AMO GmbH ATU Test kit

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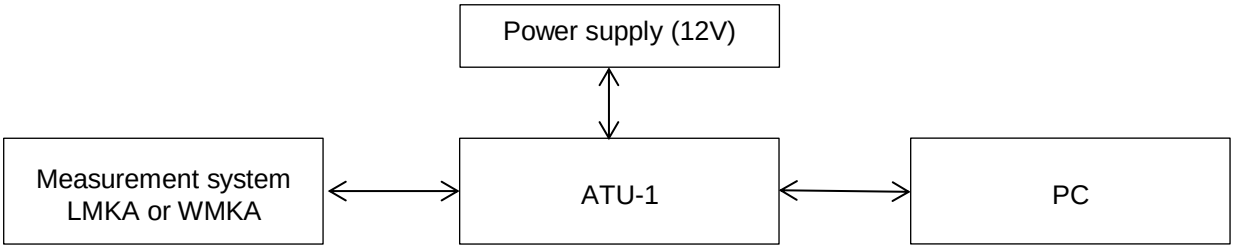
1 Generalities

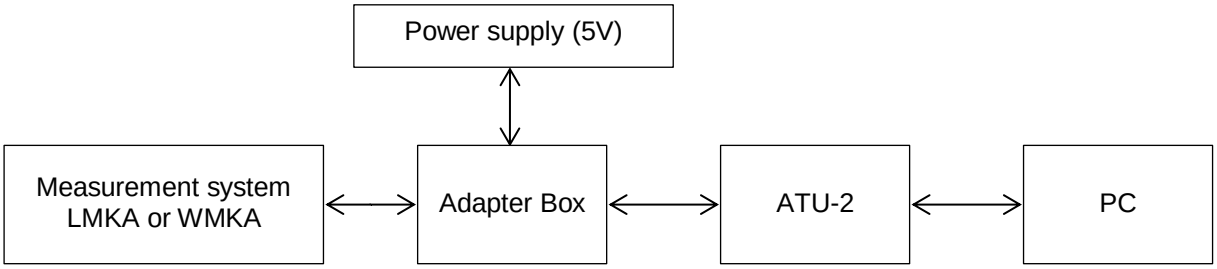
The test kit is used for checking functionality of absolute linear (type LMKA) and rotary (type WMKA) encoders produced by AMO GmbH (http://www.amo-gmbh.com/) with output interface SSI or BISS C.

ATU-1

ATU-2



Pic.1. ATU-1 connection scheme



Pic.2. ATU-2 connection scheme

Minimal PC requirements:

- Processor: 1GHz;
- RAM: 512 MB;
- Operating system: Windows XP or higher.

Hardware:

- ATU Box (ATU-1 or ATU-2);
- USB cable (ATU to PC);
- Connection cable (ATU-1 to reading head) or 2 connection cables (ATU-2 to Adapter Box and Adapter Box to reading head);
- Adapter Box (only for ATU-2);
- Power supply unit (12V for ATU-1 or 5V for ATU-2).

