

This application note describes the supported PMBus™ Digital Communications supported command list for the **D1U54P-W-2000-12-HxxC-xx** series power supplies.

PMBus™ implementaion General Notes

- Complies with PMBus™ Power Systems Management Protocol Part 1 – General Requirements Rev 1.2 and Power System Mgt Protocol Specification – Part II , Revision 1.2. Refer to these documents for additional details.
- PEC is enabled; Ensure system/host PEC enabled to avoid registering CML errors when issuing write commands.
- [Linear data formatting](#) is used for all passed parameters.
- Block reads (where the loose byte received denotes the remaining byte to be clocked out) are not supported on this product series.
- A minimum of 300µs delay between transactions (between the STOP of one command and the START of the next command) is
- 400KHz I²C communications is supported for the PMBus™ interface.
- The PMBus™ slave controller does “clock stretch” on ACK or NAK.
- “Page” is supported, generally, page “0” contains main output parameters and page “1” contains the standby output parameters.

Device Details

Power Supply Controllers

Vendor	MFG Part Number	Package	Description
Microchip Technology Inc.	DSPIC33FJ64GS606T-50I/PT	TQFP64	(Secondary) IC Dig SMT Microcontroller PIC33 TQFP64 64k 9kB 50MHz
Microchip Technology Inc.	DSPIC33FJ16GS504T-50I/PT	TQFP44	(Primary) IC Dig SMT Controller PWM Industrial PIC33 TQFP44 40MHz

Power Supply External EEPROM

Vendor	MFG Part Number	Package	Description
Microchip Technology Inc.	24AA024T-I/MS	MSOP8	IC Dig SMT EEPROM CMOS Serial I2C AT24CXx MSOP8 2kB

Device Addressing Methods

There are two methods whereby the three lower order address bits of the seven bit address structure of the internal addressable devices can be assigned (for the secondary microcontroller and the EEPROM device A0, A1 & A2; see the PMBus™ standard). These are as follows:

- Using the ADDR signal pin of the power supply in digital mode by either:
 - Un-terminating (leaving open circuit); this will set a default setting of “111” for the last three addressable bits (A0, A1 & A2) of the seven bit address byte, resulting in PSU/EEPROM addresses of BEh & AEh respectively.
 - Terminating the pin to RTN/ground (Pin numbers A2/B2); this method will set a default address of “000” for the last three addressable bits (A0, A1 & A2) of the address byte, resulting in PSU/EEPROM addresses of B0h & A0h respectively.
- Using the ADDR signal pin in analogue mode by connection of an external resistance to RTN/ground (pin numbers A2/B2).

For the possible external resistance values this will result in the address combinations listed:

HEX Address Combinations by Analogue Method; ADDR External Resistance Values		
ADDR External Resistance to RTN/Ground (KΩ; ±5% Tolerance)	Power Module Secondary Main Controller (Serial Slave Address)*	Power Module EEPROM (Serial Slave Address)*
0.82	0xB0	0xA0
2.7	0xB2	0xA2
5.6	0xB4	0xA4
8.2	0xB6	0xA6
15	0xB8	0xA8
27	0xBA	0xAA
56	0xBC	0xAC
180	0xBE	0xAE

*The D1U54x-x-2000-12-HxxC-xxx uses 7-bit left shifted” device addressing; the EEPROM addressing follows a similar convention (commences at base address 0xA0); the lowest order bit of the address is the Read/Write bit. It is assumed that the Read Write bit is set to logic “0” (for addresses shown in the table above).

PMBus™ Command List

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
00	PAGE	R/W	All		1			Command to provide ability to configure, control & monitor multiple outputs and other parameters such as thermal sensors	YES
01	OPERATION	R/W	All	Bit Flags	1	5:0		Set output margin high/low voltages	NO
						7:6		Turn the unit on/off in conjunction with digital input from PSON_H	YES
02	ON_OFF_CONFIG	Send	All	Bit Flags	1	0	ON_OFF_DELAY	Set when Turn off immediately (default) / 0 = Use delay @ turn-off	YES
						1	ON_OFF_POLARITY	Set when Power on processing is active high (default)	YES
						2	USE_CONTROL	Set when Use CONTROL pin for on/off power processing (default)	YES
						3	USE_OPERATION	Set when Use OPERATION command for on/off power processing (default)	YES
						4	USE_CNTL_AND_OP	Set when Use both CONTROL pin & OPERATION command (default)	YES
						5	RESERVED		NO
						6	RESERVED		NO
						7	RESERVED		NO
03	CLEAR_FAULTS	W	All		0			Write only command clears all faults that have been set in all the STATUS_XXXX registers simultaneously	YES
04	PHASE	R/W	All		1			Command to provide the ability to configure, control, and monitor multiple phases on one PMBus unit.	NO
05	PAGE_PLUS_WRITE	Block Write	All		Variable			Command used to set the page within a device, send a command, and send the data for the command in one packet	YES
06	PAGE_PLUS_READ	Block Write / Block Read Process Call	All		Variable			Command used to set the page within a device, send a command, and read the data returned by the command in one packet	YES
10	WRITE_PROTECT	R/W	All		1			Command to provide ability to configure, control & monitor multiple outputs; Write 0h to allow write to all supported commands	YES
11	STORE_DEFAULT_ALL	Send	All		0			Command instructs PMBus device to copy contents of Operating Memory to matching NVM	NO
12	RESTORE_DEFAULT_ALL	Send	All		0			Command instructs PMBus device to copy contents of NVM to matching Operating Memory	NO
13	STORE_DEFAULT_CODE	W	All		1			Command instructs the PMBus device to copy the parameter whose Command Code matches value in the data byte, from Operating Memory to matching NVM	NO
14	RESTORE_DEFAULT_CODE	W	All		1			Command instructs the PMBus device to copy the parameter whose Command Code matches value in the data byte, from NVM to matching Operating Memory	NO
15	STORE_USER_ALL	Send	All		0			Command instructs the PMBus device to copy the entire contents of Operating Memory to matching NVM	NO
16	RESTORE_USER_ALL	Send	All		0			Command instructs the PMBus device to copy the entire contents of NVM to matching Operating Memory	NO
17	STORE_USER_CODE	W	All		1			Command instructs the PMBus device to copy the parameter whose Command Code matches value in the data byte from Operating Memory to matching NVM User Store memory	NO
18	RESTORE_USER_CODE	W	All		1			Command instructs the PMBus device to copy the parameter whose Command Code matches value in the data byte from NVM to matching Operating Memory Store memory	NO
19	CAPABILITY	R	All	Bit Flags	1	0:3	RESERVED		NO
						4	SMBALERT_L	Set when device has SMBALERT_L pin which supports the SMBus Alert Response protocol	YES
						6:5	MAX_BUS_SPEED	01 = Max supported bus speed = 400kHz; 00 Max supported bus speed = 100kHz	NO
						7	PEC	Set when packet error checking is supported	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
1A	QUERY	Block Write / Block Read Process Call	All	Bit Flags	1	1:0	RESERVED		NO
						4:2	DATA FORMAT	PMBus 1.2 Spec Section 11.13 Table 8.	YES
						5	READ_SUPPORT	1 = Supported ; 0 = Not Supported	YES
						6	WRITE_SUPPORT	1 = Supported ; 0 = Not Supported	YES
						7	COMMAND_SUPPORT	1 = Supported ; 0 = Not Supported	YES
1B	SMBALERT_MASK	Block Write / Block Read Process Call	All		2			Command may be used to prevent a warning or fault condition from asserting the SMBALERT# signal	YES
20	VOUT_MODE	R	0	Bit Flags	1			Single data byte sets the READ_VOUT sensor to linear mode data format and supplies N exponent for translation to volts PMBus Spec - Part II - Revision 1.2 - Sections 8.1-8.3	YES
20	VSTBY_MODE	R	1	Bit Flags	1			Single data byte sets the READ_VSTBY sensor to linear mode data format and supplies N exponent for translation to volts PMBus Spec - Part II - Revision 1.2 - Sections 8.1-8.3	YES
21	VOUT_COMMAND	R/W	0	Linear Data Format	2			Manual override main output setpoint command - Voltage range setting 11.5V - 12.75V Command speed formatted in Linear as per command 0x8B - VOUT_COMMAND	YES
21	VSTBY_COMMAND	R/W	1	Linear Data Format	2			Manual override standby output setpoint command - Voltage range setting x. Command speed formatted in Linear as per command 0x8B - VOUT_COMMAND	NO
22	VOUT_TRIM	R/W	0	Linear Data Format	2			Command used to apply a fixed offset voltage to the output voltage command value	NO
23	VSTBY_TRIM	R/W	1	Linear Data Format	2			Command used to apply a fixed offset voltage to the output voltage command value	NO
23	VOUT_CAL_OFFSET	R/W	0	Linear Data Format	2			Command used to apply a fixed offset voltage to the output voltage command value	NO
23	VSTBY_CAL_OFFSET	R/W	1	Linear Data Format	2			Command used to apply a fixed offset voltage to the output voltage command value	NO
24	VOUT_MAX	R/W	0	Linear Data Format	2			Command sets upper limit output voltage can be set regardless of other command/combination	NO
24	VSTBY_MAX	R/W	1	Linear Data Format	2			Command sets upper limit output voltage can be set regardless of other command/combination	NO
25	VOUT_MARGIN_HIGH	R/W	0	Linear Data Format	2			Load the unit with the voltage to which the output is to be changed when the OPERATION command set to "Margin High"	NO
25	VSTBY_MARGIN_LOW	R/W	1	Linear Data Format	2			Load the unit with the voltage to which the output is to be changed when the OPERATION command set to "Margin High"	NO
26	VOUT_MARGIN_HIGH	R/W	0	Linear Data Format	2			Load the unit with the voltage to which the output is to be changed when the OPERATION command set to "Margin Low"	NO
26	VSTBY_MARGIN_LOW	R/W	1	Linear Data Format	2			Load the unit with the voltage to which the output is to be changed when the OPERATION command set to "Margin Low"	NO
27	VOUT_TRANSITION_RATE	R/W	0	Linear Data Format	2			Command sets the rate in mV/μs at which the output should change voltage	NO
27	VSTBY_TRANSITION_RATE	R/W	1	Linear Data Format	2			Command sets the rate in mV/μs at which the output should change voltage	NO

