XDP™ XDM700-1 PMBus® commands

Fully digital current sensing and system monitoring IC

About this document

Scope and purpose

This document describes all the PMBus® commands supported by the XDP™ XDM700-1 fully digital current sensing and system monitoring IC.

Intended audience

This document is intended for XDP™ XDM700-1, commonly referred to as XDM700, users.

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1 Introduction

In tables where register bit fields are defined, the following conventions are used to indicate undefined and unimplemented function. Furthermore, types of bits and bit fields are defined using the abbreviations as shown in the following table.

Table 1 Bit function terminology

Function of bits	Description
Unimplemented, Reserved	The bit fields indicate unimplemented functions with the following behavior: • Reading these bit fields returns specific data depending on the "Reset value" • These bit fields should be written with the same data as mentioned in the "Reset value" These bit fields are reserved. The detailed description of these bit fields can be found in the register descriptions.
rw	The bit or bit field can be read and written.
r	The bit or bit field can only be read (read-only).
w, wX	The bit or bit field can only be written (write-only). A read of this register will always give a default value back that is described in the register documentation.
w0, w1	The bit or bit field can only be written (write-only). A read of this register will always give the value 0 or 1 back.
r0, r1	The bit or bit field can only be read. The read value is 0 or 1.
s	Bits with this attribute are “sticky” in one direction. If their reset value is once overwritten by software, they can be switched again into their reset state only by a reset operation. Software cannot switch this type of bit into its reset state by writing the register. This attribute can be combined to “rws” or “rwhs”.
f	Bits with this attribute are readable only when they are accessed by an instruction fetch. Normal data read operations will return other values.

2 XDP™ XDM700-1 PMBus® commands

2.1 CLEAR_FAULTS

This command is used to clear any warning bits that have been set. If the fault or warning is still present when the bit is cleared, the fault bit shall immediately be set again. This command is write only without a data byte.

CLEAR_FAULTS Address: 003_H

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CLEAR_FAULTS															
w															

Field	Bits	Type	Description
CLEAR_FAULTS	15:0	w	**Clear any warning bits that have been set.**

2.2 CAPABILITY

This read only command provides a way for a host system to determine some key capabilities of XDM700.

CAPABILITY Address: 019_H

Reset value: $D0_H$

7	6	5	4	3	2	1	0
PCK_ERR_CHK	MAX_BUS_SPEED		SMBALLERT	NUMERIC_FORMAT	Res		
r	r		r	r	r		

Field	Bits	Type	Description
NUMERIC_FORMAT	3	r	**Specifies the format of the numeric data.** 0_B Numeric data is in Direct format. 1_B NA
SMBALLERT	4	r	**Specifies whether or not the device has an SMBALERT# pin and supports SMBus Alert Response protocol.** 0_B NA 1_B Device does support the SMBus Alert Response protocol.
MAX_BUS_SPEED	6:5	r	**Specifies the maximum speed of the bus.** 00_B NA 01_B NA 10_B Maximum supported bus speed is 1MHz. 11_B NA
PCK_ERR_CHK	7	r	**Specifies whether or not the device supports Packet Error Check.** 0_B NA 1_B Packet Error Checking is supported.

2.3 VOUT_OV_WARN_LIMIT

This command sets the value of the output voltage measured at the VOUT_SNS pin that causes an output overvoltage (OOV) warning.

VOUT_OV_WARN_LIMIT Address: 042_H

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				VOUT_OV_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
VOUT_OV_WARN_LIMIT	11:0	rw	**OOV warning can be programmed from 0 to 22, 0 to 44 or 0 to 88V (absolute value) depending on VTLM_RNG settings.**

2.4 VOUT_UV_WARN_LIMIT

This command sets the value of the output voltage measured at the VOUT_SNS pin that causes an output undervoltage (OUV) warning.

VOUT_UV_WARN_LIMIT Address: 043_H

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				VOUT_UV_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
VOUT_UV_WARN_LIMIT	11:0	rw	**OUV warning can be programmed from 0 to 22, 0 to 44 or 0 to 88V (absolute value) depending on VTLM_RNG settings.**

2.5 IOUT_OC_WARN_LIMIT

This command sets the current level (below the VCS_RNG voltage measured across the ISNS_x pins) that causes an output overcurrent (OOC) warning.

IOUT_OC_WARN_LIMIT Address: $04A_H$

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				IOUT_OC_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
IOUT_OC_WARN_LIMIT	11:0	rw	**OOC limit for triggering the warning.**

2.6 OT_WARN_LIMIT

This command sets the temperature of the heat source, in degree Celsius, measured between TSNS_P and TSNS_N pins, at which the overtemperature (OT) warning is triggered.

