Instructions

TSG

ThyssenCAN Adapter

Module

Documentation history

No.	Ver.	Version	Editor
1	1.0	06/04/22	FH
2	1.01	24/05/22	FH
3	1.02	23/11/22	FH
4	1.03	23/05/23	FH
5	1.04	25/05/23	FH
6	1.05	20/11/23	FH

Get the operating instruction in **English** by scanning the QR code.

Demandez les instructions d´instruction de montage en **français**, en scannant le code QR.

Langer & Laumann Ing.-Büro GmbH
Wilmbsberger Weg 8
48565 Steinfurt
Germany

Tel.: +49 (2552) 92791 0

www.lul-ing.de
info@lul-ing.de

File: 1.20.92620 Dokumentation TSG V4 ThyssenCAN_Adapter_Modul_V1.05_en.docx
Print date: 21/11/2023 09:10:00

Contents

1 Basic information

1.1 Copyright

We reserve all rights to this document. Without our prior consent is not permitted to copy it, make it available to third parties or otherwise use it without authorisation. Changes require our express prior written consent.

1.2 Notes in the manual

All notes in the instructions must be observed.

1.3 Informal measures by the installer

The installer of the system must ensure that he himself attends a training course. He must immediately inform the manufacturer/supplier of missing or defective parts.

1.4 Requirements for installation personnel

Persons responsible for installation and maintenance should be informed about the generally applicable safety and occupational hygiene regulations. They should be familiar with Langer&Laumann products. The installation tools should be functional and the measuring instruments should be checked continuously.

1.5 Explanation of symbols

WARNING:
You are advised of a possible impending danger that can lead to serious physical injuries or death.

CAUTION:
You are warned of a possible impending danger that can lead to minor physical injuries. You will also find this signal for warnings of property damage.

NOTE:
You will be informed about applications and other useful information.

2 General

By using the TSG ThyssenCAN module, the *Langer & Laumann Ing. Büro GmbH door drive* can be connected to the Thyssen bus of the **Thyssen F5, F9, F12, RT301, DOD_V1.xx, DOD_V112.xx** device series and the **Fermator VF7+ CAN**. A maximum of 2 doors per car can be operated.

CAUTION:
All work on the door control must be carried out when the system is de-energised.
If the bus connection is interrupted during operation, this can lead to **grave damage to the electronics of the lift controller**.

3 Interface

The CAN interface of the TSG ThyssenCAN module has status LEDs, is galvanically isolated and can be terminated using a slide switch.
The module also has an input and an output socket.

The door number can be selected using a parameter from 1-2.

