Business Line Sensors

elmos

Segment Sensor ICs

Support tools

Overview

Elmos Semiconductor AG

Evaluation Support Plattform

- ELMOS calibration support hardware:
  - SSP2 (programmer for all 520.4x sensor signal conditioners)
    - SSP2 multiplexer extension board (extension for multiple sensor calibration features)
    - 520.4x application circuit board (individual hardware including 520.47 SSP + external components)
  - SSP3 (programmer for all 703.x1 sensor signal conditioners)
    - 70311 interface board
    - 703.21 interface board
    - 703.x1 application circuit board (individual hardware including 703.x1 SSP + external components)
  - Emulation board (potentiometer for setup verification and training)

- PC- calibration software development requirements:
  - Windows 10 (Windows 7)
  - Microsoft .NET framework V4.0 or newer
  - FTDI - USB to UART driver
  - Microsoft visual C++ redistribution packages visual studio 2015 or newer

- Provided engineering support:
  - 703.x1, 520.47, 520.42: PC-tool as executable file
    - Used for initial engineering tasks (configuration definition, prototype calibration)
  - API : Calibration support DLL's
   - Integration of ELMOS API into custom production calibration software

General Description

Evaluation Support Plattform

- Documentation:
    - hardware description
        - Schematics , Layout
    - Software description
        - GUI , API
        - Bootloader
    - Code examples for calibration and configuration
        - communication, Calibration
    - Setup files
        - Device Configuration
        - Software configuration
        - Firmware

General Description

Evaluation Kit – E703.11

- **Evaluation Kit Content:**

  Order Code: K70311-0001 (complete kit)
    - 1x SSP3 Board
    - 1x Interface Board
    - 3x Application Circuit Board
    - 1x Sensor Emulator (span 25mV/V)
    - USB-stick, USB-Cable, 10-wire cable

- **SSP3 Board**

  Order Code: Z00000-0015

- **Interface Board**

  Order Code: K70311-0003

- **Application Circuit Board**

  Order Code: K70311-0004

- **Sensor Emulator (span 25mV/V)**

  Order Code: K70311-0005
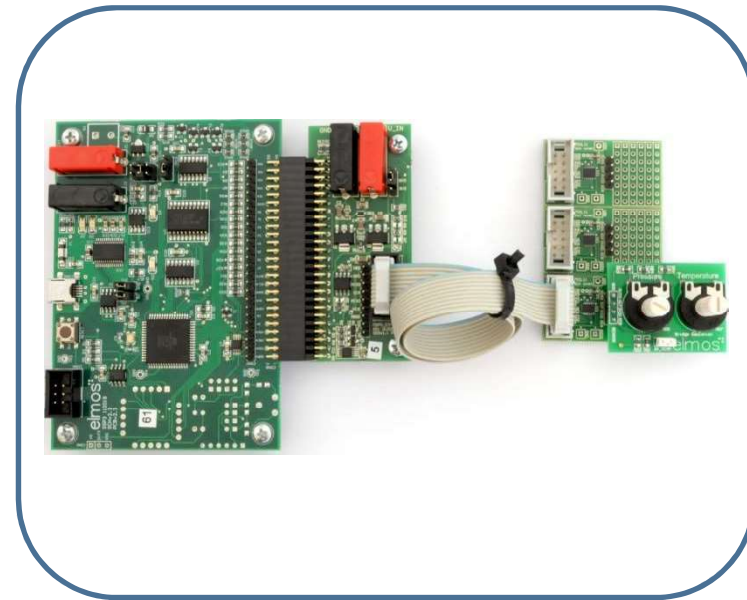
Content of the Evaluation Kit

Evaluation Kit – E703.11: Hardware Components

SSP3 Board	Interface Board	Application Circuit Board
Computer to signal conditioner communication interface:	Programmer interface for the E703.11:	Carrier PCB for the E703.11:

SSP3 Board

- USB based (virtual com port)
- 1-Wire (SIO), I²C and SPI output supported

Interface Board

- Connection to application circuit board and external 5V power supply option
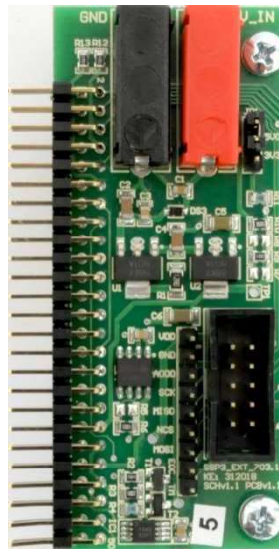
Application Circuit Board

- Supports initial prototype and configuration tests with custom pressure sensing elements

