User Control:

Report command, used with ?:

Command	TUP	TPC	TPS	Example Command	Example TUP1000 Response	Units	Description
VER	X	X	X	ver?	01.26-0GV7FL*	N/A	firmware version + build code (* indicate calibration support)
PN	X	X	X	pn?	TUP1000_5V (4747mV ~ 5253mV) TPS1000-5-12 (4747mV ~ 5253mV / 11392mV ~ 12608mV)	N/A	product part number with the output 1 range (include output 2 range for TPS model)
SN	X	X	X	sn?	F50000004EFE036D53360ABB03031B07	32 Hex characters	Serial number
RT	X	X	X	rt?	0:00:01:32	Days:HH:MM:SS	Runtime
OT	X	X	X	ot?	0:00:01:12	Days:HH:MM:SS	Time the output is ON
MLF	X	X	X	mlf?	MLF = 54413	#	Number of times the main loop is executed per second
SDX	X	X	X	sdx?	SDX = high	low, high	SD Status
TRD	X	X	X	trd?	TRD = 297524	mK (milli Kelvin)	Temperature
SECI	X	X	X	seci?	SECI = 19	mA	Discharging Current
MAINI	X	X	X	maini?	MAINI = 98	mA	Main Input Current
MAINV	X	X	X	mainv?	MAINV = 14995	mV	Main input Voltage
MAINP	X	X	X	mainp?	MAINP = 12722688	uW	Main Input Power
MAIND	X	X	X	maind?	MAIND = 123	mV	Delta between highest and lowest Vin sample
MDRP	X	X	X	mdrp?	MDRP = 52	mV	Delta between 2 consecutive MAINV measurement
EFF	X	X	X	eff?	EFF = 86	%	Calculated Efficiency
OUTV	X	X	X	outv?	OUTV = 5000	mV	Output 1 Voltage
OUTI	X	X	X	outi?	OUTI = 27	mA	Output 1 Current
OUTP	X	X	X	outp?	OUTP = 23456879	uW	Output 1 Power
OMAX	X	X		omax?	OMAX = 5253	mV	Output 1 maximum voltage limit
OMIN	X	X		omin?	OMIN = 4747	mV	Output 1 minimum voltage limit
OUT2I			X	out2i?	OUT2I = 27	mA	Output 2 Current
OUT2V			X	out2v?	OUT2V = 12000	mV	Output 2 Voltage
OUT2P			X	out2p?	OUT2P = 31567369	uW	Output 2 Power
O2MAX			X	o2max?	OMAX = 12608	mV	Output 2 maximum voltage limit
O2MIN			X	o2min?	OMIN = 11392	mV	Output 2 minimum voltage limit
BAKI	X	X		baki?	BAKI = 119	mA	Charging Current
BAKV	X	X		bakv?	BAKV = 14911	mV	Backup Voltage
BAKP	X	X		bakp?	BAKP = 21580653	uW	Charging Power
BAKC	X	X		back?		mF	Calculated Backup capacity
BAKE	X	X		bace?		mJ	Calculated Backup Energy
BVT	X	X		bvt?	BVT = 25200	mV	Charge termination voltage
VOCM	X			vocm?	VOCM=25240	mA	Maximum open-circuit voltage allowed for the charger
VCHM	X			vchm?	VCHM=25100	mA	Maximum voltage allowed for the charger
ICHM	X	X		ichm?	ICHM=3500	mA	Maximum current allowed for the charger
TRBC	X	X		trbc?	TRBC = 45443678	ms	Time remaining before next charge cycle
TRBR	X	X		trbr?	TRBR = 12344	ms	Time remaining before re-allowing charge
CHSC		X		chsc?	CHSC=22	#	Record # of steps required by the last charge
DICH		X		dich?	DICH = 287	mA	Negative delta charge current
DVCHN		X		dvchn?	DVCHN = 48	mV	Negative delta charge voltage
DVCHP		X		dvchp?	DVCHP = 56	mV	Positive delta charge voltage
PSST	X	X	X	psst?	PSST = ON	ON, OFF	Output(s) state in automatic mode
CHST	X	X		chst?	CHST = OFF	ON, OFF	Charger state
SUST	X	X	X	sust?	SUST = Disable	Enable, Disable	Startup state
SDST	X	X	X	sdst?	SDST = Disable	Enable, Disable	Shutdown state
PBST	X	X	X	pbst?	PBST = high	high, low	Push Button / Ignition input state
SUFL	X	X	X	sufl?	SUFL = SD	SD, ????, None	Startup event (event that initiated the startup)
SDFL	X	X	X	sdfl?	SDFL = None	SD, ????, None	Shutdown event (event that initiated the startup)

