SLC® Line → BC24 (G2) master

THC24-B G2

Technical datasheet

Digital communication and control unit for the control and reliable monitoring of one motorized fire damper in ventilation systems

SLC ®

Main characteristics

+ **BC24 G2 / BC24 master**
+ **1:1 replacement for THC24-B**
+ display of damper position
+ monitoring of actuator travelling time
+ monitoring of the thermoelectric tripping device of the actuator
+ monitoring of a smoke detector attached at the BC24
+ manual damper test via button on device
+ tried and tested SLC® wiring principle, in star topology via 2 x 1.5 mm2 cables to the fire damper
+ conventional control via potential-free contact
+ relay outputs for enabling ventilation
+ relay output (BAE** or smoke detector triggered)

* The datasheet for the BC24 G2 is available as a separate document
** Thermoelectric tripping device

Content

1 SUMMARY

The THC24-B G2 is the successor of the THC24-B. The module communicates with the communication units BC24 (G2) via an interchangeable 2-wire line.

The SLC® communication principle used enables the actuator to be supplied with power directly via the communication line, so that no separate power supply line has to be laid to the damper.

The module sends and receives digitally encoded commands and status messages. The simultaneous transmission of check codes ensures maximum transmission reliability.

In the event of a communication interruption, the THC24-B G2 module reports the fault and the BC24 (G2) autonomously moves the damper to the safety position.

Four LEDs are used to display the movement sequences and states of the damper and the safety elements.

The movement sequence can be easily followed on the display. The current position of the damper can be seen at any time. A button allows the user to test the damper and is used to reset errors.

The device is equipped with 4 relay outputs to forward the states 'damper closed', 'damper open', 'thermoelectric tripping device / smoke detector error' and 'general error'.

2 TECHNICAL DATA

Electrical data	**Nominal Voltage**	**24 VAC -15%...+20% , 50/60 Hz** **24 VDC…28 VDC** **Attention, severely limited cable lengths when using 24.0 VDC!** **Use power supply with adjustment function**
	Power Consumption	1.5 VA
	Terminals	Plug-in spring-loaded
	Relay load	0.5 A @ 24 VAC; 0.5 A @ 24 VDC
Safety	Protection Class	**III (safety extra-low voltage)**
	EMC	CE according 2014/30/EU
	Mode of operation	Type 1 (EN 60730-1)
	Ambient temperature	-20° … +50°C
		-20° … +80°C
	Humidity Test	95 % RH, not condensing (EN 60730-1)
	Maintenance	Maintenance-free
Mechanical data	Dimensions	Width 24.5 mm Height 76.75 mm (without terminals) Depth 78 mm (on DIN rail)
	Weight	approx. 150 g
	Installation	Clips onto 35 mm DIN rail.

Table 1 Technical data

3 DISPLAY AND OPERATION

LED green

on	damper is open
blinking	damper is opening
flashing	open command present and actuator not connected or thermoelectric tripping device of the actuator triggered

LED yellow

on	damper closed
blinking	damper is closing

LED red (>72°C)

blinking	thermoelectric tripping device or smoke detector on BC24 (G2) interrupted
on	thermoelectric tripping device or smoke detector on BC24 (G2) was temporarily interrupted. (saved error)

LED red (horn)

blinking	current mechanical error
on and shortly off	saved mechanical error
flashing	communication error (SLC line shorted or open)
on	saved communication error

