

## Sentinel 300P MODBUS register description.

Firmware V002a 17/08/11

**Format: RS485, MODBUS RTU**

**Node Address:** The default node address of the SNTL300-P is 100

### Standard Register List

Register	Description	Units	Data range	Bit resolution	Data offset
40001	Measured battery voltage	V	0.0 ~ 40.0	0.1	0
40002	Charger output current	A	0.00 ~ 12.00	0.01	0
40003	Charger status register <i>(See table 1)</i>	n/a	0x0000 ~ 0x000E	1	0
40004	DIP switch setting <i>(See table 2 and 2a)</i>	n/a	0x00 ~ 0x3F	1	0
40005	Temperature – Internal	°C	-12 ~ 51	1	-12
40006	Temperature – External	°C	-12 ~ 51	1	-12
40007	Target Float Voltage	V	0.0 ~ 40.0	0.1	0
40008	Boost Initiate Voltage	V	0.0 ~ 40.0	0.1	0
40009	Target boost Voltage	V	0.0 ~ 40.0	0.1	0
40010	Total Boost period	Secs	0 ~ 65534	1	0
40011	Low Alarm Voltage	V	0.0 ~ 40.0	0.1	0
40012	High Alarm Voltage	V	0.0 ~ 40.0	0.1	0
40013	AC on time MSB	Minutes	0 ~ 65535	65535	0
40014	AC on time LSB	Minutes	0 ~ 65535	1	0
40015	Charge time MSB	Minutes	0 ~ 65535	65535	0
40016	Charge time LSB	Minutes	0 ~ 65535	1	0
40017	Remaining boost time	Secs	0 ~ 65535	1	0
40018	Fault status <i>(See table 3)</i>	n/a	0x0000 ~ 0x01FF	1	0
40019	Charger PWM value	n/a	0 ~ 1023	1	0
40020	Lamp status	n/a			
40024	24V lock-in timer	n/a			

40086-40095 Splash screen name (20 characters stored as 2 ASCII bytes per register)

40100-40109 Charger firmware version (20 characters stored as 2 ASCII bytes per register)

### ***Following only applicable unit is models SNTL300P-C or ESNTL300P-CL pr ESNTL30P-CLM***

40021 RTC minutes / seconds MSB = minute LSB = seconds

40022 RTC date / hours MSB = date LSB = hours

40023 RTC month / year MSB = year LSB = Month

(if month > 12, date format = dd:mm else date format = mm:dd)

40110-40119 Coms PCB firmware version (20 characters stored as 2 ASCII bytes per register)

## CCL Reserved / Special Registers

### **Diagnostic Registers: CAL mode READ registers**

40041	Raw ADC value for current	n/a	0 ~ 1023	1	0
40042	Raw ADC value for battery V	n/a	0 ~ 1023	1	0
40043	Measured battery voltage	V	0.0 ~ 40.0	0.1	0
40044	Measured output current	A	0.00 ~ 12.00	0.01	0
40045	Read CAL mode PWM value	n/a	0 ~ 1023	1	0
40046	Voltage CAL factor X 1000				

### **Diagnostic Registers: CAL mode WRITE registers**

40050	Write CAL mode PWM value	n/a	0 ~ 1023	1	0
40051	CAL output control register: bit 0: 0 = Output FET off 1 = Output FET on	n/a	0 ~ 1	1	0
40052	Current CAL ADC value @ I =0	n/a	0 ~ 1023	1	0
40053	Current CAL ADC value @ I =Load				
40054	Current CAL: Iload value	A	0.00 ~ 10.00	0.01	0
40055	Voltage CAL: calibration voltage X 1000				

## CCL Reserved / Special Registers for calibration / set up

40060	Calibration Password submit register	n/a	0x0000 ~ 0xFFFF	1	0
40061	Charger-mode setup.		00 = Gen-set mode. 01 = Fire-pump mode		
40062	Reset AC-on hours count		(0xA5A5 = reset active)		
40063	Reset charger hours count		(0xA5A5 = reset active)		
40064	Remote profile: Float voltage X 10				
40065	Remote profile: Boost voltage X 10				
40066	Remote profile: Boost initiate voltage X 10				
40067	Remote profile: SPARE				
40068	Remote profile: Low alarm voltage X 10				
40069	Remote profile: High alarm voltage X 10				
40070	Remote profile: Number of cells				
40071 - 40080	Remote profile: Profile name (20 characters stored as 2 ASCII bytes per register)				
40081	Battery-check period (minutes)				
40082	Boost-time (minutes)				
40083	Charger MODBUS address				
40084	Current limit (Amps X 10)				
40085	Burn-in mode control				

