

BALLUFF

sensors worldwide

BTL7-A/E501-...

Micropulse Configuration Tool – Manual



MICROPULSE⁺

english

www.balluff.com

1	First Steps	4
1.1	Validity	4
1.2	Symbols and conventions	4
1.3	Overview	4
1.4	System requirements	4
1.5	Installation	5
1.6	Uninstallation	5
1.7	Software update	5
2	Windows and Tabs	6
2.1	The Start window	6
2.2	The Main window	7
2.3	Magnet tab	9
2.4	Output 1 and Output 2 tabs	10
3	Menus	12
3.1	"File" menu	12
3.2	"Transducer" menu	12
3.3	"Settings" menu	13
3.4	"Help" menu	13

1 First Steps

1.1 Validity

This guide describes installation and operation of the configuration software for the Micropulse Transducer **BTL7-A/E501...**

The illustrations in the manual are for the B style, but the software can be used to display another style depending on which transducer is connected. Depending on the style, windows or menu elements may also be hidden if the connected transducer does not support the respective functions.

1.2 Symbols and conventions

Enumerations are shown in list form with bullet points.

Action instructions are indicated by a preceding triangle. The result of an action is indicated by an arrow.

- ▶ Action instruction 1.
- ⇒ Action result.

Cross-references indicate where additional information on the topic can be found (see "Settings" menu on page 13).

Buttons are set in angle brackets, e.g. confirm by pressing <Enter>.

Button combinations are buttons which are pressed simultaneously. These are joined by a plus sign, e.g. <Ctrl> + <O>.

Buttons are written in small caps, e.g. UPDATE TRANSDUCER.

Menu commands are joined with a greater than symbol, e.g. "Settings > Options" stands for the menu command "Options" from the "Settings" menu.



Note, tip

This symbol indicates general notes.

1.3 Overview

The Micropulse Configuration Tool allows Balluff transducers type **BTL7-A/E501...** to be quickly and simply configured. The results of the configuration are displayed online. The most significant features are:

- Online display of the current position of the magnet
- Graphical support for setting the functions and curves
- Display of information about the connected transducer
- Selectable number formats and units for display
- Resetting to factory settings is possible
- Demo mode without having a transducer connected

1.4 System requirements

- Standard PC
- Windows 2000/XP/Vista
- Screen resolution at least 1024 × 768 pixels
- 10 MB available hard disk space
- Java Runtime Environment (JRE) Version 1.4.2 or higher installed (download at <http://java.sun.com/getjava>)
- USB port



Installation requires administrator rights on the PC.

1 First Steps (cont.)

1.5 Installation

Installation is done using an Installation Wizard which guides you through the individual steps.

i The USB communication box should not be connected during installation. It is not set up until the Configuration Tool is first started.

- ▶ Be sure that the system requirements are met.
- ▶ Double-click on "Micropulse Configuration Tool Setup Vx.xx.xxx.msi"
 - ⇒ The Installation Wizard starts.
 - ⇒ The license agreement is displayed. The next step can only be carried out if the license agreement has been accepted.
- ▶ Accept license agreement and click on NEXT.
 - ⇒ The destination directory is displayed.
 - ⇒ Use BROWSE to select a different destination directory.
- ▶ Click on NEXT.
 - ⇒ The software is installed in the selected destination directory and entered in the Windows Start menu. A link is shown on the desktop.
 - ⇒ When this procedure is complete, the last page of the Installation Wizard is displayed. The check box "Launch Micropulse Configuration Tool" is activated.
- ▶ Click on FINISH
 - ⇒ Installation is complete, the Configuration Tool is started.

Setting up the USB communication box

The first time the Configuration Tool is started, the drivers for the communication box are installed.

- ⇒ The message "Connect communication box" is displayed.



- ▶ Connect the USB communication box to the PC using the USB cable.
- ▶ Click on OK.
 - ⇒ Installation of the communication driver is finished and the Start window is displayed.
 - ⇒ If a ready transducer is connected to the communication box, the transducer data are read and displayed.

