

### PMBus™ Commands

This application note is applicable for the following members of the product D1U4-W-1600-54-HBxC product series:

D1U4-W-1600-54-HB3C – Universal AC Input (Front to Back Airflow) Variant

D1U4-W-1600-54-HB4C – Universal AC Input (Back to Front Airflow) Variant

### Standard PMBus™ Commands

All data communicated over the PMBus™ interface does not use PEC (Packet Error Checking) as defined by the standard for PMBus™ Power Systems Management Protocol Part 1 – General Requirements Rev 1.1.

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 400µs delay between transactions (between START and STOP bits) is recommended for robust communications.

Note: 100/400KHz I<sup>2</sup>C communications is supported for the PMBus™ interface.

### D1U4-W-1600-54-HBxC

Power Module Internal Devices				
Vendor	Manufacturer's Part Number	Package	Description	
Microchip Technology Inc.	PIC24FJ16GA002T-I/SS	28 Pin	Primary Microcontroller, 16 bit PIC, 16K flash, 8K SRAM, -40C	
Microchip Technology Inc.	PIC24FJ32GA002T-I/SS	28 Pin	Floating Output Microcontroller, 16 bit PIC, 32K flash, 8K SRAM, -40C	
Microchip Technology Inc.	PIC24FJ64GA004T-I/PT	44 Pin	Secondary Microcontroller, 16 bit PIC, 64K flash, 8K SRAM, -40C	
Microchip Technology Inc.	24AA024T-IMS	8 Pin	2K Bit, 2.5-5.5V, 400KHz, 1.8-25V 100KHz, 85C	

### Device Addressing Methods (See D1U4-54-CONC ACAN-52 for Additional Details)

There are two I<sup>2</sup>C buses provided by the D1U4-W-1600-54-HBxC power modules. These provide redundancy of the communication path to the slave I<sup>2</sup>C device (embedded in the power module) by providing dual “master” buses.

Internally within the D1U4-W-1600-54-HBxC power module is located a NXP PCA9541A/03 2-1 I<sup>2</sup>C-Bus Master Selector device that allows operation with dual buses.

The dual master devices (each with it's own dedicated bus) shall arbitrate between themselves by the method defined in NXP I<sup>2</sup>C Specification UM10204 Section 3.1.8 for details. The bus that “wins” the arbitration process shall control the bus for the remaining duration of the transaction.

Since dual I<sup>2</sup>C buses are provided there are no variable address selections possible. Each NXP PCA9541A/03 address is fixed as 0xB0.

Also shown is the address of the EEPROM device resident in the power module.

Power Module Main Controller (Serial Comm Slave Address)	Power Module Main EEPROM (Serial Comm Slave Address)
0xB0	0xA0

### Commands

Page Command is supported to allow the ability to control and monitor the dual outputs, the Main output, and the V<sub>STANDBY</sub> outputs. Each Command Code is annotated with either “All,” “0” or “1” accordingly to identify which “page” is associated with the command.

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
00	PAGE	R/W	All		1			Command to provide ability to configure, control & monitor multiple outputs	YES
01	OPERATION <a href="#">(See Relevant Table in Appendix A) #OperationCommand</a>	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 PS_ON	YES
02	ON_OFF_CONFIG <a href="#">(See Relevant Table in Appendix A) #OnOffConfiguration</a>	R	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		1		Write only command clears all faults that have been set in all the STATUS_XXXX registers simultaneously	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 = -6 exponent for translation to volts	YES
								PMBus Spec - Part II - Revision 1.1 - Sections 8.1-8.3	
20	VSTBY_MODE	R	1	Bit Flags	1			Single data byte sets the READ_VOUT sensor to linear mode data format and supplies N = -7 exponent for translation to volts	YES
								PMBus Spec - Part II - Revision 1.1 - Sections 8.1-8.3	
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

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
3A	FAN_CONFIG_1_2	R	All	Bit Flags	1	0	FAN_2_TACH_PULSES	Fan 2 Tachometer pulses per revolution (lower bit)	YES
						1	FAN_2_TACH_PULSES	Fan 2 Tachometer pulses per revolution (upper bit)	YES
						2	FAN_2_SETTING_MODE	Set when fan is commanded in RPM (Clear when fan is commanded in Duty Cycle)	YES
						3	FAN_2_INSTALLATION	Set when fan is installed in position 2	YES
						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)	YES
						7	FAN_1_INSTALLATION	Set when fan is installed in position 1	YES
3B	FAN_COMMAND_1	R/W	All	R/W	2		Manual fan override command fan speed value in RPM Command speed formatted in Linear as per command 0x90 - READ_FAN_SPEED_1	YES	
3C	FAN_COMMAND_2	R/W	All	R/W	2		Manual fan override command fan speed value in RPM Command speed formatted in Linear as per command 0x90 - READ_FAN_SPEED_2	YES	
40	VOUT_OV_FAULT_LIMIT	R	0	Linear Data Format	2		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 - High line	YES	

[See Returned Results for Details #ReturnedResults](#)

