MAXM86161EVSYS Release Notes and Compatibility Matrix

MAXM86161EVSYS Compatibility Matrix

MAX32664C for MAXM86161 .msbl version	MAXM86161 GUI version	NRF52832 version
30.2.3 (1 PD) (KX122)	1.0.0	0.0
32.1.2(KX122)	Not available	Not available
32.7.0(KX122)	Not available	Not available
32.9.2(KX122)	Not available	Not available
32.9.21(KX122)	Not available	Not available
32.12.0 (not supported, use 32.9.22) (KX122)	Not available	Not available
32.9.22 (KX122)	v2.0.0-rc2 (MAXM86161SensorHubGUISetupV200-rc2.exe)	2.2
32.9.23 (KX122)	v2.0.0-rc2 (MAXM86161SensorHubGUISetupV200-rc2.exe)	2.2
32.9.28 (LIS2DS12)	Not supported with MAXM86161EVSYS	Not supported with MAXM86161EVSYS
32.9.29 (LIS2DS12)	Not supported with MAXM86161EVSYS	Not supported with MAXM86161EVSYS

Sensor Hub .msbl Version Numbering Convention

MAX32664+ Optical Sensor	.msbl versions	WLP IC, Accel	Form Factor
MAX32664C+ MAXM86161	MAX32664C_MAXM86161_WHRM_AEC_SCD_WSPO2_C_32.9.23.msbl (MAX32664 Website)	MAX32664GWEC, KX122	Ear
	MAX32664C_MAXM86161_WHRM_AEC_SCD_WSPO2_C_32.9.29.msbl (MAX32664 Website)	MAX32664GWEC, LIS2DS12	
	MAX32664C_MAXM86161_WHRM_AEC_SCD_WSPO2_Z_32.9.23.msbl (MAX86161EVSYS Website or MAX32664 Website)	MAX32664GWEZ, KX122	

MAX32664C for MAXM86161 .msbl Release Notes

Version	Date	Importance	History	Known Issues
32.9.23 (KX122)	3/7/22	Low	- Wearable Algorithm Suite 2.10.0 - Added read algo output FIFO size 0x11 0x06 0x01/2 command. - Added Disable/Enable LDO_EN 0x10 0x12 command. - Added Disable/Enable MAXM86161 GPIO 0x10 0x13 command.	- This version only supports KX122 (LIS2DS12 not supported in this version).. - MFIO interrupt mode not supported. - Algo Hub mode not supported. - 0x10 0x00 0x08, enter bootloader mode is not operational. - 0x11 0x03, read I2C address command is not supported. - Initial HR setting configuration is not operational. -

32.9.29 (LIS2DS12)	1/23/22	High	- Wearable Algorithm Suite 6.5.0 - Fix R values are not output in SpO2 calibration mode. - Fix Extended Algorithm report values: • SpO2 low signal quality flag • SpO2 motion flag • SpO2 low PI flag • SpO2 unreliable R flag • SpO2 state - Fix 0x50 0x07 0x14, write minimum sampling average - Fix 0x50 0x07 0x16, write maximum sampling average - Fix 0x50 0x07 0x13, write minimum integration time - Fix 0x50 0x07 0x15, write maximum integration time	- Only supports LIS2DS12 (KX122 not supported). - SCDSM not supported. - MFIO interrupt mode not supported. - Algo Hub mode not supported. - 0x10 0x00 0x08, enter bootloader mode is not operational. - 0x11 0x03, read I2C address command is not supported. - ST accel is high resolution mode; low resolution mode was too noisy to be useful. - Initial HR setting configuration is not operational. - Raw data mode is not operational. - For 0x50 0x07 0x17, only 0x00 0x73 is functional for MAXM86161 0x51 0x07 0x17 is not implemented for for MAXM86161. Default is 0x00 0x73
32.9.28 (LIS2DS12)	10/11/21	High	- Wearable Algorithm Suite 6.5.0 - MAX32664, deep sleep between FIFO reads fixed - LIS2DS12 shutdown when algo disabled fixed. - Algo Output FIFO size is 20 bytes for normal and 52 bytes for extended. - Sensor hub only supports STM LIS2DS12 (no KX122) - Firmware compiled with -O0 optimization - 0x50 0x07 0x17 0x00 0x73 fixed; No other 0x50 0x07 0x17 0xXX 0xXX commands are accepted. - Added read algo output FIFO size 0x11 0x06 0x01/2 command. - Added Disable/Enable LDO_EN 0x10 0x12 command. - Added Disable/Enable MAXM86161 GPIO 0x10 0x13 command.	- Only supports LIS2DS12 (KX122 not supported). - SCDSM not supported. - MFIO interrupt mode not supported. - Algo Hub mode not supported. - 0x10 0x00 0x08, enter bootloader mode is not operational. - 0x11 0x03, read I2C address command is not supported. - ST accel is high resolution mode; low resolution mode was too noisy to be useful. - Initial HR setting configuration is not operational. - Raw data mode is not operational. - For 0x50 0x07 0x17, only 0x00 0x73 is functional for MAXM86161 - 0x51 0x07 0x17 is not implemented for for MAXM86161. Default is 0x00 0x73
32.13.12 (LIS2DS12) (engineering release)	3/8/21	High	- Wearable Algorithm Suite 5.0 - Four bytes added to the Algo Ouput FIFO - 1Hz IBI reporting mode - Sensor hub only supports STM LIS2DS12 (no KX122) - ST accel to high resolution mode - Algo Hub mode - Firmware compiled with -O2 optimization - Sensor hub only supports STM LIS2DS12 (no KX122)	- ST accel is high resolution mode; low resolution mode was too noisy to be useful. - SCDSM not supported for ST LIS2DS12 accelerometer part - Initial HR setting configuration is not operational. - 0x10 0x00 0x08, enter bootloader mode is not functional. - 0x11 0x03, read I2C address command is not supported.
32.9.22 (KX122)	10/5/20	High	- Wearable Algorithm Suite 2.10.0 • Improved SpO2 performance with the following ○ Signal assessment block ○ Estimation duration ○ Accuracy with subjects who are at the lower end of PI ○ Fast converging Spo2 ○ Enhanced MLP model - Command added to change LED firing (0x50 0x07 0x19) - Definition of command (0x50 0x07 0x17/0x18) are changed. They specify Slot # rather than LED #. THIS MAY CAUSE BACKWARD COMPATIBILITY IF NON-DEFAULT LED/PD CONFIGURATIONS ARE USED	