You can click on the DEMO button at any time to switch to Demo mode without having the communication box connected.

Adjusting the Configuration Tool

The Configuration Tool is preset with standard settings. In the "Options" window you can adjust the Configuration Tool (see "Settings" menu on page 13).

- ▶ Select "Settings > Options".
 - ⇒ The "Options" window opens.

The following options can be adjusted:

- Response time for the online display
- Number format
- Units of length
- User interface language

i The Configuration Tool starts with the last made settings.

1.6 Uninstallation

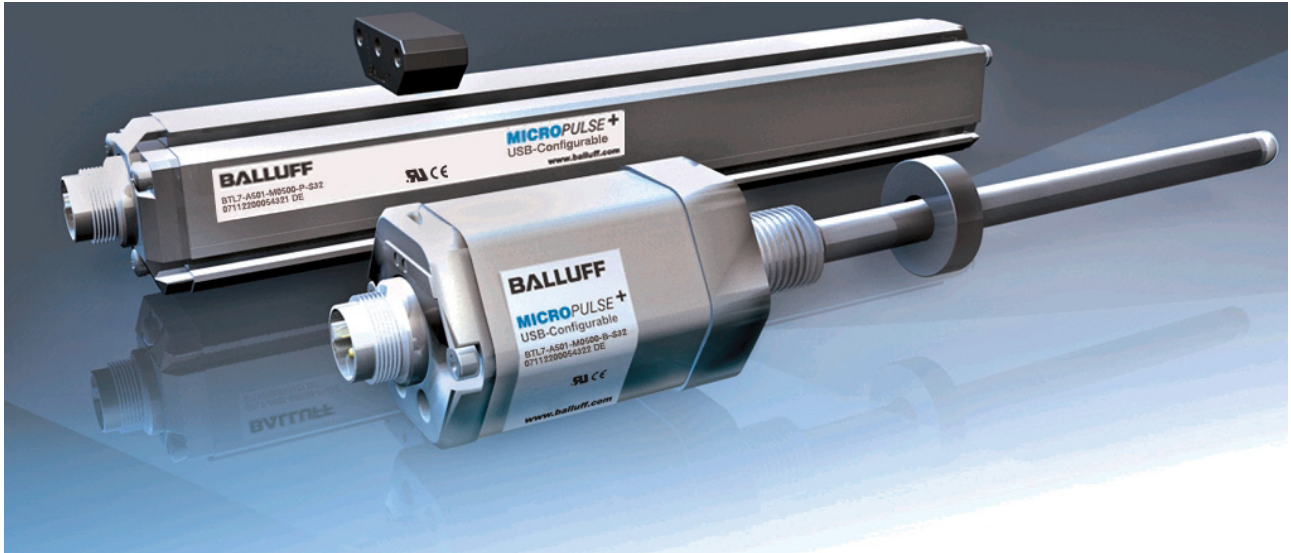
The software can be removed from the PC using the entry "Uninstall Micropulse Configuration Tool" in the Start menu.

1.7 Software update

The software does not have to be removed in order to install a new version. The Installation Wizard updates the existing version.

2 Windows and Tabs

2.1 The Start window



MICROPULSE[®]
Configuration Tool

Connecting...

Demo >>
Exit >>

Establish a connection

When starting, the Configuration Tool establishes the connection to the communication box and to the connected transducer. The data and configuration for the transducer are read and displayed in the main window.

The individual steps are shown in the start window:

Connecting... Connection to the communication box is established.

Opening... Connection to the transducer is established.

Reading... Transducer data are read.

If the action can be successfully completed, the main window is displayed.