OT_WARN_LIMIT Address: 051_H

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				OT_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
OT_WARN_LIMIT	11:0	rw	**OT limit for triggering the warning.**

2.7 VIN_OV_WARN_LIMIT

This command sets the value of the input voltage measured at the VIN_SNS pin that causes an input overvoltage (OV) warning.

VIN_OV_WARN_LIMIT Address: 057_H

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				VIN_OV_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
VIN_OV_WARN_LIMIT	11:0	rw	**OV warning can be programmed from 0 to 22, 0 to 44 or 0 to 88V (absolute value) depending on VTLM_RNG settings.**

2.8 VIN_UV_WARN_LIMIT

This command sets the value of the input voltage measured at the VIN_SNS pin that causes an input undervoltage (UV) warning.

VIN_UV_WARN_LIMIT Address: 058_H

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				VIN_UV_WARN_LIMIT											
r				rw											

Field	Bits	Type	Description
VIN_UV_WARN_LIMIT	11:0	rw	**UV warning can be programmed from 0 to 22, 0 to 44 or 0 to 88V (absolute value) depending on VTLM_RNG settings.**

2.9 PIN_OP_WARN_LIMIT

This command sets the value of the input power calculated as a product of VIN * IOUT that causes an input overpower (OP) warning.

PIN_OP_WARN_LIMIT Address: $06B_H$

Reset value: $FFFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
PIN_OP_WARN_LIMIT															
rw															

Field	Bits	Type	Description
PIN_OP_WARN_LIMIT	15:0	rw	**OP warning can be programmed from 0 to VTLM_RNG * Ioc.**

2.10 STATUS_BYTE

This command returns one byte of information with a summary of the most critical warnings.

STATUS_BYTE Address: 078_H

Reset value: 40_H

7	6	5	4	3	2	1	0
Res					**TEMP**	**CML**	**NONE_OF_THE_ABOVE**
r					rw	rw	rw

Field	Bits	Type	Description
NONE_OF_THE_ABOVE	0	rw	**This bit indicates if a warning not listed in this command has occurred.** 0_B Warning has not ocurred. 1_B Warning has occurred.
CML	1	rw	**This bit indicates if a communications warning, memory or logic fault has occurred.** 0_B Fault or Warning has not occurred. 1_B Fault or Warning has occurred.
TEMP	2	rw	**This bit indicates if a temperature warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.11 STATUS_WORD

This command returns two bytes of information with a summary of the device's warning condition. Based on the information in these bytes, the host can get more information. The low byte of the STATUS_WORD is the same command as the STATUS_BYTE command.

STATUS_WORD Address: 079_H

Reset value: 0840_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
VOUT	IOUT_POUT	INPUT	Res			OTHER	Res						TEMP	CML	NONE_OF_THE_ABOVE
rw	rw	rw	r			rw	r						rw	rw	rw

Field	Bits	Type	Description
NONE_OF_THE_ABOVE	0	rw	**This bit indicates if a warning not listed in bits [6:1] has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
CML	1	rw	**This bit indicates if a communications warning, memory or logic fault has occurred.** 0_B Fault or Warning has not occurred. 1_B Fault or Warning has occurred.
TEMP	2	rw	**This bit indicates if a temperature warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
OTHER	9	rw	**This bit reflects the status of the STATUS_OTHER command.** 0_B A bit in STATUS_OTHER command is not set. 1_B A bit in STATUS_OTHER command is set.
INPUT	13	rw	**This bit indicates if an input voltage, input current, or input power warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
IOUT_POUT	14	rw	**This bit indicates if an output current warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
VOUT	15	rw	**This bit indicates if an output voltage warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.12 STATUS_VOUT

This command returns one data byte with a summary of the output voltage warnings.

STATUS_VOUT Address: $07A_H$

Reset value: 00_H

7	6	5	4	3	2	1	0
Res	**VOUT_OV_WARN**	**VOUT_UV_WARN**	**Res**				
r	rw	rw	r				

Field	Bits	Type	Description
VOUT_UV_WARN	5	rw	**This bit indicates if an output undervoltage warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
VOUT_OV_WARN	6	rw	**This bit indicates if an output overvoltage warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.13 STATUS_IOUT

This command returns one data byte with a summary of the output current faults and warnings and device status.

STATUS_IOUT Address: $07B_H$

Reset value: 00_H

7	6	5	4	3	2	1	0
Res		**IOUT_OC_WARN**	**Res**				
r		rw	r				

Field	Bits	Type	Description
IOUT_OC_WARN	5	rw	**This bit indicates if an output overcurrent warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.14 STATUS_INPUT

This command returns one data byte with a summary of the system input warning status.

