



BLUESTREAK PMBus SOFTWARE MANUAL

WWW.UNIPOWERCO.COM

Part Number 101-3274-0000 Rev 7

© 2017 UNIPOWER LLC

UNIPOWER LLC

NORTH AMERICA • 3900 Coral Ridge Drive, Coral Springs, Florida 33065, USA • Tel: +1 954-346-2442 • Fax: +1 954-340-7901 • Sales-NorthAmerica@unipowerco.com
EUROPE • Parkland Business Centre, Chartwell Road, Lancing BN15 8UE, ENGLAND • Tel: +44(0)1903 768200 • Sales-Europe@unipowerco.com

CONTENTS

1	<i>Purpose of this Document</i>	5
2	<i>Operation Notes</i>	5
3	<i>Applicable Documents</i>	5
4	<i>The Bluestreak PMBus Commands</i>	6
4.1	01h OPERATION	7
4.2	02h ON_OFF_CONFIG	7
4.3	03h CLEAR_FAULTS.....	8
4.4	12h RESTORE_DEFAULT_ALL	8
4.5	15h STORE_USER_ALL	8
4.6	16h RESTORE_USER_ALL	9
4.7	20h VOUT_MODE	9
4.8	21h VOUT_COMMAND.....	10
4.9	22h VOUT_TRIM.....	11
4.10	24h VOUT_MAX	12
4.11	25h VOUT_MARGIN_HIGH.....	13
4.12	26h VOUT_MARGIN_LOW	14
4.13	27h VOUT_TRANSITION_RATE	15
4.14	42h VOUT_OV_WARN_LIMIT	16
4.15	43h VOUT_UV_WARN_LIMIT	17
4.16	44h VOUT_UV_FAULT_LIMIT	18
4.17	45h VOUT_UV_FAULT_RESPONSE	19
4.18	46h IOUT_OC_FAULT_LIMIT	20
4.19	47h IOUT_OC_FAULT_RESPONSE.....	21
4.20	4Ah IOUT_OC_WARN_LIMIT	22
4.21	4Fh OT_FAULT_LIMIT	23
4.22	50h OT_FAULT_RESPONSE.....	24
4.23	51h OT_WARN_LIMIT	25
4.24	52h UT_WARN_LIMIT	26
4.25	53h UT_FAULT_LIMIT	27
4.26	54h UT_FAULT_RESPONSE	28
4.27	5Eh POWER_GOOD_ON	29
4.28	5Fh POWER_GOOD_OFF.....	30
4.29	60h TON_DELAY.....	31

4.30	61h TON_RISE	32
4.31	64h TOFF_DELAY.....	33
4.32	78h STATUS_BYTE.....	34
4.33	79h STATUS_WORD	35
4.34	7Ah STATUS_VOUT	36
4.35	7Bh STATUS_IOUT	37
4.36	7Ch STATUS_INPUT	38
4.37	7Dh STATUS_TEMPERATURE.....	38
4.38	7Eh STATUS_CML.....	39
4.39	81h STATUS_FANS_1_2	39
4.40	88h READ_VIN.....	40
4.41	8Ah READ_VCAP	41
4.42	8Bh READ_VOUT	42
4.43	8Ch READ_IOUT	43
4.44	8Dh READ_TEMPERATURE_1	44
4.45	90h READ_FAN_SPEED_1	45
4.46	91h READ_FAN_SPEED_2	46
4.47	98h PMBUS_REVISION.....	47
4.48	99h MFR_ID.....	47
4.49	9Ah MFR_MODEL	48
4.50	9Bh MFR_REVISION.....	48
4.51	9Ch MFR_LOCATION.....	48
4.52	9Dh MFR_DATE	49
4.53	9Eh MFR_SERIAL.....	49
4.54	D0h OVP_SETTING	50
4.55	D1h READ_ISHARE.....	51
4.56	D2h READ_VOUT_BUTTON_ADJUST	52
4.57	D3h MINIMUM_FAN_SPEED_RPM	53
4.58	D4h MISC_CONFIG	54
4.59	D5h SOFTWARE_VERSION	55
4.60	D6h MODEL	55
4.61	D7h PART_NUMBER.....	56
<i>Appendix 1 - REVISION HISTORY.....</i>		<i>57</i>

BLUESTREAK PMBus SOFTWARE MANUAL

1 Purpose of this Document

This document is for customer use, and describes in detail each of the PMBus commands available in the Bluestreak power supply.

2 Operation Notes

The Bluestreak power supply uses PMBus Revision 1.1 and will operate with a clock rate of up to 100kHz.

All Bluestreak PMBus commands allow the use of the PEC (Packet Error Check) mechanism to help insure that the correct data has been transferred.

PMBus faults and warnings are reported to the host using the #SMBALERT signal method.

3 Applicable Documents

The following documents that are available from the pmbus.org website are required to be used in conjunction with this document;

PMBus Power System Management Protocol Specification Part I Revision 1.1

PMBus Power System Management Protocol Specification Part II Revision 1.1

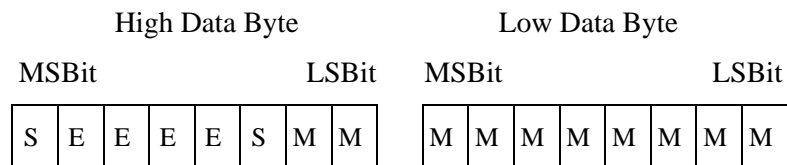
4 The Bluestreak PMBus Commands

In the following sections of this document, each of the commands that are used in the Bluestreak power supply are described in detail.

Key to the diagrams and nomenclature used in the following PMBus command descriptions;

Command Code	The hexadecimal PMBus command code value.
Command Name	The PMBus name of the command.
SMBus Transaction Type	The PMBus uses a subset of the various possible SMBus transactions.
Number of Data Bytes	The number of data bytes to be read or written by the command.
Data Format	Identifying how to interpret the data.
Data Value	More detailed breakdown of the data to bit or byte level.
Data Range	Information on the range of values that could be transferred by the command. The value could be clipped by the device if the value is not practical.
Data Resolution	Indication of the resolution that the command can transfer.

