UPRGAM4096 manual

Software installation

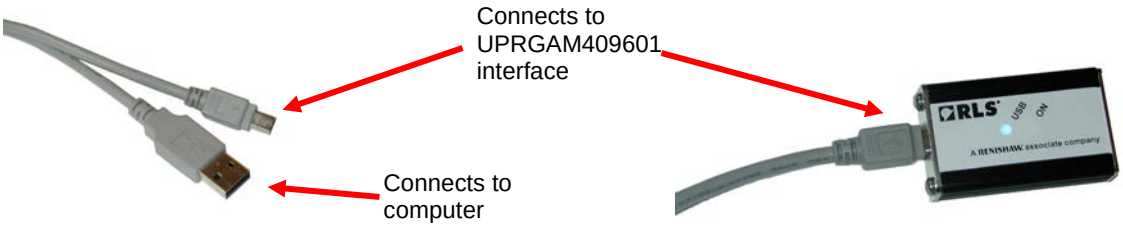
Download the software from www.rls.si/UPRGAM4096 by clicking the Documentation tab and selecting the file UPRGAM4096_Software. Once downloaded open the Setup.exe file and follow the installation wizard to complete installation.
NOTE – You should install the UPRGAM4096 software BEFORE connecting the UPRGAM4096 interface.

Note: Administrator rights are required to install the software.

Compatible operating systems: Windows XP, Windows Vista

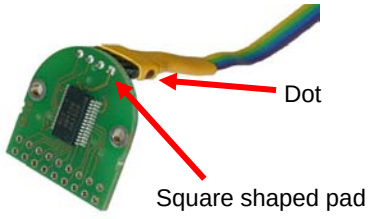
Connecting the UPRGAM4096 interface and RMK4

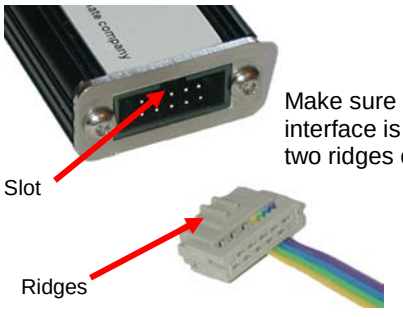
After software installation connect the UPRGAM4096 to the computer using the USB cable.



Connect the RMK4 as shown

Make sure that the dot on the connector is on the same side as the square shaped pad on the RMK4.





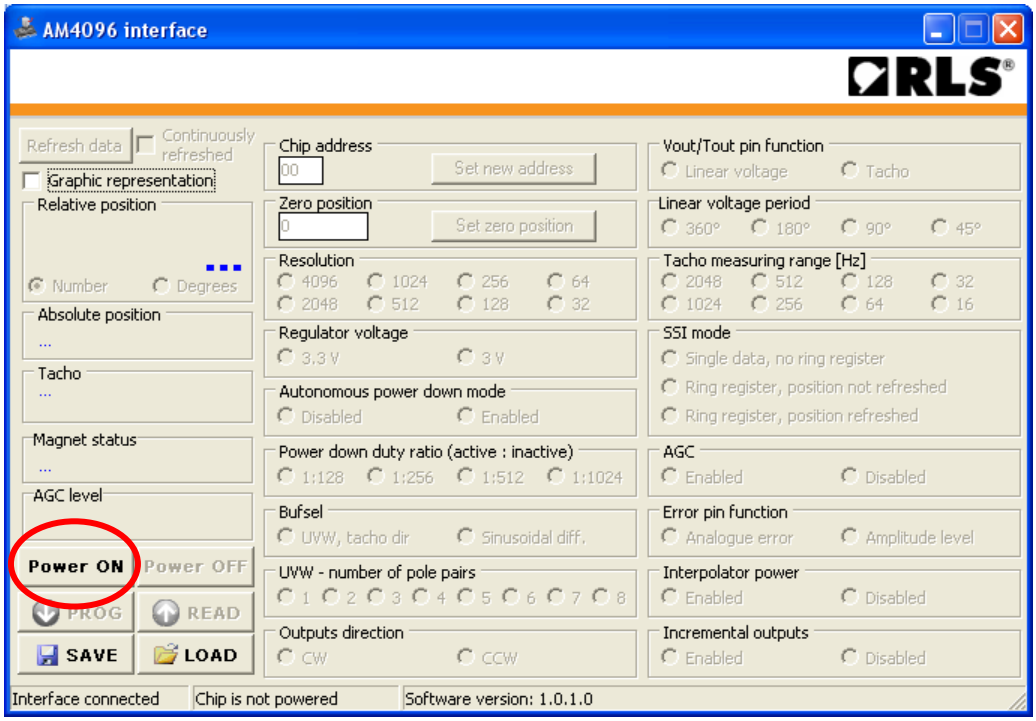
Make sure that the slot on the interface is on the same side as the two ridges on the connector.

