



SEARCHLIGHTS

TEF 2650/2655 COMMANDER

SAFE AREA

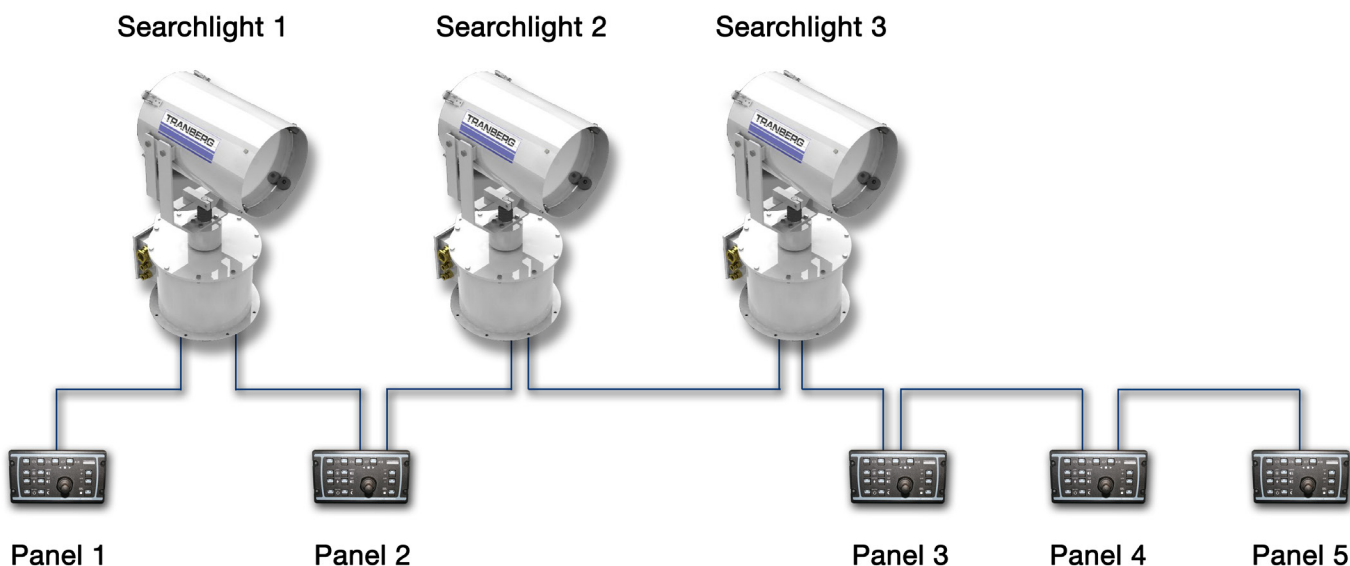
NETWORK & CONFIGURATION MANUAL

Subject to change without prior notice TUM3291 REV. A 17.07.2017



IMPORTANT

Please read this manual carefully before installing the product.



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SAFETY INSTRUCTIONS

The intense light output may damage eyes when stared directly into the light.

Any type of light source reaches a very high temperature. Do not touch if warm. Never touch with bare skin as this reduces light output.

The motorized searchlight moves both vertically and horizontally. Be aware of any personnel close to the searchlight when testing or operating.

Never use force to move the searchlight head on a motorized unit. This may damage the power train inside the motor unit.

Never open a searchlight head while energized. High voltage is present.

Always wait until light source and other components have cooled before touching any part.

GENERAL WARRANTY CERTIFICATE

Tranberg AS gives normally a general warranty on Tranberg products valid for 12 months from delivery date.

General the products will

- (a) Confirm to the purchase order,
- (b) Be free from liens, claims and encumbrances,
- (c) Be free from failures or defects which may arise from defective design, materials or workmanship.

The warranty is based on that "The assembly- and maintenance instruction", attached with the product, is fulfilled, and does not cover damage caused by misuse or lack of proper maintenance and care.

Regards terms of delivery:

Other agreements than standard terms of delivery are to be in writing.
Official terms of delivery, NL-01 are valid.

