Manual

Software FLB/TLB-2X-V1.0-Scope

(PC-Software for Microsoft® Windows® XP, 2000, NT® 4.0, Me, 98, 95)

for electronic control unit FLB-CON2-2X
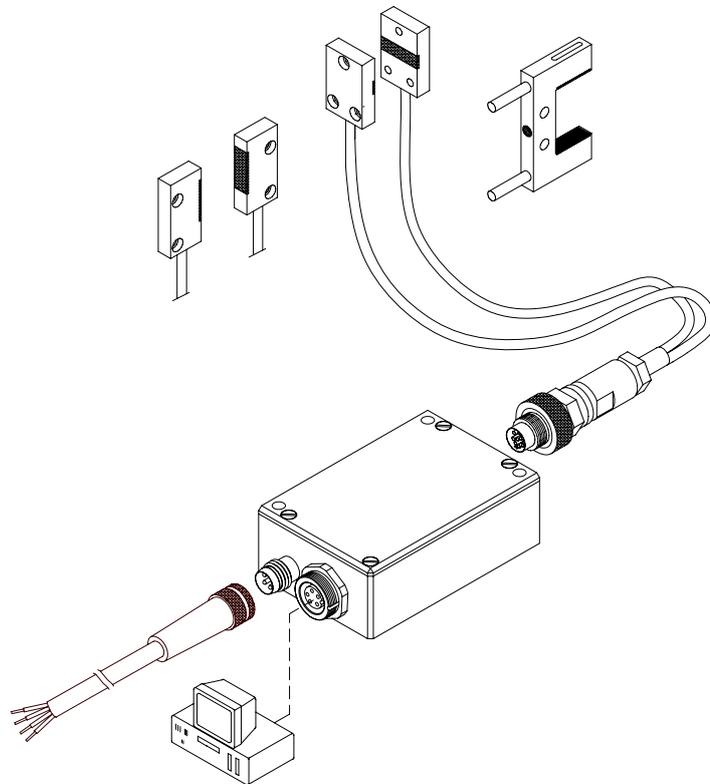
This manual describes installation and commissioning of the PC software for the electronic control unit FLB-CON2-2X.

Parameters and measured values can be exchanged between the PC and the electronic control unit FLB-CON2-2X through the RS232 interface. All the parameters can be stored in the non-volatile EEPROM of the electronic control unit through the serial RS232 interface.

1   Installation of the FLB/TLB-2X-V1.0-SCOPE software

Hardware requirements for successful installation of the FLB/TLB-2X-V1.0-SCOPE software:

- IBM PC AT or compatible
- VGA graphics
- Microsoft® Windows® XP, Me, 2000, 98, NT® 4.0 or 95
- Serial RS232 interface at the PC
- Microsoft-compatible mouse
- Cable for the RS232 interface (cab-las5/PC)
- CD-ROM drive
- 5 MByte of free hard disk space

Please install the FLB/TLB-2X-V1.0-SCOPE software as described below:

The FLB/TLB-2X-V1.0-SCOPE software can only be installed under Windows. Windows must therefore be started first, if it is not yet running.

1.	The software can be installed directly from the installation CD-ROM. To install the software, start the SETUP program in the INSTALL folder of the CD-ROM.
2.	The installation program displays a dialog and suggests to install the software in the C:\"FILENAME" directory on the hard disk. You may accept this suggestion with **OK** or [**ENTER**], or you may change the path as desired. Installation is then performed automatically.
3.	During the installation process a new program group for the FLB/TLB-2X-V1.0-SCOPE software is created in the Windows Program Manager. In the FLB/TLB-2X-V1.0-SCOPE program group an icon for starting the software is created automatically. When installation is successfully completed the installation program displays "Setup OK".
4.	After successful installation the software can be started with a left mouse button double-click on the FLB/TLB-2X-V1.0-SCOPE icon.