Final assembly should look as shown

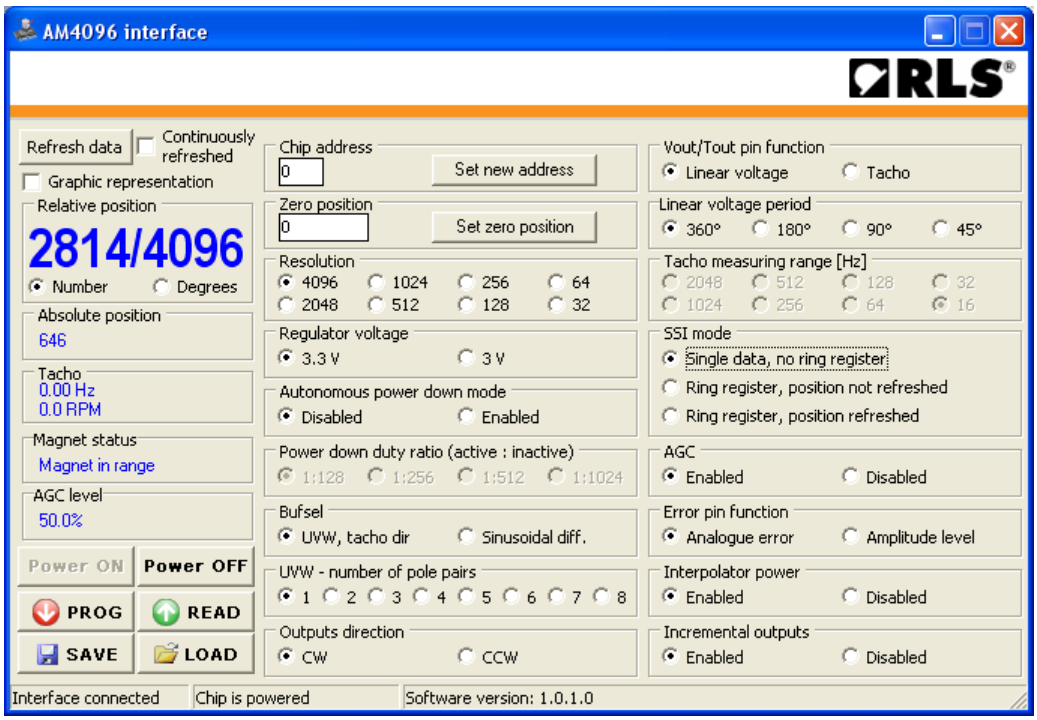
Starting the AM4096 interface program

Start the program by clicking the Desktop icon  which has been created during installation or by selecting the program from the Start menu.

Once the application is started, you will see see the following screen. Click the 'Power on' button.



The interface will now read the current programming / settings of the RMK4 and the screen should look something like this depending on the settings previously loaded.



During 'Power on' the interface reads the data stored inside the internal EEPROM of the AM4096 chip and the software interface displays the read information graphically.

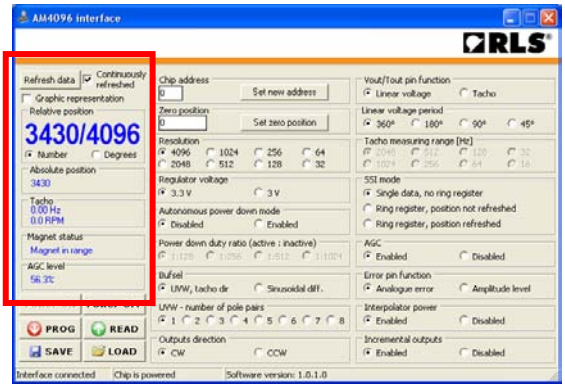
Programming and reading

The AM4096 can be re-programmed by changing the parameters within the software. Once the desired parameters have been selected, the 'PROG' button has to be clicked in order to save the changes to the chip.

The 'READ' button reads the current programming of the AM4096 chip. (If, for example, the parameters on the screen have been changed, but not saved, and the current programming needs to be read again, this can be done by pressing the 'READ' button.)

Different settings can be stored to the computer as a by pressing the 'SAVE' button. Previously saved setting can be uploaded by pressing the 'LOAD' button.

Parameter description: FIRST COLUMN



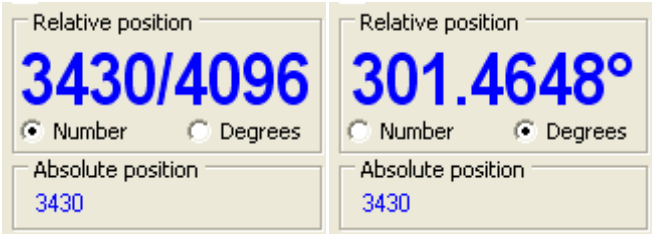
Refreshing data

Data can be refreshed in two ways:

1. By default, the data (read position from the sensor) is refreshed each time the 'Refresh data' button is clicked.
2. The data is continuously refreshed by ticking the 'Continuously refreshed' option.