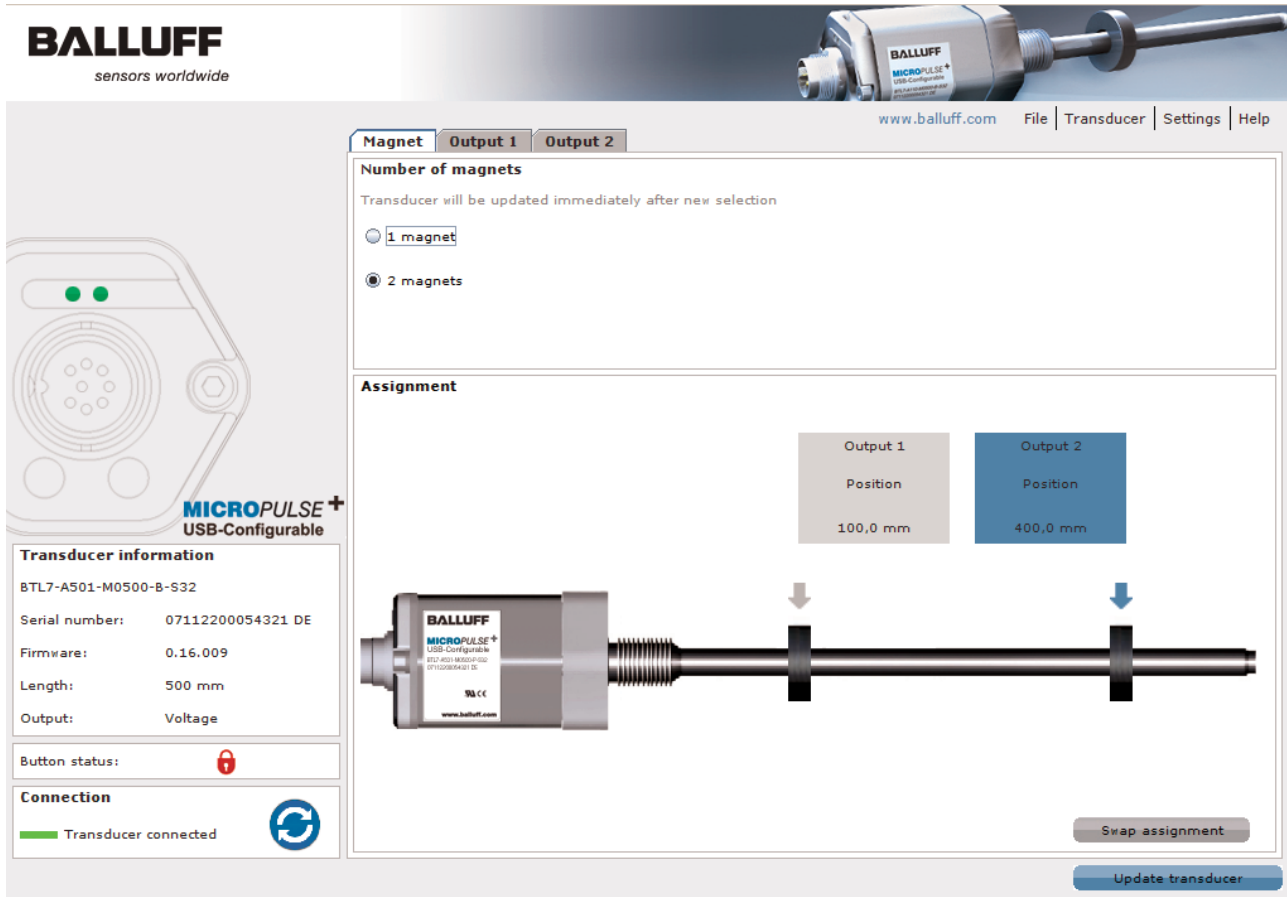
If no connection to the communication box or to the transducer can be established, a message appears on the start screen and the main window is not shown.

A connection cannot be made

- ▶ Check the USB connection, unplug and plug in the cable on the PC.
⇒ The Configuration Tool attempts again to establish the connection.
- ▶ Check connection between the transducer and the communication box, reconnect if necessary.
⇒ The Configuration Tool retries to contact the transducer.
- ▶ Switch to the Demo version (DEMO).
⇒ A self-running demo is started. No connected transducer is necessary.
- ▶ Quit program (Exit).
⇒ The Configuration Tool is ended.