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
28	VOUT_DROOP	R/W	0	Linear Data Format	2			Command sets the rate (mV/A) which output voltage decreases (or increases) with increasing (or decreasing) output current (in Adaptive Voltage Positioning/passive current sharing)	NO
28	VSTBY_DROOP	R/W	1	Linear Data Format	2			Command sets the rate (mV/A) which output voltage decreases (or increases) with increasing (or decreasing) output current (in Adaptive Voltage Positioning/passive current sharing)	NO
29	VOUT_SCALE_LOOP	R/W	0	Linear Data Format	2			PMBus Spec - Part II - Revision 1.2 - Section 13.10	NO
29	VSTBY_SCALE_LOOP	R/W	1	Linear Data Format	2			PMBus Spec - Part II - Revision 1.2 - Section 13.10	NO
2A	VOUT_SCALE_MONITOR	R/W	0	Linear Data Format	2			PMBus Spec - Part II - Revision 1.2 - Section 13.11	NO
2A	VSTBY_SCALE_MONITOR	R/W	1	Linear Data Format	2			PMBus Spec - Part II - Revision 1.2 - Section 13.11	NO
30	COEFFICIENTS	Block Write / Block Read Process Call	All		5			Command used to retrieve the m, b and R coefficients needed by data in the DIRECT format	NO
31	POUT_MAX	R/W	All	Linear Data Format	2			Commands sets output power (watts) which unit starts regulating in constant power mode	NO
32	MAX_DUTY	R/W	All	Linear Data Format	2			Command sets maximum duty cycle (%) of the unit's power conversion stage	NO
33	FREQUENCY_SWITCH	R/W	All	Linear Data Format	2			Command sets switching frequency (kHz) of a PMBus device	NO
35	VIN_ON	R/W	All	Linear Data Format	2			Command sets value of input voltage (Vdc/Vrms) at which unit should start power conversion	NO
36	VIN_OFF	R/W	All	Linear Data Format	2			Command sets value of input voltage (Vdc/Vrms) at which unit should stop power conversion	NO
37	INTERLEAVE	R/W	All	Bit Flags	2			PMBus Spec - Part II - Revision 1.2 - Section 14.7	NO
38	IOUT_CAL_GAIN	R/W	All	Linear Data Format	2			Command used to set the ratio of the voltage at the current sense pins to the sensed current	NO
39	IOUT_CAL_OFFSET	R/W	All	Linear Data Format	2			Command used to null out any offsets in the output current sensing circuit	NO
3A	FAN_CONFIG_1_2	R	All	Bit Flags	1	0	FAN_2_TACH_PULSES	Fan 2 Tachometer pulses per revolution (lower bit)	NO
						1	FAN_2_TACH_PULSES	Fan 2 Tachometer pulses per revolution (upper bit)	NO
						2	FAN_2_SETTING_MODE	Set when fan is commanded in RPM (Clear when fan is commanded in Duty Cycle)	NO
						3	FAN_2_INSTALLATION	Set when fan is installed in position 2	NO
						4	FAN_1_TACH_PULSES	Fan 1 Tachometer pulses per revolution (lower bit)	YES
						5	FAN_1_TACH_PULSES	Fan 1 Tachometer pulses per revolution (upper bit)	YES
						6	FAN_1_SETTING_MODE	Set when fan is commanded in RPM (Clear when fan is commanded in Duty Cycle) This bit is clear for this product	YES
						7	FAN_1_INSTALLATION	Set when fan is installed in position 1	YES
3B	FAN_COMMAND_1	R/W	All	Linear Data Format	2		Link to Write details	Manual fan override command fan speed value in Duty Cycle Command speed formatted in Linear as per command 0x90 - READ_FAN_SPEED_1	YES
3C	FAN_COMMAND_2	R/W	All	Linear Data Format	2			Manual fan override command fan speed value in Duty Cycle Command speed formatted in Linear as per command 0x91 - READ_FAN_SPEED_2	NO

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
3D	FAN_CONFIG_3_4	R	All	Bit Flags	1	0	FAN_4_TACH_PULSES	Fan 4 Tachometer pulses per revolution (lower bit)	NO
						1	FAN_4_TACH_PULSES	Fan 4 Tachometer pulses per revolution (upper bit)	NO
						2	FAN_4_SETTING_MODE	Set when fan is commanded in RPM (Clear when fan is commanded in Duty Cycle)	NO
						3	FAN_4_INSTALLATION	Set when fan is installed in position 4	NO
						4	FAN_3_TACH_PULSES	Fan 3 Tachometer pulses per revolution (lower bit)	NO
						5	FAN_3_TACH_PULSES	Fan 3 Tachometer pulses per revolution (upper bit)	NO
						6	FAN_3_SETTING_MODE	Set when fan is commanded in RPM (Clear when fan is commanded in Duty Cycle)	NO
						7	FAN_3_INSTALLATION	Set when fan is installed in position 3	NO
3E	FAN_COMMAND_3	R/W	All	Linear Data Format	2			Manual fan override command fan speed value in Duty Cycle Command speed formatted in Linear as per command 0x92 - READ_FAN_SPEED_3	NO
3F	FAN_COMMAND_4	R/W	All	Linear Data Format	2			Manual fan override command fan speed value in Duty Cycle Command speed formatted in Linear as per command 0x93 - READ_FAN_SPEED_4	NO
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2		Link to Limits and Response by model: HB4C HC4C HA4C HB3C HC3C HA3C	Main Output Overvoltage Fault Limit	YES
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Overvoltage Fault Limit	YES
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1			Main Output Overvoltage Fault Response Actions	YES
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1			Standby(Auxiliary) Output Overvoltage Fault Response Actions	YES
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2			Main Output Overvoltage Warning Limit	YES
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Overvoltage Warning Limit	YES
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2			Main Output Undervoltage Warning Limit	YES
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Undervoltage Warning Limit	YES
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2			Main Output Undervoltage Fault Limit	YES
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Undervoltage Fault Limit	YES
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1			Main Output Undervoltage Fault Response Actions	YES
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1			Standby(Auxiliary) Output Undervoltage Fault Response Actions	YES
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	2			Main Output Overcurrent Fault Limit	YES
46	ISTBY_OC_FAULT_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Overcurrent Fault Limit	YES
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1			Main Output Overcurrent Fault Response Actions	YES
47	ISTBY_OC_FAULT_RESPONSE	R	1	Bit Flags	1			Standby(Auxiliary) Output Overcurrent Fault Response Actions	YES
48	IOUT_OC_LV_FAULT_LIMIT	R	0	Linear Data Format	2			Main Output Overcurrent Foldback Fault Limit	NO
48	ISTBY_OC_LV_FAULT_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Overcurrent Foldback Fault Limit	NO

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
49	IOUT_OC_LV_FAULT_RESPONSE	R	0	Bit Flags	1		Link to Limits and Response: HB4C HC4C HA4C HB3C HC3C HA3C	Main Output Overcurrent Foldback Fault Response Actions	NO
49	ISTBY_OC_LV_FAULT_RESPONSE	R	1	Bit Flags	1			Standby(Auxiliary) Output Overcurrent Foldback Fault Response Actions	NO
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2			Main Output Overcurrent Warning Limit	YES
4A	ISTBY_OC_WARN_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Overvoltage Warning Limit	YES
4B	IOUT_UC_FAULT_LIMIT	R	0	Linear Data Format	2			Main Output Undercurrent Fault Limit	NO
4B	ISTBY_UC_FAULT_LIMIT	R	1	Linear Data Format	2			Standby(Auxiliary) Output Undercurrent Fault Limit	NO
4C	IOUT_UC_FAULT_RESPONSE	R	0	Bit Flags	1			Main Output Undercurrent Fault Response Actions	NO
4C	ISTBY_UC_FAULT_RESPONSE	R	1	Bit Flags	1			Standby(Auxiliary) Output Undercurrent Fault Response Actions	NO
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2			Airflow 1 Overtemperature Fault Limit	YES
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	1	Linear Data Format	2			Hotspot 1 Overtemperature Fault Limit	YES
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	2	Linear Data Format	2			Airflow 2 Overtemperature Fault Limit	YES
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2			Hotspot 2 Overtemperature Fault Limit	YES
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1			Airflow 1 Overtemperature Fault Response Actions	YES
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1			Hotspot 1 Overtemperature Fault Response Actions	YES
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1			Airflow 2 Overtemperature Fault Response Actions	YES
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1			Hotspot 2 Overtemperature Fault Response Actions	YES
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2			Airflow 1 Overtemperature Warning Limit	YES
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2			Hotspot 1 Overtemperature Warning Limit	YES
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2			Airflow 2 Overtemperature Warning Limit	YES
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2			Hotspot 2 Overtemperature Warning Limit	YES
52	AIRFLOW_1_UT_FAULT_LIMIT	R	0	Linear Data Format	2			Airflow 1 Undertemperature Fault Limit	NO
52	HOTSPOT_1_UT_FAULT_LIMIT	R	1	Linear Data Format	2			Hotspot 1 Undertemperature Fault Limit	NO
52	AIRFLOW_2_UT_FAULT_LIMIT	R	2	Linear Data Format	2			Airflow 2 Undertemperature Fault Limit	NO
52	HOTSPOT_2_UT_FAULT_LIMIT	R	3	Linear Data Format	2			Hotspot 2 Undertemperature Fault Limit	NO