LSUF	X	X	X	lsuf?	LSUF = SD	SD, ????, None	Last recorded Startup event
LSDF	X	X	X	lsdf?	LSDF = MV	SD, ????, None	Last recorded Shutdown event
CELV	X			celv?	CELV = 14918 Cell[0] = 1239 Cell[1] = 1255 Cell[2] = 1240 Cell[3] = 1251 Cell[4] = 1242 Cell[5] = 1242 Cell[6] = 1243 Cell[7] = 1239 Cell[8] = 1243 Cell[9] = 1240 Cell[10] = 1245 Cell[11] = 1239 Cell[Hi] = 1255 Cell[Lo] = 1239	mV	Ultracapacitor bank voltage, the voltage of each cell, the highest cell voltage and the lowest cell voltage (only updated when the bank voltage is higher than 7V)
CELT	X			celt?	CELT = 301000	mK (milli Kelvin)	Temperature of the ultracapacitor controller (only updated when the bank voltage is higher than 7V)
CELS	X			cels?	CELS: Cell[0] = undervoltage Cell[1] = undervoltage Cell[2] = undervoltage Cell[3] = undervoltage Cell[4] = undervoltage Cell[5] = undervoltage Cell[6] = undervoltage Cell[7] = undervoltage Cell[8] = undervoltage Cell[9] = undervoltage Cell[10] = undervoltage Cell[11] = undervoltage	undervoltage, OK, overvoltage	Status of each ultracapacitor (only updated when the bank voltage is higher than 7V)
					OV=000	hex character bit mapped Bit 0 = ultracapacitor 1 to Bit 11 = ultracapacitor 12 0 = OK, 1 = over voltage	Ultracapacitor controller over voltage register (only updated when the bank voltage is higher than 7V)
					UV=FFF	hex character bit mapped Bit 0 = ultracapacitor 1 to Bit 11 = ultracapacitor 12 0 = OK, 1 = under voltage	Ultracapacitor controller under voltage register (only updated when the bank voltage is higher than 7V)
					BP=000	hex character bit mapped Bit 0 = ultracapacitor 1 to Bit 11 = ultracapacitor 12 0 = OFF, 1 = ON	Ultracapacitor controller bypass register (only updated when the bank voltage is higher than 7V)
					MM=10	10 = standby, 12 = normal	Ultracapacitor controller running mode
CELF	X			celf?	CELF = 040A	hex character bit mapped Bit 0 = ultracapacitor 1 to Bit 11 = ultracapacitor 12 0 = OFF, 1 = ON	Is the same as BP except CELF retains the last state of the Discharge cell register
CERR	X			cerr?	Cell[0] = 2079 Cell[1] = 2077 Cell[2] = 2075 Cell[3] = 2080 Cell[4] = 2072 Cell[5] = 2069 Cell[6] = 2068	mV	The voltage of each cell at the time a voltage error is detected (only updated when the bank voltage is higher than 7V)

					Cell[7] = 2250		
					Cell[8] = 2076		
					Cell[9] = 2081		
					Cell[10] = 2071		
					Cell[11] = 2067		
CELC	X			celc?	CELC = 12	#	# of capacitor cells to be balanced
CELM	X			celm?	CELM = 2100	mV	maximum voltage allowed by cell
CCFG	X	X	X	ccfg?	CCFG = 0x00030301	32bit hex	track the communication register flags
UERR	X	X	X	uerr?	UERR = 0x00000000	32bit hex	Track the UART status error
UWDC	X	X	X	uwdc?	UWDC = 9876	ms	Track time before next Warning message on UART port
CWDC	X	X	X	cwdc?	CWDC = 11367	ms	Track time before next Warning message on CDC port
UADC	X	X	X	uadc?	UADC=2345	ms	Track time before next Alarm message on UART port
CADC	X	X	X	cadc?	CADC=4578	ms	Track time before next Alarm message on CDC port
UEDC	X	X	X	uedc?	UEDC=23456	ms	Track time before next Error message on UART port
CEDC	X	X	X	cedc?	CEDC= 7893	ms	Track time before next Error message on CDC port

Assign Command, used with ? Or =: (use '=' to assign a new value and '?" to return the present value

