

# I<sup>2</sup>C COMMUNICATION MANUAL

## Platinum Front-Ends

PFE1100-12-054NA

PFE850-12-054NA

PFE600-12-054NA

PFE1100-12-054RA

PFE850-12-054RA

PFE600-12-054RA



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This manual applies to the following:

PART NUMBER	VIN RANGE	PO <sub>NOM</sub>	VO <sub>NOM</sub>	REMARKS
PFE1100-12-054NA	85 ... 264 VAC	1100 W	12 VDC	Normal Airflow
PFE850-12-054NA	85 ... 264 VAC	850 W	12 VDC	Normal Airflow
PFE600-12-054NA	85 ... 264 VAC	600 W	12 VDC	Normal Airflow
PFE1100-12-054RA	85 ... 264 VAC	1100 W	12 VDC	Reverse Airflow
PFE850-12-054RA	85 ... 264 VAC	850 W	12 VDC	Reverse Airflow
PFE600-12-054RA	85 ... 264 VAC	600 W	12 VDC	Reverse Airflow

### 1. ADDRESS/PROTOCOL SELECT (APS)

The Protocol\_Select, A0\_Address, and A1\_Address lines are lumped into one input pin called APS. This pin is pulled-up to 3.3 V with a resistor (12.1k $\Omega$ ) inside the unit.

With a resistor R<sub>n</sub> (connected between APS and GND) or voltage V<sub>n</sub> (applied between APS and GND), the I<sup>2</sup>C Protocol and Unit Address can be selected according to Table 1.

R <sub>n</sub> , $\Omega$	V <sub>n</sub> , V	Protocol	A1	A0	Unit Address	EEPROM Address
820	0.2094	Power Management Bus	0	0	0xB0	0xA0
2700	0.6020	Power Management Bus	0	1	0xB2	0xA2
5600	1.0441	Power Management Bus	1	0	0xB4	0xA4
8200	1.3330	Power Management Bus	1	1	0xB6	0xA6
15000	1.8266	PSMI	0	0	0xB0	0xA0
27000	2.2788	PSMI	0	1	0xB2	0xA2
56000	2.7137	PSMI	1	0	0xB4	0xA4
180000	3.0921	PSMI	1	1	0xB6	0xA6

Table 1. Address/Protocol Select

**NOTE:**

- Use E12 (5% tolerance) resistors.
- If the APS is open (i.e. Rn not assembled or Vn not applied), the Protocol = PSMI, A1 = 1, and A0 = 1.

## 2. PSMI PROTOCOL

**NOTES:**

- Reference: Power Supply Monitoring Interface (PSMI) Revision 2.12.
- Register Access: RO = Read-Only; RW = Read/Write; RWR = Read/Write-Reset; WO = Write-Only
- Register Type: S = Static Value; D = Dynamic Value

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
<b>Thermal sensor configuration</b>	<b>06h</b>		<b>004Ch</b>	RO	S	
Temperature sensor quantity T1, T2, T3, T4		0-2	100b			4 Temperature sensor
Fan sensor quantity F1sense, F2sense, F3sense, F4sense		3-5	001b			1 Fan sensor
Fan control quantity F1cont, F2cont, F3cont, F4cont		6-8	001b			1 Fan control
Fan Temperature associations		9	0b			All temperatures are affected by F1cont control register
Fan control associations		A	0b			F1cont control affects all fans
Reserved		B-F	0h			-
<b>Temperature sensor types</b>	<b>07h</b>		<b>0021h</b>	RO	S	
T1		0-3	0001b			Inlet air temperature (NTC)
T2		4-7	0010b			Outlet air temperature (NTC)
T3		8-B	0000b			Internal PFC heatsink (PTC)
T4		C-F	0000b			Internal DCDC heatsink (PTC)
<b>Temperature sensor offsets</b>						
T1offset	<b>08h</b>		<b>0000h</b>	RO	S	Not Supported
T2offset	<b>09h</b>		<b>0000h</b>	RO	S	Not Supported
T3offset	<b>0Ah</b>		<b>0000h</b>	RO	S	Not Supported
T4offset	<b>0Bh</b>		<b>0000h</b>	RO	S	Not Supported
<b>Fan Speed Resolutions for F1sense and F2sense</b>	<b>0Ch</b>		<b>0000h</b>	RO	S	
F1 Counts or RPM		0	0b			F1sense reported as RPM
F1 Clock Pulse Multiplier		1-7	00h			Not Supported
F2 Counts or RPM		8	0b			Not Supported
F2 Clock Pulse Multiplier		9-F	00h			Not Supported
<b>Fan Speed Resolutions for F3sense and F4sense</b>	<b>0Dh</b>		<b>0000h</b>	RO	S	
F3 Counts or RPM		0	0b			Not Supported
F3 Clock Pulse Multiplier		1-7	00h			Not Supported
F4 Counts or RPM		8	0b			Not Supported
F4 Clock Pulse Multiplier		9-F	00h			Not Supported



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NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
<b>Fan speed control configuration</b>						
F1config	<b>0Eh</b>		<b>A410h</b>	RO	S	
		0	0b			Fan speed set using RPMs
		1-F	5208h			Fan maximum speed = 21000RPM
F2config	<b>0Fh</b>		<b>0000h</b>	RO	S	
		0	0b			Not Supported
		1-F	00h			Not Supported
F3config	<b>10h</b>		<b>0000h</b>	RO	S	
		0	0b			Not Supported
		1-F	00h			Not Supported
F4config	<b>11h</b>		<b>0000h</b>	RO	S	
		0	0b			Not Supported
		1-F	00h			Not Supported
<b>Voltage / current sensor configuration register V1 through V10</b>						
	<b>12h</b>		<b>0A52h</b>	RO	S	
Power supply output quantity		0-3	0010b			V1 = Main Output (12.0V) V2 = Standby Output (3.3V or 5.0V)
Voltage sensors		4	1b			Outputs have voltage sensors
Output current sensors		5-8	0010b			I1out = Main Output I2out = Standby Output
Input current sensor		9	1b			Input current sensor is present
Peak current sensor		A	0b			Not Supported
Input voltage sensor		B	1b			Input voltage sensor is present
Reserved		C-F	0000b			-
<b>Fan control associations</b>						
	<b>13h</b>		<b>0000h</b>	RO	S	
F1cont fans		0-3	0000b			Not Supported
F2cont fans		4-7	0000b			Not Supported
F3cont fans		8-B	0000b			Not Supported
F4cont fans		C-F	0000b			Not Supported
<b>Fan Temperature associations</b>						
F1cont temperatures	<b>14h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
F2cont temperatures		8-F	00h			Not Supported
F3cont temperatures	<b>15h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
F4cont temperatures		8-F	00h			Not Supported
<b>Shutdown events</b>						
	<b>16h</b>		<b>001Fh</b>	RO	S	
Failure		0	1b			Supported
Over current shutdown		1	1b			Supported
Over temperature shutdown		2	1b			Supported
AC loss		3	1b			Supported