Illustration of the Command Data Bits



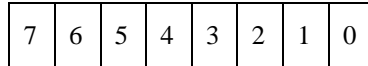
Bit Usage S = Sign Bit
 E = Exponent Bit
 M = Mantissa Bit

Number Base Identification AAh = hexadecimal value
 170d = decimal value

Non Vol Memory Commands	Lists the PMBus commands that can be used to store or restore the value.
Default Value	The value that is read if the command has not been written to before.
Maximum Error	The maximum error of the setting or reading over -20C to 70C ambient temperature range and from zero to full load.
Comments	Additional information or conditions that apply to the command.

4.1 01h OPERATION

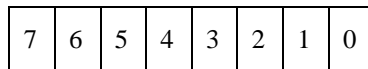
Command Code	01h
Command Name	OPERATION
SMBus Transaction Type	R/W BYTE
Number of Data Bytes	1
Data Format	See the PMBus Specification.



Non Vol Memory Commands	None
Default Setting	00h
Comments	The margin commands with ignore fault have not been implemented and the device will respond with invalid data if bit 2 is set. All the other OPERATION commands have been implemented.

4.2 02h ON_OFF_CONFIG

Command Code	02h
Command Name	ON_OFF_CONFIG
SMBus Transaction Type	R/W BYTE
Number of Data Bytes	1
Data Format	See the PMBus specification.



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	1Eh
Comments	See the MISC_CONFIG command for an additional power up configuration bit.

4.3 03h CLEAR_FAULTS

Command Code	03h
Command Name	CLEAR_FAULTS
SMBus Transaction Type	SEND BYTE
Number of Data Bytes	0
Non Vol Memory Commands	None
Comments	Any faults or warnings still active will immediately set the status bits again.

4.4 12h RESTORE_DEFAULT_ALL

Command Code	12h
Command Name	RESTORE_DEFAULT_ALL
SMBus Transaction Type	SEND BYTE
Number of Data Bytes	0
Comments	The device will operate normally during the EEPROM read so the output does not need to be disabled. Restores the Operating Memory to the factory settings.

4.5 15h STORE_USER_ALL

Command Code	15h
Command Name	STORE_USER_ALL
SMBus Transaction Type	SEND BYTE
Number of Data Bytes	0
Comments	The Operating Memory data is written to the EEPROM after the SMBus stop condition has been received. A delay of 300ms should be allowed while the device is busy before the next command is transmitted to this device. The device will operate normally during the EEPROM write so the output does not need to be disabled.

4.6 16h RESTORE_USER_ALL

Command Code	16h
Command Name	RESTORE_USER_ALL
SMBus Transaction Type	SEND BYTE
Number of Data Bytes	0
Comments	The device will operate normally during the EEPROM read so the output does not need to be disabled. Restores the Operating Memory to the user settings.

4.7 20h VOUT_MODE

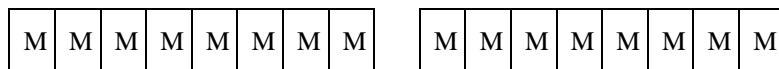
Command Code	20h
Command Name	VOUT_MODE
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	See the PMBus Specification.

0	0	0	1	0	1	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands	None
Default Setting	16h
Comments	This command is read only as the mode is fixed. Bits 7 to 5 of this value indicates that the mode is linear and bits 4 to 0 indicate that the VOUT related values have an exponent of -10d.

4.8 21h VOUT_COMMAND

Command Code	21h
Command Name	VOUT_COMMAND
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting	48V Model	Front End 48.0V	Rectifier 54.4V
	24V Model	Front End 24.0V	Rectifier 27.2V
	12V Model	Front End 12.0V	Rectifier 13.6V

Maximum Error in Output +/- 1.2% of the output voltage setting.

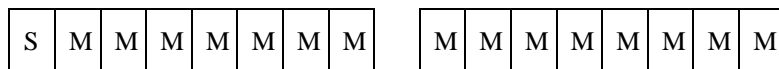
Comments	48V Model	Output voltage range	30V to 60V
	24V Model	Output voltage range	15V to 30V
	12V Model	Output voltage range	7.5V to 15V

The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

4.9 22h VOUT_TRIM

Command Code	22h
Command Name	VOUT_TRIM
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit 2's complement mantissa, (exponent = -10d)
Data Range	-32V to + 31.999V
Data Resolution	1/1024V



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting 0.0V

Maximum Error in Output This setting causes no additional error to the output voltage.

Comments

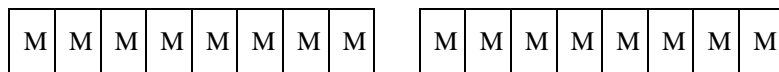
48V Model	Output voltage range	30V to 60V
24V Model	Output voltage range	15V to 30V
12V Model	Output voltage range	7.5V to 15V

The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

4.10 24h VOUT_MAX

Command Code	24h
Command Name	VOUT_MAX
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting	48V Model	60.0V
	24V Model	30.0V
	12V Model	15.0V

Maximum Error in Output This setting causes no additional error to the output voltage.

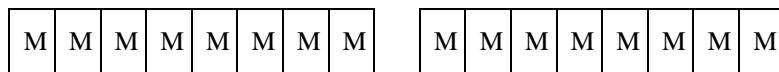
Comments	48V Model	Output voltage range	30V to 60V
	24V Model	Output voltage range	15V to 30V
	12V Model	Output voltage range	7.5V to 15V

The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

4.11 25h VOUT_MARGIN_HIGH

Command Code	25h
Command Name	VOUT_MARGIN_HIGH
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting	48V Model	Front End 48.0V	Rectifier 54.4V
	24V Model	Front End 24.0V	Rectifier 27.2V
	12V Model	Front End 12.0V	Rectifier 13.6V

Maximum Error in Output This setting causes no additional error to the output voltage.