Command	TUP	TPC	TPS	Example Command	Example TUP1000 Response	Units	Description	Class
HBT	X	X	X	hbt?	HBT = 1000	ms	LED flashing time period	LED
HBD	X	X	X	hbd?	HBD = 10	ms	LED flashing duty-cycle	LED
LED1	X	X	X	led1? led1=0x00060201	LED1 = 00000000 LED1 = 00060201	32 bit hex 0x00RRGGBB	LED1 RGB color and brightness	LED
LED2	X	X	X	led2? led2=0x00060201	LED2 = 00000000 LED2 = 00060201	32 bit hex 0x00RRGGBB	LED2 RGB color and brightness	LED
LED3	X	X	X	led3? led3=0x00060201	LED3 = 00000000 LED3 = 00060201	32 bit hex 0x00RRGGBB	LED3 RGB color and brightness	LED
LED4	X	X	X	led4? led4=0x00060201	LED4 = 00000000 LED4 = 00060201	32 bit hex 0x00RRGGBB	LED4 RGB color and brightness	LED
LED5	X	X	X	led5? led5=0x00060201	LED5 = 00000000 LED5 = 00060201	32 bit hex 0x00RRGGBB	LED5 RGB color and brightness	LED
LED6	X	X	X	led6? led6=0x00060201	LED5 = 00000000 LED6 = 00060201	32 bit hex 0x00RRGGBB	LED6 RGB color and brightness	LED
WMSK	X	X	X	wmsk?	WMSK = 0x0000000F	32bit hex	Mask warning messages	COMMUNICATION
AMSK	X	X	X	amsk?	AMSK = 0x00000001	32bit hex	Mask alarm messages	COMMUNICATION
UBR	X	X	X	ubr?	UBR = 115200	baud	UART Baud Rate	UART
UPRT	X	X	X	uprt?	UPRT = 0x003E0A0D	0xC4C3C2C1	up to 4 characters used as prompt for RS232 communication	UART
UDIV	X	X	X	udiv?	UDIV = 0x00000A0D	0xC4C3C2C2	up to 4 characters used as divider for RS232 communication (commands returning multiple values like "celv"))	UART
UEND	X	X	X	uend?	UEND = 0x000A0A0D	0xC4C3C2C3	up to 4 characters used as command termination for RS232 communication	UART
UWMF	X	X	X	uwmf?	UWMF = 20000	ms	Warning Message Frequency for UART port, 0 = disable	UART
UAMF	X	X	X	uamf?	UAMF = 10000	ms	Alarm Message Frequency for UART port, 0 = disable	UART
UEMF	X	X	X	uemf?	UEMF = 5000	ms	Error Message Frequency for UART port, 0 = disable	UART
CBR	X	X	X	cbr?	CBR = 115200	baud	CDC/ACM Baud Rate	USB CDC/ACM
CPRT	X	X	X	cprt?	CPRT = 0x003E0A0D	0xC4C3C2C1	up to 4 characters used as prompt for CDC/ACM communication	USB CDC/ACM
CDIV	X	X	X	cdiv?	CDIV = 0x00000A0D	0xC4C3C2C2	up to 4 characters used as divider for CDC/ACM communication (commands returning multiple values like "celv"))	USB CDC/ACM

