E51 MODBUS POINT MAP

The E51C2 Full Data Set (FDS) model features data outputs such as demand calculations, per phase signed watts VA and VAR, import/export Wh and VAh, and VARh accumulators by quadrant. The E51C3 Data Logging model includes the FDS and adds log configuration registers 155-178 and log buffer reading at registers 8000-13760. The meter supports variable CTs and PTs, allowing a much wider range of operation from 90V x 5A up to 32000V x 32000A. To promote this, the meter permits variable scaling via the scale registers.

Integer registers begin at 001 (0x001). Floats at 257 (0x101). Configuration registers at 129 (0x081). Values not supported in a particular System Type configuration will report QNAN (0x8000 in Integer Registers, 0x7FC00000 in Floating Point Registers). Register addresses are in PLC style base 1 notation. Subtract 1 from all addresses for the base 0 value used on the Modbus RS-485 link.

Supported Modbus Commands

Note: Id String information varies from model to model. Text shown here is an example.

Command	Description
0x03	Read Holding Registers
0x04	Read Input Registers
0x06	Preset Single Register
0x10	Preset Multiple Registers
0x11	Report ID
	Return string: byte0: address byte1: 0x11 byte2: #bytes following w/out crc byte3: ID byte = 247 byte4: status = 0xFF if the operating system is used; status = 0x00 if the reset system is used bytes5+: ID string = "Veris Industries E51xx Power Meter Full Data Set" or "Veris Industries E51xx Power Meter - RESET SYSTEM RUNNING RS Version x.xxx" last 2 bytes: CRC
0x2B	Read Device Identification, BASIC implementation (0x00, 0x01 and 0x02 data), Conformity Level 1.
	Object values: 0x01: "Veris Industries" 0x02: " E51xx" 0x03: "Vxx.yyy", where xx.yyy is the OS version number (reformatted version of the Modbus register #7001, (Firmware Version, Operating System). If register #7001 == 12345, then the 0x03 data would be "V12.345").

Legend

The following table lists the addresses assigned to each data point. For floating point format variables, each data point appears twice because two 16-bit addresses are required to hold a 32-bit float value. Negative signed integers are 2's complement.

R/W	R=read only R/W=read from either int or float formats, write only to integer format.	
NV	Value is stored in non-volatile memory. The value will still be available if the meter experiences a power loss and reset.	
Format	UInt	Unsigned 16-bit integer.
	SInt	Signed 16-bit integer.
	ULong	Unsigned 32-bit integer; Upper 16-bits (MSR) in lowest-numbered / first listed register (001/002 = MSR/LSR).
	SLong	Signed 32-bit integer; Upper 16-bits (MSR) in lowest-numbered / first listed register (001/002 = MSR/LSR).
	Float	32-bit floating point; Upper 16-bits (MSR) in lowest-numbered / first listed register (257/258 = MSR/LSR). Encoding is per IEEE standard 754 single precision.
Units	Lists the physical units that a register holds.	
Scale Factor	Some Integer values must be multiplied by a constant scale factor (typically a fraction), to be read correctly. This is done to allow integer numbers to represent fractional numbers.	
Range	Defines the limit of the values that a register can contain.	

SunSpec Alliance Interoperability Specification Compliance

This meter implements the draft SunSpec 1.0 common elements starting at base 1 address 40001, and the proposed SunSpec 1.1 meter model at 40070 (these addresses are not in Modicon notation). See www.veris.com or www.sunspec.org for copies of these specifications.

SunSpec™ alliance

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description			
Integer Data: Summary of Active Phases												
•	•	001	R	NV	SLong	kWh	E	-2147483647 to +2147483647	Real Energy: Net (Import - Export)	MSR	Accumulated Real Energy (Ph)	Clear via reset register 129
•	•	002								LSR		
•	•	003	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Real Energy: Quadrants 1 & 4 Import	MSR		
•	•	004								LSR		
•	•	005	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Real Energy: Quadrants 2 & 3 Export	MSR		
•	•	006								LSR		
•	•	007	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Reactive Energy - Quadrant 1: Lags Import Real Energy (IEC) Inductive (IEEE)	MSR	Accumulated Reactive Energy (Qh): Quadrants 1 + 2 = Import Quadrants 3 + 4 = Export	
•	•	008								LSR		
•	•	009	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Reactive Energy - Quadrant 2: Leads Export Real Energy (IEC) Inductive (IEEE)	MSR		
•	•	010								LSR		
•	•	011	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Reactive Energy - Quadrant 3: Lags Export Real Energy (IEC) Capacitive (IEEE)	MSR		
•	•	012								LSR		
•	•	013	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Reactive Energy - Quadrant 4: Leads Import Real Energy (IEC) Capacitive (IEEE)	MSR		
•	•	014								LSR		
•	•	015	R	NV	SLong	kVAh	E	-2147483647 to +2147483647	Apparent Energy: Net (Import - Export)	MSR	Accumulated Apparent Energy (Sh): Import and Export correspond with Real Energy	
•	•	016								LSR		
•	•	017	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Apparent: Quadrants 1 & 4 Import	MSR		
•	•	018								LSR		
•	•	019	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Apparent: Quadrants 2 & 3 Export	MSR		
•	•	020								LSR		
•	•	021	R		SInt	kW	W	-32767 to +32767	Total Instantaneous Real (P) Power			
•	•	022	R		SInt	kVAR	W	0 to 32767	Total Instantaneous Reactive (Q) Power			
•	•	023	R		UInt	kVA	W	0 to 32767	Total Instantaneous Apparent (S) Power (vector sum)			
•	•	024	R		SInt	Ratio	0.0001	-10000 to +10000	Total Power Factor (total kW / total kVA)			
•	•	025	R		UInt	Volt	V	0 to 32767	Voltage, L-L (U), average of active phases			
•	•	026	R		UInt	Volt	V	0 to 32767	Voltage, L-N (V), average of active phases			
•	•	027	R		UInt	Amp	I	0 to 32767	Current, average of active phases			
•	•	028			UInt	Hz	0.01	4500 to 6500	Frequency			
•	•	029	R		SInt	kW	W	-32767 to +32767	Total Real Power Present Demand			
•	•	030			SInt	kVAR	W	-32767 to +32767	Total Reactive Power Present Demand			
•	•	031	R		SInt	kVA	W	-32767 to +32767	Total Apparent Power Present Demand			
•	•	032	R	NV	SInt	kW	W	-32767 to +32767	Total Real Power Max. Demand	Import		Reset via register 129
•	•	033	R	NV	SInt	kVAR	W	-32767 to +32767	Total Reactive Power Max. Demand			
•	•	034	R	NV	SInt	kVA	W	-32767 to +32767	Total Apparent Power Max. Demand			
•	•	035	R	NV	SInt	kW	W	-32767 to +32767	Total Real Power Max. Demand	Export		
•	•	036	R	NV	SInt	kVAR	W	-32767 to +32767	Total Reactive Power Max. Demand			
•	•	037	R	NV	SInt	kVA	W	-32767 to +32767	Total Apparent Power Max. Demand			
•	•	038	R		UInt				Reserved, returns 0x8000 (QNAN)			
•	•	039	R	NV	ULong			0 to 0xFFFFFFFF	Pulse Counter 1 (Import Real Energy)	MSR	Contact Closure Counters. Valid for both pulse inputs and outputs. E51Cx counts are shown in (). See register 144 - Energy Per Pulse for the Wh per pulse count.	
•	•	040								LSR		
•	•	041	R	NV	ULong			0 to 0xFFFFFFFF	Pulse Counter 2 (Export Real Energy)	MSR		
•	•	042								LSR		