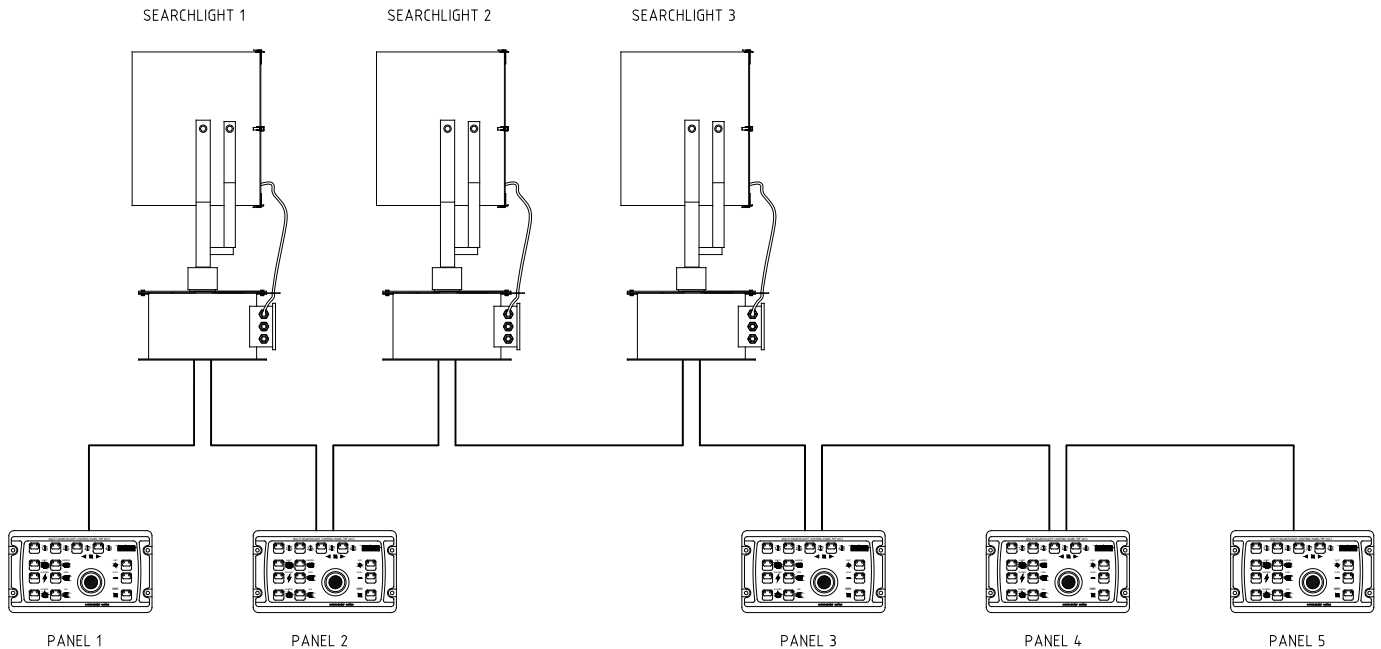
Regarding the bulb, please look at the warranty papers following the bulb. This must be filled in and returned with the bulb to Tranberg AS.

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1. SYSTEM OVERVIEW



600A105424

The Tranberg Commander Searchlight uses a serial communication network to control and monitor the searchlights. This makes it possible to freely choose and combine the number of searchlights and panels. All panels can control all searchlights, one at a time, by using selection buttons on the panel.

The communication network is connected as a bus topology, i.e. the communication cable is connected from unit to unit as a chain. In that way, all units can communicate with every other unit, and can listen to every message sent over the network. Each unit connected to a bus must be uniquely identified by a number (address). This address is set either by thumbwheels, or programmed and stored in internal non-volatile memory.

One of the units has to control the communication on the bus. The unit performing this function is called a master, and in the Commander Searchlight system this function is assigned to the panel with address '0'. When the master is powered up it will check what units are present on the bus by querying each unit. If one unit is not powered up in this phase, and thus does not answer the query, it will be regarded as not-present and will not be able to communicate with the other units on the bus. It is therefore important that all searchlights are powered up before the panels.

2. OPERATION

2.1 START-UP PROCEDURE

Power-up: Apply power in the following sequence:

Apply the 230 VAC power to the searchlights first.

