<u>CM2 Register List Change Summary:</u>

Changes from Z30 to Z31

- Add registers 1900-1959 for Date/Time of Min and Max Generic Demand
- Register 2019 is deleted
- Register 2027 allows format of Energy Display
- Register 2039 allows selection of Event Log format
- Register 2083 provides Day of Week
- Register 2099 allows trim of master time base.
- Register 2123-2124 allows entry of CT phase shift correction
- Register 2200-2299 provides Generic Demand for 20 metering values
- Event 47 reports suspension of the Surge/Sag system
- Add command 4913 for Hi-Density WFC
- Add command 5112 for reset of Generic Demand

Changes from Z31 to Z32

- Added definition for bits 3 and 4 to register 2038

CM2 REGISTER MAP

REGISTER MAP

	0001-999	Used as shadow of CM1 registers no extra RAM needed
VR	1000-1117	Real Time metering
VR	1118-1190	Reserved for future metering values
VR	1191-1199	Analog Input Metered Values
NVR	1200-1315	Minimum Instantaneous Metering
NVR	1316-1390	Reserved for future minimum values
NVR	1391-1399	Analog Input Minimum Values
NVR	1400-1515	Maximum Instantaneous Metering
NVR	1516-1590	Reserved for future maximum values
NVR	1591-1599	Analog Input Maximum Values
NVR	1600-1663	Energy
	1664-1699	Reserved
NVR	1700-1752	Demand, Peak Demand
	1753-1799	Reserved
NVR	1800-1871	Date/time Compressed 3 register format (Note: existing CM1 6 register format date/time registers are supported only with CM1 registers)
NVR	1872-1999	Reserved for future date/time stamping

CM2 REGISTER MAP (cont.)

NVR	2000-2121	Unique code for each register, defining System Connection, E,I,P Scale Factors, Label & Nameplate, Configuration, Energy level setpoints, Event Counters, Coeff Gain/Offset, Status In/Out, Utility, ETC.
NVR	2122-2129	Reserved (Future Configuration)
NVR	2130-2139	Production / Calibration Process History Registers
NVR	2122-2129	Reserved (Future Configuration)
NVR	2200-2299	Generic Demand
NVR	2350-2399	Development Diagnostic Registers
NVR	2400-2441	Status Inputs
NVR	2442-2499	Reserved for future status inputs
NVR	2500-2535	Discrete Outputs
NVR	2536-2599	Reserved for future Discrete Outputs
NVR	2600-2699	Analog Outputs
NVR	2700-2849	Analog Inputs
	2850-2899	Unused
NVR	2900-2999	Status Input Demand Metering
NVR	3000-3999	CUL Application Registers
VR	4000-5199	FFT Spectral Components for 31 harmonics
	5200-5599	Not Used

CM2 REGISTER MAP (cont.)

NVR	5600-5749	High Speed Surge/Sag Events
NVR	5750-5899	Event Queues / Counters
NVR	5900-6669	Pre-defined Events
NVR	6670-6799	User Defined Events
NVR	6800-6999	Application S/W Registers
NVR	7000-7399	File Access Header Block
VR	7700-7999	Command Interface
VR	8000-8171	Reserved
	8172-8192	Sy/Max compatibility

REAL TIME METERED VALUES

1000		Update Interval	R	N	N	1000ths of a second	0 to 10,000	The amount of time between the last update of metered values and the update previous to that
1001	1	Frequency	R	N	N	Hertz/Scale Factor F	2300 to 6700, (50/60) 3500 to 4500 (400)	Frequency of circuit being monitored. If the frequency is out of range this register will have a value of 0.
1002	2	Temperature	R	N	N	Degrees Cent. in 100ths	-10000 to +10000	Temperature inside of the Circuit Monitor enclosure
1003	3	Current, Phase A	R	N	A	Amps/Scale Factor A	0 to 32,767	Measured RMS Phase A Current
1004	4	Current, Phase B	R	N	A	Amps/Scale Factor A	0 to 32,767	Measured RMS Phase B Current
1005	5	Current, Phase C	R	N	A	Amps/Scale Factor A	0 to 32,767	Measured RMS Phase C Current
1006		Current, Neutral (I4)	R	N	B	Amps/Scale Factor B	0 to 32,767	Measured RMS Neutral Current, if applicable, else -32,768
1007		Current, Ground (I5)	R	N	C	Amps/Scale Factor C	0 to 32,767	Ground Current when Calculated: fundamental RMS ground Current from -IN - IA-IB-IC if applicable, else -32,768 when measured: true RMS Ground Current
1008	6	Current, 3 Phase Average	R	N		Amps/Scale Factor A	0 to 32,767	Calculated Arithmetic mean of the RMS values of IA, IB, and IC
1009	7	Current, Apparent RMS	R	N	A	Amps/Scale Factor A	0 to 32,767	Peak instantaneous value of IA, IB, or IC divided by the square root of 2
1010		Current Unbal. Phase A	R	N	N	Percent in 10ths	0 to +/-1000	Percent Current Unbalance, Phase A
1011		Current Unbal.	R	N	N	Percent	0 to +/-1000	Percent Current Unbalance, Phase B

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Phase B				in 10ths		
1012		Current Unbal. Phase C	R	N	N	Percent in 10ths	0 to +/-1000	Percent Current Unbalance, Phase C
1013		Current Unbal. Worst	R	N	N	Percent in 10ths	0 to +/-1000	Percent Current Unbalance, Worst Depends on Absolute Value
1014	8	Voltage, Phase A to B	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phases A and B.
1015	9	Voltage, Phase B to C	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phases B and C.
1016	10	Voltage, Phase C to A	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phases C and A.
1017		Voltage L-L, 3 Phase Average	R	N	D	Volts/Scale Factor D	0 to 32,767	Average of the 3 Phase Line-Line RMS Voltages
1018	11	Voltage, Phase A to Neutral	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phase A and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1019	12	Voltage, Phase B to Neutral	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phase B and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1020	13	Voltage, Phase C to Neutral	R	N	D	Volts/Scale Factor D	0 to 32,767	Measured RMS Voltage Between Phase C and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1021		Voltage L-N, 3 Phase Average	R	N	D	Volts/Scale Factor D	0 to 32,767	Average of the 3 Phase Line-Neutral RMS Voltages if in 4 wire mode, else -32,768.
1022		Voltage Unbal. Phase A-B	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Phase A-B

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1023		Voltage Unbal. Phase B-C	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Phase B-C
1024		Voltage Unbal. Phase C-A	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Phase C-A
1025		Voltage Unbal. L-L Worst	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Worst Line-Line, depends on Absolute Value
1026		Voltage Unbal. Phase A	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Phase A if in 4 wire mode, else -32,768.
1027		Voltage Unbal. Phase B	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Phase B if in 4 wire mode, else -32,768.
1028		Voltage Unbal. Phase C	R	N	N in 10ths	Percent	0 to +/-1000	Percent Voltage Unbalance, Phase C if in 4 wire mode, else -32,768.
1029		Voltage L-N. Unbal Worst	R	N	N	Percent in 10ths	0 to +/-1000	Percent Voltage Unbalance, Worst L-N, if in 4 wire mode, else -32,768. Based on Absolute Value
1030		Reserved						
1031	15	True Power, Factor A	R	N	N in 1000ths	to +100	-100 to +1000	"True" Power Factor for Phase A, derived using the complete harmonic content of the real and apparent power for 4-wire systems else -32,768. Scale is 100ths if CM1 Register is used
1032	16	True Power, Factor B	R	N	N	in 1000ths	-100 to +1000 to +100	"True" Power Factor for Phase B, derived using the complete harmonic content of the real and apparent power for 4-wire systems else -32,768. Scale is 100ths if CM1 Register

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
								is used
1033	17	True Power, Factor C	R	N	N	in 1000ths	-100 to +1000 to +100	"True" Power Factor for Phase C, derived using the complete harmonic content of the real and apparent power for 4-wire systems else -32,768. Scale is 100ths if CM1 Register is used
1034	14	True Power, Factor 3 Total	R	N	N	in 1000ths	-100 to +1000 to +100	"True" Total Power Factor for all 3 Phases, derived using the complete harmonic content of the total real and apparent power. Scale is 100ths if CM1 Register is used
1035		Displacement Power Factor, A	R	N	N	in 1000ths	-100 to +1000 to +100	Displacement Power Factor for Phase A, derived using only the fundamental frequency of the real and apparent power for 4-wire systems else -32,768
1036		Displacement Power Factor, B	R	N	N	in 1000ths	-100 to +1000 to +100	Displacement Power Factor for Phase B, derived using only the fundamental frequency of the real and apparent power for 4-wire systems else -32,768
1037		Displacement Power Factor, C	R	N	N	in 1000ths	-100 to +1000 to +100	Displacement Power Factor for Phase C, derived using only the fundamental frequency of the real and apparent power for 4-wire systems else -32,768
1038		Displacement Power Factor, 3 Total	R	N	N	in 1000ths	-100 to +1000 to +100	Displacement Power Factor for all three phases derived using only the fundamental frequency of the real and apparent power
1039		Real Power, Phase A	R	N	E	kW/Scale Factor E	0 to +/-32,767	Real Power on Phase A (PA) 4-wire / -32,768 3 wire
1040		Real Power, Phase B	R	N	E	kW/Scale Factor E	0 to +/-32,767	Real Power on Phase B (PB) 4-wire / -32,768 3 wire
1041		Real Power, Phase C	R	N	E	kW/Scale Factor E	0 to +/-32,767	Real Power on Phase C (PC) 4-wire / -32,768 3 wire
1042	18	Real Power,	R	N	E	kW/Scale	0 to +/-32,767	Sum of the three real phase powers (PA+PB+PC) 4-wire

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		3 Total				Factor E		3 wire = 3 phase real power
1043		Reactive Power, Phase A	R	N	E	kVAr/Scale Factor E	0 to +/-32,767	Reactive Power on Phase A (QA) 4-wire / -32,768 3 wire
1044		Reactive Power, Phase B	R	N	E	kVAr/Scale Factor E	0 to +/-32,767	Reactive Power on Phase B (QB) 4-wire / -32,768 3 wire
1045		Reactive Power, Phase C	R	N	E	kVAr/Scale Factor E	0 to +/-32,767	Reactive Power on Phase C (QC) 4-wire / -32,768 3 wire
1046	19	Reactive Power, 3 Phase Total	R	N	E	kVAr/Scale Factor E	0 to +/-32,767	Sum of the three reactive phase powers (QA+QB+QC) 3 wire = 3 phase real power
1047		Apparent Power, Phase A	R	N	E	kVA/Scale Factor E	0 to +32,767	Apparent Power on Phase A (SA) 4-wire / -32,768 3 wire
1048		Apparent Power, Phase B	R	N	E	kVA/Scale Factor E	0 to +32,767	Apparent Power on Phase B (SB) 4-wire / -32,768 3 wire
1049		Apparent Power, Phase C	R	N	E	kVA/Scale Factor E	0 to +32,767	Apparent Power on Phase C (SC) 4-wire / -32,768 3 wire
1050	20	Apparent Power, 3 Phase Total	R	N	E	kVA/Scale Factor E	0 to +32,767	Sum of the three apparent phase powers (SA+SB+SC) 3 wire = 3 phase real power
POWER QUALITY								
1051		THD A Current	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase A Current
1052		THD B Current	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase B Current
1053		THD C Current	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase C Current
1054		THD Neut. Curr.	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Neutral Current

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
								in 4-Wire Mode, else -32,768
1055		THD A Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase A-N for 4-wire systems else -32,768
1056		THD B Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase B-N for 4-wire systems else -32,768
1057		THD C Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), Phase C-N for 4-wire systems else -32,768
1058		THD A-B Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), A-B Voltage
1059		THD B-C Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), B-C Voltage
1060		THD C-A Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (THD), C-A Voltage
1061		thd A Current	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase A Current
1062		thd B Current	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase B Current
1063		thd C Current	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase C Current
1064		thd Neut. Curr.	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Neutral Current in 4-Wire Mode, else -32,768
1065		thd A Voltage	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase A-N Voltage for 4-wire systems else -32,768
1066		thd B Voltage	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase B-N Voltage

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
								for 4-wire systems else -32,768
1067		thd C Voltage	R	N	N	% in 10ths	0 to 10,000	Total Harmonic Distortion (thd), Phase C-N Voltage for 4-wire systems else -32,768
1068		thd A-B Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (thd), A-B Voltage
1069		thd B-C Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (thd), B-C Voltage
1070		thd C-A Voltage	R	N	N	% in 10ths	0 to 32,767	Total Harmonic Distortion (thd), C-A Voltage
1071		K-Factor A	R	N	N	In 10ths	0 to 10,000	Transformer K-Factor, Phase A
1072		K-Factor B	R	N	N	In 10ths	0 to 10,000	Transformer K-Factor, Phase B
1073		K-Factor C	R	N	N	In 10ths	0 to 10,000	Transformer K-Factor, Phase C
1074		Crest Factor A	R	N	N	In 100ths	0 to 10,000	Transformer Crest Factor, Phase A
1075		Crest Factor B	R	N	N	In 100ths	0 to 10,000	Transformer Crest Factor, Phase B if applicable, else -32,68
1076		Crest Factor C	R	N	N	In 100ths	0 to 10,000	Transformer Crest Factor, Phase C
1077		Crest Factor Neutral	R	N	N	In 100ths	0 to 10,000	Transformer Crest Factor, Neutral Where Applicable, else -32,768
1078		A Current Fundamental RMS Magnitude	R	N	A	Amps/Scale Factor A	0 to 32,767	Phase A Current Fundamental RMS Magnitude
1079		A Current Fundamental Coincident Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase A Current Fundamental Angle Referenced to A-N/A-B Voltage Angle
1080		B Current Fundamental RMS Magnitude	R	N	A	Amps/Scale Factor A	0 to 32,767	Phase B Current Fundamental RMS Magnitude

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1081		B Current Fundamental Coincident Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase B Current Fundamental Angle Referenced to A-N/A-B Voltage Angle
1082		C Current Fundamental RMS Magnitude	R	N	A	Amps/Scale Factor A	0 to 32,767	Phase C Current Fundamental RMS Magnitude
1083		C Current Fundamental Coincident Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase C Current Fundamental Angle Referenced to A-N/A-B Voltage Angle
1084		Neutral Current Fundamental RMS Magnitude	R	N	A	Amps/Scale Factor B	0 to 32,767	Neutral Current Fundamental RMS magnitude when applicable, else -32,768
1085		Neutral Current Fundamental Angle	R	N	N	10ths of Degrees	0 to 3,599	Neutral Current Fundamental Angle when applicable, else -32,768
1086		Ground Current Fundamental RMS Magnitude	R	N	A	Amps/Scale Factor C	0 to 32,767	Ground Current Fundamental RMS magnitude when applicable, else -32,768
1087		Ground Current Fundamental Angle	R	N	N	10ths of Degrees	0 to 3,599	Ground Current Fundamental angle when applicable, else -32,768
1088		A Voltage Fundamental RMS Magnitude	R	N	D	Volts/Scale Factor D	0 to 32,767	Phase A-N Voltage Fundamental RMS Magnitude 4 wire, else -32,768
1089		A Voltage Fundamental	R	N	N	10ths of Degrees	0 to 3,599	Phase A-N Voltage Fundamental Angle, 4 wire, else -32,768 Referenced to itself

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Coincident Angle						
1090		B Voltage Fundamental RMS Magnitude	R	N	D	Volts/Scale Factor D	0 to 32,767	Phase B-N Voltage Fundamental RMS Magnitude 4 wire, else -32,768
1091		B Voltage Fundamental Coincident Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase B-N Voltage Fundamental Angle, 4 wire, else -32,768 Referenced to A-N Voltage Angle
1092		C Voltage Fundamental RMS Magnitude	R	N	D	Volts/Scale Factor D	0 to 32,767	Phase C-N Voltage Fundamental RMS Magnitude 4 wire, else -32,768
1093		C Voltage Fundamental Coincident Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase C-N Voltage Fundamental Angle, 4 wire, else -32,768 Referenced to A-N Voltage Angle
1094		A-B Voltage Fundamental RMS Magnitude	R	N	D	Volts/Scale Factor D	0 to 32,767	Phase A-B Voltage Fundamental RMS Magnitude
1095		A-B Voltage Fundamental Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase A-B Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1096		B-C Voltage Fundamental RMS Magnitude	R	N	D	Volts/Scale Factor D	0 to 32,767	Phase B-C Voltage Fundamental RMS Magnitude
1097		B-C Voltage Fundamental Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase B-C Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1098		C-A Voltage	R	N	D	Volts/Scale	0 to 32,767	Phase C-A Voltage Fundamental RMS Magnitude

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Fundamental RMS Magnitude				Factor D		
1099		C-A Voltage Fundamental Angle	R	N	N	10ths of Degrees	0 to 3,599	Phase C-A Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1100		Phase A Fundamental Real Power	R	N	E	KW/Scale Factor E	0 to +/- 32,767	Fundamental Real Power, Phase A 4 wire, else -32,768
1101		Phase B Fundamental Real Power	R	N	E	KW/Scale Factor E	0 to +/- 32,767	Fundamental Real Power, Phase B 4 wire, else -32,768
1102		Phase C Fundamental Real Power	R	N	E	KW/Scale Factor E	0 to +/- 32,767	Fundamental Real Power, Phase C 4 wire, else -32,768
1103		Fundamental Real Power 3 Phase Total	R	N	E	KW/Scale Factor E	0 to +/- 32,767	Fundamental Real Power, 3 Phase Total
1104		Phase A Fundamental Reactive Power	R	N	E	KVAr/Scale Factor E	0 to +/- 32,767	Fundamental Reactive Power, Phase A 4 wire, else -32,768
1105		Phase B Fundamental Reactive Power	R	N	E	KVAr/Scale Factor E	0 to +/- 32,767	Fundamental Reactive Power, Phase B 4 wire, else -32,768
1106		Phase C Fundamental Reactive Power	R	N	E	KVAr/Scale Factor E	0 to +/- 32,767	Fundamental Reactive Power, Phase C 4 wire, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1107		Fundamental Reactive Power 3 Phase Total	R	N	E	KVAr/Scale Factor E	0 to +/- 32,767	Fundamental Reactive Power, 3 Phase Total
1108		Harmonic Factor, A	R	N	N	Percent in 10ths	0 to 1000	Harmonic Factor for phase A - equal to True A PF/Displacement A PF, 4 wire, else -32,768
1109		Harmonic Factor, B	R	N	N	Percent in 10ths	0 to 1000	Harmonic Factor for phase B - equal to True B PF/Displacement B PF, 4 wire, else -32,768
1110		Harmonic Factor, C	R	N	N	Percent in 10ths	0 to 1000	Harmonic Factor for phase C - equal to True C PF/Displacement C PF, 4 wire, else -32,768
1111		Harmonic Factor, 3 Phase Total	R	N	N in 10ths	Percent	0 to 1000	Harmonic Factor for 3 phase total - equal to True Total PF/Displacement Total PF
1112		Harmonic Power Phase A	R	N	E	KW/Scale	0 to +/-32,767	Harmonic Power Phase A, 4-wire, else -32,768
1113		Harmonic Power Phase B	R	N	E	KW/Scale	0 to +/-32,767	Harmonic Power Phase B, 4-wire, else -32,768
1114		Harmonic Power Phase C	R	N	E	KW/Scale	0 to +/-32,767	Harmonic Power Phase C, 4-wire, else -32,768
1115		Harmonic Power 3 Phase Total	R	N	E	KW/Scale	0 to +/-32,767	Harmonic Power 3 Phase Total,
1116		Harmonic Power Flow Direction Bit Map for	R	N	N	none	Byte 0: 0 to 7 Byte 1:	Direction of Harmonic Power Flow Bit Map Byte 0 represents kW, Byte 1 represents kVAR Bit 0 represents Phase A, Bit 1 phase B and

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		A, B, C					0 to 7	Bit 2 phase C. And Bit 3, 3 phase total. Bits 0-2 are set to 0 for 3 wire systems. A 1 signifies harmonic power flow out of the load, and a 0 signifies harmonic power flow into the load
1117		Phase Rotation Direction	R	N	N	none	0 to 1	Direction of Phase Rotation, Based on Voltage only 0 represents normal A-B-C Rotation 1 represents C-B-A rotation
1118-1149		Reserved for future metered values						
1150-1189		CUL User Defined Metering interval quantities	R	R	N	None	0 - +/-32,767	Definition for each register is created by the CUL User.
1190		Reserved for Future Metered Values						
1191		Analog Input 1 Present Value	R	N	Y	None	-32,767 to +32,767	The present value of the analog input 1 register after being scaled as specified..
1192		Analog Input 2 Present Value	R	N	Y	None	-32,767 to +32,767	The present value of the analog input 2 register after being scaled as specified..
1193		Analog Input 3 Present Value	R	N	Y	None	-32,767 to +32,767	The present value of the analog input 3 register after being scaled as specified..
1194		Analog Input 4 Present Value	R	N	Y	None	-32,767 to +32,767	The present value of the analog input 4 register after being scaled as specified..
1195-1199		Reserved for future analog inputs						

REAL TIME METERED VALUES
MINIMUM

1200		Minimum update Interval	R	Y	N	1000ths of a second	0 to 10,000	The minimum amount of time between the last update of metered values and the update previous to that
1201	38	Minimum Freq.	R	Y	N	Hertz/Scale Factor F	2300 to 6700, (50/60) 3500 to 4500 (400)	Frequency of circuit being monitored. If the frequency is out of range this register will have a value of 0.
1202	39	Minimum Temp.	R	Y	N	Degrees Cent. in 100ths	-10,000 to +10,000	Minimum Temperature inside of the Circuit Monitor enclosure
1203	40	Minimum Curr. Phase A	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Measured RMS Phase A Current
1204	41	Minimum Curr. Phase B	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Measured RMS Phase B Current
1205	42	Minimum Curr. Phase C	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Measured RMS Phase C Current
1206		Minimum Curr. Neutral (I4)	R	Y	B	Amps/Scale Factor B	0 to 32,767	Minimum Measured RMS Neutral Current, if applicable, else -32,768
1207		Minimum Curr. Ground (I5)	R	Y	C	Amps/Scale Factor C	0 to 32,767	Minimum Calculated RMS Current from IN - (IA+IB+IC) if applicable, else -32,768
1208	43	Minimum Curr. 3 - Phase Average	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Calculated Arithmetic mean of the RMS values of IA, IB, and IC
1209	44	Minimum Curr. Apparent RMS	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Peak instantaneous value of IA, IB, or IC divided by the square root of 2
1210		Minimum Curr. Unbalance, Phase A	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Current Unbalance, phase A
1211		Minimum Curr. Unbalance, Phase B Program.	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Current Unbalance, phase B