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
Fan1 failure		4	1b			Supported
Fan2 failure		5	0b			Not Supported
Fan3 failure		6	0b			Not Supported
Fan4 failure		7	0b			Not Supported
Reserved		8-F	00h			-
<b>Status</b>	<b>17h</b>		<b>0071h</b>	RO	S	
F1cont override indicator		0	1b			Supported
F2cont override indicator		1	0b			Not Supported
F3cont override indicator		2	0b			Not Supported
F4cont override indicator		3	0b			Not Supported
PWOK		4	1b			Supported
PSON		5	1b			Supported
Interrupt		6	1b			Supported
Redundancy		7	0b			Not Supported
Input range		8	0b			Not Supported
Reserved		9-F	00h			-
<b>Control</b>	<b>18h</b>		<b>0701h</b>	RO	S	
F1cont control mode		0	1b			Supported
F2cont control mode		1	0b			Not Supported
F3cont control mode		2	0b			Not Supported
F4cont control mode		3	0b			Not Supported
LED control		4	0b			Not Supported
Reserved		5-7	00h			-
<b>Records</b>						
Power supply capability records		8	1b			Supported
Vendor PSMI device field		9	1b			Supported
Custom features		A	1b			Supported
Reserved		B-F	00h			-
<b>Warning events</b>	<b>19h</b>		<b>089Ah</b>	RO	S	
Control temperature		0-1	10b			T3 and T4
Ambient temperature		2-3	10b			T1 and T2
Fan failure		4-6	001b			1 Fan failure warning
Output current		7-A	0001b			1 Output current warning
Input voltage		B	1b			Supported
Input current		C	0b			Not Supported
Reserved		D-F	00h			-
<b>Reserved configuration registers</b>	<b>1Ah-1Fh</b>		<b>0000h</b>	RO	S	-
<b>Header</b>						

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
Discovery Key 1	<b>3Eh</b>	0-7	<b>50h</b>	RO	S	-
Discovery Key 2		8-F	<b>53h</b>			-
Discovery Key 3	<b>3Fh</b>	0-7	<b>4Dh</b>	RO	S	-
Discovery Key 4		8-F	<b>49h</b>			-
PSMI Major Version	<b>40h</b>	0-7	<b>02h</b>	RO	S	PSMI Spec Major version = 2
PSMI Minor Version		8-F	<b>0Ch</b>			PSMI Spec Minor version = 12
Power supply code major version	<b>41h</b>	0-7	-	RO	S	PSMI Device FW Major version
Power supply code minor version		8-F	-			PSMI Device FW Minor version
Supplier ID	<b>42h</b>		<b>6A7Bh</b>	RO	S	Supplier ID = 27259
	<b>43h</b>		<b>0000h</b>	RO	S	
Reserved	<b>44h-52h</b>		<b>0000h</b>			-
<b>Temperature Sensors</b>						
T1	<b>00h</b>		-	RO	D	Supported
T2	<b>01h</b>		-	RO	D	Supported
T3	<b>02h</b>		<b>0000h</b>	RO	S	Not Supported
T4	<b>03h</b>		<b>0000h</b>	RO	S	Not Supported
Reserved	<b>04h-05h</b>		<b>0000h</b>	RO	S	-
<b>Fan Speed Sensors</b>						
F1sense	<b>20h</b>		-	RO	D	Supported
F2sense	<b>21h</b>		<b>0000h</b>	RO	S	Not Supported
F3sense	<b>22h</b>		<b>0000h</b>	RO	S	Not Supported
F4sense	<b>23h</b>		<b>0000h</b>	RO	S	Not Supported
<b>Fan speed control</b>						
F1cont	<b>24h</b>		-	RW	D	Supported (0-65535 RPM)
F2cont	<b>25h</b>		<b>0000h</b>	RO	S	Not Supported
F3cont	<b>26h</b>		<b>0000h</b>	RO	S	Not Supported
F4cont	<b>27h</b>		<b>0000h</b>	RO	S	Not Supported
<b>Voltage sensors</b>						
Vsense1	<b>28h</b>		-	RO	D	Supported (V1)
Vsense2	<b>29h</b>		-	RO	D	Supported (V2)
Vsense3-Vsense10	<b>2Ah-31h</b>		<b>0000h</b>	RO	S	Not Supported
Vin	<b>32h</b>		-	RO	D	Supported
<b>Current sensors</b>						
I1out	<b>33h</b>		-	RO	D	Supported (I1out)
I2out	<b>34h</b>		-	RO	D	Supported (I2out)
I3out-I10out	<b>35h-3Ch</b>		<b>0000h</b>	RO	S	Not Supported
Iin	<b>3Dh</b>		-	RO	D	Supported
<b>Peak output current sensors</b>						

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
I1out_peak-I10out_peak	<b>53h-5Ch</b>		<b>0000h</b>	RO	S	Not Supported
lin peak	<b>5Dh</b>		<b>0000h</b>	RO	S	Not Supported
<b>Shutdown Event Register</b>	<b>5Eh</b>		-	RWR	D	
Failure		0	-			Supported
Over current		1	-			Supported
Over temperature		2	-			Supported
AC loss		3	-			Supported
Fan1 failure		4	-			Supported
Fan2 failure		5	0b			Not Supported
Fan3 failure		6	0b			Not Supported
Fan4 failure		7	0b			Not Supported
Not used		8-F	00h			-
<b>Thermal Warning Event Register</b>	<b>5Fh</b>		-	RWR	D	
T1warning		0	-			Supported
T2warning		1	-			Supported
T3warning		2	-			Not Supported
T4warning		3	-			Not Supported
F1warning		4	-			Supported
F2warning		5	0b			Not Supported
F3warning		6	0b			Not Supported
F4warning		7	0b			Not Supported
Not used		8-F	00h			-
<b>Output Current Warning Event Register</b>	<b>60h</b>		-	RWR	D	
I1out		0	-			Supported
I2out		1	0b			Not Supported
I3out-I10out		2-9	00h			Not Supported
Not used		A-F	00h			-
<b>Input Warning Event Register</b>	<b>61h</b>		-	RWR	D	
Input over current		0	-			Not Supported
Not used		1-2	00h			-
Input under voltage		3	-			Supported
Not used		4-F	00h			-
<b>Status Register</b>	<b>62h</b>		-			
RPM1 override		0	-	RO	D	Supported
RPM2 override		1	0b			Not Supported
RPM3 override		2	0b			Not Supported
RPM4 override		3	0b			Not Supported
PWOK		4	-	RO	D	Supported