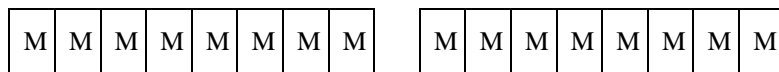
Comments	48V Model	Output voltage range	30V to 60V
	24V Model	Output voltage range	15V to 30V
	12V Model	Output voltage range	7.5V to 15V

The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

4.12 26h VOUT_MARGIN_LOW

Command Code	26h
Command Name	VOUT_MARGIN_LOW
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting	48V Model	Front End 48.0V	Rectifier 54.4V
	24V Model	Front End 24.0V	Rectifier 27.2V
	12V Model	Front End 12.0V	Rectifier 13.6V

Maximum Error in Output This setting causes no additional error to the output voltage.

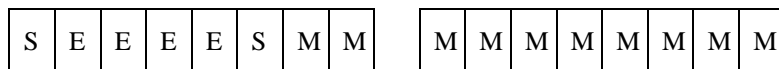
Comments	48V Model	Output voltage range	30V to 60V
	24V Model	Output voltage range	15V to 30V
	12V Model	Output voltage range	7.5V to 15V

The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

4.13 27h VOUT_TRANSITION_RATE

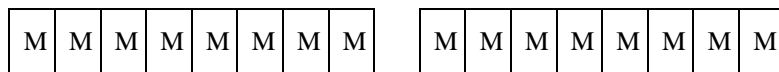
Command Code	27h
Command Name	VOUT_TRANSITION_RATE
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	15mV/s to 1023V/ms
Data Resolution	10d bit mantissa



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.	
Default Setting	48V Model	1mV/us, 1V/ms
	24V Model	0.5mV/us, 0.5V/ms
	12V Model	0.25mV/us, 0.25V/ms
Maximum Error in Rate	48V Model	+/-1% of setting when the setting is slower than 2V/ms.
	24V Model	+/-1% of setting when the setting is slower than 1V/ms.
	12V Model	+/-1% of setting when the setting is slower than 0.5V/ms.
Comments	48V Model	Negative transitions rely on the load current to reduce the voltage stored on the output filter capacitors.
	24V Model	Negative transitions are aided by the synchronous rectifiers being able to sink current to reduce the voltage stored on the output filter capacitors.
	12V Model	Negative transitions are aided by the synchronous rectifiers being able to sink current to reduce the voltage stored on the output filter capacitors.

4.14 42h VOUT_OV_WARN_LIMIT

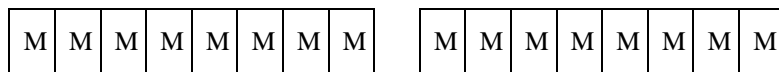
Command Code	42h
Command Name	VOUT_OV_WARN_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.		
Default Setting	48V Model	Front End 50.40V	Rectifier 57.12V
	24V Model	Front End 25.20V	Rectifier 28.56V
	12V Model	Front End 12.60V	Rectifier 14.28V
Maximum Error in Setting	+/- 1.7% between this setting and the output voltage.		
Comments	The default setting is the default VOUT_COMMAND setting +5%.		

4.15 43h VOUT_UV_WARN_LIMIT

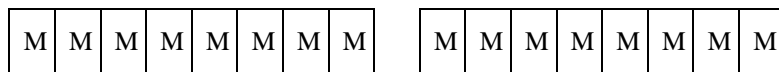
Command Code	43h
Command Name	VOUT_UV_WARN_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.						
Default Setting	<table border="0"> <tr> <td>48V Model</td> <td>45.60V</td> </tr> <tr> <td>24V Model</td> <td>22.80V</td> </tr> <tr> <td>12V Model</td> <td>11.40V</td> </tr> </table>	48V Model	45.60V	24V Model	22.80V	12V Model	11.40V
48V Model	45.60V						
24V Model	22.80V						
12V Model	11.40V						
Maximum Error in Setting	+/- 1.7% between this setting and the output voltage.						
Comments	<p>For front ends the default setting is the default VOUT_COMMAND setting -5%.</p> <p>For rectifiers the default setting is the Model voltage -5%.</p>						

4.16 44h VOUT_UV_FAULT_LIMIT

Command Code	44h
Command Name	VOUT_UV_FAULT_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	48V Model 10.00V 24V Model 6.00V 12V Model 3.00V
Maximum Error in Setting	+/- 1.7% between this setting and the output voltage.
Comments	This value is used in conjunction with the VOUT_UV_FAULT_RESPONSE setting to provide overload protection for the power supply. 48V Model The value written is clipped to 10.00V minimum. 24V Model The value written is clipped to 6.00V minimum. 12V Model The value written is clipped to 3.00V minimum.

4.17 45h VOUT_UV_FAULT_RESPONSE

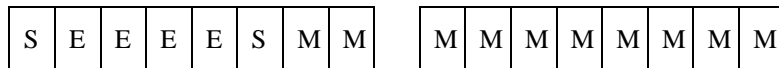
Command Code	45h
Command Name	VOUT_UV_FAULT_RESPONSE
SMBus Transaction Type	R/W BYTE
Number of Data Bytes	1
Data Format	See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	BAh Shutdown and retry after a delay of 1s, unlimited retries.
Comments	<p>The supported fault responses are;</p> <p>40h to 47h Lockout and no retry + delay time units of 50ms.</p> <p>B8h to BFh Shutdown and retry forever + delay time units of 500ms.</p> <p>This setting is used in conjunction with the VOUT_UV_FAULT_LIMIT value to provide overload protection for the power supply.</p>

4.18 46h IOUT_OC_FAULT_LIMIT

Command Code	46h	
Command Name	IOUT_OC_FAULT_LIMIT	
SMBus Transaction Type	R/W WORD	
Number of Data Bytes	2	
Data Format	Linear	
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa	
Data Range	48V Model	0.0A to 63.938A
	24V Model	0.0A to 127.88A
	12V Model	0.0A to 127.88A
Data Resolution	48V Model	62.5mA
	24V Model	125mA
	12V Model	125mA



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.	
Default Setting	48V Model	44.875A
	24V Model	64.625A
	12V Model	105.25A
Maximum Error in Setting	48V Model	+/-1.5A +/-3.2% of the setting.
	24V Model	+/-3.0A +/-2.7.% of the setting.
	12V Model	+/-3.1A +/-2.1% of the setting.
Comments	48V Model	Command read returns with an exponent of -4.
	24V Model	Command read returns with an exponent of -3.
	12V Model	Command read returns with an exponent of -3.
	A command write will accept any exponent.	
	The default setting guarantees that the unit will current limit at no less than the output current rating unless automatic power limiting or temperature de-rating is occurring.	
	48V Model	The output current rating is 42A.
	24V Model	The output current rating is 60A.
	12V Model	The output current rating is 100A.
	The minimum output power limit is 2000W high line and 1500W low line and The output power and current de-rates with temperature from 50C ambient to 50% at 70C ambient.	