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
46	IOUT_OC_FAULT_LIMIT	R	1	Linear Data Format	2			Main Output Overcurrent Fault Limit - Low line	YES
46	ISTBY_OC_FAULT_LIMIT	R	2	Linear Data Format	2			Standby(Auxiliary) Output Overvoltage Fault Limit	YES
47	IOUT_OC_FAULT_RESPONSE	R	0	Bit Flags	2			Main Output Overcurrent Fault Response Actions	YES
47	IOUT_OC_FAULT_RESPONSE	R	1	Bit Flags	2			Main Output Overcurrent Fault Response Actions	YES
47	ISTBY_OC_FAULT_RESPONSE	R	2	Bit Flags	2			Standby(Auxiliary) Output Response Actions	YES
4A	IOUT_OC_WARN_LIMIT	R	0	Linear Data Format	2			Main Output Overcurrent Warning Limit - High line	YES
4A	IOUT_OC_WARN_LIMIT	R	1	Linear Data Format	2			Main Output Overcurrent Warning Limit - Low line	YES
4A	ISTBY_OC_WARN_LIMIT	R	2	Linear Data Format	2			Standby(Auxiliary) Output Overcurrent Warning Limit	YES
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		<a href="#">See Returned Results for Details #ReturnedResults</a>	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
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2			Input Overvoltage Fault Limit	YES
56	VIN_OV_FAULT_RESPONSE	R	0	Bit Flags	1			Input Overvoltage Fault Response Actions	YES
57	VIN_OV_WARN_LIMIT	R	0	Linear Data Format	2			Input Overvoltage Warning Limit	YES
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2			Input Undervoltage Warning Limit	YES
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2			Input Undervoltage Fault Limit	YES

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
5A	VIN_UV_FAULT_RESPONSE	R	0	Bit Flags	1			Input Undervoltage Fault Response Actions	YES
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2			Input Overcurrent Fault Limit – High Line	YES
5B	IIN_OC_FAULT_LIMIT	R	0	Linear Data Format	2			Input Overcurrent Fault Limit – Low Line	YES
5C	IIN_OC_FAULT_RESPONSE	R	0	Bit Flags	1			Input Overcurrent Fault Response Actions	YES
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2			Input Overcurrent Warning Limit – High Line	YES
5D	IIN_OC_WARN_LIMIT	R	0	Linear Data Format	2			Input Overcurrent Warning Limit – Low Line	NO
5E	POWER_GOOD_ON	R	0	Linear Data Format	2			Power Good On Main Output Voltage Limit	YES
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2			Power Good Off Main Output Voltage Limit	YES
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2			Output Overpower Fault Limit – High Line	YES
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2			Output Overpower Fault Limit – Low Line	YES
69	POUT_OP_FAULT_RESPONSE	R	0	Bit Flags	1			Output Overpower Fault Response Actions	YES
6A	POUT_OP_WARN_LIMIT	R	0	Linear Data Format	2			Output Overpower Warning Limit - High line	YES
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2			Output Overpower Warning Limit - Low line	YES
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2			Input Overpower Warning Limit - High line	YES
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2			Input Overpower Warning Limit - Low line	YES
79	STATUS_BYTE <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	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
						7	BUSY_F	Asserted when device busy and unable to respond fault	YES

See Returned Results for  
Details  
#ReturnedResults

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
79	STATUS_WORD <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	All	Bit Flags	2	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	MFG_SPECIFIC_F_W	Manufacturer specific fault or warning has occurred	NO
						13	INPUT_F_W	Set when an Input voltage/current/power fault or warning has occurred	YES
						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						
7A	STATUS_VOUT <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	0	Bit Flags	1	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
						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						
7A	STATUS_VSTBY <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	1	Bit Flags	1	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
						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						

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
7B	STATUS_IOUT <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	0	Bit Flags	1	0	POUT_OP_W	Set when an error in the output voltage during power-up/down 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_IJSTBY <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	1	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
7C	STATUS_INPUT <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	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 <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	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 <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	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 bootload)	NO
						5	PEC_ERROR_F	Set when a packet error checking (PEC) failed has occurred	NO
						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

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
7F	STATUS_OTHER	R	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 output B ORING device fault occurs	NO
						3	ORING_INPUT_A_F	Set when output 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
80	STATUS_MFR_SPECIFIC	R	All	Bit Flags	1	0	RESERVED	Reserved	NO
						1	RESERVED	Reserved	NO
						2	VINIT_RANGE_W	Set when an internal (VCC2, VCC4 or VDD) output of range warning has occurred	NO
						3	VINT_RANGE_F	Set when an internal (VCC2, VCC4 or VDD) output of range fault has occurred	NO
						4	VBUS_UV_F	Set when a primary boot output bus undervoltage fault has occurred	NO
						5	VBUS_UV_W	Set when primary boost output bus undervoltage warning has occurred	NO
						6	VBUS_OV_W	Reserved Set when primary boost output bus overvoltage warning has occurred	NO
						7	VBUS_OV_F	Reserved Set when primary boost output bus overvoltage fault has occurred	NO
81	STATUS_FANS_1_2 <a href="#">See Related Table for LED Indicators #FaultIndicatorLEDFunction</a>	R	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	YES
						5	FAN_1_W	Fan 1 warning	YES
						6	FAN_2_F	Fan 2 fault	YES
						7	FAN_1_F	Fan 1 fault	YES
82	STATUS_FANS_3_2	R	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	NO
						4	FAN_2_W	Fan 4 warning	NO
						5	FAN_1_W	Fan 3warning	NO
						6	FAN_2_F	Fan 4fault	NO
						7	FAN_1_F	Fan 3fault	NO
88	READ_VIN	R	All	Linear Data Format	2			Input Voltage Sensor Reading	YES



Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
89	READ_IIN	R	All	Linear Data Format	2			Input Current 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
8D	READ_TEMPERATURE_1	R	0	Linear Data Format	2			Airflow 1 Temperature Sensor Reading	YES
8E	READ_TEMPERATURE_2	R	0	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	0	Linear Data Format	2			Fan 1 Speed Sensor Reading	YES
91	READ_FAN_SPEED_2	R	0	Linear Data Format	2			Fan 2 Speed Sensor Reading	YES
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	R	All	Ascii Text Block	Variable			Power Supply Company Name See Appendix A	YES
9A	MFR_MODEL	R	All	Ascii Text Block	10			Power Supply Company Name See Appendix A	YES
9B	MFR_REVISION	R	All	Ascii Text Block	15			Power Supply Company Name See Appendix A	YES
9C	MFR_LOCATION	R/W	All	Ascii Text Block	Variable			Power Supply Manufacture Location	YES
9D	MFR_DATE	R/W	All	Ascii Text Block	5			Power Supply Manufacture Date	YES
9E	MFR_SERIAL	R/W	All	Ascii Text Block	Variable			Power Supply Serial Number	YES
A0	MFR_VIN_MIN	R	All	Linear Data Format	2			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