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1212		Minimum Curr. Unbalance, Phase C	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Current Unbalance, phase C
1213		Min. Current Unbalance Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Current Unbalance Worst
1214	45	Minimum Volt. Phase A to B	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phases A and B.
1215	46	Minimum Volt. Phase B to C	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phases B and C.
1216	47	Minimum Vol. Phase C to A	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phases C and A.
1217		Min Volt L-L, 3 Phase Average	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum of the average of the 3 Phase Line-Line RMS Voltages
1218	48	Minimum Volt. Phase A to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phase A and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1219	49	MinimumVolt. Phase B to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phase B and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1220	50	Minimum Volt. Phase C to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Measured RMS Voltage Between Phase C and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1221		Min Volt L-N, 3 Phase Average	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum of the average of the 3 Phase Line-Neutral RMS Voltages if in 4 wire mode, else -32,768.
1222		Min Volt Unbal Phase A-B	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase A-B
1223		Min Volt Unbal Phase B-C	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase B-C

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1224		Min Volt Unbal. Phase C-A	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase C-A
1225		Min Volt Unbal. L-L Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Worst Line-Line, depends on Absolute Value
1226		Min Volt Unbal. Phase A	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase A if in 4 wire mode, else -32,768.
1227		Min Volt Unbal. Phase B	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase B if in 4 wire mode, else -32,768.
1228		Min Volt Unbal. Phase C	R	Y	N in 10ths	Percent	0 to +/-1000	Minimum Percent Voltage Unbalance, Phase C if in 4 wire mode, else -32,768.
1229		Min Volt L-N. Unbal Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Minimum Percent Voltage Unbalance, Worst L-N, if in 4 wire mode, else -32,768. Based on Absolute Value
1230		Reserved						

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
POWER								
					Program.			
1231	52	MinimumTrue, Power Factor A	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum "True" Power Factor for Phase A, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1232	53	Minimum True, Power Factor B	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum "True" Power Factor for Phase B, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1233	54	Minimum True, Power Factor C	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum "True" Power Factor for Phase C, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1234	51	Minimum True, Power Factor, 3 Total	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum "True" Total Power Factor for all 3 Phases, derived using the complete harmonic content of the total real and apparent power. Scale is 100ths if CM1 Register is used
1235		Minimum Displ. Power Factor, A	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum Displacement Power Factor for Phase A, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1236		Minimum Displ. Power Factor, B	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum Displacement Power Factor for Phase B, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1237		Minimum Displ. Power Factor, C	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum Displacement Power Factor for Phase C, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1238		Minimum Displ. Power Factor, 3 Total	R	Y	N	in 1000ths	-100 to +1000 to +100	Minimum Displacement Power Factor for all three phases derived using only the fundamental freq. of the real and apparent power

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1239		Min. Real Power Phase A	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Minimum Real Power on Phase A (PA) 4-wire/-32,768 3 wire
1240		Min. Real Power Phase B	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Minimum Real Power on Phase B (PB)4-wire/-32,768 3 wire
1241		Min. Real Power Phase C	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Minimum Real Power on Phase C (PC)4-wire/-32,768 3 wire
1242	55	Min. Real Power 3 Phase Total	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Minimum Sum of the three real phase powers 4-wire (PA+PB+PC) / 3 wire = min 3 phase total real power
1243		Min. Reactive Power Phase A	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Minimum Reactive Power on Phase A (QA) 4-wire/-32,768 3 wire
1244		Min. Reactive Power Phase B	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Minimum Reactive Power on Phase B (QB) 4-wire/-32,768 3 wire
1245		Min. Reactive Power Phase C	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Minimum Reactive Power on Phase C (QC) 4-wire/-32,768 3 wire
1246	56	Min. Reactive Power 3 Phase Total	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Minimum Sum of the three reactive phase powers (QA+QB+QC)
1247		Min. Apparent Power Phase A	R	Y	E	kVA/Scale Factor E	0 to +32,767	Minimum Apparent Power on Phase A (SA) 4-wire/-32,768 3 wire
1248		Min. Apparent Power Phase B	R	Y	E	kVA/Scale Factor E	0 to +32,767	Minimum Apparent Power on Phase B (SB) 4-wire/-32,768 3 wire
1249		Min. Apparent Phase C	R	Y	E	kVA/Scale Factor E	0 to +32,767	Minimum Apparent Power on Phase C (SC) 4-wire/-32,768 3 wire

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description

POWER QUALITY

1250	57	Min. Apparent Power 3 Phase Total	R	Y	E	kVA/Scale Factor E	0 to +32,767	Minimum Sum of the three apparent phase powers (SA+SB+SC)
1251		Minimum THD Phase A current	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase A Current
1252		Minimum THD Phase B current	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase B Current
1253		Minimum THD Phase C current	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase C Current
1254		Minimum THD Neutral Current	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Neutral Current in 4-Wire Mode, else -32,768
1255		Minimum THD Phase A Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase A-N for 4-wire, else -32,768
1256		Minimum THD Phase B Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase B-N for 4-wire, else -32,768
1257		Minimum THD Phase C Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), Phase C-N for 4-wire, else -32,768
1258		Minimum THD A-B Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), A-B Voltage
1259		Minimum THD B-C Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), B-C Voltage
1260		Minimum THD C-A Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (THD), C-A Voltage
1261		Minimum thd Phase A current	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase A Current

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1262		Minimum thd Phase B current	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase B Current
1263		Minimum thd Phase C current	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase C Current
1264		Minimim thd Neutral Current	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Neutral Current in 4-Wire Mode, else -32,768
1265		Minimum thd Phase A Voltage	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase A-N Voltage for 4-wire, else -32,768
1266		Minimum thd Phase B Voltage	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase B-N Voltage for 4-wire, else -32,768
1267		Minimum thd Phase C Voltage	R	Y	N	% in 10ths	0 to 10,000	Minimum Total Harmonic Distortion (thd), Phase C-N Voltage for 4-wire, else -32,768
1268		Minimum thd A-B Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (thd), A-B Voltage
1269		Minimum thd B-C Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (thd), B-C Voltage
1270		Minimum thd C-A Voltage	R	Y	N	% in 10ths	0 to 32,767	Minimum Total Harmonic Distortion (thd), C-A Voltage
1271		Min. K-Factor A	R	Y	N	In 10ths	0 to 10,000	Minimum Transformer K-Factor, Phase A
1272		Min.K-Factor B	R	Y	N	In 10ths	0 to 10,000	Minimum Transformer K-Factor, Phase B
1273		Min. K-Factor C	R	Y	N	In 10ths	0 to 10,000	Minimum Transformer K-Factor, Phase C
1274		Minimum Crest Factor, Phase A	R	Y	N	In 100ths	0 to 10,000	Minimum Transformer Crest Factor, Phase A

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1275		Minimum Cres Factor Phase B	R	Y	N	In 100ths	0 to 10,000	Minimum Transformer Crest Factor, Phase B if applicable, else -32,68
1276		Minimum Crest Factor Phase C	R	Y	N	In 100ths	0 to 10,000	Minimum Transformer Crest Factor, Phase C
1277		Minimum Crest Factor Neutral	R	Y	N	In 100ths	0 to 10,000	Minimum Transformer Crest Factor, Neutral When applicable, else -32,768
1278		Min. A Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Phase A Current Fundamental RMS Magnitude Coincident with any magnitude that falls below the lowest min.
1279		Min. A Current Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase A Current Fundamental Angle Coincident with minimum fundamental current
1280		Min. B Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Phase B Current Fundamental RMS Magnitude Coincident with any magnitude that falls below the lowest min.
1281		Min. B Current Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase B Current Fundamental AngleCoincident with minimum fundamental current
1282		Min.C Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Minimum Phase C Current Fundamental RMS Magnitude Coincident with any magnitude that falls below the lowest min.
1283		Min. C Current Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase C Current Fundamental Angle Coincident with minimum fundamental current
1284		Min. Neutral Curr. Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor B	0 to 32,767	Minimum Neutral Current Fundamental RMS magnitude When applicable, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1285		Min. Neutral Curr. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Minimum Neutral Current Fundamental Angle When applicable, else -32,768
1286		Min. Ground Curr. Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor C	0 to 32,767	Minimum Ground Current Fundamental RMS magnitude When applicable, else -32,768
1287		Min. Ground Curr. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Minimum Ground Current Fundamental angle When applicable, else -32,768
1288		Min. A Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Phase A-N Voltage Fundamental RMS Magnitude Coincident with any magnitude that falls below the lowest min. 4-wire, else -32,768
1289		Min. A Voltage Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase A-N Voltage Fundamental Angle Coincident with minimum fundamental voltage. 4-wire, else -32,768
1290		Min. B Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Phase B-N Voltage Fundamental RMS Magnitude Coincident with any magnitude that falls below the lowest min. 4-wire, else -32,768
1291		Min. B Voltage Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase B-N Voltage Fundamental Angle Coincident with minimum fundamental voltage 4-wire, else -32,768
1292		Min. C Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Phase C-N Voltage Fundamental RMS Magnitude coincident with any magnitude that falls below the lowest min. 4-wire, else -32,768
1293		Min. C Voltage Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase C-N Voltage Fundamental Angle Coincident with Minimum fundamental voltage 4-wire, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1294		Min. A-B Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Phase A-B Voltage Fundamental RMS Magnitude
1295		Min. A-B Voltage Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Minimum Phase A-B Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1296		Min. B-C Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Phase B-C Voltage Fundamental RMS Magnitude
1297		Min. B-C Voltage Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Minimum Phase B-C Voltage Fundamental Angle, Referenced to B-N (4 wire) or B-C (3 wire) Voltage Angle
1298		Min. C-A Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Minimum Phase C-A Voltage Fundamental RMS Magnitude
1299		Min. C-A Voltage Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Minimum Phase C-A Voltage Fundamental Angle, Referenced to C-N (4 wire) or C-A (3 wire) Voltage Angle
1300		Min.Phase A Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Fundamental Real Power, Phase A 4-wire, else -32,768
1301		Min. Phase B Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Real Power, Phase B 4-wire, else -32,768
1302		Min. Phase C Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Real Power, Phase C 4-wire, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1303		Min. Fund. Real Power Three Phase Total	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Real Power, 3 Phase Total
1304		Min. Phase A Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Reactive Power, Phase A 4-wire, else -32,768
1305		Min. Phase B Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Reactive Power, Phase B 4-wire, else -32,768
1306		Min. Phase C Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Reactive Power, Phase C 4-wire, else -32,768
1307		Min.Fund. Reactive Power 3 Phase Total	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Minimum Fundamental Reactive Power, 3 Phase Total
1308		Min. Harmonic Factor, Phase A	R	Y	N	Percent in 10ths	0 to 1000	Minimum Harmonic Factor for phase A - equal to True A PF/Displacement A PF, 4 wire, else -32,768
1309		Min. Harmonic Factor, Phase B	R	Y	N	Percent in 10ths	0 to 1000	Minimum Harmonic Factor for phase B - equal to True B PF/Displacement B PF, 4 wire, else -32,768
1310		Min. Harmonic Factor, Phase C	R	Y	N	Percent in 10ths	0 to 1000	Minimum Harmonic Factor for phase C - equal to True C PF/Displacement C PF, 4 wire, else -32,768
1311		Min. Harmonic Factor, 3 Phase Total	R	Y	N in 10ths	Percent	0 to 1000	Minimum Harmonic Factor for 3 phase total - equal to True 3 PF/Displacement 3 PF
1312		Min. Harmonic Power Phase A	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase A, 4-wire, else -32,768
1313		Min. Harmonic Power Phase B	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase B, 4-wire, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1314		Min. Harmonic Power Phase C	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase C, 4-wire, else -32,768
1315		Min. Harmonic Power, 3 Phase Total	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power 3 Phase Total,
1316-1349		Reserved for future metered value minimums						
1350-1389		CUL User Defined Metering Minimum Quantities	R	N	N	None	0 - +/-32,767	Definition for each register is crreated by the CUL User.
1390		Reserved for future metered value minimums						
1391		Analog Input 1 Minimum Value	R	Y	Y	None	-32,767 to +32,767	The minimum value of the analog input 1 register since last reset of min/max parameters
1392		Analog Input 2 Minimum Value	R	Y	Y	None	-32,767 to +32,767	The minimum value of the analog input 2 register since last reset of min/max parameters
1393		Analog Input 3 Minimum Value	R	Y	Y	None	-32,767 to +32,767	The minimum value of the analog input 3 register since last reset of min/max parameters
1394		Analog Input 4 Minimum Value	R	Y	Y	None	-32,767 to +32,767	The minimum value of the analog input 4 register since last reset of min/max parameters
1395-1399		Reserved for future analog I/O minimums						

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description

<u>REAL TIME METERED VALUES</u>
<u>MAXIMUM</u>

1400		Max. update Interval	R	Y	N	1000ths of a second	0 to 10,000	The Maximum amount of time between the last update of metered values and the update previous to that
1401	61	Maximum Freq.	R	Y	N	Hertz/Scale Factor F	2300 to 6700, (50/60) 3500 to 4500 (400)	Frequency of circuit being monitored. If the frequency is out of range this register will have a value of 0.
1402	62	Maximum Temp.	R	Y	N	Degrees Cent. in 100ths	-10,000 to +10,000	Maximum Temperature inside of the Circuit Monitor enclosure
1403	63	Max. Current Phase AR	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Measured RMS Phase A Current
1404	64	Max. Current Phase BR	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Measured RMS Phase B Current
1405	65	Max. Current Phase CR	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Measured RMS Phase C Current
1406		Max. Current Neutral (I4)	R	Y	B	Amps/Scale Factor B	0 to 32,767	Maximum Measured RMS Neutral Current, if applicable, else -32,768
1407		Max. Current Ground (I5)	R	Y	C	Amps/Scale Factor C	0 to 32,767	Maximum Calculated RMS Current from IA+IB+IC+IN, if applicable, else -32,768
1408	66	Max. Current 3 - Phase Average	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Calculated Arithmetic mean of the RMS values of IA, IB, and IC
1409	67	Max. Current, Apparent RMS	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Peak instantaneous value of IA, IB, or IC divided by the square root of 2
1410		Max. Current Unbalance, Phase A	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Current Unbalance, Phase A

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1411		Max. Current Unbalance, Phase B	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Current Unbalance, Phase B
1412		Max. Current Unbalance Phase C	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Current Unbalance, Phase C
1413		Max. Current Unbalance Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Current Unbalance Worst
1414	68	Max.Voltage Phase A to B	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phases A and B.
1415	69	Max. Voltage Phase B to C	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phases B and C.
1416	70	Max. Voltage Phase C to A	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phases C and A.
1417		Max Volt L-L, 3 Phase Average	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum of the average of the 3 Phase Line-Line RMS Voltages
1418	71	Max. Voltage Phase A to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phase A and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1419	72	Max. Voltage Phase B to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phase B and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1420	73	Max. Voltage Phase C to Neutral	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Measured RMS Voltage Between Phase C and Neutral. (4-wire mode only, in 3-wire mode the value is set to -32,768)
1421		Max Volt L-N, 3 Phase Average	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum of the average of the 3 Phase Line-Neutral RMS Voltages if in 4 wire mode, else -32,768.
1422		Max Volt Unbal Phase A-B	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase A-B
1423		Max Volt Unbal	R	Y	N	Percent	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase B-C

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Phase B-C				in 10ths		
1424		Max Volt Unbal. Phase C-A	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase C-A
1425		Max Volt Unbal. L-L Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Worst Line-Line, depends on Absolute Value
1426		Max Volt Unbal. Phase A	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase A if in 4 wire mode, else -32,768.
1427		Max Volt Unbal. Phase B	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase B if in 4 wire mode, else -32,768.
1428		Max Volt Unbal. Phase C	R	Y	N in 10ths	Percent	0 to +/-1000	Maximum Percent Voltage Unbalance, Phase C if in 4 wire mode, else -32,768.
1429		Max Volt L-N. Unbal Worst	R	Y	N	Percent in 10ths	0 to +/-1000	Maximum Percent Voltage Unbalance, Worst L-N, if in 4 wire mode, else -32,768. Based on Absolute Value
1430		Reserved						

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
POWER								
1431	75	Maximum True, Power Factor A	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum "True" Power Factor for Phase A, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1432	76	Maximum True, Power Factor B	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum "True" Power Factor for Phase B, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1433	77	Maximum True, Power Factor C	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum "True" Power Factor for Phase C, derived using the complete harmonic content of the real and apparent power for 4-wire systems, else -32,768. Scale is 100ths if CM1 Register is used
1434	74	Maximum True, Power Factor 3 Phase total	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum "True" Total Power Factor for all 3 Phases, derived using the complete harmonic content of the total real and apparent power. Scale is 100ths if CM1 Register is used
1435		Maximum Displ. Power Factor Phase A	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum Displacement Power Factor for Phase A, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1436		Maximum Displ. Power Factor, Phase B	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum Displacement Power Factor for Phase B, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1437		Maximum Displ. Power Factor Phase C	R	Y	N	in 1000ths	-100 to +1000 to +100	Maximum Displacement Power Factor for Phase C, derived using only the fundamental frequency of the real and apparent power for 4-wire systems, else -32,768
1438		Maximum Displ. Power Factor 3 Phase Total	R	Y	N	Percent in 1000ths	-100 to +1000 to +100	Maximum Displacement Power Factor for all three phases derived using only the fundamental freq. of the real and apparent power

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1439		Max. Real Power Phase A	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Maximum Real Power on Phase A (PA)/4 wire / -32,768 3 wire
1440		Max. Real Power Phase B	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Maximum Real Power on Phase B (PB)/4 wire / -32,768 3 wire
1441		Max. Real Power Phase C	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Maximum Real Power on Phase C (PC)/4 wire / -32,768 3 wire
1442	78	Max. Real Power 3 Total	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Maximum Sum of the three real phase powers 4 wire (PA+PB+PC) /3 wire = max 3 phase total real power
1443		Max. Reactive Power Phase A	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Maximum Reactive Power on Phase A (QA) 4 wire / -32,768 for 3 wire
1444		Max. Reactive Power Phase B	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Maximum Reactive Power on Phase B (QB) 4 wire / -32,768 for 3 wire
1445		Max. Reactive Power Phase C	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Maximum Reactive Power on Phase C (QC) 4 wire / -32,768 for 3 wire
1446	79	Max. Reactive Power 3 Phase Total	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Maximum Sum of the three reactive phase powers (QA+QB+QC)
1447		Max. Apparent Power Phase A	R	Y	E	kVA/Scale Factor E	0 to +32,767	Maximum Apparent Power on Phase A (SA) 4 wire / -32,768 for 3 wire
1448		Max. Apparent Power Phase B	R	Y	E	kVA/Scale Factor E	0 to +32,767	Maximum Apparent Power on Phase B (SB) 4 wire / -32,768 for 3 wire
1449		Max. Apparent Power Phase C	R	Y	E	kVA/Scale Factor E	0 to +32,767	Maximum Apparent Power on Phase C (SC) 4 wire / -32,768 for 3 wire
1450	80	Max. Apparent Power 3 Phase Total	R	Y	E	kVA/Scale Factor E	0 to +32,767	Maximum Sum of the three apparent phase powers (SA+SB+SC)

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1451		Maximum THD Phase A current	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase A Current
1452		Maximum THD Phase B current	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase B Current
1453		Maximum THD Phase C current	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase C Current
1454		Maximum THD Neutral Current	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (THD), Neutral Current for 4 wire, else -32,768
1455		Maximum THD Phase A Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase A-N for 4 wire, else -32,768
1456		Maximum THD Phase B Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase B-N for 4 wire, else -32,768
1457		Maximum THD Phase C Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), Phase C-N for 4 wire, else -32,768
1458		Maximum THD A-B Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), A-B Voltage
1459		Maximum THD B-C Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), B-C Voltage
1460		Maximum THD C-A Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (THD), C-A Voltage
1461		Maximum thd Phase A current	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase A Current
1462		Maximum thd Phase B current	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase B Current

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1463		Maximum thd Phase C current	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase C Current
1464		Maximum thd Neutral Current	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Neutral Current for 4 wire, else -32,768
1465		Maximum thd Phase A Voltage	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase A-N for 4-wire, else -32,768
1466		Maximum thd Phase B Voltage	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase B-N for 4-wire, else -32,768
1467		Maximum thd Phase C Voltage	R	Y	N	% in 10ths	0 to 10,000	Maximum Total Harmonic Distortion (thd), Phase C-N for 4-wire, else -32,768
1468		Maximum thd A-B Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (thd), A-B Voltage
1469		Maximum thd B-C Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (thd), B-C Voltage
1470		Maximum thd C-A Voltage	R	Y	N	% in 10ths	0 to 32,767	Maximum Total Harmonic Distortion (thd), C-A Voltage
1471		Max. K-Factor Phase A	R	Y	N	In 10ths	0 to 10,000	Maximum Transformer K-Factor, Phase A
1472		Max. K-Factor Phase B	R	Y	N	In 10ths	0 to 10,000	Maximum Transformer K-Factor, Phase B
1473		Max. K-Factor Phase C	R	Y	N	In 10ths	0 to 10,000	Maximum Transformer K-Factor, Phase C
1474		Maximum Crest Factor Phase A	R	Y	N	In 100ths	0 to 10,000	Maximum Transformer Crest Factor, Phase A

