E909.06 - HALIOS® GESTURE REFERENCE BOARD AN 0114

SEP 16, 2014

This comprehensive HALIOS® reference board illustrates the major advantages and stunning features of a HALIOS® based HMI input system with a complete touchless gesture control.
This board shows a clear recognition of three dimensional movements with a very fast reaction time.
Elmos/Mechaless article no. RD1210005.

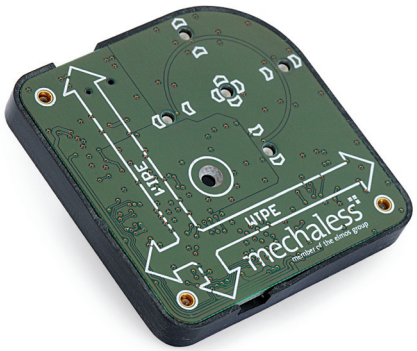

Figure 1. Gesture Reference Board

Advantages of a HALIOS® based input system regarding this reference board:

- Larger detection range compared to other optical sensor solutions
  - standard SMD components
  - up to 35 cm proximity
  - up to 25 cm gesture detection
- Detection of the direction of movements in all three dimensions (x, y, z)
- High speed (real time feedback)
- High robustness against humidity, ambient and extrinsic light as also temperature influences
- Constant functionality while ambient light changes
- Low power consumption (especially compared to other optical sensor systems)
- Best price (e.g. compared with camera based solutions)
- Less components (only 3 IR transmitter LEDs, 1 compensator LED and on photo diode)

The shown functionality is realized by using the HALIOS® standard IC E909.06 from Elmos. The major advantage of this demonstrator is that it only consists of a PCB and its electrical assemblies. There is no need for any additional mechanics or optics.

Implemented gestures:

- Awareness
- Continuous proximity in z-direction
- Wipe gesture detection in x- and y-direction
- Time Select gesture
- Double Tap gesture