4 Hardware

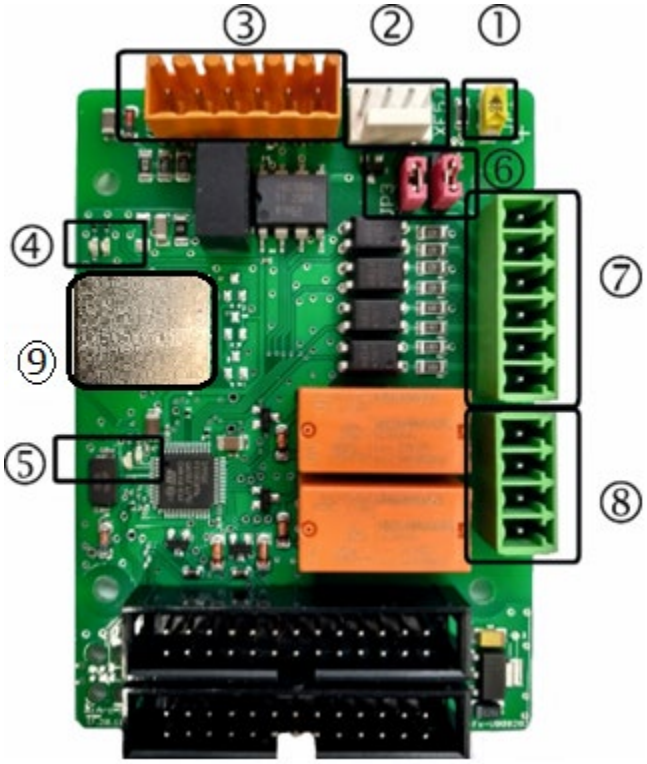

Fig. 1: TSG Thyssen Fx module

No.	Name	Description
①	JP1	Slide switch (see chapter 5.2Bus termination setting / page 13)
②	XF5	CAN bus connection (see Fig. 5: 4-pin CAN connector XF5 / page 8)
③	XF4	24V CAN bus connection (see Fig. 4: 6-pin CAN connector XF4 / page 8)
④	LED3 LED4	CAN Run (green) (see chapter 6.3 CAN_Run / page 18) CAN error (red) (see chapter 6.4CAN_Error / page 18)
⑤	LED1 LED2	Error (red) (see chapter 6.2Error (LED / page 17) Check (yellow) (see chapter 6.1Check (LED / page 17)
⑥	JP2 JP3	Jumper 2 and Jumper 3 (see chapter 4.2Supply voltage for discrete control / page 9)
⑦	XF2	Input (see Fig. 2: Input terminal XF2 / Page 7)
⑧	XF3	Output (see Fig. 3: Output terminal XF3 / Page 7)
⑨	XD26	Ethernet socket (see Fig. 6: Ethernet connector (RJ45) / Page 8)

4.1 Connector ThyssenCAN module

Fig. 2: Input terminal XF2

Pin	Signal	Description	
		Variant1	Variant2
XF2 - 1	Power supply In	24V	0V
XF2 - 2	Power supply Out	0V	24V
XF2 - 3	TU	Close	
XF2 - 4	TO	Open	
XF2 - 5	TUL	Push	
XF2 - 6	Insp. approval	Inspection approval	

Fig. 3: Output terminal XF3

Pin	Signal	Description
XF3 - 1	TSU	Door closed
XF3 - 2	TSO	Door open
XF3 - 3	Output 3	
XF3 - 4	Input 5	

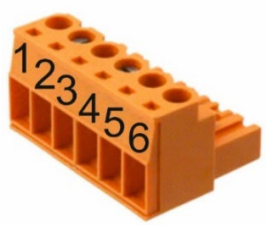

Fig. 4: 6-pin CAN connector XF4

Pin	Signal	Description
XF4 - 1		Internal bridge to XF4.2, XF5.1, XF5.2
XF4 - 2		Internal bridge to XF4.1, XF5.1, XF5.2
XF4 - 3	CAN_L	CAN bus signal (dominant low)
XF4 - 4	CAN_H	CAN bus signal (dominant high)
XF4 - 5	+24V via CAN	Supply voltage via CAN connector (see JP2 and JP3)
XF4 - 6	0V via CAN	Supply voltage via CAN connector (see JP2 and JP3)

Fig. 5: 4-pin CAN connector XF5

Pin	Signal	Description
XF5 - 1		Internal bridge to XF4.1, XF4.2, XF5.2
XF5 - 2		Internal bridge to XF4.1, XF4.2, XF5.1
XF5 - 3	CAN_L	CAN bus signal (dominant low)
XF5 - 4	CAN_H	CAN bus signal (dominant high)

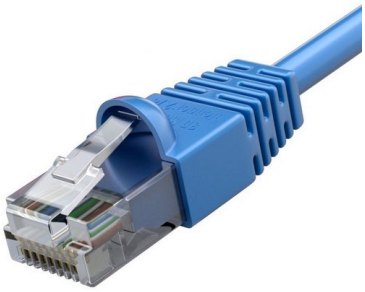

Fig. 6: Ethernet connector (RJ45)

Pin	Signal	Description
XD26.1	CAN_L	CAN bus signal (dominant low)
XD26.2	CAN_H	CAN bus signal (dominant high)
XD26.3	Ground 0V	CAN-GND
XD26.4	---	---
XD26.5	Ground 0V	CAN-GND
XD26.6	---	---
XD26.7	CAN_L	CAN bus signal (dominant low)
XD26.8	CAN_H	CAN bus signal (dominant high)

4.2 Supply voltage for discrete control

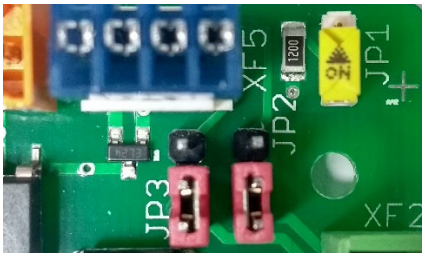

Fig. 7: Standard setting, 24V supply via XF2

Jumper	Signal	Description
JP2: 2-3	Inputs	Power supply via input connector XF2
JP3: 2-3	Outputs	Power supply via input connector XF2