STATUS_INPUT Address: $07C_H$

Reset value: 00_H

7	6	5	4	3	2	1	0
Res	**VIN_OV_WARN**	**VIN_UV_WARN**	**Res**				**PIN_OP_WARN**
r	rw	rw	r				rw

Field	Bits	Type	Description
PIN_OP_WARN	0	rw	**This bit indicates if an input overpower warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
VIN_UV_WARN	5	rw	**This bit indicates if an input undervoltage warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.
VIN_OV_WARN	6	rw	**This bit indicates if an input overvoltage warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.15 STATUS_TEMPERATURE

This command returns one data byte with a summary of the external temperature warning status.

STATUS_TEMPERATURE Address: $07D_H$
Reset value: 00_H

7	6	5	4	3	2	1	0
Res	**OT_WARN**	**Res**					
r	rw	r					

Field	Bits	Type	Description
OT_WARN	6	rw	**This bit indicates if an overtemperature warning has occurred.** 0_B Warning has not occurred. 1_B Warning has occurred.

2.16 STATUS_CML

This command returns one data byte with a summary of the communication interface fault and warning status.

STATUS_CML Address: $07E_H$
Reset value: 00_H

7	6	5	4	3	2	1	0
INVALID_CMD	**INVALID_DATA**	**PEC_FAIL**	**MEM_FAULT**	**Res**		**OTHER**	**Res**
rw	rw	rw	rw	r		rw	r

Field	Bits	Type	Description
OTHER	1	rw	**This bit indicates if a miscellaneous communications fault has occurred.** 0_B No miscellaneous fault has occurred. 1_B Miscellaneous fault has occurred.
MEM_FAULT	4	rw	**This bit indicates if an OTP fault has occurred.** 0_B Fault has not occurred. 1_B Fault has occurred.
PEC_FAIL	5	rw	**This bit indicates the Packet Error Check status.** 0_B Packet Error Check has not failed. 1_B Packet Error Check failed.
INVALID_DATA	6	rw	**This bit indicates if an invalid or unsupported data was received.** 0_B Invalid or unsupported data not received. 1_B Invalid or unsupported data received.
INVALID_CMD	7	rw	**This bit indicates if an invalid or unsupported command was received.** 0_B Invalid or unsupported command not received. 1_B Invalid or unsupported command received.

2.17 STATUS_OTHER

This command returns one data byte with SMBALERT# pin status.

STATUS_OTHER Address: $07F_H$
Reset value: 00_H

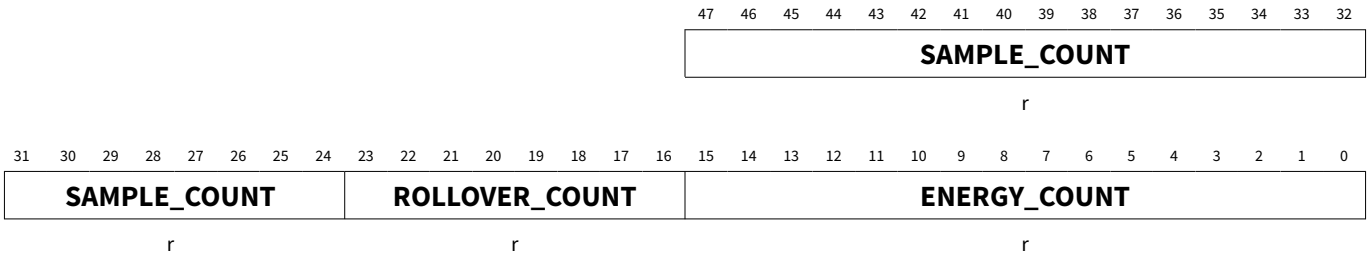
7	6	5	4	3	2	1	0
Res							**SMBALERT**
r							rw

Field	Bits	Type	Description
SMBALERT	0	rw	**This bit indicates if this device is the First To Assert SMBALERT# status.** 0_B Not the First To Assert SMBALERT# pin. 1_B First To Assert SMBALERT# pin.

2.18 READ_EIN

This command returns the input energy reading in direct format.

