

Programming tool ENC_PROGRAMMER

Operating instruction for ASIC K1382HX045

Programming tool description

Tool is purpose for setting and calibration various ICs, including K1382HX045. Tool support next interfaces:

- OWI;
- SPI;
- SSI.

Table 1 Enc_Programmer pinout

Pin number	Pin symbol	Pin description
1	CLOCK_n	SSI clock signal, negative
2	CLOCK_p	SSI clock signal, positive
3	DATA_n	SSI data signal, negative
4	DATA_p	SSI data signal, positive
5	OWI	OWI interface output
6	VDD_OUT	OWI supply output
7	GND	Ground
8	VPP	Programming voltage (not used for K1382HX045)
9	MISO_AT	SPI interface MISO input
10	CSn_AT	SPI interface CSn output
11	SCK_AT	SPI interface SCK output
12	MOSI_AT	SPI interface MOSI output
13	GND	Ground
14	GND	Ground
15	RESET	Reset output
16	PRG	PRG output

Setting through SPI interface

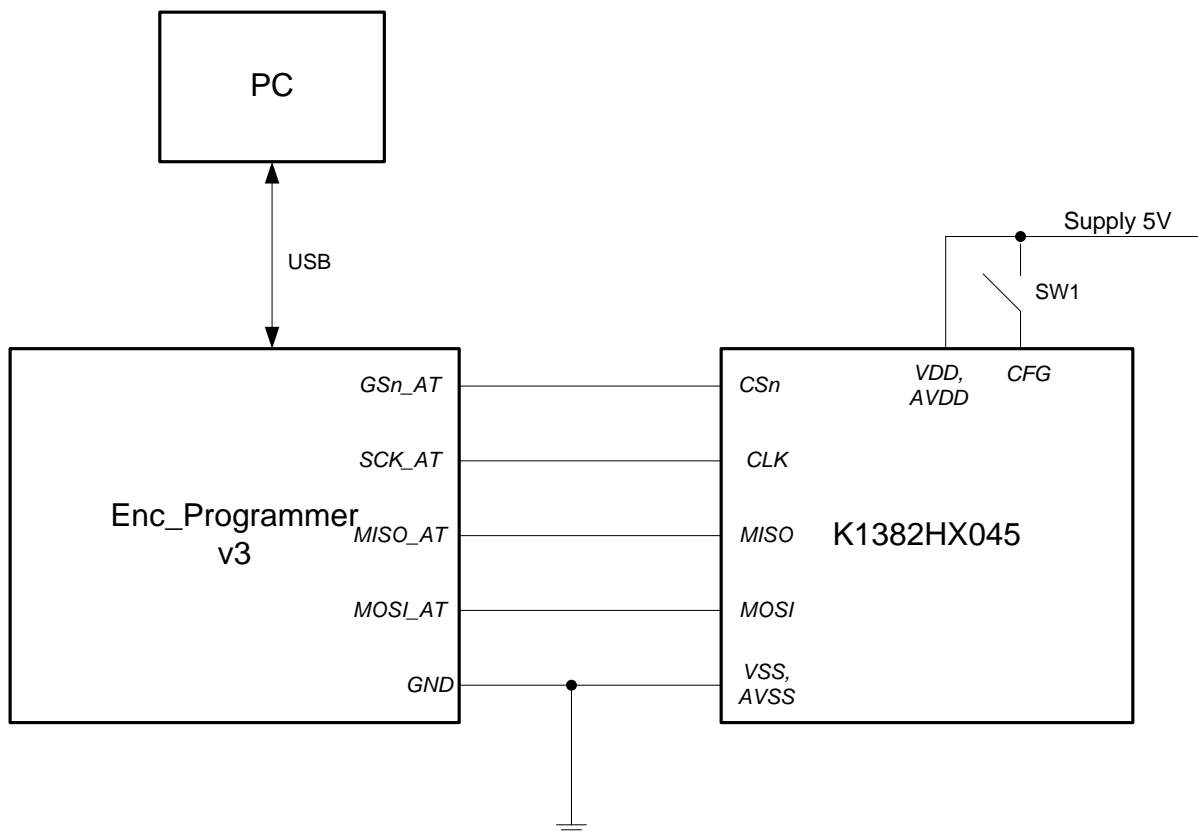


Figure 1. K1382HX045 and programming tool Enc_Programmer connection through SPI.