4.19 47h IOUT_OC_FAULT_RESPONSE

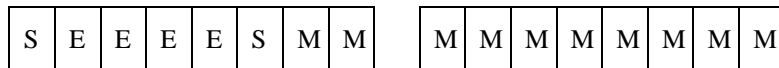
Command Code 47h
 Command Name IOUT_OC_FAULT_RESPONSE
 SMBus Transaction Type R/W BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None as only one value is supported.
 Default Setting 00h Continue operation.
 Comments The supported fault responses are;
 00h Continue operation.

4.20 4Ah IOUT_OC_WARN_LIMIT

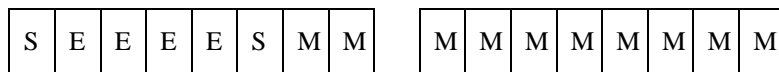
Command Code	4Ah	
Command Name	IOUT_OC_WARN_LIMIT	
SMBus Transaction Type	R/W WORD	
Number of Data Bytes	2	
Data Format	Linear	
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa	
Data Range	48V Model	0.0A to 63.938A
	24V Model	0.0A to 127.88A
	12V Model	0.0A to 127.88A
Data Resolution	48V Model	62.5mA
	24V Model	125mA
	12V Model	125mA



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.	
Default Setting	48V Model	39.875A
	24V Model	57.000A
	12V Model	95.000A
Maximum Error in Setting	48V Model	+/-1.5A +/-3.2% of the setting.
	24V Model	+/-3.0A +/-2.7% of the setting.
	12V Model	+/-3.1A +/-2.1% of the setting.
Comments	The default setting is at 95% of the output current rating.	
	48V Model	Command read returns with an exponent of -4.
	24V Model	Command read returns with an exponent of -3.
	12V Model	Command read returns with an exponent of -3.
	The command write will accept any exponent.	

4.21 4Fh OT_FAULT_LIMIT

Command Code	4Fh
Command Name	OT_FAULT_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	-128C to 127.875C
Data Resolution	0.125C



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	120C
Maximum Error in Setting	+/- 10.7C, the error in reading the internal temperature.
Comments	<p>The read command exponent is always -3 but the write command will accept any exponent.</p> <p>This setting is compared to a measurement of the internal temperature of the unit.</p> <p>The over temperature fault status bit has hysteresis. Once the temperature has reached this setting the over temperature fault bit will be set. If the status bit is cleared the bit will be set again until the measured temperature falls to 10C below this setting.</p>

4.22 50h OT_FAULT_RESPONSE

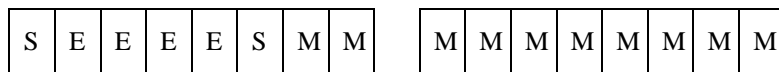
Command Code 50h
 Command Name OT_FAULT_RESPONSE
 SMBus Transaction Type R/W BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None as only one value is supported.
 Default Setting C0h Disable the output while fault then resume.
 Comments The supported fault responses are;
 C0h Disable the output while fault then resume.

4.23 51h OT_WARN_LIMIT

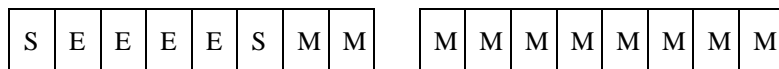
Command Code	51h
Command Name	OT_WARN_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	-128C to 127.875C
Data Resolution	0.125C



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	95C
Maximum Error in Setting	+/- 10.7C, the error in reading the internal temperature.
Comments	<p>The read command exponent is always -3 but the write command will accept any exponent.</p> <p>This setting is compared to a measurement of the internal temperature of the unit.</p> <p>The over temperature warning status bit has hysteresis. Once the temperature has reached this setting the over temperature warning bit will be set. If the status bit is cleared the bit will be set again until the measured temperature falls to 10C below this setting.</p>

4.24 52h UT_WARN_LIMIT

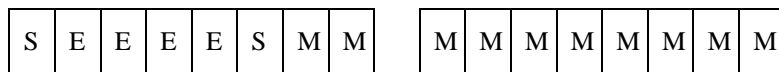
Command Code	52h
Command Name	UT_WARN_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	-128C to 127.875C
Data Resolution	0.125C



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	-20C
Maximum Error in Setting	+/- 10.7C, the error in reading the internal temperature.
Comments	<p>The read command exponent is always -3 but the write command will accept any exponent.</p> <p>This setting is compared to a measurement of the internal temperature of the unit.</p> <p>The under temperature warning status bit has hysteresis. Once the temperature has reached this setting the under temperature warning bit will be set. If the status bit is cleared the bit will be set again until the measured temperature rises to 5C above this setting.</p>

4.25 53h UT_FAULT_LIMIT

Command Code	53h
Command Name	UT_FAULT_LIMIT
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	-128C to 127.875C
Data Resolution	0.125C



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	-30C
Maximum Error in Setting	+/- 10.7C, the error in reading the internal temperature.
Comments	<p>The read command exponent is always -3 but the write command will accept any exponent.</p> <p>This setting is compared to a measurement of the internal temperature of the unit.</p> <p>The under temperature fault status bit has hysteresis. Once the temperature has reached this setting the under temperature fault bit will be set. If the status bit is cleared the bit will be set again until the measured temperature rises to 5C above this setting.</p>

4.26 54h UT_FAULT_RESPONSE

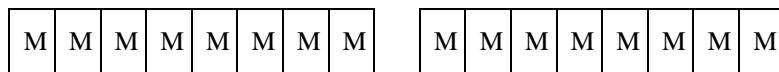
Command Code 54h
 Command Name UT_FAULT_RESPONSE
 SMBus Transaction Type R/W BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None as only one value is supported.
 Default Setting C0h Disable the output while fault then resume.
 Comments The supported fault responses are;
 C0h Disable the output while fault then resume.

