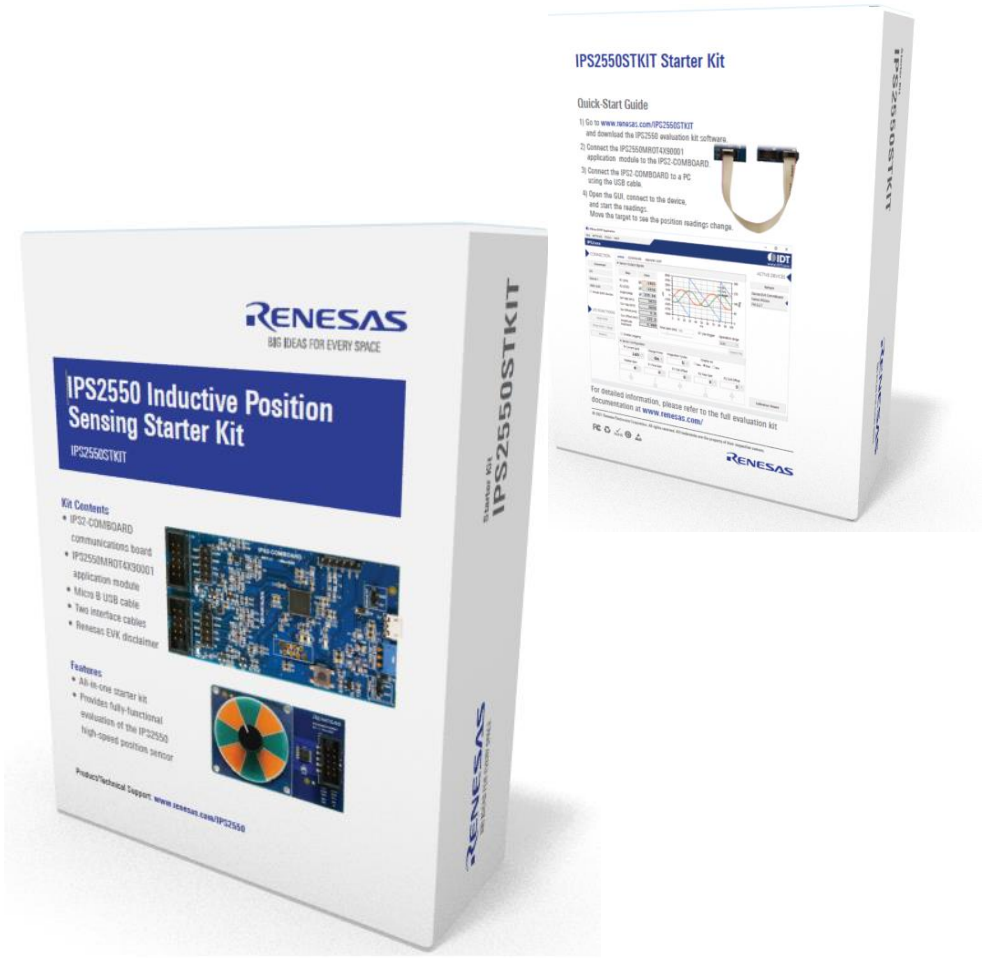
IPS2550STKIT
GETTING STARTED

20210120
RENESAS ELECTRONICS CORPORATION

CONTENT

IPS2550STKIT Content

- IPS2-Comboard
- IPS2550MROT4x90001
- Micro B USB cable
- Two 10pin ribbon cables
- Renesas disclaimer document



IPS2550STKIT Getting Started

- IPS2550 General Overview
- Starter Kit Setup Steps
- Starter Kit Configuration
- Programming over the Analog Output Pins