Command				Query	Default	Units/Value	Description	Category
CEND	X	X	X	cend?	CEND = 0x000A0A0D	0xC4C3C2C3	up to 4 characters used as command termination for CDC/ACM communication	USB CDC/ACM
CWMF	X	X	X	cwmf?	CWMF = 15000	ms	Warning Message Frequency for CDC port, 0 = disable	USB CDC/ACM
CAMF	X	X	X	camf?	CAMF = 12000	ms	Alarm Message Frequency for CDC port, 0 = disable	USB CDC/ACM
CEMF	X	X	X	cemf?	CEMF = 8000	ms	Error Message Frequency for CDC port, 0 = disable	USB CDC/ACM
VSET	X	X	X	vset?	VSET = 5000	mV	Output 1 voltage setpoint	OUTPUT
VSET2			X	vset?	VSET = 12150	mV	Output 2 voltage setpoint	OUTPUT
BMIN	X	X		bmin?	BMIN = 14400	mV	Ultracapacitor bank minimum voltage	CHARGER
BMAX	X	X		bmax?	BMAX = 14800	mV	Ultracapacitor bank maximum voltage	CHARGER
BOCV	X	X		bocv?	BOCV = 15000	mV	Battery Open Circuit Voltage	CHARGER
BSTP	X	X		bstp?	BSTP = 50	mV	Charger minimum voltage step increase	CHARGER
BIS	X	X		bis?	BIS = 1000	mA	Maximum Charging Current	CHARGER
PCHM	X	X		pchm?	PCHM=25000000	uW	Maximum Charging Power	CHARGER
BIE	X	X		bie?	BIE = 50	mA	Charge termination current	CHARGER
BID		X		bid?	BID = 10	mA	Charge termination delta current	CHARGER
BVDN		X		bvdn?	BVDN = 100	mV	Charge termination negative delta voltage	CHARGER
BVDP		X		bvdp?	BVDP = 100	mV	Charge termination positive delta voltage	CHARGER
BCAP	X	X		bcap?	BCAP = 833	mF	Capacity definition in mF (for CBPx)	CHARGER
BNRG	X	X		bnrg?	BNRG = 7500000	mJ	Capacity definition in mJ (for TBPx)	CHARGER
CHTO	X	X		chto?	CHTO = 10000	ms	maximum time allowed between 2 charge steps	CHARGER
PSM	X	X	X	psm?	PSM = 100000000	uW	Maximum Power available from source	CHARGER
ISM	X	X	X	ism?	ISM = 8000	mA	Maximum current available from source	CHARGER
MTBR	X	X		mtbr?	MTBR = 86400000	ms	Maximum Time Before Recharge (next cycle)	CHARGER
DBRC	X	X		dbrc?	DBRC = 30000	ms	Minimum Delay Before Re-allowing Charge	CHARGER
CTLH	X	X		ctlh?	CTLH = 343150	mK (milli Kelvin)	Charge Temperature Limit Low	CHARGER
CTLL	X	X		ctll?	CTLL = 243150	mK (milli Kelvin)	Charge Temperature Limit High	CHARGER
BCDV		X		bcdv?	BCDV = 10800	mV	Battery Connection Detect Voltage	CHARGER
SUTH	X	X	X	suth?	SUTH = 355650	mK (milli Kelvin)	Temperature that initiates a startup when returning to normal temperature from an over temperature condition	STATUP
SUTL	X	X	X	sutl?	SUTL = 233650	mK (milli Kelvin)	Temperature that initiates a startup when returning to normal temperature from an under temperature condition	STATUP
SUVH	X	X		suvh?	SUVH = 32500	mV	Main input voltage that initiates a startup when returning to normal from an over voltage condition	STATUP
SUVL	X	X		suvl?	SUVL = 7050	mV	Main input voltage that initiates a startup when returning to normal from an under voltage condition	STATUP
BSUV	X	X		bsuv?	BSUV = 13500	mV	Ultracapacitor bank voltage that initiates a startup	STATUP
MVRD	X	X	X	mvrd?	MVRD = 1000	ms	Main Voltage recovery delay	STATUP
SUDL	X	X	X	sudl?	SUDL = 1000	ms	Startup delay	STATUP
TMIN	X	X	X	tmin?	TMIN = 233150	mK (milli Kelvin)	Minimum operating temperature	SHUTDOWN
TMAX	X	X	X	tmax?	TMAX = 358150	mK (milli Kelvin)	Maximum operating temperature	SHUTDOWN
BSDV	X	X		bsdv?	BSDV = 7000	mV	Ultracapacitor bank voltage that initiates a shutdown	SHUTDOWN
VMIN	X	X	X	vmin?	VMIN = 7000	mV	Main input minimum voltage limit	SHUTDOWN
VMAX	X	X	X	vmax?	VMAX = 33000	mV	Main input maximum voltage limit	SHUTDOWN
DMAX	X	X	X	dmax?	DMAX = 500	mV	Main Input maximum allowed voltage differential	SHUTDOWN
MVDB	X	X	X	mvdb?	MVDB = 1000	ms	Main Voltage debounce	SHUTDOWN
SDDL	X	X	X	sddl?	SDDL = 500000	ms	Shutdown delay	SHUTDOWN
PSTD	X	X	X	pstd?	PSTD = 1000	ms	PS-STAT output active duration	STATUS
WDC	X	X	X	wdc?	WDC=1000	ms	Watchdog counter	CONTROL
SDS	X	X	X	sds?	SDS = 100	ms	Time to validate "STAT-SDX"	CONTROL
SUDC	X	X	X	sudc?	SUDC = 0	ms	Startup Counter value	HIDDEN
SDDC	X	X	X	sddc?	SDDC = 0	ms	Shutdown Counter value	HIDDEN
TIME	X	X	X	time?	TIME = 06:15:27	HH:MM:SS	RTC time	HIDDEN
DATE	X	X	X	date?	DATE = 12/11/26	YY/MM/DD	RTC date	HIDDEN
WUT	X	X	X	wut?	WUT = 06:15:27	HH:MM:SS	RTC alarm time (TUP1000 wakeup from hibernation)	HIDDEN

Command	X	X	X	wud?	WUD = 12/11/26	YY/MM/DD	RTC Alarm date (TUP1000 wakeup from hibernation)	HIDDEN
WUD	X	X	X	wud?	WUD = 12/11/26	YY/MM/DD	RTC Alarm date (TUP1000 wakeup from hibernation)	HIDDEN
PWD	X	X	X	pwd?	PWD = 00000000	32bit hex	password to allow unlock profile	HIDDEN
CREG	X	X	X	creg?	CREG = 00000103		assign / return value of the control register (register where the flag command are save, see CREG sheet)	HIDDEN
EREG	X	X	X	ereg?	EREG = 00000000		report system failure (see EREG sheet), each flag can be reset by writing a 1	HIDDEN
WREG	X	X	X	wreg?	WREG = 0x00000002	32bit hex	report system warning (see WREG sheet), each flag can be cleared by writing a 1	HIDDEN
AREG	X	X	X	areg?	AREG = 0x00000001	32bit hex	report system alarm (see AREG sheet), each flag can be cleared by writing a 1	HIDDEN
DREG	X	X	X	dreg?	DREG = 0x00050000	32bit hex	assign / return value of the debug register (register where the debug flag save, see DREG sheet)	HIDDEN

Flags Command, used with ? or =:

Command	TUP	TPC	TPS	Example Command	Example TUP1000 Response	Units	Description	Class
LED	X	X	X	led?	LED = Auto	Auto, Manual	LED control	LED
BLI	X	X		bli?	BLI = Disable	Disable, Enable	Enable / Disable Battery Low Indicator	LED
DBG	X	X	X	dbg?	DBG = Disable	Disable, Enable	Additional debug messages	COMMUNICATION
DBP	X	X	X	dbp?	DBP = UART	Uart, Cdc	Debug port	COMMUNICATION
SPC	X	X	X	spc?	SPC = Enable	Disable, Enable	Enable / Disable space character in returned message ("CMD = VAL" vs "CMD=VAL")	COMMUNICATION
UCMD	X	X	X	ucmd?	UCMD = Enable	Disable, Enable	Enable / Disable command name in returned message on the RS232 communication port ("CMD = VAL" vs "VAL")	UART
UECHO	X	X	X	uecho?	UECHO = Enable	Disable, Enable	Enable /Disable the echo on the RS232 port	UART
UXON	X	X	X	uxon?	UXON = Disable	Disable, Enable	Enable / Disable XON/XOFF on the RS232 port NOT YET IMPLEMENTED	UART
CCMD	X	X	X	ccmd?	CCMD = Enable	Disable, Enable	Enable / Disable command name in returned message on the CDC/ACM communication port ("CMD = VAL" vs "VAL")	USB CDC/ACM
CECHO	X	X	X	cecho?	CECHO = Enable	Disable, Enable	Enable /Disable the echo on the CDC/ACM port	USB CDC/ACM
CXON	X	X	X	cxon?	CXON = Disable	Disable, Enable	Enable / Disable XON/XOFF on the CDC/ACM port NOT YET IMPLEMENTED	USB CDC/ACM
OUTM	X	X	X	outm?	OUTM = Auto	Auto, Manual	Output 1 Mode	OUTPUT
OUTC	X	X	X	outc?	OUTC = Enable	Disable, Enable	Output 1 control	OUTPUT
OUT2M			X	out2m?	OUT2M = Auto	Auto, Manual	Output 2 Mode	OUTPUT
OUT2C			X	out2c?	OUT2C = Enable	Disable, Enable	Output 2 control	OUTPUT
CHM	X	X		chm?	CHM = Terminated	Continuous / Terminated	Charger operating mode	CHARGER
SDSU	X	X	X	sdsu?	SDSU = Enable	Disable, Enable	Enable / Disable Start up on SD (CTRL input)	STATUP
MVSU	X	X	X	mvsu?	MVSU = Enable	Disable, Enable	Enable / Disable Start up on Main input Voltage	STATUP
BVSU	X	X		bvsu?	BVSU = Enable	Disable, Enable	Enable / Disable Start up on Battery Voltage	STATUP
TPSU	X	X	X	tpsu?	TPSU = Enable	Disable, Enable	Enable / Disable Start up on Temperature	STATUP
HCSU	X	X	X	hcsu?	HCSU = Enable	Disable, Enable	Enable / Disable Start up on Host Command (SUDC)	STATUP
SDSD	X	X	X	sdsd?	SDSD = Enable	Disable, Enable	Enable / Disable Shutdown on SD (CTRL input)	SHUTDOWN
MVSD	X	X	X	mvsd?	MVSD = Enable	Disable, Enable	Enable / Disable Start up on Main input Voltage	SHUTDOWN
BVSD	X	X		bvsd?	BVSD = Enable	Disable, Enable	Enable / Disable Start up on Battery Voltage	SHUTDOWN
TPSD	X	X	X	tpsd?	TPSD = Enable	Disable, Enable	Enable / Disable Start up on Temperature	SHUTDOWN
HCSD	X	X	X	bcsd?	HCSD = Enable	Disable, Enable	Enable / Disable Shutdown on Host Command (SDDC)	SHUTDOWN
FSD	X	X	X	fsd?	FSD = Enable	Disable, Enable	Enable / Disable PSST activated on Shutdown (STAT output)	STATUS
FOV	X	X	X	fov?	FOV = Enable	Disable, Enable	Enable / Disable PSST activated on Output Voltage being off range (STAT output)	STATUS

					Example			
PSTA	X	X	X	pstd?	PSTA = High	high, low	PS-STAT output active polarity	STATUS
PSTM	X	X	X	pstm?	PSTM = Status	Status, Power Button	PS_STAT Mode	STATUS
PSTT	X	X	X	pstp?	PSTT = Down	Down, Up+Down	PS STAT Power Button Pulse Trigger	STATUS
SDP	X	X	X	sdp?	SDP = Negative	Positive, Negative	SD input polarity (CTRL input)	CONTROL
SDA	X	X	X	sda?	SDA = Ignition	Ignition, Push button	SD input function (CTRL input)	CONTROL
ST	X	X	X	st?	ST = Allow	Deny, Allow	Future Production Self Test	CONTROL
LCK	X	X	X	lck?	LCK = Unlocked	Unlocked, Locked	Lock, Unlock changes. Valid password required before unlock	CONTROL

Action Command (without ? Or =):