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
PERSON		5	-	RO	D	Supported
Interrupt		6	-	RWR	D	Supported
Power supply operating range		7-8	00b			Not Supported
Redundancy		9	0b			Not Supported
Reserved		A-F	00h			-
<b>Control Register</b>	<b>63h</b>		-			
RPM1 control mode		0	-	RW	D	Supported
RPM2 control mode		1	0b			Not Supported
RPM3 control mode		2	0b			Not Supported
RPM4 control mode		3	0b			Not Supported
LED Control		4-5	00b			Not Supported
<b>Mask Bits</b>						
Shutdown Event mask		6	1b	RO	S	Shutdown Events will cause an Interrupt
Warning Event mask		7	0b	RO	S	Warning Events do not cause an Interrupt
Reserved		8-F	00h			-
<b>Maximum Temperatures</b>						
T1target	<b>64h</b>		<b>104Dh</b> <b>104Dh</b> <b>104Dh</b> <b>104Dh</b> <b>104Dh</b>	RO	S	PFE1100-12-054NA: T1 = 65°C PFE850-12-054NA: T1 = 65°C PFE600-12-054NA: T1 = 65°C PFE1100-12-054RA: T1 = 65°C PFE850-12-054RA: T1 = 65°C PFE600-12-054RA: T1 = 65°C
T2target	<b>65h</b>		<b>1680h</b> <b>1680h</b> <b>1680h</b> <b>1680h</b> <b>1680h</b>	RO	S	PFE1100-12-054NA: T2 = 90°C PFE850-12-054NA: T2 = 90°C PFE600-12-054NA: T2 = 90°C PFE1100-12-054RA: T2 = 90°C PFE850-12-054RA: T2 = 90°C PFE600-12-054RA: T2 = 90°C
T3target	<b>66h</b>		<b>0000h</b>	RO	S	Not Supported
T4target	<b>67h</b>		<b>0000h</b>	RO	S	Not Supported
<b>Fan operating minimum</b>						
F1min	<b>68h</b>		<b>0FA0h</b>	RO	S	F1 = 4000RPM
F2min	<b>69h</b>		<b>0000h</b>	RO	S	Not Supported
F3min	<b>6Ah</b>		<b>0000h</b>	RO	S	Not Supported
F4min	<b>6Bh</b>		<b>0000h</b>	RO	S	Not Supported
<b>Sound power capability</b>	<b>6Ch</b>		<b>0000h</b>	RO	S	
Max fan speed sound power		0-7	00h			Not Supported
Min fan speed sound power		8-F	00h			Not Supported
<b>Output voltage limits</b>						
Vout1 maximum	<b>6Dh</b>		<b>0D33h</b>	RO	S	V1 = 13.2V (12V+10%)
Vout1 minimum	<b>6Eh</b>		<b>0ACCh</b>	RO	S	V1 = 10.8V (12V-10%)
Vout2 maximum	<b>6Fh</b>		<b>0580h</b>	RO	S	V2 = 5.50V (5V+10%)



NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
Vout2 minimum	70h		02F8h	RO	S	V2 = 2.97V (5V-10%)
Vout3-Vout10 limits	71h-80h		0000h	RO	S	Not Supported
<b>Output current capability</b>						
First output current capability	81h		12ACh 0D72h 0C7Fh	RO	S	PFE1100-12-054NA: I1out = 74.7A PFE850-12-054NA: I1out = 53.8A PFE600-12-054NA: I1out = 50.0A
			11ECh 1072h 0B3Fh			PFE1100-12-054RA: I1out = 71.7A PFE850-12-054RA: I1out = 65.8A PFE600-12-054RA: I1out = 45.0A
	82h		013Fh 013Fh 013Fh	RO	S	PFE1100-12-054NA: I2out = 5.0A PFE850-12-054NA: I2out = 5.0A PFE600-12-054NA: I2out = 5.0A
			00DFh 00DFh 00DFh			PFE1100-12-054RA: I2out = 3.5A PFE850-12-054RA: I2out = 3.5A PFE600-12-054RA: I2out = 3.5A
	83h-8Ah		0000h	RO	S	Not Supported
Second output current capability	8Bh		16ECh 11B2h 0C7Fh	RO	S	PFE1100-12-054NA: I1out = 91.7A PFE850-12-054NA: I1out = 70.8A PFE600-12-054NA: I1out = 50.0A
			16ECh 11B2h 0C7Fh			PFE1100-12-054RA: I1out = 91.7A PFE850-12-054RA: I1out = 70.8A PFE600-12-054RA: I1out = 50.0A
	8Ch		013Fh 013Fh 013Fh	RO	S	PFE1100-12-054NA: I2out = 5.0A PFE850-12-054NA: I2out = 5.0A PFE600-12-054NA: I2out = 5.0A
			00DFh 00DFh 00DFh			PFE1100-12-054RA: I2out = 3.5A PFE850-12-054RA: I2out = 3.5A PFE600-12-054RA: I2out = 3.5A
	8Dh-94h		0000h	RO	S	Not Supported
Third output current capability	95h		0000h	RO	S	Not Supported
	96h		0000h	RO	S	Not Supported
	97h-9Eh		0000h	RO	S	Not Supported
<b>Input current maximum limits</b>						
First input current limit	9Fh		033Fh 027Fh 01C6h	RO	S	PFE1100-12-054NA: Iin = 13.0A PFE850-12-054NA: Iin = 10.0A PFE600-12-054NA: Iin = 7.1A
			033Fh 027Fh 01C6h			PFE1100-12-054RA: Iin = 13.0A PFE850-12-054RA: Iin = 10.0A PFE600-12-054RA: Iin = 7.1A
Second input current limit	A0h		033Fh 027Fh 01C6h	RO	S	PFE1100-12-054NA: Iin = 13.0A PFE850-12-054NA: Iin = 10.0A PFE600-12-054NA: Iin = 7.1A
			033Fh 027Fh 01C6h			PFE1100-12-054RA: Iin = 13.0A PFE850-12-054RA: Iin = 10.0A PFE600-12-054RA: Iin = 7.1A
Third input current limit	A1h		0000h	RO	S	Not Supported
<b>Minimum input voltage limits</b>						
First input voltage limit	A2h		0B40h 0B40h 0B40h	RO	S	PFE1100-12-054NA: Vin = 90VAC PFE850-12-054NA: Vin = 90VAC PFE600-12-054NA: Vin = 90VAC
			0B40h			PFE1100-12-054RA: Vin = 90VAC