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
53	AIRFLOW_1_UT_FAULT_RESPONSE	R	0	Bit Flags	1		Link to Limits and Response: HB4C HC4C HA4C HB3C HC3C HA3C	Airflow 1 Undertemperature Fault Response Actions	NO
53	HOTSPOT_1_UT_FAULT_RESPONSE	R	1	Bit Flags	1			Hotspot 1 Undertemperature Fault Response Actions	NO
53	AIRFLOW_2_UT_FAULT_RESPONSE	R	2	Bit Flags	1			Airflow 2 Undertemperature Fault Response Actions	NO
53	HOTSPOT_2_UT_FAULT_RESPONSE	R	3	Bit Flags	1			Hotspot 2 Undertemperature Fault Response Actions	NO
55	VIN_OV_FAULT_LIMIT	R	All	Linear Data Format	2			Input Overvoltage Fault Limit	YES
56	VIN_OV_FAULT_RESPONSE	R	All	Bit Flags	1			Input Overvoltage Fault Response Actions	YES
57	VIN_OV_WARN_LIMIT	R	All	Linear Data Format	2			Input Overvoltage Warning Limit	YES
58	VIN_UV_WARN_LIMIT	R	All	Linear Data Format	2			Input Undervoltage Warning Limit	YES
59	VIN_UV_FAULT_LIMIT	R	All	Linear Data Format	2			Input Undervoltage Fault Limit	YES
5A	VIN_UV_FAULT_RESPONSE	R	All	Bit Flags	1			Input Undervoltage Fault Response Actions	YES
5B	IIN_OC_FAULT_LIMIT	R	All	Linear Data Format	2			Input Overcurrent Fault Limit	YES
5C	IIN_OC_FAULT_RESPONSE	R	All	Bit Flags	1			Input Overcurrent Fault Response Actions	YES
5D	IIN_OC_WARN_LIMIT	R	All	Linear Data Format	2			Input Overcurrent Warning Limit	YES
5E	POWER_GOOD_ON	R	All	Linear Data Format	2			Power Good On Main Output Voltage Limit	YES
5F	POWER_GOOD_OFF	R	All	Linear Data Format	2			Power Good Off Main Output Voltage Limit	YES
60	TON_DELAY	R	All	Linear Data Format	2			Sets the time (mSec) from when a start condition is received (as programmed by the ON_OFF_CONFIG command) until the output voltage starts to rise	NO
61	TON_RISE	R	All	Linear Data Format	2			Sets the time (mSec) from when the output starts to rise until the voltage has entered the regulation band.	NO
62	TON_MAX_FAULT_LIMIT	R	All	Linear Data Format	2			Command sets an upper limit (mSec) on how long the unit can attempt to power up the output without reaching the output undervoltage fault limit	NO
63	TON_MAX_FAULT_RESPONSE	R	All	Bit Flags	1			Command instructs the device on what action to take in response to a TON_MAX fault	NO
64	TOFF_DELAY	R	All	Linear Data Format	2			Sets the time (mSec) from a stop condition is received (as programmed by the ON_OFF_CONFIG command) until the unit stops transferring energy to the output	NO
65	TOFF_FALL	R	All	Linear Data Format	2			Sets the time (mSec) from the end of the turn-off delay time until the voltage is commanded to zero.	NO
66	TOFF_MAX_WARN_LIMIT	R	All	Linear Data Format	2			Command sets an upper limit(mSec), on how long unit can attempt to power down output without reaching 12.5% of the output voltage programmed at the time the unit is turned off	NO
68	POUT_OP_FAULT_LIMIT	R	All	Linear Data Format	2			Output Overpower Fault Limit	YES
69	POUT_OP_FAULT_RESPONSE	R	All	Bit Flags	1			Output Overpower Fault Response Actions	YES
6A	POUT_OP_WARN_LIMIT	R	All	Linear Data Format	2			Output Overpower Warning Limit	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
6B	PIN_OP_WARN_LIMIT	R	All	Linear Data Format	2		Link to Limits and Response: HB4C, HC4C, HA4C, HB3C, HC3C, HA3C	Input Overpower Warning Limit	YES
78	STATUS_BYTE	R/W	All	Bit Flags	1	0	NONE_F_W	Set when a fault not listed in [7:1] occurred	NO
						1	CML_F	Set when a communications, memory, or logic fault has occurred	YES
						2	TEMPERATURE_F_W	Set when an overtemperature fault or warning has occurred	YES
						3	INPUT_UV_F	Set when an input undervoltage fault has occurred	YES
						4	OUTPUT_OC_F	Set when an output overcurrent fault has occurred	YES
						5	OUTPUT_OV_F	Set when an output overvoltage fault has occurred	YES
						6	UNIT_OFF	Set when unit not providing power to the output	YES
79	STATUS_WORD	R	All	Bit Flags	2	7	BUSY_F	Asserted when device busy and unable to respond fault	YES
						0	NONE_F_W	Set when a fault not listed in [7:1] occurred	NO
						1	CML_F	Set when a communications, memory, or logic fault has occurred	YES
						2	TEMPERATURE_F_W	Set when an overtemperature fault or warning has occurred	YES
						3	INPUT_UV_F	Set when an input undervoltage fault has occurred	YES
						4	OUTPUT_OC_F	Set when an output overcurrent fault has occurred	YES
						5	OUTPUT_OV_F	Set when an output overvoltage fault has occurred	YES
						6	UNIT_OFF	Set when unit not providing power to the output	YES
						7	BUSY_F	Asserted when device busy and unable to respond fault	YES
						8	UNKNOWN_F_W	Set when a fault not listed in [15:1] has occurred	NO
						9	STATUS_OTHER_F_W	Set when a bit in command STATUS_OTHER set	NO
						10	FANS_F_W	Set when a fan fault or warning has occurred	YES
						11	POWER_GOOD_L	Set when the POWER_GOOD signal is negated	YES
						12	MFR_SPECIFIC_F_W	Manufacturer specific fault or warning has occurred	YES
						13	INPUT_F_W	Set when an Input voltage/current/power fault or warning has occurred	YES
7A	STATUS_VOUT	R/W	0	Bit Flags	1	14	IOUT_POUT_F_W	Set when an output current / output power fault or warning has occurred	YES
						15	VOUT_F_W	Set when an output voltage fault or warning has occurred	YES
						0	VOUT_TRACKING_E	Set when an error in the output voltage during power-up/down has occurred	NO
						1	TON_MAX_W	Set when the output turn-on timing has exceeded the TON_MAX warning timing	NO
						2	TON_MAX_F	Set when the output turn-on timing has exceeded the TON_MAX fault timing	NO
						3	VOUT_MAX_F	Set when the output is set higher than the commanded VOUT_MAX limit	NO
						4	VOUT_UV_F	Set when an output undervoltage fault has occurred	YES
						5	VOUT_UV_W	Set when an output undervoltage warning has occurred	YES
7A	STATUS_VSTBY	R/W	1	Bit Flags	1	6	VOUT_OV_W	Set when an output overvoltage warning has occurred	YES
						7	VOUT_OV_F	Set when an output overvoltage fault has occurred	YES
						0	VOUT_TRACKING_E	Set when an error in the output voltage during power-up/down has occurred	NO
						1	TON_MAX_W	Set when the output turn-on timing has exceeded the TON_MAX warning timing	NO
						2	TON_MAX_F	Set when the output turn-on timing has exceeded the TON_MAX fault timing	NO
						3	VOUT_MAX_F	Set when the output is set higher than the commanded VOUT_MAX limit	NO
						4	VOUT_UV_F	Set when an output undervoltage fault has occurred	NO
						5	VOUT_UV_W	Set when an output undervoltage warning has occurred	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
7B	STATUS_IOUT	R/W	0	Bit Flags	1	0	POUT_OP_W	Set when an output overpower warning has occurred	YES
						1	POUT_OP_F	Set when an output overpower fault has occurred	YES
						2	POWER_LIMIT_MODE	Set when the unit has entered output power limiting mode	NO
						3	CURRENT_SHARE_F	Set when an output current share fault has occurred	NO
						4	IOUT_UC_W	Set when an output undercurrent fault has occurred	NO
						5	IOUT_OC_W	Set when an output overcurrent warning has occurred	YES
						6	IOUT_OC_SHUTDOWN	Set when an output overcurrent and low voltage shutdown fault has occurred	YES
						7	IOUT_OC_F	Set when an output overcurrent fault has occurred	YES
7B	STATUS_ISTBY	R/W	1	Bit Flags	1	0	POUT_OP_W	Set when an output overpower warning has occurred	NO
						1	POUT_OP_F	Set when an output overpower fault has occurred	NO
						2	POWER_LIMIT_MODE	Set when the unit has entered output power limiting mode	NO
						3	CURRENT_SHARE_F	Set when an output current share fault has occurred	NO
						4	IOUT_UC_W	Set when an output undercurrent fault has occurred	NO
						5	IOUT_OC_W	Set when an output overcurrent warning has occurred	YES
						6	IOUT_OC_SHUTDOWN	Set when an output overcurrent and low voltage shutdown fault has occurred	YES
						7	IOUT_OC_F	Set when an output overcurrent fault has occurred	YES
7C	STATUS_INPUT	R/W	All	Bit Flags	1	0	PIN_OP_W	Set when an input overpower warning has occurred	YES
						1	IIN_OC_W	Set when an input overcurrent warning has occurred	YES
						2	IIN_OC_F	Set when an input overcurrent fault has occurred	YES
						3	VIN_UV_OFF	Set when the Unit is OFF for insufficient input voltage	YES
						4	VIN_UV_F	Set when an input undervoltage fault has occurred	NO
						5	VIN_UV_W	Set when an input undervoltage warning has occurred	YES
						6	VIN_OV_W	Set when an input overvoltage warning has occurred	YES
						7	VIN_OV_F	Set when an input overvoltage fault has occurred	YES
7D	STATUS_TEMPERATURE	R/W	All	Bit Flags	1	0	RESERVED	Reserved	NO
						1	RESERVED	Reserved	NO
						2	RESERVED	Reserved	NO
						3	RESERVED	Reserved	NO
						4	TEMPERATURE_UT_F	Set when an undertemperature fault has occurred	NO
						5	TEMPERATURE_UT_W	Set when an undertemperature warning has occurred	NO
						6	TEMPERATURE_OT_W	Set when an overtemperature warning has occurred	YES
						7	TEMPERATURE_OT_F	Set when an overtemperature fault has occurred	YES
7E	STATUS_CML	R/W	All	Bit Flags	1	0	OTHER_MEMORY_F	Set when another memory or logic fault has occurred	NO
						1	OTHER_COMM_F	Set when a communication fault not listed in [7:3] has occurred (example: UART or SPI)	YES
						2	RESERVED	Reserved	NO
						3	PROCESSOR_F	Set when a processor fault is detected	NO
						4	MEMORY_F	Set when a memory fault is detected (example: Checksum errors during bootloader)	NO
						5	PEC_ERROR_F	Set when a packet error checking (PEC) failed has occurred	YES
						6	DATA_ERROR_F	Set when invalid or unsupported data is received	YES
						7	COMMAND_ERROR_F	Set when an invalid or unsupported command is received	YES
7F	STATUS_OTHER	R/W	All	Bit Flags	1	0	RESERVED	Reserved	NO
						1	ORING_OUTPUT_F	Set when output ORing device fault occurs	NO
						2	ORING_INPUT_B_F	Set when input B ORing device fault occurs	NO
						3	ORING_INPUT_A_F	Set when input A ORing device fault occurs	NO
						4	FUSE_INPUT_B_F	Set when input B fuse/breaker fault occurs	NO
						5	FUSE_INPUT_A_F	Set when input A fuse/breaker fault occurs	NO
						6	RESERVED	Reserved	NO
						7	RESERVED	Reserved	NO

