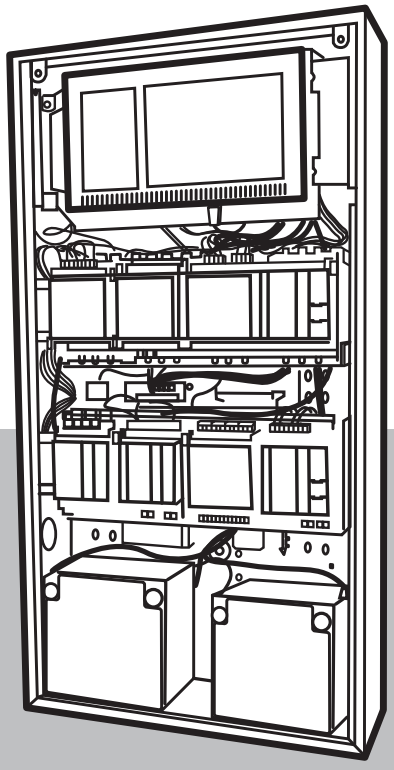
AVENAR panel



en Wiring guide

Table of contents

1	**Notices**	**4**
1.1	Safety instructions	4
1.2	Information on the fire alarm system	4
1.2.1	Devices for connection	5
1.2.2	Auxiliary power supply	5
1.3	Symbols	5
2	**Wiring to functional modules**	**6**
2.1	CZM 0004 A	6
2.2	LSN 0300 A, LSN 1500 A	7
2.3	NZM 0002 A	9
2.4	ELS	9
2.4.1	CZM 0004 A - ELS	9
2.4.2	LSN 0300 A, LSN 1500 A - ELS	10
2.4.3	NZM 0002 A - ELS	11
3	**Wiring to LSN bus elements**	**12**
3.1	FLM-420/4-CON	12
3.2	FLM-420-NAC	13
3.3	FLM-430-I2M1	13
3.4	ELS	14
3.4.1	FLM-420/4-CON - ELS	14
3.4.2	FLM-420-NAC - ELS	15
3.4.3	FLM-430-I2M1 - ELS	15
4	**Door control unit**	**16**
5	**Connecting fire service devices**	**18**
6	**Appendix**	**20**
6.1	Compatibility list FLM-420/4-CON	20
6.2	Compatibility list FLM-420-NAC	24
6.3	Calculation of max line resistance at power supply outputs	24

1 Notices

The wiring guide shows how the peripheral devices are connected to the AVENAR panel 8000 in principle. National and local regulations are not taken into account. The responsibility of considering national and local regulations are with the planner and system integrator. National and local regulations could result in different wirings.
The wiring guide is structured as follows:

– The wirings are sorted according to the device to which the peripheral devices are connected.
– Use the table of contents and the full-text search to find the required wiring.

Notice!
The connections laid out in this document also apply to AVENAR panel 2000, provided that the individual components are Bosch Sicherheitssysteme GmbH approved extensions of AVENAR panel 2000.

1.1 Safety instructions

– Assembly and installation must only be performed by qualified personnel.
– Note connection criteria of the regional authorities/institutions.

Warning!
Touching live components can be fatal.
Disconnect the power supply before carrying out installation.

Notice!
If a cable shield wire for the LSN cable has to be connected, then proceed according to LSN specifications.
- Connect LSN cable shield on panel side to designated functional earth connector:
two connections at start and end of a loop
one connection at the start of a stub
- Loop through cable shield at all LSN peripheral devices using provided terminals
- No additional connection of LSN cable shield is permitted, neither to earth connectors at any location nor to other electrical potential

Notice!
VdS 2540, VdS 2541, VdS 2543
For systems that have to comply with VdS 2540, VdS 2541 and VdS 2543, note that primary lines and power supply lines must be separated from each other. This must be done for all EN 54 Type 1 elements that are connected to the fire panel.

Notice!
FPP-3000
Consider for FPP-3000 usage:
- no creeping detection according to VdS 2540 possible
- no ground-fault detection
If you need ground fault detection, you can use the FPP-3000 Power supply with an adjoined installed FLM-430-I2M1 interface module, and enable the ground fault detection in FSP-5000-RPS.

1.2 Information on the fire alarm system

The following functional modules are part of the fire panel:

– CZM 0004 A Conventional zone module

– LSN 0300 A LSN bus module, 300mA or LSN 1500 A LSN bus module, 1500mA
– NZM 0002 A Notification appliance zone module
– ENO 0000 A | ENO 0000 B External notification module
– IOS 0020 A Communication module, 20mA for connecting the Fire brigade peripheral module FMF-ADP-TTY
– FPE-5000-UGM Module interface for connecting the Fire brigade peripheral module FMF-ADP-TTY

The following interface modules are LSN bus elements:
– FLM-420/4-CON Conventional Interface Modules 4-wire LSN
– FLM-420-NAC Signaling Device Interface Modules
– FLM-430-I2M1 Interface module 2 inputs 1 output

1.2.1 Devices for connection

The list of devices approved for connection you find in the system manual (F.01U.378.910) in the chapter *System overview*. The maximum number of devices per functional module or interface module and further system limits you find in the system manual (F.01U.378.910) in the chapter *System limits*. The parameters for and the calculations of the achievable cable length with LSN 0300 A and with LSN 1500 A you find in the system manual (F.01U.378.910) in the chapter *Planning*.

– You can find datasheets and installation manuals of the individual devices at: www.boschsecurity.com

1.2.2 Auxiliary power supply

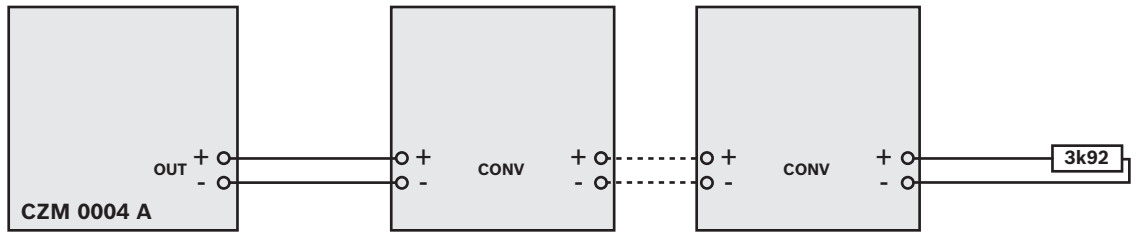
The following are used for applying auxiliary power:
– Battery controller module
– FPP-5000 Power supply kit
– FPP-3000 Power supply
– LSN 0300 A LSN bus module, 300mA
– LSN 1500 A LSN bus module, 1500mA
– Refer to the installation manual of the respective auxiliary power supply units for installation instructions and transmission path limits. Find the respective manual at: www.boschsecurity.com

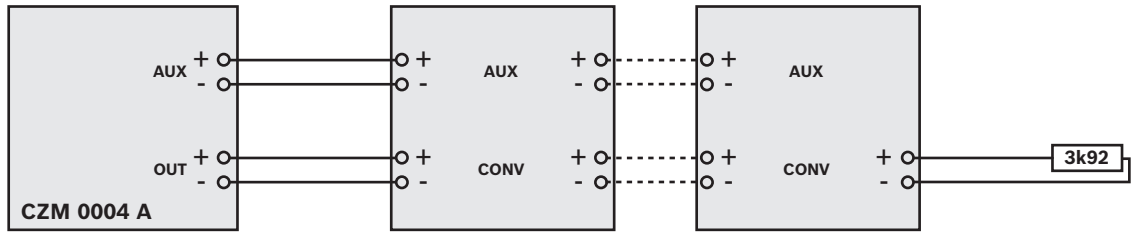
1.3 Symbols

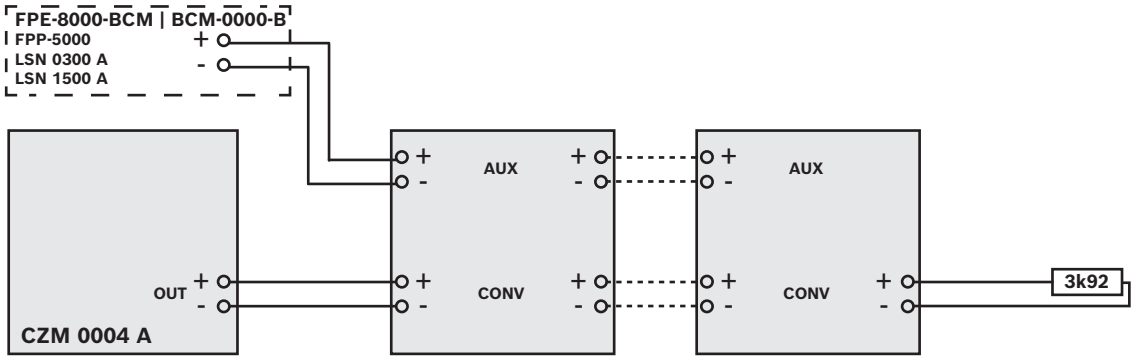
_____	Mandatory wiring
- - - - -	The dashed line represents the connection between similar elements. Only the first and the last element are drawn (or you can connect just one element).
ELS	This wiring is compliant with VdS 2489 / VdS 2540 / VdS 2541 / VdS 2543. ELS stands for Extended Line Supervision, which means fault monitoring and indication of degraded transmission paths for components type 1. This wiring offers ELS. A creeping short circuit is detected by the following modules: FLM-430-I2M1, LSN 0300 A, LSN 1500 A, and by the Battery controller module.
	Primary lines and power supply lines must be separated from each other.

