Application Note

AS7263

AT & I²C Commands for AS7263
Overview, status and description

Content Guide

1. General Description

This document describes all AT & I²C commands of AS7263 firmware version NEW (here 12.0.0) and their status compared with older firmware versions. The following codes for status are used:

No change – AT command was not changed in function, syntax, response, etc. No adaptations in firmware are necessary.

Yes Change - AT command was changed in function, syntax, response, etc. An adaptation in firmware are necessary

New – AT command is new and was added in version NEW. The AT command can be used in future for customer firmware.

Deleted – AT command was deleted and does not exists in version NEW. Please, check older firmware and replace the deleted command by alternatives.

Adapted – AT command was changed. Please, check older firmware and adapt firmware t the new command, if necessary.

2. AT Commands Changes in AS7263

Changes	AT Commd	Descriptions	Changes from previous version
2.1 Status			
No	AT	No operation (NOP) - returns 'OK'	-
No	ATVERSW	Return the current software version number	-
Yes	ATVERHW	Returns the system hardware as a HEX value of the form PRDTx where P=PartID and R=ChipRevision and DT= DeviceType	one byte changed to two byte and added Device type to LSB byte
No	ATTEMP	Read the current device temperature in degrees Celsius	-
Yes	ATDATA	Read all six raw values 65535 means saturation	Added Saturation beyond 65535
No	ATCDATA	Read calibrated data. Returns comma-separated 32-bit floating-point values.	-
2.2 Control			
No	ATINT TIME	Set sensor integration time. Integration time = <value> * ~2.8 ms	-
No	ATGAIN	Set sensor gain: 0=1X gain, 1=3.7X, 2=16X, 3=64X	-
New	ATINTRP	Enable/Disable Interrupt Pin, Default pin state: low (pin disabled) or high (pin enabled). Goes to low when new data are measured. Will be reset to high, if raw data or calibrated data were read	Created Enable/Disable Interrupt Pin, Default pin state: low (pin disabled) or high (pin enabled).
No	ATTCSMD	Set measurement mode	-

Changes	AT Commd	Descriptions	Changes from previous version
New	ATINTRVL	Set the sampling interval as an integer multiple of the Integration time. The <value> is an integer between [1..255]. A sampling interval=1 implies a sampling rate of 1x the current integration time. A sampling interval=255 implies a slow sampling rate of 255 times the current integration time.	As described in description
No	ATBURST	Sends a number of calibrated data without separate requests. The second parameter for the burst mode is optional. Format: Send: ATBURST=10,0 or ATBURST=10 Read: ATBURST => 10,0 OK	-
Yes	ATLED0	Enables or disables the indication led	Changed 0 -Led off , 1 - LED ON(before 100-ON)
Yes	ATLED1	Enables or disables the driver led	Changed 0 -Led off , 1 - LED ON(before 100-ON)
NO	ATLEDC	Sets LED_IND and LED_DRV current	-
New	ATFRST	Factory Reset. Stored values are reset to 'Factory' defaults. Afterwards a software reset is started.	-
Yes	ATSRST	Software reset	AT command changed from ATRST to ATSRST
2.3 Calibration Values			
New	ATSCLx	Read/Write scalar for the raw values x = 0 .. 5	Scalar for the raw values
		FIRMWARE UPDATE	
No	ATFWU	Starts firmware update process and transfer the bin file checksum	-
No	ATFW	Download new firmware Up to 7 bytes of FW image at a time (14 hex bytes with no leading or trailing 0x) Repeat command till all 56Kbytes of firmware are downloaded	-
No	ATFWS	Tests the checksum on the non-active FW partition and, if correct, switches active partition. This is a toggle and can be used to toggle between the 2 FW partitions. Note: the first 5 bytes in page 0 are not touched. It is only a temporary switch and must be used to check the new firmware whether the communication works!	
New	ATFWL	This command locks the current firmware to starts on power cycles. It rewrites the first five bytes in page0!	-

Changes	AT Commd	Descriptions	Changes from previous version
New	ATFWC	This command gives information about the current firmware state	This command gives information about the current firmware state
No	ATFWA	Only for backward compatibility to support old firmware, update mechanism. Always returns with OK. Because of flash devices, it is not possible to increment the address separately (Page erase necessary!)	-

3. I²C Commands Changes in AS7263

Changes Yes No New	Old Commd	Old Addr	New Commd	New Addr	Descriptions	Changes from previous releases
Yes	HW_Version	0x00: 0x01	HW_VERSION_H	0x00	Device type	Two separate registers created - Device Type
			HW_VERSION_L	0x01	HW version	- HW Version
Yes	FW_Version	0x02: 0x03	FW_VERSION_H	0x02	Set register 0x02 or 0x03 to 1 - 3 to get each firmware positions high byte 1: MAJOR version [15..8] 2: PATCH version [15..8] 3: BUILD version [15..8] Other write values set registers 0x02/0x03 to zero	Two separate registers created - Functions as described in description
			FW_VERSION_L	0x03	Set register 0x02 or 0x03 to 1 - 3 to get each firmware positions low byte 1: MAJOR version [7..0] 2: PATCH version [7..0] 3: BUILD version [7..0] Other write values set registers 0x02/0x03 to zero	