4.27 5Eh POWER_GOOD_ON

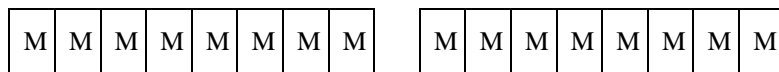
Command Code	5Eh
Command Name	POWER_GOOD_ON
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	48V model 45.60V 24V model 22.80V 12V model 11.40V
Maximum Error in Setting	+/- 1.7% between this setting and the output voltage.
Comments	For front ends the default setting is the default VOUT_COMMAND setting -5%. For rectifiers the default setting is the Model voltage -5%. The DCOK signal will become true within 1ms of the output voltage reaching this value.

4.28 5Fh POWER_GOOD_OFF

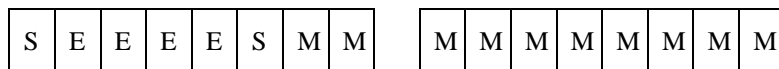
Command Code	5Fh
Command Name	POWER_GOOD_OFF
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.	
Default Setting	48V model	43.20V
	24V model	21.60V
	12V model	10.80V
Maximum Error in Setting	+/- 1.7% between this setting and the output voltage.	
Comments	<p>For front ends the default setting is the default VOUT_COMMAND setting -10%.</p> <p>For rectifiers the default setting is the Model voltage -10%.</p> <p>The DCOK signal will be become false within 1ms of the output voltage falling below this value.</p>	

4.29 60h TON_DELAY

Command Code	60h
Command Name	TON_DELAY
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	0ms to 100s
Data Resolution	Depends on the exponent, up to 10d bits.



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	0ms
Maximum Error in Setting	+/-1ms +/-1% of this setting.
Comments	From power on to the time the output starts to rise is determined by the device configuration and three time delays; Power Up Delay, PFC Delay and TON_DELAY.

Power Up Delay 130ms to 300ms This is the time from power on to the bias supply being enabled. The PMBus will start running within 10ms of the bias supply being established.

PFC Delay 150ms Software version up to 2.05.
 500ms Software version 2.06 onwards.
 This is a time delay to allow the Power Factor Correction circuit to charge the bulk hold-up capacitors and to complete soft start.

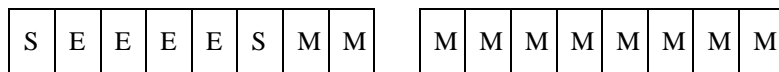
TON_DELAY This setting After this delay the output will rise at the rate determined by the value of TON_RISE.

If the device is configured to wait for the CONTROL signal or the OPERATION command, the instruction should be given after the Power Up Delay and PFC Delay have elapsed to maintain the expected timing.

See the MISC_CONFIG command for information on an additional power up configuration bit.

4.30 61h TON_RISE

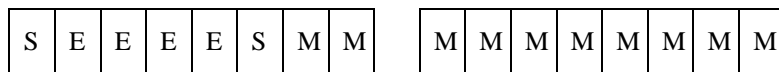
Command Code	61h
Command Name	TON_RISE
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	0ms to 100s
Data Resolution	Depends on exponent, up to 10d bits.



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	50ms
Maximum Error in Rise Time	+/-1ms +/-1% of setting for values of 30ms or greater. The fastest rise time achievable is less than 20ms.
Comments	The PMBus Specification part II calls for the default value to be 0ms but the device is set up with a default value of 50ms.

4.31 64h TOFF_DELAY

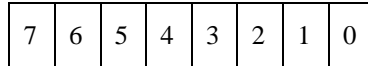
Command Code	64h
Command Name	TOFF_DELAY
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	0ms to 100s
Data Resolution	Depends on exponent, up to 10d bit.



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	0ms
Maximum Error in Setting	+/-1ms +/-1% of this setting.
Comments	

4.32 78h STATUS_BYTE

Command Code	78h
Command Name	STATUS_BYTE
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	See the PMBus specification.



Non Vol Memory Commands None

Comments The following status bits are implemented;

Bit 7 BUSY

Bit 6 OFF

Bit 4 IOOUT_OC

Bit 2 TEMPERATURE

Bit 1 CML

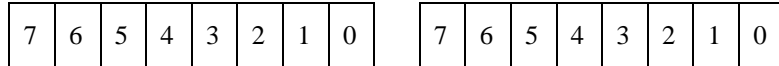
Bit 0 NONE OF THE ABOVE

Status bit 5 VOUT_OV has not been implemented because the programmable OVP (over voltage protection) is implemented in hardware and not in software.

Status bit 3 VIN_UV has not been implemented as an input voltage under voltage fault results in the PFC (power factor corrector) hardware shutting down.

4.33 79h STATUS_WORD

Command Code 79h
 Command Name STATUS_WORD
 SMBus Transaction Type READ WORD
 Number of Data Bytes 2
 Data Format See the PMBus specification.



Non Vol Memory Commands None

Comments The low byte status bits are the same as in the STATUS_BYTE above.

The following High Byte status bits are implemented;

- Bit 7 VOUT
- Bit 6 IOUT/POUT
- Bit 5 INPUT
- Bit 3 POWER_GOOD#
- Bit 2 FANS

4.34 7Ah STATUS_VOUT

Command Code	7Ah
Command Name	STATUS_VOUT
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

Comments The following status bits are implemented;

Bit 6 VOUT Overvoltage Warning

Bit 5 VOUT Undervoltage Warning

Bit 4 VOUT Undervoltage Fault

Bit 3 VOUT_MAX_FAULT

Status bit 7 VOUT Overvoltage Fault has not been implemented because the programmable OVP (over voltage protection) is implemented in hardware and not in software.