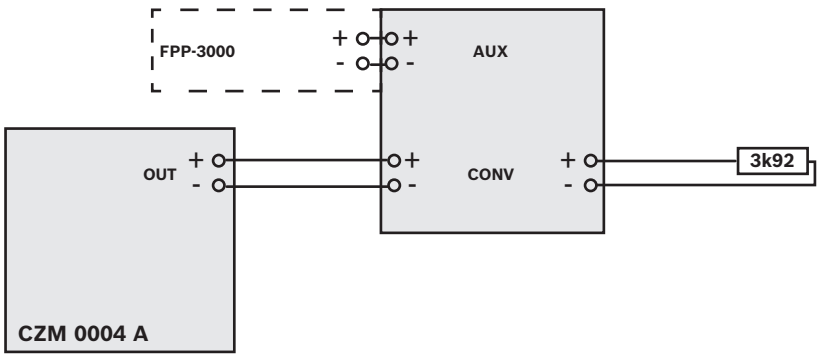
2 Wiring to functional modules

2.1 CZM 0004 A

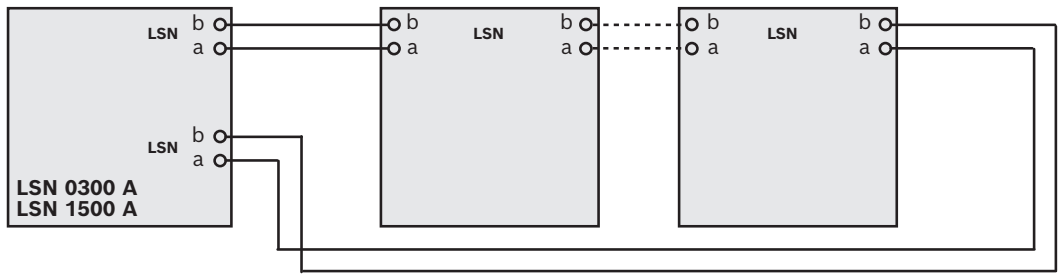


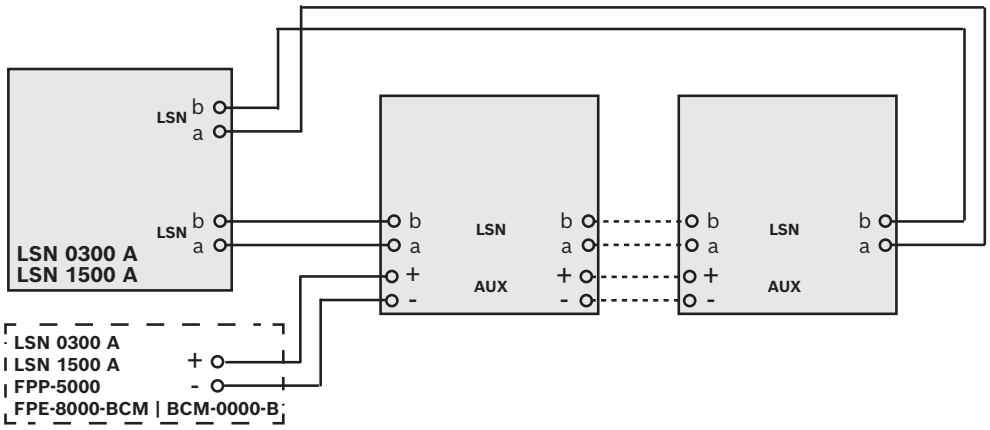


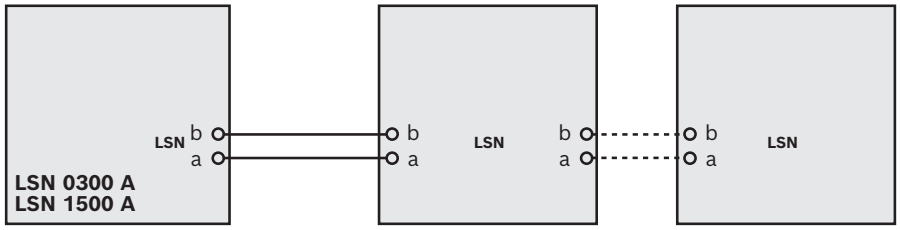


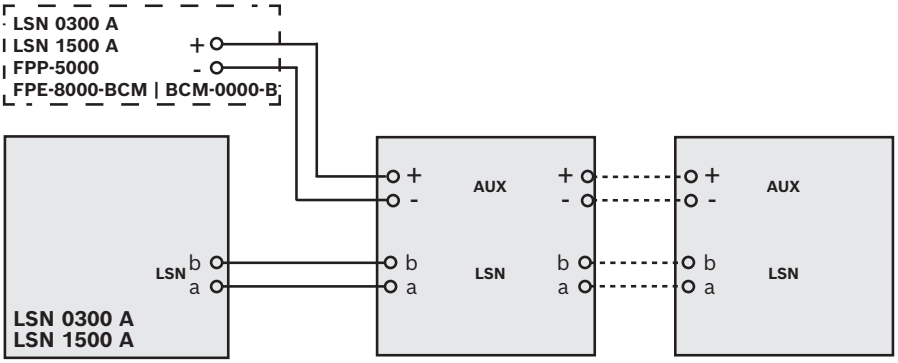


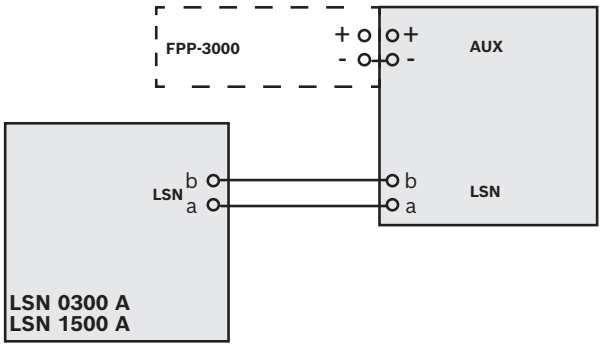
2.2 LSN 0300 A, LSN 1500 A



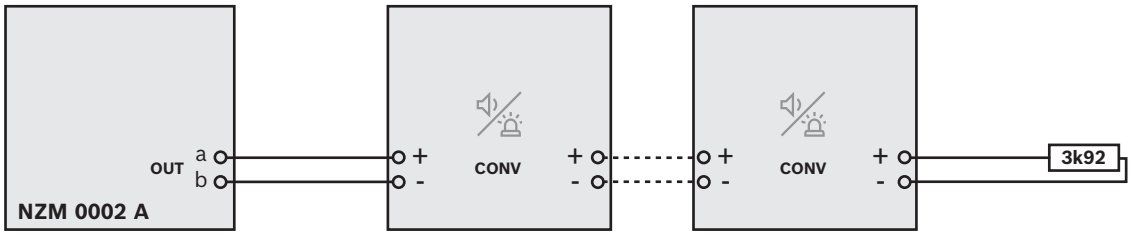



LSN
b
a
LSN 0300 A
LSN 1500 A
LSN
LSN


LSN 0300 A
LSN 1500 A
FPP-5000
FPE-8000-BCM | BCM-0000-B
+
-
AUX
LSN
LSN 0300 A
LSN 1500 A

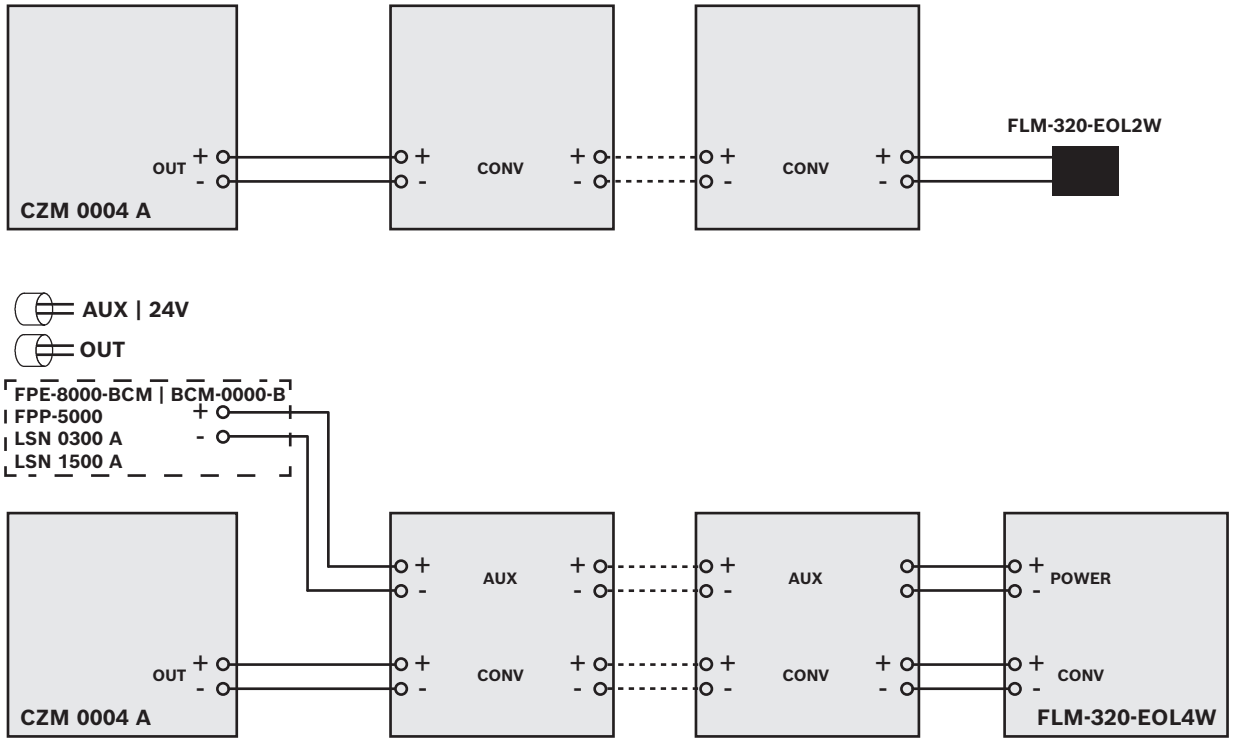

FPP-3000
+
-
AUX
LSN
LSN 0300 A
LSN 1500 A

2.3 NZM 0002 A

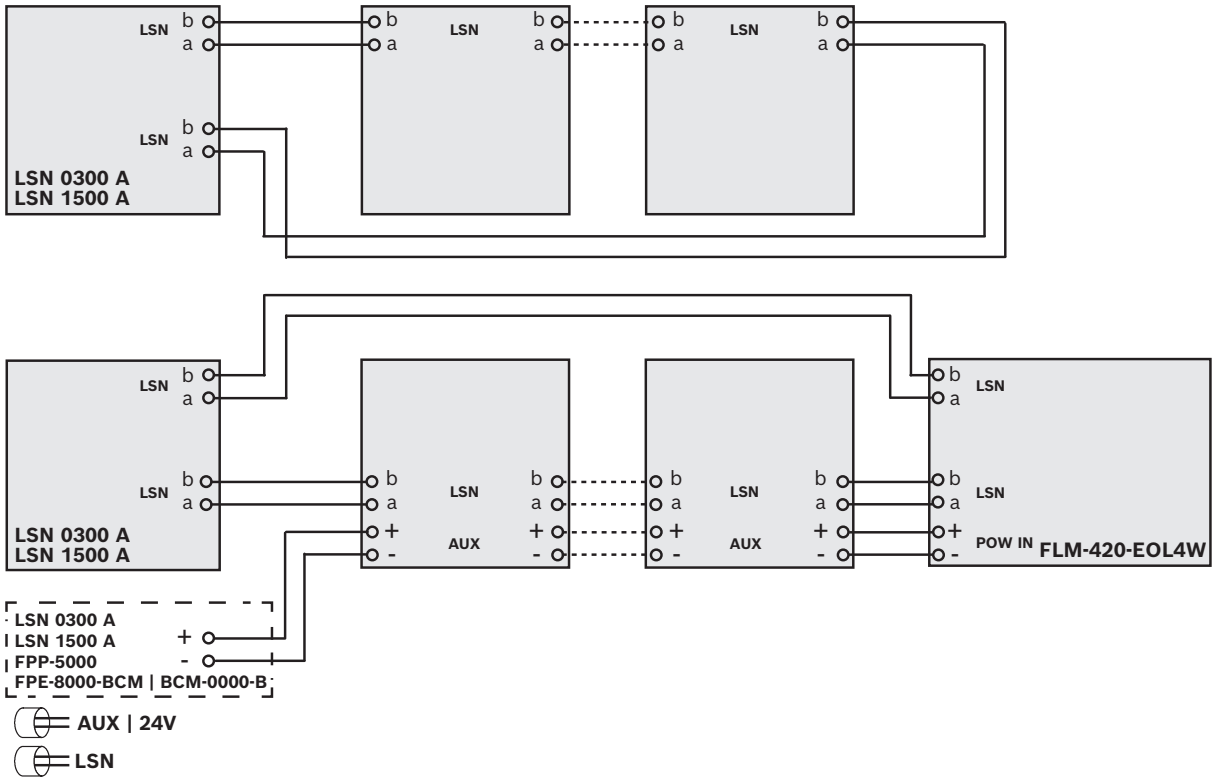


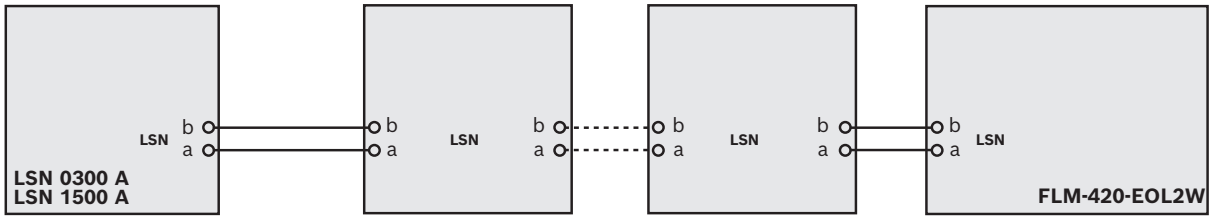
2.4 ELS

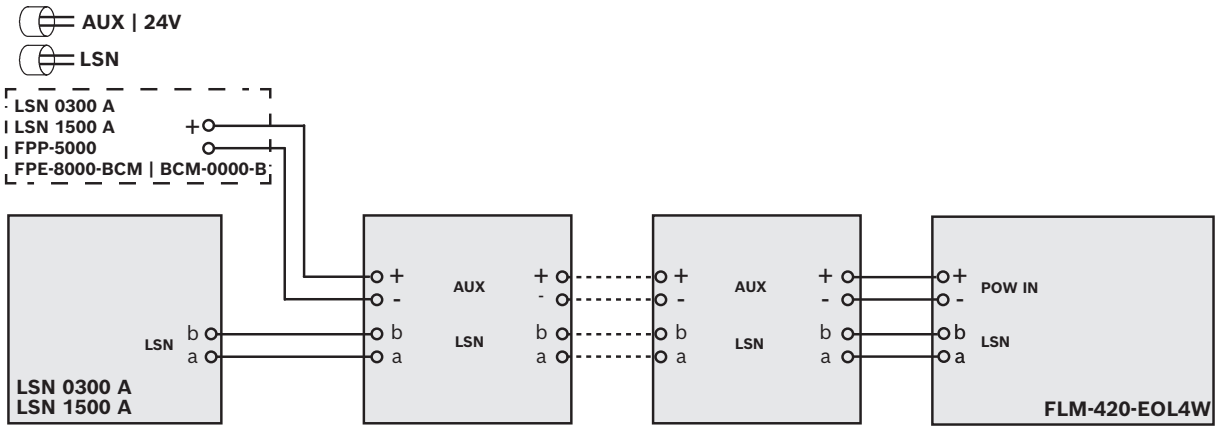
2.4.1 CZM 0004 A - ELS