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1475		Maximum Crest Factor Phase B	R	Y	N	In 100ths	0 to 10,000	Maximum Transformer Crest Factor, Phase B if applicable, else -32,68
1476		Maximum Crest Factor Phase C	R	Y	N	In 100ths	0 to 10,000	Maximum Transformer Crest Factor, Phase C
1477		Maximum Crest Factor Neutral	R	Y	N	In 100ths	0 to 10,000	Maximum Transformer Crest Factor, Neutral when applicable, else -32,768
1478		Max. A Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Phase A Current Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum
1479		Max. A Current Fundamental Coicident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase A Current Fundamental Angle coincident with maximum fundamental current
1480		Max. B Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Phase B Current Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum
1481		Max. B Current Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase B Current Fundamental Angle coincident with maximum fundamental current
1482		Max.C Current Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor A	0 to 32,767	Maximum Phase C Current Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum
1483		Max. C Current Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase C Current Fundamental Angle coincident with maximum fundamental current
1484		Max.Neutral Curr. Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor B	0 to 32,767	Maximum Neutral Current Fundamental RMS magnitude when applicable, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1485		Max. Neutral Curr. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Maximum Neutral Current Fundamental Angle when applicable, else -32,768
1486		Max. Ground Curr. Fundamental RMS Magnitude	R	Y	A	Amps/Scale Factor C	0 to 32,767	Maximum Ground Current Fundamental RMS magnitude when applicable, else -32,768
1487		Max. Ground Curr. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Maximum Ground Current Fundamental angle when applicable, else -32,768
1488		Max. A Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Phase A-N Voltage Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum 4-wire, else -32,768
1489		Max. A Voltage Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase A-N Voltage Fundamental Angle coincident with maximum fundamental voltage 4-wire, else -32,768
1490		Max. B Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Phase B-N Voltage Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum 4-wire, else -32,768
1491		Max. B Voltage Fundamental Coincident Angle	R	Y	N	Degrees	0 to 3,599	Phase B-N Voltage Fundamental Angle coincident with Maximum fundamental voltage 4-wire, else -32,768
1492		Max. C Voltage Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Phase C-N Voltage Fundamental RMS Magnitude Coincident with any magnitude surpassing any phase maximum 4-wire, else -32,768
1493		Max. C Voltage Fundamental Coincident Angle	R	Y	N	Degrees in 10ths	0 to 3,599	Phase C-N/C-A Voltage Fundamental Angle coincident with Maximum fundamental voltage

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1494		Max. A-B Volt. Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Phase A-B Voltage Fundamental RMS Magnitude
1495		Max. A-B Volt. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Maximum Phase A-B Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1496		Max. B-C Volt. Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Maximum Phase B-C Voltage Fundamental RMS Magnitude
1497		Max. B-C Volt. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Maximum Phase B-C Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1498		Max. C-A Volt. Fundamental RMS Magnitude	R	Y	D	Volts/Scale Factor D	0 to 32,767	Phase C-A Voltage Fundamental RMS Magnitude
1499		Max. C-A Volt. Fundamental Angle	R	Y	N	10ths of Degrees	0 to 3,599	Phase C-A Voltage Fundamental Angle, Referenced to A-N (4 wire) or A-B (3 wire) Voltage Angle
1500		Max.Phase A Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Real Power, Phase A 4-wire, else -32,768
1501		Max. Phase B Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Real Power, Phase B 4-wire, else -32,768
1502		Max. Phase C Fundamental Real Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Real Power, Phase C 4-wire, else -32,768

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1503		Max.Fund. Real Power 3 Phase Total	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Real Power, 3 Phase Total
1504		Max. Phase A Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Reactive Power, Phase A 4-wire, else -32,768
1505		Max. Phase B Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Reactive Power, Phase B 4-wire, else -32,768
1506		Max. Phase C Fundamental Reactive Power	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Reactive Power, Phase C 4-wire, else -32,768
1507		Max. Fund. Reactive Power 3 Phase Total	R	Y	E	KW/Scale Factor E	0 to +/- 32,767	Maximum Fundamental Reactive Power, 3 Phase Total
1508		Max. Harmonic Factor, Phase A	R	Y	N	Percent in 10ths	0 to 1000	Maximum Harmonic Factor for phase A - equal to True A PF/Displacement A PF 4-wire, else -32,768
1509		Max. Harmonic Factor, Phase B	R	Y	N	Percent in 10ths	0 to 1000	Maximum Harmonic Factor for phase B - equal to True B PF/Displacement B PF 4-wire, else -32,768
1510		Max. Harmonic Factor, Phase C	R	Y	N	Percent in 10ths	0 to 1000	Maximum Harmonic Factor for phase C - equal to True C PF/Displacement C PF 4-wire, else -32,768
1511		Max. Harmonic Factor, 3 Phase Total	R	Y	N	Percent in 10ths	0 to 1000	Maximum Harmonic Factor for 3 phase total - equal to True Total PF/Displacement Total PF

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1512		Max. Harmonic Power Phase A	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase A, 4-wire, else -32,768
1513		Max. Harmonic Power Phase B	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase B, 4-wire, else -32,768
1514		Max. Harmonic Power Phase C	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power Phase C, 4-wire, else -32,768
1515		Max. Harmonic Power, 3 Phase Total	R	Y	E	KW/Scale Factor E	0 to +/-32,767	Minimum Harmonic Power 3 Phase Total,
1516-1549		Reserved for future metered value maximums						
1550-1589		CUL User Defined Metering Maximum Quantities	R	N	N	None	0 to +/-32,767	Definition for each user is created by the CUL User
1590		Reserved for future metered value maximums						
1591		Analog Input 1 Maximum Value	R	Y	Y	None	-32,767 to +32,767	The maximum value of the analog input 1 register since last reset of min/max parameters
1592		Analog Input 2 Maximum Value	R	Y	Y	None	-32,767 to +32,767	The maximum value of the analog input 2 register since last reset of min/max parameters
1593		Analog Input 3 Maximum Value	R	Y	Y	None	-32,767 to +32,767	The maximum value of the analog input 3 register since last reset of min/max parameters
1594		Analog Input 4 Maximum Value	R	Y	Y	None	-32,767 to +32,767	The maximum value of the analog input 4 register since last reset of min/max parameters
1595-1599		Reserved for future analog I/O maximums						

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

ENERGY VALUES

Each energy is kept in 4 registers, except Incremental which is kept in 3 registers, modulo 10,000 per register

ACCUMULATED ENERGY

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1600		Unused						
1601-1604		Real Energy In 3 Phase Total	R	Y	N	WH	0 to 9,999,999,999,999,999	Sum of the three real phase Energies into the load
1605-1608		Reactive Energy In 3 Phase Total	R	Y	N	VArH	0 to 9,999,999,999,999,999	Sum of the three reactive phase energies into the load, using either the fundamental or total energy.
1609-1612		Real Energy Out 3 Phase Total	R	Y	N	WH	0 to 9,999,999,999,999,999	Sum of the three real phase Energies out of the load
1613-1616		Reactive Energy Out 3 Phase Total	R	Y	N	VArH	0 to 9,999,999,999,999,999	Sum of the three reactive phase energies out of the load, using either the fundamental or total energy.
1617-1620		Apparent Energy, 3 Phase Total	R	Y	N	VAH	0 to 9,999,999,999,999,999	Sum of the three apparent phase Energies
1621-1624	24-27	Real Energy Signed/Absolute 3 Phase Total	R	Y	N	WH	0 to +/-9,999,999,999,999,999	Real Energy into the load - Real Energy Out of the Load or Real Energy into the load + Real Energy Out of the Load or user selectable

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1625-1628	28-31	Reactive Energy Signed/Absolute 3 Phase Total	R	Y	N	VArH	0 to +/-9,999,999,999,999,999	Reactive Energy into the load - Reactive Energy Out of the Load or Reactive Energy into the load + Real Energy Out of the Load or user selectable, using either the fundamental or total energy.

CONDITIONAL ACCUMULATED ENERGY

Register Number	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1629-1632	Conditional Real Energy In, 3 Phase Total	R	Y	N	WH	0 to 9,999,999,999,999,999	Sum of the three real Conditional phase Energies into the load
1633-1636	Conditional Reactive Energy In 3 Phase Total	R	Y	N	VArH	0 to 9,999,999,999,999,999	Sum of the three reactive Conditional phase energies into the load, using either the fundamental or total energy.
1637-1640	Conditional Real Energy Out, 3 Phase Total	R	Y	N	WH	0 to 9,999,999,999,999,999	Sum of the three real Conditional phase Energies out of the load
1641-1644	Conditional Reactive Energy Out 3 Phase Total	R	Y	N	VArH	0 to 9,999,999,999,999,999	Sum of the three reactive Conditional phase energies into the load, using either the fundamental or total energy.
1645-1648	Conditional Apparent Energy 3 Phase Total	R	Y	N	VAH	0 to 9,999,999,999,999,999	Sum of the three apparent Conditional phase Energies

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

INCREMENTAL ACCUMULATED ENERGY

1649-1651	Incremental Real Energy In, 3 Phase Total	R	Y	N	WH	0 to 999,999,999,999	Sum of the three real phase incremental Energies into the load
1652-1654	Incremental Reactive Energy In 3 Phase Total	R	Y	N	VArH	0 to 999,999,999,999	Sum of the three reactive incremental phase energies into the load, using either the fundamental or total energy.
1655-1657	Incremental Real Energy Out, 3 Phase Total	R	Y	N	WH	0 to 999,999,999,999	Sum of the three real incremental phase Energies out of the load
1658-1660	Incremental Reactive Energy Out 3 Phase Total	R	Y	N	VArH	0 to 999,999,999,999 energy.	Sum of the three reactive incremental phase energies into the load, using either the fundamental or total
1661-1663	Incremental Apparent Energy 3 Phase Total	R	Y	N	VAH	0 to 999,999,999,999	Sum of the three apparent incremental phase Energies

DEMAND VALUES

CURRENT DEMAND

Register CM/2	Number CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1700		Present Current Demand 3 Phase Average	R	N	Y	Amps/Scale Factor A	0 to 32,767	Present current demand, 3 Phase Average Average of 3 phase thermal demand currents
1701	32	Present Current Demand Phase A	R	N	Y	Amps/Scale Factor A	0 to 32,767	Present current demand, thermal, Phase A
1702	33	Present Current Demand Phase B	R	N	Y	Amps/Scale Factor A	0 to 32,767	Present current demand, thermal, Phase B
1703	34	Present Current Demand Phase C	R	N	Y	Amps/Scale Factor A	0 to 32,767	Present current demand, thermal, Phase C
1704		Present Current Demand Neutral	R	N	Y	Amps/Scale Factor B	0 to 32,767	Present current demand, thermal, Neutral, if applicable, else -32,768
1705		Thermal K-Factor Demand, Phase A	R	N	N	In 10ths	0 to 10,000	Thermal K-Factor demand, phase A, over the demand interval
1706		Thermal K-Factor Demand, Phase B	R	N	N	In 10ths	0 to 10,000	Thermal K-Factor demand, phase B, over the demand interval
1707		Thermal K-Factor Demand, Phase C	R	N	N	In 10ths	0 to 10,000	Thermal K-Factor demand, phase C, over the demand interval

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

CURRENT DEMAND (continued)

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1708		Peak Current Demand 3 Phase Average	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Peak current demand, 3 Phase Average
1709	84	Peak Current Demand Phase A	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Peak current demand, Phase A
1710	85	Peak Current Demand Phase B	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Peak current demand, Phase B
1711	86	Peak Current Demand Phase C	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Peak current demand, Phase C
1712		Peak Current Demand Neutral	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Peak Current Demand, Neutral if applicable, else -32,768
1713		K-Factor Demand Phase A Coincident Peak Product	R	Y	N	In 10ths	0 to 10,000	K-Factor demand, phase A, over the demand interval coincident with the peak of the product of K-Factor Demand and square of Current Demand
1714		Current Demand Phase A Coincident Peak Product	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Current demand, Phase A coincident with peak of the product of K-Factor Demand and the square of Current Demand

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1715		K-Factor Demand Phase B Coincident Peak Product	R	Y	N	In 10ths	0 to 10,000	K-Factor demand, phase B, over the demand interval coincident with the peak of the product of K-Factor Demand and square of Current Demand
1716		Current Demand Phase B Coincident Peak Product	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Current demand, Phase B coincident with the peak of the product of K-Factor Demand and the square of Current Demand
1717		K-Factor Demand Phase C Coincident Peak Product	R	Y	N	In 10ths	0 to 10,000	K-Factor demand, phase C, over the demand interval coincident with the peak of the product of K-Factor Demand and square of Current Demand
1718		Current Demand Phase C Coincident Peak Product	R	Y	Y	Amps/Scale Factor A	0 to 32,767	Current demand, Phase C coincident with the peak of the product of K-Factor Demand and the square of Current Demand
1719-1729		Reserved						

Register CM/2	Number CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

POWER DEMAND ** Reactive Demand may be calculated either using the fundamental only (default) or using total harmonics, user selectable.

1730		Average Power Factor Over Interval	R	N	Y	Percent in 1000ths	-100 to 1000 to +100	Average True Power Factor over the last completed Demand Interval i.e. (Demand kW)/(Demand kVA). Updated every sub-interval
1731	35	Present Real Power, Demand, 3 Phase Total	R	N	E	kW/Scale Factor E	0 to +/-32,767	Present Real Power Demand, 3 phase total for the last completed demand interval. Updated every sub-interval
1732		Present Reactive Power, Demand, 3 Phase Total	R	N	E	kVAr/Scale Factor E	0 to +/-32,767	Present Reactive Power Demand, 3 phase totals for the last completed demand interval, using either the fundamental or total energy. updated every sub-interval.
1733		Present Apparent Power Demand Demand, 3 Phase Total	R	N	E	kVA/Scale Factor E	0 to 32,767	Present Apparent Power Demand, 3 phase total for the last completed demand interval. Updated ever sub-interval.
1734	37	Peak Real Power Demand 3 Phase Total	R	Y	E	kW/Scale Factor E	0 to +/-32,767	Peak Real Power Demand, 3 phase total
1735	83	Average Power Factor, for Peak Real	R	Y	Y	Percent in 1000ths	-100 to 1000 to +100	Average True Power Factor at time of Peak Real Demand
1736		Reactive Power Demand for Peak Real	R	Y	Y	kVAr/Scale Factor E	0 to +/-32,767	Reactive Powrer Demand coincident with peak real power demand
1737		Apparent Power Demand for Peak Real	R	Y	Y	kVA/Scale Factor E	0 to 32,767	Apparent Power Demand coincident with peak real power demand

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
POWER DEMAND (continued)								
1738		Peak Reactive Power Demand, 3 Phase Total	R	Y	E	kVAr/Scale Factor E	0 to +/-32,767	Peak Reactive Power Demand, 3 phase total
1739		Average Power Factor for Peak Reactive	R	Y	Y	Percent in 1000ths	-100 to 1000 to +100	Average True Power Factor at time of Peak Reactive Demand
1740		Real Power Demand for Peak Reactive	R	Y	Y	kW/Scale Factor E	0 to +/-32,767	Real Power Demand coincident with peak reactive power demand
1741		Apparent Power Demand for Peak Reactive	R	Y	Y	kVA/Scale Factor E	0 to 32,767	Apparent Power Demand coincident with peak reactive power demand
1742		Peak Apparent Power Demand, 3 Phase Total	R	Y	E	kVA/Scale Factor E	0 to 32,767	Peak Apparent Power Demand, 3 phase total
1743		Average Power Factor, for Peak Apparent	R	Y	Y	Percent in 1000ths	-100 to 1000 to +100	Average True Power Factor at time of Peak Apparent Demand
1744		Real Power Demand for Peak Apparent	R	Y	Y	kW/Scale Factor E	0 to +/-32,767	Real Power Demand coincident with peak apparent power demand

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
1745		Reactive Power Demand for Peak Apparent	R	Y	Y	kVAr/Scale Factor E	0 to +/-32,767	Reactive Power Demand coincident with peak apparent power demand
1746	36	Predicted Real Power Demand, 3 Phase Total	R	N	E	kW/Scale Factor E	0 to +/-32,767	Predicted Real Power Demand, 3 phase total Average of last four 15s granules
1747		Predicted Reactive Power Demand, 3 Phase Total	R	N	E	kVAr/Scale Factor E	0 to 32,767	Predicted Reactive Power Demand, 3 phase total, using either the fundamental or total energy.
1748		Predicted Apparent Power Demand, 3 Phase Total	R	N	E	kVA/Scale Factor E	0 to 32,767	Predicted Apparent Power Demand, 3 phase total
1749		Max. Real Power 3 phase Demand over last inc. energy interval	R	Y	E	kW/Scale Factor E	0 to 32,767	Maximum Real Power 3 Phase Demand calculation over the last incremental energy interval
1750		Max. Reactive Power 3 phase Demand over last inc. energy interval	R	Y	E	kVAr/Scale Factor E	0 to 32,767	Maximum Reactive Power 3 Phase Demand calculation over the last incremental energy interval
1751		Max. Apparent Power 3 phase Demand over last inc. energy interval	R	Y	E	kVA/Scale Factor E	0 to 32,767	Maximum Apparent Power 3 Phase Demand calculation over the last incremental energy interval
1752		Time Remaining in Sub Demand	R	Y	N	Seconds	0 to 3600	Time remaining in the power sub demand interval for demand intervals without external synch pulse,

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
		Interval						otherwise -32,768.

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Compressed (3 registers)

Register Number CM/2	CM/1	Register Name	Type	Program Saved	Scaled	Units	Range	Register Description
1800-1802	88-90	Last Restart Date/Time	R	Y	N	Month,Day,Yr, Hr,Min,Sec	*See below	Date and Time of Last Restart compressed form
1803-1805	91-93	Date/Time Demand of Peak Current Phase A	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak demand current, A, compressed form
1806-1808	94-96	Date/Time Demand of Peak Current Phase B	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak demand current, B, compressed form
1809-1811	97-99	Date/Time Demand of Peak Current Phase C	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak demand current, C, compressed form
1812-1814	100-102	Date/Time of Peak Demand (Average Real Power)	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Real Demand Power, 3 phase total, compressed form
1815-1817	103-105	Date/Time of Last Reset of Peak Demand Current	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of last reset of Peak Demand Current compressed form
1818-1820	106-108	Date/Time of last Min/Max Clear of Instantaneous Values	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of last Min/Max Clear of Instantaneous values compressed form

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description

*Register 1800, Month (high byte) = 1-12, Day (low byte) = 1-31, Register 1801, Year (high byte) = 0-199), Hour (low byte) = 0- 23, Register 1802, Minutes (high byte) = 0-59, Seconds (low byte) = 0-59. The year is zero based on the year 1900 in anticipation of the 21st century, (e.g.1989 wou ld be represented as 89 and 2009 would be represented as 109).