See Appendix A for Details  
[#ManufacturersData](#)

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
AA	MFR_EFFICIENCY_LL	R	All	Linear Data Format	2			Power Supply Low-Line Input Voltage Specification	YES
								Power Supply Low Line Power Efficiency Specification	YES
								Power Supply Low-Line Low Power Efficiency Specification	YES
								Power Supply Low-Line Medium Power Specification	YES
								Power Supply Low-Line Medium Power Efficiency Specification	YES
								Power Supply Low-Line High Power Specification	YES
								Power Supply Low-Line High Power Efficiency Specification	YES
AB	MFR_EFFICIENCY_HL	R	All	Linear Data Format	2			Power Supply High-Line Input Voltage Specification	YES
								Power Supply High-Line Low Power Specification	YES
								Power Supply High-Line Low Power Efficiency Specification	YES
								Power Supply High-Line Medium Power Specification	YES
								Power Supply High-Line Medium Power Efficiency Specification	YES
								Power Supply High-Line High Power Specification	YES
								Power Supply High-Line High Power Efficiency Specification	YES
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 boot loader is taking control and the main output and PFC need to be shutdown	NO
						9	BOOTLOAD_COMPLETED	Set when the boot loader has completed and system reset needs to be Set	NO
						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						

See Appendix A for Details  
[#ManufacturersData](#)

Command Code (Hex)	Command Name	Read/Write	Page	Format	Number of Bytes	Bit(s) Number	Bit Name	Definition	Supported
E1	EEPROM_WP	R/W	All	Integer	1			Byte to enable (write 0x9A) or disable (write 0x56) writes to the external EEPROM	YES
E2	READ_HOURS_USED	R	All	Linear Data Format	3			Power Supply Accumulated Main Output Power-On Hours	YES
E5	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			Boot loader completion and application restart request command	NO
FA	BOOTLOAD_REQUEST	R/W	All	Ascii Text Block	6			Boot loader request command	NO
FB	BOOTLOAD_STATUS	R	All	Bit Flags	2	0	BOOTLOADING_PRI	Set when primary uC boot loading in process	NO
						1	BOOTLOADING_FLOAT	Set when floating uC boot loading in process	NO
						2	BOOTLOADING_SEC	Set when secondary uC boot loading in process	NO
						3	BOOTLOADED_PRI	Set when primary uC boot loading completed; reset required	NO
						4	BOOTLOADED_FLOAT	Set when floating uC boot loading completed; reset required	NO
						5	BOOTLOADED_SEC	Set when secondary uC boot loading completed; reset required	NO
						6	RESET_PRI	Set when primary uC reset	NO
						7	RESET_FLOAT	Set when floating uC reset	NO
						8	RESET_SEC	Set when secondary uC reset	NO
						9	RESERVED		NO
						10	RESERVED		NO
						11	RESERVED		NO
						12	RESERVED		NO
						13	RESERVED		NO
						14	RESERVED		NO
15	RESERVED		NO						

### Returned Results vs. Command Code

The following table represents typical results/responses returned from respective Command Code entries and is provided as an illustration of what would be expected.

Command Code Hex)	Command Name	Read/Write	Page	Data Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
40	VOUT_OV_FAULT_LIMIT	R	0	Linear	2	Vdc	-4				58		
40	VSTBY_OV_WARN_LIMIT	R	1	Linear	2	Vdc	-6				13.5		
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	2	Vdc	-4				57		
42	VSTBY_OV_WARN_LIMIT	R	1	Linear	2	Vdc	-6				13		
43	VOUT_UV_WARN_LIMIT	R	0	Linear	2	Vdc	-4				51		
43	VSTBY_UV_WARN_LIMIT	R	1	Linear	2	Vdc	-6				11.5		
44	VOUT_UV_FAULT_LIMIT	R	0	Linear	2	Vdc	-4				50		
44	VSTBY_UV_FAULT_LIMIT	R	1	Linear	2	Vdc	-6				11		
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	2	Adc	-4				35	AC high range	
46	IOUT_OC_FAULT_LIMIT	R	1	Linear Data Format	2	Adc	-4				26	AC low range	
46	ISTBY_OC_FAULT_LIMIT	R	2	Linear	2	Adc	-8				2.4		
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	1	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	2	Adc	-4				34	AC high range	
4A	IOUT_OC_WARN_LIMIT	R	1	Linear	2	Adc	-4				24	AC low range	
4A	ISTBY_OC_WARN_LIMIT	R	2	Linear	2	Adc	-8				2.3		

Command Code Hex)	Command Name	Read/Write	Page	Data Format	# of Bytes	Units	Scaling Coefficients				Bit #	Reading	Comments
							N	m	R	b			
4F	AIRFLOW_1_OT_FAULT_LIMIT	R	0	Linear	2	°C	0					64	Primary
4F	HOTSPOT_1_OT_FAULT_LIMIT	R	1	Linear	2	°C	0					125	Primary
4F	AIRFLOW_2_OT_FAULT_LIMIT	R	2	Linear	2	°C	0					98	Secondary
4F	HOTSPOT_2_OT_FAULT_LIMIT	R	3	Linear	2	°C	0					130	Secondary
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_1_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					62	Primary
51	HOTSPOT_1_OT_WARN_LIMIT	R	1	Linear Data Format	2	°C	0					115	Primary
51	AIRFLOW_2_OT_WARN_LIMIT	R	2	Linear Data Format	2	°C	0					85	Secondary
51	HOTSPOT_2_OT_WARN_LIMIT	R	3	Linear Data Format	2	°C	0					110	Secondary
55	VIN_OV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					280	
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					275	
58	VIN_UV_WARN_LIMIT	R	0	Linear Data Format	2	Vrms	-1					82	
59	VIN_UV_FAULT_LIMIT	R	0	Linear Data Format	2	Vrms	-1					74.5	
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					18	