Command	TUP	TPC	TPS	Example		Units	Description
				Command	TUP1000 Response		
UPD	X	X	X	upd	hardware initialized	-	Update the variable used at initialization, all others are updated in realtime
STD	X	X	X	std	tup_12v.cfg updated	-	Save the current settings in the config file (ALL parameters)
RLD	X	X	X	rld	Configuration loaded from tup_12v.cfg	-	Reload the settings from the config file
SAV	X	X	X	sav	tup_12v.cfg updated	-	Save the current settings in the config file (ONLY parameters changed from default value)

CREG register:

FLAG	SHIFT	BIT#	Description	Default Val	Default Bit
SDP	(1 << 0)	0x00000001	SD polarity (N = Negative / P = Positive)	N	1
SDA	(1 << 1)	0x00000002	SD action (I = Ignition / P = Push Button)	I	1
OUTM	(1 << 2)	0x00000004	OUTPUT1 mode A = Auto (follows SU/SD), M = Manual (controlled by "OUTC")	A	0
OUTC	(1 << 3)	0x00000008	OUTPUT1 control: E = Enable (forced ON), D = Disable (forced OFF)	D	0
OUT2M	(1 << 4)	0x00000010	OUTPUT2 mode A = Auto (follows SU/SD), M = Manual (controlled by "OUT2C")	A	0
OUT2C / CHON	(1 << 5)	0x00000020	OUTPUT2 control: E = Enable (forced ON), D = Disable (forced OFF) CHON used instead for TUP in debug mode to force the charger ON	D	0
FSD	(1 << 6)	0x00000040	Enable / Disable STATUS output activated on shutdown	E	1
FOV	(1 << 7)	0x00000080	Enable / Disable STATUS output activated on output voltage off range	E	1
SDSU	(1 << 8)	0x00000100	Enable / Disable Start up on CTRL input	E	1
MVSU	(1 << 9)	0x00000200	Enable / Disable Start up on main input voltage	E	1
BVSU	(1 << 10)	0x00000400	Enable / Disable Start up on battery voltage	E	1
TPSU	(1 << 11)	0x00000800	Enable / Disable Start up on Temperature	E	1
HCSU	(1 << 12)	0x00001000	Enable / Disable Start up on host command	E	1
BLI	(1 << 13)	0x00002000	Enable / Disable Battery low indicator	D	0
	(1 << 14)	0x00004000		E	1
CHM	(1 << 15)	0x00008000	Charger termination control: (T = terminate, C = continuous)	T	1
SDSD	(1 << 16)	0x00010000	Enable / Disable Shutdown on CTRL input	E	1
MVSD	(1 << 17)	0x00020000	Enable / Disable Shutdown on main input voltage	E	1
BVSD	(1 << 18)	0x00040000	Enable / Disable Shutdown on battery voltage	E	1
TPSD	(1 << 19)	0x00080000	Enable / Disable Shutdown on Temperature	E	1
HCSD	(1 << 20)	0x00100000	Enable / Disable Shutdown on host command	E	1
LED	(1 << 21)	0x00200000	LED control (A = Auto / M = Manual)	A	0
PSTA	(1 << 22)	0x00400000	PS-STAT Active Polarity	L	0
PSTM	(1 << 23)	0x00800000	PS_STAT Mode (STATUS / Power Button)	S	0
PSTT	(1 << 24)	0x01000000	PS STAT Power Button Pulse Trigger (Shutdown only / Start Up & Shutdown)	D	0
	(1 << 25)	0x02000000			0
	(1 << 26)	0x04000000			0
	(1 << 27)	0x08000000			0
	(1 << 28)	0x10000000			0
	(1 << 29)	0x20000000			0
ST	(1 << 30)	0x40000000	Self Test	D	0
LCK	(1 << 31)	0x80000000	Lock or Unlock changes (U = Unlock / L = Lock), password will have to be entered before allowing the unlock.	U	0

Default   CREG 0x001FDFC3

WREG register:

SHIFT	BIT#	Desciption
(1 << 0)	0x00000001	Main Input Voltage too low, triggered when MAINV < VMIN, cleared when MAINV > SUVL
(1 << 1)	0x00000002	Main Input Voltage too High, triggered when MAINV > VMAX, cleared when MAINV < SUVH
(1 << 2)	0x00000004	Temperature too low, triggered when TRD < TMIN
(1 << 3)	0x00000008	Temperature too High, triggered when TRD > TMAX
(1 << 4)	0x00000010	Output ouside 2.5% tolerance, needs to be calibrated
(1 << 5)	0x00000020	
(1 << 6)	0x00000040	
(1 << 7)	0x00000080	
(1 << 8)	0x00000100	
(1 << 9)	0x00000200	
(1 << 10)	0x00000400	
(1 << 11)	0x00000800	
(1 << 12)	0x00001000	
(1 << 13)	0x00002000	
(1 << 14)	0x00004000	
(1 << 15)	0x00008000	
(1 << 16)	0x00010000	
(1 << 17)	0x00020000	
(1 << 18)	0x00040000	
(1 << 19)	0x00080000	
(1 << 20)	0x00100000	
(1 << 21)	0x00200000	
(1 << 22)	0x00400000	
(1 << 23)	0x00800000	
(1 << 24)	0x01000000	
(1 << 25)	0x02000000	
(1 << 26)	0x04000000	
(1 << 27)	0x08000000	
(1 << 28)	0x10000000	
(1 << 29)	0x20000000	
(1 << 30)	0x40000000	
(1 << 31)	0x80000000	