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description			
Integer Data: Per Phase												
•	•	043	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase A	MSR	Import	Accumulated Real Energy (Ph), per phase
•	•	044								LSR		
•	•	045	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase B	MSR		
•	•	046								LSR		
•	•	047	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase C	MSR		
•	•	048								LSR		
•	•	049	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase A	MSR	Export	
•	•	050								LSR		
•	•	051	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase B	MSR		
•	•	052								LSR		
•	•	053	R	NV	ULong	kWh	E	0 to 0xFFFFFFFF	Accumulated Real Energy, Phase C	MSR		
•	•	054								LSR		
•	•	055	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q1 Reactive Energy, Phase A	MSR	Import	Accumulated Reactive Energy (Qh), Per Phase
•	•	056								LSR		
•	•	057	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q1 Reactive Energy, Phase B	MSR		
•	•	058								LSR		
•	•	059	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q1 Reactive Energy, Phase C	MSR		
•	•	060								LSR		
•	•	061	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q2 Reactive Energy, Phase A	MSR		
•	•	062								LSR		
•	•	063	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q2 Reactive Energy, Phase B	MSR		
•	•	064								LSR		
•	•	065	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q2 Reactive Energy, Phase C	MSR		
•	•	066								LSR		
•	•	067	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q3 Reactive Energy, Phase A	MSR	Export	
•	•	068								LSR		
•	•	069	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q3 Reactive Energy, Phase B	MSR		
•	•	070								LSR		
•	•	071	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q3 Reactive Energy, Phase C	MSR		
•	•	072								LSR		
•	•	073	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q4 Reactive Energy, Phase A	MSR		
•	•	074								LSR		
•	•	075	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q4 Reactive Energy, Phase B	MSR		
•	•	076								LSR		
•	•	077	R	NV	ULong	kVARh	E	0 to 0xFFFFFFFF	Accumulated Q4 Reactive Energy, Phase C	MSR		
•	•	078								LSR		