IPS2550 HIGH-SPEED POSITION SENSOR

AECQ100 Grade-0 Automotive Qualified

Interface: sin/cos single ended or differential

Temperature range: -40° to 160° C ambient

Functional Safety: supports ASIL-C single

Voltage Supply: 3.3V ±10% or 5.0V ±10% supply

Speed: 600.000 (el) rpm

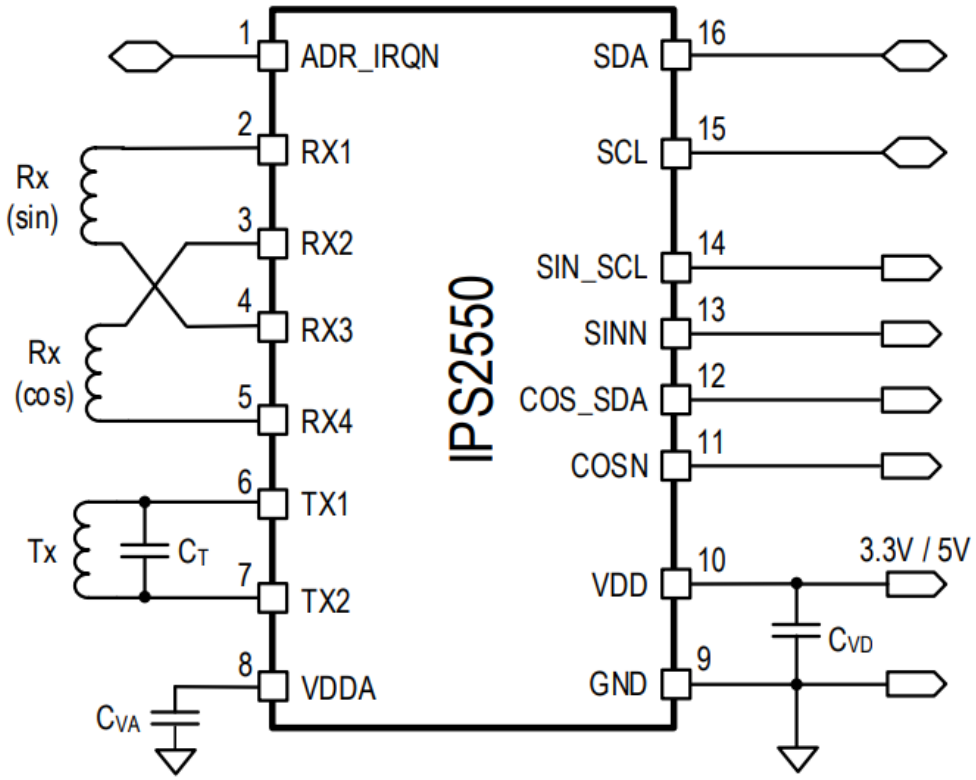
Propagation delay: 4µs

Overvoltage, reverse polarity, short-circuit protected

Programming interface: I²C or over output pins
Diagnostics interrupt to external MCU

AGC to compensate air-gap variations

TSSOP-16 with exposed pad



IPS2550 is pin backward compatible
to IPS2200 in straight pinout mode

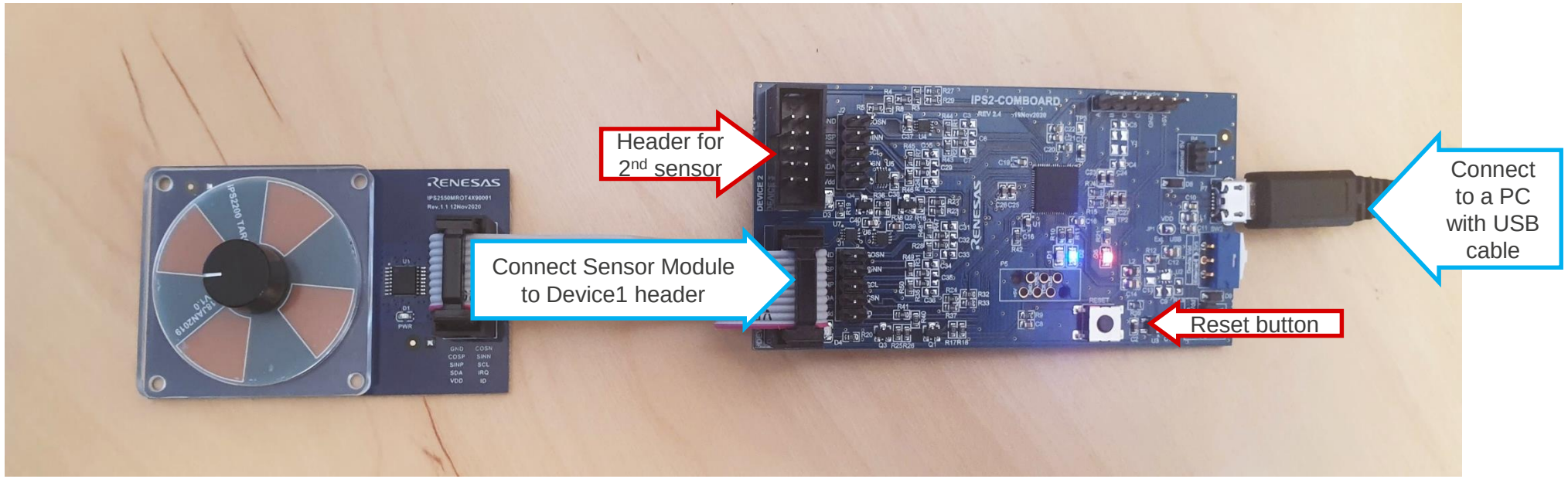
Improvement over IPS2200 in blue

EVALUATION KIT SETUP: STEP 1 - CONNECT BOARD

Step 1: Connect IPS2550MROT4X90001 to the IPS-COMBOARD

IPS2550 Sensor Module
IPS2550MROT4X90001

IPS-COMBOARD
(Same for IPS2200 and IPS 2550)