32.12.0 (not supported, use 32.9.22) (KX122)	7/22/20	High	- Wearable Algorithm Suite 2.10.0 - Improved SpO2 performance with the following ○ Signal assessment block ○ Estimation duration ○ Accuracy with subjects who are at the lower end of PI ○ Fast converging Spo2 ○ Enhanced MLP model - Command added to change LED firing (0x50 0x07 0x19) - Definition of command (0x50 0x07 0x17/0x18) are changed. They specify Slot # rather than LED #.	Command 0x11 0x05 is not available in this version
32.9.21 (KX122)	9/30/20	Low	- Added command to query the number of bytes used for the PPG output FIFO samples report (0x11 0x05).	
32.9.2 (KX122)	1/28/2020	High	- Wearable Algorithm Suite 2.2.0 ○ Peak detector module for IBI detection enhanced to reduce false detection rate ○ MLP integration to improve HR accuracy ○ Motion frequency tracking for HR measurement and skin contact detection are improved - Default SpO2 calibration coefficients updated to better suite MRD103 platform: a = 0; b = -26.224999; c = 112.317421; - Fixed bug of lagging PPG samples after long term run - Algorithm configuration command to set initial value of sensor sample rate/average and time integration - Fixed bug of sampled HR mode - Authentication feature and commands - Improved authentication commands - Automatically detects number of PDs supported	
32.7.0 (KX122)	11/8/2019	High	- Wearable Algorithm Suite 1.9.3 ○ Motion frequency tracking for HR measurement improved ○ Max Sampling frequency default is 100Hz with avg=4 - Internal FIFO increased to support host poll time of once per up to 8min in 1sec algorithm report mode (Power Saving Mode) and with sensor hub accel. - Reported number of samples in output FIFO (Family byte=0x12, index=0x00) changed from 1 to two byte, LSB first - Sensor Hub status [7:0] bit 6 is used to flag for Host accel underflow if samples are not feed fast enough to sensor hub - Sensor Hub accelerometer sampling freq changed from 100Hz to 200Hz to support 100Hz raw streaming. - HR RR and RR confidence are reported only when calculated (typically once per several samples) and zero the rest of the time. - Initials sampling frequency of sensor set to 100Hz with avg=4.	Sampled mode HR (mode 3) does not produce correct result.
32.1.2 (KX122)	9/12/2019		- LOW Power Feature added and MFIO functionality changed to support low power mode: MFIO is always input and used to wake up MAX32664 and keep it active during normal application (not bootloader). HOST application should be update to: ○ Pull MFIO LOW at least *250usec* PRIOR to start of any I2C command transaction to force a wake up. ○ Keep MFIO LOW until the end of I2C transaction to ensure MAX32664 will not go to sleep. ○ Set MFIO to HIGH after I2C transaction is complete. ○ Periodically read MAX79356 FIFO according to desired report period (200msec for 40msec report, or 1sec for 1sec report).	Accelerometer samples occasionally may be repeated or skipped.

		High	- Additional command to change report period from once per sample (40msec) to once per multiple sample (e.g. 1 per 25 sample for 1sec reporting) in sensor hub "CommChannel" family. - Detects chip rev A1 or A2 and switches to low power Sleep or Deep Sleep respectively. - Fixed bug of repeated/skipped accel samples - Extended report (mode 2) of algorithm output - KX122 accel polling rate is 100Hz - Fixed bug of limiting range of green LED current to half of maximum. - Maintain SpO2 state after reaching TIMEOUT or SUCCESS - If sampling of host accel is slightly slow/faster than 25Hz, accelerometer samples inside sensor hub will be repeated/decimated to provide synchronization with sensor samples. - Motion Threshold representation is changed from 0.1g to mili-g in the interface - PD configuration for WHRM and SPO2 changed to include both PD and LED (index 0x17 and 0x18), Default: LED1/PD1 for WHRM, LED2/3 for ir/red and PD1 for SPO2 - Wearable Algorithm Suite 1.7, simultaneous HR and SPO2, - Initialize sampling freq. and integration time of sensor to max. (400Hz avg4 and to 117usec), controlled by AEC - I2C Slave address configurable with a command - Shutdown command added - SCD based power saving support added, set accel to motion detection wake mode - Command added to check chip rev and sleep being enabled - Bug fix in stopping streaming after few samples - Spo2 r value is reported as integer represented as 1000*r instead of 10*r.	
30.2.3 (KX122)	6/04/2019	High	- Initial release for MAX32664C/MAX86161 sensor hub - MAX86161 DAC calibration - WHRM controls sensor sampling rate/average and time integration (TINT) - Single API command to enable algorithm and required sensors - Sensor Hub v.1.9.8 - Sensor Hub accel polling, sampling frequency is 200Hz and low power mode - Algorithm versions - Wearable Algorithm Union v.1.4.0 - WHRM_AEC_SCD:	- SpO2 100Hz sample rate mode is disabled