READ_EIN Address: 086_H
Reset value: $0000\ 0000\ 0000_H$



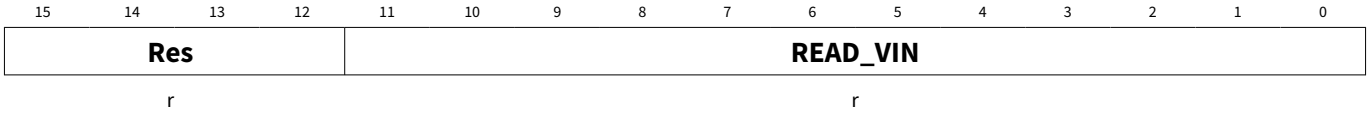
Field	Bits	Type	Description
ENERGY_COUNT	15:0	r	**Output of an accumulator that continuously sums samples of the instantaneous input power.**
ROLLOVER_COUNT	23:16	r	**Unsigned integer that will periodically roll over from its maximum positive value to zero.**
SAMPLE_COUNT	47:24	r	**Unsigned integer that counts the number of samples of the instantaneous input power.**

2.19 READ_VIN

This command returns the input voltage reading measured at the VIN_SNS pin in direct format.

READ_VIN Address: 088_H

Reset value: 0000_H



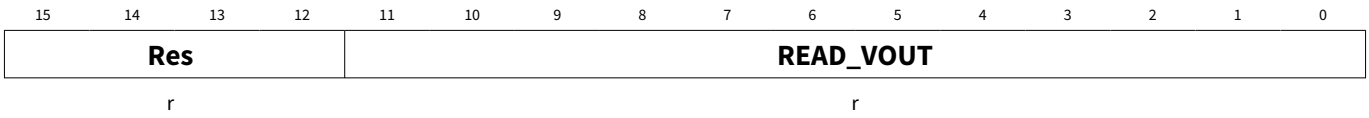
Field	Bits	Type	Description
READ_VIN	11:0	r	**Input voltage reading.**

2.20 READ_VOUT

This command returns the output voltage reading measured at the VOUT_SNS pin in direct format.

READ_VOUT Address: $08B_H$

Reset value: 0000_H



Field	Bits	Type	Description
READ_VOUT	11:0	r	**Output voltage reading.**

2.21 READ_IOUT

This command returns the reading of the current flow through the sense resistor (measured using the voltage drop across the ISNS_x pins) in direct format.

READ_IOUT Address: $08C_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				**READ_IOUT**											
r				r											

Field	Bits	Type	Description
READ_IOUT	11:0	r	**Current reading.**

2.22 READ_TEMPERATURE_1

This command returns the reading of the external temperature measured between TSNS_P and TSNS_N pins in direct format.

READ_TEMPERATURE_1 Address: $08D_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				**READ_TEMPERATURE_1**											
r				r											

Field	Bits	Type	Description
READ_TEMPERATURE_1	11:0	r	**External temperature reading.**

2.23 READ_TEMPERATURE_2

This command returns the reading of the device on-chip temperature measured by the internal temperature sensor in direct format.

READ_TEMPERATURE_2 Address: $08E_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				**READ_TEMPERATURE_2**											
r				r											

Field	Bits	Type	Description
READ_TEMPERATURE_2	11:0	r	**Internal temperature reading.**

2.24 READ_PIN

This command returns the input power (PIN = VIN * IOUT) reading in direct format.

READ_PIN Address: 097_H

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
READ_PIN															
r															

Field	Bits	Type	Description
READ_PIN	15:0	r	**Input power reading.**

2.25 PMBUS_REVISION

This command stores the revision of the PMBus® to which the device is compliant.

PMBUS_REVISION Address: 098_H

Reset value: 33_H

7	6	5	4	3	2	1	0
PMBUS_P1_REVISION				PMBUS_P2_REVISION			
r				r			

Field	Bits	Type	Description
PMBUS_P2_REVISION	3:0	r	**0x3 indicates part 2 is revision 1.3**
PMBUS_P1_REVISION	7:4	r	**0x3 indicates part 1 is revision 1.3**

2.26 MFR_ID

This command contains the manufacturer ID according to ISO/IEC 8859-1 [A05].

MFR_ID Address: 099_H

Reset value: $00\ 4649_H$

23	22	21	20	19	18	17	16
MFR_ID							
r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MFR_ID															
r															

Field	Bits	Type	Description
MFR_ID	23:0	r	**Manufacturer's ID.**

2.27 MFR_MODEL

This command contains a string to identify the device model in ASCII.

MFR_MODEL

Address: $09A_H$

Reset value: 0000 3031 374D 4458$_H$

63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
MFR_MODEL																															
r																															

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MFR_MODEL																															
r																															

Field	Bits	Type	Description
MFR_MODEL	63:0	r	**Contains the device model identifier string.**

2.28 MFR_REVISION

This command contains the manufacturer's revision number i.e. device version.

MFR_REVISION

Address: $09B_H$

Reset value: 0001_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MFR_REVISION															
r															

Field	Bits	Type	Description
MFR_REVISION	15:0	r	**Manufacturer revision.**

2.29 PMBUS_CFG

This command configures the PMBus® device address and communication bus speed.