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
			<b>0B40h</b> <b>0B40h</b>			PFE850-12-054RA : Vin = 90VAC PFE600-12-054RA : Vin = 90VAC
Second input voltage limit	<b>A3h</b>		<b>0E60h</b> <b>0E60h</b> <b>0E60h</b> <b>1680h</b> <b>1220h</b> <b>0DC0h</b>	RO	S	PFE1100-12-054NA : Vin = 115VAC PFE850-12-054NA : Vin = 115VAC PFE600-12-054NA : Vin = 115VAC PFE1100-12-054RA : Vin = 180VAC PFE850-12-054RA : Vin = 145VAC PFE600-12-054RA : Vin = 110VAC
Third input voltage limit	<b>A4h</b>		<b>0000h</b>	RO	S	Not Supported
<b>Total output power maximum limits</b>						
First output power limit	<b>A5h</b>		<b>0380h</b> <b>0285h</b> <b>0258h</b> <b>035Ch</b> <b>0316h</b> <b>021Ch</b>	RO	S	PFE1100-12-054NA : P1out = 896W PFE850-12-054NA : P1out = 645W PFE600-12-054NA : P1out = 600W PFE1100-12-054RA : P1out = 860W PFE850-12-054RA : P1out = 790W PFE600-12-054RA : P1out = 540W
Second output power limit	<b>A6h</b>		<b>044Ch</b> <b>0352h</b> <b>0258h</b> <b>044Ch</b> <b>0352h</b> <b>0258h</b>	RO	S	PFE1100-12-054NA : P1out = 1100W PFE850-12-054NA : P1out = 850W PFE600-12-054NA : P1out = 600W PFE1100-12-054RA : P1out = 1100W PFE850-12-054RA : P1out = 850W PFE600-12-054RA : P1out = 600W
Third output power limit	<b>A7h</b>		<b>0000h</b>	RO	S	Not Supported
Combined output power limit 1	<b>A8h</b>		<b>038Fh</b> <b>0294h</b> <b>0267h</b> <b>0367h</b> <b>0321h</b> <b>0227h</b>	RO	S	PFE1100-12-054NA : Pcomb = 911W PFE850-12-054NA : Pcomb = 660W PFE600-12-054NA : Pcomb = 615W PFE1100-12-054RA : Pcomb = 871W PFE850-12-054RA : Pcomb = 801W PFE600-12-054RA : Pcomb = 551W
Combined outputs for power limit 1	<b>A9h</b>		<b>0012h</b>	RO	S	V1 and V2 outputs
Combined output power limit 2	<b>AAh</b>		<b>045Bh</b> <b>0361h</b> <b>0267h</b> <b>0457h</b> <b>035Dh</b> <b>0263h</b>	RO	S	PFE1100-12-054NA : Pcomb = 1115W PFE850-12-054NA : Pcomb = 865W PFE600-12-054NA : Pcomb = 615W PFE1100-12-054RA : Pcomb = 1111W PFE850-12-054RA : Pcomb = 861W PFE600-12-054RA : Pcomb = 611W
Combined outputs for power limit 2	<b>ABh</b>		<b>0012h</b>	RO	S	V1 and V2 outputs
<b>Current sensor bandwidths</b>						
Output bandwidth	<b>ACh</b>		<b>0000h</b>	RO	S	Not Supported
Input bandwidth	<b>ADh</b>		<b>0000h</b>	RO	S	Not Supported
<b>Power supply efficiency curve for high line operation</b>						
Light load output power	<b>AEh</b>		<b>0000h</b>	RO	S	Not Supported
Mid load output power	<b>AFh</b>		<b>0000h</b>	RO	S	Not Supported
Max load output power	<b>B0h</b>		<b>0000h</b>	RO	S	Not Supported
Light load efficiency	<b>B1h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
Mid load efficiency		8-F	-			Not Supported
Max load efficiency	<b>B2h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
Not used		8-F	-			-

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
<b>Power supply efficiency curve for low line operation</b>						
Light load output power	<b>B3h</b>		<b>0000h</b>	RO	S	Not Supported
Mid load output power	<b>B4h</b>		<b>0000h</b>	RO	S	Not Supported
Max load output power	<b>B5h</b>		<b>0000h</b>	RO	S	Not Supported
Light load efficiency	<b>B6h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
Mid load efficiency		8-F	-			Not Supported
Max load efficiency	<b>B7h</b>	0-7	<b>0000h</b>	RO	S	Not Supported
Not used		8-F	00h			-
<b>Load share error</b>						
Output share error for V1	<b>B8h</b>		<b>0000h</b>	RO	S	Not Supported
Output share error for V2	<b>B9h</b>		<b>0000h</b>	RO	S	Not Supported
Output share error for V3	<b>BAh</b>		<b>0000h</b>	RO	S	Not Supported
Output share error for V4	<b>BBh</b>		<b>0000h</b>	RO	S	Not Supported
<b>Redundancy configuration</b>						
	<b>BCh</b>		<b>0000h</b>	RO	S	
Max power supply quantity		0-7	00h			Not Supported
Min power supply quantity		8-F	00h			Not Supported
<b>Reserved configuration registers</b>						
	<b>BDh-BFh</b>		<b>0000h</b>	RO	S	-
<b>Reserved configuration registers</b>						
	<b>E0h-FFh</b>		<b>0000h</b>	RO	S	-
<b>Custom feature area</b>						
P1 (main) output power sensor	<b>D0h</b>		-	RO	D	Data Format: 1 Bit = 31.25 mW
Input power sensor	<b>D1h</b>		-	RO	D	Data Format: 1 Bit = 31.25 mW
PFC bulk voltage sensor	<b>D2h</b>		-	RO	D	Data Format: Same as Vin <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA
V1 output voltage external sensor	<b>D3h</b>		-	RO	D	Data Format: Same as Vsense1
V1 output voltage internal sensor	<b>D4h</b>		-	RO	D	Data Format: Same as Vsense1
V2 output voltage external sensor	<b>D5h</b>		-	RO	D	Data Format: Same as Vsense2
V2 output voltage internal sensor	<b>D6h</b>		-	RO	D	Data Format: Same as Vsense2
SEC FW Revision	<b>D7h</b>			RO	S	SEC FW Revision = MM.mm
		0-7	-			Major Revision (MM)
		8-F	-			Minor Revision (mm)
P2 (standby) output power sensor	<b>D8h</b>		-	RO	D	Data Format: 1 Bit = 31.25 mW
Product ID Number	<b>D9h</b>		-	RO	D	Refer to Table 2
		0-7	-			Product Part Number
		8-9	-			Communication Protocol
		A-F	-			Product Family
I1 output current share bus sensor	<b>DAh</b>		-	RO	D	Data Format: 1 Bit ≈ 0.2A
Input current sensor (direct)	<b>DBh</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b>

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
						Data Format: Same as lin For calibration of PRI lin reading <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA
Input power sensor (direct)	<b>DCh</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b> Data Format: 1 Bit = 31.25 mW For calibration of PRI Pin reading <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA
PRI FW Revision	<b>DDh</b>			RO	S	PRI FW Revision = MM.mm <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA
		0-7	-			Major Revision (MM)
		8-F	-			Minor Revision (mm)
Hot-Standby Register	<b>DEh</b>	0	-	RW	D	HS Select 0 = Disable (Default) 1 = Enable
		1	-	RO	D	HS Enable Line 0 = Low 1 = High
		2	-	RO	D	HS Status 0 = Not Activated 1 = Activated
		3-F	00h	RO	S	Reserved
Power Supply Control Register	<b>DFh</b>		-	RW	D	
		0	-			System Over-ride to Disable Fan 0 = Don't Disable Fan (Default) 1 = Disable Fan
		1	-			SMBALERT# Control 0 = Disable SMBALERT# (Default) 1 = Enable SMBALERT#
		2	-			EEPROM Write Protect Control 0 = Enable Write Protect (Default) 1 = Disable Write Protect
		3-F	00h			Reserved
<b>Vendor specific registers</b>						
Calibration Parameter Pointer	<b>C0h</b>		-	RW	D	<b>For Bel Power Solutions Use Only</b>
Calibration Parameter Data	<b>C1h</b>		-	RW	D	<b>For Bel Power Solutions Use Only</b>
Secondary Status Register	<b>C2h</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b>
Secondary Control Register 1	<b>C3h</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b>
Primary Status Register	<b>C4h</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b>
Power Supply Debug Register	<b>C5h</b>		-	RW	D	<b>For Bel Power Solutions Use Only</b>
		0	00h			Reserved
		1	-			Calibration Parameter Write to Flash 0 = Don't Write to Flash 1 = Write to Flash

NAME	REGISTER	BIT(S)	VALUE	ACCESS	TYPE	REMARKS
		2-F	00h			Reserved
Calibration Parameter Write to Flash Result	<b>C6h</b>		-	RO	D	<b>For Bel Power Solutions Use Only</b>
Bootloader Status/Request	<b>C7h</b>		-	RW	D	<b>For Bel Power Solutions Use Only</b>
Bootloader Page Data	<b>C8h</b>		-	WO		<b>For Bel Power Solutions Use Only</b> This command follows the "Block Write" protocol as described in the SMBus Specification.