Status bits 2 to 0 have not been implemented.

4.35 7Bh STATUS_IOUT

Command Code	7Bh
Command Name	STATUS_IOUT
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

Comments The following status bits are implemented;

- Bit 7 IOUT Overcurrent Fault
- Bit 5 IOUT Overcurrent Warning
- Bit 3 Current Share Fault
- Bit 2 Power Limiting

A current share fault is set when this unit is delivering less than the Ishare value by 5% of rating - 10% of Ishare reading.

e.g. 48V Model rated Iout = 42.0A

If Ishare = 40.0A and Iout = 33.8A

If $I_{out} < (I_{share} - I_{share} * 10\% - I_{rating} * 5\%)$ set the share fault bit.

$33.8A < 40.0A - 4.0A - 2.1A = 33.9A$, the current share fault bit is set.

The power limiting bit is set when the measured output power exceeds the unit power limit which depends on the line voltage and internal temperature measurement.

4.36 7Ch STATUS_INPUT

Command Code 7Ch
 Command Name STATUS_INPUT
 SMBus Transaction Type READ BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

Comments The following status bits are implemented;

- Bit 6 VIN Overvoltage Warning
- Bit 5 VIN Undervoltage Warning

A warning bit is set if the READ_VIN voltage is outside the range 80V to 270V. The VIN warning bits are not set if the READ_VIN voltage is within the range 83V to 267V.

4.37 7Dh STATUS_TEMPERATURE

Command Code 7Dh
 Command Name STATUS_TEMPERATURE
 SMBus Transaction Type READ BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

Comments The following status bits are implemented;

- Bit 7 Overtemperature Fault
- Bit 6 Overtemperature Warning
- Bit 5 Undertemperature Warning
- Bit 4 Undertemperature Fault

4.38 7Eh STATUS_CML

Command Code 7Eh
 Command Name STATUS_CML
 SMBus Transaction Type READ BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

Comments The following status bits are implemented;
 Bit 7 Invalid Or Unsupported Command Received
 Bit 6 Invalid Or Unsupported Data Received
 Bit 5 Packet Error Check Failed
 Bit 1 Other Communication Fault

4.39 81h STATUS_FANS_1_2

Command Code 81h
 Command Name STATUS_FANS_1_2
 SMBus Transaction Type READ BYTE
 Number of Data Bytes 1
 Data Format See the PMBus specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands None

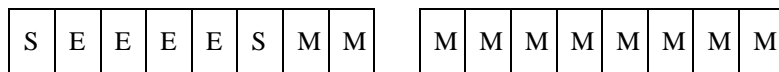
Comments The following status bits are implemented;
 Bit 7 Fan 1 Fault
 Bit 6 Fan 2 Fault
 Bit 5 Fan 1 Warning
 Bit 4 Fan 2 Warning

A fan warning bit is set if the fan speed is below 80% of the expected speed. A fan fail bit is set if the speed drop is double i.e. to 60% of the expected speed.

Looking at the unit front panel, fan 1 is on the left and fan 2 is on the right.

4.40 88h READ_VIN

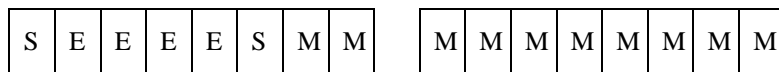
Command Code	88h
Command Name	READ_VIN
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	0.0V to +511.5V
Data Resolution	0.5V



Non Vol Memory Commands	None
Maximum Error in Reading	+/-10.8% of the reading.
Comments	The read command exponent is always -1.

4.41 8Ah READ_VCAP

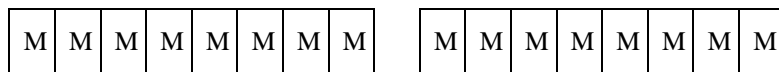
Command Code	8Ah
Command Name	READ_VCAP
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	0.0V to +511.5V
Data Resolution	0.5V



Non Vol Memory Commands	None
Maximum Error in Reading	+/- 57V
Comments	<p>The read command exponent is -1.</p> <p>The read value is the instantaneous high voltage power bus voltage which will include 31Vpkpk ripple at full load.</p>

4.42 8Bh READ_VOUT

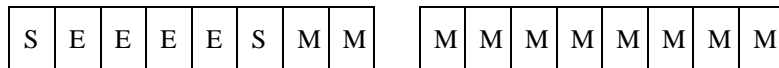
Command Code	8Bh
Command Name	READ_VOUT
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	None
Maximum Error in Reading	+/-1.7% between this reading and the output voltage.
Comments	The measurement resolution is approximately; 48V Model 80mV 24V Model 40mV 12V Model 20mV

4.43 8Ch READ_IOUT

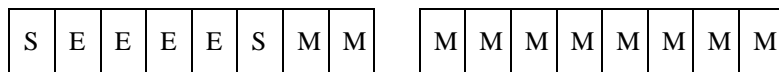
Command Code	8Ch	
Command Name	READ_IOUT	
SMBus Transaction Type	READ WORD	
Number of Data Bytes	2	
Data Format	Linear	
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa	
Data Range	48V Model	0.0A to + 63.937A
	24V Model	0.0A to + 127.88A
	12V Model	0.0A to + 127.88A
Data Resolution	48V Model	62.5mA
	24V Model	125mA
	12V Model	125mA



Non Vol Memory Commands	None	
Maximum Error in Reading	48V Model	+/-1.5A +/-3.2% of the reading.
	24V Model	+/-3.0A +/-2.7% of the reading.
	12V Model	+/-3.1A +/-2.1% of the reading.
Comments	48V Model	The read exponent is always -4.
	24V Model	The read exponent is always -3.
	12V Model	The read exponent is always -3.