Multi-Sensor Calibration – E703.11

- **MassCal Kit Content:**
 Order Code: K70311-0002 (complete kit)
    - 1x SSP3 Board
    - 1x Supply Circuit Board
    - 1x Multiplex Circuit Board
    - 20-wire connection cable (Supply -> Mux)
    - 2-wire ribbon cable (Supply -> Mux)
    - 2x connector cable multiplex circuit board
      (no customer interface board included)
    - USB cable , USB stick

- **SSP3 Board :** Order Code: Z00000-0015
- **Supply Circuit Board:** Order Code: K70311-0007 (cb2mc1w)
- **Multiplex Circuit Board:** Order Code: K70311-0006 (mchub1w)
  - including connection cable set (4 cables in total)
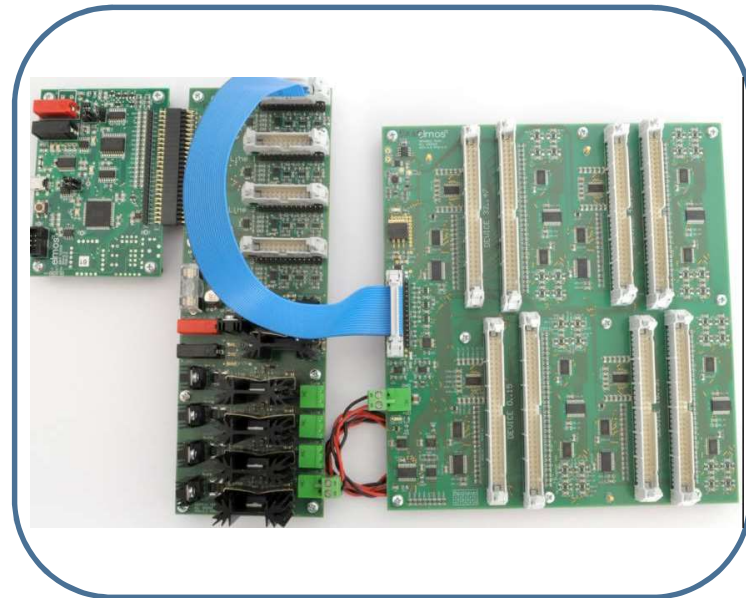
Content of the Evaluation Kit

Multi-Sensor Calibration – E703.11: Hardware Components

SSP3 Board	Supply Circuit Board	Multiplex Circuit Board
Computer to signal conditioner communication interface:	Supply board for the E703.11:	Channel multiplexer for E70311:

SSP3 Board

Computer to signal conditioner communication interface:

- USB based (virtual com port)
- 0-wire, 1-Wire (SIO), I²C
    - Remove JP1 and JP2

Supply Circuit Board

Supply board for the E703.11:

- Supports supply for up to 4 multiplexer boards, each line can connect to max 64 sensor modules
- Supply:
    - 12V
    - min 350mA, depends on setup

Multiplex Circuit Board

Channel multiplexer for E70311:

- Supports connection to 64 sensor modules at 4 different sites , each site supports 16 channels

Evaluation Kit – E703.21

- **Evaluation Kit Content:**

  Order Code: K70321-0001 (complete kit)
  - 1x SSP3 Board
  - 1x Interface Board
  - 6x Application Circuit Board (2 of each type)
  - 2x Sensor Emulator (span 25mV/V)
  - USB-stick, USB-Cable, 10-wire cable

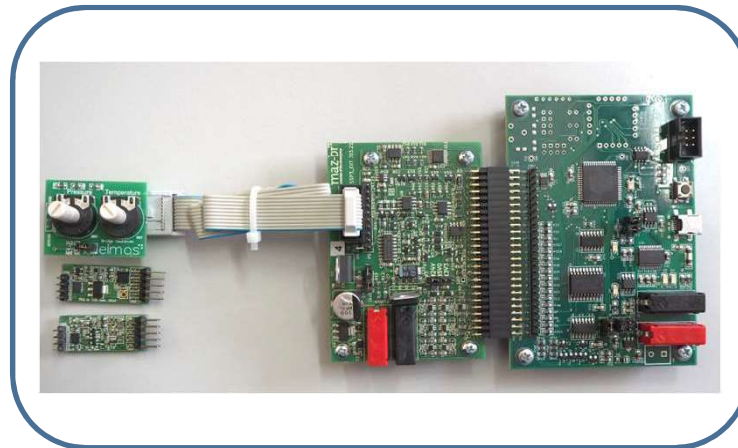- **SSP3 Board**

  Order Code: Z00000-0015

- **Interface Board**

  Order Code: K70321-0003 (application),
  K70321-00011 (buffer, optional)