### 3. POWER MANAGEMENT BUS PROTOCOL

**NOTE:**

- Reference: Power Management Bus Power System Management Protocol Specification Part II – Command Language Revision 1.1.
- Register Access: R = Read-Only; RW = Read/Write; W = Write-Only

COMMAND NAME	CODE	BIT(S)	VALUE	ACCESS	DATA BYTES	REMARKS
PAGE	00h		<b>00h</b>	R	-	Not Supported
OPERATION	01h		-		1	
		7-6	-	RW		0b00 = OFF 0x10 = ON (Default)
		5-0	00h	R		Not Supported
ON_OFF_CONFIG	02h		<b>1Dh</b>		1	
		7-5	00h	R		Reserved
		4	1b	R		Unit does not power up until commanded by the CONTROL pin and OPERATION command
		3	1b	R		To start, the unit requires that the on/off portion of the OPERATION command is instructing the unit to run.
		2	1b	R		Unit requires the CONTROL pin to be asserted to start the unit.
		1	0b	R		Active low
		0	1b	R		Turn off the output and stop transferring energy to the output as fast as possible.
CLEAR_FAULTS	03h		-	W	0	Clear all fault bits in all status registers.
PHASE	04h		<b>00h</b>	R	-	Not Supported
Reserved	05h-0Fh		<b>00h</b>	R	-	Reserved
WRITE_PROTECT	10h		<b>00h</b>	R	-	Not Supported
STORE_DEFAULT_ALL	11h		<b>00h</b>	R	-	Not Supported
RESTORE_DEFAULT_ALL	12h		<b>00h</b>	R	-	Not Supported
STORE_DEFAULT_CODE	13h		<b>00h</b>	R	-	Not Supported
RESTORE_DEFAULT_CODE	14h		<b>00h</b>	R	-	Not Supported
STORE_USER_ALL	15h		<b>00h</b>	R	-	Not Supported



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RESTORE_USER_ALL	16h		<b>00h</b>	R	-	Not Supported
STORE_USER_CODE	17h		<b>00h</b>	R	-	Not Supported
RESTORE_USER_CODE	18h		<b>00h</b>	R	-	Not Supported
CAPABILITY	19h		<b>90h</b>		1	
		7	1b	R		PEC Supported
		6-5	00b	R		100kHz Maximum bus speed
		4	1b	R		SMBALERT# Supported
		3-0	0000b	R		Reserved
QUERY	1Ah		<b>00h</b>	R	-	Not Supported
Reserved	1Bh-1Fh		<b>00h</b>	R	-	Reserved
VOUT_MODE	20h		<b>00h</b>	R	-	Not Supported
VOUT_COMMAND	21h		<b>00h</b>	R	-	Not Supported
VOUT_TRIM	22h		<b>00h</b>	R	-	Not Supported
VOUT_CAL_OFFSET	23h		<b>00h</b>	R	-	Not Supported
VOUT_MAX	24h		<b>00h</b>	R	-	Not Supported
VOUT_MARGIN_HIGH	25h		<b>00h</b>	R	-	Not Supported
VOUT_MARGIN_LOW	26h		<b>00h</b>	R	-	Not Supported
VOUT_TRANSITION_RATE	27h		<b>00h</b>	R	-	Not Supported
VOUT_DROOP	28h		<b>00h</b>	R	-	Not Supported
VOUT_SCALE_LOOP	29h		<b>00h</b>	R	-	Not Supported
VOUT_SCALE_MONITOR	2Ah		<b>00h</b>	R	-	Not Supported
Reserved	2Bh-2Fh		<b>00h</b>	R	-	Reserved
COEFFICIENTS	30h		<b>00h</b>	R	-	Not Supported
POUT_MAX	31h		<b>00h</b>	R	-	Not Supported
MAX_DUTY	32h		<b>00h</b>	R	-	Not Supported
FREQUENCY_SWITCH	33h		<b>00h</b>	R	-	Not Supported
Reserved	34h		<b>00h</b>	R	-	Not Supported
VIN_ON	35h		<b>00h</b>	R	-	Not Supported
VIN_OFF	36h		<b>00h</b>	R	-	Not Supported
INTERLEAVE	37h		<b>00h</b>	R	-	Not Supported
IOUT_CAL_GAIN	38h		<b>00h</b>	R	-	Not Supported
IOUT_CAL_OFFSET	39h		<b>00h</b>	R	-	Not Supported
FAN_CONFIG_1_2	3Ah		<b>D0h</b>		1	
		7	1b	R		Fan Installed in Position 1
		6	1b	R		Fan 1 Commanded in RPM
		5-4	01b	R		2 Tachometer Pulses per Revolution
		3	0b	R		No Fan Installed in Position 2
		2	0b	R		Don't Care
		1-0	00b	R		Don't Care
FAN_COMMAND_1	3Bh		-	RW	2	Linear Format, N = 5