1. Start

First need copy SPI programming software to PC and execute `enc_control.exe` file. Also can needing install hardware drivers (on CD-ROM).

If before execute software K1382HX045 was connected with programmer tools, then after execute software the check box “**Enable SPI**” be set and chip identification start automatically.

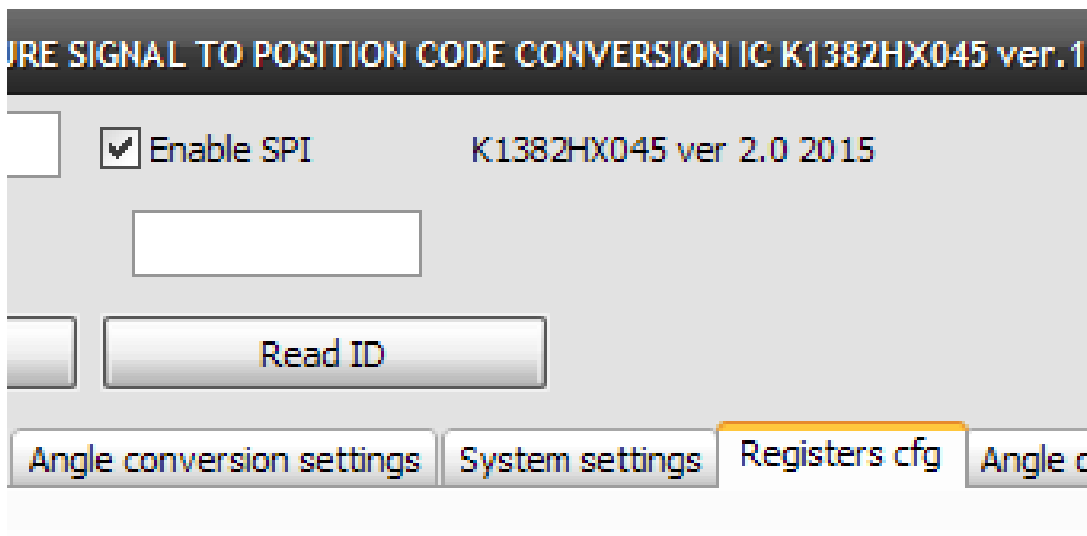


Figure 2. Chip identification

If K1382HX045 connect after execute software, need to set check box and wait chip identification.

2. Reading and writing chip identifier

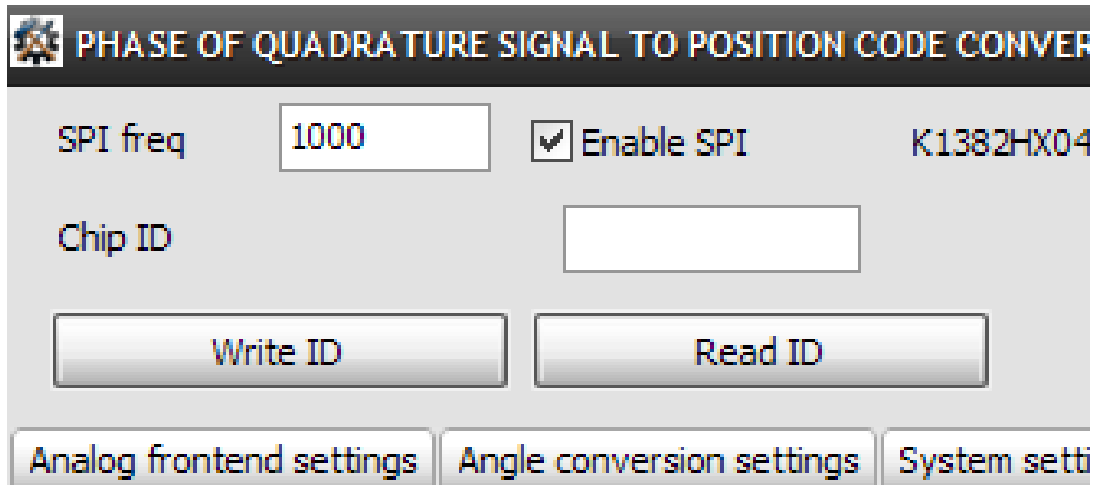


Figure 3. Buttons for reading and writing chip identifier

For each chip can be appropriate 10-digits identification number. For reading identifier need to press button “Read ID”.