Changes Yes No New	Old Commd	Old Addr	New Commd	New Addr	Descriptions	Changes from previous releases
Yes	Control_ Setup	0x04	CONFIGURATION	0x04	[7] SRST: [W] software reset [R] gain error [6] INT: [R/W] enable interrupt pin [5:4] GAIN: [R/W] gain configuration: b00=1x; b01=3.7x; b10=16x; b11=64x [3:2] BANK: [R/W] measurement mode: b00=Mode 0: 4 channels b01=Mode 1: 4 channels b10=Mode 2: all 6 channels b11=Mode 3: One-Shot operation of mode 2 [1] DATA_RDY: [R] data ready to read [0] FRST: [W] factory reset	[7] RST: [W] software reset [R] [6] INT: [R/W] enable interrupt pin [5:4] GAIN: [R/W] gain configuration: b00=1x; b01=3.7x; b10=16x; b11=64x [3:2] BANK: [R/W] measurement mode: b00=Mode 0: 4 channels b01=Mode 1: 4 channels b10=Mode 2: all 6 channels b11=Mode 3: One-Shot operation of mode 2 [1] DATA_RDY: [R] data ready to read [0] RSVD: [W] factory reset
Yes	INT_T	0x05	INTEGRATION_TIME	0x05	Integration time	Name changed
Yes	Device_ Temp	0x06	TEMPERATURE	0x06	Temperature of the device in °C Read value from every device in dependency of register DEV_SEL	Name changed
Yes	LED_Control	0x07	LED_CONFIG	0x07	[7] [R] READ_ERR: error while reading status [6] not used [5:4] LED_DRV current limit: b00=12.5mA; b01=25mA; b10=50mA; b11=100mA [3] Enable LED_DRV [2:1] LED_IND current limit: b00=1mA; b01=2mA; b10=4mA; b11=8mA [0] Enable LED_IND	[7:6] RSVD [5:4] ICL_DRV current limit: b00=12.5mA; b01=25mA; b10=50mA; b11=100mA [3] Enable LED_DRV [2:1] ICL_IND current limit: b00=1mA; b01=2mA; b10=4mA; b11=8mA [0] Enable LED_IND
Yes	R_High	0x08	RAW_VALUE_0_H	0x08	R	Name changed
Yes	R_Low	0x09	RAW_VALUE_0_L	0x09	-	
Yes	S_High	0x0A	RAW_VALUE_1_H	0x0A	S	Name changed
Yes	S_Low	0x0B	RAW_VALUE_1_L	0x0B	-	

Changes Yes No New	Old Commd	Old Addr	New Commd	New Addr	Descriptions	Changes from previous releases
Yes	T_High	0x0C	RAW_VALUE_2_H	0x0C	T	Name changed
Yes	T_Low	0x0D	RAW_VALUE_2_L	0x0D	-	
Yes	U_High	0x0E	RAW_VALUE_3_H	0x0E	U	Name changed
Yes	U_Low	0x0F	RAW_VALUE_3_L	0x0F	-	
Yes	V_High	0x10	RAW_VALUE_4_H	0x10	V	Name changed
Yes	V_Low	0x11	RAW_VALUE_4_L	0x11	-	
Yes	W_High	0x12	RAW_VALUE_5_H	0x12	W	Name changed
Yes	W_Low	0x13	RAW_VALUE_5_L	0x13	-	
Yes	R_Cal	0x14	CAL_CHAN0_0	0x14	Channel R Calibrated Data (float)	Name changed
		0x15	CAL_CHAN0_1	0x15	-	
		0x16	CAL_CHAN0_2	0x16	-	
		0x17	CAL_CHAN0_3	0x17	-	
Yes	S_Cal	0x18	CAL_CHAN1_0	0x18	Channel S Calibrated Data (float)	Name changed
		0x19	CAL_CHAN1_1	0x19	-	
		0x1A	CAL_CHAN1_2	0x1A	-	
		0x1B	CAL_CHAN1_3	0x1B	-	
Yes	T_Cal	0x1C	CAL_CHAN2_0	0x1C	Channel T Calibrated Data (float)	Name changed
		0x1D	CAL_CHAN2_1	0x1D	-	
		0x1E	CAL_CHAN2_2	0x1E	-	
		0x1F	CAL_CHAN2_3	0x1F	-	
Yes	U_Cal	0x20	CAL_CHAN3_0	0x20	Channel U Calibrated Data (float)	Name changed
		0x21	CAL_CHAN3_1	0x21	-	
		0x22	CAL_CHAN3_2	0x22	-	
		0x23	CAL_CHAN3_3	0x23	-	
Yes	V_Cal	0x24	CAL_CHAN4_0	0x24	Channel V Calibrated Data (float)	Name changed
		0x25	CAL_CHAN4_1	0x25	-	
		0x26	CAL_CHAN4_2	0x26	-	
		0x27	CAL_CHAN4_3	0x27	-	
Yes	W_Cal	0x28	CAL_CHAN5_0	0x28	Channel W Calibrated Data (float)	Name changed
		0x29	CAL_CHAN5_1	0x29	-	
		0x2A	CAL_CHAN5_2	0x2A	-	
		0x2B	CAL_CHAN5_3	0x2B	-	
-	-	0x2C	not used	0x2C	-	-
		0x2D	not used	0x2D	-	
		0x2E	not used	0x2E	-	
		0x2F	not used	0x2F	-	
-	-	0x30	not used	0x30	-	-
		0x31	not used	0x31	-	