AREG register:

SHIFT	BIT#	Desciption
(1 << 0)	0x00000001	Battery Low triggered when BAKV < BSDV, reset when BAKV > BSUV
(1 << 1)	0x00000002	Output outside 5% tolerance
(1 << 2)	0x00000004	
(1 << 3)	0x00000008	
(1 << 4)	0x00000010	
(1 << 5)	0x00000020	
(1 << 6)	0x00000040	
(1 << 7)	0x00000080	
(1 << 8)	0x00000100	
(1 << 9)	0x00000200	
(1 << 10)	0x00000400	
(1 << 11)	0x00000800	
(1 << 12)	0x00001000	
(1 << 13)	0x00002000	
(1 << 14)	0x00004000	
(1 << 15)	0x00008000	
(1 << 16)	0x00010000	
(1 << 17)	0x00020000	
(1 << 18)	0x00040000	
(1 << 19)	0x00080000	
(1 << 20)	0x00100000	
(1 << 21)	0x00200000	
(1 << 22)	0x00400000	
(1 << 23)	0x00800000	
(1 << 24)	0x01000000	
(1 << 25)	0x02000000	
(1 << 26)	0x04000000	
(1 << 27)	0x08000000	
(1 << 28)	0x10000000	
(1 << 29)	0x20000000	
(1 << 30)	0x40000000	
(1 << 31)	0x80000000	

EREG register:

SHIFT	BIT#	Desciption
(1 << 0)	0x00000001	Serial number reading error
(1 << 1)	0x00000002	RTC registers initialization error
(1 << 2)	0x00000004	RTC reading error
(1 << 3)	0x00000008	RTC writing error
(1 << 4)	0x00000010	LED controller writing error
(1 << 5)	0x00000020	
(1 << 6)	0x00000040	
(1 << 7)	0x00000080	
(1 << 8)	0x00000100	UART communication error
(1 << 9)	0x00000200	
(1 << 10)	0x00000400	
(1 << 11)	0x00000800	
(1 << 12)	0x00001000	
(1 << 13)	0x00002000	
(1 << 14)	0x00004000	
(1 << 15)	0x00008000	
(1 << 16)	0x00010000	DAC1 (OUTPUT) initialization error (will be also set if max/min limit not defined)
(1 << 17)	0x00020000	DAC2 (CHARGER) writing error
(1 << 18)	0x00040000	Temperature sensor registers initialization error
(1 << 19)	0x00080000	Temperature sensor reading error
(1 << 20)	0x00100000	Multicell monitor registers initialization error
(1 << 21)	0x00200000	Multicell monitor registers read error
(1 << 22)	0x00400000	Multicell monitor registers write error
(1 << 23)	0x00800000	
(1 << 24)	0x01000000	Cell voltage error
(1 << 25)	0x02000000	Cell temperature error
(1 << 26)	0x04000000	
(1 << 27)	0x08000000	Cell charging error
(1 << 28)	0x10000000	Input Voltage configuration error
(1 << 29)	0x20000000	Backup Voltage configuration error
(1 << 30)	0x40000000	Temperature configuration error
(1 << 31)	0x80000000	Output Voltage configuration error

DREG register:

FLAG	SHIFT	BIT#	Desciption	Default Val	Default Bit
ILM1	(1 << 0)	0x00000001	Control current limit of output 1, 0 = 100%, 1 = 50% (#ifdef IL1DBG)	H	1
ILM2	(1 << 1)	0x00000002	Control current limit of output 2, 0 = 100%, 1 = 50% (#ifdef IL2DBG)	H	1
SSED	(1 << 2)	0x00000004	Select the Surge Stopper Enable pin to input or output (#ifdef DOSSDBG)	I	0
SSEL	(1 << 3)	0x00000008	Control the Surge Stopper Enable pin high or low (#ifdef DOSSDBG)	L	0
BPE	(1 << 4)	0x00000010	Enable / Disable Backup Power (#ifdef BPEDBG)	D	0
	(1 << 5)	0x00000020			0
	(1 << 6)	0x00000040			0
	(1 << 7)	0x00000080			0
	(1 << 8)	0x00000100			0
	(1 << 9)	0x00000200			0
	(1 << 10)	0x00000400			0
	(1 << 11)	0x00000800			0
	(1 << 12)	0x00001000			0
	(1 << 13)	0x00002000			0
	(1 << 14)	0x00004000			0
	(1 << 15)	0x00008000			0
MVOK	(1 << 16)	0x00010000	Read only bit, indicate the status of the Main Voltage flag, 1 = OK, 0 = KO	RO	0
BKOK	(1 << 17)	0x00020000	Read only bit, indicate the status of the Backup Voltage flag, 1 = OK, 0 = KO	RO	0
TOK	(1 << 18)	0x00040000	Read only bit, indicate the status of the Temperature flag, 1 = OK, 0 = KO	RO	0
	(1 << 19)	0x00080000			0
	(1 << 20)	0x00100000			0
	(1 << 21)	0x00200000			0
	(1 << 22)	0x00400000			0
	(1 << 23)	0x00800000			0
	(1 << 24)	0x01000000			0
	(1 << 25)	0x02000000			0
	(1 << 26)	0x04000000			0
	(1 << 27)	0x08000000			0
	(1 << 28)	0x10000000			0
	(1 << 29)	0x20000000			0
DBP	(1 << 30)	0x40000000	Debug port to be Uart or Cdc (U = UART / C = CDC)	U	0
DBG	(1 << 31)	0x80000000	Disable or Enable additional debug messages (D = Disable / E = Enable)	D	0