2 Windows and Tabs (cont.)

2.2 The Main window





Online display of the LEDs (if applicable)

The LEDs indicate the operating states of the transducer. LED 1 (left) is assigned to Output 1, LED 2 (right) to Output 2.

LED 1/LED 2	Operating status
green	Normal function (magnet is within the measuring range)
flashing green	Communication running (Read, Update)
red flashing	Measuring range left (magnet is outside the measuring range)
red	Error (no magnet or magnet outside the limits)

Button status (if calibration device is usable)




-  Buttons on calibration device are locked.
-  Buttons on calibration device are unlocked.

Transducer information

The following transducer information is displayed:

- Type
- Serial number
- Firmware version
- Length: Nominal stroke length of the connected transducer
- Output: Voltage or current depending on model

Connection

-  This symbol is displayed when the communication box is active.
-  Transducer is connected.
-  Transducer is not connected.

Menu bar

The menu bar contains the menu commands. The menu commands are described in Section 3 "Menus" starting on page 12.

2 Windows and Tabs (cont.)

Update transducer

Changed values for a configuration are displayed in the Configuration Tool by means of blue numbers and letters and the UPDATE TRANSDUCER button is active. Clicking on UPDATE TRANSDUCER sends the information to the transducer. Transmission takes a certain amount of time, since all the parameters are sent.



The UPDATE TRANSDUCER button is only active if there are changed settings pending.

Tabs

Settings are made on the tabs.

Magnet: Select number of magnets. Online display of the configuration.

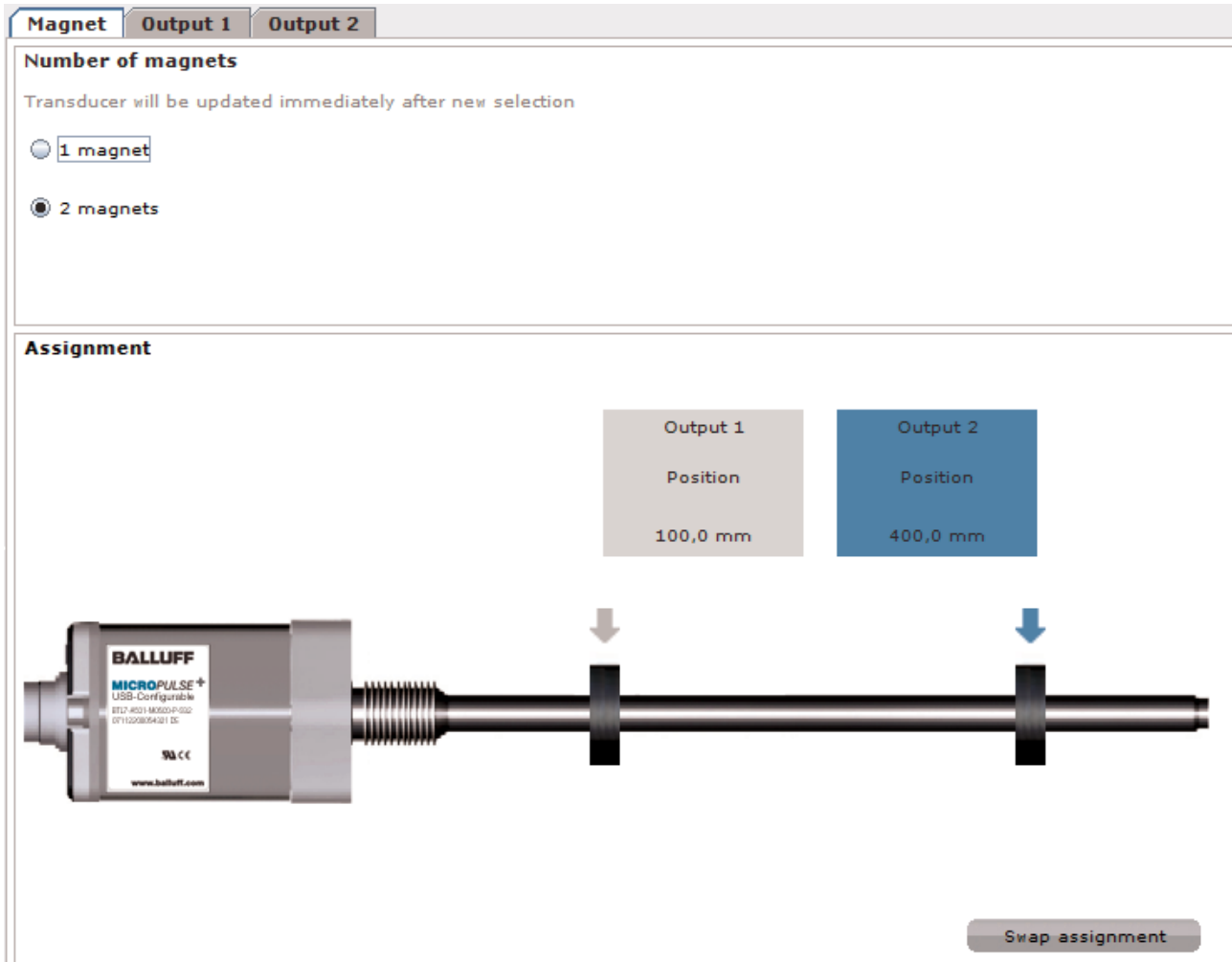
Output 1: Select function and set gradient.