Changes Yes No New	Old Commd	Old Addr	New Commd	New Addr	Descriptions	Changes from previous releases
		0x32	not used	0x32	-	
		0x33	not used	0x33	-	
-	-	0x34	not used	0x34	-	-
		0x35	not used	0x35	-	
		0x36	not used	0x36	-	
		0x37	not used	0x37	-	
-	-	0x38	not used	0x38	-	-
		0x39	not used	0x39	-	
		0x3A	not used	0x3A	-	
		0x3B	not used	0x3B	-	
-	-	0x3C	not used	0x3C	-	-
		0x3D	not used	0x3D	-	
-	-	0x3E	not used	0x3E	-	-
		0x3F	not used	0x3F	-	
-	-	0x40	not used	0x40	-	
-	-	0x41	not used	0x41	-	
-	-	0x42	not used	0x42	-	
-	-	0x43	not used	0x43	-	
-	-	0x44	not used	0x44	-	
-	-	0x45	not used	0x45	-	
-	-	0x46	not used	0x46	-	
-	-	0x47	not used	0x47	-	
New	-	-	FW_CNTRL	0x48	[7] START [R/W]: set bit once to configure the device for firmware update [6] STOP [W]: Reset firmware update state machine [5] BYTES_TRANSFERED [R]: all 56kBytes are transferred [4] LOCK [R/W]: Lock this firmware for next start [3] SWITCH [W]: Switch between both firmware [2] BANK1 [R]: Set if bank 1 is active, else bank 2 [1] ERROR [R]: error occurred while firmware update [0] CHKSUM [R]: Checksum of other bank is valid	Refer Description for details
New	-	-	FW_BYTE_COUNT_H	0x49	Byte counter of transferred image	Refer Description for details
New	-	-	FW_BYTE_COUNT_L	0x4A	-	
New	-	-	FW_PAYLOAD	0x4B	Transfer of the firmware byte	Refer Description for details
New	-	-	not used	0x4C	-	
New	-	-	not used	0x4D	-	
New	-	-	not used	0x4E	-	
New	-	-	not used	0x4F	-	

Changes Yes No New	Old Commd	Old Addr	New Commd	New Addr	Descriptions	Changes from previous releases
New	-	-	COEF_DATA_0	0x50	Data heap to read and write calibration data	Refer Description for details
New	-	-	COEF_DATA_1	0x51	-	
New	-	-	COEF_DATA_2	0x52	-	
New	-	-	COEF_DATA_3	0x53	-	
New	-	-	COEF_READ	0x54	Set sub addresses to read different calibration data from COEF_DATA register	Refer Description for details
New	-	-	COEF_WRITE	0x55	Set sub addresses to write different calibration data from COEF_DATA register to persistent memory	Refer Description for details

4. Contact Information

Buy our products or get free samples online at:
www.ams.com/ICdirect

Technical Support is available at:
www.ams.com/Technical-Support

Provide feedback about this document at:
www.ams.com/Document-Feedback

For further information and requests, e-mail us at:
ams_sales@ams.com

For sales offices, distributors and representatives, please visit:
www.ams.com/contact

Headquarters
ams AG
Tobelbader Strasse 30
8141 Premstaetten
Austria, Europe

Tel: +43 (0) 3136 500 0
Website: www.ams.com

5. Copyrights & Disclaimer

Information in this document is believed to be accurate and reliable. However, ams AG does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Applications that are described herein are for illustrative purposes only. ams AG makes no representation or warranty that such applications will be appropriate for the specified use without further testing or modification. ams AG takes no responsibility for the design, operation and testing of the applications and end-products as well as assistance with the applications or end-product designs when using ams AG products. ams AG is not liable for the suitability and fit of ams AG products in applications and end products planned.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data or applications described herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

ams AG reserves the right to change information in this document at any time and without notice.

6. Revision Information

Changes from previous version to current revision 11-01 (2018-May-04)	Page
Initial version 1-00	

Note: Page numbers for the previous version may differ from page numbers in the current revision.
Correction of typographical errors is not explicitly mentioned.