

H84XX MODBUS POINT MAP

H8436-FDS	H8437-EDS	H8400 REG.	R/W	N/V	Format	Units	Scale Factor/ Mult.	Range	Description
Integer Statistics									
--- BDS ---									
3-Phase Summary									
•	•	001	R	NV	ULong	kWh	E	0-0xFFFF	Real Energy Consumption (LSW)
•	•	002	R	NV		kWh	E	0-0xFFFF	Real Energy Consumption (MSW)
•	•	003	R		ULnt	kW	W	0-32767	Total Instantaneous Real Power (3 Phase Total)
--- FDS ---									
•	•	004	R		ULnt	kVA	W	0-32767	Total Instantaneous Apparent Power (3 Phase Total)
•	•	005	R		ULnt	kVAR	W	0-32767	Total Instantaneous Reactive Power (3 Phase Total)
•	•	006	R		ULnt	Ratio	0.0001	0-10000	Total Power Factor (Total KW / Total KVA)
•	•	007	R		ULnt	Volt	V	0-32767	Voltage, L-L, Average of 3 Phases
•	•	008	R		ULnt	Volt	V	0-32767	Voltage, L-N, Average of 3 Phases
•	•	009	R		ULnt	Amp	I	0-32767	Current, Average of 3 Phases
Per Phase									
•	•	010	R		ULnt	kW	W	0-32767	Real Power, Phase A
•	•	011	R		ULnt	kW	W	0-32767	Real Power, Phase B
•	•	012	R		ULnt	kW	W	0-32767	Real Power, Phase C
•	•	013	R		ULnt	Ratio	0.0001	0-10000	Power Factor, Phase A
•	•	014	R		ULnt	Ratio	0.0001	0-10000	Power Factor, Phase B
•	•	015	R		ULnt	Ratio	0.0001	0-10000	Power Factor, Phase C
•	•	016	R		ULnt	Volt	V	0-32767	Voltage, Phase A-B
•	•	017	R		ULnt	Volt	V	0-32767	Voltage, Phase B-C
•	•	018	R		ULnt	Volt	V	0-32767	Voltage, Phase A-C
•	•	019	R		ULnt	Volt	V	0-32767	Voltage, Phase A-N
•	•	020	R		ULnt	Volt	V	0-32767	Voltage, Phase B-N
•	•	021	R		ULnt	Volt	V	0-32767	Voltage, Phase C-N
•	•	022	R		ULnt	Amp	I	0-32767	Current, Instantaneous, Phase A
•	•	023	R		ULnt	Amp	I	0-32767	Current, Instantaneous, Phase B
•	•	024	R		ULnt	Amp	I	0-32767	Current, Instantaneous, Phase C
--- EDS ---									
	•	025	R		ULnt	Amp	I	0-32767	Current, Instantaneous, Neutral
	•	026	R		ULnt	Hz	0.01	4500-6500	Frequency (derived from Phase A)
	•	027	R	NV	ULnt	kW	W	0-32767	Total Real, Power Minimum
	•	028	R	NV	ULnt	kW	W	0-32767	Total Real, Power Maximum
Accumulated Energy									
	•	029	R	NV	ULong	kVAh	E	0-0xFFFF	Apparent Energy Consumption (LSW)
	•	030	R	NV		kVAh	E	0-0xFFFF	Apparent Energy Consumption (MSW)
	•	031	R	NV	ULong	kVARh	E	0-0xFFFF	Reactive Energy Consumption (LSW)
	•	032	R	NV		kVARh	E	0-0xFFFF	Reactive Energy Consumption (MSW)
Per Phase Power									
	•	033	R		ULnt	kVA	W	0-32767	Apparent Power, Phase A
	•	034	R		ULnt	kVA	W	0-32767	Apparent Power, Phase B
	•	035	R		ULnt	kVA	W	0-32767	Apparent Power, Phase C
	•	036	R		ULnt	kVAR	W	0-32767	Reactive Power, Phase A
	•	037	R		ULnt	kVAR	W	0-32767	Reactive Power, Phase B
	•	038	R		ULnt	kVAR	W	0-32767	Reactive Power, Phase C