ATU-1 Test Kit

ATU-2 Test Kit

2 Software Installation

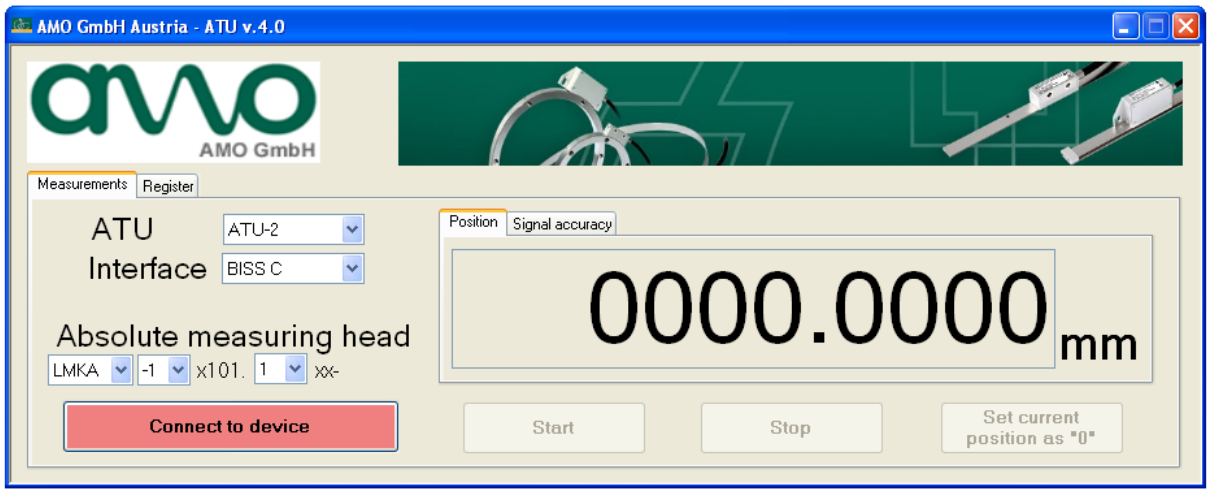
- Download software from official site of AMO GmbH (http://www.amo-gmbh.com/downloads/);
- Launch the file USB_ATU1_driver.exe or USB_ATU2_driver.exe for drivers installation;
- Normally (Windows 7 or higher) the software runs without any additional .Net Framework installation. If you have .Net Framework v.3.5 or earlier, launch the file dotNetFx40_Full_setup.exe for installation .Net Framework v.4.0 (English version) or download another file (.Net Framework v.4.0 or higher) from the official site of Microsoft Corp;
- Copy files AMO_ATU.exe and BISS1SL_interface.dll to one folder.

3 Hardware

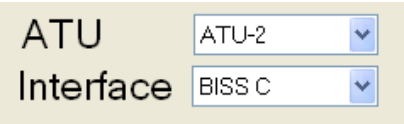
- Check polarity of Power supply unit and connect it to the ATU Box (for ATU-1) or to Adapter Box (for ATU-2);
- Connect the ATU Box with the PC (USB) and wait until the PC recognized and installed the ATU Box;
- Connect ATU Box with measuring head using connection scheme (Page 2).

4 Software Manual

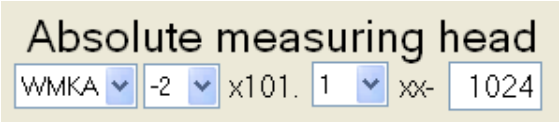
- Start the Software with desktop icon or file AMO_ATU.exe in installed folder;



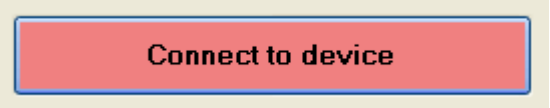
- Select type of ATU Box (ATU-1 or ATU-2) and interface of the measuring head (SSI or BISS C);

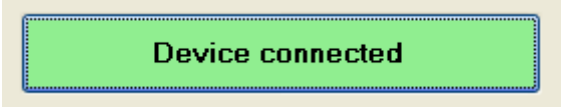


- Set the type of your absolute measuring system (For example is used rotary encoder WMKA-20101.110-1024-0,5-5 with BISS C interface);

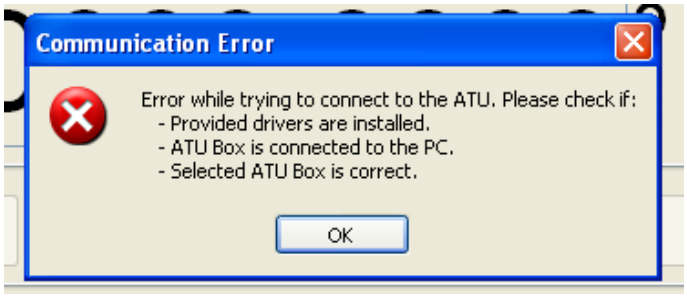


- Click “Connect to device” button.
  If connection with ATU Box is set successfully, the button will change colour and name.