Default   DREG 0x00000003

CCFG register:

FLAG	SHIFT	BIT#	Desciption
SPC	(1 << 0)	0x00000001	Command return, extra space character around equal sign (Enable / Disable)
	(1 << 1)	0x00000002	
	(1 << 2)	0x00000004	
	(1 << 3)	0x00000008	
	(1 << 4)	0x00000010	
	(1 << 5)	0x00000020	
	(1 << 6)	0x00000040	
	(1 << 7)	0x00000080	
UCMD	(1 << 8)	0x00000100	UART command return: Enable = return command name with equal sign and value, Disable = return value only
UECHO	(1 << 9)	0x00000200	Echo on UART communication (Enable / Disable)
UXON	(1 << 10)	0x00000400	XON / XOFF protocol for UART communication (Enable / Disable)
	(1 << 11)	0x00000800	
	(1 << 12)	0x00001000	
	(1 << 13)	0x00002000	
	(1 << 14)	0x00004000	
	(1 << 15)	0x00008000	
CCMD	(1 << 16)	0x00010000	CDC/ACM command return: Enable = return command name with equal sign and value, Disable = return value only
CECHO	(1 << 17)	0x00020000	Echo on CDC/ACM communication (Enable / Disable)
CXON	(1 << 18)	0x00040000	XON / XOFF protocol for CDC/ACM communication (Enable / Disable)
	(1 << 19)	0x00080000	
	(1 << 20)	0x00100000	
	(1 << 21)	0x00200000	
	(1 << 22)	0x00400000	
	(1 << 23)	0x00800000	
	(1 << 24)	0x01000000	
	(1 << 25)	0x02000000	
	(1 << 26)	0x04000000	
	(1 << 27)	0x08000000	
	(1 << 28)	0x10000000	
	(1 << 29)	0x20000000	
	(1 << 30)	0x40000000	
	(1 << 31)	0x80000000	

LED	period	Status	Color	Desciption
1	HDB	Temperature	blue	Temperature lower than TMIN
1	HDB	Temperature	red	Temperature higher than TMAX
1	HDB	Temperature	green	TMIN < Temperature < TMAX
1	100% – HDB	Input Voltage	blue	Input Voltage lower than VMIN
1	100% – HDB	Input Voltage	red	Input Voltage higher than VMAX
1	100% – HDB	Input Voltage	green	VMIN < Input Voltage < VMAX
1	100%	Input Power	red	MAINP > PSM or MAINI > ISM
2	HDB	Charger	green	capacitor bank is at full charge status
2	HDB	Charger	yellow	capacitors are being charged
2	HDB	Charger	blue	running on backup power
2	HDB	Charger	red	battery low indicator / battery not connected
2	100% – HDB	Operation	off	PS is operating properly
2	100% – HDB	Operation	red	a critical error occurred, the output and charger are forced off
3	100%	Output	off	Output 1 is OFF
3	HDB	Startup	yellow	Startup in progress
3	100% – HDB	Shutdown	green	Shutdown in progress, output 1 is in range
3	100% – HDB	Shutdown	orange	Shutdown in progress, output 1 need to be calibrated
3	100% – HDB	Shutdown	red	Shutdown in progress, output 1 is out of calibration range
3	100%	Output	green	Output 1 is ON and in range
3	100%	Output	orange	Output 1 is ON but need to be calibrated
3	100%	Output	red	Output 1 is ON but out of calibration range
3	100%	Output	yellow	TUP: Output 1 is manually controlled and forced ON TPS: Output 1 and Output 2 are manually controlled and at least one is ON

	Control	Status	Duration	Condition
PS-STAT	FSD=E	PSTA	PSTD	When shutdown is initiated
	FOV=E	PSTA	PSTD	When the output(s) is/are out of calibration range

FSD and FOV can be both enabled at the same time
PSTA set to HIGH = PS-STAT floating
PSTA set to LOW = PS-STAT set to GND
If PSTD is disabled, the PS-STAT remains inactive until the output(s) are turned back on, and are in range if the FOV flag is set