For writing identifier need place number in field “Chip ID”, and next press “Write ID” button. Identifier stored in EEPROM.

3. Status register

Status bits are represented at the bottom of window.

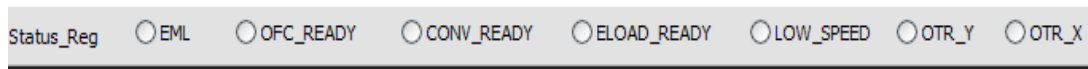


Figure 4. Status register representation

4. General working area

Software window has several sub-windows: “Analog frontend settings”, “Angle conversion settings”, “System settings”, “Registers cfg”, “Angle data”, “Chart”, “X-Y chart”.

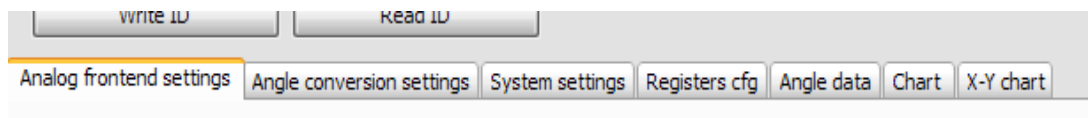


Figure 5. Sub-windows

4.1 Analog frontend settings

“Analog frontend setting” sub-window is purpose for setting analog parameters of K1328HX045 chip.