Command Code Hex)	Command Name	Read/Write	Page	Data 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					17	
5E	POWER_GOOD_ON	R	0	Linear Data Format	2	Vdc	-6					30	
5F	POWER_GOOD_OFF	R	0	Linear Data Format	2	Vdc	-4					30	
68	POUT_OP_FAULT_LIMIT	R	0	Linear Data Format	2	Watts	1					2000	AC high range
68	POUT_OP_FAULT_LIMIT	R	1	Linear Data Format	2	Watts	1					1450	AC 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	1					1850	AC high range
6A	POUT_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	1					1300	AC low range
6B	PIN_OP_WARN_LIMIT	R	0	Linear Data Format	2	Watts	1					2000	AC high range
6B	PIN_OP_WARN_LIMIT	R	1	Linear Data Format	2	Watts	1					1500	AC low range

### Sensor Data and Resolution

Command Code (Hex)	Command Name	Description	Page	Data Format	Units	Scaling Coefficient	Raw Sensor	PMBus Reporting Sensor			
						N	Full-scale / Range	Resolution	Full-scale / Range	Resolution	Accuracy
88	READ_VIN	Input Voltage Sensor Reading	All	Linear	Vrms	-1	300	0.293	511.5	0.5	±2% of Reporting Full-Scale
89	READ_IIN	Input Current Sensor Reading	All	Linear	Arms	-5	67.97	0.0664	31.97	0.0313	±5% of Reporting Full-Scale
8B	READ_VOUT	Main Output Voltage Sensor Reading	0	Linear	Vdc	-4	61.88	0.0605	63.94	0.0625	±2% of Reporting Full-Scale
8B	READ_VSTBY	Standby(Auxiliary) Output Voltage Sensor Reading	1	Linear	Vdc	-6	13.74	0.0134	15.984	0.01563	±2% of Reporting Full-Scale
8C	READ_IOUT	Main Output Current Sensor Reading	0	Linear	Adc	-4	39.01	0.0381	63.94	0.063	±2% of Reporting Full-Scale
8C	READ_ISTBY	Standby(Auxiliary) Output Current Sensor Reading	1	Linear	Adc	-8	2.86	0.00279	3.996	0.00391	±2% of Reporting Full-Scale
8D	READ_TEMPERATURE_1	Temperature Sensor Reading - Inlet (Secondary Side)	0	Linear	°C	0	-40 to 150		-40 to 150	1	±5°C
8E	READ_TEMPERATURE_2	Temperature Sensor Reading - Outlet (Primary Side)	0	Linear	°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	°C	0	-40 to 150		-40 to 150	1	±5°C
8F	READ_TEMPERATURE_3	Temperature Sensor Reading - PFC Hotspot (Primary Side)	1	Linear	°C	0	-40 to 150		-40 to 150	1	±5°C
90	READ_FAN_SPEED_1	Fan 1 Speed Sensor Reading	All	Linear	RPM	5	24,000		32736	32	±5% of Reporting Full-Scale
91	READ_FAN_SPEED_2	Fan 2 Speed Sensor Reading	All	Linear	RPM	5	24,000		32736	32	±5% of Reporting Full-Scale
96	READ_POUT	Output Power Sensor Reading	All	Linear	Watts	1			2046	2	±5% of Reporting Full-Scale
97	READ_PIN	Input Power Sensor Reading	All	Linear	Watts	1			2046	2	±5% of Reporting Full-Scale
E2	READ_POWER_ON_HOURS	Accumulated Main Output Power-On Hours	All	Linear	Hours	0	~1,900 (Years)		~1,900 (Years)	1	±3%

### Data Format

The products use the “linear” data format

Formula:  $X = Y * 2^N$

X = the calculated (decimal) value

Y = the two-byte value read from PMBus expressed as a “twos complement value”; expressed as a decimal equivalent

N = the specific sensor exponent (scaling coefficient)

**APPENDIX A**
**Manufacturers' Data**

Command Code (Hex)	Command Name	Value	Units	N	Value (dec)	Firmware Constants Table																						
99	MFR_ID	Murata-PS				#define MFR_ID_LENGTH	9					// Murata-PS																
						#define MFR_ID_0					'M'																	
						#define MFR_ID_1					'u'																	
						#define MFR_ID_2					'r'																	
						#define MFR_ID_3					'a'																	
						#define MFR_ID_4					't'																	
						#define MFR_ID_5					'a'																	
						#define MFR_ID_6					'.'																	
						#define MFR_ID_7					'P'																	
						#define MFR_ID_8					'S'																	
						#define MFR_ID_9					0																	
						#define MFR_ID_10					0																	
						#define MFR_ID_11					0																	
						#define MFR_ID_12					0																	
						#define MFR_ID_13					0																	
						#define MFR_ID_14					0																	
						#define MFR_ID_15					0																	
						#define MFR_ID_16					0																	
						#define MFR_ID_17					0																	
						#define MFR_ID_18					0																	
						#define MFR_ID_19					0																	
						#define MFR_ID_20					0																	
						#define MFR_ID_21					0																	
						#define MFR_ID_22					0																	
#define MFR_ID_23					0																							
9A	MFR_MODEL	D1U4-W-1600-54-HB3C				#define MFR_MODEL_LENGTH	19	'D'				// D1U4-W-1600-54-HB3C																
						#define MFR_MODEL_0					'1'																	
						#define MFR_MODEL_1					'U'																	
						#define MFR_MODEL_2					'4'																	
						#define MFR_MODEL_3					'.'																	
						#define MFR_MODEL_4					'W'																	
						#define MFR_MODEL_5					'.'																	
						#define MFR_MODEL_6					'1'																	
						#define MFR_MODEL_7					'6'																	
						#define MFR_MODEL_8					'0'																	
						#define MFR_MODEL_9					'0'																	
						#define MFR_MODEL_10					'0'																	
						#define MFR_MODEL_11					'.'																	
						#define MFR_MODEL_12					'5'																	
						#define MFR_MODEL_13					'4'																	
						#define MFR_MODEL_14					'.'																	
						#define MFR_MODEL_15					'H'																	
						#define MFR_MODEL_16					'B'																	
						#define MFR_MODEL_17					'3'																	
						#define MFR_MODEL_18					'C'																	
						#define MFR_MODEL_19					0																	
						#define MFR_MODEL_20					0																	
						#define MFR_MODEL_21					0																	
						#define MFR_MODEL_22					0																	
#define MFR_MODEL_23					0																							



