEAN		SOG3Present: SOG 3 is present.				
			5-15			BOOLEAN		Reserved				
40592	024F	591		Manufacture.Date	1	UINT16	1	Manufacture Date, days since 1999 (January 1, 2000 = 0).	ReadOnly	x	x	x
40593	0250	592		Output.VoltageACSetting_BF*	1			This is the configured output voltage setting. This is still implemented when there is only one voltage setting. This field may not show all values (see register 644).	ReadOnly	x	x	x
			0			BOOLEAN		VAC100: Output voltage 100VAC.				
			1			BOOLEAN		VAC120: Output voltage 120VAC.				
			2			BOOLEAN		VAC200: Output voltage 200VAC.				
			3			BOOLEAN		VAC208: Output voltage 208VAC.				
			4			BOOLEAN		VAC220: Output voltage 220VAC.				
			5			BOOLEAN		VAC230: Output voltage 230VAC.				
			6			BOOLEAN		VAC240: Output voltage 240VAC.				
			7			BOOLEAN		Reserved				
			8			BOOLEAN		Reserved				
			9			BOOLEAN		Reserved				
			10			BOOLEAN		Reserved				
			11			BOOLEAN		VAC110: Output voltage 110VAC.				
			12			BOOLEAN		Reserved				
			13			BOOLEAN		VACAuto120_208or240: Output voltage 120VAC Phase-Neutral and automatically selected 208 or 240 based on the input.				
			14			BOOLEAN		VAC120_208: Output voltage 120VAC Phase-Neutral and 208				
			15			BOOLEAN		VAC120_240: Output voltage 120VAC Phase-Neutral and 240				

*** Supported in NMC 2 models for Smart-UPS firmware v6.4.6 and higher, and NMC 3 models with all Smart-UPS firmware revisions**