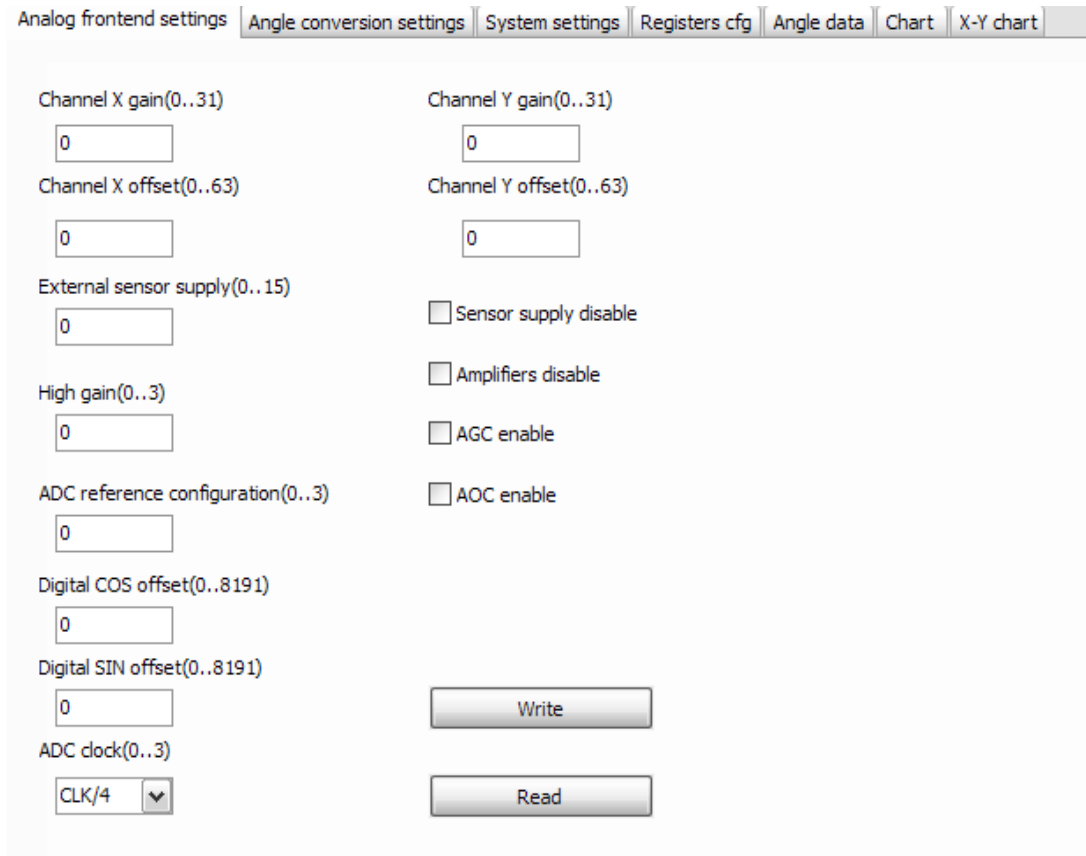


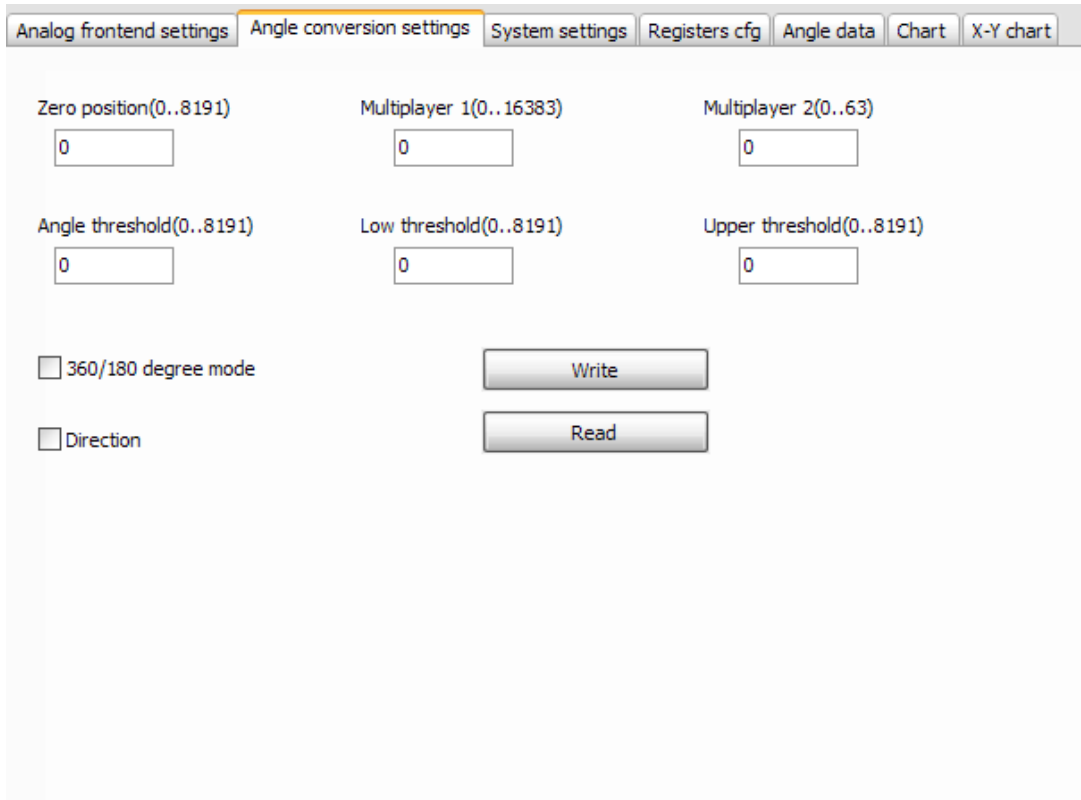
Figure 6. Sub-window "Analog frontend settings"

For reading register value need press button “Read”. If reading is right, data field filled in green color.

For writing register value need insert number in data field and next press button “write”.

4.2 Angle conversion settings

This sub-window purpose for set zero position, upper and downer thresholds, slope, angle mode and direction.