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description			
•	•	079	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase A	MSR	Import	Accumulated Apparent Energy (Sh), Per Phase
•	•	080								LSR		
•	•	081	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase B	MSR		
•	•	082								LSR		
•	•	083	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase C	MSR		
•	•	084								LSR		
•	•	085	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase A	MSR	Export	
•	•	086								LSR		
•	•	087	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase B	MSR		
•	•	088								LSR		
•	•	089	R	NV	ULong	kVAh	E	0 to 0xFFFFFFFF	Accumulated Apparent Energy, Phase C	MSR		
•	•	090								LSR		
•	•	091	R		SInt	kW	W	-32767 to +32767	Real Power (P), Phase A		Real Power (P)	
•	•	092	R		SInt	kW	W	-32767 to +32767	Real Power (P), Phase B			
•	•	093	R		SInt	kW	W	-32767 to +32767	Real Power (P), Phase C			
•	•	094	R		SInt	kVAR	W	-32767 to +32767	Reactive Power (Q), Phase A		Reactive Power (Q)	
•	•	095	R		SInt	kVAR	W	-32767 to +32767	Reactive Power (Q), Phase B			
•	•	096	R		SInt	kVAR	W	-32767 to +32767	Reactive Power (Q), Phase C			
•	•	097	R		UInt	kVA	W	0 to 32767	Apparent Power (S), Phase A		Apparent Power (S)	
•	•	098	R		UInt	kVA	W	0 to 32767	Apparent Power (S), Phase B			
•	•	099	R		UInt	kVA	W	0 to 32767	Apparent Power (S), Phase C			
•	•	100	R		SInt	Ratio	0.0001	-10000 to +10000	Power Factor (PF), Phase A		Power Factor (PF)	
•	•	101	R		SInt	Ratio	0.0001	-10000 to +10000	Power Factor (PF), Phase B			
•	•	102	R		SInt	Ratio	0.0001	-10000 to +10000	Power Factor (PF), Phase C			
•	•	103	R		UInt	Volt	V	0 to 32767	Voltage (U), Phase A-B		Line to Line Voltage (U)	
•	•	104	R		UInt	Volt	V	0 to 32767	Voltage (U), Phase B-C			
•	•	105	R		UInt	Volt	V	0 to 32767	Voltage (U), Phase A-C			
•	•	106	R		UInt	Volt	V	0 to 32767	Voltage (V), Phase A-N		Line to Neutral Voltage (V)	
•	•	107	R		UInt	Volt	V	0 to 32767	Voltage (V), Phase B-N			
•	•	108	R		UInt	Volt	V	0 to 32767	Voltage (V), Phase C-N			
•	•	109	R		UInt	Amp	I	0 to 32767	Current, Phase A		Current	
•	•	110	R		UInt	Amp	I	0 to 32767	Current, Phase B			
•	•	111	R		UInt	Amp	I	0 to 32767	Current, Phase C			
•	•	112	R		UInt				Reserved, Returns 0x8000 (QNAN)			
Configuration												
•	•	129	R/W		UInt			N/A	Reset: - Write 30078 (0x757E) to clear all Energy Accumulators to 0 (All). - Write 21211 (0x52DB) to begin new Demand Sub-Interval calculation cycle. Takes effect at the end of the next 1 second calculation cycle. Write no more frequently than every 10 seconds. - Write 21212 (0x52DC) to reset Max Demand values to Present Demand Values. Takes effect at the end of the next 1 second calculation cycle. Write no more frequently than every 10 seconds. - Write 16640 (0x4100) to reset Logging (E51C3 only). - Write 16498 (0x4072) to clear Pulse Counts to zero. - Read always returns 0.			
•	•	130	R/W	NV	UInt			10, 11, 12, 31, 40	Single Phase: A + N Single Phase: A + B Single Split Phase: A + B + N 3 phase Δ, A + B + C, no N 3 phase Y, A + B + C + N		System Type (See Manual. Note: only the indicated phases are monitored for Phase Loss)	

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description	
•	•	131	R/W	NV	UInt	Amps		1-32000	CT Ratio – Primary	Current Inputs
•	•	132	R/W	NV	UInt			1, 3	CT Ratio – Secondary Interface (1 or 1/3 V, may not be user configurable)	
•	•	133	R/W	NV	UInt		100	0.01-320.00	PT Ratio: The meter scales this value by 100 (i.e. entering 200 yields a potential transformer ratio of 2:1). The default is 100 (1.00:1), which is with no PT attached. Set this value before setting the system voltage (below)	
•	•	134	R/W	NV	UInt			82-32000	System Voltage: This voltage is line to line, unless in system type 10 (register 130), which is line to neutral. The meter uses this value to calculate the full scale power for the pulse configuration (below), and as full scale for phase loss (register 142). The meter will refuse voltages that are outside the range of 82-660 volts when divided by the PT Ratio (above).	
•	•	135	R	NV	UInt	kW	W	1-32767	Theoretical Maximum System Power – This read only register is the theoretical maximum power the meter expects to see on a service. It is calculated by the meter from the System Type (register 130), CT size (register 131), and System Voltage (register 134) and is updated whenever the user changes any of these parameters. It is used to determine the maximum power the pulse outputs can keep up with. This integer register has the same scale as other integer power registers (see register 140 for power scaling).	
•	•	136	R		UInt				Reserved, always returns 0	
•	•	137	R/W	NV	UInt			0,1	Display Units: 0 = IEC (U, V, P, Q, S), 1 = IEEE (default: VLL, VLN, W, VAR, VA)	
•	•	138	R		SInt		-4 0.0001 -3 0.001 -2 0.01 -1 0.1 0 1.0 1 10.0 2 100.0 3 1000.0 4 10000.0		Scale Factor I (Current)	Scale Factors Note: These registers contain a signed integer, which scales the corresponding integer registers. Floating point registers are not scaled. Scaling is recalculated when the meter configuration is changed.
•	•	139	R		SInt				Scale Factor V (Voltage)	
•	•	140	R		SInt				Scale Factor W (Power)	
•	•	141	R		SInt				Scale Factor E (Energy)	
•	•	142	R/W	NV	UInt	V		1-99	Phase Loss Voltage Threshold in percent of system voltage (register 134).	Phase Loss Output Note: The phases tested are determined by the System Type.
•	•	143	R/W	NV	UInt	%		1-99	Phase Loss Imbalance Threshold in Percent. Default is 25% phase to phase difference. For System type 40 (3+N), both line to neutral and line to line voltages are tested. For System type 31, only only line to line voltages are examined. In System type 12 (2+N), just the two line to neutral voltages are compared.	
•	•	144	R/W	NV	UInt	Wh		10000, **1000**, 100, 10	Wh (& VARh, if equipped) Energy per Pulse Output Contact Closure. If the meter cannot find a pulse duration that will keep up with the max. system power (register 135), it will reject the new value. Check the meter configuration and/or try a larger value.	kWh (& VARh, if equipped) Pulse Contacts
•	•	145	R	NV	UInt	msec		500, 250, 100, 50, 25, 10	Pulse Contact Closure Duration in msec. Read-only. Set to the slowest duration that will keep up with the theoretical max. system power (register 135). The open time ≥ the closure time, so the max. pulse rate (pulses per sec) is the inverse of double the pulse time.	Note: The kWh pulse contact can keep up with a maximum power (Watts) of 1800000 x Wh pulse weight ÷ contact closure duration (in msec)