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2 Operation of the FLB/TLB-2X-V1.0-SCOPE *software*

When the FLB/TLB-2X-V1.0-SCOPE *s*oftware is started the following window appears on the Windows interface:

Please read this chapter first before you start to adjust and parameterise the FLB-CON2-2X sensor system.
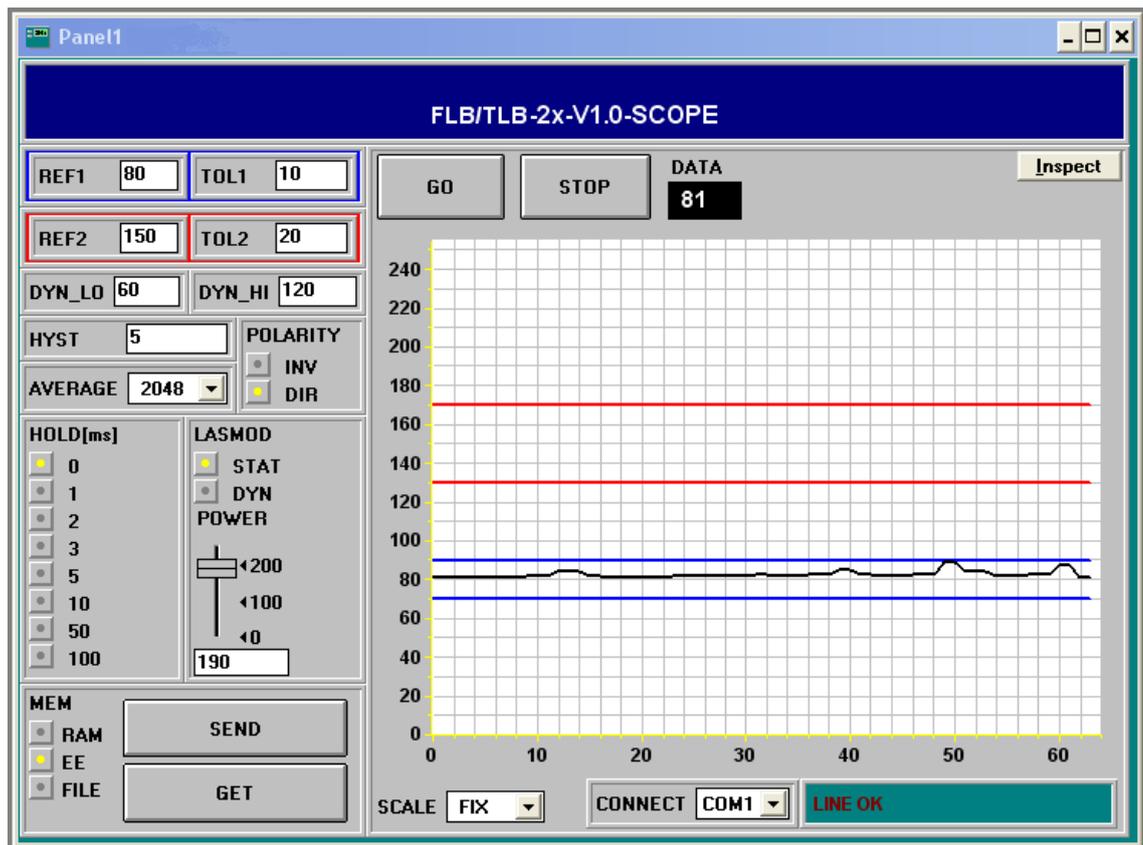
The function of the individual FLB-CON2-2X control elements will be explained on the following pages:

| REF1 | 100 | TOL1 | 10 |

REF1 and TOL1 setting:
Entering a value in the REF1 edit-box teaches the reference for the first window.
Entering a value in the TOL1 edit-box applies a ±tolerance around this value.

| REF2 | 150 | TOL2 | 20 |

REF2 and TOL2 setting:
Entering a value in the REF2 edit-box teaches the reference for the second window.
Entering a value in the TOL2 edit-box applies a ±tolerance around this value.

| DYN_LO | 5 | DYN_HI | 250 |

DYN_LO and DYN_HI:
The two function fields DYN_LO and DYN_HI are used for setting a lower and higher dynamic range limit for the sensor. When the sensor is within the dynamic range (DYN-LO < DATA < DYN-HI), the dynamic check output (green LED at the sensor housing) is active.

| HYST | 10 |

HYST:
The hysteresis setting value lies below or above the current reference window (REF1 ± TOL1, REF2 ± TOL2). The switching hysteresis affects the corresponding digital output. It increases the signal stability at the digital output of the electronic control unit FLB-CON2-2X.

POLARITY
INV
DIR

POLARITY:
Determines the polarity change of the digital outputs when the value rises above or falls below the respective thresholds.

AVERAGE 1024

AVERAGE:
Determines the number of measured values (raw data) over which the sensor signal arriving at the receiver is averaged (noise suppression).