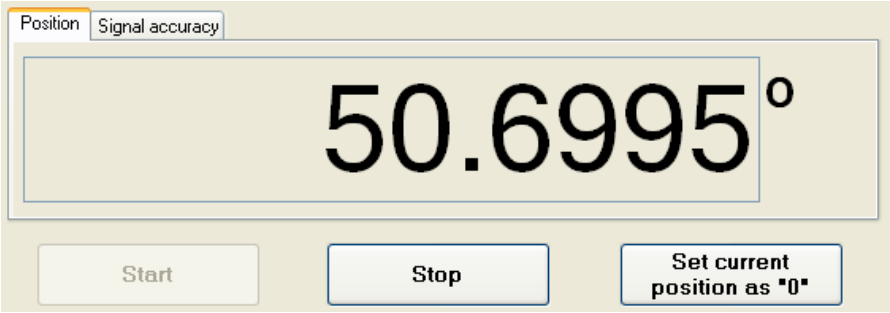


Otherwise you will see a communication error.



5 Position measurement (ATU-1 and ATU-2)

- Check the geometrical mounting conditions (use Mounting Instructions http://www.amo-gmbh.com/en/downloads/assembly-manuals/).
- If the ATU Box was connected successfully, you can start getting position with click at “Start” button.

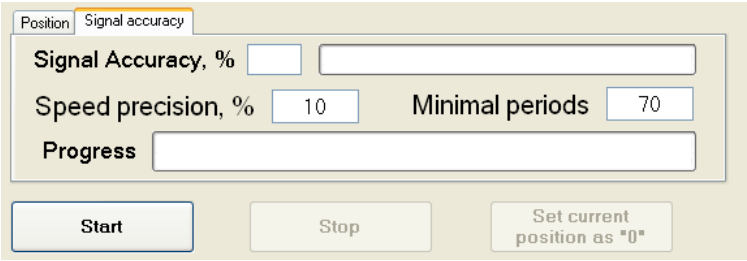


If something goes wrong during measurements, you will see error messages. Please follow the instructions and try again.

- To stop measurement process click “Stop” button.
- If you need to set “0” position, click “Set current position as “0”” button. The button will change name to “Reset “0” position” and the value in measurement data field will be set as 0. The value of “0” position will be saved until you reset it by clicking the same button or close the programm.
- Before closing programm, please break connection with ATU Box by clicking “Device connected” button.

6 Measuring of signal accuracy (only ATU-2)

- Check the geometrical mounting conditions (use Mounting Instructions http://www.amo-gmbh.com/en/downloads/assembly-manuals/).
- Before measuring of signal accuracy ensure that you get no error for total measuring distance using Position measurement function.
- If the ATU Box was connected successfully, you can measure signal accuracy by activating of “Signal accuracy” window.



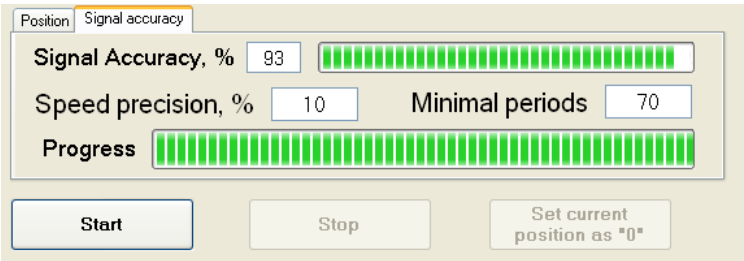
The signal deviations can be evaluated by moving the measuring head along the scale (or measuring flange) with a constant speed.

