Scope

This document will highlight the major difference of MLX 90333BCT in respect to MLX90333BCH

The MLX90333BCT has exactly the same hardware as MLX90333BCH but it is targeted to improve the linearity for joystick applications, in redundant version through additional front-end parameters, and robustness against vibrations. The additional switch option and the programmable diagnostic feature confirm this deviation.

Related Melexis Products

Datasheet MLX90333 rev 3

Application Comparison

Parameter	90333 BCT	90333 BCH
Package		
SOIC 8 TSSOP 16	✓ pin compatible ✓ pin compatible	✓ ✓
Application		
3D Joystick sensor	✓ Alpha & Beta	✓ Alpha & Beta
Rotary Position Sensor	✓ Alpha / Beta & switch	✓ Alpha / Beta & derivate
Linear position sensor	✓ Alpha / Beta & Switch	✓ Alpha / Beta & derivate
Firmware Change list		
3D Joystick sensor	Improved angle formula 2 x Kt correction 4 x Orthogonal correction	1 x Kt correction
PWM output signal	Improved startup behavior Progr. diagnostic mode PWM Latch	x
AGC Target	64% ADC (88% optional)	88 % ADC
Linear / Rotary position sensor OUTPUT 2	Programmable Switch	Derivate angle

EEPROM Comparison

Parameter	EEPROM description	90333BCT	90333BCH
ROM			
Chip version	PSF.Advanced.Chipversion	12	11
EEPROM			
AGCRADIUS	Automatic gain adjustment	64 / 88 %ADC	x (default=88 % ADC)
OUT1DIAG OUT2DIAG	Programmable diag level	✓	-
KTALPHA KTBeta KT	Joystick Angle correction	✓ ✓ -	- - ✓
ORTHZXALPHA ORTHZYALPHA ORTHZXBETA ORTHZYBETA	Front end Orthogonal correction	✓ Alpha & Beta	-
DERIVGAIN DERIVOFS	d (Angle) / d (t) on out 2	-	✓ f (Alpha or Beta)
SWTHRES SWTHRES SWHYST SWLOW SWHIGH	Switch on out 2	✓ f (Alpha or Beta)	-

Software requirements

The following Table gives a summary of the available software for programming the Triaxis Hall sensor. Since the 90333 is very similar to the 90316, both devices require the same Firmware

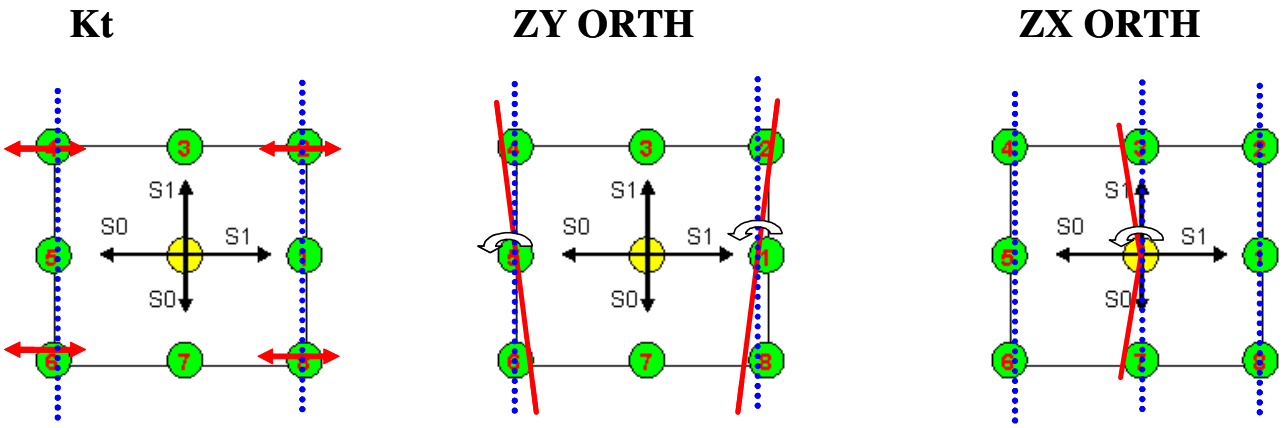
Chipversion	Product ID	Description	Version	Date
90333BCT	FIR090316AAMLX	Firmware 90316 (PTC04)	Min 1.56	
	MLX90333 PSF	ActiveX software library – 90333 - 90333 Functions - 90333 advanced functions - 90333 solver functions	Min 1.8	07/01/11
	UI 90333	User Interface 90333BCT	Min 1.3	07/01/11
90333BCH	FIR090316AAMLX	Firmware 90316 (PTC04)	Min 1.56	
	MLX90333 PSF	ActiveX software library – 90333 - 90333 Functions - 90333 advanced functions - 90333 solver functions	Min 1.5	5/03/10
	UI90333	User Interface 90333BCH	Min 1.1	5/03/10

90316 / Daughterboard 90316.

Latest software can be downloaded from Softdist.Melexis.COM . Contact Melexis for Login and password.

Example : 90333 BCT – EEPROM parameter effects on "Alpha"

The following picture illustrates the effect of the programmable eeprom parameters on the calibration points of the Joystcik for the angleformula "Alpha"



9 points are typical needed to define correctly the output behavior for a joystick application with a square gate. The x-coordinates are determined by "alpha" and the Y-coordates are determined by "Beta"

Convention

90333 Rev. XYZ

- X is related to the full maskset (used for manufacturing the CMOS wafer). A change in this 1st letter means that the complete maskset has been changed. This is usually considered as a major redesign of the hardware (H/W)
- Y is related to a partial modification of a maskset i.e. typically the change of few masks within the original maskset associated to the "X". A change in this letter is usually considered as a minor redesign of the H/W
- Z refers to the revision of the embedded firmware (F/W) in case it is applicable. A change of this letter is associated to the change of the F/W w/o any modification on the H/W.