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
80	STATUS_MFR_SPECIFIC	R/W	All	Bit Flags	1	0	VINT_RANGE_F	Set when an internal voltage (VCC2, VCC4, or VDD) out-of-range fault has occurred	YES
						1	IIN_CH1_OC_F	Set when the primary boost switch current exceeds a specified number of power-limited cycles	NO
						2	IIN_CH2_OC_F	Set when the primary boost switch current exceeds a specified number of power-limited cycles	NO
						3	VINT_RANGE_F	Set when an internal voltage (VCC2, VCC4, or VDD) out-of-range fault has occurred	YES
						4	VBUS_UV_F	Set when the primary boost output bus undervoltage fault has occurred	YES
						5	VBUS_UV_W	Set when the primary boost output bus undervoltage warning has occurred	YES
						6	VBUS_OV_W	Set when the primary boost output bus overvoltage warning has occurred	YES
						7	VBUS_OV_F	Set when the primary boost output bus overvoltage fault has occurred	YES
81	STATUS_FANS_1_2	R/W	All	Bit Flags	1	0	FAN_AIRFLOW_W	Airflow warning	NO
						1	FAN_AIRFLOW_F	Airflow fault	NO
						2	FAN_2_OVERRIDE	Fan 2 speed overridden	NO
						3	FAN_1_OVERRIDE	Fan 1 speed overridden	YES
						4	FAN_2_W	Fan 2 warning	NO
						5	FAN_1_W	Fan 1 warning	YES
						6	FAN_2_F	Fan 2 fault	NO
						7	FAN_1_F	Fan 1 fault	YES
82	STATUS_FANS_3_4	R/W	All	Bit Flags	1	0	FAN_AIRFLOW_W	Airflow warning	NO
						1	FAN_AIRFLOW_F	Airflow fault	NO
						2	FAN_4_OVERRIDE	Fan 4 speed overridden	NO
						3	FAN_3_OVERRIDE	Fan 3 speed overridden	NO
						4	FAN_4_W	Fan 4 warning	NO
						5	FAN_3_W	Fan 3 warning	NO
						6	FAN_4_F	Fan 4 fault	NO
						7	FAN_3_F	Fan 3 fault	NO
86	READ_EIN	BLOCK READ	All	PMBus Spec 18.13	5			Input Energy Consumption Sensor	YES
87	READ_EOUT	BLOCK READ	All	PMBus Spec 18.13	5			Output Energy Consumption Sensor	YES
88	READ_VIN	R	All	Linear Data Format	2		Link to PMBus sensor tolerance: HB4C HC4C HA4C HB3C HC3C HA3C	Input Voltage Sensor Reading	YES
89	READ_IIN	R	All	Linear Data Format	2			Input Current Sensor Reading	YES
8A	READ_VCAP	R	All	Linear Data Format	2			PFC Output Voltage Sensor Reading	YES
8B	READ_VOUT	R	0	Linear Data Format	2			Main Output Voltage Sensor Reading	YES
8B	READ_VSTBY	R	1	Linear Data Format	2			Standby(Auxiliary) Output Voltage Sensor Reading	YES
8C	READ_IOUT	R	0	Linear Data Format	2			Main Output Current Sensor Reading	YES
8C	READ_ISTBY	R	1	Linear Data Format	2			Standby(Auxiliary) Output Current Sensor Reading	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
8D	READ_TEMPERATURE_1	R	All	Linear Data Format	2			Airflow 1 Temperature Sensor Reading	YES
8E	READ_TEMPERATURE_2	R	All	Linear Data Format	2			Airflow 2 Temperature Sensor Reading	YES
8F	READ_TEMPERATURE_3	R	0	Linear Data Format	2			Hotspot 1 Temperature Sensor Reading	YES
8F	READ_TEMPERATURE_3	R	1	Linear Data Format	2			Hotspot 2 Temperature Sensor Reading	YES
90	READ_FAN_SPEED_1	R	All	Linear Data Format	2			Fan 1 Speed Sensor Reading	YES
91	READ_FAN_SPEED_2	R	All	Linear Data Format	2			Fan 2 Speed Sensor Reading	NO
92	READ_FAN_SPEED_3	R	All	Linear Data Format	2			Fan 3 Speed Sensor Reading	NO
93	READ_FAN_SPEED_4	R	All	Linear Data Format	2			Fan 4 Speed Sensor Reading	NO
94	READ_DUTY_CYCLE	R	All	Linear Data Format	2			Command returns the duty of the PMBus device's main power converter in percent	NO
95	READ_FREQUENCY	R	All	Linear Data Format	2			Command returns the switching frequency of PMBus device's main power converter in KHz	NO
96	READ_POUT	R	All	Linear Data Format	2			Output Power Sensor Reading	YES
97	READ_PIN	R	All	Linear Data Format	2			Input Power Sensor Reading	YES
98	PMBUS_REVISION	R	All	HEX	1			PMBus Specification Revision	YES
99	MFR_ID	BLOCK READ	All	Ascii Text Block	10		Link to returned results	Power Supply Company Name	YES
9A	MFR_MODEL	BLOCK READ / BLOCK WRITE	All	Ascii Text Block	32 Max			Power Supply Model Number	YES
9B	MFR_REVISION	BLOCK READ	0	Ascii Text Block	17			Power Supply Firmware Revision	YES
9B	MFR_REVISION	BLOCK READ	1	Ascii Text Block	17			Power Supply Firmware Revision	YES
9B	MFR_REVISION	BLOCK READ	2	Ascii Text Block	17			Power Supply Firmware Revision	NO
9C	MFR_LOCATION	BLOCK READ / BLOCK WRITE	All	Ascii Text Block	16 Max			Power Supply Manufacture Location	YES
9D	MFR_DATE	BLOCK READ / BLOCK WRITE	All	Ascii Text Block	16 Max			Power Supply Manufacture Date	YES
9E	MFR_SERIAL	BLOCK READ / BLOCK WRITE	All	Ascii Text Block	16 Max			Power Supply Serial Number	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
9F	APP_PROFILE SUPPORT	BLOCK READ	All		3			Command provides a mean for a host to determine which PMBus Applications Profiles, and the revision of those profiles, that the device supports	YES
A0	MFR_VIN_MIN	R	All	Linear Data Format	2		Link to MFG's Parametric Data	Power Supply Input Voltage Minimum Specification	YES
A1	MFR_VIN_MAX	R	All	Linear Data Format	2			Power Supply Input Voltage Maximum Specification	YES
A2	MFR_IIN_MAX	R	All	Linear Data Format	2			Power Supply Input Current Maximum Specification	YES
A3	MFR_PIN_MAX	R	All	Linear Data Format	2			Power Supply Input Power Maximum Specification	YES
A4	MFR_VOUT_MIN	R	All	Linear Data Format	2			Power Supply Main Output Voltage Minimum Specification	YES
A5	MFR_VOUT_MAX	R	All	Linear Data Format	2			Power Supply Main Output Voltage Maximum Specification	YES
A6	MFR_IOUT_MAX	R	All	Linear Data Format	2			Power Supply Main Output Current Maximum Specification	YES
A7	MFR_POUT_MAX	R	All	Linear Data Format	2			Power Supply Output Power Maximum Specification	YES
A8	MFR_TAMBIENT_MAX	R	All	Linear Data Format	2			Power Supply Operating Ambient Temperature Maximum Specification	YES
A9	MFR_TAMBIENT_MIN	R	All	Linear Data Format	2			Power Supply Operating Ambient Temperature Minimum Specification	YES
AA	MFR_EFFICIENCY_LL	R	All	Linear Data Format	2			Power Supply Low-Line Input Voltage Specification	YES
				Linear Data Format	2			Power Supply Low-Line Low Power Specification	YES
				Linear Data Format	2			Power Supply Low-Line Low Power Efficiency Specification	YES
				Linear Data Format	2			Power Supply Low-Line Medium Power Specification	YES
				Linear Data Format	2			Power Supply Low-Line Medium Power Efficiency Specification	YES
				Linear Data Format	2			Power Supply Low-Line High Power Specification	YES