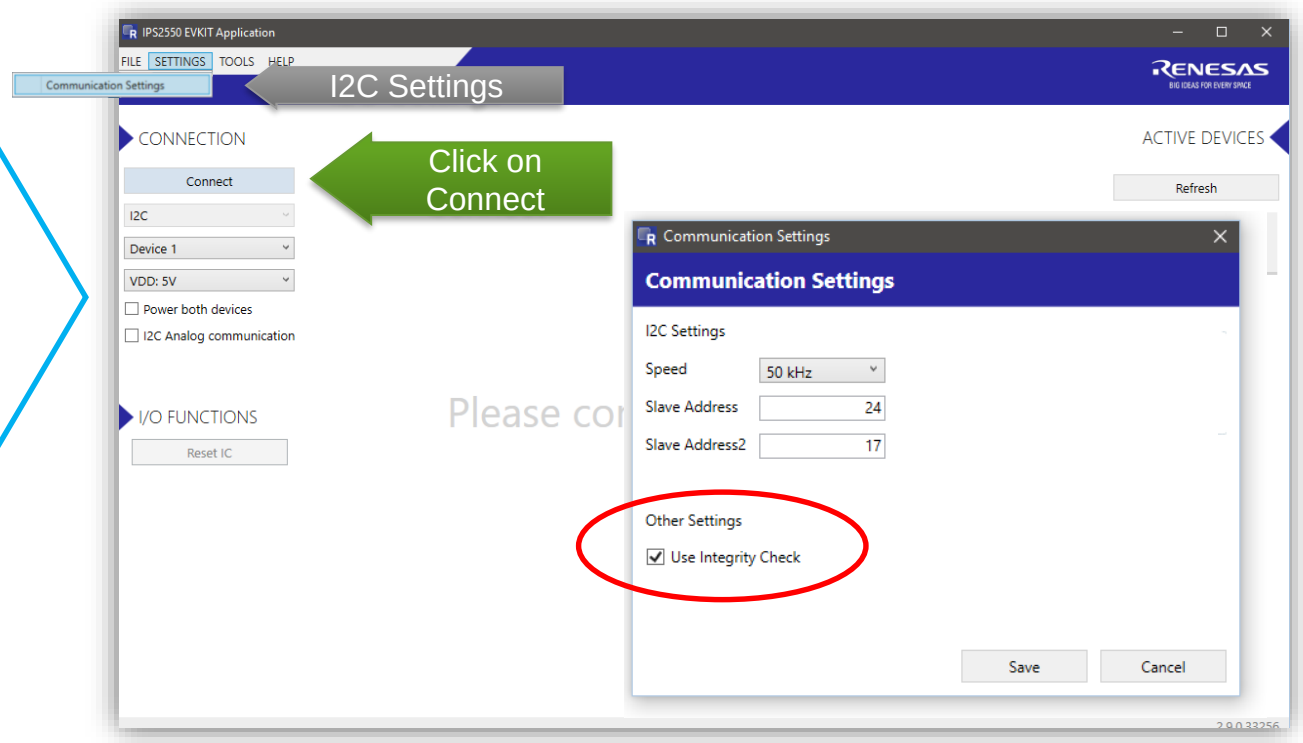
EVALUATION KIT SETUP: STEP 2 – INSTALL GUI AND CONNECT

Step 2: Download and Install the IPS2550 EVKIT Application. Open the application and click on “Connect”

(Request Download Link if not available)

Select connection settings:
(1) Select Device 1 (as connected)
(2) Select VDD: 5V (IPS2550MROT4X90001 default)

Optional:
(3) Change I2C address if needed in “Settings → Communication Settings”)
(4) Enable Integrity Check for default config