Apply the 24 VDC power to the panels next. If the panels have several separate supplies, ensure that the master panel is powered up last. The panels will be in the 'on' mode when powered up.

If, for some reason, this is not possible, please do a manual re-scan as described in chapter 4.2 after all units are powered up.

A searchlight will do a position reference search when powered up and receiving a bus query message from the master panel (a bus re-scan). It will slowly turn to the right and tilt upwards until the end positions are reached. The searchlight will not respond to joystick commands from a panel until it has finished this position search phase (but the light can be turned on and off).

2.2 ELECTRICAL INSTALLATION - CABLING

CABLING – COMMUNICATION NETWORK:

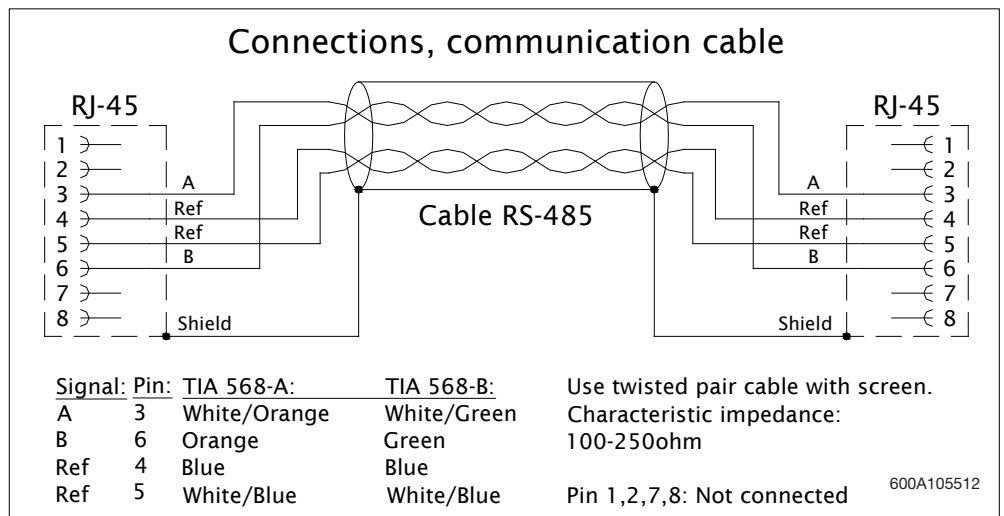
1. Use 2x twisted pairs + screen cable. Characteristic impedance: 100 – 250 ohms. Suitable cables types can be cables made for Profibus, Interbus, Ethernet, Cat5, or similar.
2. The communication network must be connected as a bus topology, i.e. from point to point (unit to unit). No loops or star connections are allowed.
3. No end terminations are necessary.
4. Connect A to A, B to B and Ref to Ref.
5. The order of panels and searchlights along the bus can be freely chosen. Tip: A drawing of the system showing the order and addresses of the units can be of great help if troubleshooting should be necessary.

NOTE1:

Keep communication cables away from all power lines.

NOTE2:

Treat / regard Reference as a signal. It shall under no circumstance be connected to Ground or other Protective Earth potentials.



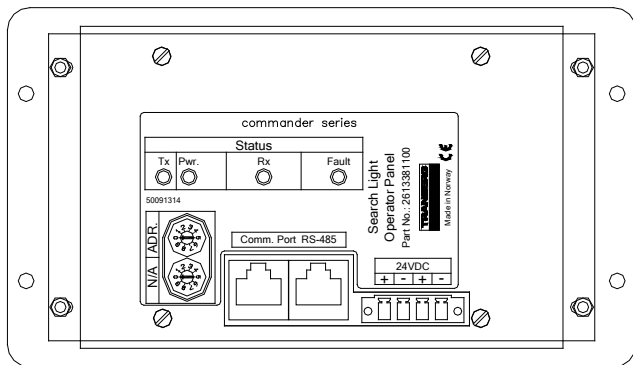
3 CONNECTIONS, SETTINGS AND INDICATORS

3.1 PANELS

There are 3 different panel models:

1. TEF 2612 Single (this panel can only control 1 searchlight, searchlight no. 1)
2. TEF 2613 Multi (the standard panel for control of up to 8 searchlights)
3. TEF 2614 SAR (Search And Rescue, can control 4 searchlights with 2 light sources each)

All models are identical regarding outer dimensions and connections. The 2613 and 2614 panels have 13 keys, while the 2612 panel has 9 keys (It does not have the upper 4 searchlight select keys).