Command Code (Hex)	Command Name	Value	Units	N	Value (dec)	Firmware Constants Table							
9A	MFR_MODEL	D1U4-W-1600-54-HB3C				#define	MFR_MODEL_LENGTH	19	'D'		// D1U4-W-1600-54-HB3C		
						#define	MFR_MODEL_0		'1'				
						#define	MFR_MODEL_1		'U'				
						#define	MFR_MODEL_2		'4'				
						#define	MFR_MODEL_3		'.'				
						#define	MFR_MODEL_4		'W'				
						#define	MFR_MODEL_5		'.'				
						#define	MFR_MODEL_6		'1'				
						#define	MFR_MODEL_7		'6'				
						#define	MFR_MODEL_8		'0'				
						#define	MFR_MODEL_9		'0'				
						#define	MFR_MODEL_10		'0'				
						#define	MFR_MODEL_11		'.'				
						#define	MFR_MODEL_12		'5'				
						#define	MFR_MODEL_13		'4'				
						#define	MFR_MODEL_14		'.'				
						#define	MFR_MODEL_15		'H'				
						#define	MFR_MODEL_16		'B'				
						#define	MFR_MODEL_17		'3'				
						#define	MFR_MODEL_18		'C'				
						#define	MFR_MODEL_19		0				
						#define	MFR_MODEL_20		0				
						#define	MFR_MODEL_21		0				
						#define	MFR_MODEL_22		0				
#define	MFR_MODEL_23		0										
9B	MFR_REVISION	0001-0001-0001				#define	MFR_ID_LENGTH	14			// Primary FW major rev byte0		
						#define	MFR_ID_0		'0'		// Primary FW major rev byte1		
						#define	MFR_ID_1		'0'		// Primary FW minor rev byte0		
						#define	MFR_ID_2		'0'		// Primary FW minor rev byte1		
						#define	MFR_ID_3		'1'				
						#define	MFR_ID_4		'.'		// Secondary FW major rev byte0		
						#define	MFR_ID_5		'0'		// Secondary FW major rev byte1		
						#define	MFR_ID_6		'0'		// Secondary FW minor rev byte0		
						#define	MFR_ID_7		'0'		// Secondary FW minor rev byte1		
						#define	MFR_ID_8		'1'		// Floating FW major rev byte0		
						#define	MFR_ID_9		'.'				
						#define	MFR_ID_10		'0'		// Floating FW major rev byte1		
						#define	MFR_ID_11		'0'		// Floating FW minor rev byte0		
						#define	MFR_ID_12		'0'		// Floating FW minor rev byte1		
						#define	MFR_ID_13		'1'		// Primary FW major rev byte0		
						#define	MFR_ID_14		0				
						#define	MFR_ID_15		0				
						#define	MFR_ID_16		0				
						#define	MFR_ID_17		0				
						#define	MFR_ID_18		0				
						#define	MFR_ID_19		0				
						#define	MFR_ID_20		0				
						#define	MFR_ID_21		0				
						#define	MFR_ID_22		0				
#define	MFR_ID_23		0										

Command Code (Hex)	Command Name	Value	Units	N	Value (dec)	Firmware Constants Table																						
9C	MFR_LOCATION	China				#define	MFR_LOCATION_LENGTH	5																				
						#define	MFR_LOCATION_0		'C'																			
						#define	MFR_LOCATION_1		'h'																			
						#define	MFR_LOCATION_2		'i'																			
						#define	MFR_LOCATION_3		'n'																			
						#define	MFR_LOCATION_4		'a'																			
						#define	MFR_LOCATION_5		0																			
						#define	MFR_LOCATION_6		0																			
						#define	MFR_LOCATION_7		0																			
						#define	MFR_LOCATION_8		0																			
						#define	MFR_LOCATION_9		0																			
						#define	MFR_LOCATION_10		0																			
						#define	MFR_LOCATION_11		0																			
						#define	MFR_LOCATION_12		0																			
						#define	MFR_LOCATION_13		0																			
						#define	MFR_LOCATION_14		0																			
						#define	MFR_LOCATION_15		0																			
						#define	MFR_LOCATION_16		0																			
						#define	MFR_LOCATION_17		0																			
						#define	MFR_LOCATION_18		0																			
						#define	MFR_LOCATION_19		0																			
						#define	MFR_LOCATION_20		0																			
						#define	MFR_LOCATION_21		0																			
#define	MFR_LOCATION_22		0																									
#define	MFR_LOCATION_22		0																									
9D	MFR_DATE	1400				#define	MFR_DATE_LENGTH	4													// YYWW (Default)							
						#define	MFR_DATE_0		'1'																			
						#define	MFR_DATE_1		'4'																			
						#define	MFR_DATE_2		'0'																			
						#define	MFR_DATE_3		'0'																			
						#define	MFR_DATE_4		'0'																			
						#define	MFR_DATE_5		'0'																			
						#define	MFR_DATE_6		'0'																			
						#define	MFR_DATE_7		'0'																			
						#define	MFR_DATE_8		'0'																			
						#define	MFR_DATE_9		0																			
						#define	MFR_DATE_10		'0'																			
						#define	MFR_DATE_11		'0'																			
						#define	MFR_DATE_12		'0'																			
						#define	MFR_DATE_13		'0'																			
						#define	MFR_DATE_14		0																			
						#define	MFR_DATE_15		0																			
						#define	MFR_DATE_16		0																			
						#define	MFR_DATE_17		0																			
						#define	MFR_DATE_18		0																			
						#define	MFR_DATE_19		0																			
						#define	MFR_DATE_20		0																			
						#define	MFR_DATE_21		0																			
#define	MFR_DATE_22		0																									
#define	MFR_DATE_23		0																									