Analog frontend settings | **Angle conversion settings** | System settings | Registers cfg | Angle data | Chart | X-Y chart

Zero position(0..8191)
 Multiplayer 1(0..16383)
 Multiplayer 2(0..63)

Angle threshold(0..8191)
 Low threshold(0..8191)
 Upper threshold(0..8191)

☐ 360/180 degree mode

☐ Direction

Write

Read

Figure 7. Sub-window "Angle conversion settings"

For reading register value need press button “Read”. If reading is right, data field filled in green color.

For writing register value need insert number in data field and next press button “write”.

4.3 System settings

This sub-window purpose for set system parameters of K1382HX045.

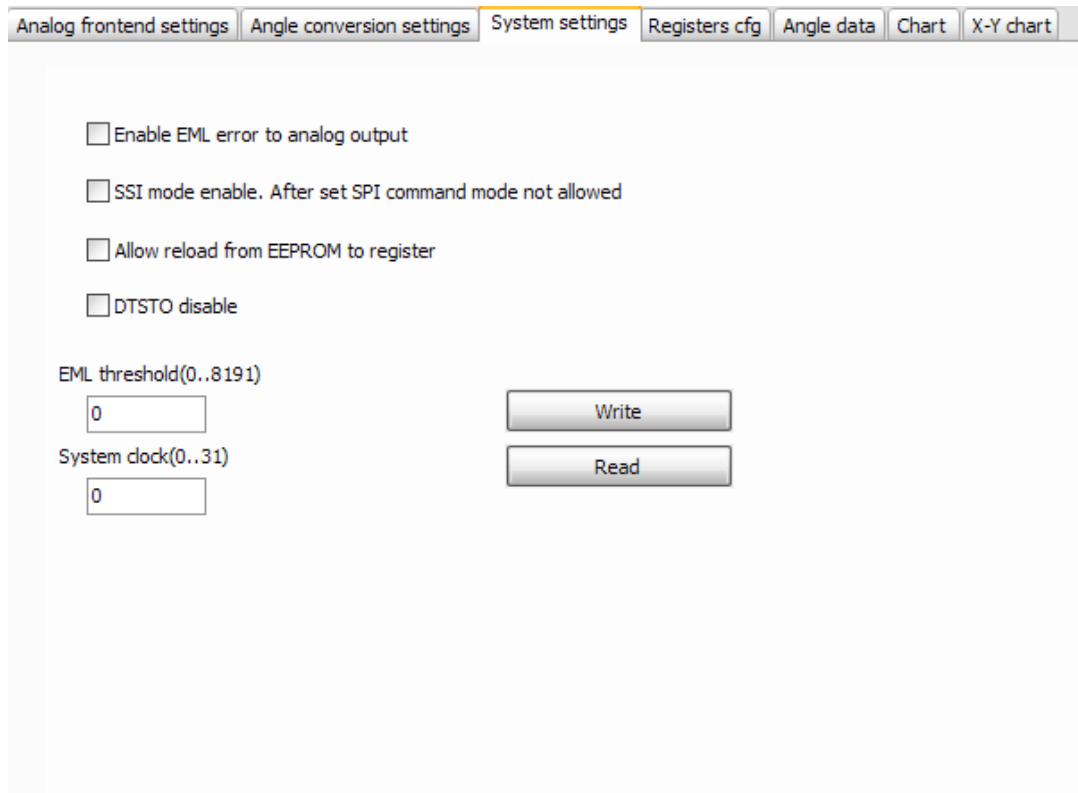


Figure 8. Sub-window "System settings"

For reading register value need press button “Read”. If reading is right, data field filled in green color.

For writing register value need insert number in data field and next press button “write”.

4.4 Registers configuration

This sub-window is purpose for controlling sine, cosine, CORDIC, angle and amplitude registers. This sub-window also include clock-field for visual representation angle register (for activate this function press button “Turn On”).