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description
•	•	146	R		UInt				Error Bitmap. 1 = Active: Bit 0: Phase A Voltage out of range Bit 1: Phase B Voltage out of range Bit 2: Phase C Voltage out of range Bit 3: Phase A Current out of range Bit 4: Phase B Current out of range Bit 5: Phase C Current out of range Bit 6: Frequency out of the range of 45 to 65 Hz -OR- insufficient voltage to determine frequency. Bit 7: Reserved for future use Bit 8: Phase Loss A Bit 9: Phase Loss B Bit 10: Phase Loss C Bit 11: Low Power Factor on A with one or more phases having a PF less than 0.5 due to mis-wiring of phases Bit 12: Low Power Factor on B Bit 13: Low Power Factor on C Bit 14: Energy pulse output overrun error. The pulse outputs are unable to keep up with the total real power (registers 3 and 261/262). To fix, increase the pulse energy register (register 144) and reset the energy accumulators (see reset register 129). Bit 15: Energy pulse output configuration error (present pulse energy setting may not keep up with the theoretical max. system power; see register 135). To fix, increase the pulse energy (register 144).
•	•	147	R	NV	UInt			0-32767	Count of Energy Accumulator resets
•	•	148	R		UInt				Reserved (returns 0)
•	•	149	R/W	NV	UInt			1-6	Number of Sub-Intervals per Demand Interval. Sets the number of sub-intervals that make a single demand interval. For block demand, set this to 1. Default is 1. When Sub-Interval Length register #150 is set to 0 (sync-to-comms mode), this register is ignored. — Demand Calculation
•	•	150	R/W	NV	UInt	Seconds		0, 10-32767	Sub-Interval Length in seconds. For sync-to-comms, set this to 0 and use the reset register (129) to externally re-start the sub-interval. On the E51C3, this is also the logging interval. — Demand Calculation
•	•	151	R/W		UInt			1-32767	Reserved (returns 0)
•	•	152	R	NV	UInt			0-32767	Power Up Counter.
•	•	153	R	NV	UInt			0-32767	Output Configuration. Unless otherwise noted, all units have a NO energy contact and NO or NC (Normally Open - Form A or Normally Closed - Form B) Phase Loss contact.
•	•	154	R		UInt				Reserved, returns 0
Logging Configuration and Status									
	•	155	R/W	NV	UInt	Day / Month		See Bytes	**Most Significant Byte (MSB)**: Day 1-31 (0x01-0x1F); **Least Significant Byte (LSB)**: Month 1-12 (0x01-0x0C)
	•	156	R/W	NV	UInt	Hour / Year		See Bytes	Hour 0-23 (0x00-0x17); Year 0-199 (0x00-0xC7)
	•	157	R/W	NV	UInt	Seconds / Minutes		See Bytes	Seconds 0-59 (0x00-0x3B); Minutes 0-59 (0x00-0x3B)
									Date / Time Clock. Following a power cycle, resets to: Day 01 Month 00 Hour 00 Year 213 Note that this is the only time Month goes to 0.
	•	158	R/W	NV	UInt			0-10	Logging Read Page Register. Selects which of the Register Logs to read (see registers 169-178). 1-10 are valid entries that put the meter into log reading mode, temporarily pausing logging. When set to 0 (no variable selected for reading), normal logging resumes. The meter will buffer one set of log entries while in reading mode if a sub-interval timeout occurs (read/write collision). Default is 0. Warning: this buffered data will be written to the log, and logging will resume on the following sub-interval timeout whether the page register has been cleared or not, resulting in the appearance of data moving in the buffer during reads. To avoid this, log buffer reads should be completed and this register set back to 0 in less time than the Demand Sub-interval (preferred) or logging should be halted by setting Bit 1 in register 158 (logs may be missed)

3rd Output	Phase Loss
0 = RS-485	NC
1 = RS-485	NO

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description
	•	159	R/W	NV	UInt				Logging Configuration Register (Bit Mapped): Bit 0: Clear to 0 for Circular log buffer mode. Set to 1 for single shot logging mode. Default is 0 (Circular). Bit 1: Clear to 0 to enable Logging. Set to 1 to halt logging. Default is 0 (Log).
	•	160	R	NV	UInt				Logging Status Register (Bit Mapped): Bit 0: Log buffer full – Set to 1 when one single shot mode has filled the log buffer. In this condition, the Logged Entry Count will continue to increment. Cleared to 0 when logging is restarted (see reset command register 129). Bit 1: Log Buffer Read Collision 1 – Set to 1 if the meter tried to save log data while the user was reading the log (Logging Page Register has been set to something other than 0). On the first collision, the meter holds the data until the next sub-interval and then writes the saved data to the log as well as the data for that interval. This bit is cleared to 0 on the first demand interval with Logging Page Register = 0. Bit 2: Log Buffer Read Collision 2 – Set to 1 on the 2nd attempt to save log data while the user is reading the log (Logging Page Register is set to something other than 0). At this point the meter ignores the read condition and does a double write, first of the values saved from the previous cycle, and then the present values. If the read condition is not removed the meter continues to write the log data as it normally would. This bit is cleared to 0 on the first demand interval with Logging Page Register = 0. Bit 3: Logging Reset – The log has been reset during the previous demand sub-interval. Bit 4: Logging Interrupted – Logging has been interrupted (power cycled, log configuration change, etc.) during the previous demand sub-interval. Bit 5: RTC Changed – The real time clock had been changed during the previous demand subinterval.
	•	161	R	NV	UInt			0-32767	Log Buffer Wrap / Missed Log Counter. In continous mode, this counter increments each time the internal circular log buffer wraps and overwrites old data. The total number of logged entries since the last log reset is: (Register 161 x 5760) + Register 163. In single shot mode this counter is the number of log entries lost due to the buffer being full. The counter is cleared on logging reset.
	•	162	R	NV	UInt			0-32767	Max Number of Logging Days. Based on the Sub-Interval Length and the depth of the log buffer, this register shows the maximum number of days that data will be logged following a reset until the Buffer is full (Single Shot Mode) or overwrites old data (Continuous).
	•	163	R	NV	UInt			0-32767	Number of Logged Entries since the log buffer wrapped or was reset. In single shot mode, this is the total number of valid entries in the buffer. Any entries beyond this will read back as QNAN (0x8000).
	•	164	R	NV	ULong	kWh	E	0-0xFFFF	Real Energy Consumption (MSR) — Real Energy (Register 001/002) starting value. Corresponds to when logging is started, reset, or rolls.
	•	165						0-0xFFFF	Real Energy Consumption (LSR)
	•	166	R	NV	UInt	Month / Day		See Bytes	**Most Significant Byte (MSB)** / **Least Significant Byte (LSB)** — Date & Time of the newest entry in the log. After a power cycle, resets to: Day 01 Month 00 Hour 00 Year 199
	•	167	R	NV	UInt	Year / Hour		See Bytes	Day 1-31 (0x01-0x1F) / Month 1-12 (0x01-0x0C)
	•	168	R	NV	UInt	Minutes / Seconds		See Bytes	Hour 0-23 (0x00-0x17) / Year 0-199 (0x00-0xC7)
									Seconds 0-59 (0x00-0x3B) / Minutes 0-59 (0x00-0x3B)