4.44 8Dh READ_TEMPERATURE_1

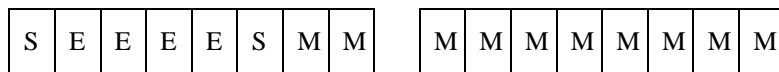
Command Code	8Dh
Command Name	READ_TEMPERATURE_1
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	-128.0C to 127.875C
Data Resolution	0.125C



Non Vol Memory Commands	None
Maximum Error in Reading	+/-11.7C
Comments	This command returns a measurement of the internal temperature of the unit.

4.45 90h READ_FAN_SPEED_1

Command Code	90h
Command Name	READ_FAN_SPEED_1
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	0 RPM to 32736 RPM
Data Resolution	32 RPM

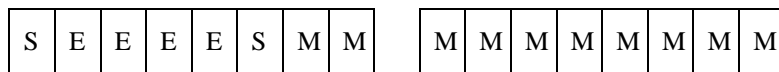


Non Vol Memory Commands	None
Maximum Error in Reading	62 RPM
Comments	The read command exponent is always 5.

This is the speed of the left hand fan when viewed from the front of the unit. The fan speed is automatically controlled from the internal temperature measurement. Above 45C the fans will be running at full speed. Below -10C the fans will be stopped until the temperature rises above -5C.

4.46 91h READ_FAN_SPEED_2

Command Code	91h
Command Name	READ_FAN_SPEED_2
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	0 RPM to 32736 RPM
Data Resolution	32 RPM



Non Vol Memory Commands	None
Maximum Error in Reading	62RPM
Comments	The read command exponent is always 5.

This is the speed of the right hand fan when viewed from the front of the unit. The fan speed is automatically controlled from the internal temperature measurement. Above 45C the fans will be running at full speed. Below -10C the fans will be stopped until the temperature rises above -5C.

4.47 98h PMBUS_REVISION

Command Code	98h
Command Name	PMBUS_REVISION
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	See the PMBus Specification.

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Non Vol Memory Commands	None
Default Setting	011h
Comments	This device uses PMBus Revision 1.1.

4.48 99h MFR_ID

Command Code	99h
Command Name	MFR_ID
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	9
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	Length + 8 text characters
Non Vol Memory Commands	None
Default Setting	Length = 8, + 'Unipower'
Comments	See the PMBus Specification.

4.49 9Ah MFR_MODEL

Command Code	9Ah
Command Name	MFR_MODEL
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 21d
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	Length + 1 to 20d text characters
Non Vol Memory Commands	None
Comments	See the PMBus Specification.

4.50 9Bh MFR_REVISION

Command Code	9Bh
Command Name	MFR_REVISION
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 7
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	Length + 1 to 6 text characters
Non Vol Memory Commands	None
Comments	See the PMBus Specification.

4.51 9Ch MFR_LOCATION

Command Code	9Ch
Command Name	MFR_LOCATION
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 17d
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	length + 1 to 16d characters
Non Vol Memory Commands	None
Comments	See the PMBus Specification.

4.52 9Dh MFR_DATE

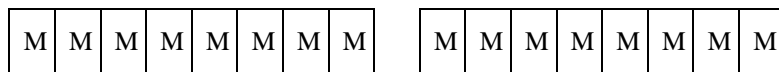
Command Code	9Dh
Command Name	MFR_DATE
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 7
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	length + 1 to 6 characters
Non Vol Memory Commands	None
Comments	See the PMBus Specification.

4.53 9Eh MFR_SERIAL

Command Code	9Eh
Command Name	MFR_SERIAL
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 11d
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	length + 1 to 10d characters
Non Vol Memory Commands	None
Comment	See the PMBus Specification.

4.54 D0h OVP_SETTING

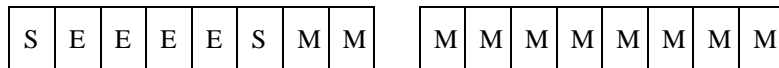
Command Code	D0h
Command Name	OVP_SETTING
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit mantissa, (exponent = -10d)
Data Range	0.0V to + 63.999V
Data Resolution	1/1024V



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.		
Default Setting	48V Model	Front End = 52.80V	Rectifier = 59.00V
	24V Model	Front End = 30.00V	Rectifier = 30.00V
	12V Model	Front End = 15.00V	Rectifier = 15.00V
Maximum Error in Setting	+/-2.7% between this setting and the output voltage.		
Comments	This parameter determines the output voltage which will set the hardware over voltage protection latch which shuts down the output voltage converter. The latch can be reset only by powering the unit off and on.		

4.55 D1h READ_ISHARE

Command Code	D1h
Command Name	READ_ISHARE
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11d bit 2's compliment mantissa
Data Range	48V Model 0.0A to + 63.875A 24V Model 0.0A to + 127.88A 12V Model 0.0A to + 127.88A
Data Resolution	48V Model 62.5mA 24V Model 125mA 12V Model 125mA



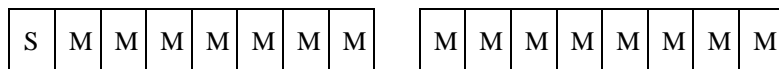
Non Vol Memory Commands	None
Maximum Error in Reading	48V Model +/-1.5A +/-3.2% 24V Model +/-3.0A +/-2.7% 12V Model +/-3.1A +/-2.1%

of the largest output current of the paralleled units.

Comments The READ_ISHARE value indicates the output current of the unit outputting the largest current in a group of paralleled units with a commoned IShare signal.

4.56 D2h READ_VOUT_BUTTON_ADJUST

Command Code	D2h
Command Name	READ_VOUT_BUTTON_ADJUST
SMBus Transaction Type	READ WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	16d bit 2's compliment mantissa, (exponent = -10d)
Data Range	-32.0V to + 31.999V
Data Resolution	1/1024V



Non Vol Memory Commands	None. See below.
Default Setting	0.0V
Maximum Error in Output	The button adjust value does not add any extra error to the output voltage.

Comments

The purpose of the value is to allow users not using PMBus to be able to adjust the output voltage by using the front panel push buttons.