Position display

The software displays the position as relative and absolute. By default, the *Relative position* displays the position as a number (e.g. 686/4096, where the first number represents the relative position and the second number represents the full number of counts, or the resolution the chip is set to). This can be changed to 'Degrees' and the display now shows the relative position in degrees.
The *Absolute position* always shows the position as an absolute number.



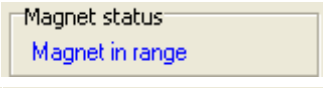
The position can also be displayed as a graphic form by ticking the 'Graphic representation' option.

Tacho output

When the Tacho output is used, the Tacho section displays the speed in Hertz and RPM (rotations per minute).

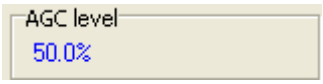
Magnet status

The 'Magnet status' section indicates whether the magnet is in range too close or too far. This helps control the distance between the magnet and the AM4096 chip.

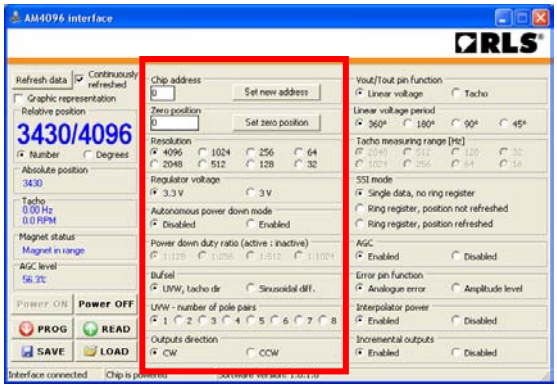


Automatic gain control (AGC gain)

The AGC gain section displays the percentage of the automatic gain control. When AGC is disabled the AGC gain is fixed at 50.0%. If the AGC is enabled, then the AGC gain varies, depending on the magnet to chip distance. See AGC section on how to enable or disable.

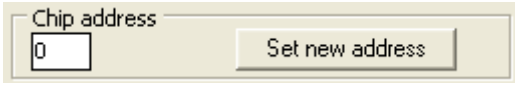


Parameter description: SECOND COLUMN



Chip address

In the *Chip address* section the address of the device can be set from 0 to 127. This is used when more devices are interconnected, where each device needs to have an individual address. Type a number from 0 to 127 into the text box and confirm by pressing the 'Set the new address' button.



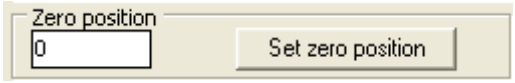
See page 6 of the AM4096D01 datasheet for a detailed description of this functionality.

NOTE – AM4096 chips with serial numbers AA3509 and AB3509 do not allow connecting more than one slave device to the TWI bus. This functionality is being added to the next revision of the product.

The RMK4 default setting is '0'.

Zero position

In the *Zero position* section you can set the zero position of the chip. The number represents the absolute position at which the zero position is to be set.

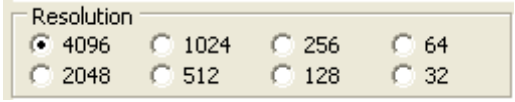


Bring the encoder to the position where you wish to set your zero position. Now type the number which is displayed in the *Absolute position* section into the text box and confirm by pressing the 'Set zero position' button.
The value must be between 0 and 4095, otherwise an Error message will appear.

The RMK4 default setting is '0'.

Resolution

In this section the resolution can be set by selecting the required radio button. The resolution can be set to binary resolutions from 32 cpr (5 bit) to 4096 cpr (12 bit). Resolution is in CPR (counts per revolution) or PPR (positions per revolution).



The RMK4 default setting is '4096' (12 bit).

Regulator voltage

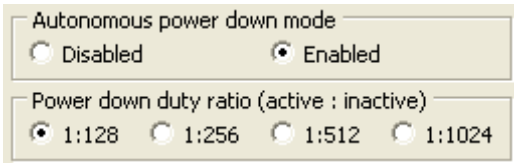
In this section the regulator voltage can be set. If a power supply of 5 V is used, the 3.3 V option should be selected. If a power supply of 3 V is used, the 3 V option should be selected.

The RMK4 default setting is '3.3 V' (for 5 V power supply).

Autonomous power down mode and Power down duty ratio (active : inactive)

In this section the power save mode can be enabled or disabled by selecting the appropriate button.

