

# Engine Management – Hall Sensors” Business Unit



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MLX90316 - RevBx  
Universal Rotary Position Sensor IC

## MLX90316 AN-01 : Getting started

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### Introduction

This document is your quick guide to getting started with programming the MLX90316. It will give you a step by step procedure to get the MLX90316 programmed.

### Requirements

- 1) PTC-04  
Connect PTC-04 to your serial port. (for USB please check FAQ PTC-04.pdf for more information)
- 2) DB 90316.  
For communication with the MLX90316 the DaughterBoard DB90316 is required. The connector of the PTC04/ DB 90316 is a Dsub25 connector and is an easy way to recognize the DB90316.
- 3) Software 90316 ( UI / PSF) All the required software will be installed during the Autorun program from the CD by selecting 90316. Latest software version is also available at [softdist.melexis.com](http://softdist.melexis.com). ( see FAQ PTC-04.pdf for more information)
- 4) Firmware 90316. Install the latest firmware by using the firmware commander. Start the firmware commander, select “Communication -> Upload firmware” and select the file “ptc04\_mlX90316\_firmware.hex” The firmware commander can be found by starting the PTC04 user interface from the “Melexis programming toolbox” (MPT)



Figure 1 : Autorun program from CD

# Functional Diagram

Connect the MLX90316 to the PTC-04 / DB90316. The sense wires are optional. If these sense wires are required then remove the jumpers from the daughterboard.

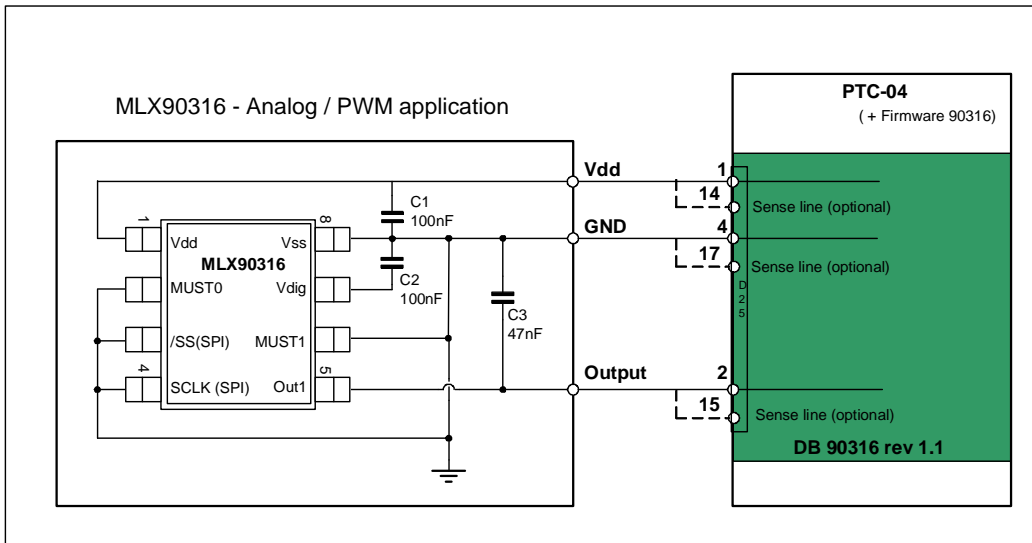
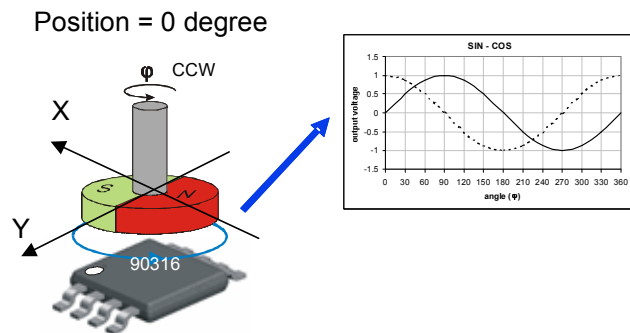
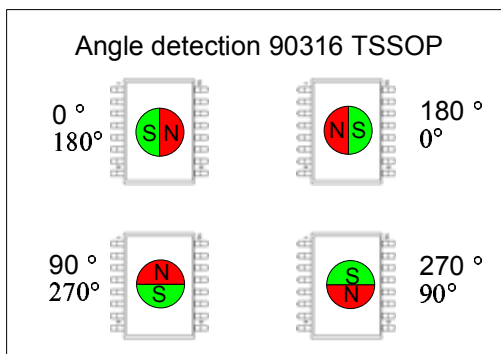
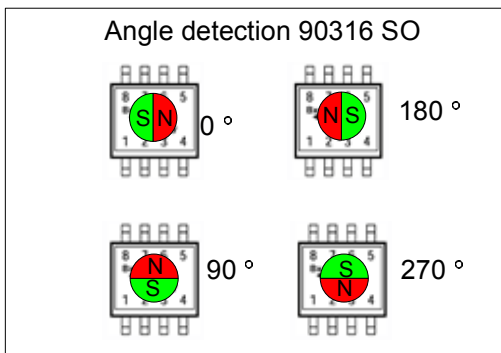