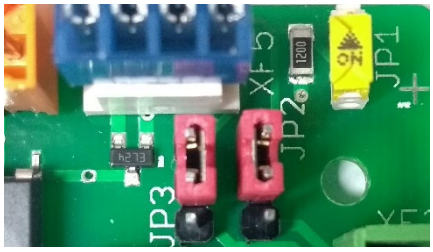

Fig. 8: Extended setting, 24V supply via XF4

Pin	Signal	Description
JP2: 1-2	Inputs	Power supply via CAN connection XF4
JP3: 1-2	Outputs	Power supply via CAN connection XF4

4.3 Thyssen bus connection

CAUTION:
Before working on the CAN bus, the door control unit **must always be switched off!**
Only remove the CAN connectors from the unit after switching off.
If this is not observed, a **defect in the CAN communication of the lift control system** may occur.

4.3.1 Thyssen F3, F5, F9, F12 Series

The TSG ThyssenCAN module is plug-compatible with the old door control. The existing connectors can be reused.

4.3.2 RT301 CAN

The RT301 CAN continues to use the Ethernet connector. This is plugged into the XD26 slot.

NOTE:
If necessary, the connection set RJ45 TSG to ThyssenCAN (8.20.81570) can be used here. The adapter cable is plugged into slot XF4 and is used to connect to the existing Ethernet cable.

4.3.3 DOD

For the **DOD_V1.xx (CMC4+ lift controller)**, the CAN cable must be connected to the connector XF4 of the ThyssenCAN adapter module.

DOD	TSG	Description
X333 - 1	XF4 - 6	CAN_GND
X333 - 2	XF4 - 4	CAN_H
X333 - 3	XF4 - 3	CAN_L

The **DOD_V112.xx (ECOR Lift controller)** continues to use the Ethernet connector. This is plugged into the XD26 slot.

NOTE:
If necessary, the connection set RJ45 TSG to ThyssenCAN (8.20.81570) can be used here. The adapter cable is plugged into slot XF4 and is used to connect to the existing Ethernet cable.

NOTE:
The assignment for **DOD_V1.xx** on connector XF4 can also be selected for the **DOD_V112.xx**.

4.3.4 VF7+CAN

With the VF7+CAN, the CAN cable must be connected to connector XF4 of the ThyssenCAN adapter.

VF7+CAN	TSG	Description
60	XF4 - 5	CAN_VCC
61	XF4 - 4	CAN_H
62	XF4 - 3	CAN_L
63	XF4 - 6	CAN_GND

4.4 Light curtain connection

If the light curtain is connected directly to the door control unit, it must be rewired to terminal X1 of the TSGV4.
In order for the light curtain to be activated, the **parameter h3=02 "low active"** is set.

4.4.1 Assignment of the Thyssen RT301

The signal must be rewired as follows:

RT301	TSGV4	Meaning
XD8.1	X1.5	+24VDC (RX and TX)
XD8.2	X1.3	CS (cell signal)
XD8.3	X1.8	GND (RX and TX)
XD8.4	-	SYS (Syncro)
-	X1.4	Bridge on X1.6
-	X1.6	Bridge on X1.4

CAUTION:
The **connector XD8** of the RT301 must **not be plugged into terminal XF3** of the additional board.
A defect of the light curtain may occur.

4.4.2 Assignment of the DOD

The power supply for the light barrier comes from the cabin junction box and can remain.
The signal must be rewired as follows:

DOD	TSGV4	Meaning
X462.1	X1.5	VCC
X462.6	X1.3	Light curtain
-	X1.4	Bridge on X1.8
-	X1.8	Bridge on X1.4

4.4.3 Assignment of the VF7+ CAN

The power supply for the light barrier comes from the cabin junction box and can remain.
The signal must be rewired as follows:

VF7+ CAN	TSGV4	Meaning
23	X1.5	VCC
22	X1.3	Light curtain
-	X1.4	Bridge on X1.8
-	X1.8	Bridge on X1.4

5 Configuration

All possible settings of the electronics regarding the ThyssenCAN bus are described here.

5.1 Setting the bus communication

In order for the TSG ThyssenCAN adapter to be recognised by the TSG V4 electronics, the parameter must be set depending on the application.

