Manual

TSG ThyssenCAN Adapter Module

Documentation history

No.	Ver.	Version	Editor
1	1.0	6.4.22	FH
2	1.01	24.5.22	FH
3	1.02	23.11.22	FH
4	1.03	23.5.23	FH
5	1.04	25.5.23	FH
6	1.05	23.8.23	FH
7	1.06	23.1.25	FH
8	1.07	08.12.25	FH

Scan the QR code for the **English** manual.

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

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File: 1.20.92620_EN_Instructions_V1.07_TSG-V4-ThyssenCAN.docx
Print date: 08/12/2025 16:22:00

Contents

1 Basic information

1.1 Copyright

We reserve all rights to this technical document. This document may not be copied, made available to third parties or otherwise used for any other purposes without our prior permission. Any changes or amendments require our express prior written permission.

1.2 Notices in this manual

All notices in this manual must be observed.

1.3 Measures to be taken by engineers

Engineers must attend a training course. The manufacturer/supplier must be informed immediately of missing or faulty parts.

1.4 Requirements for installation personnel

Engineers carrying out installation and maintenance should be informed about the generally applicable safety and occupational hygiene regulations. Engineers must familiarise themselves with Langer&Laumann products. Installation tools must be fully functional and measuring instruments checked regularly.

1.5 Explanation of symbols

WARNING:
Indicates a potential imminent danger that can result in serious injuries or death.

CAUTION:
Indicates a potential danger that can result in minor injuries. This sign also warns of potential property damage.

NOTICE:
Indicates actions to be taken and other useful information.

2 General

By using the TSG ThyssenCAN Adapter 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 with the system disconnected from the supply. If the bus connection is interrupted during operation, this can lead to **serious damage to the electronics of the lift control**.

3 Interface

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

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

4 Hardware

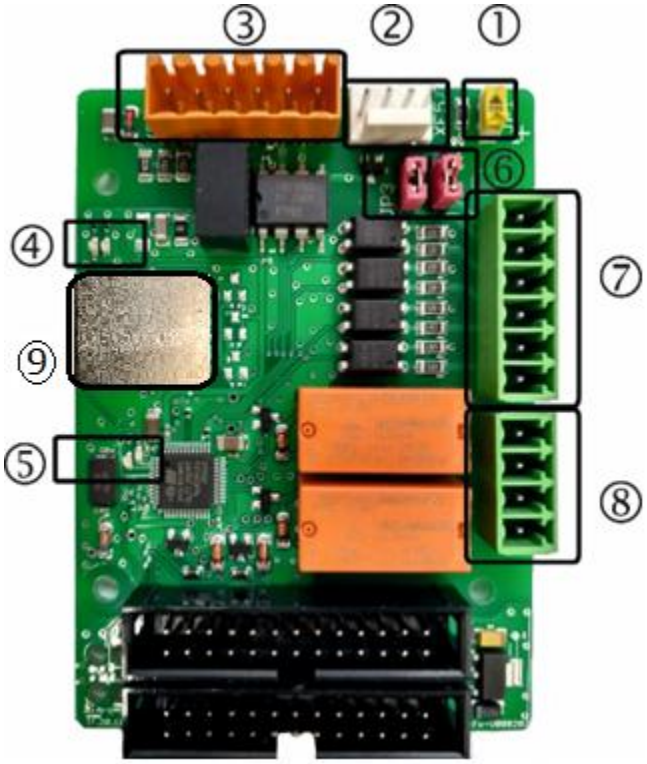

Fig. 1: TSG Thyssen Fx module

No.	Name	Description
①	JP1	Slide switch (see Chapter 5.2Bus termination setting/page 12)
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	LED1 LED2	CAN Run (green) (see Chapter 6.3 CAN_Run/page 19) CAN error (red) (see Chapter 6.4CAN_Error/page 19)
⑤	LED3 LED4	Error (red) (see Chapter 6.2Error LED/page 18) Check (yellow) (see Chapter 6.1Check LED/page 18)
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 TSG ThyssenCAN Adapter Module