**Table 1: Charger Status Register**

Status Register Value	Charger State
0x0000	Power – up: (Detect connected battery matched DIP switch selection)
0x0001	Ramp PWM: (Increasing PWM value until current flow is detected)
0x0002	Float Charging
0x0003	Boost charging
0x0004	Boost decay: (Waiting for battery voltage to decay to float level after boost period.)
0x0005	Ramp PWM after boost: (Increasing PWM value until current flow is detected)
0x0006	PSU 12V: (Fixed 12V output, current limited to 10A)
0x0007	PSU 24V: (Fixed 24V output, current limited to 10A)
0x0008	Mains failure: (Waiting for mains to be available before commencing charge)
0x0009	Battery Error: (Checking if a valid battery voltage is detected which matches DIP switch settings)
0x000A	Boost extension: (Boost mode continues until boost timer reaches 0)
0x000B	Battery check: (Periodic check that a battery is still present)
0x000C	Battery missing: (Periodically checking for battery present)
0x000D	POST: (LEDs displaying selected profile from DIP switches)
0x000E	Calibration mode: (Special state for calibrating charger current measurement)
0x000F	Short circuit: (Output terminals short-circuit, waiting for short to be removed)
0x0010	Reducing Output voltage prior to battery check
0x0011	Battery connection error
0x0012	External Boost input active
0x0013	External nominal input active
0x0014	Power-up battery check
0x0015	Burn-in test mode

**Table 2: DIP switch settings (1 to 4)**

Switch Value	Profile Name	Float Voltage (V)	Boost Voltage (V)	Boost Initiate Voltage (V)	Boost extension period (Minutes)	Low Alarm Voltage (V)	High Alarm Voltage (V)
0	Automatic battery check	13.5 or 27.0	14.1 or 28.2	12.5 or 25.0	360	12.0	16.0
1	12V Wet lead-acid	13.5	14.1	12.5	360	12.0	16.0
2	12V Calcium / Calcium	13.8	15.6	12.5	360	12.0	16.0
3	12V Lead-acid Antimony	13.5	14.7	12.5	360	12.0	16.0
4	12V VRLA AGM	13.5	14.4	12.5	360	12.0	16.0
5	12V VRLA GEL	13.5	13.8	12.5	360	12.0	16.0
6	12V NiCd 10-cell	14.4	14.5	12.5	360	12.0	16.0
7	12V Power supply	12.0					
8	24V NiCd 18-cell	25.6	26.1	25.0	360	24.0	32.0
9	24V NiCd 20-cell	28.2	29.0	25.0	360	24.0	32.0
10	24V Wet lead-acid	27.0	28.2	25.0	360	24.0	32.0
11	24V Calcium / Calcium	27.6	31.2	25.0	360	24.0	32.0
12	24V Lead-acid Antimony	27.0	29.4	25.0	360	24.0	32.0

13	24V VRLA AGM	27.0	28.8	25.0	360	24.0	32.0
14	24V VRLA GEL	27.0	27.6	25.0	360	24.0	32.0
15	24V Power supply	24.0					

**Table 2a: DIP switch settings ( 5 & 6)**

**Gen-set mode:**

**SW5**                **ON = Remote configuration enabled**  
**SW6**                **No action**

**Fire-pump mode:**

**SW5**                **ON = Remote configuration enabled**  
**SW6**                **ON = MODBUS slave address = 105. OFF = MODBUS slave address = 100.**

**Table 3: Fault Status Register**

<b>Bit</b>	<b>Fault description</b>
0	1 = Mains failure
1	1 = Reversed battery connections detected
2	1 = Battery output short-circuit detected
3	1 = Battery missing (As detected in float mode)
4	1 = Incorrect battery type for DIP switches detected
5	1 = No battery detected
6	1 = High battery voltage alarm currently active
7	1 = Charge failure detected (Output current < 50mA)
8	1 = Low battery voltage alarm currently active
9	1 = Voltage sense level alarm
10	Not used
11	Not used
12	Not used
13	Not used
14	Not used
15	Not used