Parameter settings	Function
hA=10 (default)	TSG control via ThyssenCAN adapter.
hA=16	Locking or blade drive (e.g. QKS9, can be used with additional board additional drive) and the TSG control via ThyssenCAN adapter.
hA=17	Locking with NSG (e.g. Koch, can be used with additional board for additional drive) and TSG control via ThyssenCAN adapter.
hA=18	Locking drive for shaft swing door (can be used with additional board additional drive) and TSG control via ThyssenCAN adapter.

NOTE:
Only the door signals that are sent via the CAN bus are evaluated.

The Thyssenbus is selected with the parameter h4. Here you can choose between the Thyssenbus for F3, F5, F9 and F12 and the Thyssenbus for controlling the RT301 CAN series, the DOD series or the Fermator VF7+ CAN.

Parameter settings	Function
hA=10 (default)	Thyssenbus for F3, F5, F9 or F12
h4=8	Thyssenbus for RT301 CAN
h4=9	Thyssenbus from DOD_Vers.1.04 (CMC4+ lift controller)
h4=10	Thyssenbus for DOD_Vers.112.xx (ECOR Lift controller)
h4=11	Thyssenbus Fermator VF7+ CAN
h4=12	Thyssenbus for DOD_Vers.1.00 (CMC4+ lift controller)

NOTE:
When using the Thyssenbus for DOD, please note the version number of the original drive (see photos) so that the appropriate parameter can be selected.

5.2 Bus termination setting

A CAN bus must be terminated so that no reflections appear in the network. For this, both ends of the network must be terminated with a resistor (120Ω). For a termination to take place at the TSG Thyssen CAN module, the slide switch JP1 on the board must be set to **ON**.

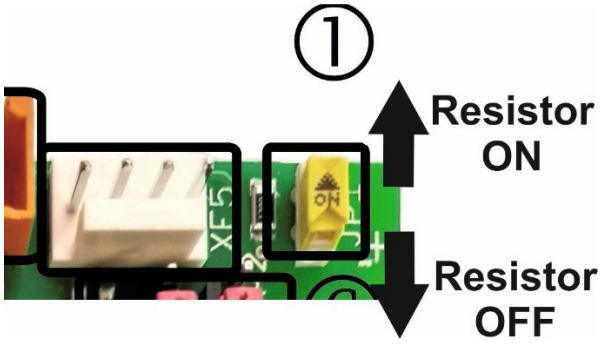

Fig. 9: TSG Thyssen Fx module - bus termination

NOTE:
Care must be taken to ensure that the termination only takes place at the beginning and end of the entire network.

CAUTION:
If the termination does not take place at the end or at the beginning, but in between in the network, or if additional resistors (120Ω) are added in addition to the end termination, there will be faults in the CAN bus.

5.3 Setting the mechanical transmission ratio

In the standard setting, a fixed transmission ratio is stored in the TSG door control unit.
A changed mechanical transmission ratio means that the forces, speeds and accelerations are different from those set in the door control unit TSG. To compensate for the difference, the existing mechanical transmission ratio can be adjusted in the door control unit TSG.

To set the desired transmission ratio, the parameter A8 *Mechanical, additional transmission ratio* must be selected appropriately. In order for the value set in A8 to be accepted, parameter A9, *Enable parameter A8* must be activated.

Thyssen series	Mechanical transmission	release parameter A8
F3,F5,F9,F12	A8=1.0	A9=0.0
RT301	A8=1.5	A9=1.0
DOD Serie	A8=1.5	A9=1.0
VF7+ CAN	A8=1.5	A9=1.0

5.4 Setting TSG parameters

Parame-ter	Meaning	Value
h1	Door number	Standard: 01 = door 1 alternative: 02 = door 2
h3	Light curtain	Standard: 00 = Light curtain not active alternative: 02 = Light curtain "low active
h4	Select bus variant	Standard: 07 = Thyssenbus for F3, F5, F9 or F12 alternative: 08 = Thyssenbus for RT301 CAN 09 = Thyssenbus from DOD V1.04 (CMC4+ lift controller) 10 = Thyssenbus for DOD V112.xx (ECOR Lift controller) 11 = Thyssenbus Fermator VF7+ CAN 12 = Thyssenbus for DOD_Vers.1.00 (CMC4+ lift controller)
hA	ThyssenCAN operation ThyssenCAN operation and TSG sinus drive ThyssenCAN operation, TSG sinus drive and NSG ThyssenCAN operation and Shaft revolving door lock	10 16 17 18
A8	Mechanical additional translation	Standard: 1.0 alternative: 0.5 to 8.0
A9	Enable parameter A8 (mechanical, additional transmission)	Standard: 0 = off Alternative: 1 = on

NOTE:
As soon as parameter hA is set to 10, the following parameter values are set:
- h1 and h4 to standard values (see chap. 5.4Setting TSG parameters / page 14)
- b4 to on (see manual TSGV4)
- cC, and cd on 0A (see manual TSGV4)

NOTE:
If the parameter hA has already been set to 10 and is then set unequal to 10, the parameter b4 remains on and the settings of h1 and h4 remain.