Fig. 2: Input terminal XF2

Pin	Signal	Description	
		Variant 1	Variant 2
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	

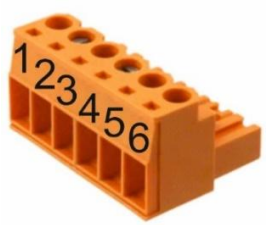

Fig. 4: 6-pin CAN connector XF4

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

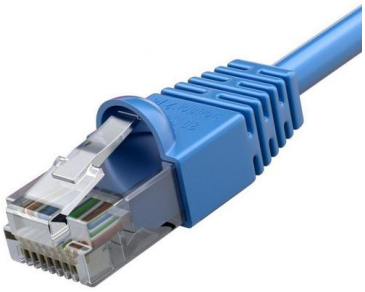

Fig. 6: Ethernet connector (RJ45)

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: Default 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

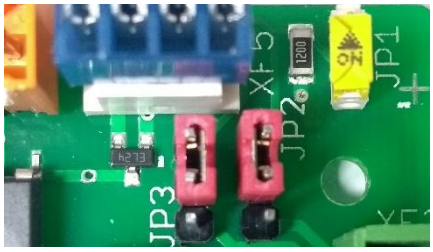

Fig. 8: Extended setting, 24V supply via XF4

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.
Failure to observe the above can lead to a **fault in the CAN communication of the lift control**.

4.3.1 Thyssen F3, F5, F9, F12 Series

The TSG ThyssenCAN Adapter Module is connector-compatible with the old door control. The existing connectors can be reused.

4.3.2 RT301 CAN

The Ethernet connector is still used with the RT301 CAN. This is plugged into the XD26 slot.

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

4.3.3 DOD

With the **DOD_V1.xx (CMC4+ control**), the CAN cable must be connected to connector XF4 of the TSG 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 Ethernet connector is still used with the **DOD_V112.xx (ECOR control)**. This is plugged into the XD26 slot.

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

NOTICE:
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 TSG ThyssenCAN Adapter Module.

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

When the light curtain is directly connected to the door control unit, it must be rewired on terminal X1 of the TSGV4.
To activate the light curtain, the **parameter h3=02 ("low active")** is set.

4.4.1 Assignment for Thyssen RT301

Rewiring must be carried out 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	Jumper on X1.6
-	X1.6	Jumper on X1.4

CAUTION:
The **connector XD8** of the RT301 must **not be plugged into terminal XF3** on the additional board.
This may lead to a light curtain fault.

4.4.2 Assignment for DOD

The light barrier is supplied with power from the car junction box and can remain.
Rewiring of the signal must be carried out as follows:

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

4.4.3 Assignment for VF7+ CAN

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

VF7+ CAN	TSGV4	Wires	Meaning
23	X1.5	brown	VCC
22	X1.3	green	Light curtain
-	X1.4		Jumper on X1.8
-	X1.8		Jumper on X1.4
24	-	white	Bypass (not used)

5 Configuration

All possible settings of the electronics with respect to the ThyssenCAN bus are described here.

5.1 Bus communication setting

For the TSG ThyssenCAN Adapter Module to be recognised by the TSG electronics, the parameter hA must be set depending on the application.

Parameter settings	Function
hA=10 (default)	TSG control via ThyssenCAN adapter.
hA=16	Locking or skate 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 additional drive) and TSG control via ThyssenCAN adapter.
hA=18	Locking drive for hinged landing door (can be used with additional board additional drive) and TSG control via ThyssenCAN adapter.

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

The Thyssenbus is selected with the parameter h4. Here, it is possible to choose between the Thyssenbus for F3, F5, F9 and F12 and the Thyssenbus for controlling the RT301 CAN series, the DOD series or 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 for DOD from Vers.1.01!? (CMC4+ control)
h4=10	Thyssenbus for DOD_Vers.112.xx (ECOR control)
h4=11	Thyssenbus Fermator VF7+ CAN
h4=12	Thyssenbus for DOD_Vers.1.00 (CMC4+ control)

NOTICE:
When using in Thyssenbus for DOD, the version number of the original drive must be noted 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 termination on the TSG Thyssen CAN module, the slide switch JP1 on the board must be set to **ON**.