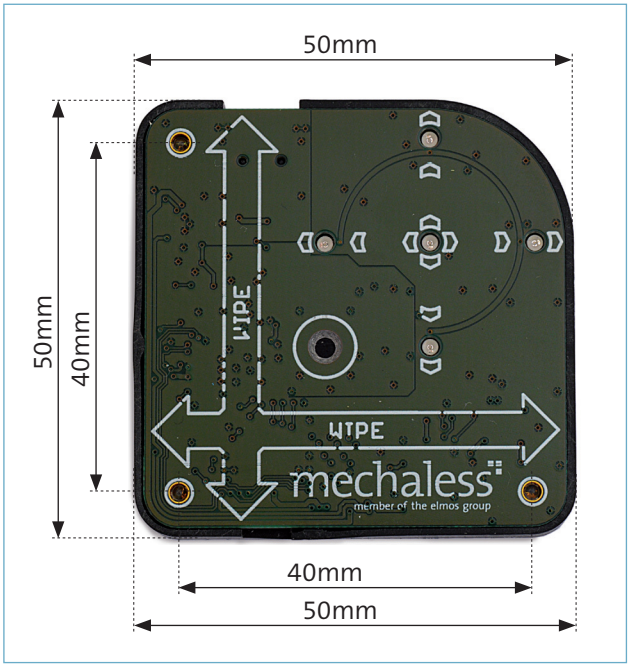

Figure 2. Top view

Figure 3. Bottom view

Overview

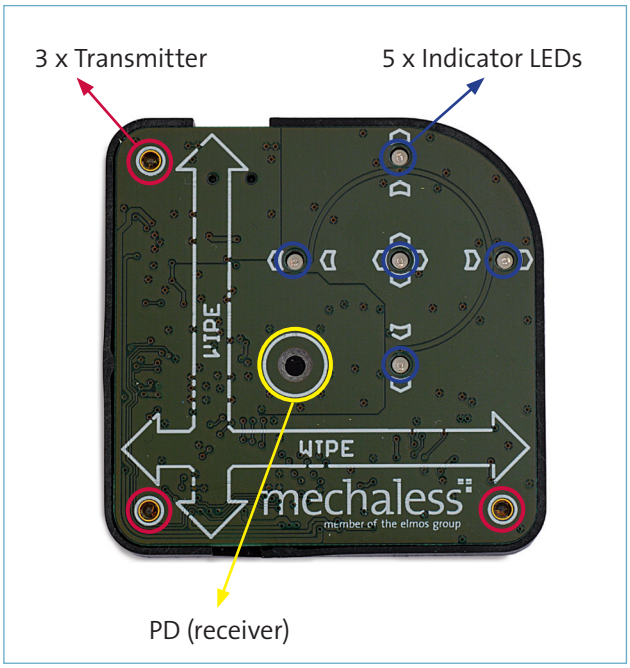

Figure 4. Top view

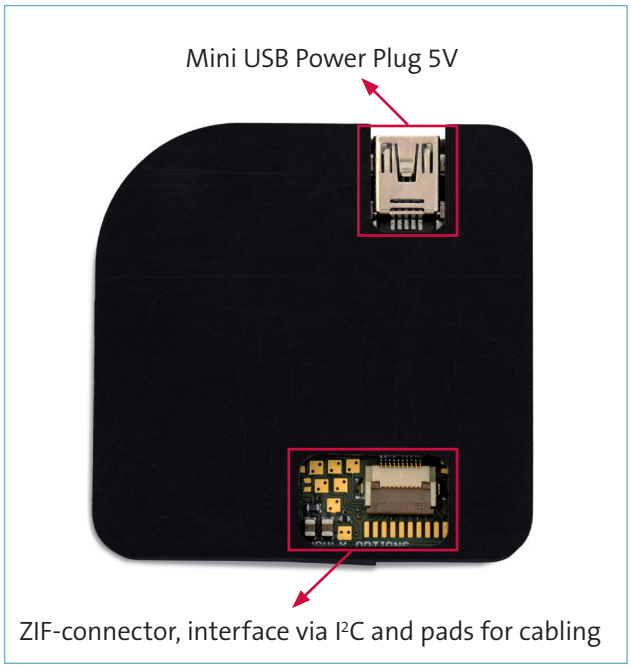

Figure 5. Bottom view

The E909.06 HALIOS® Gesture Reference Board as a standalone solution:
The Gesture Reference Board (see Fig. 6) can directly be used as a standalone solution. Just connect it to USB 5V to be powered. The detected gestures are notified by the blue indicator LEDs.

- **Proximity:** The PWM output of E909.06 dims the indicator LED in the center. As closer the hand moves towards the sensor as brighter the illumination of the LED.
- **Wipe:** The indicator LEDs in the direction of the wipe are switched on and off in a sequence.
- **Time Select:** With this function the user can select an item in a menu for instance, while keeping or holding the hand in front of the board without moving. All indicator LEDs flash one time to confirm the selection.
- **Double Tap:** This feature is similar like a double click with the PC mouse to do a selection. All indicator LEDs flash two times for confirmation.

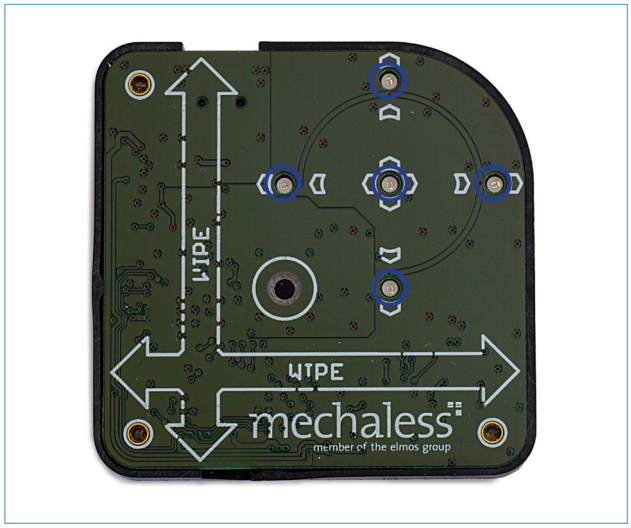

Figure 6. Five blue indicator LEDs

Interface and connectors:
The board operates with 5V power supply. Power supply can be established via the USB plug, the ZIF-connector or the soldering pads next to the ZIF-connector.
Note:
The USB connection only provides 5V power supply. For USB communication to PC you have to use additional hardware (COM-board).