1821-1823	109-111	Date/Time of Last Write to Circuit Tracker™ Setpoint Register	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Last Write to Circuit Tracker™ Setpoint Register compressed form
1824-1826	112-114	Date/Time when Peak Demand was last cleared	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time when Peak Demand (Average Real Power) was last Cleared. compressed form
1827-1829	115-117	Date/Time when Accumulated Energy Last Cleared	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time when Accumulated Energy Last Cleared compressed form
1830-1832	118-120	Date/Time when Control Power Failed Last	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time when the Control Power failed last compressed form
1833-1835	124-126	Date/Time When Level 1 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time When Level 1 Energy Management Set-Point Alarm Period was last entered. compressed form
1836-1838	127-129	Date/Time When Level 2 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time When Level 2 Energy Management Set-Point Alarm Period was last entered. compressed form
1839-1841	130-132	Date/Time When Level 3 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time When Level 3 Energy Management Set-Point Alarm Period was last entered. compressed

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1842-1844	228-230	Present/Set Date/Time	R/(W*)	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Present/Set Date/Time in compressed form * Only the ghosted CM1 registers are R/W, the CM2 Registers are Read only
1845-1847	232-234	Calibration	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date and Time of Calibration compressed form
1848-1850		Date/Time of Peak K-Factor Demand A Product	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of the Peak of the product of K-factor demand and current demand, phase A in compressed form
1851-1853		Date/Time of Peak K-Factor Demand B Product	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of the Peak of the product of K-factor demand and current demand, phase B in compressed form
1854-1856		Date/Time of Peak K-Factor Demand C Product	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of the Peak of the product of K-factor demand and current demand, phase C in compressed form
1857-1859		Date/Time of Peak Reactive Demand Power	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Reactive Demand Power, 3 phase total, compressed form
1860-1862		Date/Time of Peak Apparent Demand Power	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Apparent Demand Power, 3 phase total, compressed form
1863-1865		Incremental Energy Start Time	R/W	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs #	Incremental Energy start time of day compressed form (month, day and year are used only

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		of Day					1800-1802	to start accumulation, after that only Hr,Min,&Sec are used).
1866-1868		Date/Time when Conditional Energy Last Cleared	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time when Conditional Energy Last Cleared compressed form
1869-1871		Incremental Energy Last Update Date/Time	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Incremental Energy Last Update Date/Time
1872-1874		Date/Time of Peak 3 phase Avg Current Demand	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak 3 phase Average Current Demand compressed form
1875-1877		Date/Time of Peak Neutral Current Demand	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Neutral Current Demand compressed form
1878-1880		Date/Time of Max Real PowerDemand during last inc. energy interval	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Max Real Power Demand during the last completed incremental energy interval. Compressed form
1881-1883		Date/Time of Max Reactive PowerDemand during last inc. energy interval	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Max Reactive Power Demand during the last completed incremental energy interval. Compressed form
1884-1886		Date/Time of Max Apparent PowerDemand during last inc. energy interval	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Max Apparent Power Demand during the last completed incremental energy interval. Compressed form

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1887-1892		Reserved						
1893-1898		Present Date/Time 6 Reg format	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Present date/time 6 register format
1900-1902		Date/Time of Max Generic Demand #1	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #1
1903-1905		Date/Time of Min Generic Demand #1	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #1
1906-1908		Date/Time of Max Generic Demand #2	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #2
1909-1911		Date/Time of Min Generic Demand #2	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #2
1912-1914		Date/Time of Max Generic Demand #3	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #3
1915-1917		Date/Time of Min Generic Demand #3	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #3
1918-1920		Date/Time of Max Generic Demand #4	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #4

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1921-1923		Date/Time of Min Generic Demand #4	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #4
1924-1926		Date/Time of Max Generic Demand #5	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #5
1927-1929		Date/Time of Min Generic Demand #5	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #5
1930-1932		Date/Time of Max Generic Demand #6	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #6
1933-1935		Date/Time of Min Generic Demand #6	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #6
1936-1938		Date/Time of Max Generic Demand #7	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #7
1939-1941		Date/Time of Min Generic Demand #7	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #7
1942-1944		Date/Time of Max Generic Demand #8	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #8
1945-		Date/Time of	R	Y	N	Month,Day,Yr	Same as	Date/Time of Min Generic Demand #8

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
1947		Min Generic Demand #8				Hr,Min,Sec	Reg. # 1893	
1948-1950		Date/Time of Max Generic Demand #9	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #9
1951-1953		Date/Time of Min Generic Demand #9	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #9
1954-1956		Date/Time of Max Generic Demand #10	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Max Generic Demand #10
1957-1959		Date/Time of Min Generic Demand #10	R	Y	N	Month,Day,Yr Hr,Min,Sec	Same as Reg. # 1893	Date/Time of Min Generic Demand #10
1988-1990		Date/Time of Last Write Register Group 2000-2999	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Regs # 1800-1802	Date/Time of Last Write to Register Group 2000-2999
1991		Source of Last Write to Register Group 2000-2999	R	Y	N	None	0-4	Date/Time of Last Write to Register Group 2000-2999 External Change Source: 1 = Comms 2 = Commands i/f 3 = Front Panel 4 = CUL
1992-1994		Date/Time of Last Write to Register Group	R	Y	N	Sec, Min, Hour Day, Monty, Yr.	Same as Reg # 1800-1802	Date/Time of Last Write to Register Group 5600-6999

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		5600-6999						
1995		Source of Last Write to Register Group 5600-6999	R	Y	N	None	0-4	Date/Time of Last Write to Register Group 5600-6999 External Change Source 1 = Comms 2 = Commands i/f 3 = Front Panel 4 = CUL
1996-1998		Date/Time of Last Write to Register Group 7000-7399	R	Y	N	Sec, Min, Hour Day, Monty, Yr.	Same as Reg # 1800-1802	Date/Time of Last Write to Register Group 7000-7399
1999		Source of Last Write to Register Group 7000-7399	R	Y	N	None	0-4	Date/Time of Last Write to Register Group 7000-7399 External Change Source 1 = Comms 2 = Commands i/f 3 = Front Panel 4 = CUL

DATE/TIME

expanded (6 registers) - These registers do not really "exist", instead they are calculated from the compressed format registers when a communications read request occurs. Therefore they may not be used for any on-board event or logic operations.

N/A	700-705	Last Restart Date/Time	R	Y	N	Sec, Min, Hour Day, Month, Yr	*See below	Date and Time of Last Restart expanded form
N/A	706-711	Date/Time Demand of Peak Current Phase A	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of Peak demand current, A, expanded form
N/A	712-717	Date/Time Demand of	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg #	Date/Time of Peak demand current, B, expanded form

Register CM/2	Number CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Peak Current Phase B					700-705	
N/A	718-723	Date/Time Demand of Peak Current Phase C	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of Peak demand current, C, expanded form
N/A	724-729	Date/Time of Peak Demand (Average Real Power)	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of Peak Real Demand Power, 3 phase total, expanded form
N/A	730-735	Date/Time of Last Reset of Peak Demand Current	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of last reset of Peak Demand Current expanded form
N/A	736-741	Date/Time of last Min/Max Clear of Instantaneous Values	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of last Min/Max Clear of Instantaneous values expanded form

DATE/TIME (continued)
expanded (6 registers) - These registers do not really "exist", instead they are calculated from the compressed format registers when a communications read request occurs. Therefore they may not be used for any on-board event or logic operations.

*Seconds (Reg 700) = 0-59, Minutes (Reg 701) = 0-59, Hours (Reg 702) = 0-23,
Day (Reg 703) 1-31, Month (Reg 704) = 1-12, Year (Reg 705) = 1900-2099
The date and time are mapped from CM Registers 1800-1802.

N/A	742-747	Date/Time of Last Write to Circuit Tracker™ Setpoint Register	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time of Last Write to Circuit Tracker™ Setpoint Register expanded form
N/A	748-	Date/Time when	R	Y	N	Sec, Min, Hour	Same as	Date/Time when Peak Demand (Average Real Power) was last

Register CM/2	Number CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
	753	Peak Demand was last cleared				Day, Month, Yr	Reg # 700-705	Cleared. expanded form
N/A	754-759	Date/Time when Accumulated Energy Last Cleared	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time when Accumulated Energy Last Cleared expanded form
N/A	760-765	Date/Time when Control Power Failed Last	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time when the Control Power failed last expanded form
N/A	766-771	Date/Time When Level 1 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg #	Date/Time When Level 1 Energy Management Set-Point Alarm Period was last entered. expanded form
N/A	772-777	Date/Time When Level 2 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time When Level 2 Energy Management Set-Point Alarm Period was last entered expanded form
N/A	778-783	Date/Time When Level 3 Energy Mgmt. Setpt. Alarm Period was Last Entered	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date/Time When Level 3 Energy Management Set-Point Alarm Period was last entered expanded form
N/A	784-789	Present/Set Date/Time	R/W	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Present/Set Date/Time, expanded form
N/A	790-795	Date/Time of Calibration	R	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 700-705	Date and Time of Calibration expanded form

CONFIGURATION

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2000	200	System Con. CM1	R/W	Y	N	None		System Connection 3-wire, 4-wire
2001		System Con. CM2	R/W	Y	N	None		System Connection 3-wire, 4-wire with subordinate
2002	201	CT Rat. 3-phase primary ratio term	R/W	Y	N	None	1 to 32,767	CT rating, 3 phase primary ratio term
2003		CT Rat. 3-phase secondary ratio term	R/W	Y	N	None	1 to 5	CT rating, 3 phase secondary ratio term
2004		CT Rat. Neut. Primary Ratio Term	R/W	Y	N	None	1 to 32,767	CT Rating Neutral primary ratio term
2005		CT Rat. Neut. Secondary Ratio Term	R/W	Y	N	None	1 to 5	CT Rating Neutral secondary ratio term
2006	202	PT Rat. 3-phase primary ratio term	R/W	Y	Y	None/ Scale Factor	1 to 32,767	PT Rating 3-phase primary ratio term used in conjunction with register 2007 PT Rat. 3-phase scale factor
2007		PT Rat. 3-phase primary scale factor	R/W	Y	N	None	0 to 2	PT Rating 3-phase primary scale factor. Default value: 0.
2008		PT Rat. 3-phase secondary ratio term	R/W	Y	N	None	1 to 600	PT Rating 3-phase secondary ratio term
2009		CT Ratio Correction Factors Phase A	R	Y	N	10,000 ths	5,000 - 20,000	CT Ratio and Correction Factors, Phase A
2010		CT Ratio Correction Factors Phase B	R	Y	N	10,000 ths	5,000 - 20,000	CT Ratio and Correction Factors, Phase B
2011		CT Ratio Correction Factors Phase C	R	Y	N	10,000 ths	5,000 - 20,000	CT Ratio and Correction Factors, Phase C
2012		CT Ratio	R	Y	N	10,000 ths	5,000 - 20,000	CT Ratio and Correction Factors, Phase Neutral/Ground

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Correction Factors Neutral /Ground						
2013		PT RatioR Correction Factors Phase A	Y	N		10,000 ths	5,000 - 20,000	PT Ratio and Correction Factors, Phase A
2014		PT RatioR Correction Factors Phase B	Y	N		10,000 ths	5,000 - 20,000	PT Ratio and Correction Factors, Phase B
2015		PT RatioR Correction Factors Phase C	Y	N		10,000 ths	5,000 - 20,000	PT Ratio and Correction Factors, Phase C
2016		Nominal System Frequency	R/W	Y	N			Nominal System Frequency
2017	87	SY/Max Device Address	R	Y	N	None	0 to 89	SY/Max Device Address
2018		Sy/Max Device Baud Rate	R	Y	N	Baud	1200,2400 4800,9600 19,200	Sy/Max Device Baud Rate
2019		Not Used						
2020		Scale Group A: Ammeter Per Phase	R	Y	N	None	-2 to 1	Scale Group A: Ammeter Per Phase -2 = scale by 0.01 -1 = scale by 0.10 0 = scale by 1.00 (default) 1 = scale by 10.0
2021		Scale Group B: Ammeter Neutral	R	Y	N	None	-2 to 1	Scale Group B: Ammeter Neutral -2 = scale by 0.01 -1 = scale by 0.10 0 = scale by 1.00 (default)

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
							1 = scale by 10.0
2022	Scale Group C: Ammeter Ground	R	Y	N	None	-2 to 1	Scale Group C: Ammeter Ground -2 = scale by 0.01 -1 = scale by 0.10 0 = scale by 1.00 (default) 1 = scale by 10.0
2023	Scale Group D: Voltmeter	R	Y	N	None	-1 to 2	Scale Group D: Voltmeter -1 = scale by 0.10 0 = scale by 1.00 (default) 1 = scale by 10.0 2 = scale by 100.
2024	Scale Group E: kwattmeter, kVarmeter, kVa	R	Y	N	None	-3 to 3	Scale Group E: kWattmeter, kVarmeter, kVA -3 = scale by .001 -2 = scale by 0.01 -1 = scale by 0.10 0 = scale by 1.00 (default) 1 = scale by 10.0 2 = scale by 100. 3 = scale by 1000
2025	Scale Group F: Frequency	R	Y	N	None	-1 to 2	Scale Group F: Frequency (Determined by CM) -2 = scale by 0.01 (default) -1 = scale by 0.10
2026	Scaling Error	R	Y	N	None	0 to 1F	Possible Scaling Error: selected scale may result in overrange. Bit 0 is set if any other bits are set Bit 1 is set for possible phase current scale error Bit 2 is set for possible N or G current scale error Bit 3 is set for possible phase voltage scale error Bit 4 is set for possible power scale error
2027	Select Energy Display Precision	R/W	Y	N	None	0-23	Select precision of energy display 0 = Autorange

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
								10 = 000000 kilo 11 = 00000.0 kilo 12 = 0000.00 kilo 13 = 000.000 kilo 20 = 000000 mega 21 = 00000.0 mega 22 = 0000.00 mega 23 = 000.000 mega All other values will default to autorange.
2028		Command Password	R	Y	N	None	0 to +/-32,767	Command Password (computed by the CM2)
2029		Display Setup Config. Password	R/W	Y	N	None	0 to 9998	Full Access Front Panel Setup Password
2030	237	Command Reg.	R/W	N	N	None	0 to FFFF	Command Register for CM/1 compatible functions
2031		Reset Access Password	R/W	Y	N	None	0 to 9998 or -32,768	Limited Front Panel Reset Password. When set to -32,768 the Configuration password is used to access Resets.
2032		Limited Access Disable Bit Mask	R/W	Y	N	None	0 to F (Hex)	Limited Front Panel Reset Disable Bit Mask. A 1 = Disable. Bit 0 = Disable Demand Amps Reset Capability Bit 1 = Disable Demand Power Reset Capability Bit 2 = Disable Energy Reset Capability Bit 3 = Disable Min/Max Reset Capability
2033		Select FFT Hold Time	R/W	Y	N	None	1-60	Select FFT Hold Time. Range 1-60 (default 60). User supplied value to specify the number of metering intervals the FFT values are to be held stable (for retrieval).
2034		Select FFT Component Ratio	R/W	Y	N	None	0-1	Select FFT Component Ratio 0 = % of Fundamental (default) 1 = % of RMS
2035		Enable	R/W	Y	N	None	0-2	Enable Presentation of FFT Component Values.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Presentation of FFT Component Values						0 = none (i.e. disable) 1 = volts only 2 = volts and amps
2036		Remaining FFT Hold Time	R/W	Y	N	None	0-60	Remaining FFT Hold Time Range 0-60. This value is set = R2033 when FFT values are stable. It then counts down to indicate the remaining FFT hold time. The user may "stretch" the hold time by writing larger (but <= 60) values into this register when it is not equal 0. A value of 0 is placed in this register when the values are not stable.
2037		FFT Presentation Status	R	N	N	None	0-1	FFT Presentation Status 0 = Processing 1 = Hold
2038		System Inhibit Flags	R/W	Y	N	None	0-7	System Inhibit Flags Bit 0 - Any Other Bit Set = 1 1 - S/S Disabled = 1 2 - CUL Stopped = 1 3 - S/S Suspended Temp = 1 4 - S/S Suspended Perm = 1
2039		Select Event Log Format	R/W	Y	N	None	0-1	Select Event Log Format 0 = Priority not stored 1 = Priority stored
2040-2041	218-219	CM Label	R/W	Y	N	None	Any Valid Alpha-Numeric	CM Label
2042-	220-	CM Nameplate	R/W	Y	N	None	Any Valid	CM Nameplate
2049	227						Alpha-Numeric	
2050	203	Voltage Gain A-N	R	Y	N	in 10,000ths	8,000 to 12,000	Voltage Gain, A-N

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2051	205	Voltage Gain B-N	R	Y	N	in 10,000ths	8,000 to 12,000	Voltage Gain, B-N
2052	207	Voltage Gain C-N	R	Y	N	in 10,000ths	8,000 to 12,000	Voltage Gain, C-N
2053	209	Current Gain Phase A	R	Y	N	in 10,000ths	8,000 to 12,000	Current Gain, Phase A
2054	211	Current Gain Phase B	R	Y	N	in 10,000ths	8,000 to 12,000	Current Gain, Phase B
2055	213	Current Gain, Phase C	R	Y	N	in 10,000ths	8,000 to 12,000	Current Gain, Phase C
2056		Current Gain Neutral	R	Y	N	in 10,000ths	8,000 to 12,000	Current Gain, Neutral
2057		Temperature Gain	R	Y	N	in 10,000ths	8,000 to 12,000	Temperature Gain
2058		Temperature at Time of Cal.	R	Y	N	Degress Cent. in 100ths	-10,000 to +10,000	The temperature at the time the circuit monitor was calibrated
2059		reserved						
2060	204	Voltage Offset A-N	R	Y	N	in 10,000ths	0 to +/-30,000	Voltage Offset, A-N
2061	206	Voltage Offset B-N	R	Y	N	in 10,000ths	0 to +/-30,000	Voltage Offset, B-N
2062	208	Voltage Offset C-N	R	Y	N	in 10,000ths	0 to +/-30,000	Voltage Offset, C-N

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2063	210	Current Offset Phase A	R	Y	N	in 10,000ths	0 to +/-30,000	Current Offset, Phase A
2064	212	Current Offset Phase B	R	Y	N	in 10,000ths	0 to +/-30,000	Current Offset, Phase B
2065	214	Current Offset Phase C	R	Y	N	in 10,000ths	0 to +/-30,000	Current Offset, Phase C
2066		Current Offset Neutral	R	Y	N	in 10,000ths	0 to +/-30,000	Current Offset, Neutral
2067		Temperature Offset	R	Y	N	in 10,000ths	0 to +/-30,000	Temperature Offset
2068		Meter Gain Temp. Drift Correction	R	Y	N	in 10,000ths	9000 to 11,000	Correction factor for temperature drift of metering gains per degree C deviation from temperature at time of cal.
2069		Reserved for internal use only						
2070-2075		Reserved						
2076		Incremental Energy Interval	R/W	Y	N	Minutes	0 to 1440	Incremental energy accumulation interval in minutes. A value of 0 allows continuous accumulation
2077	216	Power Demand Interval	R/W	Y	N	Minutes	0 to 60 @5min. Multiples	Power Demand Interval: A 0 indicates demand Interval is slaved to an external synch pulse on input 1 or communications command. Default value: 15 min.
2078		Power Demand Sub-Interval	R/W	Y	N	Minutes	0 to 60 @5min.	Power Demand Sub-Interval. Set equal to demand interval for block demand.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
							Multiples	Default Value: 0 min.
2079		Current Demand K-Factor Demand Interval in minutes	R/W	Y	N	Minutes		Current Demand/K-Factor Demand Interval in minutes Default value: 15 min.
2080	215	Energy Accum. Mode Selections Bit map	R/W	Y	N	None	0 or 1	Circuit Monitor Energy Accumulation Mode Selections Bit Map. bit 0 indicates real & reactive energy accumulation method a 0 indicates absolute a 1 indicates signed

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2081	Operating Mode Selections Bit map	R	Y	N	None	0 to FFFF	Circuit Monitor Operating Mode Selections Bit map

bit 0 indicates real & reactive energy accumulation method:
a 0 indicates absolute (default)
a 1 indicates signed

bit 1 indicates Reactive Energy and Demand accumulation method:
a 0 specifies fundamental only (default)
a 1 specifies to include harmonic cross products - (displacement&distortion)

bit 2 indicates VAr/PF sign convention:
a 0 indicates CM1 convention (default)
a 1 indicates alternate convention

bit 3 indicates Demand Power calculation method:
a 0 indicates Thermal Demand (default)
a 1 indicates a Block/Rolling Interval Demand

bit 4 indicates external power demand synch. driver source if applicable:
a 0 Specifies Input 1 as the source (default)
a 1 Specifies Command Interface as the source

bit 5 indicates which mechanism controls cond. energy:
a 0 indicates status inputs (default)
a 1 indicates command I/F

bit 6 indicates status of conditional energy accumulation:
a 0 indicates Cond Energy Accum is off (default)
a 1 indicates Cond Energy Accum is

bit 7 is unused

bit 8 Unused

bit 9 indicates whether front comm port is enabled
a 0 indicates front comm port is enabled (default)
a 1 indicates front comm port is disabled

bit 10 indicates whether front panel setup is enabled
a 0 indicates front panel setup is enabled (default
a 1 indicates front panel setup is disabled

bit 11 indicates Symax UART parity selection
0 - Even
1 - None

bit 12 indicates user specified normal phase rotation:
a 0 indicates ABC rotation (default)
a 1 indicates CBA rotation

All other bits are unused

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2082	Metering Configuration Status	R	Y	N	None	0 to FFFF	Present status of unit metering configuration - sets a bit to indicate if a metering configuration register has been changed but is not yet active. bit 0 is set to a 1 if any of the other bits are set to a 1. bit 1 is set to a 1 if the scale factors have been changed but are not yet active. bit 2 is set to a 1 if the PT Primary or Secondary has been changed but is not yet active. bit 3 is set to a 1 if the Phase CT Primary or Secondary has been changed but is not yet active. bit 4 is set to a 1 if the Neutral CT Primary or Secondary has been changed but is not yet active. bit 5 is set to a 1 if any of the PT/CT correction factors have been changed but are not yet active. bit 6 is set to a 1 if the System Type has been changed but is not yet active. bit 7 is set to a 1 if the Nominal System Frequency has been changed but is not yet active. bit 8 is set to a 1 if the any of the logical phase associations have been changed but but are not yet active. bit 9 is set to a 1 if the VAr/PF convention has been changed but but are not yet active. bit 10 is set to a 1 if the any of the Energy configurations have been changed but but are not yet active. bit 11 is set to a 1 if the any of the demand configurations have been changed but but are not yet active. Bits 12 and 13 are reserved.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2083		Day of Week	R	Y	N	None	0 to 6	Day of Week, Sunday = 0
2084		Number of PLOS system restarts	R	Y	N	None	0 to 32,767	Number of PLOS system restarts
2085	242	Square-D Product ID Number equal to 460 for CM2 Model A	R	Y	N	None	0 to 3000	Square-D Product ID Number equal to 460 for CM2 Model A
2086		Installed Option Bit map	R	Y	N	None	0 to 32	Installed Option Bit map : I/O etc a 00000 (0) = None a 00001 (1) = 1 input/ 1pulse output a 01111 (15)= 8 inputs / 2 pulse outputs a 10011 (19)= 4 inputs / 1 pulse output / 3 Relays a 00110 (6) = Analog I/O 1 in / 1 20ma out / 4 status in / 1 pulse output / 3 Relays a 00010 (2) = Analog I/O 1 in / 1 1ma out / 4 status in / 1 pulse output / 3 Relays a 11110 (30) = Analog I/O 4 in / 4 20ma out / 4 status in / 1 pulse output / 3 Relays a 11010 (26) = Analog I/O 4 in / 4 1ma out / 4 status in / 1 pulse output / 3 Relays all others are reserved
2087		Reserved - Internal Use Only for Future value to be saved to Serial EEPROM						

Register Number CM/2 CM/1		Register Name	Type	Saved	Scaled	Units	Range	Register Description
2088		Installed RAM Log Space	R	Y	N	1024Bytes	0 to 1131	Installed RAM available for logging
2089		Unallocated RAM Log Space	R	Y	N	1024Bytes	0 to 1031	The amount of unallocated RAM log space.
2090		Installed up Memory	R	Y	N	None	0 to FFFF Hex	Installed up memory: Bits 0-3: Size of Volatile RAM, 1= 32K, 4=128K Bits 4-7: Size of Non-Volatile RAM, 1= 32K, 4=128K Bits 8-11: # of Aux NV RAM Chips Installed, 0-8 Bits 12-15: # of EEPROM Chips Installed, 2-3
2091-		Prior PLOS Rev Sub-Level	R	Y	N	None	0 to 9999	Prior PLOS revision sub-level before last firmware download. Zero if not applicable.
2092		Prior PLOS Revision Level	R	Y	N	None	01:00 to 99:99	Prior PLOS revision level before last firmware download. Zero if not applicable.
2093		PLOS Rev Sublevel	R	Y	N	None	0 to 9999	PLOS revision sublevel - used for dianostic purposes only
2094	231	Firmware Revision Level	R	Y	N	None	01:00 to 99:99	Firmware Revision Level in decimal. The most two significant digits represent the revision of the reset/boot code. The least two significant digits represent the revision of the PLOS code. A rev, of 00 is used for the PLOS if it is absent or corrupted.
2095		Unit Revision	R	Y	N	None	0 to FFFF	Unit Revision
2096-2097		CM2 Serial Number	R	Y	N	None	0 to 2147352577	Circuit Monitor Serial Number - 2 registers signed long integer format. Reg 2096 is LSReg.
2098		PLOS Firmware CRC Value	R	Y	N	None	0 to FFFF	PLOS firmware CRC value