				Linear Data Format	2			Power Supply Low-Line High Power Efficiency Specification	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
AB	MFR_EFFICIENCY_HL	R	All	Linear Data Format	2			Power Supply High-Line Input Voltage Specification	YES
				Linear Data Format	2			Power Supply High-Line Low Power Specification	YES
				Linear Data Format	2			Power Supply High-Line Low Power Efficiency Specification	YES
				Linear Data Format	2			Power Supply High-Line Medium Power Specification	YES
				Linear Data Format	2			Power Supply High-Line Medium Power Efficiency Specification	YES
				Linear Data Format	2			Power Supply High-Line High Power Specification	YES
				Linear Data Format	2			Power Supply High-Line High Power Efficiency Specification	YES
AC	MFR_PIN_ACCURACY	R	All	Linear Data Format	2			Command returns the accuracy (%) of the value returned by the READ_PIN command	YES
AD	IC_DEVICE_ID	BLOCK READ	All	Ascii Text Block	32 Max			Command used to set or read the type or part number of IC embedded within a PMBus that is used for the PMBus interface	YES
AE	IC_DEVICE_REV	BLOCK READ	All	Ascii Text Block	32 Max			Command is used set or read the revision of the IC whose type or part number is set or read with the IC_DEVICE_ID command	NO
B0	USER_DATA_00	R/W	All	Ascii Text Block	24			Customer text data block 00	NO
B1	USER_DATA_01	R/W	All	Ascii Text Block	24			Customer text data block 01	NO
B2	USER_DATA_02	R/W	All	Ascii Text Block	24			Customer text data block 02	NO
B3	USER_DATA_03	R/W	All	Ascii Text Block	24			Customer text data block 03	NO
C0	MFR_MAX_TEMP_1	R	All	Linear Data Format	2			Maximum temperature (degC) associated with READ_TEMPERATURE_1 - Inlet	YES
C1	MFR_MAX_TEMP_2	R	All	Linear Data Format	2			Maximum temperature (degC) associated with READ_TEMPERATURE_2 - Outlet	YES
C2	MFR_MAX_TEMP_3	R	0	Linear Data Format	2			Maximum temperature (degC) associated with READ_TEMPERATURE_3 - Hotspot 1	YES
C2	MFR_MAX_TEMP_3	R	1	Linear Data Format	2			Maximum temperature (degC) associated with READ_TEMPERATURE_3 - Hotspot 2	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
E0	PS_STATUS	R	All	Bit Flags	2	0	CALIBRATION	Set when the unit is in Calibration mode	YES
						1	VSTBY_SELECT	Set when Vstby set to 5V; de-Set when Vstby set to 3.3V	NO
						2	PS_KILL	Set when the PS_KILL pin is defeated and the unit is properly seated in the chassis	YES
						3	VIN_OK	Set when the input voltage is within operating specification	YES
						4	VIN_RANGE	Set when input voltage range is high; de-Set when input voltage range is low	YES
						5	PFC_BUS	Set when the PFC BUS is within operating specification	YES
						6	PS_ON	Set when the PS_ON logic set to enable the main output	YES
						7	POWER_GOOD	Set when main output power delivered to unit is OK; mirrors the digital output signal	YES
						8	POWER_DOWN	Set when bootloader is taking control and the main output and PFC need to be shutdown	YES
						9	BOOTLOAD_COMPLETE_D	Set when the bootloader has completed and system reset needs to be Set	YES
						10	UNUSED		NO
						11	UNUSED		NO
						12	UNUSED		NO
						13	UNUSED		NO
						14	WARNING	Set when power supply warning has occurred; tracks 'WARNING' status LED	YES
						15	FAULT	Set when power supply fault has occurred; tracks 'FAULT' status LED	YES
E1	EEPROM_WP	R/W	All	Integer	1			Byte to enable (write 0x9A) or disable (write 0x56) writes to the external EEPROM	NO
E2	READ_HOURS_USED	BLOCK READ	All	Linear Data Format	3			Power Supply Accumulated Main Output Power-On Hours	YES
E3	UART_STATUS_FLAGS	R	All	Bit Flags	6	0	BYTE_0	Primary status flags - byte 0	YES
						1	BYTE_1	Primary status flags - byte 1	YES
						2	BYTE_2	Secondary status flags 1 - byte 0	YES
						3	BYTE_3	Secondary status flags 1 - byte 1	YES
						4	BYTE_4	Secondary status flags 2 - byte 0	YES
						5	BYTE_5	Secondary status flags 2 - byte 1	YES
EA	MFR_VIN_OK_CR_SELECT	R/W	All	HEX	2		Link to Cold Redundant Configuration: CMD_FC FC_Bytes	0x96,0x69 - Enable AC_OK / DC_OK functionality 0x69,0x96 - Enable 'COLD REDUNDANT' mode functionality	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
ED	PS_STATUS	R	All	Bit Flags	2	0	CALIBRATION	Set when the unit is in Calibration mode	YES
						1	VSTBY_SELECT	Set when Vstby set to 5V; de-Set when Vstby set to 3.3V	NO
						2	PS_KILL	Set when the PS_KILL pin is defeated and the unit is properly seated in the chassis	YES
						3	VIN_OK	Set when the input voltage is within operating specification	YES
						4	VIN_RANGE	Set when input voltage range is high; de-Set when input voltage range is low	YES
						5	PFC_BUS	Set when the PFC BUS is within operating specification	YES
						6	PS_ON	Set when the PS_ON logic set to enable the main output	YES
						7	POWER_GOOD	Set when main output power delivered to unit is OK; mirrors the digital output signal	YES
						8	POWER_DOWN	Set when bootloader is taking control and the main output and PFC need to be shutdown	NO
						9	BOOTLOAD_COMPLETE_D	Set when the bootloader has completed and system reset needs to be Set	NO
						10	BOOTLOAD_MODE	Set when during bootload mode	NO
						11	FAN_DIRECTION	Set when airflow front-to back; clear when airflow back-to-front	YES
						12	UNUSED		NO
						13	DEFAULT	Set when default calibration data used at power-up	YES
						14	WARNING	Set when power supply warning has occurred; tracks 'WARNING' status LED	YES
						15	FAULT	Set when power supply fault has occurred; tracks 'FAULT' status LED	YES
EE	PMBUS_CONFIG Link to Configuration bits	R/W	All	Bit Flags	2	0	DATA_FORMAT	0 = Linear data format 1 = Direct data format	NO
						1	SMBALERT_L	0 = SMBALERT_L implemented & supported 1 = SMBALERT not implemented	YES
						2	MAX_BUS_SPEED	0 = 100kHz 1 = 400kHz	NO
						3	PEC	0 = PEC not supported 1 = PEC supported	YES
						4:7	RESERVED		NO
EF	LED_CONTROL Link to LED configuration	R	All	Bit Flags	1	8:15	CMD_KEY	Command activation/verification key = 0x5A	YES
						0:2	LED_MODE	LED mode change bits	YES
						3:6	RESERVED		NO
F0	READ_RESETS	R	All	Bit Flags	2			RCON register status flags for troubleshooting	YES
				Bit Flags	2			RCON2 register status flags for troubleshooting	
F8	BOOTLOAD_RESTART	R/W	All	HEX	1			Bootloader completion and application restart request command	YES
FA	BOOTLOAD_REQUEST	R/W	All	Ascii Text Block	6			Bootloader request command	YES