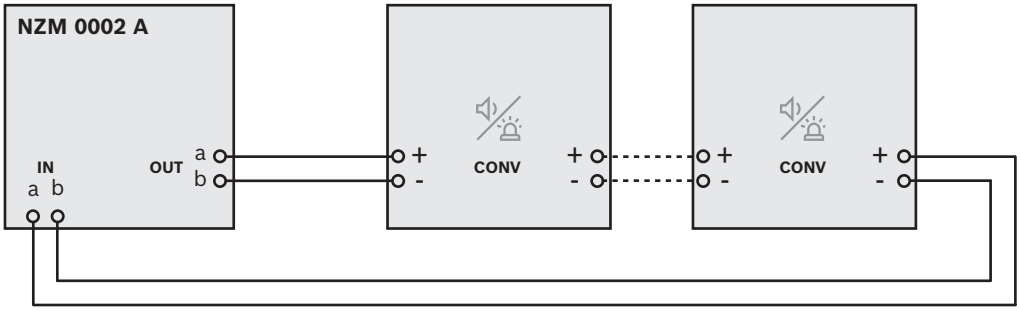
2.4.2 LSN 0300 A, LSN 1500 A - ELS





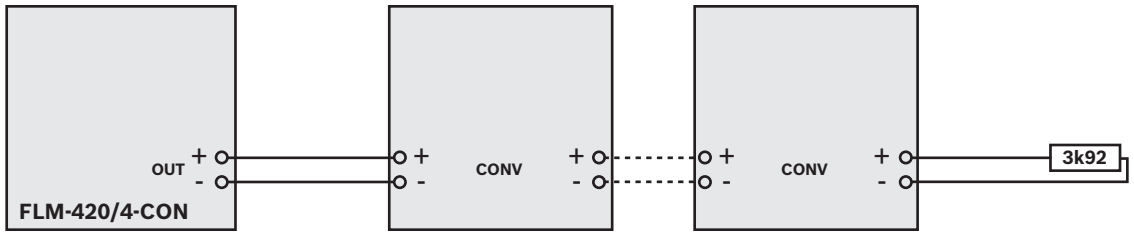


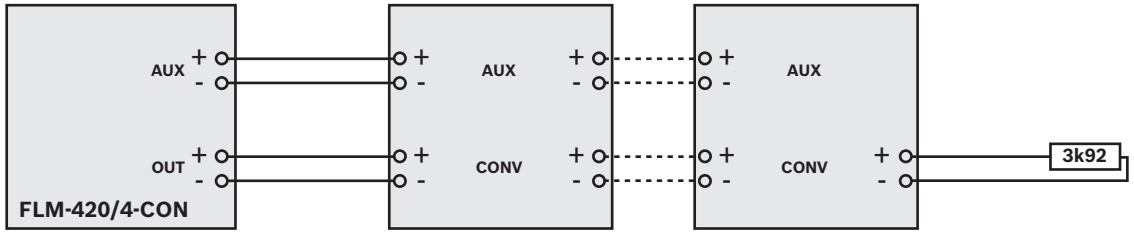
2.4.3 NZM 0002 A - ELS

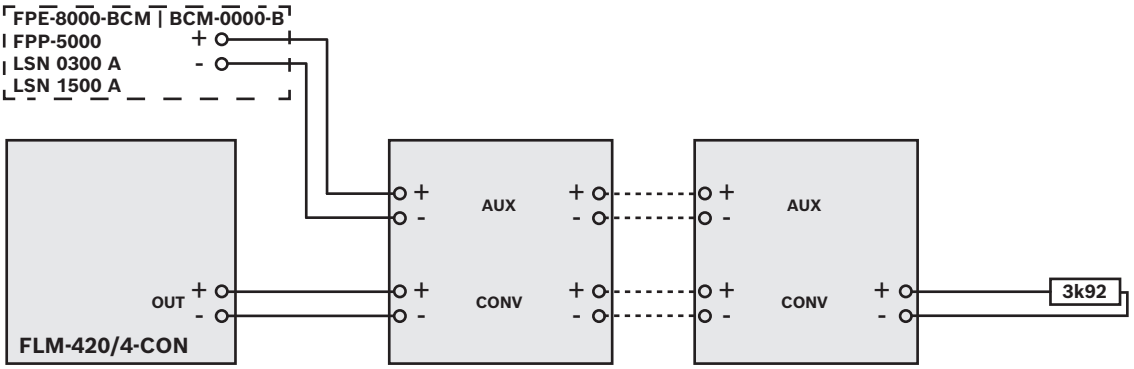


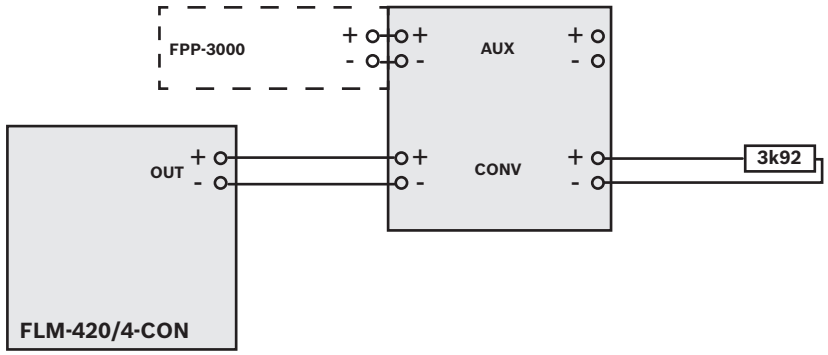
3 Wiring to LSN bus elements

3.1 FLM-420/4-CON

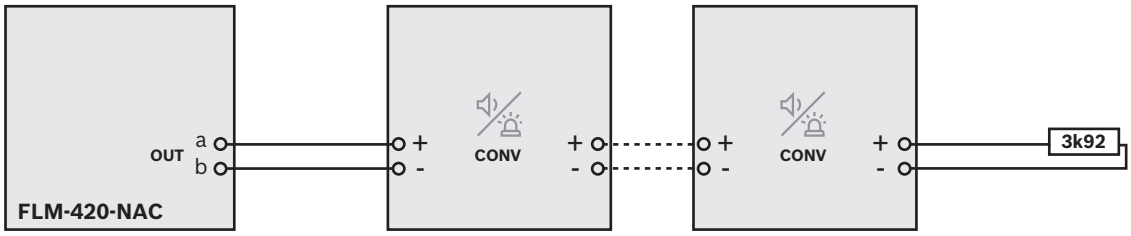




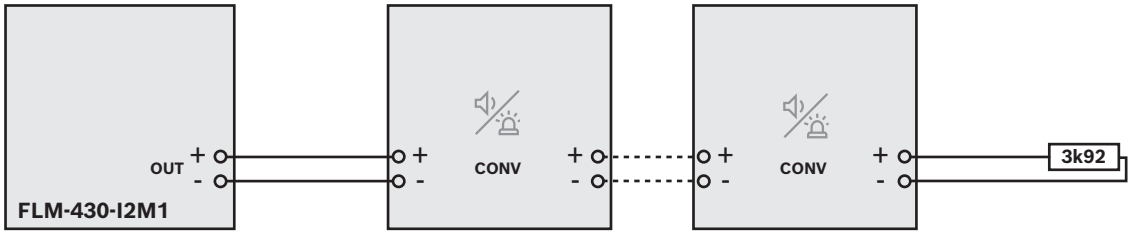




3.2 FLM-420-NAC

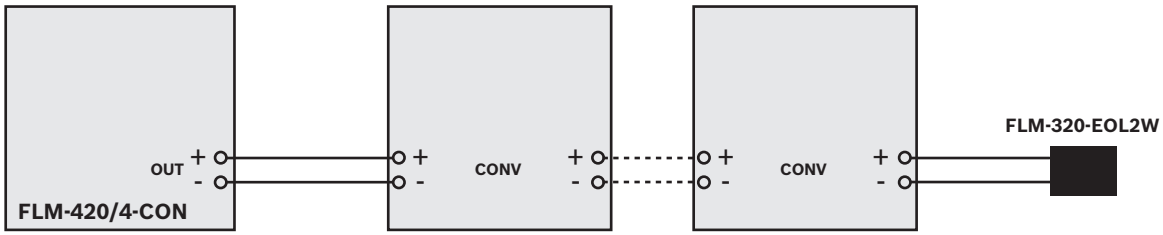


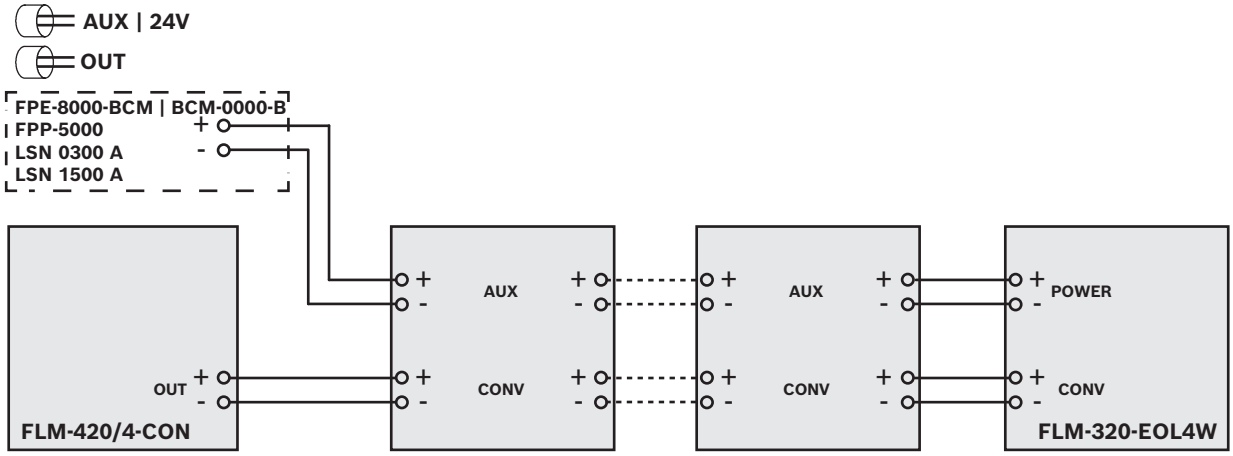
3.3 FLM-430-I2M1

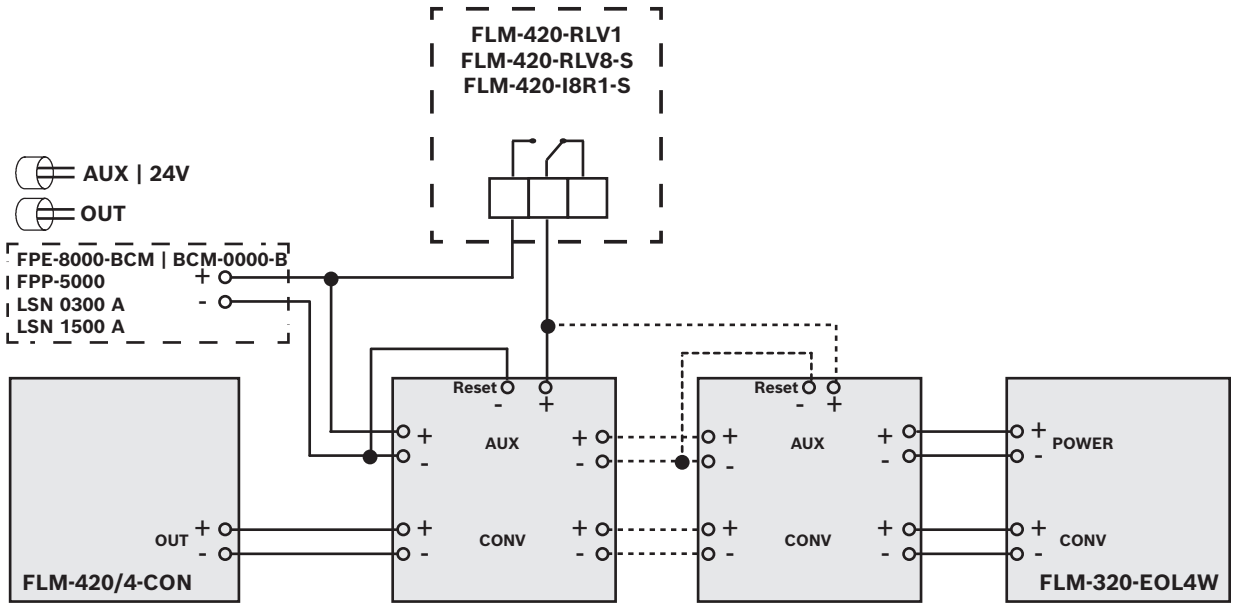


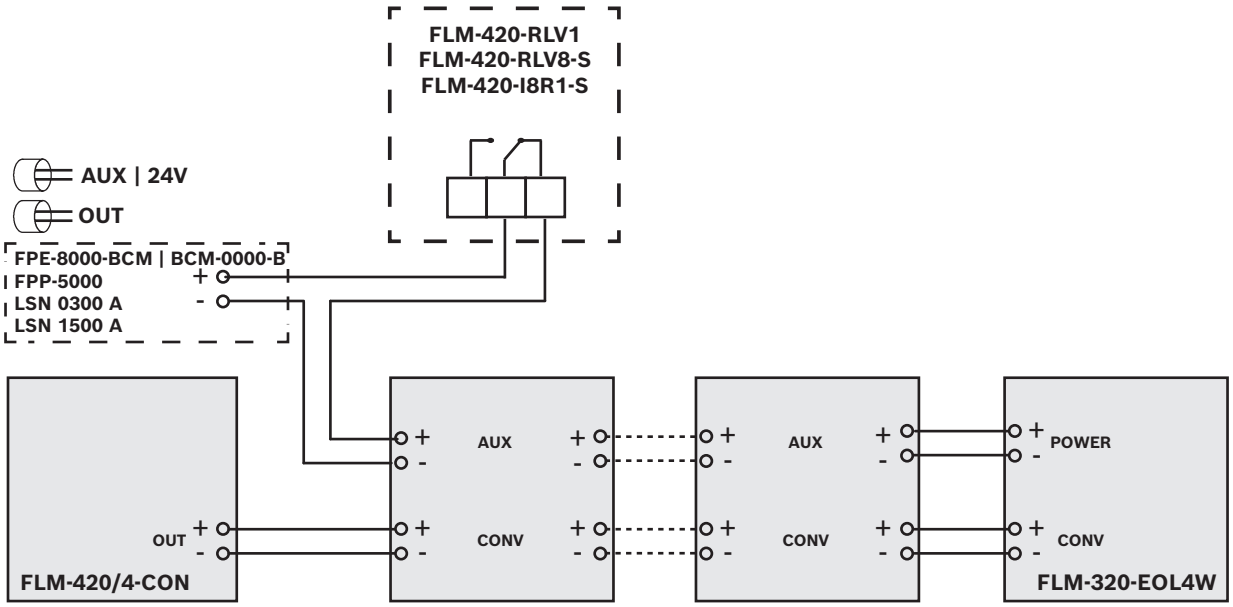
3.4 ELS

3.4.1 FLM-420/4-CON - ELS

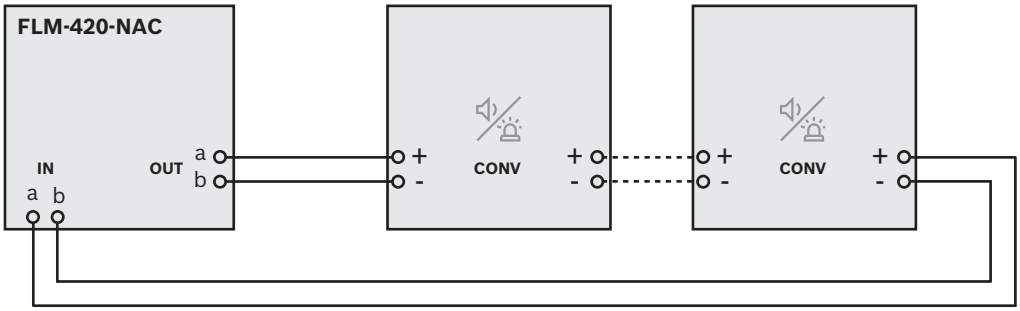




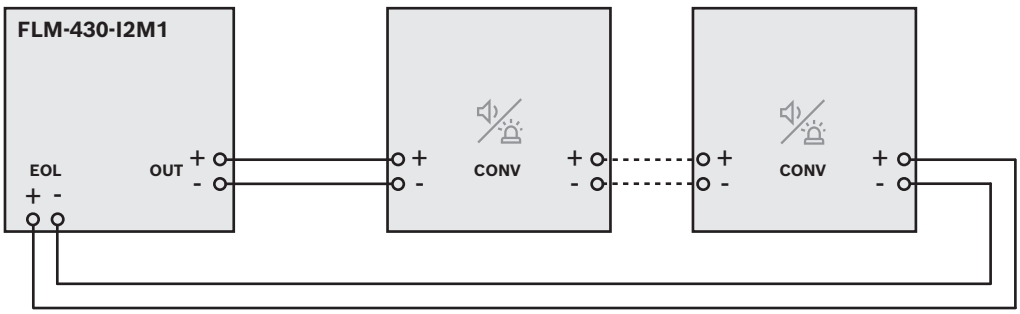




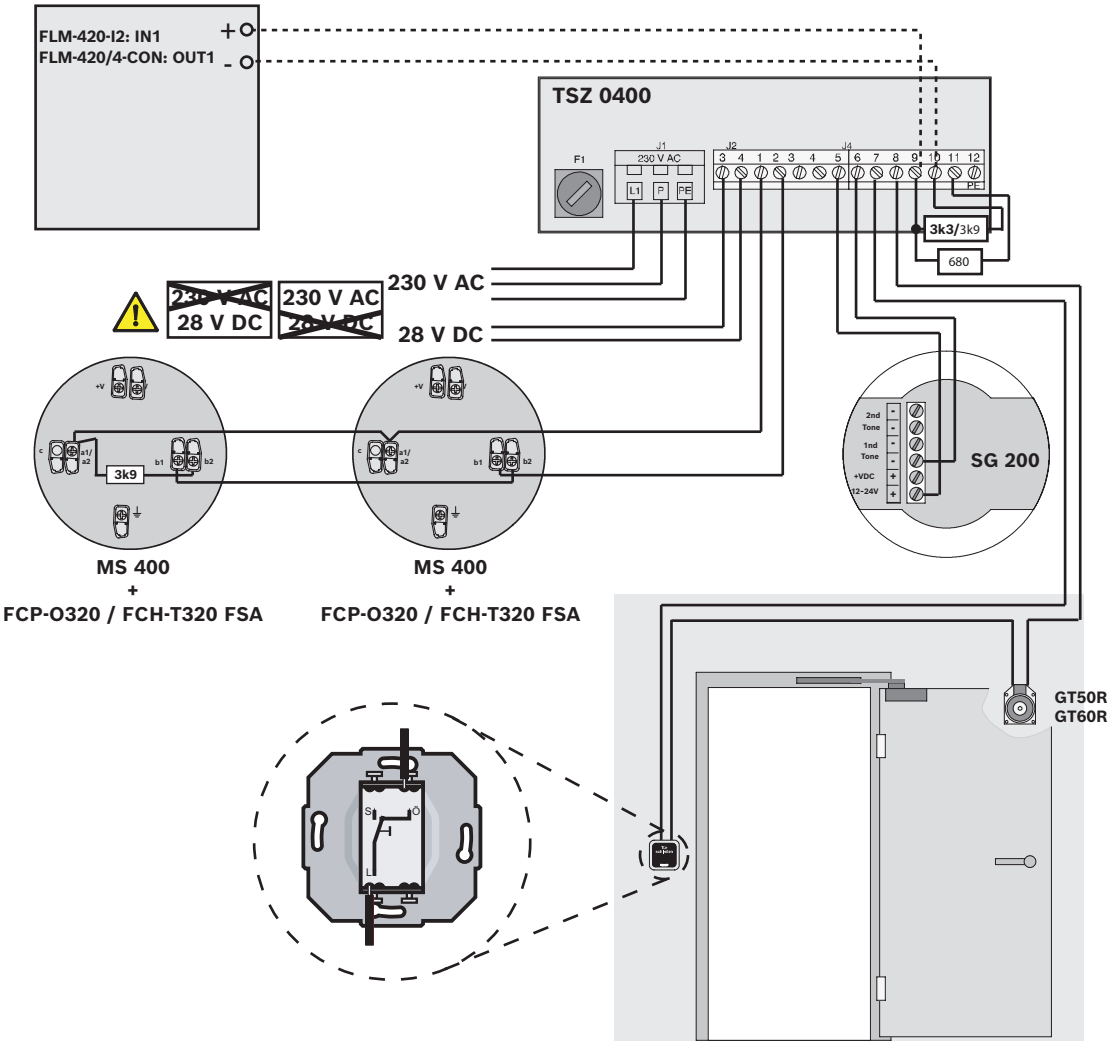
3.4.2 FLM-420-NAC - ELS