H8436-FDS	H8437-EDS	H8400 REG.	R/W	N/V	Format	Units	Scale Factor/ Mult.	Range	Description	
Demand										
•	039	R		UInt	kW	W		0-32767	Total Real Power Present Demand	
•	040	R		UInt	kVA	W		0-32767	Total Apparent Power Present Demand	
•	041	R		UInt	kVAR	W		0-32767	Total Reactive Power Present Demand	
•	042	R	NV	UInt	kW	W		0-32767	Total Real Power Max Demand	
•	043	R	NV	UInt	kVA	W		0-32767	Total Apparent Power Max Demand	
•	044	R	NV	UInt	kVAR	W		0-32767	Total Reactive Power Max Demand	
Usage Time										
•	045	R	NV	UInt	Hours	1		0-32767	Usage Hours	This combination timer counts the total time for which the absolute current on at least one phase is >0.1 Amp.
•	046	R	NV	UInt	Minutes	1		0-59	Usage Minutes	
•	047	R	NV	UInt	Hours	1		0-32767	Total Hours	This timer counts the total time since the usage timer was reset.
•	048	R	NV	UInt	Minutes	1		0-59	Total Minutes	
•	049	R	NV	UInt	%	0.01		0-10000	Percent Usage	Percent Usage = Usage Time / Total Time
THD										
•	050	R		UInt	%	0.1		0-10000	THD, Voltage A-N	
•	051	R		UInt	%	0.1		0-10000	THD, Voltage B-N	
•	052	R		UInt	%	0.1		0-10000	THD, Voltage C-N	
•	053	R		UInt	%	0.1		0-10000	THD, Voltage A-B	
•	054	R		UInt	%	0.1		0-10000	THD, Voltage B-C	
•	055	R		UInt	%	0.1		0-10000	THD, Voltage A-C	
•	056	R		UInt	%	0.1		0-10000	THD, Current, Phase A	
•	057	R		UInt	%	0.1		0-10000	THD, Current, Phase B	
•	058	R		UInt	%	0.1		0-10000	THD, Current, Phase C	
Configuration										
--- BDS ---										
--- FDS ---										
•	•	129	R/W		UInt			N/A	Reset: - Write 30078 to clear all Energy Accumulators to 0 (All). - Write 14255 to reset all Power Min/Max to Present Values (H8400 EDS Only). - Write 21212 to reset Peak Demand values to Present Demand Values (H8400 EDS Only). - Write 10001 to clear the Usage Timers to 0 (H8400 EDS Only). - Read always returns 0.	
•	•	130	R/W	NV	UInt			10,11,12,30,31,32,40,42,44	System Type	
•	•	131	R/W	NV	UInt			1-32767	CT Ratio – Primary	
•	•	132	R/W	NV	UInt			1 or 5 A	CT Ratio – Secondary (H8400A Only, unused on H8400V)	
•	•	133	R/W	NV	UInt			1-32767	PT Ratio – Primary	Voltage Inputs
•	•	134	R/W	NV	UInt			0,1,10,100	PT Ratio – Scale (0 = No PT)	
•	•	135	R/W	NV	UInt			100,110,115,120	PT Ratio – Secondary	
•	•	136	R/W	NV	UInt	Hz		50 or 60	Service Frequency (60 is Default)	
•	•	137	R/W	NV	UInt			0, 1	Units: 0 = IEC, 1 = IEEE units (default)	

H8436-FDS	H8437-EDS	H8400 REG.	R/W	N/V	Format	Units	Scale Factor/ Mult.	Range	Description
•	•	138	R/W		SInt		-4 0.0001 -3 0.001		Scale Factor I (current) Default = -2
•	•	139	R/W		SInt		-2 0.01 -1 0.1		Scale Factor V (voltage) Default = -1
•	•	140	R/W		SInt		0 1.0 1 10.0 2 100.0		Scale Factor W (power) Default = -2
•	•	141	R/W		SInt		3 1000.0 4 10000.0		Scale Factor E (energy) Default = -2
•	•	142	R		UInt				Reserved, always returns 0
•	•	143	R		UInt				Reserved, always returns 0
•	•	144	R		UInt				Reserved, always returns 0
•	•	145	R		UInt				Reserved, always returns 0
•	•	146	R		UInt				Error Bitmap: bit0: Phase A Voltage out of range bit1: Phase B Voltage out of range bit2: Phase C Voltage out of range bit3: Phase A Current out of range bit4: Phase B Current out of range bit5: Phase C Current out of range bit6: Frequency out of range or insufficient voltage on Phase A to determine frequency. *range of 45-65 Hz. bit7: Reserved for future use bit8: Phase Loss A bit9: Phase Loss B bit10: Phase Loss C bit11-15: Reserved for future use
•	•	147	R	NV	UInt			0-32767	Count of Energy Accumulator resets
--- EDS ---									
•	•	148	R	NV	UInt			0-32767	Count of Usage Timer resets
•	•	149	R	NV	UInt	Minutes		1-60	(Power) Demand Block Interval – Used for PQS (P=Real Power kW, Q=Reactive Power kVAR, and S=Apparent Power kVA) demand calculations.
•	•	150	R	NV	UInt			0-60	Number of Power Demand Block Sub-Intervals - Sets the number of subintervals per Demand Block Interval (above). The method of demand calculation is set as follows: 0 = Sliding Block. Like rolling block, but with a subinterval of 15 seconds is used for Demand Intervals <= 15 minutes, or 60 seconds for intervals > 15 minutes. 1 = Block. Fixed block with no sub-intervals. >1 = Rolling Block. The number of sub-intervals per block. This value must divide evenly into the Block Demand Interval (above). For example, if the Demand Block Interval is 15 minutes, valid subinterval values are: 3, 5, or 15. If the value of 3 is chosen, then there will be 3 subintervals of 5 minutes each.
Floating Point Statistics									
--- BDS ---									
3-Phase Summary									
•	•	257/258	R	NV	Float	kWh			Real Energy Consumption
•	•	259/260	R		Float	kW			Total Instantaneous Real Power
--- FDS ---									
•	•	261/262	R		Float	kVA			Total Instantaneous Apparent Power
•	•	263/264	R		Float	kVAR			Total Instantaneous Reactive Power
•	•	265/266	R		Float	Ratio		0.0-1.0	Total Power Factor (Total kW / Total kVA)
•	•	267/268	R		Float	Volt			Voltage, L-L, Average of 3 Phases
•	•	269/270	R		Float	Volt			Voltage, L-N, Average of 3 Phases
•	•	271/272	R		Float	Amp			Current, Average of 3 Phases