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Bit #	Bit Name	Definition	Supported?
FB	BOOTLOAD_STATUS	R	All	Bit Flags	2	0	BOOTLOADING_PRI	Set when primary uC bootloading in process	YES
						1	BOOTLOADING_FLOAT	Set when floating uC bootloading in process	YES
						2	BOOTLOADING_SEC	Set when secondary uC bootloading in process	YES
						3	BOOTLOADED_PRI	Set when primary uC bootloading completed; reset required	YES
						4	BOOTLOADED_FLOAT	Set when floating uC bootloading completed; reset required	YES
						5	BOOTLOADED_SEC	Set when secondary uC bootloading completed; reset required	YES
						6	RESET_PRI	Set when primary uC reset	YES
						7	RESET_FLOAT	Set when floating uC reset	YES
						8	RESET_SEC	Set when secondary uC reset	YES
						9	RESERVED		NO
						10	RESERVED		NO
						11	RESERVED		NO
						12	RESERVED		NO
						13	RESERVED		NO
						14	RESERVED		NO
						15	RESERVED		NO
FC	RAPID_ON	R/W	All	Integer	1		Link To config bytes	RAPID_ON / Cold Redundancy Mode Command	YES

RETURNED RESULTS: OPERATION SETTINGS

Link back to: [Commands list, CMD_01](#)

Bit # / Bit Description								Valid Values		Power Supply On/Off Mode
7	6	5	4	3	2	1	0	Dec	Hex	
On/off 1	On/off 0	Margin on/off/high/low 1	Margin on/off/high/low 0	Margin fault control 1	Margin fault control 0	not used	not used			
0	0	x	x	x	x	x	x	0 - 63	0 - 3F	Disable power supply when OPERATION command supported
1	0	x	x	x	x	x	x	128 - 191	80 - BF	Enable power supply when OPERATION command supported - DEFAULT

RETURNED RESULTS: ON_OFF CONFIG

Link back to: [Commands list, CMD_02](#)

Bit # / Bit Description								Valid Values		Power Supply On/Off Mode
7	6	5	4	3	2	1	0	Dec	Hex	
reserved	reserved	reserved	CONTROL pin / OPERATION command PS on/off	OPERATION command on/off	CONTROL pin on/off	CONTROL pin polarity	CONTROL pin action			
0	0	0	1	0	1	0	1	21	15	Control pin only ; active low polarity
0	0	0	1	0	1	1	1	23	17	Control pin only ; active high polarity
0	0	0	1	1	0	x	1	25 or 27	19 or 1B	Operation command only
0	0	0	1	1	1	0	1	29	1D	Operation command and control pin ; active low polarity - DEFAULT
0	0	0	1	1	1	1	1	31	1F	Operation command and control pin ; active high polarity

Parameter Limits and Response results:

The following tables list the PMBus limits for the operating parameter registers and associated fault / warning response.

HB4C (12V STBY, B-F airflow):

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-6					14	
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-6					13.5	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-6					11.3	

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-6					11.1	
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Secondary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Primary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Secondary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Primary Airflow - Outlet
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

Parameter Limits and Response

HC4C models (3.3V STBY, B-F airflow)

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-8					3.96	
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-8					3.64	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-8					2.96	
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-8					2.76	

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Secondary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Primary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Secondary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Primary Airflow - Outlet
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

Parameter Limits and Response

HA4C model (5V STBY, B-F airflow):

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-7					6	
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-7					5.5	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-7					4.5	
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-7					4.2	
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Secondary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Primary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Secondary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Primary Airflow - Outlet

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

Parameter Limits and Response

HB3C model (12V STBY, F-B airflow):

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-6					14	
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-6					13.5	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-6					11.3	
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-6					11.1	
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Primary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Secondary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Primary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Secondary Airflow - Outlet
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

Parameter Limits and Response
HC3C (3.3V STBY, F-B airflow) model:

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-8					3.96	
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-8					3.64	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-8					2.96	
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-8					2.76	
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Primary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Secondary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Primary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Secondary Airflow - Outlet
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

Parameter Limits and Response

HA3C (5.0V STBY, F-B airflow) model:

Link back to: [Commands List](#)

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					14	
40	VSTBY_OV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-7					6	

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
41	VOUT_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
41	VSTBY_OV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
42	VOUT_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					13.1	
42	VSTBY_OV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-7					5.5	
43	VOUT_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					11.4	
43	VSTBY_UV_WARN_LIMIT	R	1	Linear Data Format	2	Vdc	-7					4.5	
44	VOUT_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vdc	-6					10.9	
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear Data Format	2	Vdc	-7					4.2	
45	VOUT_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
45	VSTBY_UV_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
46	IOUT_OC_FAULT_LIMIT	R	0	Linear Data Format	0	Adc	-2					192	High Range (205A Override)
46	IOUT_OC_FAULT_LIMIT	R	2	Linear Data Format	2	Adc	-2					128.5	Low Range (143.5A Override)
46	ISTBY_OC_FAULT_LIMIT	R	3	Linear Data Format	3	Adc	-8					3.6	
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Continuous restart (self-recovery)
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	7	Response - Continuous restart (self-recovery)
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2	Adc	-2					186	High Range
4A	IOUT_OC_WARN_LIMIT	R	2	Linear Data Format	2	Adc	-2					126	Low Range
4A	ISTBY_OC_WARN_LIMIT	R	3	Linear Data Format	2	Adc	-8					3.4	
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear Data Format	2	°C	0					80	Primary Airflow - Inlet
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	1	Linear Data Format	2	°C	0					105	Secondary Airflow - Outlet
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	2	Linear Data Format	2	°C	0					121	Secondary Hotspot - Main output hotspot

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear Data Format	2	°C	0					104	Primary Hotspot - PFC
50	AIRFLOW_1_OT_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_1_OT_FAULT_RESPONSE	R	1	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	AIRFLOW_2_OT_FAULT_RESPONSE	R	2	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
50	HOTSPOT_2_OT_FAULT_RESPONSE	R	3	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
51	AIRFLOW_1_OT_WARN_LIMIT	R	0	Linear Data Format	2	°C	0					75	Primary Airflow - Inlet
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					95	Secondary Airflow - Outlet
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					120	Secondary Hotspot - Main output hotspot
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					100	Primary Hotspot - PFC
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					285	Recoverable (AC Input)
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					325	Recoverable (HVDC Input)
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	Recoverable (AC Input)
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					320	Recoverable (HVDC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					77	Recoverable (AC Input)
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					185	Recoverable (HVDC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					72	Recoverable (AC Input)
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					183	Recoverable (HVDC Input)
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					20.1	AC Input
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2	Arms	-5					14.1	HVDC Input

Command Code (Hex)	Command Name	Read / Write	Page	Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					19.8	AC Input
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2	Arms	-5					13.6	HVDC Input
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					10.9	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-6					10.9	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	2					2300	High Range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	2					1540	Low Range
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1						2:0	0	Delay Time - None
											5:3	0	Retry Setting - Unit does not attempt to restart & output remains disabled until fault clear
											7:6	3	Response - Output disabled while fault is present & remains disabled until fault cleared
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	2					2230	High Range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1520	Low Range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Vdc	-6					2630	High Range - POUT_OP_WARN_LIMIT / 0.85
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	2					1780	Low Range - POUT_OP_WARN_LIMIT / 0.85

The following tables contain the PMBus Reading Sensor Tolerance and Resolution

SENSOR DATA AND RESOLUTION FOR MODEL HB4C (12V STBY, B-F airflow):

Link back to: [Commands list CMD_88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients "N"	Raw Sensor		PMBus Reporting Sensor		
							Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-6	14.73	0.0144	15.984	0.01563	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

SENSOR DATA AND RESOLUTION FOR MODEL HC4C (3.3V STBY, B-F airflow):

Link back to: [Commands list CMD 88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients	Raw Sensor		PMBus Reporting Sensor		
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-8	6.6	0.0065	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

SENSOR DATA AND RESOLUTION FOR MODEL HA4C (5V STBY, B-F airflow):

Link back to: [Commands list CMD 88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients	Raw Sensor		PMBus Reporting Sensor		
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-7	6.6	0.0065	7.992	0.00781	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

SENSOR DATA AND RESOLUTION FOR MODEL HB3C (12V STBY, F-B airflow)

Link back to: [Commands list CMD 88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients	Raw Sensor		PMBus Reporting Sensor		
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-6	14.73	0.0144	15.984	0.01563	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

SENSOR DATA AND RESOLUTION FOR MODEL HC3C (3.3V STBY, F-B airflow):

Link back to: [Commands list CMD 88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients	Raw Sensor		PMBus Reporting Sensor		
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-8	6.6	0.0065	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

SENSOR DATA AND RESOLUTION FOR MODEL HA3C (5V STBY, F-B airflow):

Link back to: [Commands list CMD 88](#)