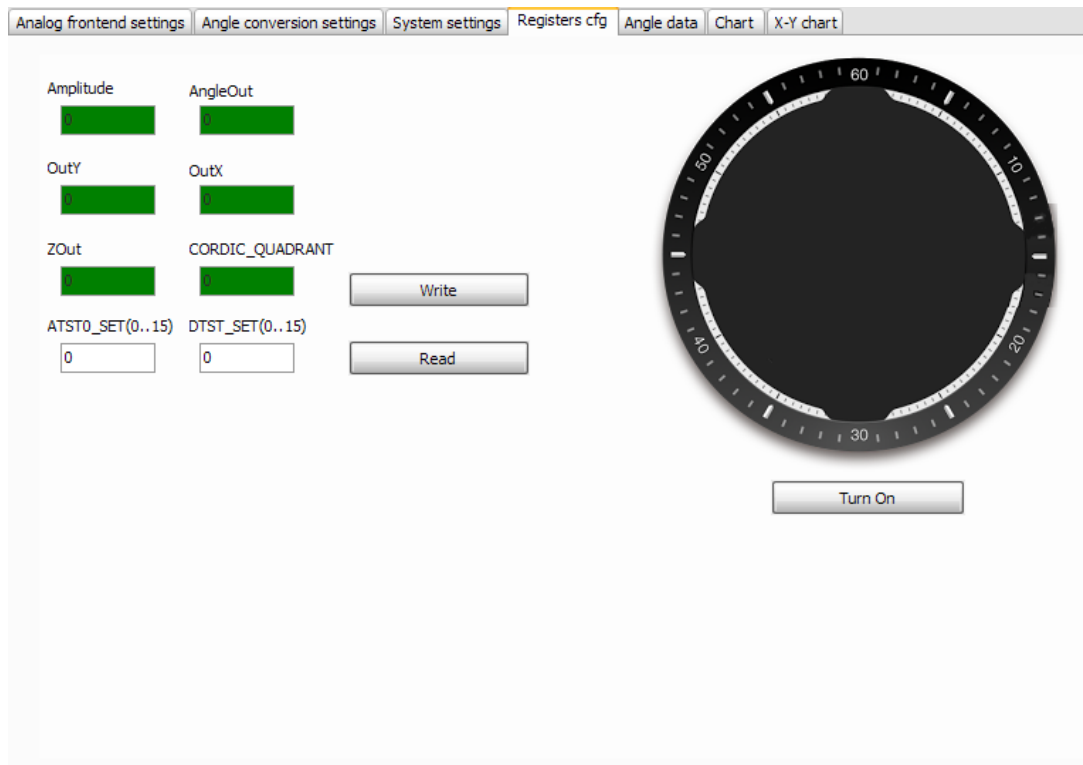


Figure 9. Sub-windows "Registers configuration "

4.5 Angle data

This sub-window purpose to reading angle data in SPI normal mode (CFG=0). Reading data representation on plot and can be saved in to file.