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	SMX/SMT	SRT	SURTD
40594	0251	593		Output.AcceptableFrequencySetting_BF	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
			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		Hz50_1_0: Frequency of 50 Hz +/- 1.0 Hz.				
			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		Hz60_1_0: Frequency of 60 Hz +/- 1.0 Hz.				
			6			BOOLEAN		Hz60_3_0: Frequency of 60 Hz +/- 3.0 Hz.				
			7-15			BOOLEAN		Reserved				
40595	0252	594		Reserved	1				ReadOnly			
40596	0253	595		Battery.DateSetting	1	UINT16		Battery Installation Date, days since 1999 (January 1, 2000 = 0).	ReadWrite	x	x	x
40597	0254	596		Name_STR	8	ASCII		The name assigned to the UPS.	ReadWrite	x	x	
40605	025C	604		MOG.Name_STR	8	ASCII		The name assigned to the Main Outlet Group (MOG).	ReadWrite	x	x	
40613	0264	612		SOG[0].Name_STR	8	ASCII		The name assigned to Switched Outlet Group SOG0.	ReadWrite	x	x	
40621	026C	620		SOG[1].Name_STR	8	ASCII		The name assigned to SOG 1.	ReadWrite	x	x	
40629	0274	628		SOG[2].Name_STR	8	ASCII		The name assigned to SOG 2.	ReadWrite	x	x	
40637	027C	636		Reserved	8				ReadOnly			
40645	0284	644		Output.VoltageACSetting_BF	2			This is the configured output voltage setting. This is still implemented when there is only one voltage setting.	ReadOnly	x	x	x
			0			BOOLEAN		VAC100: Output voltage 100VAC.				
			1			BOOLEAN		VAC120: Output voltage 120VAC.				
			2			BOOLEAN		VAC200: Output voltage 200VAC.				
			3			BOOLEAN		VAC208: Output voltage 208VAC.				
			4			BOOLEAN		VAC220: Output voltage 220VAC.				
			5			BOOLEAN		VAC230: Output voltage 230VAC.				
			6			BOOLEAN		VAC240: Output voltage 240VAC.				
			7			BOOLEAN		Reserved				
			8			BOOLEAN		Reserved				
			9			BOOLEAN		Reserved				
			10			BOOLEAN		Reserved				
			11			BOOLEAN		VAC110: Output voltage 110VAC.				
			12			BOOLEAN		Reserved				
			13			BOOLEAN		VACAuto120_208or240: Output voltage 120VAC Phase-Neutral and automatically selected 208 or 240 based on the input.				
			14			BOOLEAN		VAC120_208: Output voltage 120VAC Phase-Neutral and 208VAC Phase-Phase.				
			15			BOOLEAN		VAC120_240: Output voltage 120VAC Phase-Neutral and 240VAC Phase-Phase.				
			16			BOOLEAN		VAC100_200: Output voltage 100VAC Phase-Neutral and 200VAC Phase-Phase.				
			17			BOOLEAN		Reserved				
			18			BOOLEAN		VAC115: Output voltage 115VAC.				
			19			BOOLEAN		VAC125: Output voltage 125VAC.				
			20-31			BOOLEAN		Reserved				
41025	0400	1024		BatteryTestIntervalSetting_BF	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		OnStartUpPlus7: Perform battery test on UPS powerup and every 7 days thereafter (if UPS is on line or on battery). 7 day timer is loaded at turn on and reloaded upon timeout.				
			3			BOOLEAN		OnStartUpPlus14 : Perform battery test on UPS powerup and every 14 days thereafter (if UPS is on line or on battery). 14 day timer is loaded at turn on and reloaded upon timeout.				
			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.				
			6-31			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	SMX/SMT	SRT	SURTD
41026	0401	1025		Reserved	1				ReadOnly			
41027	0402	1026		Output.UpperAcceptableVoltageSetting	1	UINT16	1	This is the upper limit of the acceptable voltage. The "upper transfer point" (highest voltage load will see).	ReadWrite	x	x	
41028	0403	1027		Output.LowerAcceptableVoltageSetting	1	UINT16	1	This is the lower limit of the acceptable voltage. The "lower transfer point" (lowest voltage load will see).	ReadWrite	x	x	
41029	0404	1028		Output.SensitivitySetting_BF	1			Sets the UPS sensitivity to line conditions.	ReadWrite	x		
			0			BOOLEAN		Normal: allows the minimum input deviations to be seen by the load.				
			1			BOOLEAN		Reduced: allows more input deviations to be seen by the load than Normal setting.				
			2			BOOLEAN		Low: allows maximum input deviations to be seen by the load.				
			3-15			BOOLEAN		Reserved				
41030	0405	1029		MOG.TurnOffCountdownSetting_EN	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	
41031	0406	1030		MOG.TurnOnCountdownSetting_EN	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	
41032	0407	1031		MOG.StayOffCountdownSetting_4B	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	
41034	0409	1033		MOG.MinimumReturnRuntimeSetting	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	
41035	040A	1034		SOG[0].TurnOffCountdownSetting_EN	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	x	
41036	040B	1035		SOG[0].TurnOnCountdownSetting_EN	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	x	
41037	040C	1036		SOG[0].StayOffCountdownSetting_4B	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	x	
41039	040E	1038		SOG[0].MinimumReturnRuntimeSetting	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	x	
41040	040F	1039		SOG[1].TurnOffCountdownSetting_EN	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	x	
41041	0410	1040		SOG[1].TurnOnCountdownSetting_EN	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	x	
41042	0411	1041		SOG[1].StayOffCountdownSetting_4B	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	x	
41044	0413	1043		SOG[1].MinimumReturnRuntimeSetting	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	x	
41045	0414	1044		SOG[2].TurnOffCountdownSetting_EN	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	x	
41046	0415	1045		SOG[2].TurnOnCountdownSetting_EN	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	x	
41047	0416	1046		SOG[2].StayOffCountdownSetting_4B	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	x	
41049	0418	1048		SOG[2].MinimumReturnRuntimeSetting	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	x	

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	SMX/SMT	SRT	SURTD
41055	041E	1054		MOG.LoadShedConfigSetting_BF	2			Actions that cause an outlet or output to turn off. Each bit represents a separate condition.	ReadWrite	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		UPSOverload - When set, the outlet will turn off immediately (no off delay possible) when the UPS is in overload. The outlet will require a manual command to restart. Not applicable for the Main Outlet Group (MOG).				
			6-15			BOOLEAN		Reserved				
41057	0420	1056		SOG[0].LoadShedConfigSetting_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite	x	x	
41059	0422	1058		SOG[1].LoadShedConfigSetting_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite	x	x	
41061	0424	1060		SOG[2].LoadShedConfigSetting_BF	2	BOOLEAN		SEE BIT DESCRIPTIONS ABOVE FOR MOG.LoadShedConfigSetting_BF.	ReadWrite	x	x	
41065	0428	1064		SOG[0].LoadShedRunTimeRemainingSetting	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	x	
41066	0429	1065		SOG[1].LoadShedRunTimeRemainingSetting	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	x	
41067	042A	1066		SOG[2].LoadShedRunTimeRemainingSetting	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	x	
41069	042C	1068		SOG[0].LoadShedTimeOnBatterySetting	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	x	
41070	042D	1069		SOG[1].LoadShedTimeOnBatterySetting	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	x	
41071	042E	1070		SOG[2].LoadShedTimeOnBatterySetting	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	x	
41073	0430	1072		MOG.LoadShedRunTimeRemainingSetting	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	
41074	0431	1073		MOG.LoadShedTimeOnBatterySetting	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	