Command Code (Hex)	Command Name	Value	Units	N	Value (dec)	Firmware Constants Table																					
9E	MFR_SERIAL	QEyywwR1xxx				#define	MFR_LOCATION_LENGTH	12																			
						#define	MFR_LOCATION_0	'Q'																			
						#define	MFR_LOCATION_1	'E'																			
						#define	MFR_LOCATION_2	'y'																			
						#define	MFR_LOCATION_3	'y'																			
						#define	MFR_LOCATION_4	'w'																			
						#define	MFR_LOCATION_5	'w'																			
						#define	MFR_LOCATION_6	'R'																			
						#define	MFR_LOCATION_7	'1'																			
						#define	MFR_LOCATION_8	'x'																			
						#define	MFR_LOCATION_9	'x'																			
						#define	MFR_LOCATION_10	'x'																			
						#define	MFR_LOCATION_11	'x'																			
						#define	MFR_LOCATION_12	0																			
						#define	MFR_LOCATION_13	0																			
						#define	MFR_LOCATION_14	0																			
						#define	MFR_LOCATION_15	0																			
						#define	MFR_LOCATION_16	0																			
						#define	MFR_LOCATION_17	0																			
						#define	MFR_LOCATION_18	0																			
						#define	MFR_LOCATION_19	0																			
						#define	MFR_LOCATION_20	0																			
						#define	MFR_LOCATION_21	0																			
#define	MFR_LOCATION_22	0																									
#define	MFR_LOCATION_22	0																									

Command Code (Hex)	Command Name	Value	Units	N	Value (dec)	Firmware Constants Table															
A0	MFR_VIN_MIN	90	V	-1	180	#define	MFR_VIN_MIN_MSB														
A1	MFR_VIN_MAX	240	V	-1	480	#define	MFR_VIN_MIN_LSB														
A2	MFR_IIN_MAX	16	A	-5	512	#define	MFR_VIN_MAX_MSB														
A3	MFR_PIN_MAX	1800	W	1	900	#define	MFR_VIN_MAX_LSB														
A4	MFR_VOUT_MIN	52.38	V	-4	838	#define	MFR_IIN_MAX_MSB														
A5	MFR_VOUT_MAX	55.62	V	-4	890	#define	MFR_IIN_MAX_LSB														
A6	MFR_IOUT_MAX	30	A	-4	480	#define	MFR_PIN_MAX_MSB														
A7	MFR_POUT_MAX	1600	W	1	800	#define	MFR_PIN_MAX_LSB														
A8	MFR_TAMBIENT_MAX	50	C	0	50	#define	MFR_VOUT_MIN_MSB														
A9	MFR_TAMBIENT_MIN	0	C	0	0	#define	MFR_VOUT_MIN_LSB														
AA	MFR_EFFICIENCY_LL_VIN	115	V	-1	230																
	MFR_EFFICIENCY_LL_POUT1	240	V	1	120	#define															
	MFR_EFFICIENCY_LL_EFF1	0.78	--	##	799	#define															
	MFR_EFFICIENCY_LL_POUT2	600	W	1	300	#define															
	MFR_EFFICIENCY_LL_EFF2	0.85	--	##	870	#define															
	MFR_EFFICIENCY_LL_POUT3	1200	W	1	600	#define															
AB	MFR_EFFICIENCY_LL_EFF3	0.88	--	##	901	#define															
	MFR_EFFICIENCY_HL_VIN	230	V	-1	460	#define															
	MFR_EFFICIENCY_HL_POUT1	320	V	1	160	#define															
	MFR_EFFICIENCY_HL_EFF1	0.83	--	##	850	#define															
	MFR_EFFICIENCY_HL_POUT2	800	W	1	400	#define															
	MFR_EFFICIENCY_HL_EFF2	0.89	--	##	911	#define															
	MFR_EFFICIENCY_HL_POUT3	1600	W	1	800	#define															
MFR_EFFICIENCY_HL_EFF3	0.91	--	##	932	#define																
						#define															

### Operation Command (01 HEX)

Power Module On/Off Mode: Bit # / Bit Description (Command Code 01 HEX)								Valid Values		Power Module Status
7	6	5	4	3	2	1	0	Dec	Hex	
On/off Bit	On/off Bit	Margin on/off/high/low Bits		Margin Fault Control Bits		Bit	Bit			
1	0	1	0	1	0	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 setting

### On/Off Command Configuration (02 HEX)

Power Module On/Off Configuration: Bit # / Bit Description (Command Code 02 HEX)								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	Polarity	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 setting
0	0	0	1	1	1	1	1	31	1F	Operation command and control pin ; active high polarity