Output 2: Select function and set gradient. The tab is only shown if the connected transducer has two outputs (depends on style).

The following sections describe the tab elements.

2 Windows and Tabs (cont.)

2.3 Magnet tab



Number of magnets

Select the number of magnets used.

UPDATE TRANSDUCER does not have to be clicked on, clicking on an option field immediately updates the transducer and the graphic.

i For the "2 magnets" setting there must be exactly two magnets on the transducer.

Assignment

Graphical display of the magnets and their output functions.

i The response time of the display is factory set to 1000 ms. This can be changed under "Settings > Options" to the capability of the PC.

When two magnets are used the output assignments are distinguished by color. By default the magnet which is closest to the start point is associated with Output 1, and the magnet closest to the end point with Output 2.

Swap assignment

Reverses the assignment of a magnet to an output. Exception: If the "Differential position" function is set for both outputs, the assignment cannot be reversed.

i If "1 magnet" is selected, both outputs are assigned to this magnet. The outputs are not distinguished by color and the assignment cannot be reversed.

2 Windows and Tabs (cont.)

2.4 Output 1 and Output 2 tabs

i This description applies to both windows, with the same options available.

The screenshot shows the configuration interface for Output 1 and Output 2. It includes a 'Function' section with radio buttons for Position, Velocity, Velocity (no sign), and Differential position. The 'Scaling' section has two rows of input fields for position (mm) and output (mV), with 'Read position' buttons. Below that are 'Upper limit' and 'Lower limit' fields. The 'Output characteristics' section features a graph of mV vs mm with two points marked '1' and '2'. The graph shows a linear relationship between position and output voltage, with a slight plateau at the end. Buttons for 'Copy from output 2' and 'Invert curve' are at the bottom.

Function

Position: Position in the measuring range.

Velocity: Velocity of the magnet, with the sign indicating the direction of motion. Movement from the start point to the end point is output with a plus sign, and movement from the end point to the start point with a minus sign.

Velocity (no sign): Velocity of the magnet, but the direction of motion cannot be read.

Differential position: Distance between two magnets. This can only be selected if two magnets are selected (see "Magnet" tab on page 9).

Scaling

The measuring range is determined by the start and end points. The associated current or voltage values determine the gradient of the curve.

1: Start point of the curve with associated output value.

2: End point of the curve with associated output value.

READ POSITION: The present position of the magnet is read (Teach-in).

i For setting the values see "Setting the curve" on page 11.