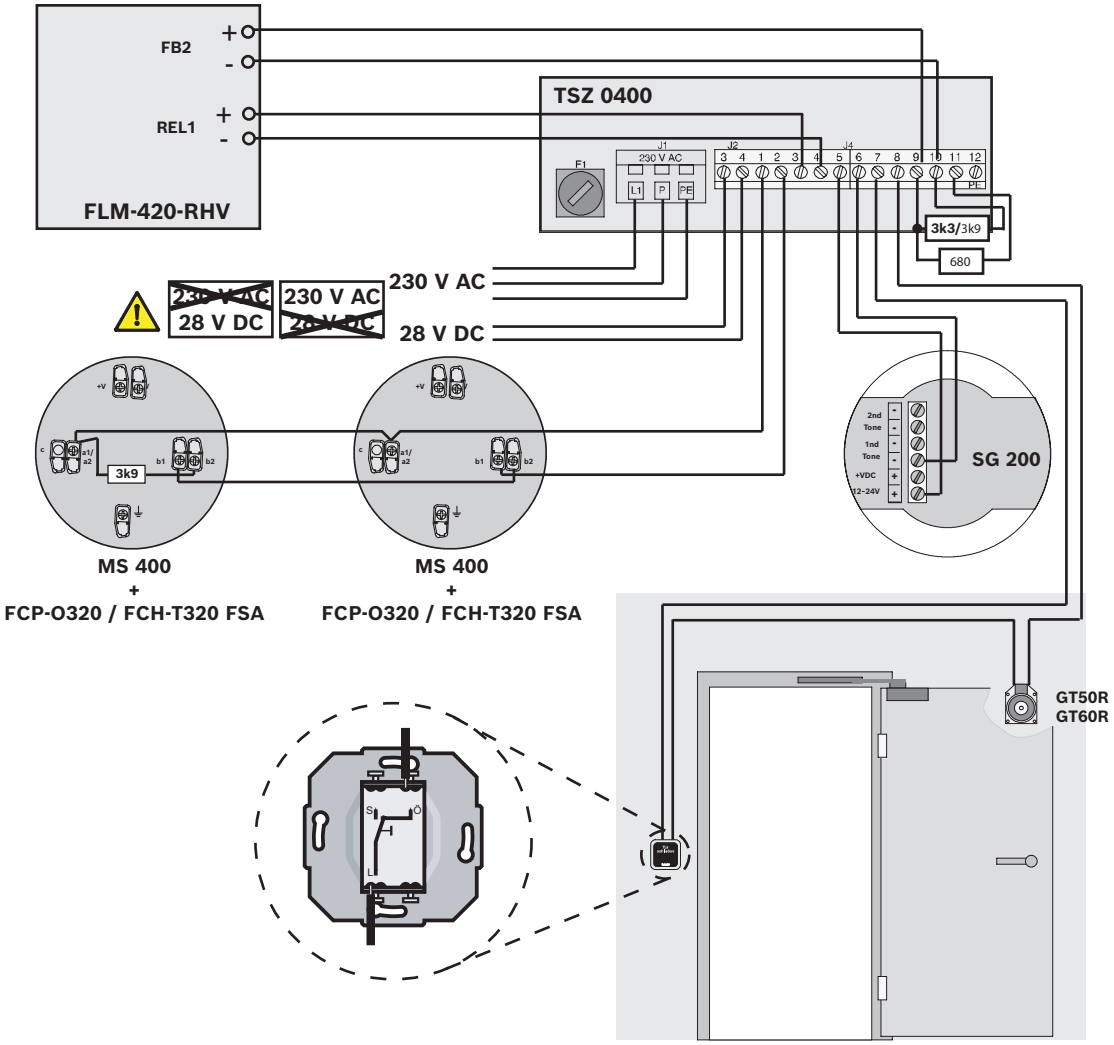


3.4.3 FLM-430-I2M1 - ELS

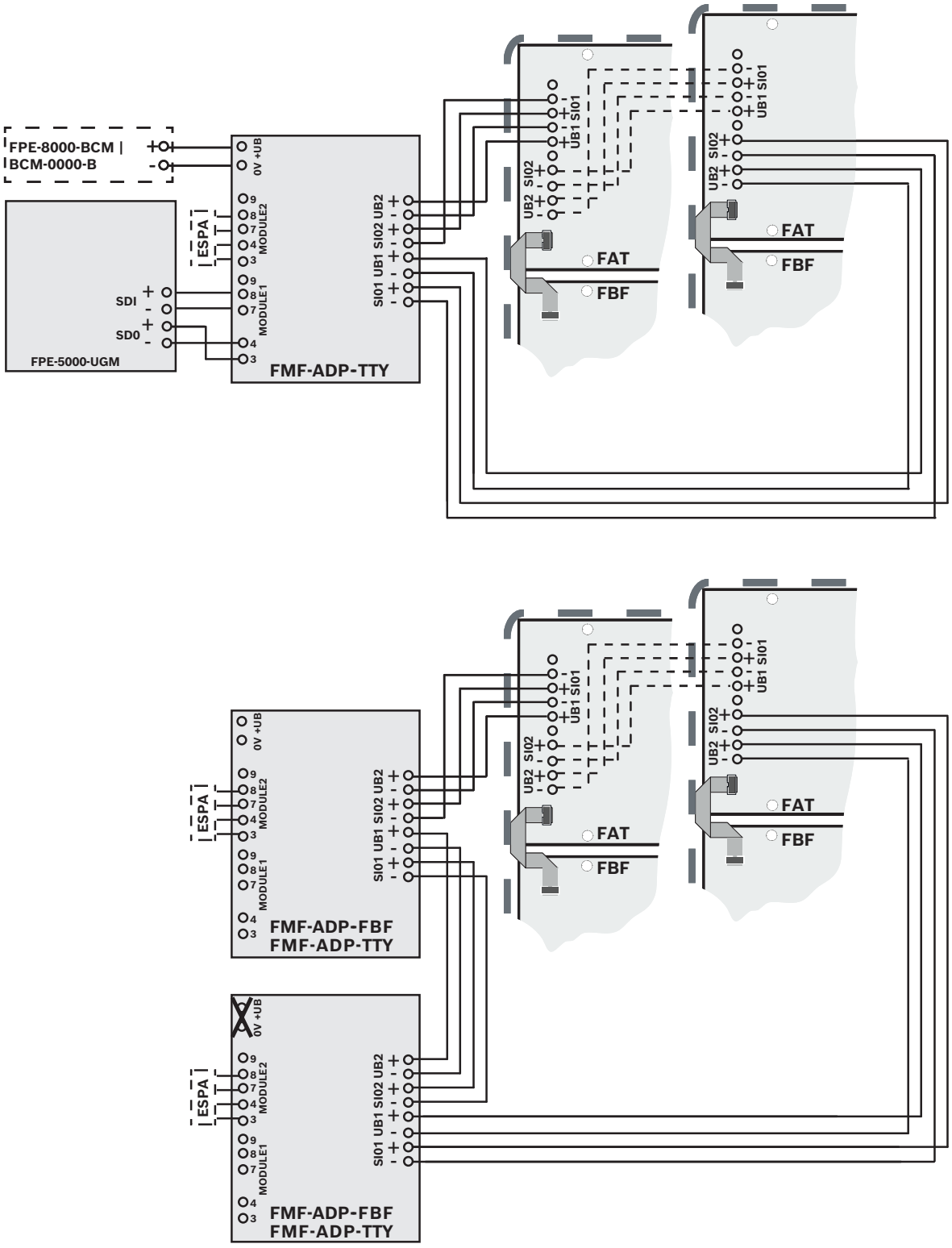


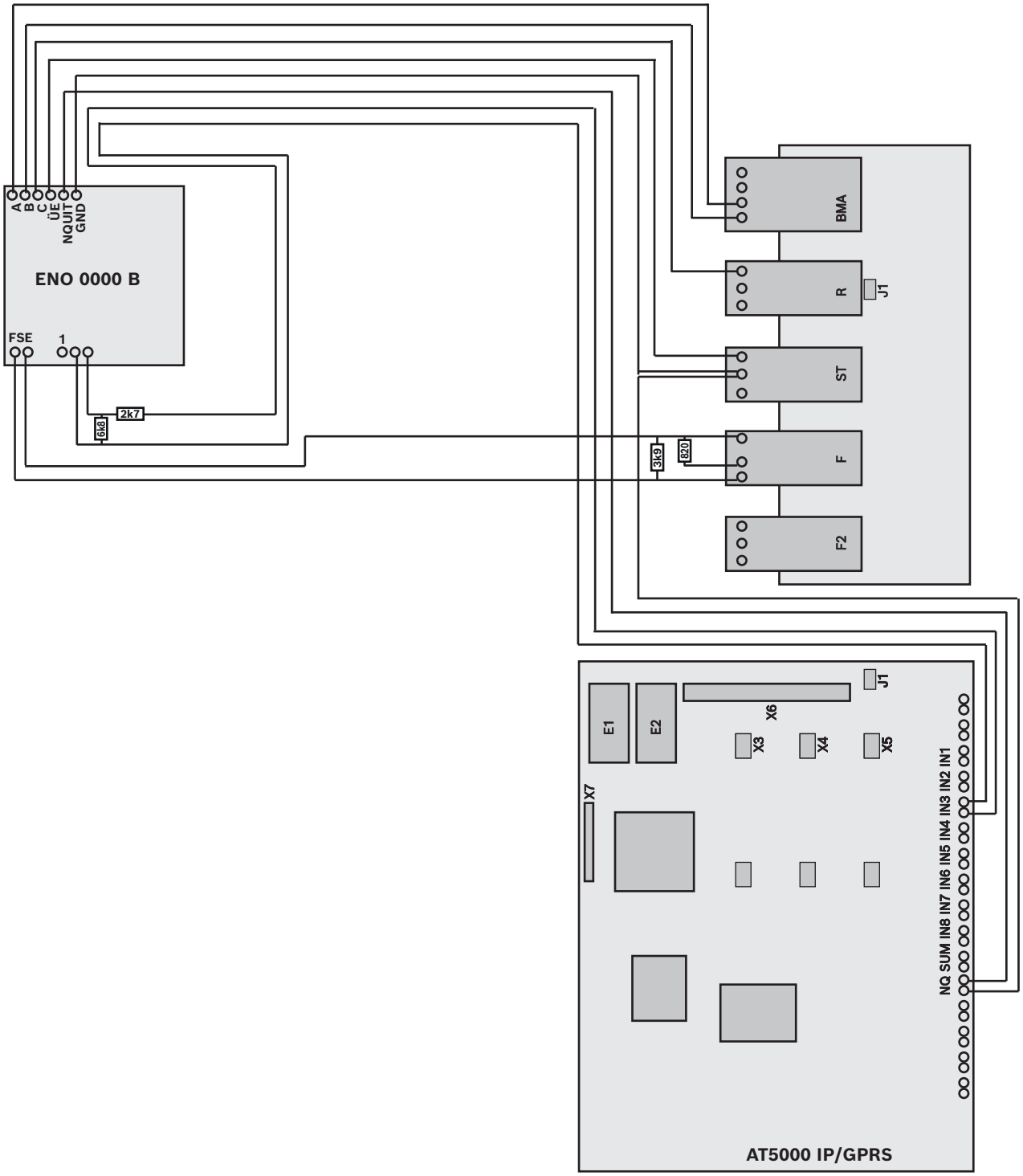
4 Door control unit




FB2
+
-
REL1
+
-
FLM-420-RHV
TSZ 0400
F1
J1
230 V AC
L1
P
PE
J2
3 4 1 2 3 4
J4
5 6 7 8 9 10 11 12
PL
3k3/3k9
680
230 V AC
28 V DC
230 V AC
28 V DC
3k9
MS 400
+
FCP-O320 / FCH-T320 FSA
MS 400
+
FCP-O320 / FCH-T320 FSA
SG 200
2nd Tone
1nd Tone
+VDC
12-24V
GT50R
GT60R

5 Connecting fire service devices




A
B
C
ÜE
NQUIT
GND
ENO 0000 B
FSE
1
2k7
6k8
BMA
R
J1
ST
F
3k9
820
F2
E1
E2
X6
X3
X4
X5
J1
X7
NQ SUM IN8 IN7 IN6 IN5 IN4 IN3 IN2 IN1
AT5000 IP/GPRS

6 Appendix

6.1 Compatibility list FLM-420/4-CON

The devices in the following lists are tested and compatible with the FLM-420/4-CON Conventional interface modules 4-wire LSN.