Button

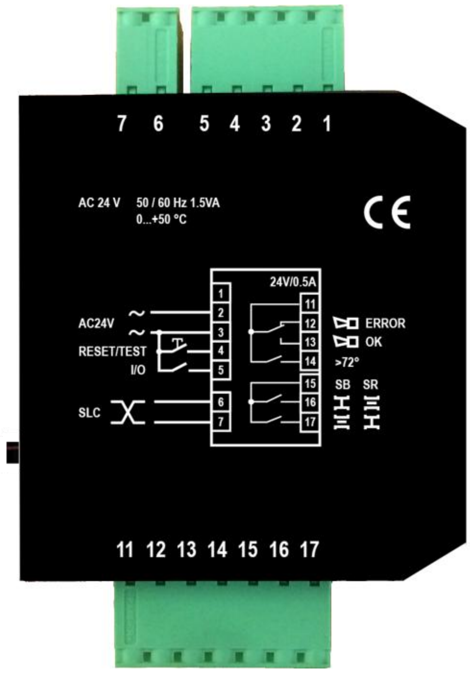
no error	as long as the button is pressed, the actuator moves in the opposite direction, i.e. reverses the control of terminal 5
on error	for current errors and stored mechanical errors, a reset / **self-test** is carried out; for other stored errors, only the errors are deleted without a reset / self-test

Self-test

The self-test is performed when the system is switched on. LEDs during the self-test:
All LEDs light up for 3 seconds, followed by alternating green and yellow flashing until the self-test is complete.

The self-test checks whether the actuator can reach and leave the safety position within the specified time (70 seconds) and whether the actuator is drawing power. If the self-test is triggered by a reset due to mechanical errors, it also checks whether the operating position is reached.

4 INPUT TERMINALS & SLC® CONNECTION



Power supply

Terminal 2 + 3	24 VAC (-15 %...+20 %, 50/60 Hz)
	24 VDC…28 VDC (Caution with 24.0 VDC voltage, see **chapter 6**)

Control with AC supply

Terminal 4	connected to 2 or 3: Test and Reset (acts like the button)
Terminal 5	connected to 2 or 3: **open damper**

Control with DC supply

Terminal 4	connected to the positive pole of the power supply: Test and Reset (acts like the button)
Terminal 5	connected to the positive pole of the power supply: **open damper**

Connection to BC24 (G2) and damper

Terminal 6 + 7	SLC line, **interchangeable**

The current of the SLC output is limited to 700 mA by means of hardware and additionally monitored by software - in the event of a short circuit, the output is deactivated for 1 minute

Never bring the SLC wires into contact with earthed parts. With a grounded transformer, the internal full-bridge rectifier would be short-circuited and destroyed.

5 RELAYS

Terminal 11+12	**ERROR**	connected without power supply or if an error is present
Terminal 11+13	**OK**	connected if no error is present
Terminal 11+14	**>72°**	open when thermoelectric tripping device / smoke detector on BC24 (G2) triggered
Terminal 15+16	**closed**	connected when the damper is closed
Terminal 15+17	**open**	connected when the damper is open **(enable ventilation)**

6 MAXIMUM LENGTHS OF THE SLC® LINE

The maximum permissible distance between the THC24-B G2 and the BC24 (G2) unit depends on the following factors:

- Input voltage of the THC24-B G2
- Cable cross-section used for the SLC® line (connection to BC24 (G2))
- Drive performance
- Smoke switch performance

6.1 EXAMPLE WITH AC POWER SUPPLY

When using a sufficiently dimensioned 230/24 V AC transformer and a cable cross-section of 1.5 mm2, very long distances can be achieved:

Power Supply	Cross Section	Actuator	Smoke Detector ORS 142 K	Max. length
24 VAC	1.5 mm^2	BF24-ST(18Nm)	Yes	475 m
24 VAC	1.5 mm^2	BFN24-ST (9Nm)	Yes	500 m
24 VAC	1.5 mm^2	BFL24-ST (4Nm)	Yes	500 m

6.2 EXAMPLE WITH DC POWER SUPPLY

When using 24.0 VDC, the cable length is severely limited! We therefore recommend using a power supply that allows the output voltage to be increased by a few volts:

Power Supply	Cross Section	Actuator	Smoke Detector ORS 142 K	Max. length
24 VDC	1.5 mm^2	BF24-ST (18Nm)	Yes	35 m
24 VDC	1.5 mm^2	BFN24-ST (9Nm)	Yes	55 m
24 VDC	1.5 mm^2	BFL24-ST (4Nm)	Yes	75 m
25 VDC	1.5 mm^2	BF24-ST (18Nm)	Yes	150 m
25 VDC	1.5 mm^2	BFN24-ST (9Nm)	Yes	225 m
25 VDC	1.5 mm^2	BFL24-ST (4Nm)	Yes	275 m
26 VDC	1.5 mm^2	BF24-ST (18Nm)	Yes	325 m
26 VDC	1.5 mm^2	BFN24-ST (9Nm)	Yes	400 m
26 VDC	1.5 mm^2	BFL24-ST (4Nm)	Yes	475 m

7 TRANSFORMER / POWER SUPPLY DIMENSIONING

The power of the transformer or power supply must be sufficiently dimensioned.

7.1 EXAMPLE WITH TRANSFORMER

S(THC24-B G2)	+	S(BC24 G2)	+	S(ORS142K)	+	S(**BF24-ST**)	= S_{Tot}
1.5 VA	+	1.5 VA	+	1 VA	+	10 VA	= **14 VA**

S(THC24-B G2)	+	S(BC24 G2)	+	S(ORS142K)	+	S(**BFN24-ST**)	= S_{Tot}
1.5 VA	+	1.5 VA	+	1 VA	+	6 VA	= **10 VA**

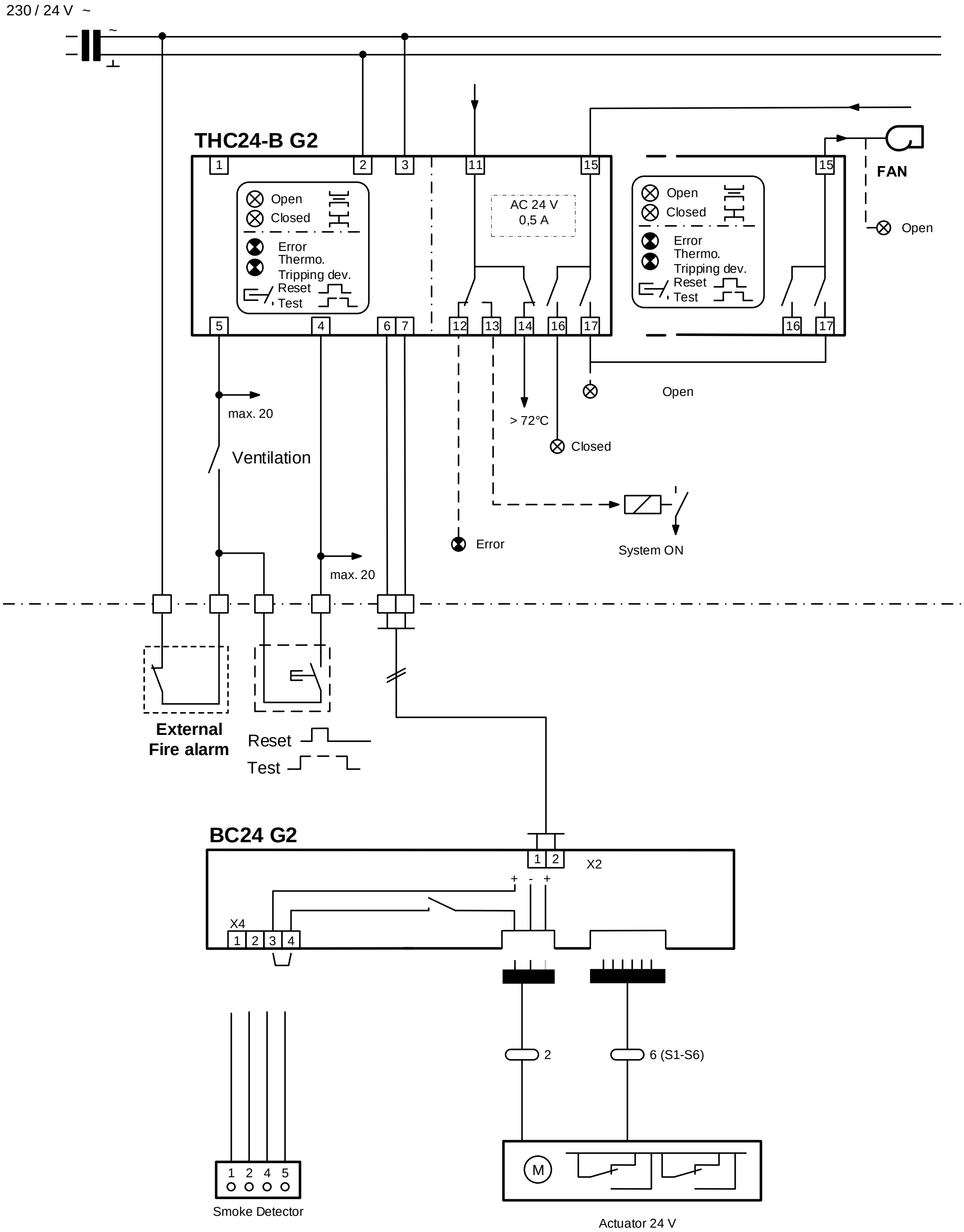
7.2 EXAMPLE WITH DC POWER SUPPLY

P(THC24-B G2)	+	P(BC24 G2)	+	P(ORS142K)	+	P(**BF24-ST**)	= P_{Tot}
1 W	+	1 W	+	0.5 W	+	7 W	= **9.5 W**

P(THC24-B G2)	+	P(BC24 G2)	+	P(ORS142K)	+	P(**BFN24-ST**)	= P_{Tot}
1 W	+	1 W	+	0.5 W	+	4 W	= **6.5 W**

8 Wiring examples

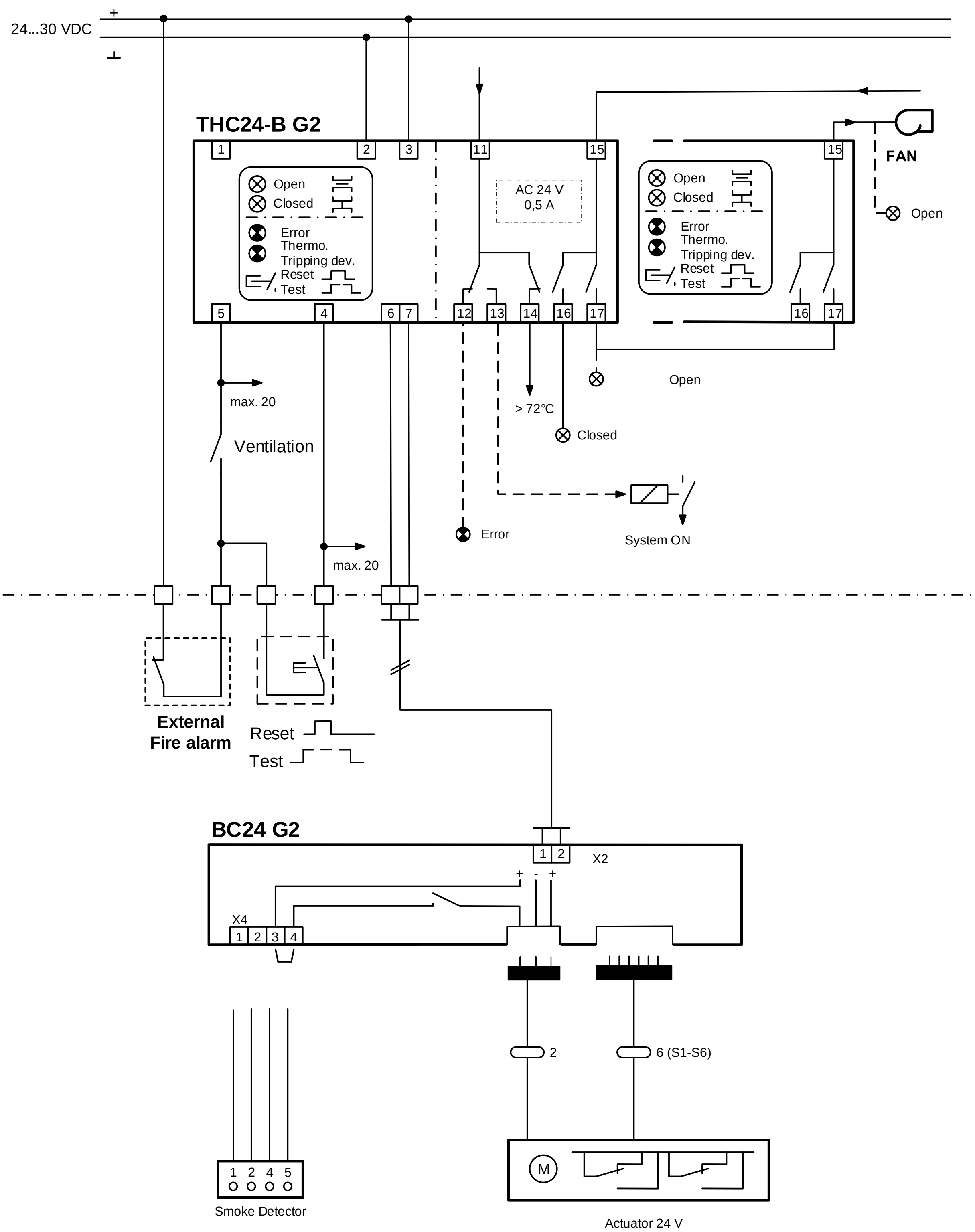
8.1 Example with BC24 G2 (AC power supply)