PMBUS_CFG

Address: $0D0_H$

Reset value: 10_H

7	6	5	4	3	2	1	0
PMBUS_SPEED	**PMBUS_BASE_ADDR**			**PMBUS_DEVICE_ADDR**			
rw	rw			rw			

Field	Bits	Type	Description
PMBUS_DEVICE_ADDR	3:0	rw	**LSB part of the PMBus® address [3:0].**
PMBUS_BASE_ADDR	6:4	rw	**MSB part of the PMBus® address [6:4].**
PMBUS_SPEED	7	rw	**Operating PMBus® speed.** 0_B Fast Mode Plus 1_B Standard or Fast Mode

2.30 V_SNS_CFG

This command is used for configuring the voltage sense range.

V_SNS_CFG Address: $0D4_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res														**VTLM_RNG**	
r														rw	

Field	Bits	Type	Description
VTLM_RNG	1:0	rw	**These bits set the monitored voltage range for input and output voltages.** 00_B 88V 01_B 44V 10_B 22V 11_B RESERVED

2.31 I_SNS_CFG

This command is used for configuring the current sense range.

I_SNS_CFG Address: $0D5_H$

Reset value: 0040_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res								**CS_RNG**		**Res**					
r								rw		r					

Field	Bits	Type	Description
CS_RNG	7:6	rw	**This bit field sets current sense differential voltage range.** 00_B 12.5 mV 01_B 25 mV 10_B 50 mV 11_B 100 mV

2.32 I_SNS_OFFSET_COMP

This command specifies a systematic offset to compensate the current sense measurements in the application.

I_SNS_OFFSET_COMP Address: $0D6_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res					**I_SNS_OFFSET_COMP**										
r					rw										

Field	Bits	Type	Description
I_SNS_OFFSET_COMP	10:0	rw	**Value is a signed integer from -1024 to 1023, specified in 2's complement.**

2.33 ENABLE_WARNS

This command is used for enabling/disabling the warnings.

ENABLE_WARNS Address: $0E1_H$

Reset value: $1FCC_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res			**COMM**	**OP**	**UV**	**OV**	**OUV**	**OOV**	**OOC**	**Res**		**OT**	**TSD**	**Res**	
r			rw	rw	rw	rw	rw	rw	rw	r		rw	rw	r	

Field	Bits	Type	Description
TSD	2	rw	**Enables or disables TSD warning.** 0_B Warning is disabled. 1_B Warning is enabled.
OT	3	rw	**Enables or disables OT warning.** 0_B Warning is disabled. 1_B Warning is enabled.
OOC	6	rw	**Enables or disables OOC warning.** 0_B Warning is disabled. 1_B Warning is enabled.
OOV	7	rw	**Enables or disables OOV warning.** 0_B Warning is disabled. 1_B Warning is enabled.
OUV	8	rw	**Enables or disables OUV warning.** 0_B Warning is disabled. 1_B Warning is enabled.

(table continues...)

(continued)

Field	Bits	Type	Description
OV	9	rw	**Enables or disables OV warning.** 0_B Warning is disabled. 1_B Warning is enabled.
UV	10	rw	**Enables or disables UV warning.** 0_B Warning is disabled. 1_B Warning is enabled.
OP	11	rw	**Enables or disables OP warning.** 0_B Warning is disabled. 1_B Warning is enabled.
COMM	12	rw	**Enables or disables COMM warning.** 0_B Warning is disabled. 1_B Warning is enabled.

2.34 MASK_WARNS

This command determines which warnings are reported on the WARN# pin.

MASK_WARNS Address: $0E2_H$

Reset value: $1FCC_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res			COMM	OP	UV	OV	OUV	OOV	OOC	Res		OT	TSD	Res	
r			rw	rw	rw	rw	rw	rw	rw	r		rw	rw	r	

Field	Bits	Type	Description
TSD	2	rw	**Masks or unmasks TSD warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
OT	3	rw	**Masks or unmasks OT warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
OOC	6	rw	**Masks or unmasks OOC warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
OOV	7	rw	**Masks or unmasks OOV warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
OUV	8	rw	**Masks or unmasks OUV warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.

(table continues...)

(continued)

Field	Bits	Type	Description
OV	9	rw	**Masks or unmasks OV warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
UV	10	rw	**Masks or unmasks UV warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
OP	11	rw	**Masks or unmasks OP warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.
COMM	12	rw	**Masks or unmasks COMM warning.** 0_B Warning is not reported in the WARN# pin. 1_B Warning is reported in the WARN# pin.