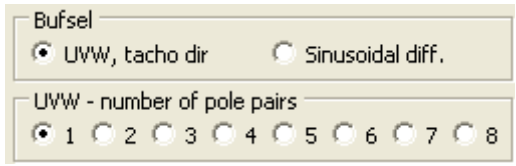
If enabled, the power down duty ratio can be selected. This means that the position is not read continuously, but in intervals as selected.



The RMK4 default setting is 'Disabled'.

Bufsel and UVW – number of pole pairs

In this section the output on pins 5, 6, 7 and 8 can be selected between UVW/Tacho and differential sinusoidal.
If the UVW outputs are selected, the number of pole pairs of the UVW commutation signals can be selected.



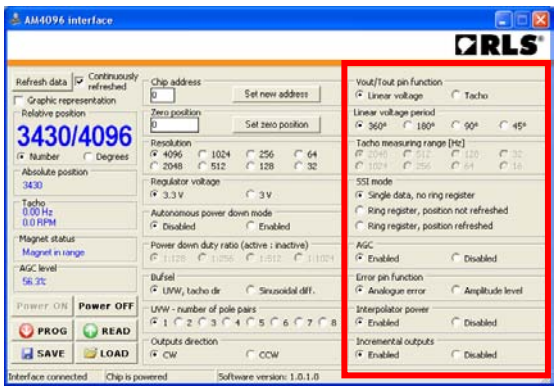
The RMK4 default setting is 'UVW, tacho dir' and the default number of pole pairs is 1.

Outputs direction

In this section the output direction can be selected to be either CW (clockwise) or CCW (counter clockwise).

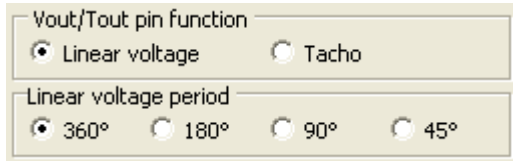
The RMK4 default setting is 'CW'.

Parameter description: THIRD COLUMN



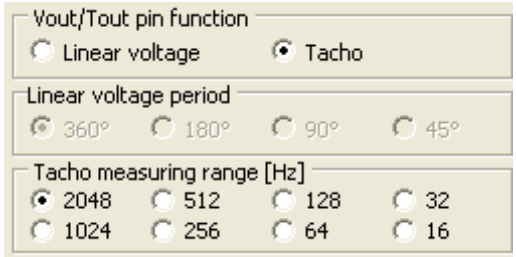
Vout/Tout pin function, DA data period and Tacho measuring range [Hz]

In this section the output on pin 20 can be selected between Linear voltage ('Vout') and Tacho ('Tacho').



If 'Vout' is selected, the period of the linear voltage output can be selected. See page 14 of the AM4096D01 datasheet for a detailed description of the Linear voltage output.

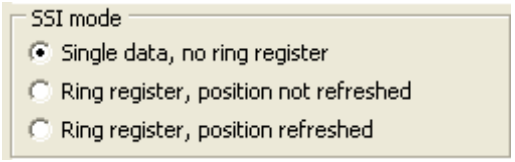
If 'Tacho' is selected, the measuring range can be selected (in Hz). See page 13 of the AM4096D01 datasheet for a detailed description of the Tacho output.



The RMK4 default setting is 'Vout' and the default period is '360°'. The default setting for the *Tacho measuring range [Hz]* is '2048'.

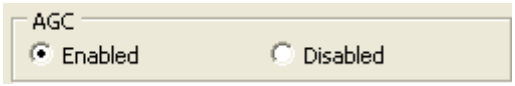
SSI mode
In this section the operating mode of the SSI output can be selected. See page 11 of the AM4096D01 datasheet for a detailed description of this functionality,.

The RMK4 default setting is ‘Single data, no ring register’.



AGC
In this section the AGC (automatic gain control) can be enabled or disabled.

The RMK4 default setting is ‘Enabled’.



Error pin function
In this section the function of the error pin (pin 9) can be selected. Both functions are aids for installing the magnet position. The ‘Analogue error’ shows the axial misalignment. The ‘Amplitude level’ shows the signal amplitude.

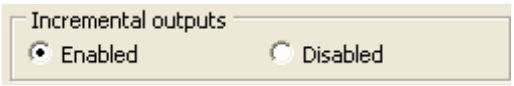
The RMK4 default setting is ‘Analogue error’.

Interpolator power
In this section the interpolator power can be enabled or disabled.

The RMK4 default setting is ‘Enabled’.

Incremental outputs
In this section the incremental outputs can be enabled or disabled.

The RMK4 default setting is ‘Enabled’.



NOTE: All of the changes made will not be saved until the PROG button has been clicked.

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Document issues

Issue	Date	Changes
1	20.11.2009	

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