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2099		Master Time Base Adjust	R/W	Y	N	None	1-7	Adjust speed of time base, where smaller numbers make the clock run slower. Range is about 3 sec/day. Default value is 3.
2100	133	Number of Messages sent to this unit	R	Y	N	None	0 to 32,767	Number of Messages sent to this unit
2101	134	Number of Messages sent to other units	R	Y	N	None	0 to 32,767	Number of Messages sent to other units
2102	135	Number of Messages with invalid address	R	Y	N	None	0 to 32,767	Number of Messages with invalid address
2103	136	Number of Messages with bad checksum	R	Y	N	None	0 to 32,767	Number of Messages with bad checksum
2104	137	Number of Messages with error	R	Y	N	None	0 to 32,767	Number of Messages with error UART errors - Parity - Overrun - Break
2105	138	Number of Messages with illegal opcode	R	Y	N	None	0 to 32,767	Number of Messages with illegal opcode
2106	139	Number of Messages with illegal registers	R	Y	N	None	0 to 32,767	Number of Messages with illegal registers
2107		Number of	R	Y	N	None	0 to 32,767	Number of invalid write responses

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
		Invalid write responses						
2108	140	Number of Messages with illegal counts	R	Y	N	None	0 to 32,767	Number of Messages with illegal counts
2109	141	Number of Messages with frame error	R	Y	N	None	0 to 32,767	Number of Messages with frame error
2110		Number of Control Panel Failures	R/W	Y	N	None	0 to 32,767	Number of Control Power Failures
2111-2112		Reserved						Reserved
2113	238	Circuit Tracker™ SetPoint Register	R/W	Y	N	None	0 to +/-32,767	Circuit Tracker™ SetPoint Register
2114	239	Level 1 Energy Management Set-Point	R/W	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 1 Energy Management Setpoint
2115	240	Level 2 Energy Management Set-Point	R/W	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 2 Energy Management Setpoint
2116	241	Level 3 Energy Management Set-Point	R/W	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 3 Energy Management Setpoint

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2117	121	Level 1 Energy Management Set-Point Last Exceeded Level	R	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 1 Energy Management Setpoint Last Exceeded Level
2118	122	Level 2 Energy Management Set-Point Last Exceeded Level	R	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 2 Energy Management Setpoint Last Exceeded Level
2119	123	Level 3 Energy Management Set-Point Last Exceeded Level	R	Y	Y	KW/Scale Factor E	0 to +/-32,767	Level 3 Energy Management Setpoint Last Exceeded Level
2120	142	Bitmap for Self-Test results	R	N	N	None	0 to FFFF	Bitmap for Selftest results Bit 0 = Is set to "1" if any error occurs Bit 1 = Real Time Clock Failure Bit 2 = Interrrupt controller Failure Bit 3 = Basic RAM Memory Failure - Volatile RAM Bit 4 = Expanded RAM Memory Failure - NV RAM Bit 5 = PLOS Memory Failure Bit 6 = Programmable Logic Memory Failure Bit 7 = UART Failure Bit 8 = DMA Failure - Data Collection Bit 9 = A/D Failure - Analog Channel Bit 10 = Internal Serial EEPROM Failure Bit 11 = External I/O Serial EEPROM Failure Bit 14 = Unit is in download alarm state 990 or 991 Bit 15 = Unit is in download alarm state 992
2121	143	Bit Map for Energy Status	R	Y	N	None	0 to 000F	Bit Map for Mode Energy Status Bit 0 Any Energy Mgt. Setpoint exceeded Bit 9 Energy Mgt. Setpoint 1 exceeded Bit 10 Energy Mgt. Setpoint 2 exceeded Bit 11 Energy Mgt. Setpoint 3 exceeded

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2122	Voltage/Current Phase Loss Bit Map	R	N	N	None	0 to 7FHex	Bit Map specifying voltage phase loss bit 0 = set to 1 if any other bits are set bit 1 = set to 1 if phase A voltage is lost bit 2 = set to 1 if phase B voltage is lost bit 3 = set to 1 if phase C voltage is lost bit 4 = set to 1 if phase A current load is lost bit 5 = set to 1 if phase B current load is lost bit 6 = set to 1 if phase C current load is lost
2123	CT Phase Shift Correction at 1 amp	R/W	Y	N	None	-1000 to 1000	CT Phase shift correction, for user instrumentation, in the rage -10 degrees to +10 degrees. A negative shift is in the lag direction.
2124	CT Phase Shift Correction at 5 amps	R/W	Y	N	None	-1000 to 1000	CT Phase shift correction, for user instrumentation, in the rage -10 degrees to +10 degrees. A negative shift is in the lag direction.
2125-2129	Not Used						
2130-2139	Production History	R	Y	N	None	0 to FFFFH	Production/Calibration History Registers - Saved in Serial EEPROM
2140-2142	Date/Time of External Cal.	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Reg #'s 1800-1802	Date/Time of Calibration of External Analog I/O Module if applicable.
2143	External H/W Revision	R	Y	N	None	0 to FFFF	Revision of H/W of external Analog I/O Module.
2144-2145	External H/W Serial #	R	Y	N	None	0 to 2147352577	Serial Number of External Analog I/O Module. Reg. 2144 is the LS register.
2146-	Not Used						

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2149							
*2150	Logical Phase A Voltage	R	Y	N	None	1-3	Logical Phase Voltage A Association where default = 1
*2151	Logical Phase B Voltage	R	Y	N	None	1-3	Logical Phase Voltage B Association where default = 2
*2152	Logical Phase C Voltage	R	Y	N	None	1-3	Logical Phase Voltage C Association where default = 3
*2153	Logical Phase A Current	R	Y	N	None	1-3	Logical Phase Current A Association where default = 1
*2154	Logical Phase B Current	R	Y	N	None	1-3	Logical Phase Current A Association where default = 2
*2155	Logical Phase C Current	R	Y	N	None	1-3	Logical Phase Current A Association where default = 3
*2156	Logical Phase Neutral Current	R	Y	N	None	1-3	Logical Phase Current A Association where default = 4

* not supported by Janus I Products

2157-2169	Not Used						
2170	Program Partition Select	R/W	Y	N	None	0-2	Program Partition Select 0 - no program selected 1 - program in standard partition (f6000, 8k) 2 - program in extended partition (60000, 64k)
2171	Startup Control	R/W	Y	N	None	0-1	Startup Control

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
							0 - Halt after unit reset (default) 1 - Run after unit reset
2172	Line Number Control	R/W	Y	N	None	0-32,767	Line Number Control 0 - display line number for Assembler steps 1 - display line number for Compiler steps
2173	Breakpoint Control	R/W	Y	N	None	0-32,767	Breakpoint Control 0 - disable breakpoint function 1 - enable breakpoint function
2174	Breakpoint Line Number	R/W	Y	N	None	0-32,767	Breakpoint Line Number 0 - none 1 to 32767 - source line number where the VPLP24 processor is to stop RUN and enter PAUSE mode. 0xffff - next source line
2175	Virtual Register Window Select	R/W	Y	N	None	0-2048	Virtual Register Window select 0 - no virtual register values presented 1 to 8192 - CM2 registers 3801-3999 will contain the values from 199 virtual registers beginning with the given select number.
2176	Max Allowed Addition to Update Cycle Time	R/W	Y	N	ms	500-5000	Max allowed task addition to update cycle time, Range .5 to 5.0 seconds (register value 500-5000), Default is 5.0 seconds.
2177-2179	Reserved						
2180	Processor Mode	R	N	N	None	0-32,767	0 - CUL program not present 1 - HALT

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
							2 - PAUSE 3 - RUN
2181	Error Number at last HALT	R	N	N	None	0-32,767	Error Number at last HALT
2182	Execution Line Number	R	N	N	None	1-32767	Present execution line number in RUN mode, or next line number when in PAUSE mode
2183	Peak Addition to Update Cycle Time	R	N	N	ms	500-5000	Peak Addition to update cycle time, Meter task.
2184	Peak Addition to Update Cycle Time	R	N	N	ms	500-5000	Peak Addition to update cycle time, Timer task.
2185	Peak Addition to Update Cycle Time	R	N	N	ms	500-5000	Peak Addition to update cycle time, Event task
2186-2187	System Clock Tick Counter	R	N	N	20ms	0-2,147,483,647	Elapsed Time, in 20ms increments, since last unit reset.
2188-2195	User Program Name	R	N	N	None		User program name (up to 16 ascii characters)
2196	User Program Version Number	R	N	N	None		User program version number (0-32767)
2197-2199	User Program Date and Time	R	N	N	Month,Dat,Yr. Hr,Min,Sec		Date and time of last compressed form.

NOTE: Changes in registers 2170-2173 will not be used until after the CM2 unit is reset.

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2200	Generic Demand (GD) Reset Command Selection	R/W	Y	N	None	0-1	Select Reset Command: 0 = CMD 5110 and CMD 5112 1 = CMD 5112 only
2201	Generic Demand Internal	R/W	Y	N	None	5-60	Generic demand internal board on thermal decay. Range is 5-60 minutes. Default is 5 minutes.
2202-2204	D/T of last MIN/MAX Reset	R/W	Y	N	Sec, Min, Hour Day, Month, Yr	Same as Reg # 1800-1802	Date and Time of last reset for the Min/Max Generic Demand
2205-2224	List of 20 registers selected for Generic Demand	R/W	Y	N	None	1000-1199 2000-2999 3000-3999 4000-5199	List of 20 registers selected for generic demand. The first 8 will default to registers 1014-1021 (voltage).
2225-2229	Not used						
2230	Present Generic Demand #1	R	Y	N	None		Present Generic Demand #1
2231	Maximum Generic Demand #1	R	Y	N	None		Maximum Generic Demand #1
2232	Minimum Generic Demand #1	R	Y	N	None		Minimum Generic Demand #1
2233	Present Generic Demand #2	R	Y	N	None		Present Generic Demand #2
2234	Maximum Generic Demand #2	R	Y	N	None		Maximum Generic Demand #2
2235	Minimum Generic Demand #2	R	Y	N	None		Minimum Generic Demand #2

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2236	Present Generic Demand #3	R	Y	N	None		Present Generic Demand #3
2237	Maximum Generic Demand #3	R	Y	N	None		Maximum Generic Demand #3
2238	Minimum Generic Demand #3	R	Y	N	None		Minimum Generic Demand #3
2239	Present Generic Demand #4	R	Y	N	None		Present Generic Demand #4
2240	Maximum Generic Demand #4	R	Y	N	None		Maximum Generic Demand #4
2241	Minimum Generic Demand #4	R	Y	N	None		Minimum Generic Demand #4
2242	Present Generic Demand #5	R	Y	N	None		Present Generic Demand #5
2243	Maximum Generic Demand #5	R	Y	N	None		Maximum Generic Demand #5
2244	Minimum Generic Demand #5	R	Y	N	None		Minimum Generic Demand #5
2245	Present Generic Demand #6	R	Y	N	None		Present Generic Demand #6
2246	Maximum Generic Demand #6	R	Y	N	None		Maximum Generic Demand #6
2247	Minimum	R	Y	N	None		Minimum Generic Demand #6

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
	Generic Demand #6						
2248	Present Generic Demand #7	R	Y	N	None		Present Generic Demand #7
2249	Maximum Generic Demand #7	R	Y	N	None		Maximum Generic Demand #7
2250	Minimum Generic Demand #7	R	Y	N	None		Minimum Generic Demand #7
2251	Present Generic Demand #8	R	Y	N	None		Present Generic Demand #8
2252	Maximum Generic Demand #8	R	Y	N	None		Maximum Generic Demand #8
2253	Minimum Generic Demand #8	R	Y	N	None		Minimum Generic Demand #8
2254	Present Generic Demand #9	R	Y	N	None		Present Generic Demand #9
2255	Maximum Generic Demand #9	R	Y	N	None		Maximum Generic Demand #9
2256	Minimum Generic Demand #9	R	Y	N	None		Minimum Generic Demand #9
2257	Present Generic Demand #10	R	Y	N	None		Present Generic Demand #10
2258	Maximum Generic Demand #10	R	Y	N	None		Maximum Generic Demand #10

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2259	Minimum Generic Demand #10	R	Y	N	None		Minimum Generic Demand #10
2260	Present Generic Demand #11	R	Y	N	None		Present Generic Demand #11
2261	Maximum Generic Demand #11	R	Y	N	None		Maximum Generic Demand #11
2262	Minimum Generic Demand #11	R	Y	N	None		Minimum Generic Demand #11
2263	Present Generic Demand #12	R	Y	N	None		Present Generic Demand #12
2264	Maximum Generic Demand #12	R	Y	N	None		Maximum Generic Demand #12
2265	Minimum Generic Demand #12	R	Y	N	None		Minimum Generic Demand #12
2266	Present Generic Demand #13	R	Y	N	None		Present Generic Demand #13
2267	Maximum Generic Demand #13	R	Y	N	None		Maximum Generic Demand #13
2268	Minimum Generic Demand #13	R	Y	N	None		Minimum Generic Demand #13
2269	Present Generic Demand #14	R	Y	N	None		Present Generic Demand #14
2270	Maximum Generic Demand #14	R	Y	N	None		Maximum Generic Demand #14

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2271	Minimum Generic Demand #14	R	Y	N	None		Minimum Generic Demand #14
2272	Present Generic Demand #15	R	Y	N	None		Present Generic Demand #15
2273	Maximum Generic Demand #15	R	Y	N	None		Maximum Generic Demand #15
2274	Minimum Generic Demand #15	R	Y	N	None		Minimum Generic Demand #15
2275	Present Generic Demand #16	R	Y	N	None		Present Generic Demand #16
2276	Maximum Generic Demand #16	R	Y	N	None		Maximum Generic Demand #16
2277	Minimum Generic Demand #16	R	Y	N	None		Minimum Generic Demand #16
2278	Present Generic Demand #17	R	Y	N	None		Present Generic Demand #17
2279	Maximum Generic Demand #17	R	Y	N	None		Maximum Generic Demand #17
2280	Minimum Generic Demand #17	R	Y	N	None		Minimum Generic Demand #17
2281	Present Generic Demand #18	R	Y	N	None		Present Generic Demand #18
2282	Maximum	R	Y	N	None		Maximum Generic Demand #18

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
	Generic Demand #18						
2283	Minimum Generic Demand #18	R	Y	N	None		Minimum Generic Demand #18
2284	Present Generic Demand #19	R	Y	N	None		Present Generic Demand #19
2285	Maximum Generic Demand #19	R	Y	N	None		Maximum Generic Demand #19
2286	Minimum Generic Demand #19	R	Y	N	None		Minimum Generic Demand #19
2287	Present Generic Demand #20	R	Y	N	None		Present Generic Demand #20
2288	Maximum Generic Demand #20	R	Y	N	None		Maximum Generic Demand #20
2289	Minimum Generic Demand #20	R	Y	N	None		Minimum Generic Demand #20
2300	Voltage A Surge Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage A Surge Extreme Value
2301-2302	Voltage A Surge Event Duration	R	Y	N	Cycles	1-99999999	Voltage A Surge Event Duration
2303	Voltage B Surge Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage B Surge Extreme Value
2304-2305	Voltage B Surge Event Duration	R	Y	N	Cycles	1-99999999	Voltage B Surge Event Duration

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2306	Voltage C Surge Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage C Surge Extreme Value
2307-2308	Voltage C Surge Event Duration	R	Y	N	Cycles	1-99999999	Voltage C Surge Event Duration
2309	Current A Surge Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current A Surge Extreme Value
2310-2311	Current A Surge Event Duration	R	Y	N	Cycles	1-99999999	Current A Surge Event Duration
2312	Current B Surge Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current B Surge Extreme Value
2313-2314	Current B Surge Event Duration	R	Y	N	Cycles	1-99999999	Current B Surge Event Duration
2315	Current C Surge Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current C Surge Extreme Value
2316-2317	Current C Surge Event Duration	R	Y	N	Cycles	1-99999999	Current C Surge Event Duration
2318	Current N Surge Extreme Value	R	Y	Y	Amps/Scale Factor B	0-32767	Current N Surge Extreme Value
2319-2320	Current N Surge Event Duration	R	Y	N	Cycles	1-99999999	Current N Surge Event Duration
2321	Voltage A Sag Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage A Sag Extreme Value
2322-2323	Voltage A Sag Event Duration	R	Y	N	Cycles	1-99999999	Voltage A Sag Event Duration

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2324	Voltage B Sag Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage B Sag Extreme Value
2325-2326	Voltage B Sag Event Duration	R	Y	N	Cycles	1-99999999	Voltage B Sag Event Duration
2327	Voltage C Sag Extreme Value	R	Y	Y	Volts/Scale Factor D	0-32767	Voltage C Sag Extreme Value
2328-2329	Voltage C Sag Event Duration	R	Y	N	Cycles	1-99999999	Voltage C Sag Event Duration
2330	Current A Sag Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current A Sag Extreme Value
2331-2332	Current A Sag Event Duration	R	Y	N	Cycles	1-99999999	Current A Sag Event Duration
2333	Current B Sag Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current B Sag Extreme Value
2334-2335	Current B Sag Event Duration	R	Y	N	Cycles	1-99999999	Current B Sag Event Duration
2336	Current C Sag Extreme Value	R	Y	Y	Amps/Scale Factor A	0-32767	Current C Sag Extreme Value
2337-2338	Current C Sag Event Duration	R	Y	N	Cycles	1-99999999	Current C Sag Event Duration
2339	Current N Sag Extreme Value	R	Y	Y	Amps/Scale Factor B	0-32767	Current N Sag Extreme Value
2340-2341	Current N Sag Event Duration	R	Y	N	Cycles	1-99999999	Current N Sag Event Duration

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2342-2349	Not Used						

STATUS INPUTS

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2400	81	Input Status	R	N	N	None	0000 to 00FF Hex	Bit Map of the states of the inputs. A 1=On, a 0=Off. Bit 0 represesents input 1, bit 7 represents input 8.
2401		Input . Conditional Energy Control	R	Y	N	None	0000 to 00FF Hex	Bit Map indicating which inputs enable conditional. energy accumulation when on if control of conditional energy is set to inputs via the command I/F. A 1=Input Controls Cond. Energy, A 0=No Control Bit 0 represesents input 1, bit 7 represents input 8. Default Value 0.
2402-2403		Input 1 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 1
2404-2405		Input 1 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 1 has transitioned from off to on Each register is Modulo 10,000.
2406	Timer	Input 1 On-	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 1 has been in the on state.

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

STATUS INPUTS (CONTINUED)

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2407-2408		Input 2 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 2
2409-2410		Input 2 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 2 has transitioned from off to on. Each register is Modulo 10,000.
2411		Input 2 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 2 has been in the on state.
2412-2413		Input 3 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 3
2414-2415		Input 3 Count	R/W	Y	Y	Counts/	0 to 99,999,999	A count of the number of times Input 3 has transitioned from off to on. Each register is Modulo 10,000.
2416		Input 3 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 3 has been in the on state.

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
STATUS INPUTS (CONTINUED)								
2417-2418		Input 4 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 4
2419-2420		Input 4 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 4 has transitioned from off to on. Each register is Modulo 10,000.
2421		Input 4 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 4 has been in the on state.
2422-2423		Input 5 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 5
2424-2425		Input 5 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 5 has transitioned from off to on. Each register is Modulo 10,000.
2426		Input 5 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 5 has been in the on state.

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

STATUS INPUTS (CONTINUED)

CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2427 2428		Input 6 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 6
2429- 2430		Input 6 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 6 has transitioned from off to on. Each register is Modulo 10,000.
2431		Input 6 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 6 has been in the on state.
2432 2433		Input 7 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 7
2434- 2435		Input 7 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 7 has transitioned from off to on. Each register is Modulo 10,000.
2436		Input 7 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 7 has been in the on state.