The two push buttons can be used to adjust the output voltage when the output is enabled. The buttons are labelled **V▲** and **V▼**.

Short presses for a fraction of a second adjust the output voltage at the output voltage setting resolution. If the button is held down, the rate of change increases to around 1V/s after 10s.

If both buttons are pressed together, the button adjust value is cleared to zero.

The new value is automatically stored in non volatile memory after a delay of 5s.

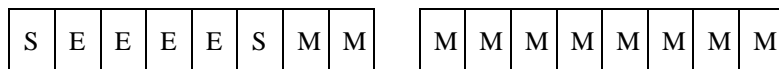
The output voltage setting is clipped to the output voltage range (or VOUT_MAX) after the effect of VOUT_TRIM, margin and push button adjust have been included.

The remote adjust pin overrides the output voltage setting and the clipping limits.

See the MISC_CONFIG command to enable/disable the buttons or to clear the READ_VOUT_BUTTON_ADJUST value.

4.57 D3h MINIMUM_FAN_SPEED_RPM

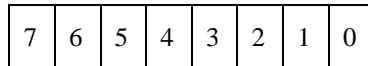
Command Code	D3h
Command Name	MINIMUM_FAN_SPEED_RPM
SMBus Transaction Type	R/W WORD
Number of Data Bytes	2
Data Format	Linear
Data Value	5 bit 2's compliment exponent + 11 d bit 2's compliment mantissa
Data Range	0 RPM to 32736 RPM
Data Resolution	32 RPM



Non Vol Memory Commands	RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.
Default Setting	4480 RPM
Maximum Error in Setting	62 RPM
Comments	<p>The read exponent is always 5 but the command will accept any write exponent.</p> <p>This value allows the minimum fan speed to be set at a higher value. The higher airflow could be used for cooling other equipment.</p> <p>Setting this value to a lower value will not slow the fans as a minimum drive level is maintained to keep the fans rotating.</p>

4.58 D4h MISC_CONFIG

Command Code	D4h
Command Name	MISC_CONFIG
SMBus Transaction Type	R/W BYTE
Number of Data Bytes	1
Data Format	See below.



Non Vol Memory Commands RESTORE_DEFAULT_ALL, STORE_USER_ALL and RESTORE_USER_ALL.

Default Setting 04h

Comments Miscellaneous configuration bits.

Bit	Default	Function
Bit 7	0	1 = FANOK signal is high active.
Bit 6	0	1 = TEMPOK signal is high active.
Bit 5	0	1 = DCOK signal is high active.
Bit 4	0	1 = ACOK signal is high active.
Bit 3	0	Not Used.
Bit 2	1	1 = Power up command on.
Bit 1	0	1 = Clear Vout button adjust value.
Bit 0	0	1 = Disable the push buttons.

Bits 7 to 4 configure the polarity of the output signals. A one bit sets high active and a zero bit sets low active.

Bit 2 configures the power up behaviour of the unit. A zero bit produces standard PMBus behaviour where if the unit is set to be controlled by the 'ON' part of the OPERATION command the unit will not automatically power up and provide output power. The unit will wait for an OPERATION command with the 'ON' bit set.

A one bit produces a more useful behaviour for rectifiers where if the unit has been configured to be controlled by the 'ON' part of the OPERATION command, the unit will power up and enable the main output automatically.

Bit 1 clears the READ_VOUT_BUTTON_ADJUST value. A one bit clears the value at the time of the command. If the buttons are pressed after the command, the value is changed. A zero bit does nothing. Pressing both buttons together also resets the value to zero.

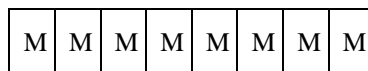
Bit 0 enables/disables the front panel Vout adjust buttons. A zero bit enables the buttons. A one bit disables the buttons.

4.59 D5h SOFTWARE_VERSION

Command Code	D5h
Command Name	SOFTWARE_VERSION
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 6
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	Length + 1 to 5 text characters
Non Vol Memory Commands	None
Comments	<p>This command always returns 5 characters to describe the software version programmed into the device.</p> <p>The two first characters show the major version, then a full stop (period) and then the last two characters shows the minor version.</p> <p>The first leading zero will be replaced by a space character but trailing zeros are included. e.g. ‘ 2.10’</p>

4.60 D6h MODEL

Command Code	D6h
Command Name	MODEL
SMBus Transaction Type	READ BYTE
Number of Data Bytes	1
Data Format	Linear
Data Value	8 bit mantissa, (exponent = 0)
Data Range	0 to 255d
Data Resolution	1



Non Vol Memory Commands	None						
Default Value	<table border="0" style="margin-left: 20px;"> <tr> <td>48V Model</td> <td>48d</td> </tr> <tr> <td>24V Model</td> <td>24d</td> </tr> <tr> <td>12V Model</td> <td>12d</td> </tr> </table>	48V Model	48d	24V Model	24d	12V Model	12d
48V Model	48d						
24V Model	24d						
12V Model	12d						
Comments	This value indicates the hardware assemblies the unit is built from.						

4.61 D7h PART_NUMBER

Command Code	D7h
Command Name	PART_NUMBER
SMBus Transaction Type	READ BLOCK
Number of Data Bytes	2 to 17d
Data Format	Byte count N + Byte 1 + + Byte N
Data Values	length + 1 to 16d characters
Non Vol Memory Commands	None
Comments	The Unipower part number of the unit.

Appendix 1 - REVISION HISTORY

Rev. #	Date	ECO	Detail	Page
2	Oct 14, 09	42079	Initial release.	All
3	Nov 18, 09	42127	Corrected the STATUS_VOUT comments, bit 7 is not implemented.	35
4	Aug 02, 10	42280	Change the default OVP_SETTING for 12V Front Ends and 12V Rectifiers to 15.00V.	49
5	Aug 12, 10	42281	Software version 2.06 changes the power on timing.	30
6	Oct 07, 10	42317	Change the default OVP_SETTING for 24V Front Ends and 24V Rectifiers to 30.00V.	49
7	Apr 22, 17		Re-branding	All