Note: These registers contain a signed integer, which scales the corresponding parameters.

H8436-FDS	H8437-EDS	H8400 REG.	R/W	N/V	Format	Units	Scale Factor/ Mult.	Range	Description	
Per Phase										
•	•	273/274	R		Float	kW			Real Power, Phase A	
•	•	275/276	R		Float	kW			Real Power, Phase B	
•	•	277/278	R		Float	kW			Real Power, Phase C	
•	•	279/280	R		Float	Ratio		0.0-1.0	Power Factor, Phase A	
•	•	281/282	R		Float	Ratio		0.0-1.0	Power Factor, Phase B	
•	•	283/284	R		Float	Ratio		0.0-1.0	Power Factor, Phase C	
•	•	285/286	R		Float	Volt			Voltage, Phase A-B	
•	•	287/288	R		Float	Volt			Voltage, Phase B-C	
•	•	289/290	R		Float	Volt			Voltage, Phase A-C	
•	•	291/292	R		Float	Volt			Voltage, Phase A-N	
•	•	293/294	R		Float	Volt			Voltage, Phase B-N	
•	•	295/296	R		Float	Volt			Voltage, Phase C-N	
•	•	297/298	R		Float	Amp			Current, Instantaneous, Phase A	
•	•	299/300	R		Float	Amp			Current, Instantaneous, Phase B	
•	•	301/302	R		Float	Amp			Current, Instantaneous, Phase C	
--- EDS ---										
•		303/304	R		Float	Amp			Current, Instantaneous, Neutral	
•		305/306	R		Float	Hz		45.0-65.0	Frequency (derived from Phase A)	
•		307/308	R	NV	Float	kW			Total Real Power Minimum	
•		309/310	R	NV	Float	kW			Total Real Power Maximum	
Accumulated Energy										
•		311/312	R	NV	Float	kVAh			Apparent Energy Consumption	
•		313/314	R	NV	Float	kVARh			Reactive Energy Consumption	
Per Phase Power										
•		315/316	R		Float	kVA			Apparent Power, Phase A	
•		317/318	R		Float	kVA			Apparent Power, Phase B	
•		319/320	R		Float	kVA			Apparent Power, Phase C	
•		321/322	R		Float	kVAR			Reactive Power, Phase A	
•		323/324	R		Float	kVAR			Reactive Power, Phase B	
•		325/326	R		Float	kVAR			Reactive Power, Phase C	
Demand										
•		327/328	R		Float	kW			Total Real Power Present Demand	
•		329/330	R		Float	kVA			Total Apparent Power Present Demand	
•		331/332	R		Float	kVAR			Total Reactive Power Present Demand	
•		333/334	R	NV	Float	kW			Total Real Power Max Demand	
•		335/336	R	NV	Float	kVA			Total Apparent Power Max Demand	
•		337/338	R	NV	Float	kVAR			Total Reactive Power Max Demand	
Usage Time										
•	•	339/340	R	NV	Float	Hours		>= 0.0	Usage Hours	This combination timer counts the total time for which the absolute current on at least one phase is >0.1 Amp.
•	•	341/342	R	NV	Float	Minutes		0.0-59.0	Usage Minutes	
•	•	343/344	R	NV	Float	Hours		>= 0.0	Total Hours	This timer counts the total time since the usage timer was reset.
•	•	345/346	R	NV	Float	Minutes		0.0-59.0	Total Minutes	
•	•	347/348	R	NV	Float	%		0.0-100.0	Percent Usage	Percent Usage = Usage Time / Total Time.
THD										
•	•	349/350	R		Float	%		0.0-1000.0	THD, Voltage A-N	
•	•	351/352	R		Float	%		0.0-1000.0	THD, Voltage B-N	
•	•	353/354	R		Float	%		0.0-1000.0	THD, Voltage C-N	
•	•	355/356	R		Float	%		0.0-1000.0	THD, Voltage A-B	
•	•	357/358	R		Float	%		0.0-1000.0	THD, Voltage B-C	