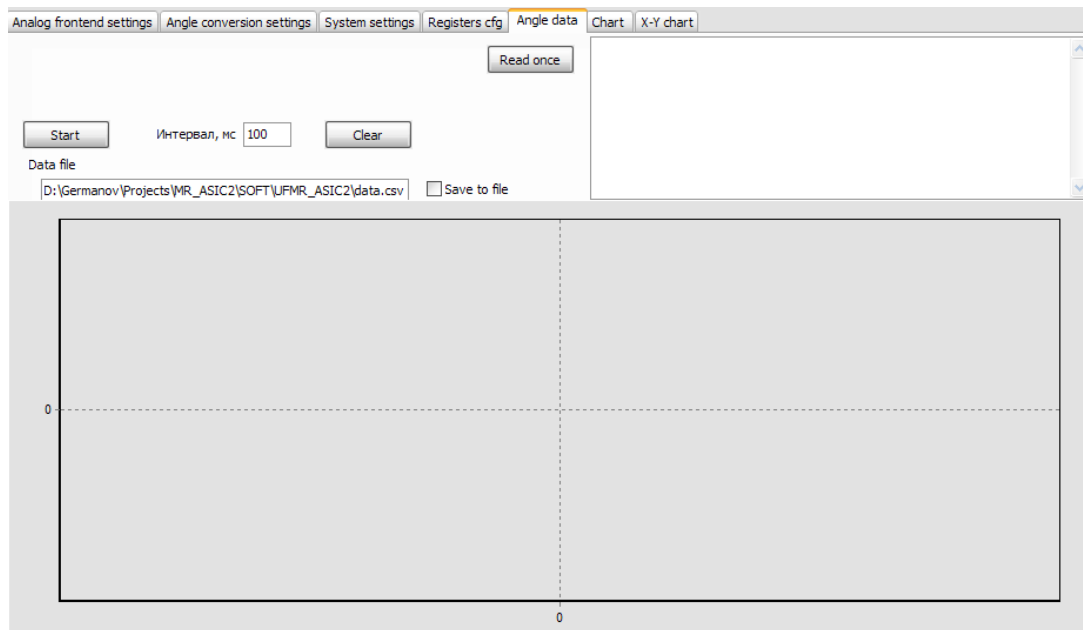


Figure 10. Sub-window "Angle data"

For one reading need press button "Read". For cycle reading need set reading interval and press "Start" button.

For save reading date need put file path field and set checkbox "Save to file".

4.6 Chart

This sub-window need for visual representation Sine, Cosine, CORDIC, Angle and Amplitude registers.

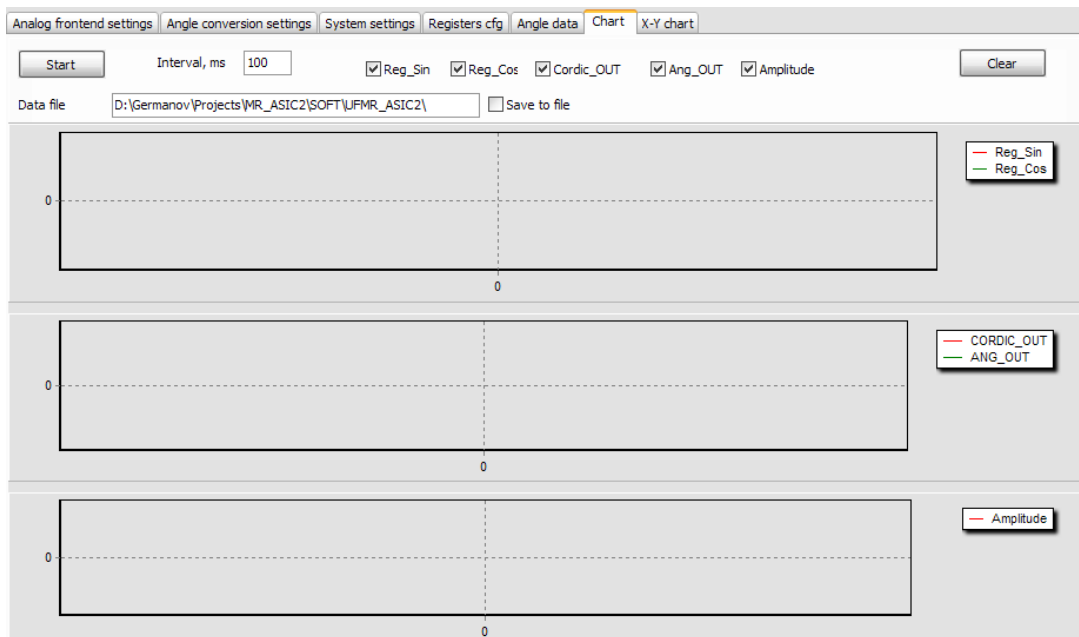


Figure 11. Sub-window “Chart”

For cycle reading need set reading interval and press “Start” button.

For save reading date need put file path field and set checkbox “Save to file”.

4.7 X-Y Chart

This sub-window need for easy calibration amplitude and offset for Sine and Cosine channels. In ideal case X-Y plot is ideal circle.



Figure 22. Sub-window "X-Y chart"

For cycle reading need set reading interval and press "Start" button.

For save reading date need put file path field and set checkbox "Save to file".

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