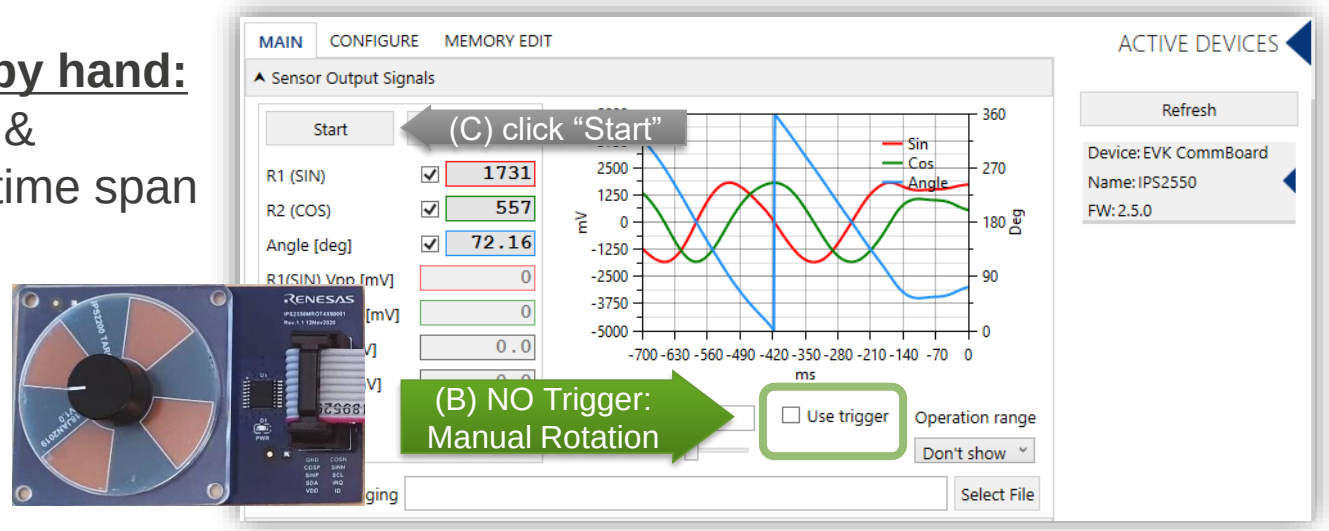
Default I2C Adresses:
24 dec (18h) → default + AdrPin High (IPS2550MROT4X90001)
17 dec (11h) → default + AdrPin Low
16 dec (10h) → old default

EVALUATION KIT SETUP: STEP 3 – READ OUTPUT SIGNALS

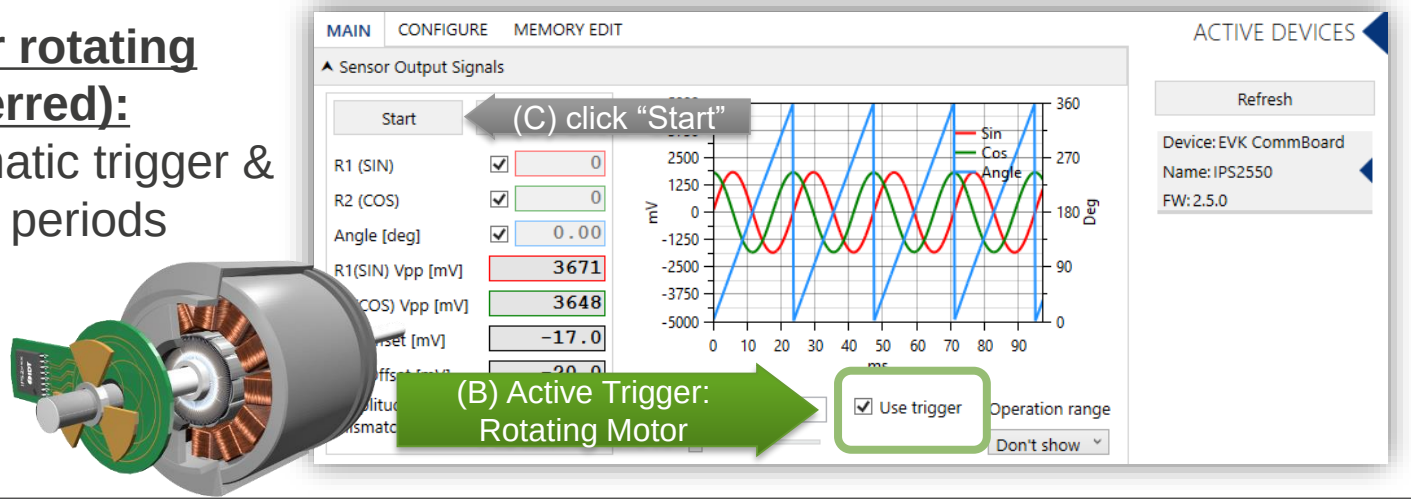
Step 3: Read Output Signals

- (A) Place a target over the Sensor Module
- (B) Decide for automatic trigger
- (C) Click Start to display output signals