Command Code (Hex)	Command Name	Description	Page	Format	Units	Scaling Coefficients	Raw Sensor		PMBus Reporting Sensor		
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading (AC Input)	All	Linear Data Format	Vrms	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
88	READ_VIN	Input Voltage Sensor Reading (HVDC Input)	All	Linear Data Format	Vdc	-1	327.93	0.3206	511.5	0.5	+ / - 2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (AC Input)	All	Linear Data Format	Arms	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading (HVDC Input)	All	Linear Data Format	Adc	-5	18.28	0.0179	31.97	0.0313	+ / - 5% of Reporting Full-Scale
8A	READ_VCAP	PFC Output Voltage Sensor Reading	All	Linear Data Format	Vdc	-1	463	0.4526	511.50	0.5000	+ / - 2% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear Data Format	Vdc	-6	20.2	0.0197	15.98	0.0156	+ / - 2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear Data Format	Vdc	-7	6.6	0.0065	7.992	0.00781	+ / - 2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear Data Format	Adc	-2	217.65	0.2128	255.75	0.250	+ / - 2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear Data Format	Adc	-8	6.3	0.0062	3.996	0.00391	+ / - 2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Primary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Secondary Side)	All	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - Main Output Hotspot (Secondary Side)	0	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear Data Format	°C	0	-40 to 150		-40 to 150	1	+ / - 5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear Data Format	RPM	5	24, 000		32736	32	+ / - 5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear Data Format	Watts	2			4092	4	+ / - 5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear Data Format	Hours	0	~1,900 (Years)		~1,900 (Years)	1	+ / - 3%

MANUFACTURER'S GENERAL PARAMETRIC DATA, ALL MODELS

Link back to: [Commands list](#)

Command	Command Name	Value	Units	N	Value (dec)
A0	MFR_VIN_MIN	90	V	-1	180
A1	MFR_VIN_MAX	264	V	-1	528
A2	MFR_IIN_MAX	20	A	-5	640
A3	MFR_PIN_MAX	2400	W	2	600
A4	MFR_VOUT_MIN	11.7	V	-6	749
A5	MFR_VOUT_MAX	12.3	V	-6	787
A6	MFR_IOUT_MAX	166.7	A	-2	667
A4	MFR_VSTBY_MIN	3.14	V	-8	804
A5	MFR_VSTBY_MAX	3.46	V	-8	886
A6	MFR_ISTBY_MAX	3	A	-8	768
A4	MFR_VSTBY_MIN	4.76	V	-7	609
A5	MFR_VSTBY_MAX	5.24	V	-7	671
A6	MFR_ISTBY_MAX	3	A	-8	768
A4	MFR_VSTBY_MIN	11.42	V	-6	731
A5	MFR_VSTBY_MAX	12.58	V	-6	805
A6	MFR_ISTBY_MAX	3	A	-8	768
A7	MFR_POUT_MAX	2000	W	2	500
A8	MFR_TAMBIENT_MAX	55	C	0	55
A9	MFR_TAMBIENT_MIN	0	C	0	0
AA	MFR_EFFICIENCY_LL_LENGTH	14			
	MFR_EFFICIENCY_LL_VIN	110	V	-1	220
	MFR_EFFICIENCY_LL_POUT1	280	W	2	70
	MFR_EFFICIENCY_LL_EFF1	0.88		-10	901
	MFR_EFFICIENCY_LL_POUT2	700	W	2	175
	MFR_EFFICIENCY_LL_EFF2	0.92		-10	942
	MFR_EFFICIENCY_LL_POUT3	1400	W	2	350
AB	MFR_EFFICIENCY_LL_EFF3	0.89		-10	911
	MFR_EFFICIENCY_HL_LENGTH	14			
	MFR_EFFICIENCY_HL_VIN	230	V	-1	460
	MFR_EFFICIENCY_HL_POUT1	400	W	2	100
	MFR_EFFICIENCY_HL_EFF1	0.9		-10	922
	MFR_EFFICIENCY_HL_POUT2	1000	W	2	250
	MFR_EFFICIENCY_HL_EFF2	0.94		-10	963
	MFR_EFFICIENCY_HL_POUT3	2000	W	2	500
	MFR_EFFICIENCY_HL_EFF3	0.91		-10	932

RETURNED RESULTS : PMBUS Configuration

Command Code EEh

[Link back to: Command List EEh](#)

Bit # / Bit Description																Read / Write	PMBus Configuration
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
CMD Key Bit 7	CMD Key Bit 6	CMD Key Bit 5	CMD Key Bit 4	CMD Key Bit 3	CMD Key Bit 2	CMD Key Bit 1	CMD Key Bit 0	reserved	reserved	reserved	reserved	PEC	Bus Speed	SMBALERT	Data Format		
0	1	0	1	1	0	1	0	X	X	X	X	0	0	0	0	Read	1.No PEC Support 2.100kHz 3. SMBALERT supported 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	0	0	1	Read	1.No PEC Support 2.100kHz 3. SMBALERT supported 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	0	1	0	Read	1.No PEC Support 2.100kHz 3. No SMBALERT support 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	0	1	1	Read	1.No PEC Support 2.100kHz 3. No SMBALERT support 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	1	0	0	Read	1.No PEC Support 2.400kHz 3. SMBALERT supported 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	1	0	1	Read	1.No PEC Support 2.400kHz 3. SMBALERT supported 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	1	1	0	Read	1.No PEC Support 2.400kHz 3. No SMBALERT support 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	0	1	1	1	Read	1.No PEC Support 2.400kHz 3. No SMBALERT support 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	0	0	0	Read	1.PEC supported 2.100kHz 3. SMBALERT supported 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	0	0	1	Read	1.PEC supported 2.100kHz 3. SMBALERT supported 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	0	1	0	Read	1.PEC supported 2.100kHz 3. No SMBALERT support 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	0	1	1	Read	1.PEC supported 2.100kHz 3. No SMBALERT support 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	1	0	0	Read	1.PEC supported 2.400kHz 3. SMBALERT supported 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	1	1	0	Read	1.PEC supported 2.400kHz 3. SMBALERT supported 4. Direct Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	1	1	0	Read	1.PEC supported 2.400kHz 3. No SMBALERT support 4. Linear Data format
0	1	0	1	1	0	1	0	X	X	X	X	1	1	1	1	Read	1.PEC supported 2.400kHz 3. No SMBALERT support 4. Direct Data format

= Default

PMBus CONFIGURATION BITS

Parameter	Bit#	Bit	Function	
Data Format	Bit 0	1	Direct Data Format	
		0	Linear Data Format	Default
SMBALERT	Bit 1	1	PS does not have SMBALERT pin or does not support SMBus alert protocol	
		0	PS does have SMBALERT pin and supports SMBus alert protocol	Default
Bus Speed	Bit 2	1	Maximum supported bus speed = 400kHz	Default
		0	Maximum supported bus speed = 100kHz	
PEC support	Bit 3	1	Packed error checking supported	Default
		0	Packed error checking not supported	

RETURNED RESULTS : LED CONTROL

Command Code EFh

[Link back to: Commands list CMD EF](#)

Bit # / Bit Description								Valid Values		Read / Write	LED Status & Control
7	6	5	4	3	2	1	0	Dec	Hex		
CONTROL Bit	reserved	reserved	reserved	reserved	LED Mode Bit 2	LED Mode Bit 1	LED Mode Bit 0				
0	0	0	0	0	0	0	0	0	0	Read	Auto - LED off
0	0	0	0	0	0	0	1	1	1	Read	Auto - LED solid green
0	0	0	0	0	0	1	0	2	2	Read	Auto - LED blinking green

Cold Redundancy (“CR”) Configuration Bytes:

Note - first requires Pin configuration [CMD_EA](#) to change signal function from INPUT_OK to RAPID_ON.

(Refer to application note “ACAN-80” should additional detail be required)

2 modes of “CR” operation:

1) Automatic Mode CR (INTEL CRPS):

0x0h = conventional redundancy

0x1h = Master & Active PSU

0x2h = Cold_redundant_Level_1

0x3h = Cold_redundant_Level_2

0x4h = Cold_redundant_Level_3

2) Manual

Roll Names:

CONVENTIONAL REDUNDANCY: (BYTE 0X0h) = DEFAULT SETTING

COLD_REDUNDANCY_FORCED_ACTIVE: (byte 0x55h) At least one (1) PSU must be assigned this roll, aka “Always On” (subsequent PSUs assigned this same roll will be known as “ACTIVE & SLAVE” and the first PSU Assigned the roll of “55” provides the bus pull-up)

COLD_REDUNDANCY_FORCED_STANDBY_X: (byte 0xEh) System makes the PSU output on/off decision and write either “55h” or “Eh” as system requires. Up to 8 PSUs can be controlled in this mode.

NOTE: If the MASTER & ACTIVE PSU to a is written to mode “0x0” by host/system, the CR bus will be forced low and all connected PSUs will end CR mode and immediately share conventionally, while COLD_STANDBY_x assigned PSUs simply enter conventional current share and do not pull down the CR bus.