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description	
	•	169	R/W	NV	UInt			1-42, 146, 155-157, 257-336	Log Register 1 – Default is 3 (Import Real Energy MSR)	Log Register Selection – Write the number of the 16 bit register to be logged. To log a 32 bit value (such as accumulators and floating point values) two log registers must be used, one each for the most and least significant register (MSR & LSR).
	•	170	R/W	NV	UInt				Log Register 2 – Default is 4 (Import Real Energy LSR)	
	•	171	R/W	NV	UInt				Log Register 3 – Default is 5 (Export Real Energy MSR)	
	•	172	R/W	NV	UInt				Log Register 4 – Default is 6 (Export Real Energy LSR)	
	•	173	R/W	NV	UInt				Log Register 5 – Default is 29 (Real Demand)	
	•	174	R/W	NV	UInt				Log Register 6 – Default is 30 (Reactive Demand)	
	•	175	R/W	NV	UInt				Log Register 7 – Default is 31 (Apparent Demand)	
	•	176	R/W	NV	UInt				Log Register 8 – Default is 155 (Month/Day)	
	•	177	R/W	NV	UInt				Log Register 9 – Default is 156 (Year/Hour)	
	•	178	R/W	NV	UInt				Log Register 10 – Default is 157 (Minutes/ Seconds)	
Floating Point Data: Summary of Active Phases										
•	•	257/258	R	NV	Float	kWh			Accumulated Real Energy: Net (Import - Export)	Accumulated Real Energy (Ph)	Clear via register 129
•	•	259/260	R	NV	Float	kWh			Real Energy: Quadrants 1 & 4 Import		
•	•	261/262	R		Float	kWh			Real Energy: Quadrants 2 & 3 Export		
•	•	263/264	R		Float	kVARh			Reactive Energy: Quadrant 1 Lags Import Real Energy (IEC) Inductive (IEEE)	Accumulated Reactive Energy (Qh): Quadrants 1+2= Import Quadrants 3+4= Export	
•	•	265/266	R		Float	kVARh			Reactive Energy: Quadrant 2 Leads Export Real Energy (IEC) Inductive (IEEE)		
•	•	267/268	R		Float	kVARh			Reactive Energy: Quadrant 3 Lags Export Real Energy (IEC) Capacitive (IEEE)		
•	•	269/270	R		Float	kVARh			Reactive Energy: Quadrant 4 Leads Import Real Energy (IEC) Capacitive (IEEE)		
•	•	271/272	R	NV	Float	kVAh			Apparent Energy: Net (Import - Export)	Accumulated Apparent Energy (Sh): Import and Export correspond with Real Energy	
•	•	273/274	R	NV	Float	kVAh			Apparent Energy: Quadrants 1 & 4 Import		
•	•	275/276	R	NV	Float	kVAh			Apparent Energy: Quadrants 2 & 3 Export		
•	•	277/278	R		Float	kW			Total Net Instantaneous Real (P) Power		
•	•	279/280	R		Float	kVAR			Total Net Instantaneous Reactive (Q) Power		
•	•	281/282	R		Float	kVA			Total Net Instantaneous Apparent (S) Power		
•	•	283/284	R		Float	Ratio		0.0-1.0	Total Power Factor (Total kW / Total kVA)		
•	•	285/286	R		Float	Volt			Voltage, L-L (U), average of active phases		
•	•	287/288	R		Float	Volt			Voltage, L-N (V), average of active phases		
•	•	289/290	R		Float	Amp			Current, average of active phases		
•	•	291/292	R		Float	Hz		45.0-65.0	Frequency		
•	•	293/294	R		Float	kW			Total Real Power Present Demand		
•	•	295/296	R		Float	kVAR			Total Reactive Power Present Demand		