### Embedded Fault & Warning Responses

Parameter	Fault / Warning	Location	Detect Mechanism	Sensor		Detect Level	Recovery Level	Units	Reporting Indicators			Impact
				Name	Cmd Address				Status Registers (Bit #) / Cmd Address (Page)	Digital/ Analog Output	LED	
Vin	UV Warning	Primary	FW Sensor	READ_VIN	0x88	82	88	Vrms	STATUS_INPUT (5) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only
Vin	UV Fault	Primary	FW Sensor	READ_VIN	0x88	74.5	85	Vrms	STATUS_INPUT (4) / 0x7C (All) STATUS_BYTE (3) / 0x79 (All) STATUS_WORD (3,6,11,13) / 0x79 (All) PS_STATUS (3,7,15) / 0xE1 (All)	AC_OK PGOOD	Solid Yellow	Reporting Indicators Main output off (recoverable)
Vin	OV Warning	Primary	FW Sensor	READ_VIN	0x88	275	270	Vrms	STATUS_INPUT (6) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only
Vin	OV Fault	Primary	FW Sensor	READ_VIN	0x88	280	275	Vrms	STATUS_INPUT (7) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Solid Yellow	Reporting Indicators Only
Iin	OC Warning	Primary	FW Sensor	READ_IIN	0x89	17	16.5	Arms	STATUS_INPUT (1) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only

Parameter	Fault / Warning	Location	Detect Mechanism	Sensor		Detect Level	Recovery Level	Units	Reporting Indicators			Impact		
				Name	Cmd Address				Status Registers (Bit #) / Cmd Address (Page)	Digital/ Analog Output	LED			
lin	OC Fault	Primary	Ext HW			Digital Input Interrupt	Latch	Arms	STATUS_INPUT (2) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Solid Yellow	Reporting Indicators Only		
Vbus	UV Warning	Primary	FW Sensor			300	320	Vdc	PS_STATUS (5) / 0xE1 (All)			Reporting Indicators Only		
Pin	High-line OP Warning	Primary	FW Sensor	READ_PIN	0x97	2000	1900	Watts	STATUS_INPUT (0) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Pin	High-line OP Warning	Primary	FW Sensor	READ_PIN	0x97	1450	1350	Watts	STATUS_INPUT (0) / 0x7C (All) STATUS_WORD (13) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Inlet Temp	OT Warning	Primary	FW Sensor	READ_TEMPERATURE_1	0x8D	62	58	°C	STATUS_TEMPERATURE (6) / 0x7D (All) STATUS_BYTE (2) / 0x79 (All) STATUS_WORD (2) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Inlet Temp	OT Fault	Primary	FW Sensor	READ_TEMPERATURE_1	0x8D	64	60	°C	STATUS_TEMPERATURE (7) / 0x7D (All) STATUS_BYTE (2,6) / 0x79 (All) STATUS_WORD (2,6,11) / 0x79 (All) PS_STATUS (7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Main output off (recoverable)		
PFC Hotspot Temp	OT Warning	Primary	FW Sensor	READ_TEMPERATURE_3	0x8F (page 0)	115	110	°C	STATUS_TEMPERATURE (6) / 0x7D (All) STATUS_BYTE (2) / 0x79 (All) STATUS_WORD (2) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
PFC Hotspot Temp	OT Fault	Primary	FW Sensor	READ_TEMPERATURE_3	0x8F (page 0)	125	120	°C	STATUS_TEMPERATURE (7) / 0x7D (All) STATUS_BYTE (2,6) / 0x79 (All) STATUS_WORD (2,6,11) / 0x79 (All) PS_STATUS (5,7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators PFC output off (recoverable) Main output off (recoverable)		
Vout	UV Warning	Floating	FW Sensor	READ_VOUT	0x8B (page 0)	51	52	Vdc	STATUS_VOUT (5) / 0x7A (0) STATUS_WORD (15) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Vout	UV Fault	Floating	FW Sensor	READ_VOUT	0x8B (page 0)	50	51	Vdc	STATUS_VOUT (4) / 0x7A (0) STATUS_BYTE (6) / 0x79 (All) STATUS_WORD (6,11,15) / 0x79 (All) PS_STATUS (7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only		
Vout	OV Warning	Floating	FW Sensor	READ_VOUT	0x8B (page 0)	57	56	Vdc	STATUS_VOUT (6) / 0x7A (0) STATUS_WORD (15) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Vout	OV Fault	Floating	Ext HW					Digital Input Interrupt	Latching	Vdc	STATUS_VOUT (7) / 0x7A (0) STATUS_BYTE (5,6) / 0x79 (All) STATUS_WORD (5,6,11,15) / 0x79 (All) PS_STATUS (7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only Main output off (HW controlled)
Iout	High-line OC Warning	Floating	FW Sensor	READ_IOUT	0x8C (page 0)	34	32	Adc	STATUS_IOUT (5) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		
Iout	High-line OC Fault	Floating	Ext HW	READ_IOUT	0x8C (page 0)	35	33	Adc	STATUS_IOUT (6,7) / 0x7B (0) STATUS_BYTE (4,6) / 0x79 (All) STATUS_WORD (4,6,11,14) / 0x79 (All) PS_STATUS (7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only Main output off (HW controlled)		
Iout	Low-line OC Warning	Floating	FW Sensor	READ_IOUT	0x8C (page 0)	24	23	Adc	STATUS_IOUT (5) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only		