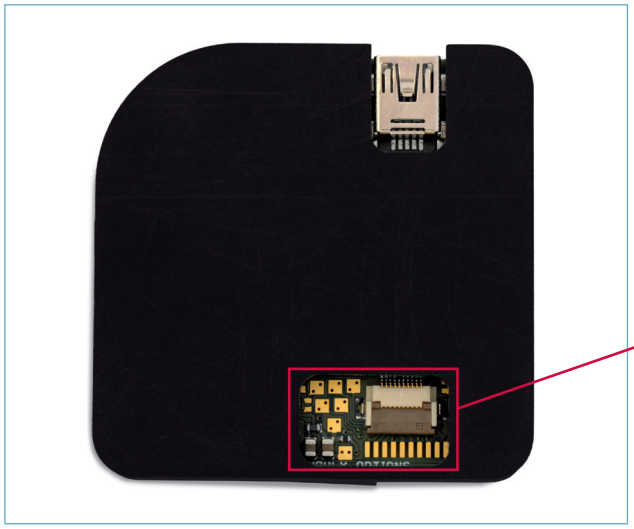

Figure 7. Bottom view

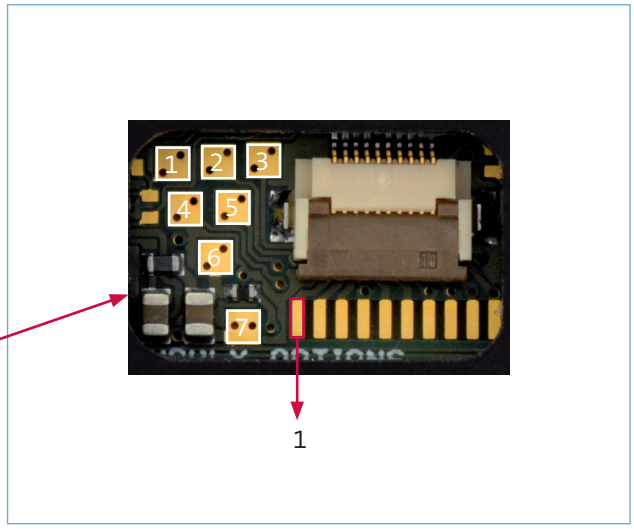

Figure 8. Pin indication

Summary of interface pads and connectors:

No.	PAD	ZIF
1	n.c.	TMODE | /TMODE
2	USB_INT (GPIO_1)	JTAG TCK (GPIO_7 | /CS)
3	Gesture INT (GPIO_0)	JTAG TMS (GPIO_6 | MOSI)
4	I2C - SDA	GND
5	I2C - SCL	JTAG TDI (GPIO_5 | MISO)
6	5V power supply	JTAG TDO (GPIO_4 | SCLK)
7	GND	USB_INT (GPIO_1)
8		I2C - SCL
9		I2C - SDA
10		5V power supply

Additional Documents

Application Note - AN0113: COM-BOARD (25AN0113E.XX)

For more information please check **www.mechaless.com** – Link “Download”.

www.halios.de

Usage Restrictions

Elmos Semiconductor AG provide the E909.06 Board simply and solely for IC evaluation purposes in laboratory. The Kit or any part of the Kit must not be used for other purposes or within non laboratory environments. Especially the use or the integration in production systems, appliances or other installations is prohibited.

The pcb´s are delivered to customer are for the temporary purpose of testing, evaluation and development of the Elmos IC´s only. Elmos will not assume any liability for additional applications of the pcb.

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