



User manual

Supplement to the original user manual item no. 08903979 Issued November 2020 Item no. 08904518 OETIKER Schweiz AG



Contents

1	Scope			3	
2	Requirements for the installed safety light curtain3				
3	Com	ompatible accessories			
4	Com	Commissioning			
	4.1	Cabling]	5	
	4.2	Installir	ng the safety light curtain	6	
5	Func	Functional testing during commissioning			
	5.1	Testing the safety light curtain			
	5.2	Testing the Emergency Stop			
6	Oper	Operation			
	6.1	Initializ	ation	8	
	6.2	Verifying the closing force			
	6.3	Crimping force monitoring verification		. 12	
	6.4	Setting the force offset to zero			
	6.5	Tightening clamps			
	6.6	Friction test			
	6.7	Manual movement			
7	Indu	strial co	mmunication	17	
8	Арре	endix		. 18	
	8.1	1 Flowchart1			
		8.1.1	Tightening cycle with light curtain	. 19	
		8.1.2	Verification of tensioning force with light curtain	. 22	
		8.1.3	Zero offset with light curtain	. 24	
		8.1.4	Friction test with light curtain	. 26	
		8.1.5	initialization with light curtain	. 28	
9	Help	and Su	pport	. 30	



1 Scope

This supplement is valid for all OETIKER FAST 3000 with the Safety Light Curtain type LC. In this type the drive of the OETIKER FAST 3000 is switched off by means of a safety relay.

This supplementary user manual is valid only in conjunction with the original user manual of the OETIKER FAST 3000, item no. 08903980. Comply with all safety instructions.

Available OETIKER FAST 3000 complete systems:

Description	Item number
OETIKER FAST 3000 + CFM - Ethernet/IP, LC	13500294
OETIKER FAST 3000 + CFM - PROFINET, LC	13500295

Installation of the "Light Curtain" option does not change the purpose for which the OETIKER FAST 3000 for is intended; the Declaration of Conformity for this type remains in force.

2 Requirements for the installed safety light curtain

A two-channel safety light curtain must be used in compliance with the following standards:

- EN ISO 13849-1:2015: at least Cat. 3, PL d
- EN 62061+A1:2009: at least Cat. 3, SIL 2

Available safety light curtain:

Keyence GL-R (GL-R08H)

Response time of the OETIKER FAST 3000 for calculation of the safety distance of the safety light curtain:

0.15 s



3 Compatible accessories

The following components should be used for operation of the OETIKER FAST 3000 with safety light curtain:

Component	Description (DE)	Description (EN)	Item number
Complete system	OETIKER FAST 3000 + CFM - EtherNet/IP, LC	OETIKER FAST 3000 + CFM - EtherNet/IP, LC	13500294
	OETIKER FAST 3000 + CFM - PROFINET, LC	OETIKER FAST 3000 + CFM - PROFINET, LC	13500295
Control cabinet	Schaltschrank kpl EtherNet/IP, LC	Control cabinet, cpl EtherNet/IP, LC	13500290
	Schaltschrank kpl PROFINET, LC	Control cabinet, cpl PROFINET, LC	13500289
2-hand dongle	Zweihand Dongle LC	Two-hand dongle LC	13500297
Dongle E-Stop (corre- sponding to the standard type)	Zweihand Dongle dünn	Two-hand dongle, thin	13500283
Tool mechanism (corre- sponding to the standard type)	Verstemm-Trennwerkzeug + CFM	Crimping cut-off tool + CFM	13500269
Two-hand control	Zweihandschaltung LC	2-hand control LC	13500298
Touch panel, cpl. (corre- sponding to the standard type)	Bedienpanel kpl.	Touch panel, cpl.	13500278
Verification Unit (when a safety light curtain is used)	Verifizierungseinheit PG135 arretierbar	Verification Unit PG135, lockable	13500299



4 Commissioning

4.1 Cabling

Connection of the light curtain, see circuit diagram no. 154534 (for Ethernet/IP) and 155553 (for Profinet).

- Connect the power supply and the signal of the 2-channel sensor to the port 350X0, using the plug supplied:
- Power supply + 24V: Pin K
- Power supply 0 V: Pin M
- Signal channel 1: Pin B
- Signal channel 2: Pin J





Fig. 1 Cabling of the safety light curtain

Wire the light curtain as shown in the documentation for the light curtain.



Commissioning

4.2 Installing the safety light curtain

NOTES

- The safety distance of the safety light curtains must be determined by the integrator.
- Comply with EN ISO 13855:2010.

Response time of the OETIKER FAST 3000 for calculation of the safety distance of the safety light curtain: 0.15 s



Functional testing during commissioning

5 Functional testing during commissioning

NOTE

- The operating company of the system must ensure that the safety light curtain and the emergency stop circuit operate correctly.
- The function of the safety relay can be checked during the IO test (Fig. 2).