New version

600A102101

Version with RJ-45 connectors

Pin	Color (TIA 568-A)	Color (TIA 568-B)	Signal
1	White / Green	White / Orange	N/C
2	Green	Orange	N/C
3	White / Orange	White / Green	A
4	Blue	Blue	Reference
5	White / Blue	White / Blue	Reference
6	Orange	Green	B
7	White / Brown	White / Brown	N/C
8	Brown	Brown	N/C
Shield	-	-	Shield

SETTINGS

For all panels with phoenix screw terminals and panels with RJ-45 connectors delivered after April 2009:

Rotary Switch			Settings	
N/A	ADR	Address	Mode	Panel Type
0	0	0	Master	TEF 2613
0	1 - 7	1 - 7	Slave	
1	0 - 7	8 - 15		TEF 2612
2	0	0	Master	
2	1 - 7	1 - 7	Slave	
3	0 - 7	8 - 15		TEF 2614
4	0	0	Master	
4	1 - 7	1 - 7	Slave	
5	0 - 7	8 - 15		

INDICATORS

Priority	Power btn LED	Fault LED	Description
1	Fast flash	Fast	Power on or off. Network error: No messages received.
2	Fast flash	Slow	Power on or off. Network error: The module receives messages on the bus, but none to its own address.
-	Steady on	Off	Power off/standby, Master Panel
-	Slow flash	Off	Power off/standby, Slave Panel (Receives messages from master)
-	Off	Off	Power on, Master or Slave Panel

If a master panel does not get any answers/messages from any other slave or node, then the master will signal 'No messages received'.

Slow flash: 1 sec. on, 1 sec off

Fast flash: 2 blink per second.

The yellow Rx and Tx LEDs shows the activity on the bus, and will flicker at normal bus activity.

The green Power LED will light steady when 24VDC is applied / supplied.

4 SPECIAL PROCEDURES

4.1 IDENTIFYING THE MASTER PANEL

For the following special procedures, the master panel need to be identified.

The master panel can be recognized by the yellow indicator in the power button. When you turn off power by pressing this button, the yellow indicator will be continuously lit in the master panel. It will blink slowly (1 sec. on, 1 sec off) on a slave panel.

4.2 RE-SCAN OF NODES CONNECTED TO THE BUS

If necessary, the master panel can do a bus scan when powered up using the following procedure:

(Note: Do not operate or use any panels or searchlights during this procedure. Ensure that all are powered up.)

1. Turn off the master panel using the power button. Release the button. The backlight will turn off.
2. Press and hold the power button for at least 5 seconds.
3. While holding the power button, press and release the second select button (marked '2/6' (2613) or 'B' (2614)). (Repeat if necessary, until backlight turns on).
4. The panel backlight will now turn on, and it will start the scanning of the bus (it takes a couple of seconds).
5. Release the power button.
6. When the scan process is finished, the panel will show which searchlights are present on the bus by fast flashing the corresponding leds on the select buttons (upper row).
7. Turn on the panel by using the power button as usual.
8. Repeat the procedure if necessary.

4.3 ALTERNATIVE RE-SCAN PROCEDURE

FOR PANELS DELIVERED FROM APRIL 2009 AND ONWARDS:
If necessary, the master panel can do a bus scan when powered up using the following procedure: A panel can do both this alternate re-scan procedure as well as the previous procedure (ch. 5.1).

(Note: Do not operate or use any panels or searchlights during this procedure. Ensure that all are powered up.)

1. Set all panels to standby ("turn off") by using the on/stdby button. The backlight will turn off. Locate the master panel (see ch. 3.2), and turn it on again.
2. Press and hold both speed buttons ('fast' and 'slow') for at least 5 seconds.
3. On the 2613 and 2614 panels, the indicators in the 'searchlight select' buttons will start flashing in sequence. On the 2612 panels, the indicators in the speed buttons will flash in sequence. Release the speed buttons.
4. The sequential flashing will last for a couple of seconds, as long as the scanning of the bus is performed. When the flashing is finished, the system is ready for use.
5. Repeat the procedure if necessary.