ORS 142 K

BF24-T-ST(18 Nm)
BFN24-T-ST(9 Nm)
BLF24-T-ST(6 Nm)
BFL24-T-ST(4 Nm)

8.2 Example with BC24 G2 (DC power supply)

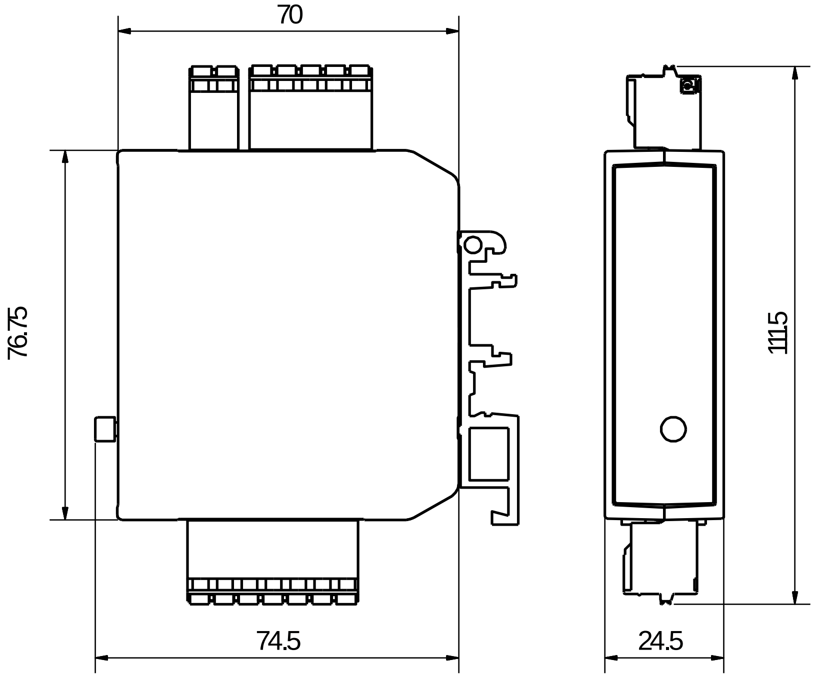


ORS 142 K

BF24-T-ST(18 Nm)
BFN24-T-ST(9 Nm)
BLF24-T-ST(6 Nm)
BFL24-T-ST(4 Nm)

9 DIMENSIONS

Dimensions in mm



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