CETIKER		2019\02\15 12:02:03	User: Superuser (
Operating mode IO T	est Standart			ر •
Laboratory mode	Manual drive	Free state pulling force	IO - test	
Switch emergency stop	Switch start 1	Switch band locking	Light curtain	
Switch Acknoledge	Switch start 2	band sensor existing		
Switch Initialization	Foot pedal	Holdup sensor	power enable ext.	
PLC / Automatic	► Waiting) for clamp and fixation	Cycle counter Service counter	162 99190

Fig. 2 I/O test

5.1 Testing the safety light curtain

- In the GUI (Graphical User Interface), navigate to the graphical I/O test.
- Monitor the status of the input to the safety light curtain.
- To acknowledge the status, press the Init button.

5.2 Testing the Emergency Stop

- Navigate to the graphical I/O test.
- Monitor the status of the input to the emergency stop.
- To acknowledge the status, press the Init button.



6 Operation

6.1 Initialization

Start the initialization by pressing the Init button (Industrial Communication Init command).

If the safety light curtain triggers a Stop, the initialization routine will be interrupted. An appropriate message will appear on the GUI.

Acknowledge the message:

Press the Init button again.

Initialization will now restart. For the sequence see also the flowchart (initialization), section 8.1.5:



Fig. 3 Message window if the safety light curtain is interrupted during initialization



6.2 Verifying the closing force

NOTE

To check the correct operation of the force load cell, verify the measured force at least once a week, using an Oetiker CAL 01.

If the force is set to 1850 N, the force measured by the OETIKER CAL 01 must be within a tolerance of \pm 100 N of that value.

The tensioning strap should be replaced after about 50 verifications.

Setting with CAL 01: SKS mode: hold-ME-EL / average (see user manual OETIKER FAST 3000)

1. Activate the verification.

- Switch to the "Settings" tab.
- In order to access force verification mode you must be logged in.
- 2. Press the "Force verification" button.
- 3. Press the "Pulling unit" button.
- 4. Press the "Force verification" button.



Fig. 4 "Settings" tab

Inserting the closing force verification unit (1) 1. Pull the locking hook (2) back.

- 2. Insert the end of the tensioning strap fully into the crimping cut-off head.
- 3. Engage the locking hook (2) and the release it.



Fig. 5 Inserting the closing force verification unit



Operation

The cams of the verification unit must be correctly positioned in the bores of the crimping cut-off head. The locking hook must be engaged.





- Fig. 6 Positioning the locking hook OK
- 4. Press the button at the top of the handle.

Fig. 7 Positioning the locking hook - wrong



Fig. 8 Button at the top of the handle



Operation

- 5. Press on "Target force" to change the verification force to the desired value.
- 6. Press on "Verification activation".
- 7. Input the force measured by the CAL 01 into the "Ext. Force value "CAL")" field. The value that is input will be saved in the verification log.
- 8. Press "Quit routine"). The values are now written to the relevant log file.
- Remove verification unit (1) from the tool (see Fig. 10).



Fig. 9 "Settings" tab

Removing the closing force verification unit (1)

- 1. Pull the locking hook (2) back.
- 2. Pull the verification unit (1) out of the crimping cutoff head.



Fig. 10 Removing the closing force verification unit



Operation

OETIKER FAST 3000 Safety light curtain

If the safety light curtain triggers a Stop, the "Verifying the closing force" routine will be interrupted. An appropriate message will appear on the GUI.

Acknowledge the message:

Press the OK field.

The notification is acknowledged, the window closes.

Lever moves to the insertion position and the tensioning unit moves to the start position. The verification value is not determined and is set to the value 0 N. For the sequence see also the flowchart (verification of the tensioning force), section 8.1.2:



Fig. 11 Message window for closing force verification and interruption by the safety light curtain

6.3 Crimping force monitoring verification

For verification of the crimping force monitoring there is no difference in the procedure with or without the safety light curtain. Tensioning unit is not required.



6.4 Setting the force offset to zero

If the safety light curtain triggers a Stop, the "Zero balance" routine will be interrupted. An appropriate message (Fig. 12) will appear on the GUI.

Acknowledge the message:

Press the OK field.

The notification is acknowledged, the window closes.

Lever moves to the insertion position and the tensioning unit moves to the start position. For the sequence see also the flowchart (Setting the force offset to zero), section 8.1.3:



Fig. 12 Message window for setting the force offset to zero and interruption by the safety light curtain



Operation

6.5 Tightening clamps

If the safety light curtain triggers a Stop, the "tightening cycle" routine will be interrupted.

An appropriate message will appear on the GUI.