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description			
•	•	297/298	R		Float	kVA			Total Apparent Power Present Demand			
•	•	299/300	R	NV	Float	kW			Total Real Power Max. Demand	Import		
•	•	301/302	R	NV	Float	kVAR			Total Reactive Power Max. Demand			
•	•	303/304	R	NV	Float	kVA			Total Apparent Power Max. Demand			
•	•	305/306	R	NV	Float	kW			Total Real Power Max. Demand	Export		
•	•	307/308	R	NV	Float	kVAR			Total Reactive Power Max. Demand			
•	•	309/310	R	NV	Float	kVA			Total Apparent Power Max. Demand			
•	•	311/312	R		Float				Reserved, reports QNAN (0x7FC00000)			
•	•	313/314	R		Float		1	0-4294967040	Pulse Counter 1 (Import Real Energy)	Contact closure counters. Valid for both pulse inputs and outputs. E51Cx counts are shown in (). See register 144 for the weight of each pulse output count. These values are derived from the 32 bit integer counter and will roll over to 0 when the integer counters do. Inputs are user defined.		
•	•	315/316	R		Float		1	0-4294967040	Pulse Counter 2 (Export Reactive Energy			
Floating Point Data: Per Phase												
•	•	317/318	R		Float	kWh			Accumulated Real Energy, Phase A	Import	Accumulated Real Energy (Ph)	
•	•	319/320	R		Float	kWh			Accumulated Real Energy, Phase B			
•	•	321/322	R		Float	kWh			Accumulated Real Energy, Phase C			
•	•	323/324	R		Float	kWh			Accumulated Real Energy, Phase A	Export		
•	•	325/326	R		Float	kWh			Accumulated Real Energy, Phase B			
•	•	327/328	R		Float	kWh			Accumulated Real Energy, Phase C			
•	•	329/330	R		Float	kVARh			Accumulated Q1 Reactive Energy, Phase A	Quadrant 1	Import	Accumulated Reactive Energy (Qh)
•	•	331/332	R		Float	kVARh			Accumulated Q1 Reactive Energy, Phase B			
•	•	333/334	R		Float	kVARh			Accumulated Q1 Reactive Energy, Phase C			
•	•	335/336	R		Float	kVARh			Accumulated Q2 Reactive Energy, Phase A	Quadrant 2		
•	•	337/338	R		Float	kVARh			Accumulated Q2 Reactive Energy, Phase B			
•	•	339/340	R		Float	kVARh			Accumulated Q2 Reactive Energy, Phase C			
•	•	341/342	R		Float	kVARh			Accumulated Q3 Reactive Energy, Phase A	Quadrant 3	Export	
•	•	343/344	R		Float	kVARh			Accumulated Q3 Reactive Energy, Phase B			
•	•	345/346	R		Float	kVARh			Accumulated Q3 Reactive Energy, Phase C			
•	•	347/348	R		Float	kVARh			Accumulated Q4 Reactive Energy, Phase A	Quadrant 4		
•	•	349/350	R		Float	kVARh			Accumulated Q4 Reactive Energy, Phase B			
•	•	351/352	R		Float	kVARh			Accumulated Q4 Reactive Energy, Phase C			
•	•	353/354	R		Float	kVAh			Accumulated Apparent Energy, Phase A	Import	Accumulated Apparent Energy (Sh)	
•	•	355/356	R		Float	kVAh			Accumulated Apparent Energy, Phase B			
•	•	357/358	R		Float	kVAh			Accumulated Apparent Energy, Phase C			
•	•	359/360	R		Float	kVAh			Accumulated Apparent Energy, Phase A	Export		
•	•	361/362	R		Float	kVAh			Accumulated Apparent Energy, Phase B			
•	•	363/364	R		Float	kVAh			Accumulated Apparent Energy, Phase C			
•	•	365/366	R		Float	kW			Real Power, Phase A	Real Power (P)		
•	•	367/368	R		Float	kW			Real Power, Phase A			
•	•	369/370	R		Float	kW			Real Power, Phase A			
•	•	371/372	R		Float	kVAR			Reactive Power, Phase A	Reactive Power (Q)		
•	•	373/374	R		Float	kVAR			Reactive Power, Phase A			
•	•	375/376	R		Float	kVAR			Reactive Power, Phase A			
•	•	377/378	R		Float	kVA			Apparent Power, Phase A	Apparent Power (S)		
•	•	379/380	R		Float	kVA			Apparent Power, Phase A			
•	•	381/382	R		Float	kVA			Apparent Power, Phase A			

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	Description	
•	•	383/384	R		Float	Ratio		0.0-1.0	Power Factor, Phase A	Power Factor (PF)
•	•	385/386	R		Float	Ratio		0.0-1.0	Power Factor, Phase A	
•	•	387/388	R		Float	Ratio		0.0-1.0	Power Factor, Phase A	
•	•	389/390	R		Float	Volt			Voltage, Phase A-B	Line to Line Voltage (U)
•	•	391/392	R		Float	Volt			Voltage, Phase B-C	
•	•	393/394	R		Float	Volt			Voltage, Phase A-C	
•	•	395/396	R		Float	Volt			Voltage, Phase A-N	Line to Neutral (V)
•	•	397/398	R		Float	Volt			Voltage, Phase B-N	
•	•	399/400	R		Float	Volt			Voltage, Phase C-N	
•	•	401/402	R		Float	Amp			Current, Phase A	Current
•	•	403/404	R		Float	Amp			Current, Phase B	
•	•	405/406	R		Float	Amp			Current, Phase C	
•	•	407/408	R		Float				Reserved, Reports QNAN (0x7FC00000)	
Logging Interface										
	•	8000	R	NV					Newest Logged Data Entry	5760 entries total (60 days at a 15 minute sub-interval)
		(to)							(to)	
	•	13760	R	NV					Oldest Logged Data Entry	

Invalid or Quiet Not A Number (QNAN) conditions are indicated by 0x8000 (negative zero) for 16 bit integers and 0x7FC00000 for 32 bit floating point numbers.

Floating point numbers are encoded per the IEEE 754 32-bit specifications.

SunSpec Compliant Common and Meter Model Register Blocks

See www.sunspec.org for the original specifications.