Notice!
All devices marked with [1] can be connected to the FLM-420/4-CON Conventional interface modules 4-wire LSN only if the detector lines are programmed as stubs (Class B). Loop configurations are not allowed. Connectivity is feasible with firmware version 1.4 and above; observe the panel software version.
For all devices marked with [2] the flashing LED option is not allowed.

Conventional automatic fire detectors

	Resistor required (Ω)	Activation resistance in FSP-5000-RPS (Ω)	VdS approval
BD102 O Optical smoke detector	n.a. (built-in)	1000	-
BR10 Optical smoke detector [1] BR12 Optical smoke detector [1]	n.a. (built-in)	800	-
DP652 Optical smoke detector [1][2]	n.a. (built-in)	470	-
DT654 Heat detector [1][2]	n.a. (built-in)	470	-
F732 [1]	n.a. (built-in)	800	-
FCP-O320 Smoke detector optical FCP-O320-R470 Smoke detector optical	n.a. (built-in)	820	G 208001
FCP-OT320 Multisensor detector optical/thermal FCP-OT320-R470 Multisensor detector optical/thermal	n.a. (built-in)	820	G 208002
FCH-T320 Heat detector, rate-of-rise FCH-T320-R470 Heat detector	n.a. (built-in)	820	G 208003
FCH-T320-FSA Heat detector, DIBt protection closures	n.a. (built-in)	820	G 208004

	Resistor required (Ω)	Activation resistance in FSP-5000-RPS (Ω)	VdS approval
FCP-OC320 Multisensor detector optical/chemical FCP-OC320-R470 Multisensor detector optical/chemical	n.a. (built-in)	820	G 208005
FCP-O 500 Smoke detector optical, white FCP-O 500-P Smoke detector optical, color inserts	n.a. (built-in)	680	G 205124
FCP-OC 500 Detector optical/chemical, white FCP-OC 500-P Detector optical/ chemical, color inserts	n.a. (built-in)	680	G 205118

Conventional manual call points

	Resistor required (Ω)	Activation resistance in FSP-5000-RPS (Ω)	VdS approval
DKM 120 Manual call points	n.a. (built-in)	910	G 298061
DM700LB Manual call point	n.a. (built-in)	520	-
FMC-120-DKM-G-B Manual call point FMC-120-DKM-H-B Manual call point FMC-120-DKM-G-Y Manual call point	n.a. (built-in)	910	G 206079
FMC-120-EST-G-B Manual stop device	n.a. (built-in)	910	G 206080
FMC-120-DKM-G-R Manual call point FMC-120-DKM-H-R Manual call point	n.a. (built-in)	910	G 298061
FMC-300RW-GSGRD Manual call point FMC-300RW-GSGBU Manual call point FMC-300RW-GSGYE Manual call point	n.a. (built-in)	795	G 207086
FMC-300RW-GSRRD Manual call point	n.a. (built-in)	795	G 207086