5.5 Quick summary: Configuring the module

In order for the ThyssenCAN adapter module to function according to the requirements, the following sequence must be strictly adhered to when configuring the module:

Step 1: Activate the expansion module

To activate the ThyssenCAN adapter module on the TSG, set parameter hA:

Parameter settings	Function
hA=10	TSG control via ThyssenCAN.
hA=16	Locking or blade drive (e.g. QKS9, can be used with additional board additional drive) and the TSG control via ThyssenCAN.
hA=17	Locking with NSG (e.g. Koch, can be used with additional board for additional drive) and TSG control via ThyssenCAN.
hA=18	Locking drive for shaft swing door (can be used with additional board additional drive) and TSG control via ThyssenCAN.

Step 2: Set the door number

The door number is set by adjusting the parameter h1:

Parameter	Meaning	Value
h1	Door number	Standard: 01 = door 1 alternative: 02 = door 2

Step 3: Set the protocol type

The protocol type is set using parameter h4:

Parameter	Meaning	Value
h4	Select bus variant	Standard: 07 = Thyssenbus for F3, F5, F9 or F12 alternative: 08 = Thyssenbus for RT301 CAN 09 = Thyssenbus from DOD V1.04 (CMC4+ lift controller) 10 = Thyssenbus for DOD V112.xx (ECOR Lift controller) 11 = Thyssenbus Fermator VF7+ CAN 12 = Thyssenbus for DOD V1.00 (CMC4+ lift controller)

Step 4: Configuration of the light curtain

If a light curtain was connected to the RT301, DOD or VF7+ CAN, it will be connected directly to the TSG and activated via parameter h3=2.

Parameter	Meaning	Value
h3	Light curtain	Standard: 00 = Light curtain not active alternative: 02 = Light curtain "low active

Step 5: Setting the ratio

When using the Thyssenbus for RT301, DOD or VF7+ CAN, the pinion gear ratio must be set with parameter A8 and then activated with A9=01...:

Parame-ter	Meaning	Value
A8	Mechanical additional translation	Standard: 1.0 alternative: 1.5 (RT301, DOD Serie, Fermator VF7+)
A9	Enable parameter A8 (mechanical, additional transmission)	Standard: 0 = off Alternative: 1 = on

5.6 Teach-in of the TSG

If the TSG is to be taught-in, please carry out the following steps:

1. Switch off TSG V4 electronics
2. Disconnect the CAN connector (XF4) from the power supply
3. Switch on TSG V4 electronics
4. Teach-in TSG V4 electronics via parameter P9
5. Switch off TSG V4 electronics
6. Attach CAN connector (XF4)
7. Switch on TSG V4 electronics

6 LED statuses and meanings

There are four LEDs on the TSG ThyssenCAN module (see chap. 4 Hardware / page 6 and Fig. 10: Display status with flashing sequence / page 19).

6.1 Check (LED2, yellow)

Status LED	Description of condition	Possible causes
Off	There is no voltage	- Check the mains voltage supply on TSG electronics. - Check the flat cable connection to the TSG electronics.
Blinking (1Hz)	TSG Thyssen Fx module is ready for operation.	

6.2 Error (LED1, red)

Status LED	Description of condition	Possible causes
Off	Communication between TSG electronics and TSG Thyssen Fx module successful.	
On	No communication between TSG electronics and TSG Thyssen Fx module	- Check the flat cable connection to the TSG electronics. - Parameter hA not set or not set correctly.

6.3 CAN_Run (LED3, green)

The status of the TSG Thyssen-Fx module in the CAN network is displayed.

Status LED	Description of condition	
Off		Module is not yet ready for use.
On	OPERATIONAL	Module is ready.

6.4 CAN_Error (LED4, red)

The status and any existing errors of the TSG Thyssen-Fx module are indicated.