- **Application Circuit Board**

  Order Code: K70321-0004 (4-20mA), K70321-0005 (0-10V regulated),
  K70321-0009 (5V ratiometric)

- **Sensor Emulator (span 25mV/V)**

  Order Code: K70321-0006

Content of the Evaluation Kit

Evaluation Kit – E703.21: Hardware Components

| SSP3 Board	Interface Board	Application Circuit Board

Computer to signal conditioner communication interface:
 	
- USB based (virtual com port)
- 0-wire, 1-Wire (SIO), I²C and SPI output supported
	Programmer interface for the E703.21:
	
	- Connection to application circuit board. Supports high voltage supply and current loop function of 703.21 application
		Carrier PCB for the E703.21:
		
		- Supports initial prototype and configuration tests with custom pressure sensing elements. Three different application boards:
		    - current-loop 4 -20mA
		    - 5V radiometric output
		    - regulated voltage 0-10V

Multi-Sensor Calibration – E703.21
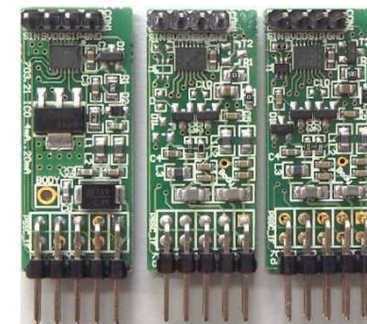
- **MassCal Kit Content:**
  Order Code: K70321-0002 (complete kit)
  - 1x SSP3 Board
  - 1x Supply Circuit Board
  - 1x Multiplex Circuit Board
  - 20-wire connection cable (Supply -> Mux)
  - 2-wire ribbon cable (Supply -> Mux)
  - 2x connector cable multiplex circuit board
    - (Mux -> customer interface board,
      no interface board included)
  - USB cable , USB stick

- **SSP3 Board:** Order Code: Z00000-0015
- **Supply Circuit Board:** Order Code: K70321-0008 (cb2mc1w)
- **Multiplex Circuit Board:** Order Code: K70321-0007 (mchub1w)
  - including connection cable set (4 cables in total)
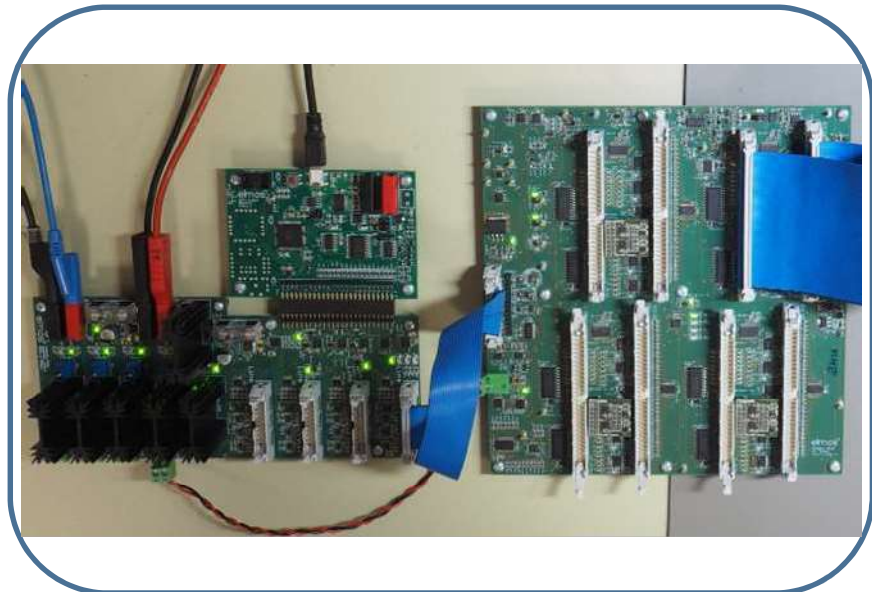
Content of the Evaluation Kit

Multi Sensor Calibration – E703.21: Hardware Components

SSP3 Board	Supply circiuit Board	Multiplex Circuit Board

SSP3 Board

Computer to signal conditioner communication interface:

- USB based (virtual com port)
- 0-wire, 1-Wire (SIO), I²C
  - Remove JP1 and JP2

Supply circiuit Board

Supply board for the E703.21:

- Supports supply for up to 4 multiplexer boards, each line can connect to max 64 sensor modules
- Supply:
  - Input : max 30V , (1.2 A - setup dependent)
  - Input: max 8V (500mA)
  - 4x Device supply output: 24V or 5V regulated
  - Board supply output : 5V regulated

Multiplex Circuit Board

Channel multiplex board the E703.21:

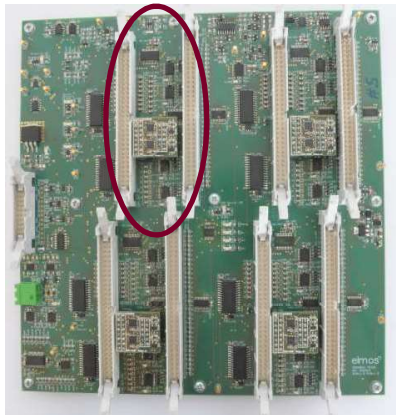- Supports connection to 64 sensor modules at 4 different sites , each site supports 16 channels

Multi Sensor Calibration – E703.x1: Hardware Components


multiplex board E703.11:
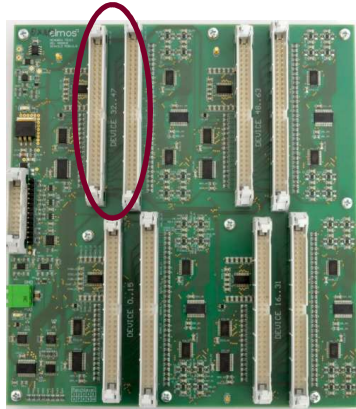
multiplex board E703.21:

ELMOS Customer interface board 703x1

Interface PCB used at ELMOS to connect 16 x 703.x1 application circuit boards to one site of the channel multiplex PCB :

- Supports functional testing of the MassCalibration hardware with reference devices.

- Order Code: Z00000-0027 (including application circuit boards + sensor emulation boards, 2 of each version)
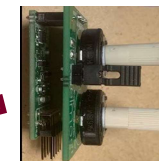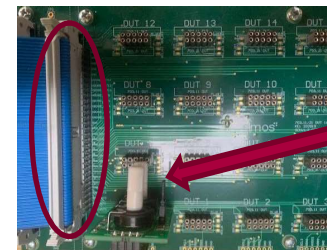
Reference example : 703.21 application circuit board with sensor simulation board

PC Software Tool – 703.x1

## Introduction

■ **GUI Functionality and Use Cases:**

The GUI is used to determine the correct configuration settings of the 703.x1 signal conditioner for a specific application.

The graphical presentation of the main functional blocks guide the user through the configuration process. The GUI consists of three main configuration blocks: analog frontend, digital signal processor and output interface. An additional window allows to configure a digital pin as output of status register signals.

For more details:

 - Evaluation kit documentation

703.x1 GUI start window
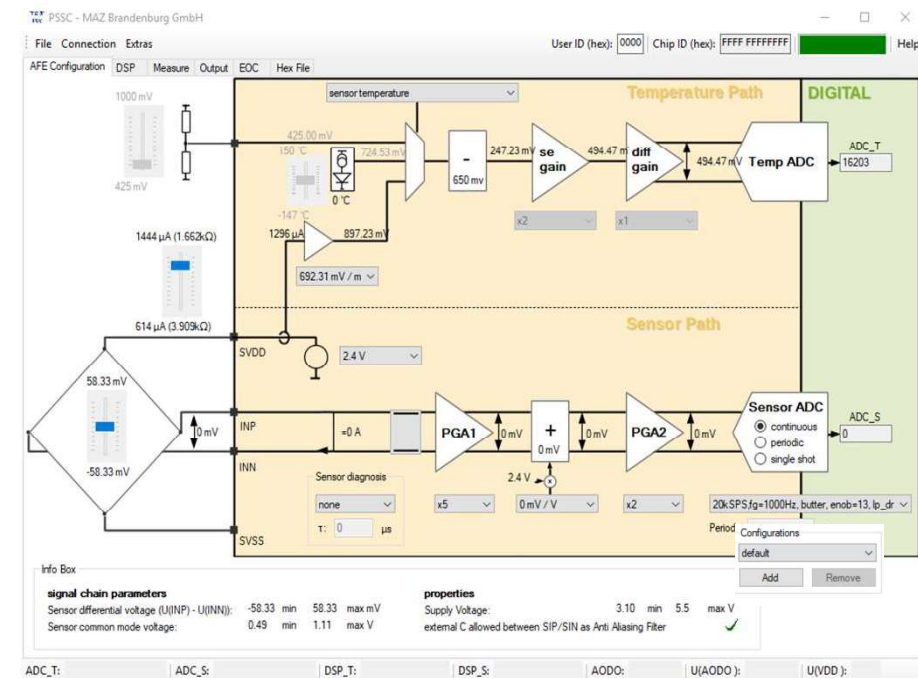
Thank you for your attention!

August 12, 2021

Elmos Semiconductor AG