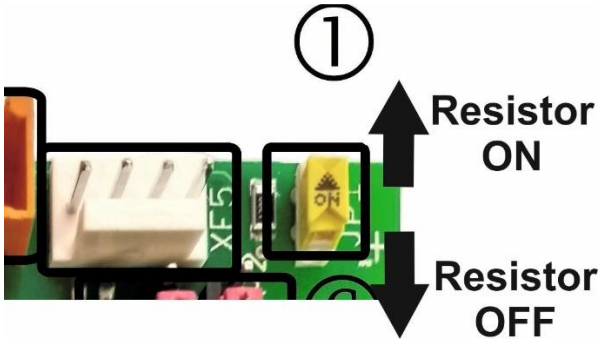

Fig. 9: TSG Thyssen Fx module - bus termination

NOTICE:
It must be ensured that termination only takes place at the beginning and end of the entire network.

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

5.3 Mechanical transmission ratio setting

In the default setting, a fixed transmission ratio is stored in the TSG door control unit.
A changed mechanical transmission ratio results in the forces, speeds and accelerations being different to those set in the TSG door control unit. To compensate for the difference, the existing mechanical transmission ratio can be adjusted in the TSG door control unit.

To set the required transmission ratio, parameter A8 "*Mechanical, additional transmission ratio"* must be selected appropriately. In order to take over the value set in A8, parameter A9, "*Enable parameter A8"* must be activated.

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

5.4 Setting closed and unlocked position

When using the original skate with hook lock in the DOD and VF7+ CAN series, the door must be able to be unlocked in the closed position by the lift control.

For this purpose, the position in which the door is unlocked (hook bolt open) must be adjusted. The lock must be open, but the door must still be visually closed.

In order that the set distance corresponds to the actual distance, the mechanical transmission ratio of the door drive must be adjusted as described in *Chapter 5.3 Mechanical transmission ratio setting, page 13* .

Parameter	Meaning	Value
A0	Closed and unlocked position	Default: 00 alternative: 10-80 (DOD series, Fermator VF7+)

5.5 TSG parameter setting

Parameter	Meaning	Value
h1	Door number	Default: 01 = door 1 alternative: 02 = door 2
h3	Light curtain	Default: 00 = Light curtain not active alternative: 02 = Light curtain "low active
h4	Select bus variant	Default: 07 = Thyssenbus for F3, F5, F9 or F12 alternative: 08 = Thyssenbus for RT301 CAN 09 = Thyssenbus for DOD from V1.01, (CMC4+ control) 10 = Thyssenbus for DOD V112.xx (ECOR control) 11 = Thyssenbus Fermator VF7+ CAN 12 = Thyssenbus for DOD V1.00 (CMC4+ control)
hA	ThyssenCAN operation ThyssenCAN operation and TSG sinus drive ThyssenCAN operation, TSG sinus drive and NSG ThyssenCAN operation and hinged landing door lock	10 16 17 18
A0	Closed and unlocked position	Default: 00 alternative: 10 to 90
A8	Mechanical, additional transmission ratio	Default: 1.0 alternative: 0.5 to 8.0
A9	Enable parameter A8 (mechanical, additional transmission ratio)	Default: 0 = off alternative: 1 = on

NOTICE:
As soon as parameter hA is set to 10, the following parameter values are set:
h1 and h4 to default values (see Chapter 5.5 TSG parameter setting /page 15)
- b4 to on (see manual TSGV4)
- cC, and cd on 0A (see manual TSGV4)

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

5.6 Brief summary: Module configuration

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

Step 1: Activation of expansion module

To activate the TSG ThyssenCAN Adapter Module on the TSG, parameter hA must be set:

Parameter settings	Function
hA=10	TSG control via ThyssenCAN.
hA=16	Locking or skate 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 additional drive) and the TSG control via ThyssenCAN.
hA=18	Locking drive for hinged landing door (can be used with additional board additional drive) and the TSG control via ThyssenCAN.