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

STATUS INPUTS (CONTINUED)

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2437-2438		Input 8 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Input 8
2439-2440		Input 8 Count	R/W	Y	Y	Counts	0 to 99,999,999	A count of the number of times Input 8 has transitioned from off to on. Each register is Modulo 10,000.
2441		Input 8 On-Timer	R/W	N	Y	Seconds	0 to 32,767	Represents the last completed on-time in seconds that input 8 has been in the on state.
2442-2499		Reserved for future status inputs						

OUTPUTS

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2500	235	Output Status	R	N	N	None	0000 to 00FF Hex	Bit Map of the states of the Outputs. A 1=On, a 0=Off. Bit 0 represesents Output 0, bit 7 represents Output 7. Register 235 is ghosted as Read Only and does not provide control.
2501		Output Control State Bit Mask	R	Y	N	None	0000 to FFFF Hex	Bit Map indicating active Relay Control states. The lower byte indicates the status of internal/external control. A 1 = Relay Control is under internal control and a 0 = Relay Control is under external control. The upper byte indicates the status of override control. A 1 = Relay Control is in override and a 0 = Relay Control is not in override. For each byte, Bits 0-7 represesent outputs 0-7 respectively.
2502 2503		Output 0 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 0
2504		Output 0 Mode Reg	R/W	Y	N	None	0 to 9	Output 0 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2505		Output 0 Parameter Register	R/W	Y	N	Variable	0 to 32,767	This register specifies the time Output 0 is to remain closed for timed mode.
2506		Output 0 kWH, kVArH or kVAH	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 0 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
	/Pulse Register				in 10ths		

OUTPUTS (continued)

2507 2508	Output 1 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 1
2509	Output 1 Mode Reg	R/W	Y	N	None	0 to 9	Output 1 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2510	Output 1 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 1 is to remain closed for timed mode.
2511	Output 1 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 1 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
OUTPUTS (continued)							
2512-2513	Output 2 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 2
2514	Output 2 Mode Reg	R/W	Y	N	None	0 to 9	Output 2 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2515	Output 2 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 2 is to remain closed for timed mode.
2516	Output 2 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 2 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
<u>OUTPUTS</u> (continued)							
2517 2518	Output 3 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 3
2519	Output 3 Mode Reg	R/W	Y	N	None	0 to 9	Output 3 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2520	Output 3 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 3 is to remain closed for timed mode.
2521	Output 3 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 3 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
OUTPUTS (continued)							
2522 2523	Output 4 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 4
2524	Output 4 Mode Reg	R/W	Y	N	None	0 to 9	Output 4 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2525	Output 4 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 4 is to remain closed for timed mode.
2526	Output 4 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 4 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

OUTPUTS (continued)

Register Number	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2527 2528	Output 5 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 5
2529	Output 5 Mode Reg	R/W	Y	N	None	0 to 9	Output 5 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2530	Output 5 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 5 is to remain closed for timed mode.
2531	Output 5 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 5 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

OUTPUTS (continued)

2532 2533	Output 6 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 6
2534	Output 6 Mode Reg	R/W	Y	N	None	0 to 9	Output 6 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2535	Output 6 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 6 is to remain closed for timed mode.
2536	Output 6 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 6 when in those modes.

Register Number CM/2 CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

OUTPUTS (continued)

Register Number	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2537 2538	Output 7 Label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Output 7
2539	Output 7 Mode Reg	R/W	Y	N	None	0 to 9	Output 7 Mode Register: 0 = Normal, 1=Latched, 2 = Timed, 3 = Absolute kWH pulse, 4 = Absolute kVArH pulse, 5 = kVAH pulse 6 = kWH in pulse, 7 = kVar in pulse, 8 = kWH out pulse, 9 = kVAr out pulse.
2540	Output 7 Parameter Register	R/W	Y	N	Seconds	0 to 32,767	This register specifies the time Output 7 is to remain closed for timed mode.
2541	Output 7 kWH, kVArH or kVAH /Pulse Register	R/W	Y	N	kWH/Pulse or kVArH/Pulse or kVAH/Pulse in 10ths	0 to 32,767	This register specifies the kWH, kVArH or kVAH per pulse for Output 7 when in those modes.
2542- 2599	Reserved for future Discrete Outputs						

ANALOG OUTPUTS

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2600-2601		Analog Output 1 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog (0/4-20ma) Output 1
2602		Analog Output 1 Enable Reg	R/W	Y	N	None	0 or 1	Analog Output 1 Enable: 0 = Off, 1 = On.
2603		Analog Output 1 Register Number	R/W	Y	N	None	Any Valid Register	The number of the register which has it's value associated with analog output 1.
2604		Analog Output 1 Lower Limit	R/W	Y	N	Equal to Units of Output Reg	-32,767 to Upper Limit	The lower limit of the designated output register considered to be the 0/4mA equivalent.
2605		Analog Output 1 Upper Limit	R/W	Y	N	Equal to Units of Output Reg	Lower Limit to +/-32,767	The upper limit of the designated output register considered to be the 20mA equivalent.
2606		Analog Output 1 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog Output 1 gain adjustment
2607		Analog Output 1 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 1 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2608-2609		Analog Output 2 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog (0/4-20ma) Output 2
2610		Analog Output 2 Enable Reg	R/W	Y	N	None	0 or 1	Analog Output 2 Enable: 0 = Off, 1 = On.
2611		Analog Output 2 Register Number	R/W	Y	N	None	Any Valid Register	The number of the register which has it's value associated with analog output 2.
2612		Analog Output 2 Lower Limit	R/W	Y	N	Equal to Units of Output Reg	-32,767 to Upper Limit	The lower limit of the designated output register considered to be the 0/4mA equivalent.
2613		Analog Output 2 Upper Limit	R/W	Y	N	Equal to Units of Output Reg	Lower Limit to +/-32,767	The upper limit of the designated output register considered to be the 20mA equivalent.
2614		Analog Output 2 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog Output 2 gain adjustment
2615		Analog Output 2 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 2 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2616-2617		Analog Output 3 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog (0/4-20ma) Output 3
2618		Analog Output 3 Enable Reg	R/W	Y	N	None	0 or 1	Analog Output 3 Enable: 0 = Off, 1 = On.
2619		Analog Output 3 Register Number	R/W	Y	N	None	Any Valid Register	The number of the register which has it's value associated with analog output 3.
2620		Analog Output 3 Lower Limit	R/W	Y	N	Equal to Units of Output Reg	-32,767 to Upper Limit	The lower limit of the designated output register considered to be the 0/4mA equivalent.
2621		Analog Output 3 Upper Limit	R/W	Y	N	Equal to Units of Output Reg	Lower Limit to +/-32,767	The upper limit of the designated output register considered to be the 20mA equivalent.
2622		Analog Output 3 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog Output 3 gain adjustment
2623		Analog Output 3 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 3 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2624-2625		Analog Output 4 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog (0/4-20ma) Output 4
2626		Analog Output 4 Enable Reg	R/W	Y	N	None	0 or 1	Analog Output 4 Enable: 0 = Off, 1 = On.
2627		Analog Output 4 Register Number	R/W	Y	N	None	Any Valid Register	The number of the register which has it's value associated with analog output 4.
2628		Analog Output 4 Lower Limit	R/W	Y	N	Equal to Units of Output Reg	-32,767 to Upper Limit	The lower limit of the designated output register considered to be the 0/4mA equivalent.
2629		Analog Output 4 Upper Limit	R/W	Y	N	Equal to Units of Output Reg	Lower Limit to +/-32,767	The upper limit of the designated output register considered to be the 20mA equivalent.
2630		Analog Output 4 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog Output 4 gain adjustment
2631		Analog Output 4 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 4 offset adjustment for calibration
2632-2679		Reserved for future analog outputs.						

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2680		Analog Output 1 Cal. Offset Value	R	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 1 Calibration Offset Value.
2681		Analog Output 1 Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Output 1 Calibration Gain Value.
2682		Analog Output 2 Cal. Offset Value	R	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 2 Calibration Offset Value.
2683		Analog Output 2 Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Output 2 Calibration Gain Value.
2684		Analog Output 3 Cal. Offset Value	R	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 3 Calibration Offset Value.
2685		Analog Output 3 Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Output 3 Calibration Gain Value.
2686		Analog Output 4 Cal. Offset Value	R	Y	N	in 10,000ths	0 to +/-30,000	Analog Output 4 Calibration Offset Value.
2687		Analog Output 4 Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Output 4 Calibration Gain Value.
2688-2699		Reserved for future analog output calibration constants (allows a total of 20)						

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description

ANALOG INPUTS

2700-2701		Analog Input 1 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog Input 1
2702		Analog Input 1 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Analog input 1 unit code register - used by software.
2703		Analog Input 1 Scale Code	R/W	Y	N	None	-3 to +3	Analog input 1 scale code register - used by software.
2704		Analog Input 1 Gain Selct	R/W	Y	N	None	0 or 1	Analog input 1 gain select register. A 0 specifies that the voltage gain; a 0 specifies current gain.
2705		Analog Input 1 Offset Voltage	R/W	Y	N	in 100ths	0 to 500	The analog input 1 voltage in hundreths of a volt equvialent to the offset value.
2706		Analog Input 1 Offset value	R/W	Y	N	None	-32,767 to Full Scale	The value assigned to the analog input 1 register when the voltage is equal to the offset voltage.
2707		Analog Input 1 Full Scale Value	R/W	Y	N	None	Offset Value 32,767	The value assigned to the analog input 1 present value register when the voltage is equal to full scale (5V).
2708		Analog Input 1 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog input 1 gain adjustment
2709		Analog Input 1 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog input 1 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2710-2711		Analog Input 2 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog Input 2
2712		Analog Input 2 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Analog input 2 unit code register - used by software.
2713		Analog Input 2 Scale Code	R/W	Y	N	None	-3 to +3	Analog input 2 scale code register - used by software.
2714		Analog Input 2 Gain Selct	R/W	Y	N	None	0 or 1	Analog input 2 gain select register. A 0 specifies that the voltage gain; a 0 specifies current gain.
2715		Analog Input 2 Offset Voltage	R/W	Y	N	in 100ths	0 to 500	The analog input 2 voltage in hundreths of a volt equvialent to the offset value.
2716		Analog Input 2 Offset value	R/W	Y	N	None	-32,767 to Full Scale	The value assigned to the analog input 2 register when the voltage is equal to the offset voltage.
2717		Analog Input 2 Full Scale Value	R/W	Y	N	None	Offset Value 32,767	The value assigned to the analog input 2 present value register when the voltage is equal to full scale (5V).
2718		Analog Input 2 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog input 2 gain adjustment
2719		Analog Input 2 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog input 2 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2720- 2721		Analog Input 3 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog Input 3
2722		Analog Input 3 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Analog input 3 unit code register - used by software.
2723		Analog Input 3 Scale Code	R/W	Y	N	None	-3 to +3	Analog input 3 scale code register - used by software.
2724		Analog Input 3 Gain Selct	R/W	Y	N	None	0 or 1	Analog input 3 gain select register. A 0 specifies that the voltage gain; a 0 specifies current gain.
2725		Analog Input 3 Offset Voltage	R/W	Y	N	in 100ths	0 to 500	The analog input 3 voltage in hundreths of a volt equvialent to the offset value.
2726		Analog Input 3 Offset value	R/W	Y	N	None	-32,767 to Full Scale	The value assigned to the analog input 3 register when the voltage is equal to the offset voltage.
2727		Analog Input 3 Full Scale Value	R/W	Y	N	None	Offset Value 32,767	The value assigned to the analog input 3 present value register when the voltage is equal to full scale (5V).
2728		Analog Input 3 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog input 3 gain adjustment
2729		Analog Input 3 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog input 3 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2730-2731		Analog Input 4 label	R/W	Y	N	None	Alpha-Numeric 4 Char's (2 Reg's)	Label for Analog Input 4
2732		Analog Input 4 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Analog input 4 unit code register - used by software.
2733		Analog Input 4 Scale Code	R/W	Y	N	None	-3 to +3	Analog input 4 scale code register - used by software.
2734		Analog Input 4 Gain Selct	R/W	Y	N	None	0 or 1	Analog input 4 gain select register. A 0 specifies that the voltage gain; a 0 specifies current gain.
2735		Analog Input 4 Offset Voltage	R/W	Y	N	in 100ths	0 to 500	The analog input 4 voltage in hundreths of a volt equvialent to the offset value.
2736		Analog Input 4 Offset value	R/W	Y	N	None	-32,767 to Full Scale	The value assigned to the analog input 4 register when the voltage is equal to the offset voltage.
2737		Analog Input 4 Full Scale Value	R/W	Y	N	None	Offset Value 32,767	The value assigned to the analog input 4 present value register when the voltage is equal to full scale (5V).
2738		Analog Input 4 Gain Adjustment	R/W	Y	N	in 10,000ths	8000 to 12,000	Analog input 4 gain adjustment
2739		Analog Input 4 Offset Adjustment	R/W	Y	N	in 10,000ths	0 to +/-30,000	Analog input 4 offset adjustment for calibration

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2740-2799		Reserved for future analog inputs (allows a total of 10)						
2800		Analog Input 1 Cal. Offset Value	R	Y	N	in 1,000ths	0 to +/-3,000	Analog Input 1 Calibration Offset Value.
2801		Analog Input 1 Voltage Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 1 Voltage Input Calibration Gain Value Used when Analog Input 1 is configured to measure Voltage.
2802		Analog Input 1 Current Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 1 Current Input Calibration Gain Value Used when Analog Input 1 is configured to measure Current.
2803		Analog Input 2 Cal. Offset Value	R	Y	N	in 1,000ths	0 to +/-3,000	Analog Input 2 Calibration Offset Value.
2804		Analog Input 2 Voltage Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 2 Voltage Input Calibration Gain Value Used when Analog Input 2 is configured to measure Voltage.
2805		Analog Input 2 Current Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 2 Current Input Calibration Gain Value Used when Analog Input 2 is configured to measure Current.

Register Number CM/2	CM/1	Register Name	Type	Saved	Program. Scaled	Units	Range	Register Description
2806		Analog Input 3 Cal. Offset Value	R	Y	N	in 1,000ths	0 to +/-3,000	Analog Input 3 Calibration Offset Value.
2807		Analog Input 3 Voltage Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 3 Voltage Input Calibration Gain Value Used when Analog Input 3 is configured to measure Voltage.
2808		Analog Input 3 Current Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 3 Current Input Calibration Gain Value Used when Analog Input 3 is configured to measure Current.
2809		Analog Input 4 Cal. Offset Value	R	Y	N	in 1,000ths	0 to +/-3,000	Analog Input 4 Calibration Offset Value.
2810		Analog Input 4 Voltage Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 4 Voltage Input Calibration Gain Value Used when Analog Input 4 is configured to measure Voltage.
2811		Analog Input 4 Current Cal. Gain Value	R	Y	N	in 10,000ths	8,000 to 12,000	Analog Input 4 Current Input Calibration Gain Value Used when Analog Input 4 is configured to measure Current.
2812-2849		Reserved for future analog input calibration constants.						

STATUS INPUT DEMAND METERING

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2898		IPD Mode	R/W	Y	N	None	0 to 3	0 = Slave to power demand 1 = Slave to incr energy 2 = Ext IN #1 3 = Ext COMMS
2899		# of IPD Intervals	R	N	N	None	0 to 32767	
2900		Channel 1 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 1 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2901		Channel 1 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 1 Demand Meter Unit Code. Used by Software Only.
2902		Channel 1 Scale Code	R/W	Y	N	None	-3 to 3	Channel 1 Demand Meter Scale Code. Used by Software Only.
2903		Channel 1 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 1 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2904		Present Demand Pulse Count Channel 1	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 1.
2905		Last Demand Pulse Count Channel 1	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2906		Peak Demand Count Value Channel 1	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 1 last demand count register since last demand reset.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2907-2909		Date/Time of Peak Demand Count Channel 1	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 1 Demand Count since last reset
2910		Channel 2 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 2 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2911		Channel 2 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 2 Demand Meter Unit Code. Used by Software Only.
2912		Channel 2 Scale Code	R/W	Y	N	None	-3 to 3	Channel 2 Demand Meter Scale Code. Used by Software Only.
2913		Channel 2 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 2 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2914		Present Demand Pulse Count Channel 2	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 2.
2915		Last Demand Pulse Count Channel 2	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2916		Peak Demand Count Value Channel 2	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 2 last demand count register since last demand reset.
2917-2919		Date/Time of Peak Demand Count Channel 2	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 2 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2920		Channel 3 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 3 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2921		Channel 3 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 3 Demand Meter Unit Code. Used by Software Only.
2922		Channel 3 Scale Code	R/W	Y	N	None	-3 to 3	Channel 3 Demand Meter Scale Code. Used by Software Only.
2923		Channel 3 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 3 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2924		Present Demand Pulse Count Channel 3	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 3.
2925		Last Demand Pulse Count Channel 3	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2926		Peak Demand Count Value Channel 3	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 3 last demand count register since last demand reset.
2927-2929		Date/Time of Peak Demand Count Channel 3	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 3 Demand Count since last reset
2930		Channel 4 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 4 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2931		Channel 4 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 4 Demand Meter Unit Code. Used by Software Only.
2932		Channel 4 Scale Code	R/W	Y	N	None	-3 to 3	Channel 4 Demand Meter Scale Code. Used by Software Only.
2933		Channel 4 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 4 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2934		Present Demand Pulse Count Channel 4	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 4.
2935		Last Demand Pulse Count Channel 4	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2936		Peak Demand Count Value Channel 4	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 4 last demand count register since last demand reset.
2937-2939		Date/Time of Peak Demand Count Channel 4	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 4 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2940		Channel 5 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 5 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2941		Channel 5 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 5 Demand Meter Unit Code. Used by Software Only.
2942		Channel 5 Scale Code	R/W	Y	N	None	-3 to 3	Channel 5 Demand Meter Scale Code. Used by Software Only.
2943		Channel 5 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 5 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2944		Present Demand Pulse Count Channel 5	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 5.
2945		Last Demand Pulse Count Channel 5	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2946		Peak Demand Count Value Channel 5	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 5 last demand count register since last demand reset.
2947-2949		Date/Time of Peak Demand Count Channel 5	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 5 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2950		Channel 6 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 6 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2951		Channel 6 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 6 Demand Meter Unit Code. Used by Software Only.
2952		Channel 6 Scale Code	R/W	Y	N	None	-3 to 3	Channel 6 Demand Meter Scale Code. Used by Software Only.
2953		Channel 6 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 6 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2954		Present Demand Pulse Count Channel 6	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 6.
2955		Last Demand Pulse Count Channel 6	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2956		Peak Demand Count Value Channel 6	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 6 last demand count register since last demand reset.
2957-2959		Date/Time of Peak Demand Count Channel 6	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 6 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2960		Channel 7 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 7 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2961		Channel 7 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 7 Demand Meter Unit Code. Used by Software Only.
2962		Channel 7 Scale Code	R/W	Y	N	None	-3 to 3	Channel 7 Demand Meter Scale Code. Used by Software Only.
2963		Channel 7 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 7 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2964		Present Demand Pulse Count Channel 7	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 7.
2965		Last Demand Pulse Count Channel 7	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2966		Peak Demand Count Value Channel 7	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 7 last demand count register since last demand reset.
2967-2969		Date/Time of Peak Demand Count Channel 7	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 7 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2970		Channel 8 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 8 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2971		Channel 8 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 8 Demand Meter Unit Code. Used by Software Only.
2972		Channel 8 Scale Code	R/W	Y	N	None	-3 to 3	Channel 8 Demand Meter Scale Code. Used by Software Only.
2973		Channel 8 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 8 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2974		Present Demand Pulse Count Channel 8	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 8.
2975		Last Demand Pulse Count Channel 8	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2976		Peak Demand Count Value Channel 8	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 8 last demand count register since last demand reset.
2977-2979		Date/Time of Peak Demand Count Channel 8	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 8 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2980		Channel 9 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 9 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2981		Channel 9 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 9 Demand Meter Unit Code. Used by Software Only.
2982		Channel 9 Scale Code	R/W	Y	N	None	-3 to 3	Channel 9 Demand Meter Scale Code. Used by Software Only.
2983		Channel 9 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 9 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2984		Present Demand Pulse Count Channel 9	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 9.
2985		Last Demand Pulse Count Channel 9	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2986		Peak Demand Count Value Channel 9	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 9 last demand count register since last demand reset.
2987-2989		Date/Time of Peak Demand Count Channel 9	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 9 Demand Count since last reset

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
2990		Channel 10 Demand Meter Bit Map	R/W	Y	N	None	0 to FF	Channel 10 Demand Meter Bit Map specifying which status inputs to totalize for this demand channel. Bit 0 represents input 1, etc. A 0 = exclude, 1 = include. Default value is 0.
2991		Channel 10 Unit Code	R/W	Y	N	None	-32,767 to +32,767	Channel 10 Demand Meter Unit Code. Used by Software Only.
2992		Channel 10 Scale Code	R/W	Y	N	None	-3 to 3	Channel 10 Demand Meter Scale Code. Used by Software Only.
2993		Channel 10 Weight Factor	R/W	Y	N	KW,KVAr,KVA per pulse	0 to 32,767	Channel 10 Weight Factor of each pulse in KW, KVAr, or KVA. This is a place holder for the user, the CM does not make any calculations with this number.
2994		Present Demand Pulse Count Channel 10	R	N	N	Counts	0 to 32,767	Total number of pulses counted on all specified inputs during present demand interval on Channel 10.
2995		Last Demand Pulse Count Channel 10	R	Y	N	Counts	0 to 32,767	Total number of pulses counted during the last completed demand interval on Input 1.
2996		Peak Demand Count Value Channel 10	R	Y	N	Counts	0 to 32,767	Peak Value of the channel 10 last demand count register since last demand reset.
2997-2999		Date/Time of Peak Demand Count Channel 10	R	Y	N	Month,Day,Yr, Hr,Min,Sec	Same as Regs # 1800-1802	Date/Time of Peak Channel 10 Demand Count since last reset

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
3000-3999	CUL Application	R/W	Y	N	None	+/-32767	All CUL application registers are available for use by the CUL tasks. Therefore, the definition for values in this register group are unique to the application.

FFT SPECTRAL COMPONENTS

Register Number	Register Name	Type	Saved	Scaled	Units	Range	Register Description
4000-4063	Spectral Components Phase A Voltage	R	N	N			Note (1)
4064-4128	Spectral Components Phase A Current	R	N	N			Note (1)
4128-4191	Spectral Components Phase B Voltage	R	N	N			Note (1)
4192-4255	Spectral Components Phase B Current	R	N	N			Note (1)
4256-4319	Spectral Components Phase C Voltage	R	N	N			Note (1)
4320-4383	Spectral Components Phase C Current	R	N	N			Note (1)
4384-4447	Spectral Components Phase N Current	R	N	N			Note (1)

Note (1): The spectral components for each metered channel are contained in 64 registers, organized as 32 pairs (the harmonics 0-31). Each register pair consists of: (1) The harmonic amplitude, expressed in hundreds of a percent of the fundamental amplitude value. (2) The angle of the component with reference to Phase A voltage, expressed in tenths of a degree.

4448-	Configuration Registers	Note (2)

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
4464	copy of 2000-2016						
4465- 4471	Configuration Registers copy of 2020-2026						Note (2)
4472- 4498	Configuration Registers copy of 2050-2066						Note (2)

Note (2): The configuration register values, in use when data was collected for FFT analysis, are saved and recorded. They may be used in converting the raw sample values into electrical units..