Setting scaling:

- ▶ For the start and end point, the present position of the magnet on the transducer is read (Teach-in).
- or
- ▶ Use the mouse to move the start and end point in the graphical display.
- or
- ▶ Set values using the spin controls.
- or
- ▶ Enter values and confirm by pressing <Enter>.

It may be necessary first to adjust the limits and the error value in order to set the scaling.

Limits and error value

Setting upper limit, lower limit and error value:

- **Measuring range/Limits:** The start and end points must lie on or within the limits and they must keep a minimum distance from the error value.
- **Error value:** The error value must lie on or outside the limits. A minimum distance from the start or end point of the measuring range must be kept.

The minimum distance of the error value from the measuring range is 500 mV or 400 µA. Entries which exceed the minimum distance are not accepted, and the previous value is retained.

Setting limits and error value:

- ▶ Set values using the spin controls.
- or
- ▶ Enter values and confirm by pressing <Enter>.

Output characteristics

Graphical representation of the curve as a function of the scaling:

Green: Valid measuring range.
Magnet in measuring range: LED is green on.

Red dashed: Outside the measuring range.
Magnet outside the measuring range: LED red flashing.

Red: Error, outside the limits.
Magnet outside the limits: LED red on.

i Offset and gradient are displayed when the mouse cursor is moved over the start point ① or end point ②.

Setting the curve:

Dragging the points with the mouse changes the curve and the associated values.

Note the following when making this setting:

- For "Position" the distance between the start point and end point must be at least 4 mm (0.15 inches).
- For "Velocity" the distance between the start point and end point must be at least 100 mm/s (4 inches/s).
- For the start and end point no identical voltage or current values are permitted.
- The minimum nominal stroke length of the transducer for the "Differential position" function is 90 mm.
- For the "Differential position" function the minimum distance between two magnets is 65 mm.
- The maximum configurable velocity is 10 m/s.

Copy from Output 2 (Copy from Output 1)

The output characteristics for the other output is copied to the currently processed output.

Invert curve

The gradient of the present curve is inverted.

i Values and settings in blue text indicate changes to the configuration. UPDATE TRANSDUCER sends the configuration to the transducer.


Check output:

The results of the configuration are displayed online on the "Magnet" tab.

- ▶ Click on UPDATE TRANSDUCER.
 - ⇒ The configuration is sent to the transducer
- ▶ Switch to "Magnet" tab
 - ⇒ The set function is displayed
 - ⇒ The movements of the magnets and the LED signals are shown online

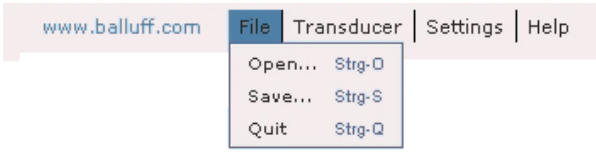
3 Menus

The menu commands can be invoked from the menu bar or directly using button combinations (shortcuts).



i Clicking on www.balluff.com opens the Balluff Web site. This requires that the PC be connected to the Internet.

3.1 "File" menu



Open <Ctrl> + <O>

Opens the "Open" dialog box. A saved configuration can be loaded (file extension "dat").

If the type is identical, a prompt appears and the transducer can be updated.

If the prompt is not confirmed or the type is not identical, the Configuration Tool switches to offline mode (see "Settings" menu on page 13).

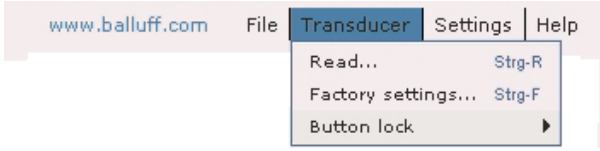
Save <Ctrl> + <S>

Opens the "Save" dialog box, a configuration can be saved as a file (file extension "dat"). The configuration currently located in the Configuration Tool is saved, regardless of whether it was sent to the transducer or not.

Quit <Ctrl> + <Q>

Quits the Configuration Tool. If the transducer is not yet updated, a prompt appears. Quitting can be canceled.