Step 2: Setting the door number

The door number is set by adjusting the parameter h1:

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

Step 3: Setting the protocol type

The protocol type is set using parameter h4:

Parameter	Meaning	Value
h4	Select bus variant	Default: 07 = Thyssenbus for F3, F5, F9 or F12 alternative: 08 = Thyssenbus for RT301 CAN 09 = Thyssenbus for DOD from V1.01 (CMC4+ control) 10 = Thyssenbus for DOD V112.xx (ECOR control) 11 = Thyssenbus Fermator VF7+ CAN 12 = Thyssenbus for DOD V1.00 (CMC4+ control)

Step 4: Light curtain configuration

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

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

Step 5: Setting the transmission ratio

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

Parameter	Meaning	Value
A8	Mechanical, additional transmission ratio	Default: 1.0 alternative: 1.5 (RT301, DOD series, Fermator VF7+)
A9	Enable parameter A8 (mechanical, additional transmission ratio)	Default: 0 = off Alternative: 1 = on

Step 6: Adjustment of unlocked position

When using the original skate with hook lock in the DOD and VF7+ CAN series, the door must be able to be unlocked in the closed position by the lift control.
For this purpose, the position in which the door is unlocked (hook bolt open) must be adjusted.

Parameter	Meaning	Value
A0	Closed and unlocked position	Default: 00 alternative: 10-80 (DOD series, Fermator VF7+)

5.7 Teach-in of the TSG

To teach-in the TSG, the following steps must be carried out:

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. Connect CAN connector (XF4)
7. Switch on TSG V4 electronics

6 LED statuses and meanings

There are four LEDs on the TSG ThyssenCAN Adapter Module (see Chapter 4 Hardware/page 6 and Fig. 10: Display status with flashing sequence/page 20).

6.1 Check LED

Status LED	Description of condition	Possible causes
Off	No voltage present	- 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 LED

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 TSG electronics. - Parameter hA not set or not set correctly.

6.3 CAN_Run

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

Status LED	Status description	
Off	RESET	A RESET is carried out.
blinking	PRE-OPERATIONAL	Module is in the PRE-OPERATIONAL state
single flash	STOPPED	Module is in the STOPPED state
On	OPERATIONAL	Module is in the OPERATIONAL state

6.4 CAN_Error

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

Status LED	Status description	
Off	No error	The TSG Thyssen-Can module is ready for operation.
blinking	Invalid configuration	Configuration error
single flash	Warning, limit reached	At least one of the error counters of the TSG Thyssen-Can module has reached or exceeded the warning level.
double flash	Error rate monitoring	CAN errors have occurred (no CAN connection).
On	Bus Off	TSG Thyssen-Can module must no longer transmit.

6.5 Flashing characteristics

CAN_Run	CAN_Error	Error LED	Meaning
ON	OFF	OFF	Module is OPERATIONAL and ready to use.
blinking	OFF	OFF	Module is PRE-OPERATIONAL (lift control must set this to OPERATIONAL mode)
blinking	Blinking (changing)	ON	No communication with TSG. Required parameters set incorrectly: Parameter hA is not equal to 10, 16, 17 or 18 (see: Chapter 5.5 TSG parameter setting, page 15).
blinking	Single flash	OFF	CANopen network not available - CANopen module not connected (guard event) - Master not connected (heartbeat event) - Wiring incorrect Bus is not terminated correctly (see 5.2 Bus termination setting, page 12)
ON	ON	OFF	No communication on CAN bus possible: - CAN_High and CAN_Low signals are interchanged - Cross-circuit between: - CAN_GND and CAN_H - CAN_H and CAN_L - Hardware faulty