Resuming the "tightening cycle" routine:

Restart the routine by pressing the start buttons or via the bus.

On resumption, the process is resumed at a position depending on the point at which it was interrupted. This position may not necessarily be the same point as the one at which the process was interrupted.

If at interruption by the safety light curtain a threshold value of the tensioning force was exceeded, the tightening will be evaluated as defective.

Perform a restart by pressing the start buttons or via the bus.

For the sequence see also the flowchart (tightening cycle), section 8.1.1:



Fig. 13 Message window for the tightening cycle and interruption by the safety light curtain



Operation

6.6 Friction test

If the safety light curtain triggers a Stop, the "Friction test" routine will be interrupted.

An appropriate message will appear on the GUI.

Acknowledge the message:

- Press the OK field.
- The notification is acknowledged, the window closes.

If the interruption occurs before the tensioning unit has reached the end position, the friction force value will be set to 0 N. For the sequence see also the flowchart (Friction test), section 8.1.4:

CETIKER		2019\02\15 12:12:44	O User: Sup	eruser 💭 🎇
Operating mode				¢
Laboratory mode	Manual drive	Free state pulling force	IO - test	1
Start free state p. f.	Targe Spee	Light grid device confirm with OK! OK		Maximal force 0 N Pulling unit actual posi - 2.7 mm
PLC / Manual	X War_10	07 Stop about light curtain	Cyc Ser	cle counter 163 vice counter 99189

Fig. 14 Message window for the friction test when the safety light curtain is interrupted



6.7 Manual movement

There is no change regarding the lever.

The tensioning unit must be energized and initialized in order that the operator can move it manually.

Press the "Power Axis".

The tensioning unit is now energized.

CETIKER	2019\02\15 12:13:31	O User: Superuser 🖓 🚟
Operating mode		ر ه
Laboratory mode	Manual drive Free state pulling force	IO - test
Motion link	Powered 🗸 Referenced 🗸	Pulling unit Powered × Referenced ✓
Actual position		-0.4 mm
PowerAxis		PowerAxis
Initializing	Crimp position	Initializing Service Pos.
Home position	Cutting position	Start pos.
Insert position	Safe cutting position	Eject position
PLC / Manual	X War_107 Stop about light curtain	Cycle counter 163 Service counter 99189

Fig. 15 Energizing the tensioning unit drive



The drive will be stopped if during the movement of the tensioning unit the safety light curtain triggers a stop. An appropriate message will appear on the GUI.

Acknowledge the message:

Press the OK field.

The notification is acknowledged, the window closes.



Fig. 16 Message window for setting the force offset to zero and interruption by the safety light curtain

The movement of the lever will not be stopped if during the movement of the lever the safety light curtain is interrupted.

7 Industrial communication

The new list for communication must be used (see separate document).

- Status word1 Bit 21: The "Status Restart Light Curtain" is no longer implemented directly. Technically the individual channels of safety light curtains are no longer evaluated; instead the status of the safety light curtain safety relay is monitored. As soon as the tightening cycle has been stopped due to the safety light curtain signal and the routine "Stop by light barrier" is ready, the signal is set by the OETIKER FAST 3000 to process a restart.
- Status word1 Bit 22: Status of the emergency stop circuit safety relay
- Status word1 Bit 23: "Status E-Stop" is omitted, since the new concept no longer evaluates the individual channels in the PLC but evaluates the emergency stop circuit safety relay.



8.1 Flowchart

Legend

Symbol	Meaning
	Start / end the routine
	Action for which the light curtain is inactive
	Decision whilst the light curtain is inactive
	Action for which the light curtain is active
	Decision whilst the light curtain is active
	Several scenarios are possible, light curtain is active
	Sub-program: Light curtain active
	Information
₫⊳	Interrupt (light curtain): Jump to the sub-program with return
>	Interrupt (light curtain): Jump to the sub-program without return



















8.1.2 Verification of tensioning force with light curtain



OETIKER FAST 3000 Safety light curtain











OETIKER FAST 3000 Safety light curtain







8.1.4 Friction test with light curtain









8.1.5 initialization with light curtain





Help and Support

9 Help and Support

If you need help or technical support, contact your local Oetiker Service Center. Further information can be found at www.oetiker.de.

Headquarters Switzerland

Tel.: +41 44 728 55 55 info.ch@oetiker.com

Germany

Tel.: +49 76 42 6 84 0 info.de@oetiker.com **USA** Tel.: +1 989 635 3621 info.us.marlette@oetiker.com China Tel.: +86 22 2697 1183 info.cn@oetiker.com Japan Tel.: +81 45 949 3151 info.jp@oetiker.com India Tel.: +91 77210 15261 64 info.in@oetiker.com