Rotation by hand:
No trigger &
configure time span



Motor rotating (preferred):
automatic trigger &
select periods

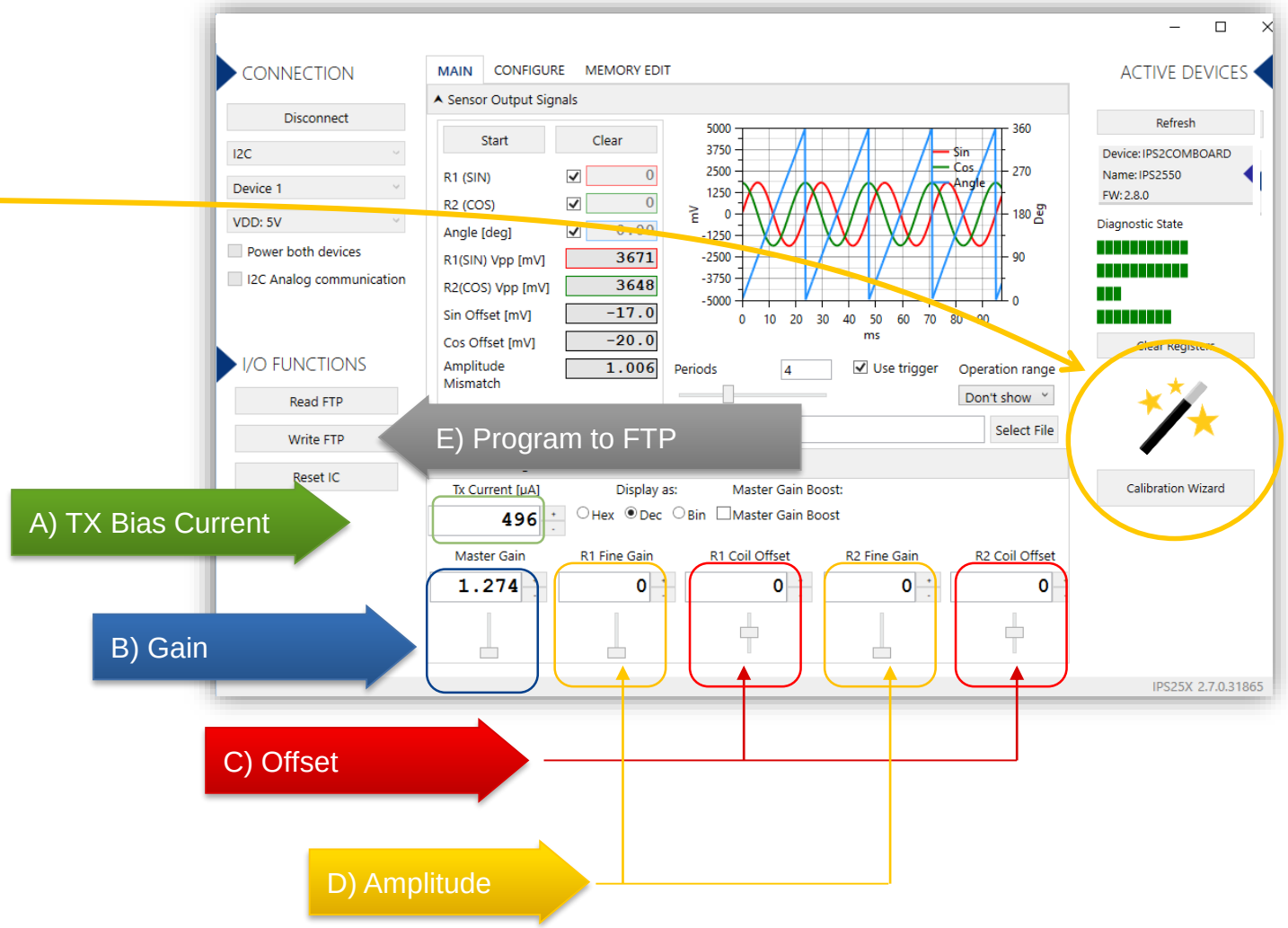


EVALUATION KIT SETUP: STEP 4 – SENSOR CONFIGURATION

Step 4: Sensor Configuration Options:

- Use the Calibration Wizard
  (ONLY WITH ROTATING MOTOR)

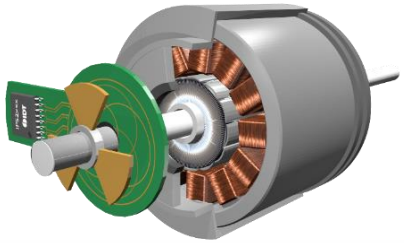
- Alternatively configure Steps A …E manually (refer to the IPS2550 Programming Manual)