Register Number	Register Name	Type	Saved	Scaled	Units	Range	Register Description
4499	Reserved						
4500- 4563	Raw Data Samples, Phase A Voltage	R	N	N	Counts	0-4095	Note (3)
4564- 4627	Raw Data Samples, Phase A Current	R	N	N	Counts	0-4095	Note (3)
4628- 4691	Raw Data Samples, Phase B Voltage	R	N	N	Counts	0-4095	Note (3)
4692- 4755	Raw Data Samples, Phase B Current	R	N	N	Counts	0-4095	Note (3)
4756- 4819	Raw Data Samples, Phase C Voltage	R	N	N	Counts	0-4095	Note (3)
4820- 4883	Raw Data Samples, Phase C Current	R	N	N	Counts	0-4095	Note (3)
4884- 4947	Raw Data Samples, Phase N Current	R	N	N	Counts	0-4095	Note (3)

Note (3): The raw data samples for each metered channel are contained in 64 registers, providing a complete waveshape description for one cycle of the monitored power circuit. The values are unscaled, and must be converted to volt or amp values by use of configuration registers 4448-4498.

Register Number	Register Name
4948- 4999	Reserved

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5000-5199		Metered Value Registers copy of 1000-1199						The metered register values, present when data was collected for FFT analysis, are saved and recorded. They may be used in converting the spectral amplitude values into electrical units.
5200-5599		Reserved						

HIGH SPEED EVENTS
(Note: High Speed events are only applicable to Models CM2350 and above)

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5600		Bit Map of High Speed Active Alarms	R	N	N	None	0 to 000F	Bit Map of Active Standard Alarms Bit 0 = 1 if any priority 1-3 alarm is active Bit 1 = 1 if a High priority (1) alarm is active Bit 2 = 1 if a Medium priority (2) alarm is active Bit 3 = 1 if a Low Priority (3) alarm is active
5601		Active High Speed Alarm Bit Map Registers	R	N	N	None	0 to FFFF	1 Register Bit Map of Active High Speed Alarms. Each bit position corresponds to an alarm/event number. Bit 0 = high speed alarm 201, etc. A 0 =Inactive, 1 = active
5602		Latched Bit Map for High Speed Alarm Indication	R/W	N	N	None	0 to 000F	Latched Bit Map for Standard Alarm indication since cleared by writing a zero. Bit 0 = 1 if any priority 1-3 alarm has occured Bit 1 = 1 if a High priority (1) alarm has occurred Bit 2 = 1 if a Medium priority (2) alarm has occurred Bit 3 = 1 if a Low Priority (3) alarm has occured
5603		Total High Speed Event Counter	R/W	Y	N	None	0 to 32,767	Total High Speed Event Counter, total of priority 1,2 or 3 high speed events.
5604		Pickup Mode Selection Bit Mask	R/W	Y	N	None	0 to 3FFF	Bit mask to select absolute or relative pickup test for the first 14 high speed events (201-214). Bit 0 is for event 201, etc. A 0= absolute, 1 = relative.
5605		Number of Samples in Relative Threshold Average	R/W	Y	N	None	5 to 30	Number of update intervals (samples) used to compute the RMS average value applied in relative pickup event tests.

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5606-5610		Not Used						

<u>High Speed Event Counters</u>

Note: All Event Counters are Type: R/W, Saved: Y, Scaled: N, Units: None, Range: 0 to 32,767

5611		High Speed Event Counter No. 201						High Speed Event Counter No. 201
5612		High Speed Event Counter No. 202						High Speed Event Counter No. 202
5613		High Speed Event Counter No. 203						High Speed Event Counter No. 203
5614		High Speed Event Counter No. 204						High Speed Event Counter No. 204
5615		High Speed Event Counter No. 205						High Speed Event Counter No. 205
5616		High Speed Event Counter No. 206						High Speed Event Counter No. 206
5617		High Speed Event Counter No. 207						High Speed Event Counter No. 207
5618		High Speed Event Counter No. 208						High Speed Event Counter No. 208
5619		High Speed Event Counter No. 209						High Speed Event Counter No. 209
5620		High Speed Event Counter No. 210						High Speed Event Counter No. 210
5621		High Speed Event Counter No. 211						High Speed Event Counter No. 211
5622		High Speed Event Counter No. 212						High Speed Event Counter No. 212
5623		High Speed Event Counter No. 213						High Speed Event Counter No. 213
5624		High Speed Event Counter No. 214						High Speed Event Counter No. 214

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5625		High Speed Event Counter No. 215						High Speed Event Counter No. 215
5626-5629		Not Used						

Event Setup

Event #201-215 Pre-defined High Speed Event Configuration Block Registers 5630-5734: Refer to Pre-defined event template.

Event #	Description	Syst. 43	Syst. 42	Syst. 41	Syst. 40	Syst. 30	Register #'s
201	Voltage Surge A-N/A-B Event Configuration Block	A-N	A-N	A-N	A-N	A-B	5630-5636
202	Voltage Surge B-N Event Configuration Block	n/a	n/a	B-N	B-N	n/a	5637-5643
203	Voltage Surge C-N/C-B Event Configuration Block	C-N	C-N	C-N	C-N	C-B	5644-5650
204	Current Surge A Event Configuration Block	A	A	A	A	A	5651-5657
205	Current Surge B Event Configuration Block	B	B	B	B	n/a	5658-5664
206	Current Surge C Event Configuration Block	C	C	C	C	C	5665-5671
207	Current Surge N Event Configuration Block	N	n/a	N	n/a	n/a	5672-5678
208	Voltage Sag A-N/A-B Event Configuration Block	A-N	A-N	A-N	A-N	A-B	5679-5685
209	Voltage Sag B-N Event Configuration Block	n/a	n/a	B-N	B-N	n/a	5686-5692
210	Voltage Sag C-N/C-B Event Configuration Block	C-N	C-N	C-N	C-N	C-B	5693-5699
211	Current Sag A Event Configuration Block	A	A	A	A	A	5700-5706
212	Current Sag B Event Configuration Block	B	B	B	B	n/a	5707-5713
213	Current Sag C Event Configuration Block	C	C	C	C	C	5714-5720
214	Current Sag N Event Configuration Block	N	n/a	N	n/a	n/a	5721-5727
215	* High Speed Voltage Sag Combination Event	*2	*2	*1	*1	*2	5728-5734
216	Reserved						5735-5741

* The High Speed Voltage Sag Event Combination Events is based on a combination of the other applicable sag events as outlined in *1-*2 below. The pickup and dropout thresholds and time delays are not applicable to these two events themselves and are ignored for these events.

*1 - When events 208, 209, or 210 are true but not all three are true then event 215 will be true for system types 40 and 41.

*2 - When events 208 or 210 are true but not both are true then event 215 will be true for system type 30, 42 , and 43.

EVENTS

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5742-5749		Not Used						
5750-5759		Priority 1 Event Queue	R/W	Y	N	None	0-110	Queue of last ten active priority 1 (high) events. 5750 = most recent event #.
5760-5764		Not Used						
5765		Total Standard Event Counter	R/W	Y	N	None	0 to 32,767	Total Standard Event Counter, total of priority 1,2 or 3 standard (not high speed) events.
5766		Low Priority (3) Event Counter	R/W	Y	N	None	0 to 32,767	Low Priority (3) Event Counter
5767		Medium Priority (2) Event Counter	R/W	Y	N	None	0 to 32,767	Medium Priority (2) Event Counter
5768		High Priority (1) Event Counter	R/W	Y	N	None	0 to 32,767	High Priority (1) Event Counter
5769		Reserved						

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5770		Bit MapR of Active Alarms	N	N		None	0 to 000F	Bit Map of Acitve Standard Alarms Bit 0 = 1 if any priority 1-3 alarm is active Bit 1 = 1 if a High priority (1) alarm is active Bit 2 = 1 if a Medium priority (2) alarm is active Bit 3 = 1 if a Low Priority (3) alarm is active
5771-5778		Active Alarm Bit Map Registers	R	N	N	None	0 to FFFF each Register	8 Register Bit Map of Active Alarms. each bit position corresponds to an alarm/event number. Bit 0 = alarm 1, etc.
5779		Latched Bit Map for Alarm Indication	R/W	N	N	None	0 to 000F	Latched Bit Map for Alarm indication since last cleared bywriting a zero. Bit 0 = 1 if any priority 1-3 alarm has occured Bit 1 = 1 if a High priority (1) alarm has occurred Bit 2 = 1 if a Medium priority (2) alarm has occurred Bit 3 = 1 if a Low Priority (3) alarm has occured

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description

<u>Standard Event Counters</u>

Note: All Event Counters are Type: R/W, Saved: Y, Scaled: N, Units: None, Range: 0 to 32,767

5780	Event Counter No. 1	Event Counter No. 1
5781	Event Counter No. 2	Event Counter No. 2
5782	Event Counter No. 3	Event Counter No. 3
5783	Event Counter No. 4	Event Counter No. 4
5784	Event Counter No. 5	Event Counter No. 5
5785	Event Counter No. 6	Event Counter No. 6
5786	Event Counter No. 7	Event Counter No. 7
5787	Event Counter No. 8	Event Counter No. 8
5788	Event Counter No. 9	Event Counter No. 9
5789	Event Counter No. 10	Event Counter No. 10
5790	Event Counter No. 11	Event Counter No. 11
5791	Event Counter No. 12	Event Counter No. 12
5792	Event Counter No. 13	Event Counter No. 13
5793	Event Counter No. 14	Event Counter No. 14
5794	Event Counter No. 15	Event Counter No. 15
5795	Event Counter No. 16	Event Counter No. 16

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5796		Event Counter No. 17						Event Counter No. 17

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5797		Event Counter No. 18						Event Counter No. 18
5798		Event Counter No. 19						Event Counter No. 19
5799		Event Counter No. 20						Event Counter No. 20
5800		Event Counter No. 21						Event Counter No. 21
5801		Event Counter No. 22						Event Counter No. 22
5802		Event Counter No. 23						Event Counter No. 23
5803		Event Counter No. 24						Event Counter No. 24
5804		Event Counter No. 25						Event Counter No. 25
5805		Event Counter No. 26						Event Counter No. 26
5806		Event Counter No. 27						Event Counter No. 27
5807		Event Counter No. 28						Event Counter No. 28
5808		Event Counter No. 29						Event Counter No. 29
5809		Event Counter No. 30						Event Counter No. 30
5810		Event Counter No. 31						Event Counter No. 31
5811		Event Counter No. 32						Event Counter No. 32
5812		Event Counter No. 33						Event Counter No. 33
5813		Event Counter No. 34						Event Counter No. 34

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5814		Event Counter No. 35						Event Counter No. 35
5815		Event Counter No. 36						Event Counter No. 36
5816		Event Counter No. 37						Event Counter No. 37
5817		Event Counter No. 38						Event Counter No. 38
5818		Event Counter No. 39						Event Counter No. 39
5819		Event Counter No. 40						Event Counter No. 40
5820		Event Counter No. 41						Event Counter No. 41
5821		Event Counter No. 42						Event Counter No. 42
5822		Event Counter No. 43						Event Counter No. 43
5823		Event Counter No. 44						Event Counter No. 44
5824		Event Counter No. 45						Event Counter No. 45
5825		Event Counter No. 46						Event Counter No. 46
5826		Event Counter No. 47						Event Counter No. 47
5827		Event Counter No. 48						Event Counter No. 48
5828		Event Counter No. 49						Event Counter No. 49
5829		Event Counter No. 50						Event Counter No. 50
5830		Event Counter No. 51						Event Counter No. 51
5831		Event Counter No. 52						Event Counter No. 52

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5832		Event Counter No. 53						Event Counter No. 53
5833		Event Counter No. 54						Event Counter No. 54
5834		Event Counter No. 55						Event Counter No. 55
5835		Event Counter No. 56						Event Counter No. 56
5836		Event Counter No. 57						Event Counter No. 57
5837		Event Counter No. 58					,	Event Counter ,No. 58
5838		Event Counter No. 59						Event Counter No. 59
5839		Event Counter No. 60						Event Counter No. 60
5840		Event Counter No. 61						Event Counter No. 61
5841		Event Counter No. 62						Event Counter No. 62
5842		Event Counter No. 63						Event Counter No. 63
5843		Event Counter No. 64						Event Counter No. 64
5844		Event Counter No. 65						Event Counter No. 65
5845		Event Counter No. 66						Event Counter No. 66
5846		Event Counter No. 67						Event Counter No. 67
5847		Event Counter No. 68						Event Counter No. 68
5848		Event Counter No. 69						Event Counter No. 69

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5849		Event Counter No. 70						Event Counter No. 70
5850		Event Counter No. 71						Event Counter No. 71
5851		Event Counter No. 72						Event Counter No. 72
5852		Event Counter No. 73						Event Counter No. 73
5853		Event Counter No. 74						Event Counter No. 74
5854		Event Counter No. 75						Event Counter No. 75
5855		Event Counter No. 76						Event Counter No. 76
5856		Event Counter No. 77						Event Counter No. 77
5857		Event Counter No. 78						Event Counter No. 78
5858		Event Counter No. 79						Event Counter No. 79
5859		Event Counter No. 80						Event Counter No. 80
5860		Event Counter No. 81						Event Counter No. 81
5861		Event Counter No. 82						Event Counter No. 82
5862		Event Counter No. 83						Event Counter No. 83
5863		Event Counter No. 84						Event Counter No. 84
5864		Event Counter No. 85						Event Counter No. 85
5865		Event Counter No. 86						Event Counter No. 86
5866		Event Counter No. 87						Event Counter No. 87

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5867		Event Counter No. 88						Event Counter No. 88
5868		Event Counter No. 89						Event Counter No. 89
5869		Event Counter No. 90						Event Counter No. 90
5870		Event Counter No. 91						Event Counter No. 91
5871		Event Counter No. 92						Event Counter No. 92
5872		Event Counter No. 93						Event Counter No. 93
5873		Event Counter No. 94						Event Counter No. 94
5874		Event Counter No. 95						Event Counter No. 95
5875		Event Counter No. 96						Event Counter No. 96
5876		Event Counter No. 97						Event Counter No. 97
5877		Event Counter No. 98						Event Counter No. 98
5878		Event Counter No. 99						Event Counter No. 99
5879		Event Counter No. 100						Event Counter No. 100
5880		Event Counter No. 101						Event Counter No. 101
5881		Event Counter No. 102						Event Counter No. 102
5882		Event Counter No. 103						Event Counter No. 103
5883		Event Counter No. 104						Event Counter No. 104

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
5884		Event Counter No. 105						Event Counter No. 105
5885		Event Counter No. 106						Event Counter No. 106
5886		Event Counter No. 107						Event Counter No. 107
5887		Event Counter No. 108						Event Counter No. 108
5888		Event Counter No. 109						Event Counter No. 109
5889		Event Counter No. 110						Event Counter No. 110
5890		Event Counter No. 111						Event Counter No. 111
5891		Event Counter No. 112						Event Counter No. 112
5892		Event Counter No. 113						Event Counter No. 113
5893		Event Counter No. 114						Event Counter No. 114
5894		Event Counter No. 115						Event Counter No. 115
5895		Event Counter No. 116						Event Counter No. 116
5896		Event Counter No. 117						Event Counter No. 117
5897		Event Counter No. 118						Event Counter No. 118
5898		Event Counter No. 119						Event Counter No. 119
5899		Event Counter No. 120						Event Counter No. 120

Event Setup

Standard Events #001-110 Pre-defined Event Configuration Block Registers 5900-6669

Event #	Description	Type	Sub-Type	Compare Reg	Register #'s
01	Over Current Phase A Event Configuration Block	1	0	1003	5900-5906
02	Over Current Phase B Event Configuration Block	1	0	1004	5907-5913
03	Over Current Phase C Event Configuration Block	1	0	1005	5914-5920
04	Over Current Neutral Event Configuration Block	1	0	1006	5921-5927
05	Over Current Ground Event Configuration Block	1	0	1007	5928-5934
06	Under Current Phase A Event Configuration Block	2	0	1003	5935-5941
07	Under Current Phase B Event Configuration Block	2	0	1004	5942-5948
08	Under Current Phase C Event Configuration Block	2	0	1005	5949-5955
09	Current Unbalance Phase A Event Configuration Block	1	1	1010	5956-5962
10	Current Unbalance Phase B Event Configuration Block	1	1	1011	5963-5969
11	Current Unbalance Phase C Event Configuration Block	1	1	1012	5970-5976
12	Current Load Loss Phase (Loss of A B or C but not all 3) Event Configuration Block	5	3	N/A	5977-5983
13	Over Voltage Phase A Event Configuration Block	1	0	1018	5984-5990
14	Over Voltage Phase B Event Configuration Block	1	0	1019	5991-5997
15	Over Voltage Phase C Event Configuration Block	1	0	1020	5998-6004
16	Over Voltage Phase A-B Event Configuration Block	1	0	1014	6005-6011
17	Over Voltage Phase B-C Event Configuration Block	1	0	1015	6012-6018
18	Over Voltage Phase C-A Event Configuration Block	1	0	1016	6019-6025
19	Under Voltage Phase A Event Configuration Block	2	0	1018	6026-6032
20	Under Voltage Phase B Event Configuration Block	2	0	1019	6033-6039
21	Under Voltage Phase C Event Configuration Block	2	0	1020	6040-6046
22	Under Voltage A-B Event Configuration Block	2	0	1014	6047-6053
23	Under Voltage B-C Event Configuration Block	2	0	1015	6054-6060
24	Under Voltage C-A Event Configuration Block	2	0	1016	6061-6067
25	Voltage Unbalance A Event Configuration Block	1	1	1026	6068-6074
26	Voltage Unbalance B Event Configuration Block	1	1	1027	6075-6081
27	Voltage Unbalance C Event Configuration Block	1	1	1028	6082-6088
28	Voltage Unbalance A-B Event Configuration Block	1	1	1022	6089-6095
29	Voltage Unbalance B-C Event Configuration Block	1	1	1023	6096-6102

Event #	Description	Type	Sub-Type	Compare Reg	Register #'s
30	Voltage Unbalance C-A Event Configuration Block	1	1	1024	6103-6109
31	Voltage Loss (Loss of Phase A B or C but not all 3) Event Configuration Block	5	2	2122	6110-6116
32	Over kVA 3 Phase Total Event Configuration Block	1	1	1050	6117-6123
33	Over kW Into the Load 3 Phase Total Event Configuration Block	1	0	1042	6124-6130
34	Over kW Out of the Load 3 Phase Total Event Configuration Block	1	2	1042	6131-6137
35	Over kVar Into the Load 3 Phase Total Event Configuration Block	1	0	1046	6138-6144
36	Over kVAr Out of the Load 3 Phase Total Event Configuration Block	1	2	1046	6145-6151
37	Over Current Demand Phase A Event Configuration Block	1	0	1701	6152-6158
38	Over Current Demand Phase B Event Configuration Block	1	0	1702	6159-6165
39	Over Current Demand Phase C Event Configuration Block	1	0	1703	6166-6172
40	Over Current Demand 3 Phase Average Event Configuration Block	1	0	1700	6173-6179
41	Over Frequency Event Configuration Block	1	0	1001	6180-6186
42	Under Frequency Event Configuration Block	2	0	1001	6187-6193
43	Lagging True Power Factor 3 Phase Total Event Configuration Block	5	5	1034	6194-6200
44	Leading True Power Factor 3 Phase Total Event Configuration Block	5	4	1034	6201-6207
45	Lagging Displacement Power Factor 3 Phase Total Event Configuration Block	5	5	1038	6208-6214
46	Leading Displacement Power Factor 3 Phase Total Event Configuration Block	5	4	1038	6215-6221
47	Suspend Swell/Sag Events	7	0	-	6222-6228
48	Reserved Event Configuration Block				6229-6235
49	Over Value THD Current Phase A Event Configuration Block	1	0	1051	6236-6242
50	Over Value THD Current Phase B Event Configuration Block	1	0	1052	6243-6249
51	Over Value THD Current Phase C Event Configuration Block	1	0	1053	6250-6256
52	Over Value THD Voltage Phase A Event Configuration Block	1	0	1055	6257-6263
53	Over Value THD Voltage Phase B Event Configuration Block	1	0	1056	6264-6270
54	Over Value THD Voltage Phase C Event Configuration Block	1	0	1057	6271-6277
55	Over Value THD Voltage Phase A-B Event Configuration Block	1	0	1058	6278-6284
56	Over Value THD Voltage Phase B-C Event Configuration Block	1	0	1059	6285-6291
57	Over Value THD Voltage Phase C-A Event Configuration Block	1	0	1060	6292-6298
58	Over K Factor Phase A Event Configuration Block	1	0	1071	6299-6305
59	Over K Factor Phase B Event Configuration Block	1	0	1072	6306-6312

Event #	Description	Type	Sub-Type	Compare Reg	Register #'s
60	Over K Factor Phase C Event Configuration Block	1	0	1073	6317-6319
61	Over Predicted KVA Demand Event Configuration Block	1	1	1748	6320-6326
62	Over Predicted KW Demand Event Configuration Block	1	1	1746	6327-6333
63	Over Predicted KVAr Demand Event Configuration Block	1	1	1747	6328-6340
64	Over KVA Demand Level 1 Event Configuration Block	1	1	1733	6341-6347
65	Over KVA Demand Level 2 Event Configuration Block	1	1	1733	6348-6354
66	Over KVA Demand Level 3 Event Configuration Block	1	1	1733	6355-6361
67	Over KW Demand Level 1 Event Configuration Block	1	1	1731	6362-6368
68	Over KW Demand Level 2 Event Configuration Block	1	1	1731	6369-6375
69	Over KW Demand Level 3 Event Configuration Block	1	1	1731	6376-6382
70	Over KVAR Demand Event Configuration Block	1	1	1732	6383-6389
71	Over Lagging 3 Phase Demand Power Factor Event Configuration Block	5	5	1730	6390-6396
72	Under 3 Phase Total Real Power Event Configuration Block	2	1	1042	6397-6403
73	Over Reverse 3 Phase Total Power Event Configuration Block	1	2	1042	6404-6410
74	Phase Reversal Event Configuration Block	5	1	1117	6411-6417
75	Status Input 1 Transition from Off to On Event Configuration Block	6	0	-	6418-6424
76	Status Input 2 Transition from Off to On Event Configuration Block	6	0	-	6425-6431
77	Status Input 3 Transition from Off to On Event Configuration Block	6	0	-	6432-6438
78	Status Input 4 Transition from Off to On Event Configuration Block	6	0	-	6439-6445
79	Status Input 5 Transition from Off to On Event Configuration Block	6	0	-	6446-6452
80	Status Input 6 Transition from Off to On Event Configuration Block	6	0	-	6453-6459
81	Status Input 7 Transition from Off to On Event Configuration Block	6	0	-	6460-6466
82	Status Input 8 Transition from Off to On Event Configuration Block	6	0	-	6467-6473
83	Status Input 1 Transition from On to Off Event Configuration Block	6	0	-	6474-6480
84	Status Input 2 Transition from On to Off Event Configuration Block	6	0	-	6481-6487
85	Status Input 3 Transition from On to Off Event Configuration Block	6	0	-	6488-6494
86	Status Input 4 Transition from On to Off Event Configuration Block	6	0	-	6495-6501
87	Status Input 5 Transition from On to Off Event Configuration Block	6	0	-	6502-6508
88	Status Input 6 Transition from On to Off Event Configuration Block	6	0	-	6509-6515
89	Status Input 7 Transition from On to Off Event Configuration Block	6	0	-	6516-6522
90	Status Input 8 Transition from On to Off Event Configuration Block	6	0	-	6523-6529

Event #	Description	Type	Sub-Type	Compare Reg	Register #'s
91	** Second Timer 1 Event Configuration Block				6530-6536
92	** Second Timer 2 Event Configuration Block				6537-6543
93	** Second Timer 3 Event Configuration Block				6544-6550
94	** Second Timer 4 Event Configuration Block				6551-6557
95	** Time of Day 1 Event Configuration Block				6558-6564
96	** Time of Day 2 Event Configuration Block				6565-6571
97	** Time of Day 3 Event Configuration Block				6572-6578
98	** Time of Day 4 Event Configuration Block				6579-6585
99	End of Incremental Energy Interval Event Configuration Block	7	0		6586-6592
100	Power-Up/Reset Event Configuration Block	7	0		6593-6599
101	End of Demand Interval Event Configuration Block	7	0		6600-6606
102	End of Update Cycle Event Configuration Block	7	0		6607-6613
103	* Over Analog Input Channel 1	1	0		6614-6620
104	* Over Analog Input Channel 2	1	0		6621-6627
105	* Over Analog Input Channel 3	1	0		6628-6634
106	* Over Analog Input Channel 4	1	0		6635-6641
107	* Under Analog Input Channel 1	2	0		6642-6648
108	* Under Analog Input Channel 2	2	0		6649-6655
109	* Under Analog Input Channel 3	2	0		6656-6662
110	* Under Analog Input Channel 4	2	0		6663-6669

* These events will not be supported until analog I/O is available.