2.35 STATUS_WARNS

This command summarizes the warnings status.

STATUS_WARNS Address: $0E3_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res			COMM	OP	UV	OV	OUV	OOV	OOC	Res		OT	TSD	Res	
r			rw	rw	rw	rw	rw	rw	rw	r		rw	rw	r	

Field	Bits	Type	Description
TSD	2	rw	**Specifies the status of TSD warning.** 0_B Warning is not present. 1_B Warning is present.
OT	3	rw	**Specifies the status of OT warning.** 0_B Warning is not present. 1_B Warning is present.
OOC	6	rw	**Specifies the status of OOC warning.** 0_B Warning is not present. 1_B Warning is present.
OOV	7	rw	**Specifies the status of OOV warning.** 0_B Warning is not present. 1_B Warning is present.
OUV	8	rw	**Specifies the status of OUV warning.** 0_B Warning is not present. 1_B Warning is present.

(table continues...)

(continued)

Field	Bits	Type	Description
OV	9	rw	**Specifies the status of OV warning.** 0_B Warning is not present. 1_B Warning is present.
UV	10	rw	**Specifies the status of UV warning.** 0_B Warning is not present. 1_B Warning is present.
OP	11	rw	**Specifies the status of OP warning.** 0_B Warning is not present. 1_B Warning is present.
COMM	12	rw	**Specifies the status of COMM warning.** 0_B Warning is not present. 1_B Warning is present.

2.36 TELEMETRY_EN

This command enables or disables each one of the telemetry features.

TELEMETRY_EN Address: $0E8_H$

Reset value: $FFFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
READ_EIN_EN	READ_VIN_EN	READ_VOUT_EN	READ_IOUT_EN	READ_TEMP_1_EN	READ_TEMP_2_EN	READ_PIN_EN	READ_VIN_PEAK_EN	READ_VOUT_PEAK_EN	READ_IOUT_PEAK_EN	READ_PIN_PEAK_EN	READ_TEMP_1_PEAK_EN	READ_VIN_VALLEY_EN	READ_VOUT_VALLEY_EN	READ_IOUT_VALLEY_EN	READ_TEMP_1_VALLEY_EN
rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw	rw

Field	Bits	Type	Description
READ_TEMP_1_VALLEY_EN	0	rw	**Enable/disable external temperature valley reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_IOUT_VALLEY_EN	1	rw	**Enable/disable output current valley reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VOUT_VALLEY_EN	2	rw	**Enable/disable output voltage valley reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VIN_VALLEY_EN	3	rw	**Enable/disable input voltage valley reading.** 0_B Feature is disabled. 1_B Feature is enabled.

(table continues...)

(continued)

Field	Bits	Type	Description
READ_TEMP_1_PEAK_EN	4	rw	**Enable/disable external temperature peak reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_PIN_PEAK_EN	5	rw	**Enable/disable input power reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_IOUT_PEAK_EN	6	rw	**Enable/disable output current peak reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VOUT_PEAK_EN	7	rw	**Enable/disable output voltage peak reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VIN_PEAK_EN	8	rw	**Enable/disable input voltage peak reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_PIN_EN	9	rw	**Enable/disable input power calculation.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_TEMP_2_EN	10	rw	**Enable/disable internal temperature reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_TEMP_1_EN	11	rw	**Enable/disable external temperature reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_IOUT_EN	12	rw	**Enable/disable output current reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VOUT_EN	13	rw	**Enable/disable output voltage reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_VIN_EN	14	rw	**Enable/disable input voltage reading.** 0_B Feature is disabled. 1_B Feature is enabled.
READ_EIN_EN	15	rw	**Enable/disable energy calculation.** 0_B Feature is disabled. 1_B Feature is enabled.

2.37 TELEMETRY_AVG

This command sets the number of averaging samples for reporting power, voltage and current telemetry. It is also used to configure the analog current (IMON or PMON) reporting.

TELEMETRY_AVG Address: $0E9_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				**AMON_SEL**	**AMON_EN**	**P_TELEMETRY_AVG**				**V_TELEMETRY_AVG**			**I_TELEMETRY_AVG**		
r				rw	rw	rw				rw			rw		

Field	Bits	Type	Description
I_TELEMETRY_AVG	2:0	rw	**Current telemetry averaging.** 000_B 1 averaging (102.4 us) 001_B 2 averaging (204.8 us) 010_B 4 averaging (409.6 us) 011_B 8 averaging (819.2 us) 100_B 16 averaging (1638.4 us) 101_B 32 averaging (3276.8 us) 110_B 64 averaging (6553.6 us) 111_B 128 averaging (13107.2 us)
V_TELEMETRY_AVG	5:3	rw	**Voltage telemetry averaging.** 000_B 1 averaging (102.4 us) 001_B 2 averaging (204.8 us) 010_B 4 averaging (409.6 us) 011_B 8 averaging (819.2 us) 100_B 16 averaging (1638.4 us) 101_B 32 averaging (3276.8 us) 110_B 64 averaging (6553.6 us) 111_B 128 averaging (13107.2 us)

(table continues...)