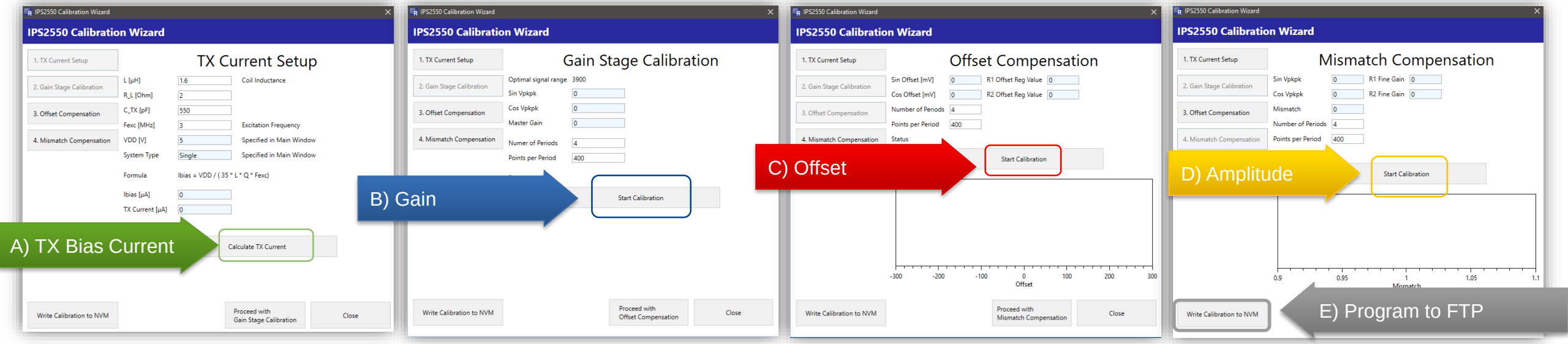


SENSOR CONFIGURATION USING THE CALIBRATION WIZARD

Configure the Sensor by performing steps A …E

(WITH ROTATING MOTOR ONLY)