E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	SunSpec Name	Description
SunSpec 1.0 Common Model										
•	•	40001	R	NV	ULong			0x5375	C_SunSpec_ID	ASCII "SunS". Identifies this as the beginning of a SunSpec Modbus point
•	•	40002						6e53		
•	•	40003	R	NV	UInt			1	C_SunSpec_DID	SunSpec common model Device ID
•	•	40004	R	NV	UInt			65	C_SunSpec_Length	Length of the common model block
•	•	40005 to 40020	R	NV	String (32)	ASCII			C_Manufacturer	null terminated ASCII text string = "VERIS"
•	•	40021 to 40036	R	NV	String (32)	ASCII			C_Model	null terminated ASCII text string = "E51C_"
•	•	40037 to 40044	R	NV	String (16)	ASCII			C_Options	null terminated ASCII text string
•	•	40045 to 40052	R	NV	String (16)	ASCII			C_Version	null terminated ASCII text string
•	•	40053 to 40068	R	NV	String (32)	ASCII			C_SerialNumber	null terminated ASCII text string
•	•	40068	R	NV	UInt	ASCII			C_SunSpec_Length	Modbus address
SunSpec 1.1 Integer Meter Model										
Identification										
•	•	40070	R	NV	UInt			201 to 204	C_SunSpec_DID	SunSpec Integer meter model device IDs. Meter configuration by device ID: 201 = single phase (A-N or A-B) meter 202 = split single phase (A-B-N) meter 203 = Wye-connect 3-phase (ABCN) meter 204 = delta-connect 3-phase (ABC) meter
•	•	40071	R	NV	UInt			105	C_SunSpec_Length	Length of the meter model block

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	SunSpec Name	Description
						Current				
•	•	40072	R		SInt	Amps	M_AC_Current_SF	-32767 to +32767	M_AC_Current	AC Current (sum of active phases)
•	•	40073	R		SInt	Amps	M_AC_Current_SF	-32767 to +32767	M_AC_Current_A	Phase A AC current
•	•	40074	R		SInt	Amps	M_AC_Current_SF	-32767 to +32767	M_AC_Current_B	Phase B AC current
•	•	40075	R		SInt	Amps	M_AC_Current_SF	-32767 to +32767	M_AC_Current_C	Phase C AC current
•	•	40076	R	NV	SInt		1		M_AC_Current_CN	AC Current Scale Factor
						Voltage: Line to Neutral				
•	•	40077	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_LN	Line to Neutral AC voltage (average of active phases)
•	•	40078	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_AN	Phase A to Neutral AC Voltage
•	•	40079	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_BN	Phase B to Neutral AC Voltage
•	•	40080	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_CN	Phase C to Neutral AC Voltage
						Voltage: Line to Line				
•	•	40081	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_LL	Line to Line AC voltage (average of active phases)
•	•	40082	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_AB	Phase A to Phase B AC Voltage
•	•	40083	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_BC	Phase B to Phase C AC Voltage
•	•	40084	R		SInt	Volts	M_AC_Voltage_SF	-32767 to +32767	M_AC_Voltage_CA	Phase C to Phase A AC Voltage
•	•	40085	R	NV	SInt		1		M_AC_Voltage_SF	AC Voltage Scale Factor
						Frequency				
•	•	40086	R		SInt	Hertz	M_AC_Freq_SF	-32767 to +32767	M_AC_Freq	AC Frequency
•	•	40087	R	NV	SInt	SF	1		M_AC_Freq_SF	AC Frequency Scale Factor
						Power				
						Real Power				
•	•	40088	R		SInt	Watts	M_AC_Power_SF	-32767 to +32767	M_AC_Power	Total Real Power (sum of active phases)
•	•	40089	R		SInt	Watts	M_AC_Power_SF	-32767 to +32767	M_AC_Power_A	Phase A AC Real Power
•	•	40090	R		SInt	Watts	M_AC_Power_SF	-32767 to +32767	M_AC_Power_B	Phase B AC Real Power
•	•	40091	R		SInt	Watts	M_AC_Power_SF	-32767 to +32767	M_AC_Power_C	Phase A AC Real Power
•	•	40092	R	NV	SInt	SF	1		M_AC_Power_SF	AC Real Power Scale Factor
						Apparent Power				
•	•	40093	R		SInt	Volt-Amps	M_AC_VA_SF	-32767 to +32767	M_AC_VA	Total AC Apparent Power (sum of active phases)
•	•	40094	R		SInt	Volt-Amps	M_AC_VA_SF	-32767 to +32767	M_AC_VA_A	Phase A AC Apparent Power
•	•	40095	R		SInt	Volt-Amps	M_AC_VA_SF	-32767 to +32767	M_AC_VA_B	Phase B AC Apparent Power
•	•	40096	R		SInt	Volt-Amps	M_AC_VA_SF	-32767 to +32767	M_AC_VA_C	Phase A AC Apparent Power
•	•	40097	R	NV	SInt	SF	1		M_AC_VA_SF	AC Apparent Power Scale Factor
						Reactive Power				
•	•	40098	R		SInt	VAR	M_AC_VAR_SF	-32767 to +32767	M_AC_VAR	Total AC Reactive Power (sum of active phases)
•	•	40099	R		SInt	VAR	M_AC_VAR_SF	-32767 to +32767	M_AC_VAR_A	Phase A AC Reactive Power
•	•	40100	R		SInt	VAR	M_AC_VAR_SF	-32767 to +32767	M_AC_VAR_B	Phase B AC Reactive Power
•	•	40101	R		SInt	VAR	M_AC_VAR_SF	-32767 to +32767	M_AC_VAR_C	Phase A AC Reactive Power
•	•	40102	R	NV	SInt	SF	1		M_AC_VAR_SF	AC Reactive Power Scale Factor
						Power Factor				
•	•	40103	R		SInt	%	M_AC_PF_SF	-32767 to +32767	M_AC_PF	Average Power Factor (average of active phases)
•	•	40104	R		SInt	%	M_AC_PF_SF	-32767 to +32767	M_AC_PF_A	Phase A Power Factor
•	•	40105	R		SInt	%	M_AC_PF_SF	-32767 to +32767	M_AC_PF_B	Phase B Power Factor
•	•	40106	R		SInt	%	M_AC_PF_SF	-32767 to +32767	M_AC_PF_C	Phase A Power Factor
•	•	40107	R	NV	SInt	SF	1		M_AC_PF_SF	AC Power Factor Scale Factor