(continued)

Field	Bits	Type	Description
P_TELEMETRY_AVG	9:6	rw	**Power telemetry averaging.** 0_H 1 averaging (102.4 us) 1_H 2 averaging (204.8 us) 2_H 4 averaging (409.6 us) 3_H 8 averaging (819.2 us) 4_H 16 averaging (1.64 ms) 5_H 32 averaging (3.27 ms) 6_H 64 averaging (6.55 ms) 7_H 128 averaging (13.1 ms) 8_H 256 averaging (26.21 ms) 9_H 512 averaging (52.43 ms) A_H 1024 averaging (104.86 ms) B_H 2048 averaging (209.72 ms) C_H 4096 averaging (419.43 ms) D_H 8192 averaging (838.86 ms) E_H 16384 averaging (1.677 s) F_H 32768 averaging (3.35 s)
AMON_EN	10	rw	**Enables or disables AMON current reporting.** 0_B AMON current reporting is disabled. 1_B AMON current reporting is enabled.
AMON_SEL	11	rw	**AMON configuration (IMON or PMON).** 0_B Analog current proportional to the output current is reported on the AMON pin (i.e. IMON). 1_B Analog current proportional to the input power is reported on the AMON pin (i.e. PMON).

2.38 READ_PIN_EXT

This command returns the extended input power reading in direct format.

READ_PIN_EXT

Address: $0EE_H$

Reset value: $00\ 0000_H$

23	22	21	20	19	18	17	16
READ_PIN_EXT							
r							

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
READ_PIN_EXT															
r															

Field	Bits	Type	Description
READ_PIN_EXT	23:0	r	**Input power reading (extended).**

2.39 READ_VIN_PEAK

This command stores the maximum VIN value read in direct format. It is automatically cleared when the data is read.

READ_VIN_PEAK Address: $0EF_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_VIN_PEAK											
r				r											

Field	Bits	Type	Description
READ_VIN_PEAK	11:0	r	**Stores the maximum VIN value read.**

2.40 READ_VOUT_PEAK

This command stores the maximum VOUT value read in direct format. It is automatically cleared when the data is read.

READ_VOUT_PEAK Address: $0F0_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_VOUT_PEAK											
r				r											

Field	Bits	Type	Description
READ_VOUT_PEAK	11:0	r	**Stores the maximum VOUT value read.**

2.41 READ_IOUT_PEAK

This command stores the maximum IOUT value read in direct format. It is automatically cleared when the data is read.

READ_IOUT_PEAK Address: $0F1_H$

Reset value: 0000_H

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_IOUT_PEAK											
r				r											

Field	Bits	Type	Description
READ_IOUT_PEAK	11:0	r	**Stores the maximum IOUT value read.**

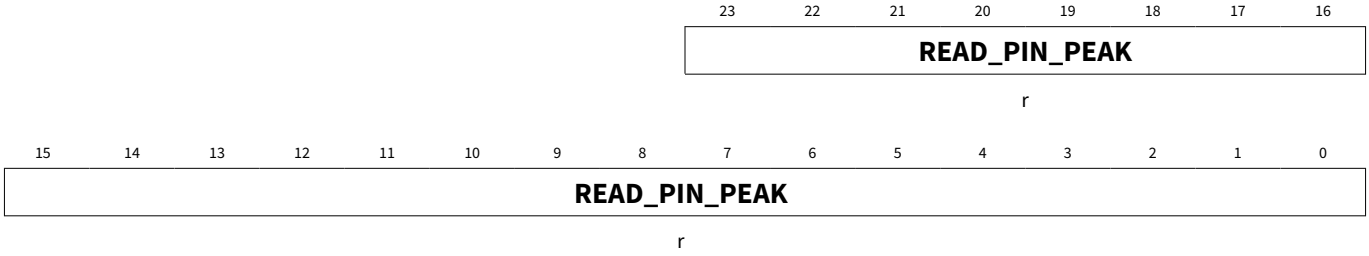
2.42 READ_PIN_PEAK

This command stores the maximum PIN value read in direct format. It is automatically cleared when the data is read.