** These events will only be present in models which support programmable logic i.e. the CM245X Models.

Register Number Offset	Register Name	Type	Saved	Scaled	Units	Range	Register Description

TEMPLATE for Pre-Defined event setup block

Register Number Offset	Register Name	Type	Saved	Scaled	Units	Range	Register Description
00	Enable/Disable, Priority	R/W	Y	N	None	MSB: 0,FF LSB: 0 to 3	Byte Map: Upper Byte - Enable as normal event (FF), and Disable (0) of Event. Lower Byte Specifies Priority Level (0-3)
01	Pickup Limit	R/W	Y	Y	Units/ Scale Factor		Pickup Limit Setpoint
02	Pickup Limit Time Delay	R/W	Y	N	Seconds or Cycles	0 to 32,767	Pickup Setpoint Time Delay. Units are in seconds for standard events, and are in cycles for high speed events.
03	Dropout Limit	R/W	Y	Y	Units/ Scale Factor		Dropout Limit Setpoint
04	Dropout Limit Time Delay	R/W	Y	N	Seconds or Cycles	0 to 32,767	Dropout Setpoint Time Delay. Units are in seconds for standard events, and are in cycles for high speed events.
05	Relay Action	R/W	Y	N	None	MSB: 0 LSB: 0 to FF	Bit Map of relays to Operate/Release Based on Event, 0 if none. Lower byte is used for operate on alarm entry and for release on alarm exit (release for normal mode relays only)
06	Data Log Specifier	R/W	Y	N	None	0000 to FFFF	Bit Map Specifying which logs including Data Logs, or Waveform Capture Logs to make an entry into on alarm entry, 0 if none. Bit position 0 corresponds to file 1, etc.

Event #111-120 User Defined Event Configuration Block Registers 6670-6799

Event #	Description	Register #'s
111	User Defined Event 1 Event Configuration Block	6670-6682
112	User Defined Event 2 Event Configuration Block	6683-6695
113	User Defined Event 3 Event Configuration Block	6696-6708
114	User Defined Event 4 Event Configuration Block	6709-6721
115	User Defined Event 5 Event Configuration Block	6722-6734
116	User Defined Event 6 Event Configuration Block	6735-6747
117	User Defined Event 7 Event Configuration Block	6748-6760
118	User Defined Event 8 Event Configuration Block	6761-6773
119	User Defined Event 9 Event Configuration Block	6774-6786
120	User Defined Event 10 Event Configuration Block	6787-6799

Register Number Offset	Register Name	Type	Saved	Scaled	Units	Range	Register Description

TEMPLATE for User Defined event setup block

00	Enable/Disable, Priority	R/W	Y	N	None	MSB: 0 or FF LSB: 0 to 3	Byte Map: Upper Byte - Enable (FF) and Disable of Event (0). Lower Byte Specifies Priority Level (0-3)
01-04	Name (8 char)	R/W	Y	N	None	Valid ASCII	8 Character User Specified Event Name
05	Monitored Register #	R/W	Y	N	None	1000 to 8000	The Number of the Register being Monitored for Events
06	Type	R/W	Y	N	None	1 to 4	Defines as either an Over (1), Under (2), Min (3), Max (4) or Singular (5) Event Type. A 100 Hex is added to the type for an alarm entry event and a 200 Hex is added to the type for an alarm exit event
07	Pickup Limit	R/W	Y	Y	Units/ Scale Factor		Pickup Limit Setpoint
08	Pickup Limit Time Delay	R/W	Y	N	Seconds	0 to 32,767	Pickup Setpoint Time Delay
09	Dropout Limit	R/W	Y	Y	Units/ Scale Factor		Dropout Limit Setpoint
10	Dropout Limit Time Delay	R/W	Y	N	Seconds	0 to 32,767	Dropout Setpoint Time Delay to Alarm
11	Relay Action	R/W	Y	N	None	MSB: 0 LSB: 0 to FF	Bit Map of relays to Operate Based on Event, 0 if none. Lower byte is used for operate on alarm entry and for release on alarm exit (release for normal mode relays only)
12	Data Log Specifier	R/W	Y	N		0000 to FFFF	Bit Map Specifying which logs including Data Logs, or Waveform Capture Logs to make an entry into on alarm entry,

0 if none. Bit position 0 corresponds to file 1, etc.

FILES

The following is a template that corresponds to the 20 blocks of 20 registers designated as the File Access Header section of the register list.

File #1 Registers 7000-7019	Data Log File
File #2 Registers 7020-7039	Data Log File
File #3 Registers 7040-7059	Data Log File
File #4 Registers 7060-7079	Data Log File
File #5 Registers 7080-7099	Data Log File
File #6 Registers 7100-7119	Data Log File
File #7 Registers 7120-7139	Data Log File
File #8 Registers 7140-7159	Data Log File
File #9 Registers 7160-7179	Data Log File
File #10 Registers 7180-7199	Data Log File
File #11 Registers 7200-7219	Data Log File
File #12 Registers 7220-7239	Data Log File
File #13 Registers 7240-7259	Data Log File
File #14 Registers 7260-7279	Data Log File
File #15 Registers 7280-7299	Continuous Waveform Capture
File #16 Registers 7300-7319	Snapshot Waveform Capture
File #17 Registers 7320-7339	Reserved (DM Event Log)
File #18 Registers 7340-7359	CM Event Log
File #19 Registers 7360-7379	Min/Max Log
File #20 Registers 7380-7399	Maintenance Log

Register Number Offset	Register Name	Type	Saved	Scaled	Units	Range	Register Description

TEMPLATE for File Access Header Block

00	Porthole Register	R/W	Y	N	None		Porthole register used to read/write to file records
01	File Type	R	Y	N	None		Specifies file type, i.e. data log, waveform capture, etc.
02	File Size	R/W	Y	N	Records	0 to 8000	The file size in records, max 8000
03	Record Size	R/W	Y	N	Registers	0 to 100	Record Size in registers, max 100 including date/time stamp
04	File Mode	R/W	Y	N	None	0 or 1	File Mode entry specifier, a 0 specifies circular data entry (newest entry overwrites oldest when file is full), and a 1 specifies stop-when-full file entry (no overwriting).
05	Record Entry Enable/.Disable	R/W	Y	N	None	0000 or FFFF	Record entry enable (FFFF) / disable (0000) for data log files.
06	Entry Update Interval	R/W	Y	N	Minutes	0 to 1,440	Entry update interval for data log files synchronized to entry interval offset time.
07	Entry Interval Offset Time	R/W	Y	N	Minutes	0 to 1,440	Time in minutes past midnight to synchronize record entry update intervals to.
08	Current # Records in File	R	Y	N	Records	0 to File Size	Current number of records in the file.
09	Current first record sequence #	R	Y	N	None	0 to 8000	Current first (oldest) record sequnce number in the file.
10	Current last Record Sequence #	R	Y	Y	None	0 to 8000	Current last (newest) record sequence number in the file.

Register Number Offset	Register Name	Type	Saved	Scaled	Units	Range	Register Description

TEMPLATE for File Access Header Block (cont)

11-13	Date/Time of last file reset/clear	R	Y	N	None		Date/Time of last file reset/clear in 3 register format.
14	Allocated File Size	R	Y	N	Records	0 to 8000	The file size allocated during the last file resize, in records
15	Allocated Record Size	R	Y	N	Registers	0 to 100	The record size allocated during the last file resize, in registers, including date/time stamp
16	File Status	R	Y	N	None	0 to 30	The status of the file based on requested and actual allocated file size and record size. Status is as follows: 0 = Okay; 10 = Resize recommended, present record size < allocated record size 20 = Resize required, present record size > allocated record size 30 = Allocation failed due to insufficient memory 250 = Internal File Failure - Special File resize/clear required 253 = File disabled due to corrupted control values 254 = File disabled due to null configuration 255 = File disabled due to invalid configuration
17	Reserved						
18	Cont. WFC Segment Limit	R/W	Y	N	None	1-5	Continuous WFC segment limit may be set in range 1-5 for the CM2350 and later models.
19	Cont. WFC Trigger Delay	R/W	Y	N	None	2-10	Number of Pre-Trigger Cycles to obtain when a continuous WFC occurs. Applicable to the Cont. WFC File Only. Reserved for all others

Register Number CM/2 CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
<u>Shared Command Interface</u>							
7700	Requested Command	R/W	N	N	None	TBD	Quick: Requested Command Function-Code
7701-7709	Command Parameters	R/W	N	N	None	0 to +/-32,767	Quick: Requested Command Parameter Area
7710-7714	Reserved						

Protected Command Interface

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
7715		Semaphore Request Register	R	N	N	None	0 to +/-32,767	Semaphore request register: A device desiring to use the long term interface must first request the semaphore by reading this register. If the semaphore is not available a value of 0 will be returned, otherwise a random number from 0 to 32,767 will be returned. This value may be read from the Active Semaphore register below.
7716		Active Access Semaphore	R	N	N	None	1 to +/-32,767	Command Interface Access Semaphore from above.
7717		Active Command Function Code	R	N	N	None	TBD	Active Command Function-code
7718		Prior Command Function Code	R	N	N	None	TBD	Prior command Function-code
7719		Prior Command Result Code	R	N	N	None	TBD	Prior command result code
7720		Requested Command Function Code	R/W	N	N	None	TBD	Requested Command Function-code

Protected Command Interface (continued)

Register Number CM/2	CM/1	Register Name	Type	Saved	Scaled	Units	Range	Register Description
7721-7729		Requested Command Parameter Area	R/W	N	N	None	0 to +/-32,767	Requested Command Parameter Area
7730-7999		Requested Command Data Buffer Area	R/W	N	N	None	0 to +/-32,767	Requested Command Data Buffer Area
8000-8171		Reserved						Reserved

Command Legend

Command Groups

- 1000-1999	H/W Restart, Clear, Set Date/Time
- 2000-2999	Configuration (User Setup)
- 3000-3999	Discrete and Analog I/O
- 4000-4999	Real Time Metering (e.g. Reset Min/Max)
- 5000-5999	Demand
- 6000-6999	Energy
- 7000-7999	Files
- 30,000-30,999	F/W Download
- 31,000-31,999	Production/Maintenance Tests
- 32,000-32,767	Alpha Tests/Special Diagnostic

Within each group, the hundreths position will specify command types as follows:

- 0	Unused
- 1	Reset
- 2	Clear
- 3	Mode Set
- 4	Data Conversion/transfer (i.e. read/write)
- 5	User Memory Configuration (e.g. firmware download)
- 6	Unused
- 7	Unused
- 8	Unused
- 9	Trigger/Initiate (e.g. new demand interval, waveform capture, etc.)

Note: Many configuration changes performed via the command interface or by writing to registers require that a reset of the unit be performed to make them active. Register 2082 indicates whether or not any metering configuration changes have been made which are not yet active.

Required Commands

Command	Parameter(s)	Description	Reset Req	Comm I/F
1110	None	Soft reset of the unit	N	Sh/Pr
1115	CM2 Password (Reg 2028)	Hard reset of the unit (reset signal goes true)	N	Sh/Pr
1120	CM2 Password (Reg 2028)	Clear Memory and reset Hardware	N	Pr
1210	None	Clear the communications counters	N	Sh/Pr
1310	Date/Time 6 Register Format	Set System Date/Time, 6 Register format	N	Sh/Pr
1311	Date/Time 3 Register Format	Set System Date/Time, 3 Register format	N	Sh/Pr
1410	Starting Register of 3 Register Date/Time Set	CM2 -> CM1 command I/F Ghost register for Date/Time translation 3 Reg -> 6 Reg format	N	Pr

Required Commands (cont.)

Command	Parameter(s)	Description	Reset Req	Comm I/F
2110	Scale Factors A-E	Change scale factors A-E and reset min/max registers/file and then reset unit WARNING: Changing scale factors does not affect event thresholds - they will continue to be based on the old scaling - eratic event/output behavior may occur if events and/or outpurs are not first disabled.	N	Sh/Pr
2120	CT ratio correction factors A,B,C,N	Change CT ratio correction factors	Y	Sh/Pr
2130	PT ratio correction factors A,B,C,	Change PT ratio correction factors	Y	Sh/Pr
2310	Unit Address	Change Unit's Address to to the address specified and reset unit	N	Sh/Pr
2320	Baud Rate	Change Unit's Baud Rate to the baud rate specified and reset unit	N	Sh/Pr
2325	None	Set UART Mode to 8 bits + even parity	Y	Sh/Pr
2326	None	Set UART Mode to 8 bits + no parity	Y	Sh/Pr
2330	None	Enable Unit #01's response to the SY/MAX Enquire transmission (default)	N	Sh/Pr
2331	None	Disable Unit #01's response to the SY/MAX Enquire transmission	N	Sh/Pr
2340	None	Set Control of Conditional Energy to status inputs (default)	N	Sh/Pr
2341	None	Set Control of Conditional Energy to command Interface	N	Sh/Pr
2350	None	Enable front panel comm port (default)	N	Sh/Pr
2351	None	Disable front panel comm port	N	Sh/Pr
2360	None	Enable front panel setup (default)	N	Sh/Pr
2361	None	Disable front panel setup	N	Sh/Pr
2370	None	Set normal phase rotation to ABC (default)	N	Sh/Pr
2371	None	Set normal phase rotation to CBA	N	Sh/Pr

Required Commands (cont.)

Command	Parameter(s)	Description	Reset Req	Com I/F
3210	None	Master disable of on-board events	N	Sh/Pr
3310	Bit Map Relay Designation	Place specified relays under external control	N	Sh/Pr
3311	Bit Map Relay Designation	Place specified relays under internal control	N	Sh/Pr
3320	Bit Map Relay Designation	De-Energize Designated relays per specified bit map	N	Sh/Pr
3321	Bit Map Relay Designation	Energize Designated relays per specified bit map	N	Sh/Pr
3340	Bit Map Output Designation	Release specified Relays from Override Control	N	Sh/Pr
3341	Bit Map Output Designation	Place specified Relays Under Override Control.	N	Sh/Pr
3390	Bit Map input Designation	Set control of Conditional Energy to indicated status inputs.	N	Sh/Pr

Required Commands (cont)

Command	Parameter(s)	Description	Reset Req	Com I/F
4110	None	Reset Min/Max	N	Sh/Pr
4310	None	Set VAr/PF sign convention to CM1 convention	Y	Sh/Pr
4311	None	Set VAr/PF sign convention to alternate convention	Y	Sh/Pr
4910	None	Trigger Snapshot WFC	N	Sh/Pr
4911	None	Trigger Continuous WFC	N	Sh/Pr
4913	Channel Format	High Density WFC with 128 points per cycle	N	Sh/Pr
4911	None	Trigger Continuous WFC	N	Sh/Pr
5110	None	Reset Peak Demand Currents/K Factors	N	Sh/Pr
5112	None	Reset Min/Max Generic Demand	N	Sh/Pr
5120	None	Reset Peak Demand Powers and associated average Power Factors	N	Sh/Pr
5310	None	Set Power Demand method to thermal	Y	Sh/Pr
5311	None	Set Power Demand Method to Block/Rolling	Y	Sh/Pr
5320	None	Set External Demand Synch source to Input 1	N	Sh/Pr
5321	None	Set External Demand Synch source to the Command Interface	N	Sh/Pr
5910	None	Start new demand interval	N	Sh/Pr
5920	None	Start new Input Pulse Demand (IPD) interval	N	Sh/Pn
6210	None	Clear all accumulated energies	N	Sh/Pr
6220	None	Clear all Conditional Energies	N	Sh/Pr
6310	None	Set Energy Accumulation method to absolute	N	Sh/Pr
6311	None	Set Energy Accumulation method to signed	N	Sh/Pr
6320	None	Disable Conditional Energy Accum.	N	Sh/Pr
6321	None	Enable Conditional Energy Accum.	N	Sh/Pr
6330	None	Set Reactive Energy and Demand method to include only the fundamental component	N	Sh/Pr
6331	None	Set Reactive Energy and Demand method to include the both fundamental and harmonic components	N	Sh/Pr
6910	None	Start new incremental Energy Interval	N	Sh/Pr

Required Commands (cont)

Command	Parameter(s)	Description	Reset Req	Com I/F
7110	CM2 Password, Parameter 2	Resize/Reallocate available file space - If paramter 2 = password then clear all data log and wfc files and resize. If parameter 2 equals the complement of the password then completely reset file handler, record sequence #'s etc..	N	Sh/Pr
7210	2 Register Bit Map Specifying files to clear	Clear files data log and wfc 1-18 as specified per bitmap	N	Sh/Pr
7310	2 register bit map specifying files to enable	Master Enable of specified Log and WFC files (default)	N	Sh/Pr
7311	2 register bit map specifying files to disable	Master Disable of specified Log and WFC files	N	Sh/Pr
7410	File #, Record Sequence #	Read File - Place the specified record from the specified file in the data buffer area	N	Pr
7420	File #, Record Sequence #, Length of record, Record Data	Write File - Write the data buffer area to the specified record in the specified file	N	Pr
7510	2 Register Bit Map Specifying Files to trigger an entry into	Trigger Data Log Entry	N	Sh/Pr
8000	HALT Cul Execution	If running, halt execution of the CUL Program	N	Sh/Pr
8001	RESTART Cul Execution	If stopped, RESTART execution of the CUL Program	N	Sh/Pr
8101	Continue Cul Execution	If debug mode enabled, complete execution of CUL Task	N	Sh/Pr
29XYZ	None	Clear the protected command interface active semaphore. The Digits XYZ must equal the active semaphore. All semaphores are restricted to the range from 0 to 999.	N	Pr

Command Result Codes

Note: Command Result codes should match the SY/MAX error codes whenever possible.

Result Condition	Result Code (Hex)
Succesful commands	00
Illegal Tranaction	14
Illegal Record Size	15
Illegal File Command	16
Insufficient File Memory	17
Illegal file number	42
Undefined commands	81
Commands with undefined or illegal parameters	82
Illegal Record Request	107
Illegal Record Count	125
Protected Mode not Enabled	200
Timeout, Operation not performed	201
Invalid Password, Operation not Performed	202

Attempts to write to the protected command interface registers by a device which does not own the semaphore will resuilt in an attempt to write to a read only register error reply.

Sy/Max Compatibility:

8172-8192	Sy/Max Compat. Registers	Registers Required to Maintain Sy/Max Compatibility (formatted as in the CM) Register 8188 will report 456 (CM150) to maintain compatibility with first generation PowerLogic S/W. Register 8172 will be set equal to the update interval (register 1000)

Reg #	Value
8172	Register 1000
8173	8176
8174	1
8175	0
8176	0
8177	0
8178	0
8179-8180	-32,768
8181-8182	0
8183-8184	0
8185	0
8186	4
8187	0
8188	SQD ID #
8189-8190	0
8101-8192	0