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	SunSpec Name	Description
Accumulated Energy										
Real Energy										
•	•	40108	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Exported_W	Total Exported Real Energy
•	•	40109								
•	•	40110	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Exported_W_A	Phase A Exported Real Energy
•	•	40111								
•	•	40112	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Exported_W_B	Phase B Exported Real Energy
•	•	40113								
•	•	40114	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Exported_W_C	Phase C Exported Real Energy
•	•	40115								
•	•	40116	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Imported_W	Total Imported Real Energy
•	•	40117								
•	•	40118	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Imported_W_A	Phase A Imported Real Energy
•	•	40119								
•	•	40120	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Imported_W_B	Phase B Imported Real Energy
•	•	40121								
•	•	40122	R	NV	ULong	Watt-hours	M_Energy_W_SF	0x0 to 0xFFFFFFFF	M_Imported_W_C	Phase C Imported Real Energy
•	•	40123								
•	•	40124	R	NV	SF	SF	1		M_Energy_W_SF	Real Energy Scale Factor
Apparent Energy										
•	•	40125	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Exported_VA	Total Exported Apparent Energy
•	•	40126								
•	•	40127	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Exported_VA_A	Phase A Exported Apparent Energy
•	•	40128								
•	•	40129	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Exported_VA_B	Phase B Exported Apparent Energy
•	•	40130								
•	•	40131	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Exported_VA_C	Phase C Exported Apparent Energy
•	•	40132								
•	•	40133	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Imported_VA	Total Imported Apparent Energy
•	•	40134								
•	•	40135	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Imported_VA_A	Phase A Imported Apparent Energy
•	•	40136								
•	•	40137	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Imported_VA_B	Phase B Imported Apparent Energy
•	•	40138								
•	•	40139	R	NV	ULong	VA-hours	M_Energy_VA_SF	0x0 to 0xFFFFFFFF	M_Imported_VA_C	Phase C Imported Apparent Energy
•	•	40140								
•	•	40141	R	NV	UInt	SF	1		M_Energy_VA_SF	Real Energy Scale Factor
Reactive Energy										
•	•	40142	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q1	Quadrant 1: Total Imported Reactive Energy
•	•	40143								
•	•	40144	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q1A	Phase A - Quadrant 1: Total Imported Reactive Energy
•	•	40145								
•	•	40146	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q1B	Phase B - Quadrant 1: Total Imported Reactive Energy
•	•	40147								
•	•	40148	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q1C	Phase C - Quadrant 1: Total Imported Reactive Energy
•	•	40149								
•	•	40150	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q2	Quadrant 2: Total Imported Reactive Energy
•	•	40151								
•	•	40152	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q2A	Phase A - Quadrant 2: Total Imported Reactive Energy
•	•	40153								

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E51C2 FDS	E51C3 Log	Register	R/W	NV	Format	Units	Scale	Range	SunSpec Name	Description
•	•	40154	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q2B	Phase B - Quadrant 2: Total Imported Reactive Energy
•	•	40155								
•	•	40156	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Import_VARh_Q2C	Phase C - Quadrant 2: Total Imported Reactive Energy
•	•	40157								
•	•	40158	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q3	Quadrant 3: Total Exported Reactive Energy
•	•	40159								
•	•	40160	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q3A	Phase A - Quadrant 3: Total Exported Reactive Energy
•	•	40161								
•	•	40162	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q3B	Phase B - Quadrant 3: Total Exported Reactive Energy
•	•	40163								
•	•	40164	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q3C	Phase C - Quadrant 3: Total Exported Reactive Energy
•	•	40165								
•	•	40166	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q4	Quadrant 4: Total Exported Reactive Energy
•	•	40167								
•	•	40168	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q4A	Phase A - Quadrant 4: Total Exported Reactive Energy
•	•	40169								
•	•	40170	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q4B	Phase B - Quadrant 4: Total Exported Reactive Energy
•	•	40171								
•	•	40172	R	NV	ULong	VAR-hours	M_Energy_VAR_SF	0x0 to 0xFFFFFFFF	M_Export_VARh_Q4C	Phase C - Quadrant 4: Total Exported Reactive Energy
•	•	40173								
•	•	40174	R	NV	UInt	SF	1		M_Energy_VA_SF	Reactive Energy Scale Factor
Events										
•	•	40175	R	NV	ULong	Flags			M_Events	Bit Map. See M_EVENT_flags. 0 = no event
•	•	40176								
End of SunSpec Block										
•	•	40177	R	NV	UInt			0xFFFF		C_SunSpec_DID = 0xFFFF Uniquely identifies this as the last SunSpec block
•	•	40178	R	NV	UInt			0x0000		C_SunSpec_Length = 0 Last block has no length

Event	Bit	Description
M_EVENT_Power_Failure	0x00000004	Loss of power or phase
M_EVENT_Under_Voltage	0x00000008	Voltage below threshold (phase loss)
M_EVENT_Low_PF	0x00000010	Power factor below threshold (can indicate misassociated voltage and current inputs in 3-phase systems)
M_EVENT_Over_Current	0x00000020	Current input over threshold (out of measurement range)
M_EVENT_Over_Voltage	0x00000040	Voltage input over threshold (out of measurement range)
M_EVENT_Missing_Sensor	0x00000080	Sensor not connected (not supported)
M_EVENT_Reserved1-8	0x00000100 to 0x00008000	Reserved for future SunSpec use
M_EVENT_OEM1-15	0x7FFF000	Reserved for OEMs (not used)

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