Parameter	Fault / Warning	Location	Detect Mechanism	Sensor		Detect Level	Recovery Level	Units	Reporting Indicators			Impact
				Name	Cmd Address				Status Registers (Bit #) / Cmd Address (Page)	Digital/ Analog Output	LED	
Iout	Low-line OC Fault	Floating	FW Sensor	READ_IOUT	0x8C (page 0)	26	25	Adc	STATUS_IOUT (6,7) / 0x7B (0)	PGOOD	Solid Yellow	Reporting Indicators Only Main output off (HW controlled)
									STATUS_BYTE (4,6) / 0x79 (All)			
									STATUS_WORD (4,6,11,14) / 0x79 (All)			
									PS_STATUS (7,15) / 0xE1 (All)			
Vout Hotspot Temp	OT Warning	Floating	FW Sensor	READ_TEMPERATURE_3	0x8F (page 1)	110	105	°C	STATUS_TEMPERATURE (6) / 0x7D (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
									STATUS_BYTE (2) / 0x79 (All)			
									STATUS_WORD (2) / 0x79 (All)			
									PS_STATUS (14) / 0xE1 (All)			
Vout Hotspot Temp	OT Fault	Floating	Ext HW	READ_TEMPERATURE_3	0x8F (page 1)	Digital Input Interrupt	°C	STATUS_TEMPERATURE (7) / 0x7D (All)	PGOOD	Solid Yellow	Reporting Indicators Main output off (recoverable)	
								STATUS_BYTE (2,6) / 0x79 (All)				
								STATUS_WORD (2,6) / 0x79 (All)				
								PS_STATUS (7,15) / 0xE1 (All)				
Vstby	UV Warning	Secondary	FW Sensor	READ_VSTBY	0x8B (page 1)	11.5	11.8	Vdc	STATUS_VSTBY (5) / 0x7A (1) STATUS_WORD (15) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Vstby	UV Fault	Secondary	FW Sensor	READ_VSTBY	0x8B (page 1)	11	11.3	Vdc	STATUS_VSTBY (4) / 0x7A (1) STATUS_WORD (15) / 0x79 (All) PS_STATUS (15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only
Vstby	OV Warning	Secondary	FW Sensor	READ_VSTBY	0x8B (page 1)	13	12.7	Vdc	STATUS_VSTBY (6) / 0x7A (1) STATUS_WORD (15) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Vstby	OV Fault	Secondary	Ext HW			Digital Input Interrupt	Latching	Vdc	STATUS_VSTBY (7) / 0x7A (1)	PGOOD	Solid Yellow	Reporting Indicators Only Standby output off (HW controlled)
									STATUS_BYTE (5) / 0x79 (All)			
									STATUS_WORD (5,15) / 0x79 (All)			
									PS_STATUS (15) / 0xE1 (All)			
Istby	OC Warning	Secondary	FW Sensor	READ_ISTBY	0x8C (page 1)	2.3	2.2	Adc	STATUS_ISTBY (5) / 0x7B (1) STATUS_WORD (14) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Istby	OC Fault	Secondary	Ext HW			Digital Input Polled		Adc	STATUS_ISTBY (6,7) / 0x7B (1)	PGOOD	Solid Yellow	Reporting Indicators Only Standby output off (HW controlled)
									STATUS_WORD (4,14) / 0x79 (All)			
									PS_STATUS (15) / 0xE1 (All)			
									STATUS_IOUT (0) / 0x7B (0)			
Pout	High-line OP Warning	Secondary	FW Sensor	READ_POUT	0x96	1850	1750	Watts	STATUS_IOUT (1) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Pout	High-line OP Fault	Secondary	FW Sensor	READ_POUT	0x96	2000	1900	Watts	STATUS_IOUT (0) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only
Pout	Low-line OP Warning	Secondary	FW Sensor	READ_POUT	0x96	1300	1200	Watts	STATUS_IOUT (0) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Pout	Low-line OP Fault	Secondary	FW Sensor	READ_POUT	0x96	1450	1350	Watts	STATUS_IOUT (1) / 0x7B (0) STATUS_WORD (14) / 0x79 (All) PS_STATUS (15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only
Fan1	Warning	Secondary	FW Sensor	READ_FAN_SPEED_1	0x90	37.5% (Fan speed setting)	44% (Fan speed setting)	RPM	STATUS_FANS_1_2 (5) / 0x81 (All) STATUS_WORD (10) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Blinking Yellow 1Hz	Reporting Indicators Only
Fan1	Fault	Secondary	FW Sensor	READ_FAN_SPEED_1	0x90	25% (Fan speed setting)	30% (Fan speed setting)	RPM	STATUS_FANS_1_2 (7) / 0x81 (All) STATUS_WORD (10) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Only

Parameter	Fault / Warning	Location	Detect Mechanism	Sensor		Detect Level	Recovery Level	Units	Reporting Indicators			Impact
				Name	Cmd Address				Status Registers (Bit #) / Cmd Address (Page)	Digital/ Analog Output	LED	
Fan2	Warning	Secondary	FW Sensor	READ_FAN_SPEED_2	0x91	37.5% (Fan speed setting)	44%(Fan speed setting)	RPM	STATUS_FANS_1_2 (4) / 0x81 (All) STATUS_WORD (10) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only
Fan2	Fault	Secondary	FW Sensor	READ_FAN_SPEED_2	0x91	25% (Fan speed setting)	30%(Fan speed setting)	RPM	STATUS_FANS_1_2 (6) / 0x81 (All) STATUS_WORD (10) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Solid Yellow	Reporting Indicators Only
Outlet Temp	OT Warning	Secondary	FW Sensor	READ_TEMPERATURE_2	0x8E	125	120	°C	STATUS_TEMPERATURE (6) / 0x7D (All) STATUS_BYTE (2) / 0x79 (All) STATUS_WORD (2) / 0x79 (All) PS_STATUS (14) / 0xE1 (All)		Blinking Yellow 1Hz	Reporting Indicators Only
Outlet Temp	OT Fault	Secondary	Ext HW	READ_TEMPERATURE_2	0x8E	Digital Input Polled		°C	STATUS_TEMPERATURE (7) / 0x7D (All) STATUS_BYTE (2,6) / 0x79 (All) STATUS_WORD (2,6) / 0x79 (All) PS_STATUS (7,15) / 0xE1 (All)	PGOOD	Solid Yellow	Reporting Indicators Main output off (recoverable)

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