MEM :
This function key group serves for parameter exchange between PC and FLB-CON2-2X electronic control unit through the serial RS232 interface.

SEND: When the SEND button is clicked, all the currently set parameters are transferred between PC and FLB-CON2-2X or sent to an output file. The target of the respective parameter transfer is determined by the selected button (RAM, EE, or FILE).

GET: The currently set values can be interrogated from the FLB-CON2-2X by clicking on the GET button. The source of data exchange is determined by the selected button (RAM, EE, or FILE).

RAM: The current parameters are written into the RAM memory of the FLB-CON2-2X, or they are read from the RAM, **i.e. these parameters are lost when the voltage at the FLB-CON2-2X is switched off**.

EE: The current parameters are written into the non-volatile memory of the EEPROM in the FLB-CON2-2X, or they are read from the EEPROM, **i.e. the parameters in the internal EEPROM are stored when the voltage at the FLB-CON2-2X is switched off**.

FILE: A click on this button opens an info field with the file name of the current parameter file.

PLEASE NOTE: The current parameters are only stored in the current output file, or retrieved from the current output file, when the SEND or GET button is activated with a mouse click.
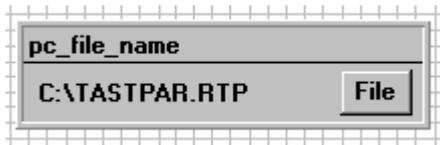
pc_file_name:
This info field displays the currently selected file name of the output file with the corresponding directory path.
The current parameters are stored (SEND button) or retrieved (GET button) in or from the output file displayed here.

If another output file should be accessed, the file button must first be activated with the mouse pointer. Then another dialog field will open, where an existing output file can be selected, or where a file name for a new output file can be entered.
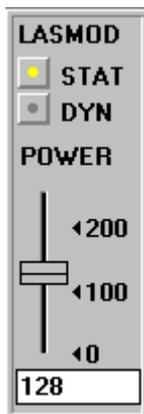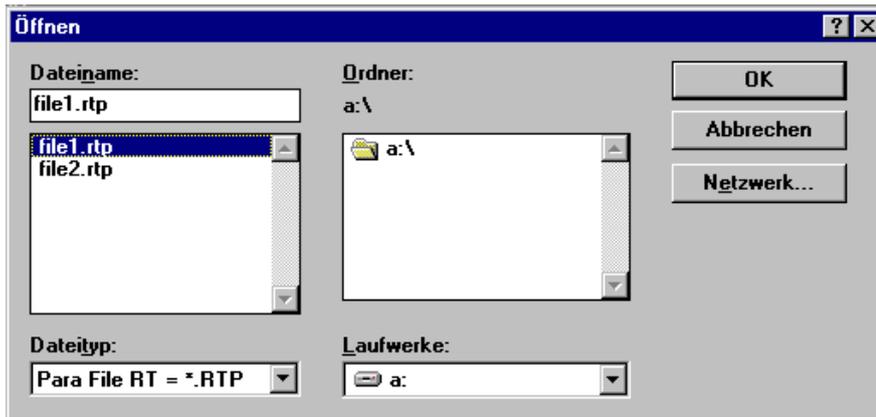
LASMOD setting:
In this function group the laser operating mode and the laser power can be adjusted at the sensor that is connected to the electronic control unit.

STAT:
With this selection button the laser power is constantly kept at the value that is set at the slider.

DYN:
The laser power is automatically and dynamically adjusted by means of the amount of radiation reflected from the object. By way of dynamic adaptation of the laser power the µC-software tries to keep the current maximum value that is detected at the receiver in the range of 100 to 200 A/D-values. In this operating mode the POWER slider is ineffective.

POWER:
With this slider the laser power is adjusted to a fixed value between 0 and 255 in STAT mode. Any change only becomes effective after the SEND button is pressed.

HOLD:

The FLB-CON2-2X operates with minimum scan times in the range of 100µs. For this reason most of the SPCs that are connected at the digital error output TOLOUT have difficulties with the safe detection of the resulting short changes of switching states.

By activating the respective HOLD selection button a pulse lengthening at the digital output of the FLB-CON2-2X of up to 100 ms can be set.
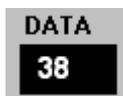
DATA:

Displays the current averaged value of the sensor frontend. This value is also visualised in the graphic display window with the corresponding reference windows REF1 ± TOL1 and REF2 ± TOL2.