READ_PIN_PEAK

Address: $0F2_H$

Reset value: $00\ 0000_H$



Field	Bits	Type	Description
READ_PIN_PEAK	23:0	r	**Stores the maximum PIN value read.**

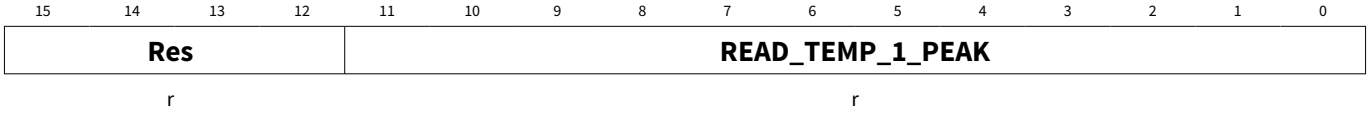
2.43 READ_TEMP_1_PEAK

This command stores the maximum external temperature value read between TSNS_P and TSNS_N pins in direct format. It is automatically cleared when the data is read.

READ_TEMP_1_PEAK

Address: $0F3_H$

Reset value: 0000_H



Field	Bits	Type	Description
READ_TEMP_1_PEAK	11:0	r	**Stores the maximum temperature value read between the TSNS_P and TSNS_N pins.**

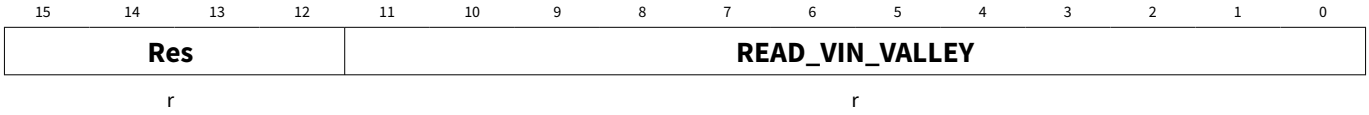
2.44 READ_VIN_VALLEY

This command stores the minimum VIN value read in direct format. It is automatically cleared when the data is read.

READ_VIN_VALLEY

Address: $0F4_H$

Reset value: $0FFF_H$



Field	Bits	Type	Description
READ_VIN_VALLEY	11:0	r	**Stores the minimum VIN value read.**

2.45 READ_VOUT_VALLEY

This command stores the minimum VOUT value read in direct format. It is automatically cleared when the data is read.

READ_VOUT_VALLEY Address: $0F5_H$

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_VOUT_VALLEY											
r				r											

Field	Bits	Type	Description
READ_VOUT_VALLEY	11:0	r	**Stores the minimum VOUT value read.**

2.46 READ_IOUT_VALLEY

This command stores the minimum IOUT value read in direct format. It is automatically cleared when the data is read.

READ_IOUT_VALLEY Address: $0F6_H$

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_IOUT_VALLEY											
r				r											

Field	Bits	Type	Description
READ_IOUT_VALLEY	11:0	r	**Stores the minimum IOUT value read.**

2.47 READ_TEMP_1_VALLEY

This command stores the minimum external temperature value read between TSNS_P and TSNS_N pins in direct format. It is automatically cleared when the data is read.

READ_TEMP_1_VALLEY Address: $0F7_H$

Reset value: $0FFF_H$

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Res				READ_TEMP_1_VALLEY											
r				r											

Field	Bits	Type	Description
READ_TEMP_1_VALLEY	11:0	r	**Stores the minimum temperature value read between the TSNS_P and TSNS_N pins.**

2.48 CONFIG_ID

This command provides the user an option to store an identification number in order to distinguish devices with different configurations in the system.

CONFIG_ID Address: $0FA_H$

Reset value: 00_H

7	6	5	4	3	2	1	0
CONFIG_ID							
rw							

Field	Bits	Type	Description
CONFIG_ID	7:0	rw	**8-bit code for user device identification number.**

2.49 READ_EIN_EXT

This command returns the extended input energy reading in direct format.

READ_EIN_EXT Address: $0FB_H$

Reset value: $0000\ 0000\ 0000\ 0000_H$

63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
SAMPLE_COUNT																								ROLLOVER_COUNT							
r																								r							

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ROLLOVER_COUNT																ENERGY_COUNT															
r																r															

Field	Bits	Type	Description
ENERGY_COUNT	15:0	r	**Output of an accumulator that continuously sums samples of the instantaneous input power.**
ROLLOVER_COUNT	39:16	r	**Unsigned integer that will periodically roll over from its maximum positive value to zero.**
SAMPLE_COUNT	63:40	r	**Unsigned integer that counts the number of samples of the instantaneous input power.**

3 Revision history

Document version	Date of release	Description of changes
Rev. 1.0	2026-04-07	Initial release

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