4.4 RESET OF SEARCHLIGHTS

1. Remove power (230VAC) to the searchlight (motor unit), wait for approx. 10 sec, and reconnect the power. (It is not necessary to disconnect the xenon power supply). If several searchlights need to be reset, repeat this for each searchlight before commencing to step
2. Do a re-scan from the master panel. Alternatively, remove and re-apply power (24VDC) to the panels, either all or at least the master panel. The searchlight will now move to the right and upwards to find the end positions, and back to center. If necessary, watch the searchlight at this stage to verify the movement.

4.5 RECALIBRATE END LIMITS ON SEARCHLIGHTS

1. Open the searchlight junction box and set DIP-switch no. 1 to ON.
2. Remove power (230VAC) to the searchlight (motor unit), wait for approx. 10 sec, and reconnect the power. (It is not necessary to disconnect the xenon power supply). If several searchlights need to be reset, repeat this for each searchlight before commencing to step 3.
3. Do a re-scan from the master panel. Alternatively, remove and re-apply power (24VDC) to the panels, either all or at least the master panel. The searchlight will now do a complete movement up – right – left – center/down to find the end limit positions, and back to center. If necessary, watch the searchlight at this stage to verify the movement.
4. Set the DIP-switch no. 1 back to OFF and close the junction box.

4.6 CHANGING ADDRESS ON A SEARCHLIGHT

PREPARATION:

1. Identify the master panel. Unmount the master panel, so as to get access to the rotary switches on the rear. **IMPORTANT:** Make a note of the settings of the switches
2. Disconnect the power supply to all the searchlights. (Leave the power supply to the panels connected).

PROCEDURE:

3. Connect the power supply to the searchlight whose address shall be changed.
4. Turn off the master panel using the power button. Release the button. The backlight will turn off.
5. Set the rotary switch labeled "N/A" on the rear, set it to one lower than the new address of the searchlight (address minus 1, e.g. set to '1' if the searchlight is to be set to address '2', i.e. respond to the first press of button '2/6').
6. Press and hold the power button for at least 5 seconds. While holding the power button, push the button marked "3/7" (a short normal push and release). This button can alternatively be pushed several times, until the panel backlight is lit. When the backlight is lit, release the power button. The panel will now send a special message to the searchlight.
7. Check the indicators in the searchlight select buttons ("1/5", "2/6", "3/7" and "4/8"). After approx. 5 – 10 sec. one of them will flash fast (2 times pr. sec) to show the new address of the searchlight.

4 SPECIAL PROCEDURES

8. Push power button once to turn on the panel. Check if the searchlight can be controlled on the new address. The procedure can be repeated if necessary.
9. If more searchlights are to be changed, disconnect the power to the current searchlight, and repeat the procedure from step 3.

FINALIZING:

10. **IMPORTANT:** Turn the rotary switch on the rear of the master panel back to the initial (noted) setting.
11. Mount the master panel back in place, connect the power supply to all the searchlights.
12. Do a re-scan of the bus, either by disconnecting and reconnecting the power supply to the master panel, or by following the re-scan procedure described further up in this document. Repeat if necessary.

INDICATOR TEST:

13. To see if all indicators on the front of the panel are working, proceed as follows:
14. Turn off panel with the 'ON/STBY' button.
15. Press and hold the 'ON/STBY' button for at least 5 seconds.
16. While holding the 'ON/STBY' button, press (and release) the 'DIM' button shortly.
17. Release the 'ON/STBY' button. All indicators on the front of the panel will now flash rapidly.
18. If joystick or buttons are operated during this test, a corresponding LED (s) will extinguish as long as the button is held.
19. Press (and release) shortly the 'ON/STBY' button to exit lamp test mode and to turn on panel.

NOTE: Slow flashing is 1 sec. on, 1 sec. off. Fast flashing is 2 flashes per second.