						Write request is executed only if FAN_COMMAND_1 > Fan speed required by the power supply.
FAN_COMMAND_2	3Ch		00h	R	-	Not Supported
FAN_CONFIG_3_4	3Dh		00h	R	-	Not Supported
FAN_COMMAND_3	3Eh		00h	R	-	Not Supported
FAN_COMMAND_4	3Fh		00h	R	-	Not Supported
VOUT_OV_FAULT_LIMIT	40h		00h	R	-	Not Supported
VOUT_OV_FAULT_RESPONSE	41h		00h	R	-	Not Supported
VOUT_OV_WARN_LIMIT	42h		00h	R	-	Not Supported
VOUT_UV_WARN_LIMIT	43h		00h	R	-	Not Supported
VOUT_UV_FAULT_LIMIT	44h		00h	R	-	Not Supported
VOUT_UV_FAULT_RESPONSE	45h		00h	R	-	Not Supported
IOUT_OC_FAULT_LIMIT	46h		00h	R	-	Not Supported
IOUT_OC_FAULT_RESPONSE	47h		00h	R	-	Not Supported
IOUT_OC_LV_FAULT_LIMIT	48h		00h	R	-	Not Supported
IOUT_OC_LV_FAULT_RESPONSE	49h		00h	R	-	Not Supported
IOUT_OC_WARN_LIMIT	4Ah		00h	R	-	Not Supported
IOUT_UC_FAULT_LIMIT	4Bh		00h	R	-	Not Supported
IOUT_UC_FAULT_RESPONSE	4Ch		00h	R	-	Not Supported
Reserved	4Dh-4Eh		00h	R	-	Reserved
OT_FAULT_LIMIT	4Fh		00h	R	-	Not Supported
OT_FAULT_RESPONSE	50h		00h	R	-	Not Supported
OT_WARN_LIMIT	51h		00h	R	-	Not Supported
UT_WARN_LIMIT	52h		00h	R	-	Not Supported
UT_FAULT_LIMIT	53h		00h	R	-	Not Supported
UT_FAULT_RESPONSE	54h		00h	R	-	Not Supported
VIN_OV_FAULT_LIMIT	55h		00h	R	-	Not Supported
VIN_OV_FAULT_RESPONSE	56h		00h	R	-	Not Supported
VIN_OV_WARN_LIMIT	57h		00h	R	-	Not Supported
VIN_UV_WARN_LIMIT	58h		00h	R	-	Not Supported
VIN_UV_FAULT_LIMIT	59h		00h	R	-	Not Supported
VIN_UV_FAULT_RESPONSE	5Ah		00h	R	-	Not Supported
IIN_OC_FAULT_LIMIT	5Bh		00h	R	-	Not Supported
IIN_OC_FAULT_RESPONSE	5Ch		00h	R	-	Not Supported
IIN_OC_WARN_LIMIT	5Dh		00h	R	-	Not Supported
POWER_GOOD_ON	5Eh		00h	R	-	Not Supported
POWER_GOOD_OFF	5Fh		00h	R	-	Not Supported
TON_DELAY	60h		00h	R	-	Not Supported
TON_RISE	61h		00h	R	-	Not Supported
TON_MAX_FAULT_LIMIT	62h		00h	R	-	Not Supported

TON_MAX_FAULT_RESPONSE	63h		00h	R	-	Not Supported
TOFF_DELAY	64h		00h	R	-	Not Supported
TOFF_FALL	65h		00h	R	-	Not Supported
TOFF_MAX_WARN_LIMIT	66h		00h	R	-	Not Supported
Reserved	67h		00h	R	-	Reserved
POUT_OP_FAULT_LIMIT	68h		00h	R	-	Not Supported
POUT_OP_FAULT_RESPONSE	69h		00h	R	-	Not Supported
POUT_OP_WARN_LIMIT	6Ah		00h	R	-	Not Supported
PIN_OP_WARN_LIMIT	6Bh		00h	R	-	Not Supported
Reserved	6Ch-77h		00h	R	-	Reserved
STATUS_BYTE	78h		-		1	0 = No Fault 1 = Fault Occurred
		7	0b	R		BUSY Not Supported
		6	-	R		OFF
		5	-	R		VOUT_OV
		4	-	R		IOUT_OC
		3	0b	R		VIN_UV Not Supported
		2	-	R		TEMPERATURE
		1	-	R		CML
		0	0b	R		NONE OF THE ABOVE Not Supported
STATUS_WORD	79h		-		2	0 = No Fault 1 = Fault Occurred
		15	0b	R		VOUT Not Supported
		14	-	R		IOUT/POUT
		13	-	R		INPUT
		12	0b	R		MFR Not Supported
		11	-	R		POWER_GOOD#
		10	-	R		FANS
		9	-	R		OTHER
		8	0b	R		UNKNOWN Not Supported
		7-0	-	R		STATUS_BYTE
STATUS_VOUT	7Ah		-		1	0 = No Fault 1 = Fault Occurred
		7	-	R		VOUT_OV_FAULT
		6	0b	R		VOUT_OV_WARN Not Supported
		5	0b	R		VOUT_UV_WARN Not Supported
		4	0b	R		VOUT_UV_FAULT Not Supported
		3	0b	R		VOUT_MAX_WARN Not Supported
		2	0b	R		TON_MAX_FAULT Not Supported



		1	0b	R		TOFF_MAX_WARN Not Supported
		0	0b	R		VOUT_TRACK_ERROR Not Supported
STATUS_IOUT	7Bh	-	-		1	0 = No Fault 1 = Fault Occurred
		7	-	R		IOUT_OC_FAULT
		6	-	R		IOUT_OC_VOUT_LV_FAULT
		5	0b	R		IOUT_OC_WARN Not Supported
		4	0b	R		IOUT_UC_FAULT Not Supported
		3	-	R		ISHARE_FAULT
		2	0b	R		POUT_LIMIT Not Supported
		1	0b	R		POUT_OP_FAULT Not Supported
		0	0b	R		POUT_OP_WARN Not Supported
STATUS_INPUT	7Ch	-	-		1	0 = No Fault 1 = Fault Occurred
		7	0b	R		VIN_OV_FAULT Not Supported
		6	0b	R		VIN_OV_WARN Not Supported
		5	0b	R		VIN_UV_WARN Not Supported
		4	0b	R		VIN_UV_FAULT Not Supported
		3	-	R		UNIT_OFF_FOR_VIN_UV
		2	0b	R		IIN_OC_FAULT Not Supported
		1	0b	R		IIN_OC_WARN Not Supported
		0	0b	R		PIN_OP_WARN Not Supported
STATUS_TEMPERATURE	7Dh	-	-		1	0 = No Fault 1 = Fault Occurred
		7	-	R		OT_FAULT
		6	-	R		OT_WARN
		5	0b	R		UT_WARN Not Supported
		4	0b	R		UT_FAULT Not Supported
		3-0	0000b	R		Reserved
STATUS_CML	7Eh	-	-		1	0 = No Fault 1 = Fault Occurred
		7	0b	R		INVALID_COMMAND Not Supported
		6	0b	R		INVALID_DATA Not Supported
		5	0b	R		PEC_FAULT Not Supported
		4	0b	R		MEM_FAULT Not Supported
		3	0b	R		PROCESSOR_FAULT Not Supported