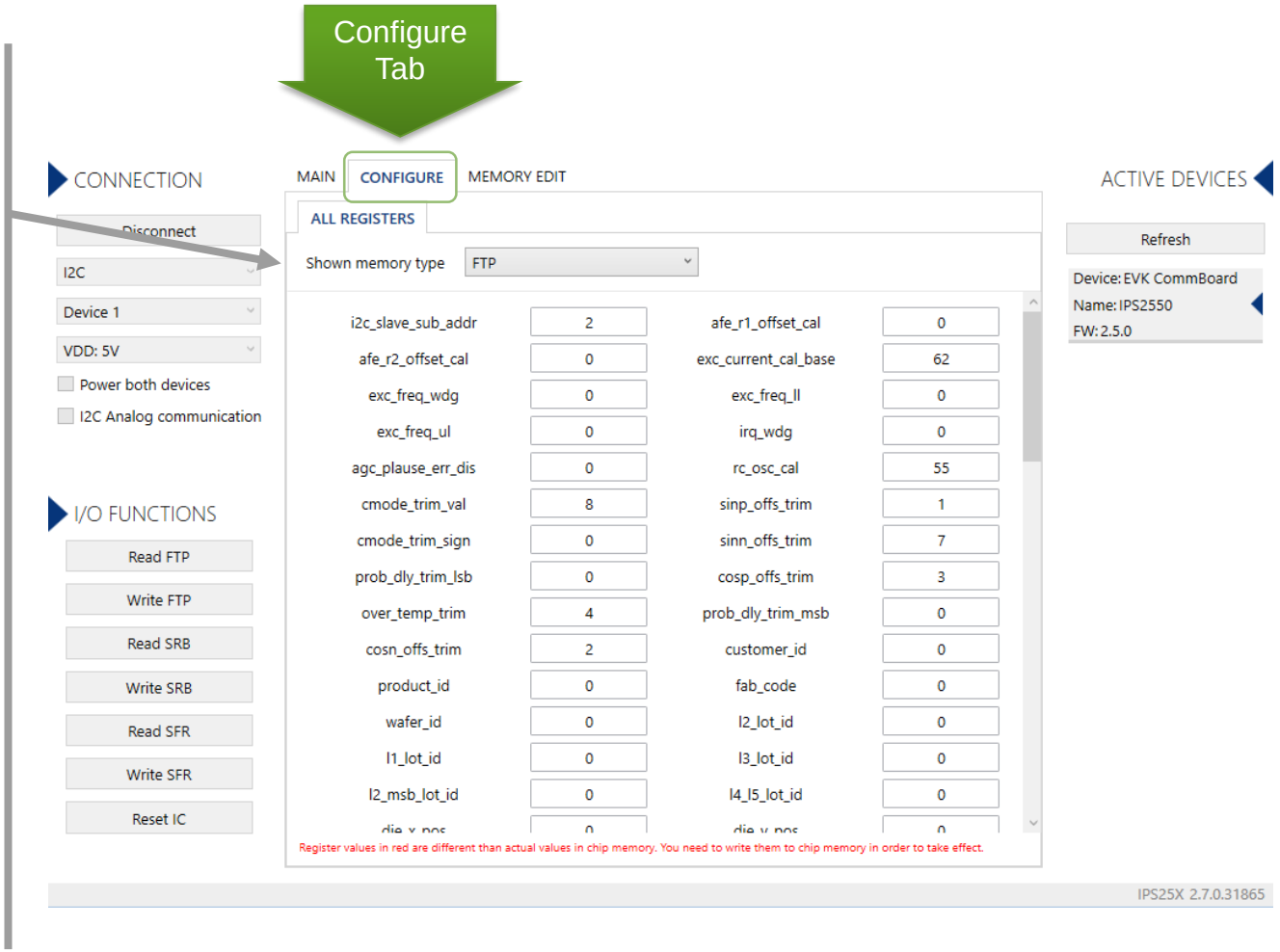


IPS2550 CONFIG: CHANGE CONFIGURATION IN CONFIGURE TAB

All configuration of the IPS2550 can be changed here.

It consists of 3 register blocks:

- FTP
  - Few Times Programmable Register
  - (1000 write cycles max.)
- SRB
  - Shadow Register Bank
  - Volatile
- SFR
  - Special Function Register
  - Contains Status and Interrupt handling



(For details refer to the IPS2550 Programming Manual)

IPS2550 CONFIG: MEMORY EDIT

Default Setup:

5V Mode

I2C Interface with address pin

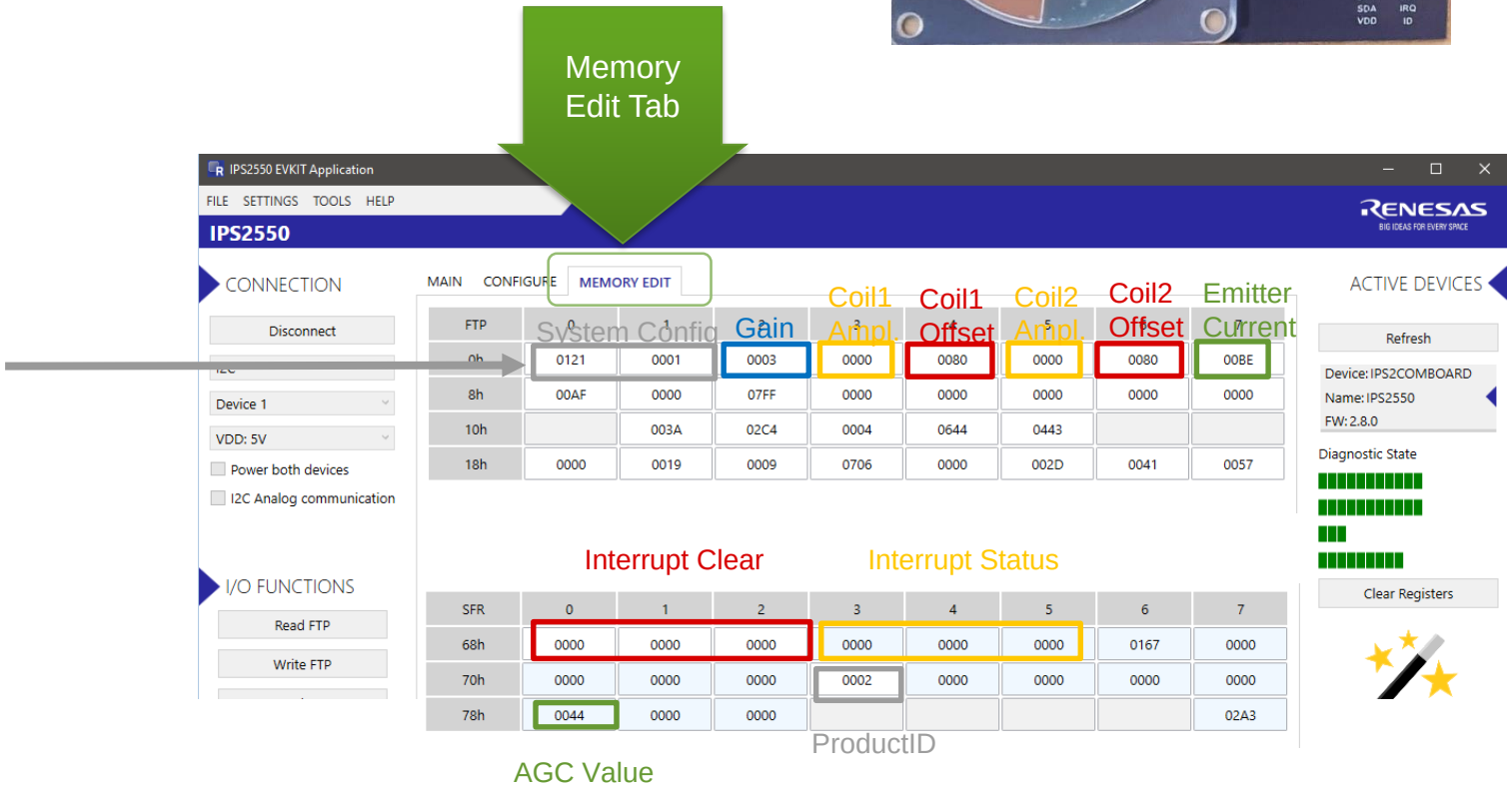
Differential Sin/Cos Output

AGC “ON”

Examples:

- System Config1 0x00 =
  - 0121h -> AGC ON (default)
  - 0321h-> AGC OFF

- System Config2 0x01 =
  - 0001h-> IPS2550 Pinout (default)
  - 0021h-> IPS2200 Pin Compatible

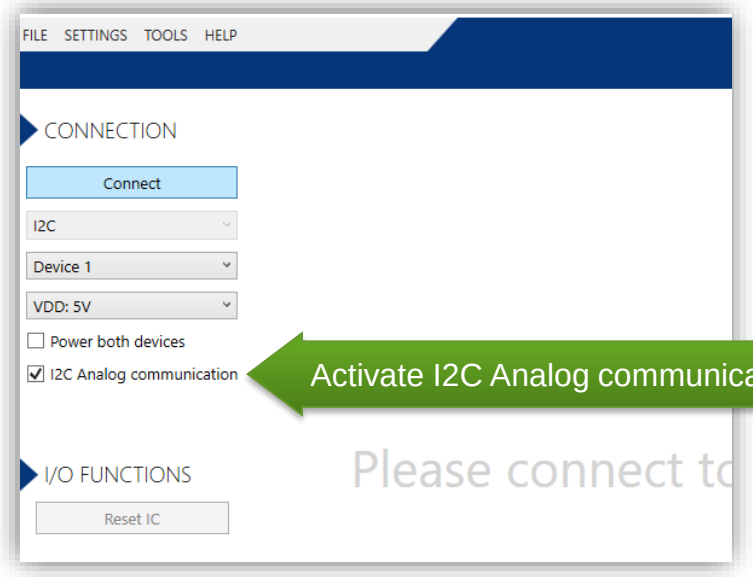


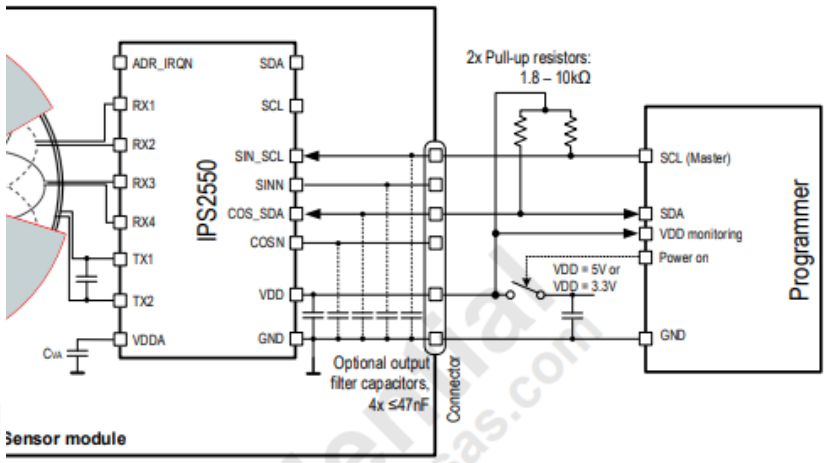
(For details refer to the IPS2550 Programming Manual)

PROGRAMMING OVER ANALOG OUTPUT PINS

It is possible to program the IC over the analog output pins. Select **“I2C Analog communication”**.

- When I2C over analog lines is selected 4KHz clock is used automatically
- If a customer programming board is used pull-ups should be 2.4K or lower.
- Filtering capacitors should be max 47nF
- If a IPS-comboard is used:
  - From Rev.2.4, the smaller pull-ups are activated automatically. Connect supply and output pins only.
  - Up to Rev.2.3 (with internal 4K7 ohm pull-ups), additional pull-ups (4K7 ohm) on the SINP and COSP pins of the sensor module are needed. Alternatively these pull-ups on the IPS-comboard can be replaced with smaller ones.
  - Up to Rev.2.3, analog output pins on the IPS-comboard must be connected to I2C pins of the IPS-comboard using jumper wires





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