Setting the speed precision and number of periods

Here you have an opportunity to set measurement speed precision (between 1 and 30%) and minimal periods quantity for measurement (between 50 and 600). The precision of evaluation is higher for uniform speed (e.g. ***Speed precision*** below 10%) and longer measuring stroke (e.g. ***Minimal periods*** higher than 70). Try to optimize these two values in order to get higer signal accuracy value.

Getting a higher speed accuracy score means a higher mounting accuracy according to Mounting Instructions.

- To start measurement process click “Start” button. If measurement goes correct, you will see progress field filling.
- After getting valid measurement data, you will see signal accuracy in the same-named field.
- To abort measurement process click “Stop” button.
- Before closing programm, please break connection with ATU Box by clicking “Device connected” button.



Software and hardware limitations:

- Allowed speed is between 4 and 100 mm / s
- If measurement speed is continuously out of allowed range, you will get error message.

7 Register operations (ATU-1 and ATU-2)

Before changing any register value it is highly recommanded to read the AMO – ABSYS Interface Description – BiSS/C starting with Revision 07 and also please be carefull to the Encode Interface Revision (Address 0x7D).

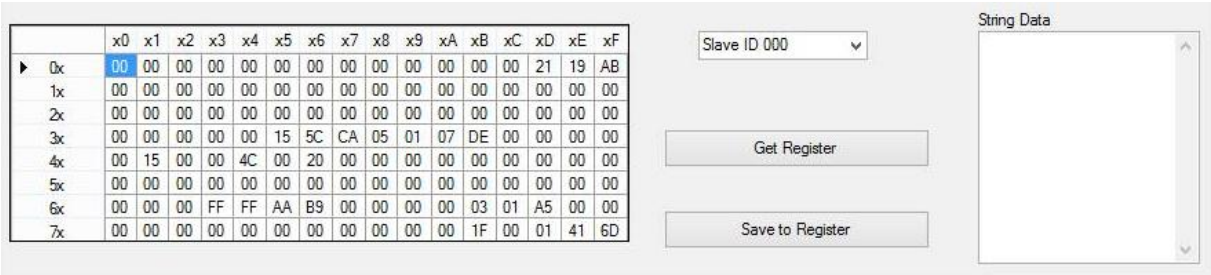
Access to register is possible with ATU-1 and ATU-2 version.

The ATU Unit must be connected to USB Port and also initialized in the ATU Software (by pressing the "Connect Device" button).

The ATU Software allows accessing 256 Bytes from the BiSS-C Encoder registers. Because the BiSS-C Register address bus has only 7 bits (which allows access to 128Bytes) the address bus is extended using 2 slaves.

Slave	Slave ID	Address Range
0	"000"	0x00 – 0x7F
1	"001"	0x80 – 0xFF

- "Get Register" button reads all the registers form the current slave.
- By double-clicking on a value, the user is able to type a new value for the register. All values are in hexadecimal.
- After changing one or several values the button "Save to Register" will transmit the data to BiSS-C Encoder/Slave and save them to the Non-Volatile Memory (Flash).



	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	00	00	00	00	00	00	00	00	00	00	00	00	00	21	19	AB
1x	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
2x	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3x	00	00	00	00	00	15	5C	CA	05	01	07	DE	00	00	00	00
4x	00	15	00	00	4C	00	20	00	00	00	00	00	00	00	00	00
5x	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
6x	00	00	00	FF	FF	AA	B9	00	00	00	00	03	01	A5	00	00
7x	00	00	00	00	00	00	00	00	00	00	00	1F	00	01	41	6D

The user can update the register values also by writing the new values in the String Data text box. String Data have higher priority, what means that they override values from table. The new values must be entered in *.mem file format:

- First value (hex in 0x?? format) defines the address
- Next numbers (hex in ?? format) represents the new register values starting with address from above

Example:

String Data	0x30 0A 09 45 F2 0x70 12
Result	Write Adr.0x30←0A, 0x31←09, 0x32←45, 0x33←F2, 0x70←12

When using different addresses as in the example from above, the addresses must be part from the same Slave ID.