H8436-FDS	H8437-EDS	H8400 REG.	R/W	N/V	Format	Units	Scale Factor/ Mult.	Range	Description
	•	359/360	R		Float	%		0.0-1000.0	THD, Voltage A-C
	•	361/362	R		Float	%		0.0-1000.0	THD, Current, Phase A
	•	363/364	R		Float	%		0.0-1000.0	THD, Current, Phase B
	•	365/366	R		Float	%		0.0-1000.0	THD, Current, Phase C
Modbus Configuration (Downloadable Firmware Support Only)									
•	•	7000	R	NV	UInt			0-32767	Firmware Version, Reset System (Boot Down Loader)
•	•	7001	R	NV	UInt				Firmware Version, Operating System (Application)
•	•	7002/03	R	NV	ULong				Serial Number (date/time of manufacture in UTC)
•	•	7004	R	NV	UInt			15166	Device ID
•	•	7005	R	NV	UInt			1-247	Modbus Address
•	•	7006	R	NV	UInt			2400,4800, 9600,19200	Baud rate
•	•	7007	R	NV	UInt				Password (always returns 0). Used only for download.
•	•	7008	R		UInt				Self test (always returns 0)
•	•	7009	R		UInt			0,65535	PLoS. Returns the one's complement of software's safe vectors flag. Indicates if the Application (OS) or Boot (Downloader/Reset System) is running.
•	•	7010	R		UInt				Reserved, always returns 0
•	•	7011	R		UInt				Reserved, always returns 0
•	•	7012	R		UInt				Reserved, always returns 0
•	•	7013	R		UInt				Reserved, always returns 0
•	•	7014	R		UInt				Reserved, always returns 0
Command Interface (Downloadable Firmware Support Only)									
•	•	7015	R/W		UInt				Command
•	•	7016-031	R/W		UInt				Parameters
•	•	7032	R/W		UInt				Status
•	•	7033	R/W		UInt				Result
•	•	7034	R/W		UInt				/O Data
•	•	7035-162	R/W		UInt				Data Area

Note 1: Demand can be calculated using sliding, fixed, or rolling block intervals. See registers 4117-4119 for settings.

Note 2: DOWNLOADABLE FIRMWARE. When the Operating System is erased, only registers 7000-7162 are available. Register 7001 (Firmware Version, Operating System) will read as 0 in this condition. Additionally, the ID string returned from a "Report ID" query (0x11) will be "Veris Power Meter - RESET SYSTEM RUNNING".

Note 3: THD (Total Harmonic Distortion) is calculated as the % ratio over the fundamental frequency. H_n is the Nth harmonic.

$$\frac{\sqrt{H_2^2 + H_3^2 + H_4^2 + H_5^2 + \dots}}{H_1} \text{ To the 15th harmonic}$$

Note 4: Unused or unsupported Integers return 0x8000, Floats 0x7FC00000

LEGEND

R/W: R=Read only, R/W=Read/Write

NV: Value is stored in non-volatile memory

Format

UInt: Unsigned 16-bit integer, read most significant Byte (MSB) first.

SInt: Signed 16-bit integer, read most significant Byte (MSB) first.

ULong: Unsigned 32-bit integer; Upper 16-bits Most Significant Word (MSW), in lowest numbered register (257/258)=MSW/LSW)

Float: 32-bit floating point; encoded per IEEE Standard 754 single precision; Upper 16-bits Most Significant Word (MSW) in lowest numbered register (257/258)=MSW/LSW)

Scale Factor/Multiplier

Integer Registers must be multiplied by this value to be read correctly in the given units. Scale Factors I, V, W, and E are configurable (see registers 138-141).

Defaults are: I = 0.01, V = 0.1, W = 0.01, E = 0.01

Modbus Commands Supported

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 = 250

bytes4: status = 0xFF

bytes5+: ID string = "H84__ Power Meter"

last 2 bytes: CRC

0x2B: Read Device Identification, BASIC implementation (0x00, 0x01 and 0x02 data), Conformity Level 1.

Object Values:

0x01: Vendor Name = "Veris Industries"

0x02: Product Code = "H84__"

0x03: Major/Minor Revision = "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").

When the Operating System is erased, only registers 7000-7162 are available. Register 7001 (Firmware Version, Operating System) will read as 0 in this condition.