SCALE setting:

These selection buttons are used for setting the scaling type of the y-axis.

FIX: Fixed scaling of the y-axis (0...255 – results from 8-bit A/D conversion)

AUTO: Automatic adaptation of y-axis scaling to the current measured values (zoom function).

Inspect button:

This button fixes the current screen of the display window. A dialog box then opens and offers different possibilities for further processing of the display window under Windows. The individual function elements of the inspect button are excellently suited for documentation purposes.

Print: Prints the current display window.

Copy Page: Copies the current display window to the Windows clipboard, from where it can be inserted and further processed in various Windows programs (documentation in the word processor, graphics software, spreadsheet, ...).

Zoom: For zooming in or zooming out the display window.

The stable function of the RS232 interface (LINE OK status message) is a prerequisite for measured value transfer from the PC to the FLB-CON2-2X electronic control unit.

The software starts with the standard configuration COM1 and the respective communication status.

CONNECT [COM1 ▼] | TRY SER LINE

The software provides the following status messages:

TRY : The PC tries to establish a connection with the FLB-CON2-2X through the respective selected interface.

LINE OK: The connection between PC and FLB-CON2-2X could be established successfully.

TIMEOUT: A connection between PC and FLB-CON2-2X could not be established, or the connection is faulty.
In this case it should first be checked whether the FLB-CON2-2X is supplied with voltage, and whether the RS232 interface cable (cab-las5/PC) is correctly connected.
If the interface assignment at the PC is not known, a selection can be made from COM1, COM2, COM3, and COM4 by clicking on the selection field [↓] in the CONNECT group.

NOT AVAIL: The selected interface is not available at the PC.

Appendix:

Technical Data: FLB-CON2-2X	
Voltage supply	+12VDC ... +30VDC, reverse-polarity protected, overload protected
Current consumption	with sensor: typ. 80 mA
Operating temperature range	-20°C to +60°C
Storage temperature range	-20°C to +85°C
Housing	aluminum, anodised in blue
Housing dimensions	LxWxH ca. 60 mm x 40 mm x 22 mm (without connector)
Enclosure rating	IP 64
Outputs (REF1, REF2)	2x digital (adjustable under Windows®): npn n.c. / pnp n.o.; pnp n.c. / npn n.o.
Serial interface	RS232, parameterisable under Windows®
Switching state indication	by means of an orange LED (integrated in the M8 connector)
Pulse lengthening	adjustable under Windows® (0 ms ... 100 ms)
Sensitivity	adjustable under Windows®
Type of connector	4-pole M8 connector (PLC), 5-pole female connector type Binder 712 (PC), connector for FLB sensor frontend
Max. switching current	200 mA, short-circuit proof
Switching frequency	Depends on AVERAGE setting: AVERAGE Switching frequency 1 32 kHz 2 16,2 kHz 4 9,19 kHz 8 4,98 kHz 16 2,6 kHz 32 1,3 kHz 64 677 Hz 128 340 Hz 256 170 Hz 512 85 Hz 1024 42,7 Hz 2048 21,4 Hz 4096 10,7 Hz 8192 5,35 Hz 16384 2,67 Hz 32768 1,33 Hz
EMC test acc. to	IEC - 801 .. CE
Suitable sensor frontends	FLB-F-..., FLB-H-..., FLB-V-...

CONNECTOR ASSIGNMENT FLB-CON2-2X

4-pole M8 connector (connecting cable: cab-M8/4-g-2) **FLB-CON2-2X / PLC**		
Pin-No.	**Color**	**Assignment:**
1	brown	+U_b (+12VDC ... +30VDC)
2	white	DIGITAL OUTPUT (TOL2)
3	blue	0V (GND)
4	black	DIGITAL OUTPUT (TOL1)
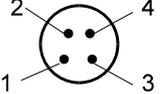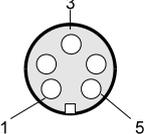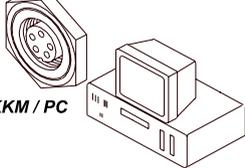
5-pole female connector (connecting cable: cab-las5/PC) **FLB-CON2-2X / PC**		KKM / PC
Pin No.:		**Assignment:**
1		0V (GND)
2		TX0
3		RX0
4		not connected
5		not connected