[Link back to Command 0xFC](#)

EEPROM DATA: Example, based on D1U54P-W-2000-12-HB3C. Actual vary with model

[Link back to: Command_E1](#)

Product Info Area Field Name	Product Info Area Field Contents	Static or Dynamic Register? (S/D)	Description	Label Markings	Label Part Number
Manufacturer name	Murata-PS	S	Manufacturer name	MPS Logo	D97905819651
Model name	M1965	S	Product / project number (Mxxxx)	n/a	n/a
Part/product number	D1U54P-W-2000-12-HB3C	D	Marketing / customer p/n (D1U54P...)	D1U54P-W-2000-12-HB3C	D97905819651
Version		N/A	Not used	n/a	n/a
Serial number	SSYYWWRxxxx	D	MPS 12-digit serial number	SSYYWWRxxxx	D97905819651
Asset tag		N/A	Not used	n/a	n/a
FRU File ID		N/A	Not used	n/a	n/a
Custom field 1		N/A	Not used	n/a	n/a
Custom field 2		N/A	Not used	n/a	n/a
Custom field 3		N/A	Not used	n/a	n/a
Custom field 4		N/A	Not used	n/a	n/a
Fill unused space with 0x00					
Reference:	IPMI Platform Management FRU Information Storage Definition v1.0				
	http://www.intel.com/content/www/us/en/servers/ipmi/information-storage-definition.html				

An Example of the returned Manufacturing Data, PMBus™ register contents D1U54P-W-2000-12-HB34:

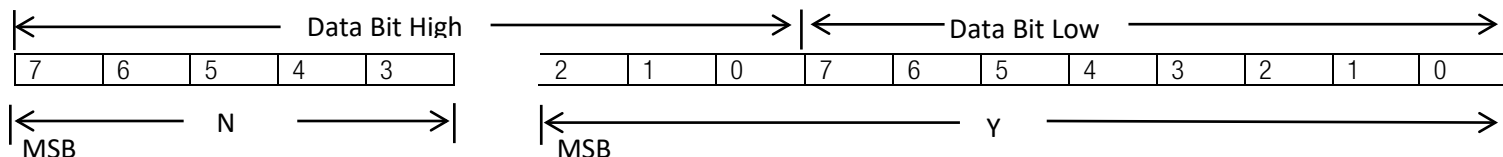
Link Back: [CMD_99](#)

PMBus Register Name	PMBus Register Number	Register Contents	Static or Dynamic Register? (S/D)
MFR_ID	0x99	Murata-PS	S
MFR_MODEL	0x9A	D1U54P-W-2000-12-HB3C	D
MFR_REVISION	0x9B (paged)	9151001965-vv-rr (page 0) 9157001965-vv-rr (page 1) 915400xxxx-wv-rr (page 2)	S
MFR_LOCATION	0x9C	China / Canada	D
MFR_DATE	0x9D	YYWW	D
MFR_SERIAL	0x9E	SSYYWWRxxxx	D

Linear Data Format

([return to front page](#); [return to Manual Fan Control](#))

Telemetry via sensor readings is expressed in Linear format, defined by PMBus Power System Mgt Protocol Specification – Part II – Revision 1.2 (summarized below)
Output Voltage readings are also expressed in linear format, [VOUT_MODE](#) format



The Relationship between Y, N and the “real world” value is:

$$X = Y \cdot 2^N$$

Where, as described above:

X is the “real world” value;

Y is an 11 bit, two's compliment integer; and

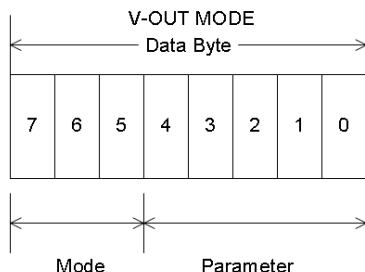
N is a 5 bit, two's compliment integer.

Command Code 20h (V-OUT MODE) PROTOCOL and Returned results:

Link back to [CMD_20 list](#)

Output voltage reading telemetry is expressed in V-OUT MODE **Linear** format. The results can be converted to “real world” voltage reading by the following two steps. Refer to PMBus Power System Mgt Protocol Specification – Part II – Revision 1.2 for additional details.

- 1) CMD_20 (V-OUT MODE) defines which of the three formats (LINEAR, VID OR DIRECT) is used. For all output voltage commands for this product, LINEAR MODE is used, returning “000h” for bits 5,6,7:



CMD_20h Reading results for this series:

Mode definition			Returned results for CMD_20h				
Mode	Bits (7:5)	Bits (4:0) (Parameter)	Command Code (Hex)	Command Name	Value	Bit#	Value
Linear (Default)	000b	Five bit two's complement exponent for the mantissa delivered as the data bytes for an output voltage command. Bits 4:0 returned= 11010b = N=-6 (Default)	20	VOUT_MODE	1Ah	Bit 7	0
						Bit 6	0
						Bit 5	0
						Bit 4	1
						Bit 3	1
						Bit 2	0
						Bit 1	1
						Bit 0	0

- 2) The Command Bytes, or mantissa can then be used to calculate real world values for the output voltage commands and parameters:

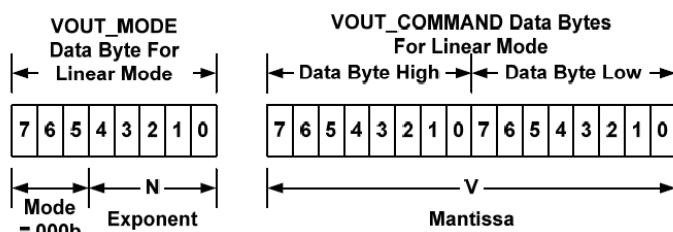


Figure 6. Linear Format Data Bytes

The Mode bits are set to 000b.

The Voltage, in volts, is calculated from the equation:

$$Voltage = V \cdot 2^N$$

Where:

Voltage is the parameter of interest in volts;

V is a 16 bit unsigned binary integer; and

N is a 5 bit two's complement binary integer.

RETURNED RESULTS :Command Code 3Bh (FAN_COMMAND_1) Link Back to Commands List: [CMD_3B](#)

Manual fan speed control via PMBus™ is a linear data mode two byte command, speed expressed as fan duty cycle. This table below contains the manual fan speed command data in 1% increments, for illustration purposes.

The power supply automatically cancels manual fan speed control and enters automatic fan speed control by any of the following conditions or methods:

- 1) Writing the command "03h"(CLEAR_FAULTS).
- 2) Any overtemperature fault or warning (manual fan speed control mode can be resumed after the faults and warnings have ended)
- 3) Recycling of AC input voltage
- 4) Toggling PS_ON signal
- 5) Issuing a fan command that is outside the normal maximum limits, i.e., writing a fan speed of 110% duty cycle.

CMD 3B(h)	"Fan_COMMAND_1" (2 bytes)			CMD 3B(h)	"Fan_COMMAND_1" (2 bytes)			CMD 3B(h)	"Fan_COMMAND_1" (2 bytes)			CMD 3B(h)	"Fan_COMMAND_1" (2 bytes)		
% Duty Cycle	MSB(h)	LSB(h)	n(d)	% Duty Cycle	MSB(h)	LSB(h)	n(d)	% Duty Cycle	MSB(h)	LSB(h)	n(d)	% Duty Cycle	MSB(h)	LSB(h)	n(d)
0	B0	0	-10	26	B1	A	-10	51	B2	A	-10	76	B2	9	-10
1	B0	A	-10	27	B1	14	-10	52	B2	14	-10	77	B2	14	-10
2	B0	14	-10	28	B1	E1	-10	53	B2	1E	-10	78	B2	1E	-10
3	B0	1F	-10	29	B1	29	-10	54	B2	28	-10	79	B2	28	-10
4	B0	29	-10	30	B1	33	-10	55	B2	33	-10	80	B3	32	-10
5	B0	33	-10	31	B1	3D	-10	56	B2	3D	-10	81	B3	3D	-10
6	B0	3D	-10	32	B1	47	-10	57	B2	47	-10	82	B3	47	-10
7	B0	48	-10	33	B1	52	-10	58	B2	51	-10	83	B3	51	-10
8	B0	52	-10	34	B1	5C	-10	59	B2	5C	-10	84	B3	5B	-10
9	B0	5C	-10	35	B1	66	-10	60	B2	66	-10	85	B3	66	-10
10	B0	66	-10	36	B1	70	-10	61	B2	70	-10	86	B3	70	-10
11	B0	71	-10	37	B1	7B	-10	62	B2	7A	-10	87	B3	7A	-10
12	B0	7B	-10	38	B1	85	-10	63	B2	84	-10	88	B3	84	-10
13	B0	85	-10	39	B1	8F	-10	64	B2	8F	-10	89	B3	8E	-10
14	B0	8F	-10	40	B1	99	-10	65	B2	99	-10	90	B3	99	-10
15	B0	99	-10	41	B1	A3	-10	66	B2	A3	-10	91	B3	A3	-10
16	B0	A4	-10	42	B1	AE	-10	67	B2	AD	-10	92	B3	AD	-10
17	B0	AE	-10	43	B1	B8	-10	68	B2	B8	-10	93	B3	B7	-10
18	B0	B8	-10	44	B1	C2	-10	9	B2	C2	-10	94	B3	C2	-10
19	B0	C2	-10	45	B1	CC	-10	70	B2	CC	-10	95	B3	CC	-10
20	B0	CD	-10	46	B1	D7	-10	71	B2	D6	-10	96	B3	D6	-10
21	B0	D7	-10	47	B1	E1	-10	72	B2	E1	-10	97	B3	E0	-10
22	B0	E1	-10	48	B1	EB	-10	73	B2	EB	-10	98	B3	EB	-10
23	B0	EB	-10	49	B1	F5	-10	74	B2	F5	-10	99	B3	F5	-10
24	B0	F6	-10	50	B2	0	-10	75	B2	FF	-10	100	B3	FF	-10
25	B1	0	-10												

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