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	SMX/SMT	SRT	SURTD
41537	0600	1536		UPSCommand_BF	2			Command the UPS to perform the designated function as defined by the individual bits.	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.				
			15-31			BOOLEAN		Reserved				
41539	0602	1538		OutletCommand_BF	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	
			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		RJ45Port-Source: Command came from a device connected to the Computer Interface port (typically RJ45), This includes software over the serial RJ45 and simple signal via RJ45.				
			15			BOOLEAN		SmartSlot1-Source: Command came from a device in SmartSlot 1.				
			16			BOOLEAN		SmartSlot2-Source: Command came from a device in SmartSlot 2.				
			17			BOOLEAN		InternalNetwork1-Source: Command came from the internal network card #1.				
			18			BOOLEAN		InternalNetwork2-Source: Command came from the internal network card #2.				
			19-31			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	SMX/SMT	SRT	SURTD
41541	0604	1540		SimpleSignalingCommand_BF	1			This usage is for writing data from the simple interface. This usage should only be used for hosting the simple signaling port.	ReadWrite	x	x	x
			0			BOOLEAN		RequestShutdown: If there is no "shutdown" action in process, this bit indicates a command to the system to shutdown. The UPS will accept this command regardless of the UPS State (Online or On Battery). It is the responsibility of the monitoring software to only issue this command at the appropriate time.				
			1			BOOLEAN		RemoteOff: This is the equivalent of pressing and holding the power off button. This will execute an immediate off function of all outlets that are on and the UPS output.				
			2			BOOLEAN		RemoteOn: This is the equivalent of pressing the power on button. This will execute a sequenced on.				
			3-15			BOOLEAN		Reserved				
41542	0605	1541		ReplaceBatteryTestCommand_BF	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.	ReadWrite	x	x	x
			0			BOOLEAN		Start: Start the test.				
			1			BOOLEAN		Abort: Cancel the test.				
			2-15			BOOLEAN		Reserved				
41543	0606	1542		RunTimeCalibrationCommand_BF	1			Begin / cancel a run time calibration. Run time calibration may improve the accuracy of the reported run time.	ReadWrite	x	x	x
			0			BOOLEAN		Start: Start the run time calibration.				
			1			BOOLEAN		Abort: Cancel the run time calibration.				
			2-15			BOOLEAN		Reserved				
41544	0607	1543		UserInterfaceCommand_BF	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		AcknowledgeSiteWiringAlarm: Acknowledge active site wiring alarm.				
			7-15			BOOLEAN		Reserved				
42049	0800	2048		ModbusMapID	2	ASCII		Reports the Modbus map ID as a string, no null terminator.	ReadOnly	x	x	x
42051	0802	2050		TestString	4	ASCII		Always reports "12345678" - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42055	0806	2054		Test4BNumber1	2	UINT32	1	Always reports 0x12345678 - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42057	0808	2056		Test4BNumber2	2	INT32	1	Always reports -5 (0xFFFFFFFB) - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42059	080A	2058		Test2BNumber1	1	UINT16	1	Always reports 0x1234 - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42060	080B	2059		Test2BNumber2	1	INT16	1	Always reports -5 (0xFFFB) - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42061	080C	2060		TestBPINumber1	1	INT16	64	Always reports 128.5 (0x2020) - included to debug end customer protocol byte order.	ReadOnly	x	x	x
42062	080D	2061		TestBPINumber2	1	INT16	64	Always reports -128.5 (0xDFE0) - included to debug end customer protocol byte order.	ReadOnly	x	x	x

END OF MAP

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