3.2 "Transducer" menu



Read <Ctrl> + <R>

The configuration of the connected transducer is read. The read must be acknowledged. The current configuration in the Configuration Tool is overwritten.

Factory settings <Ctrl> + <F>

Resets the configuration of the connected transducer to the factory settings. The Reset must be acknowledged.

Button lock (if the calibration device is usable)

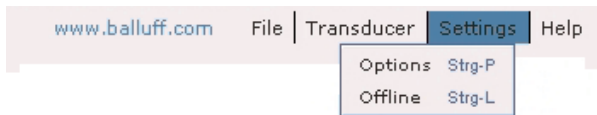
The function for manually setting the transducer using the calibration device can be locked, so that configuration is only possible using the PC software. The button status is shown in the main window.

i The menu item "Button lock" and the button status are only displayed if a transducer is connected which can be set using the calibration device.
The menu item is also only activated if the transducer is configured as a standard unit:

- One magnet,
- Both outputs are assigned the "Position" function,
- Identical measuring range for both outputs.

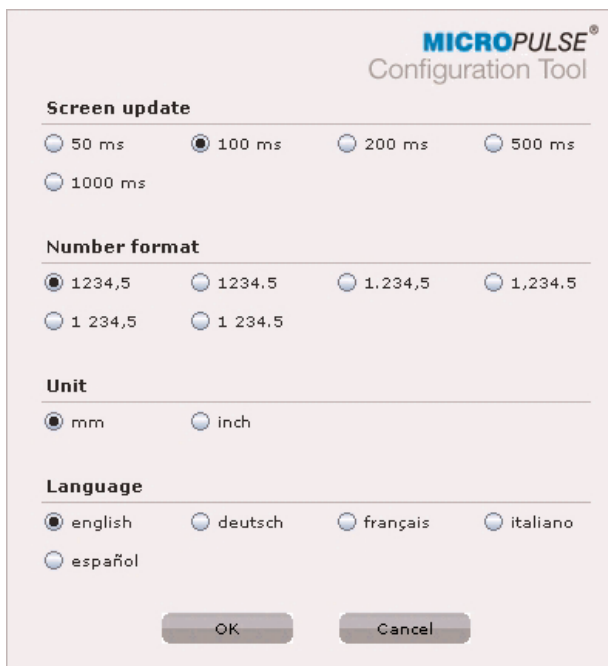
3 Menus (cont.)

3.3 "Settings" menu



Options <Ctrl> + <P>

Opens the "Options" dialog box.



Screen update: Time span in which the graphical representation of the magnets is updated. A short time span means a high data rate and presumes a capable PC.

Number format: Changes the number format of the representation.

Unit: Changes the length units of the representation.

Language: When the Configuration Tool is first started, those languages are preset which are used in the operating system. If the language of the operating system cannot be set, the Configuration Tool starts up in English. In the "Options" dialog box you can select the displayed languages for the Configuration Tool. The change is made without restarting the application.

Offline /Online <Ctrl> + <L>

Switches from online mode to offline mode and the reverse.

Online: The transducer is connected to the Configuration Tool and can be updated at any time. Data are continually sent, e.g. LED states and positions.

Offline: The transducer is not connected to the Configuration Tool. The present configuration can be edited or a configuration can be opened. You must switch to online mode to send the configuration.

Switching from "Online" to "Offline":

- ▶ Invoke "Settings > Offline" (<Ctrl> + <L>).
⇒ The Configuration Tool switches to offline mode.

Switching from "Offline" to "Online":

- ▶ Invoke "Settings > Online" (<Ctrl> + <L>).
⇒ The Configuration Tool switches to online mode.

If another transducer of the same type is connected in offline mode, a prompt with the following options appears when switching to online mode:

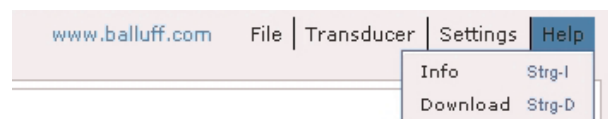
- Read: Read transducer configuration. The current configuration in the Configuration Tool is overwritten.
- Update: The transducer is updated with the current information in the Configuration Tool.
- Offline: Perform no action, remain in offline mode.