Figure 2 : Connection diagram MLX90316 SO

# Magnet position

When a magnet (diametrically magnetized) rotates above the IC as shown in fig 3. the physical angle is calculated based on a arctangent function. The discontinuity point (DP) can be set by the user to move the physical 0 degree point to a virtual 0 degree point on the circle, so the internal calculated angle becomes :

$$\text{angle}_{90316} = (\text{Angle, magnet} - \text{DP}) \quad \text{with DP} = 0..360^\circ$$



# Application example

The MLX90316 detects the absolute angular position of a small magnet that is positioned above the device surface. Points A/B/C, the virtual zero degree position (DP) together with the clamping values, are user programmable to defines the relation (the transfer function) between the digital angle and the output signal.

The shape of the 90316 transfer function from the digital angle value to the output voltage is described by the drawing below. The example shows a 100 degree application, programmed at three calibration points. (please check the 90316 UI for more information )

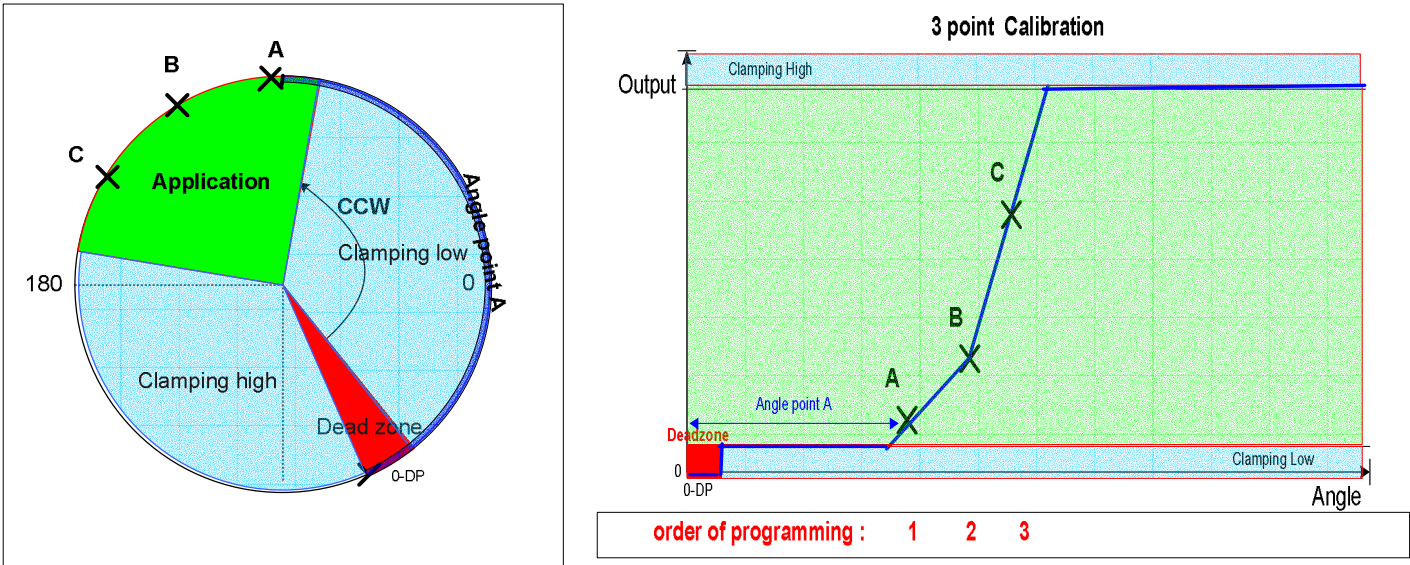


Figure 4 : Application example