Status LED	Description of condition	
Off	No error	The TSG Thyssen-Fx module is ready for operation.
flickering	Bus error	- No device is connected - No signal has yet been given by the lift controller.

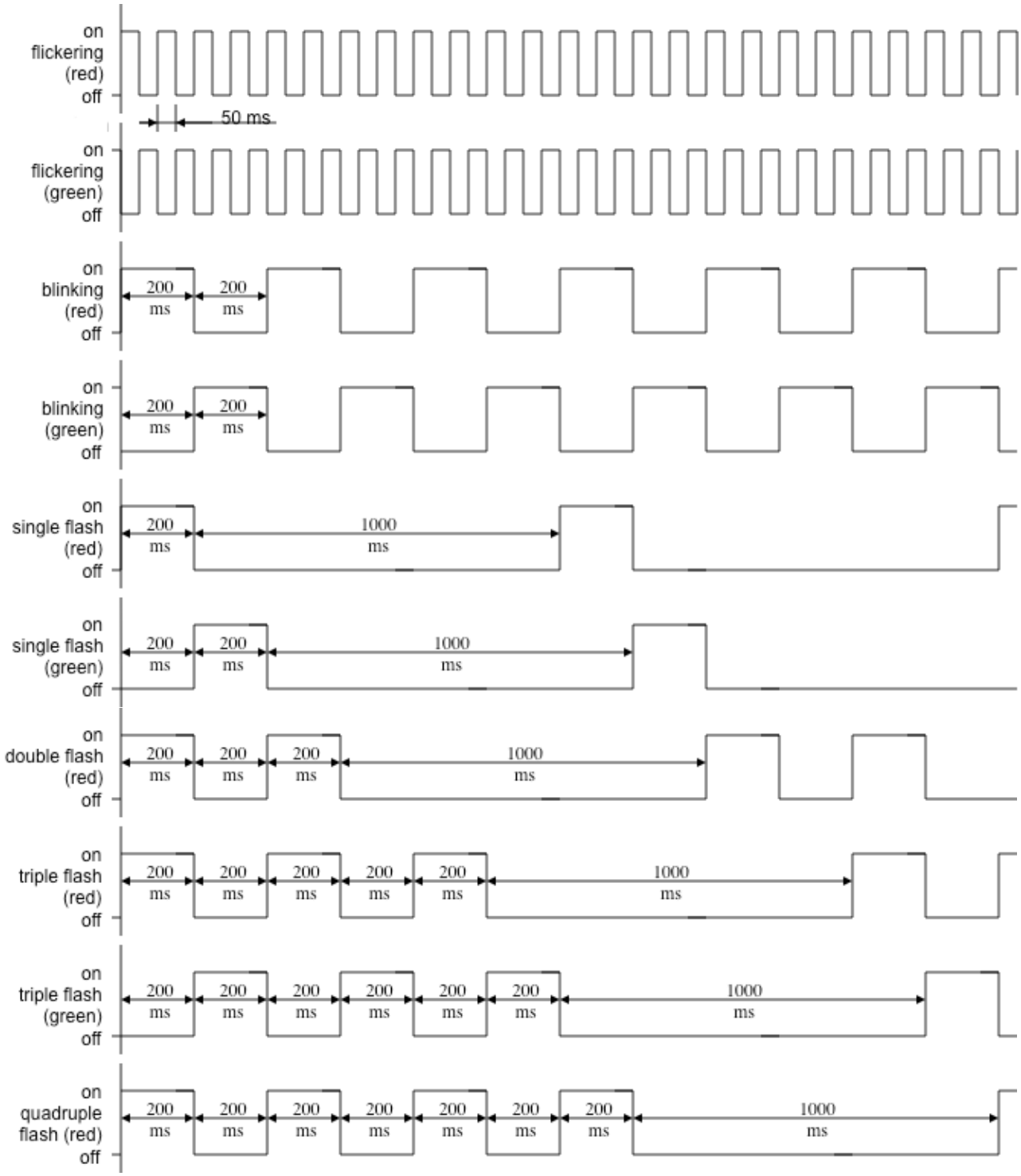

Fig. 10: Display status with flashing sequence

7 Contact

Langer & Laumann Ing.-Büro GmbH
Wilmbsberger Weg 8
48565 Steinfurt
Germany

Tel.: +49 (2552) 92791 0

www.lul-ing.de
info@lul-ing.de