		2	0b	R		Reserved
		1	-	R		OTHER_COMM_FAULT
		0	0b	R		OTHER_MEM/LOGIC_FAULT Not Supported
STATUS_OTHER	7Fh		-		1	0 = No Fault 1 = Fault Occurred
		7-6	00b	R		Reserved
		5	0b	R		INPUT_A_FUSE Not Supported
		4	0b	R		INPUT_B_FUSE Not Supported
		3	0b	R		INPUT_A_ORING Not Supported
		2	0b	R		INPUT_B_ORING Not Supported
		1	-	R		OUTPUT_ORING
		0	0b	R		Reserved
STATUS_MFR_SPECIFIC	80h		-	R	1	0 = No Fault 1 = Fault Occurred
		7	-	R		ISHARE_SHORT
		6-0	00h	R		Reserved
STATUS_FANS_1_2	81h		-		1	0 = No Fault 1 = Fault Occurred
		7	-	R		FAN_1_FAULT
		6	0b	R		FAN_2_FAULT Not Supported
		5	-	R		FAN_1_WARN
		4	0b	R		FAN_2_WARN Not Supported
		3	-	R		FAN_1_OVERRIDE
		2	0b	R		FAN_2_OVERRIDE Not Supported
		1	0b	R		AIRFLOW_FAULT Not Supported
		0	0b	R		AIRFLOW_WARN Not Supported
STATUS_FANS_3_4	82h		00h	R	-	Not Supported
Reserved	83h-87h		00h	R	-	Not Supported
READ_VIN	88h		-	R	2	Linear Format, N = -1
READ_IIN	89h		-	R	2	Linear Format, N = -6
READ_VCAP	8Ah		-	R	2	Linear Format, N = -1 <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA
READ_VOUT1	8Bh		-	R	2	Linear Format, N = -6
READ_IOUT1	8Ch		-	R	2	Linear Format, N = -3
READ_TEMPERATURE_1	8Dh		-	R	2	Linear Format, N = -3
READ_TEMPERATURE_2	8Eh		-	R	2	Linear Format, N = -3
READ_TEMPERATURE_3	8Fh		00h	R	-	Not Supported
READ_FAN_SPEED_1	90h		-	R	2	Linear Format, N = 5

READ_FAN_SPEED_2	91h		<b>00h</b>	R	-	Not Supported
READ_FAN_SPEED_3	92h		<b>00h</b>	R	-	Not Supported
READ_FAN_SPEED_4	93h		<b>00h</b>	R	-	Not Supported
READ_DUTY_CYCLE	94h		<b>00h</b>	R	-	Not Supported
READ_FREQUENCY	95h		<b>00h</b>	R	-	Not Supported
READ_POUT1	96h		-	R	2	Linear Format, N = 1
READ_PIN	97h		-	R	2	Linear Format, N = 1
POWER MANAGEMENT BUS_REVISION	98h		<b>21h</b>		1	
		7-5	001b	R		Part I = Revision 1.1
		4-0	00001b	R		Part II = Revision 1.1
MFR_ID	99h		-	R	CNT+9	ID = BEL POWER SOLUTIONS Format: ASCII
MFR_MODEL	9Ah		-	R	CNT+16	MODEL = PFExxxx-12-054NA Format: ASCII
MFR_REVISION	9Bh		-	R	CNT+3	REVISION = vvv Format: ASCII
MFR_LOCATION	9Ch		-	R	2	LOCATION = xx Format: ASCII
MFR_DATE	9Dh		-	R	CNT+4	DATE = yyww Format: ASCII
MFR_SERIAL	9Eh		-	R	CNT+18	SERIAL = xxxzzzzzzvvvvuuuuu Format: ASCII
Reserved	9Fh		<b>00h</b>	R	-	Reserved
MFR_VIN_MIN	A0h		<b>F8B4h</b>	R	2	90Vrms Linear Format, N = -1
MFR_VIN_MAX	A1h		<b>FA10h</b>	R	2	264Vrms Linear Format, N = -1
MFR_IIN_MAX	A2h		<b>D340h D280h D1C6h</b>	R	2	PFE1100-12-054NA: 13.0Arms PFE850-12-054NA: 10.0Arms PFE600-12-054NA: 7.1Arms <hr/> PFE1100-12-054RA: 13.0Arms PFE850-12-054RA: 10.0Arms PFE600-12-054RA: 7.1Arms Linear Format, N = -6
MFR_PIN_MAX	A3h		<b>00h</b>	R	-	Not Supported
MFR_VOUT1_MIN	A4h		<b>D300h</b>	R	2	12V Linear Format, N = -6
MFR_VOUT1_MAX	A5h		<b>D300h</b>	R	2	12V Linear Format, N = -6
MFR_IOUT1_MAX	A6h		<b>EADCh EA35h E9BFh</b>	R	2	PFE1100-12-054NA: 91.7A PFE850-12-054NA: 70.8A PFE600-12-054NA: 50.0A <hr/> PFE1100-12-054RA: 91.7A PFE850-12-054RA: 70.8A PFE600-12-054RA: 50.0A Linear Format, N = -2
MFR_POUT1_MAX	A7h		<b>0A26h 09A9h 092Ch</b>	R	2	PFE1100-12-054NA: 1100W PFE850-12-054NA: 850W PFE600-12-054NA: 600W <hr/> PFE1100-12-054RA: 1100W PFE850-12-054RA: 850W PFE600-12-054RA: 600W Linear Format, N = 1
MFR_TAMBIENT_MAX	A8h		<b>EA09h</b>	R	2	65°C

						Linear Format, N = -3
MFR_TAMBIENT_MIN	A9h		<b>E800h</b>	R	2	0°C Linear Format, N = -3
MFR_EFFICIENCY_LL	AAh		<b>00h</b>	R	-	Not Supported
MFR_EFFICIENCY_HL	ABh		<b>00h</b>	R	-	Not Supported
Reserved	ACh- AFh		<b>00h</b>	R	-	Reserved
USER_DATA_00-USER_DATA_15	B0h- BFh		<b>00h</b>	R	-	Not Supported
CAL_PAR_POINTER	C0h		-	RW	2	<b>For Bel Power Solutions Use Only</b>
CAL_PAR_DATA	C1h		-	RW	2	<b>For Bel Power Solutions Use Only</b>
SEC_STATUS	C2h		-	R	2	<b>For Bel Power Solutions Use Only</b>
SEC_CONTROL1	C3h		-	R	2	<b>For Bel Power Solutions Use Only</b>
PRI_STATUS	C4h		-	R	2	<b>For Bel Power Solutions Use Only</b>
POWER_SUPPLY_DEBUG	C5h		-	RW	2	<b>For Bel Power Solutions Use Only</b> Refer to Register C5h in PSMI Protocol
CAL_PAR_WRITE_RESULT	C6h		-	R	2	<b>For Bel Power Solutions Use Only</b> Refer to Register C6h in PSMI Protocol
BOOTLOADER_STAT/RQST	C7h		-	RW	2	<b>For Bel Power Solutions Use Only</b> Refer to Register C7h in PSMI Protocol
BOOTLAODER_PAGE_DATA	C8h		-	W	-	<b>For Bel Power Solutions Use Only</b> Refer to Register C8h in PSMI Protocol
Reserved	C9h- CFh		<b>00h</b>	R	-	Reserved
READ_VOUT2	D0h		-	R	2	Linear Format, N = -6
READ_IOUT2	D1h		-	R	2	Linear Format, N = -3
READ_POUT2	D2h		-	R	2	Linear Format, N = 1
READ_VOUT1_EXT	D3h		-	R	2	Linear Format, N = -6
READ_VOUT1_INT	D4h		-	R	2	Linear Format, N = -6
READ_VOUT2_EXT	D5h		-	R	2	Linear Format, N = -6
READ_VOUT2_INT	D6h		-	R	2	Linear Format, N = -6
SEC_FW_REVISION	D7h				2	SEC FW Revision = MM.mm
		0-7	-	R		Major Revision (MM)
		8-15	-	R		Minor Revision (mm)
Reserved	D8h		<b>00h</b>	R	-	Reserved
PRODUCT_ID_NUMBER	D9h		-	R	2	Refer to Table 2
		0-7	-	R		Product Part Number
		8-9	-	R		Communication Protocol
		10-15	-	R		Product Family
READ_IOUT1_ISHARE	DAh		-	R	2	Linear Format, N = 0
READ_IIN_DIRECT	DBh		-	R	2	<b>For Bel Power Solutions Use Only</b> Linear Format, N = -6 <b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA

READ_PIN_DIRECT	DCh		-	R	2	<b>For Bel Power Solutions Use Only</b> Linear Format, N = 1
PRI_FW_REVISION	DDh		-		2	<b>Not Supported in:</b> PFE600-12-054NA PFE600-12-054RA PRI FW Revision = MM.mm
		0-7	-	R		Major Revision (MM)
		8-15	-	R		Minor Revision (mm)
HOT_STANDBY	DEh		-		2	
		0	-	RW		HS Select 0 = Disable (Default) 1 = Enable
		1	-	R		HS Enable Line 0 = Low 1 = High
		2	-	R		HS Status 0 = Not Activated 1 = Activated
		3-15	00h	R		Reserved
POWER_SUPPLY_CONTROL	DFh		-		2	
		0	-	RW		System Over-ride to Disable Fan 0 = Don't Disable Fan (Default) 1 = Disable Fan
		1	-	RW		SMBALERT# Control 0 = Disable SMBALERT# (Default) 1 = Enable SMBALERT#
		2	-	RW		EEPROM Write Protect Control 0 = Enable Write Protect (Default) 1 = Disable Write Protect
		3-15	00h	R		Reserved
MFR_VOUT2_MIN	E0h		<b>D0D3h</b>	R	2	3.3V Linear Format, N = -6
MFR_VOUT2_MAX	E1h		<b>D140h</b>	R	2	5.0V Linear Format, N = -6
MFR_IOUT2_MAX	E2h		<b>E827h</b> <b>E827h</b> <b>E827h</b> <b>E81Bh</b> <b>E81Bh</b> <b>E81Bh</b>	R	2	PFE1100-12-054NA: 5.0A PFE850-12-054NA: 5.0A PFE600-12-054NA: 5.0A PFE1100-12-054RA: 3.5A PFE850-12-054RA: 3.5A PFE600-12-054RA: 3.5A Linear Format, N = -3
MFR_POUT2_MAX	E3h		<b>0807h</b>	R	2	15W Linear Format, N = 1

4. TEST PRODUCT ID NUMBER

BIT(S)	DESCRIPTION	REMARKS
15-10	Product Family	0b000001 = PFE 0b00 = Reserved
9-8	Communication Protocol	0b01 = PSMI 0b10 = Power Management Bus 0b11 = Reserved
0-7	Product Part Number	0x01 = PFE600-12-054NA



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0x02 = PFE850-12-054NA
0x03 = PFE1100-12-054NA
0x11 = PFE600-12-054RA
0x12 = PFE850-12-054RA
0x13 = PFE1100-12-054RA

Table 2. Product ID Number

## 5. SMBALERT#

This power supply supports the SMBALERT# signal as described in the SMBus Specification. The support for SMBALERT# can be enabled or disabled thru the Power Supply Control Register:

PSMI Protocol - Register DFh, Bit1

Power Management Bus Protocol - Register DFh, Bit1

If SMBALERT# support is enabled, then any supported bit in the Shutdown Event Register (0x5Eh) for PSMI and the Status Word Register (0x79h) for Power Management Bus when asserted can assert the SMBALERT# line.

When the SMBALERT# line is asserted, the Host (Master) can do any of the following to clear the SMBALERT# line:

1. Send the "Alert Response Address" as described in the SMBus Specification.

Slave Address (Bits 7-1)	R/W Bit (Bit 0)
0001 100	1

2. Read Shutdown Event Register (0x5Eh) for PSMI or Status Word Register (0x79h) for Power Management Bus.

## 6. REVISION HISTORY

REV	DESCRIPTION OF CHANGE	REQUIRED F2 FW REVISION						RELEASE DATE	AUTHOR
		PFE600_RA	PFE850_RA	PFE1100_RA	PFE600_NA	PFE850_NA	PFE1100_NA		
001	First release.	-	-	-	-	-	00.01	14-Dec-09	EE
002	Section 2: Define Register 0xC6.	-	-	-	-	-	00.02	05-Jan-10	EE
003	Table 1: The equivalent APS voltage (Vn) has changed because APS pin is pulled-up to 3.3V.	-	-	-	-	-	00.02	09-Feb-10	EE
004	Section 2: Add support for Interrupt in Status Register (0x17) Section 2: Update Custom Feature Area Registers Section 2: Update Vendor Specific Registers Section 2.1: Add description for the operation of SMBALERT#	-	-	-	-	-	00.02	23-Mar-10	EE
005	Section 2: Add Hot-Standby Register (0xDE) Section 2: Output and Input Power Sensor resolution: 1Bit = 31.25mW	-	-	-	-	-	00.02	15-Apr-10	EE

	Section 2: I1 Output Current Share Bus Error resolution: 1Bit = 0.2A Section 2: Register 0xDB = Input current sensor (direct) Section 2: Register 0xDC = Input power sensor (direct)									
006	Section 2: Add Power Supply Control Register (0xDF) Table 2: Update Product ID Number bit-fields Section 4: Description for SMBALERT# operation Section 2: Remove I1Out_Phase1 and I1Out_Phase2 Section 2: Report SEC DSP FW Revision in 0xD7 to match Power Management Bus Section 2: Report P1 (main) output power in 0xD0 Section 2: Report P2 (standby) output power in 0xD8 Section 3: Add definitions for Power Management Bus Protocol	-	-	-	-	-	00.04	29-Apr-10	EE	
007	Table 2: Expand Product ID Number to differentiate the different assembled Secondary DSP part	-	-	-	-	-	00.04	04-Jun-10	EE	
008	Table 1: Update Rn and Vn values according to E12 Series resistors	-	-	-	00.01	00.01	00.04	28-Jun-10	EE	
009	Combine External Communication Manuals for SNP600, SNP850, SNP1100 into 1 document.	-	-	-	00.01	00.01	00.04	24-Aug-10	EE	
010	Model name is changed to PFE1100-12-054NA. Update all references to SNP1100-12G. Section 3: Update definition of MFR_MODEL (0x9A)	-	-	-	00.03	00.02	00.06	04-Nov-10	EE	
011	Update PSMI and Power Management Bus Registers Add definitions for Reverse Airflow units	00.02	00.02	00.02	00.05	00.03	00.08	23-Aug-11	EE	
012	Section 3: Add support for STATUS_MFR_SPECIFIC	01.00	01.00	01.00	01.00	01.00	01.00	03-Aug-12	EE	
AA	Document updated to Bel template	01.00	01.00	01.00	01.00	01.00	01.00	14-Sep-16	VS	



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