5 FAULT FINDING

5.1 GENERAL

1. Check which searchlights and from which panels the problem exists on. Can the fault be isolated to a particular searchlight or panel?
2. If it is a system with a radio control module (RCM), check if the same problems exists with the ordinary (wired) panels.
3. When changing a setting/address on a unit, remove and reapply power to let the change become operative.

5.2 PROBLEMS WITH MOVEMENT

1. No movement: Check if light is able to turn on/off: do a re-scan on the master panel (see ch. 5.2 or 5.3).
2. Limited or shifted range of movement: possible problems with end limit switches. Try resetting the searchlight (see ch. 5.4).
3. The searchlight moves with low speed only (And incorrect position indication on panel): Possible problems with position sensors. Try resetting the searchlight (ch. 5.4) or a recalibration of end limits (ch. 5.5).
4. Spurious movement when joystick or panel is not operated: Possible electrical noise or interference on the communication network. Check if this happens under special operation conditions of the ship or other equipment. Alternatively, try resetting the searchlight (ch. 5.4)
5. Not able to select a searchlight from any of the panels. Possible failure of power supply or power dip (230VAC) to the searchlight. Do a re-scan on the master panel (see ch. 5.2 or 5.3).

5.3 PROBLEMS TURNING ON OR OFF THE LAMP

1. Check if movement functions normally. If yes, then the communication with the searchlight is OK and the fault may be in the lamp circuits: Check the lamp itself, electrical wiring and relays. If no, first try to reestablish the communication with the searchlight: Do a re-scan on the master panel (see ch. 5.2 or 5.3).
2. Check if green indicator in "light" button functions normally (toggles on/off when pushing the button). If yes, then the communication with the searchlight is OK and the fault may be in the lamp circuits: Check the lamp itself, electrical wiring and relays. If no, the communication network may be faulty or being influenced by interference, or the searchlight may have a power loss (230VAC). Try to reestablish the communication with the searchlight: Do a re-scan on the master panel (see ch. 5.2 or 5.3).
3. Check relay in the lamp power supply circuit: Contactor in junction box, relay on motor drive electronics.

5.4 PROBLEMS WITH PANELS

1. A master panel is required to get the system to function. If the panel set to master is faulty, the system will not function. Change address on one of the other (slave) panels to '0', remove and reapply power (to the panel), and the panel will function as master. See also ch. 5.2 and 5.3 for re-scan from the master panel.
2. If a button or a joystick is faulty, do the indicator test described in ch. 2.2.

5.5 PROBLEMS AT INSTALLATION

1. Check correct wiring (A is always connected to A, likewise for B and Ref. No grounding of Ref or connected to protective earth). Tip: if one unit in the middle of the comm. network bus does not respond, it may be that A and B are swapped both for the incoming and the outgoing cable.
2. Jerky movement (and/or light goes uncontrolled on/off) can be caused by electrical noise on the network. Check correct wiring, especially mix-up of Ref and A or B.
3. Two or several searchlights move simultaneously when only one is selected from the panel: Check the addresses of the searchlights (same address on two units).
4. Not possible to select any searchlight, or strange behaviour of the indicators on one or more panels. Check the addresses on the panels, two or more set at the same address.
5. Master panel: There shall be one and only one panel set to master (ADR = 0) in a system. If no panel is set as master, the system will appear "dead", if more than one, the panels will have an unpredictable behaviour.
6. If several faults are present on a system, try to isolate one panel and one searchlight and get this to work, then add more units step by step.
7. To decide whether cabling or searchlight is erroneous, power a panel (set to master) with a 9V battery and connect the communication network directly to a searchlight.

6 TECHNICAL DATA

6.1 CLEANING

The control panel may be cleaned with a mild detergent on any parts.

PANEL:

Model:	2612, 2613, 2614
Length:	163 mm
Width:	96 mm
Height:	62 mm
Height w/joystick:	105 mm
Weight:	360 g
Mounting:	Flush
Input voltage:	12 – 28 VDC
Input current (at 24V):	max 120mA
Ingress protection (DIN40050):	IP20
Operating temperature:	0°C - + 40°C
Storage temperature:	- 20°C - + 60°C