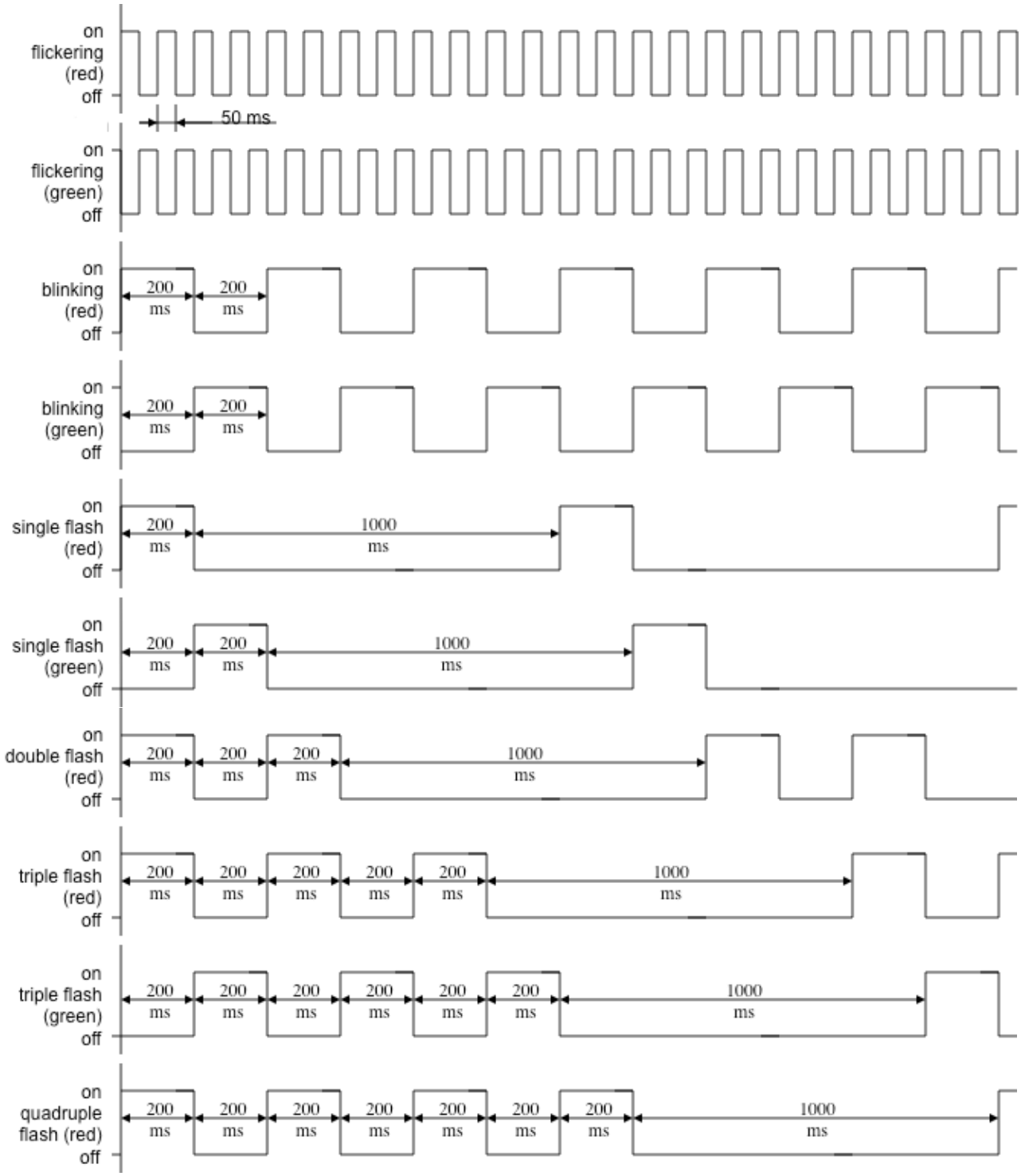

Fig. 10: Display status with flashing sequence

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