The current connection status is shown in the main window.

3.4 "Help" menu

The "Help" menu contains the following menu commands:



Info <Ctrl> + <I>

Shows the current software version number and the service contact data.

Download <Ctrl> + <D>

Opens an Internet connection for downloading the newest software version as well as the current manual. This requires that the PC be connected to the Internet.

 **www.balluff.com**

World Headquarters

Germany

Balluff GmbH
Schurwaldstrasse 9
73765 Neuhausen a.d.F.
Phone +49 7158 173-0
Fax +49 7158 5010
Service hotline
+49 7158 173-370
service@balluff.de

Subsidiaries

Australia

Balluff-Leuze Pty. Ltd.
Sensors for Automation
2 Rocco Drive
Scoresby VIC 3179
Melbourne
Phone 03/97 64 23 66
Fax 03/97 53 32 62

Austria

Gebhard Balluff
VertriebsgesmbH
Industriestrasse B16
2345 Brunn am Gebirge
Phone 0 22 36/3 25 21-0
Fax 0 22 36/3 25 21 46

Brazil

Balluff Controles
Elétricos Ltda.
Rua Francisco Foga, Nr. 25
Distrito Industrial
de Vinhedo
cep: 13280.000
Sao Paulo
Phone 0 19/3 8 76 56 11
Fax 0 19/3 8 76 27 63

Canada

Balluff Canada Inc.
2840 Argentia RD Unit 2
Mississauga On
L5N 8G4
Phone 9 05/ 8 16-14 94
1-8 00-9 27-96 54
Fax 9 05/8 16-14 11

Czech Republic

Balluff CZ, s.r.o
Pelušková 1400
198 00 Praha 9
Phone/Fax
02/81 94 00 99
Fax 02/81 94 00 66

France

Balluff SAS
ZI Nord De Torcy-Bat 3
Rue des Tanneurs - BP 48
77201 Marne La Vallée
Cedex 1
Phone 01/64 11 19 90
Fax 01/64 11 19 91

Great Britain

Balluff Ltd.
The Automation Centre
Finney Lane, Cheadle,
Cheshire SK8 3DF
Phone 0161 437 1234,
Fax 0161 436 1435

Hungary

Balluff Elektronika Kft
Pápai u. 55
8200 Veszprém
Phone 0 88/42 18 08
Fax 0 88/42 34 39

Balluff Elektronika Kft
Marketing Iroda
Vihar u. 22/4
1221 Budapest XXII
Phone/Fax 1/2 29 20 95

Italy

Balluff Automation s.r.l.
Corso Giambone 63
10134 Torino
Phone 0 11/3 15 07 11
Fax 0 11/3 17 96 65,
3 17 01 40

Japan

Balluff Co. Ltd.
Ishikawa Bldg. 2nd Fl.
1-5-5 Yanagibashi,
Taito-Ku
Tokio 111-0052
Phone +81 03 5833-5440
Fax +81 03 5833-5441

Poland

Balluff Sp. z o.o.
ul. Smolenskigo 4-7
01-698 Warszawa
Phone 22/8 33 15 64,
8 33 15 82, 8 33 58 60
Fax 22/8 33 09 69

Singapore

Balluff Asia Pte. Ltd.
BLK 1004 Toa Payoh
Ind. Park
Lorong 8, #03-1489
Singapore 319076
Phone 62 52 43 84
Fax 62 52 90 60

Switzerland

Balluff Sensortechnik AG
Riedstrasse 6
8953 Dietikon
Phone 043/322 32 40
Fax 043/322 32 41

USA

Balluff Inc.
8125 Holton Drive
Florence,
Kentucky 41042-0937
Phone 8 59/7 27-22 00,
1-8 00-5 43-83 90
Fax 8 59/7 27-48 23
applications@balluff.com