	Resistor required (Ω)	Activation resistance in FSP-5000-RPS (Ω)	VdS approval
FMC-300RW-GSRBU Manual call point FMC-300RW-GSRYE Manual call point			
SKM 120 Single action call points	n.a. (built-in)	910	G 299065
SM 120 RW Single action call points	n.a. (built-in)	620	-
2014/2 Manual call point ex area 2014/2-GLU Manual call point ex area	820	820	G 297060

Specialty detectors

	Resistor required (Ω)	Activation resistance (Ω) in FSP-5000-RPS	VdS approval
016519 IR3 Flame detector flameproof Ex d (2-wire) 016589 IR3 Flame detector (2-wire)	n.a. (built-in)	1344	G 212189
016519 IR3 Flame detector flameproof Ex d (4-wire) 016589 IR3 Flame detector (4-wire)	820	820	G 212189
ADW 511A Linear heat detector	820	820	G 204122
ADW 535-1 Linear heat detector	820	820	G 204122
ADW 535-2 Linear heat detector	820	820	G 214076
ASD 532 Aspirating smoke detector ASD 532-4 Aspirating smoke detector	820	820	G 215 101
DF1192 Flame detector [1)]	270	800	G 299085
FCH-heat-bar heat measurement detector	820	820	-
FCS-LHD-2 (Alarmline II) Linear heat detector	820	820	G 220035

	Resistor required (Ω)	Activation resistance (Ω) in FSP-5000-RPS	VdS approval
FCS-LWM-1 Linear heat detector	820	820	G 205066
FCS-LWM1-1 Linear heat detector	820	820	G 205066
Fireray 50/100RV Linear beam detectors	820	820	G 203070
FIRERAY2000 Linear beam detector	820	820	G 297058
FIRERAY3000 Linear beam detector	820	820	G 212034
FIRERAY5000-EN Linear beam detector	820	820	G 208017
LHD4-alarmline Linear heat detector	820	820	G 295013
OSID Linear smoke detector	820	820	G 211072
RAS-XL Aspirating smoke detector	820	820	G 201084
FCS-320-TM Aspirating smoke detector	820	820	G 209144
FCS-320-TP Aspirating smoke detector	820	820	G 208046
922819 IR flame detector FMX5000 IR VK 924420 IR flame detector FMX5000 IR 3GD 924439 IR flame detector FMX5000 IR HR	820	820	G 209141 G 217027
N4387A Linear heat	820	820	G 208088
Fire Beam XTRA range	820	820	G 206056

Accessory for connection of ex-area manual call points

	Resistor required (Ω)	Activation resistance (Ω) in FSP-5000-RPS	VdS approval
SB3/DCA 1192 Safety barrier [1)]	330	800	G 298021

6.2 Compatibility list FLM-420-NAC

The devices in the following lists are tested and compatible with the FLM-420-NAC Signaling device interface modules.

Audible notification appliances

	VdS approval	Further information
BEXS110D-24 DC	G 209081	With line resistance ≥ 5 Ω if used with FPP 5000/ BCM-0000-B
DS 10	G 28609	
FNM-320-SRD FNM-320-FRD FNM-320-SWH FNM-320-FWH	G 210036	
FNM-320LED-SRD	G 210037	
PA 5	G 212115	
PA 10-SSM	G 212192	
ROLP-W-LX-W-WF ROLP-W-LX-W-RF ROLP-R-LX-W-WF ROLP-R-LX-W-RF	G 214070	

Visual notification appliances

	VdS approval
PY X-M-10-SSM R PY X-M-10-SSM W	G 216036
SOL-LX-C-WF-W-S SOL-LX-C-RF-W-S SOL-LX-C-WF-W-D SOL-LX-C-RF-W-D	G 214069
SOL-LX-W-WF-W-S SOL-LX-W-RF-W-S SOL-LX-W-WF-W-D SOL-LX-W-RF-W-D	G 214067

6.3 Calculation of max line resistance at power supply outputs

Notice!
Line resistance calculation
We recommend using the FSP-5000-RPS programming software for proper line resistance calculation and system design.

Calculate the maximum line resistance with the formulas below. Use the values from the tables. The calculation is required for power outputs VDC1 and VDC2 of the battery controller module.

Formulas

1. Creeping short threshold [mA]

I_CreepMax = 1.055 * (I_LoadMax + 5.5); //min. 100 mA

2. Max line current [mA]
   I_LineMax = I_CreepMax * 1.055 + I_LoadMax - I_LoadNom + 5
3. Max line resistance [Ω]
   R = ((U_SourceMin - U_LoadMin - 1.0) / I_LineMax) * 1000; //min. 4 Ω

For battery controller module : U_SourceMin = 20.4 V.
For LSN AUX: U_SourceMin = 27.0 V.

Next, calculate the cable length using the cable's resistance per meter.

LSN devices

Device	Min load voltage [V] (U_LoadMin)	Max load current [mA] (I_LoadMax)	Nominal load current [mA] (I_LoadNom)	Max load power [W] (P_LoadMax)
MSS401	15.0	20.0	2.0	0.0
FLM-420-NAC	20.4	230.0	15.0	0.0
ATx100	10.0	80.0	8.0	1.3
FBF100	10.0	100.0	20.0	1.0
FK100	20.0	55.0	10.0	0.7
FAS-420-TT1	15.0	550.0	510.0	7.0
FAS-420-TT2	15.0	640.0	590.0	8.2
FAS-420-TP1	15.0	530.0	510.0	6.8
FAS-420-TP2	15.0	630.0	590.0	7.9
FAS-420-TM	15.0	150.0	135.0	2.0
FAS-420-TM-R/RVB	15.0	180.0	135.0	2.0
FAS-420-TM-DB	15.0	80.0	30.0	0.7
FLM-420/4-CON-S/D	24.0	95.0	15.0	0.0
ATB420	8.0	170.0	15.0	0.9
ATG420	8.0	60.0	15.0	0.4
FWI-270	15.0	30.0	10.0	0.5
FLM-430-I2M1	17.0	230.0	3.0	0.0

Conventional devices

Device	Min load voltage [V] (U_LoadMin)	Max load current [mA] (I_LoadMax)	Nominal load current [mA] (I_LoadNom)	Max load power [W] (P_LoadMax)
SB3/DCA1192	18.0	150.0	50.0	0.0
Fireray 2000	11.5	22.0	15.0	0.0
Fireray 50/100RV	10.0	37.0	25.0	0.0

Device	Min load voltage [V] (U_LoadMin)	Max load current [mA] (I_LoadMax)	Nominal load current [mA] (I_LoadNom)	Max load power [W] (P_LoadMax)
Alarmline LHD 4 /FCS-LWM-1	10.0	60.0	25.0	0.0
Transsafe ADW 511A	10.5	190.0	110.0	1.4
FCP 500	8.5	52.0	3.5	0.0
Fireray 5000 (- 2013)	14.0	20.0	20.0	0.0
FCS-320-TM	15.0	155.0	140.0	2.0
FCS-320-TM-R	15.0	190.0	150.0	2.0
FCS-320-TP1	15.0	545.0	505.0	6.8
FCS-320-TP2	15.0	675.0	615.0	7.9
Fire Beam plus	11.5	3.8	3.8	0.0
IR3 Flame Detector - 4wire	14.0	20.0	4.0	0.0
Fireray 5000	14.0	37.0	37.0	0.0
Fireray 3000	12.0	33.0	33.0	0.0
ASD 535-1	10.5	700.0	615.0	6.5
ASD 535-2	10.5	785.0	685.0	7.2
ASD 535-3	10.5	735.0	615.0	6.5
ASD 535-4	10.5	860.0	685.0	7.2
Alarmline II	20.0	47.0	38.0	0.0
ADW535-1	9.0	1028.0	1017.0	9.3
ADW535-2	9.0	1091.0	1069.0	9.8
OSID	20.0	28.8	15.6	0.2
ASD532-Fan_Level1	14.0	184.0	146.0	2.0
ASD532-Fan_Level2	14.0	209.0	178.0	2.5
ASD532-Fan_Level3	14.0	243.0	206.0	3.0
ASD535-4-Fan_Level1	10.5	480.0	321.0	3.4
ASD535-4-Fan_Level2	10.5	507.0	350.0	3.7
ASD535-4-Fan_Level3	10.5	600.0	436.0	4.6
ASD535-4-Fan_Level4	10.5	726.0	555.0	5.9
ASD535-4-Fan_Level5	10.5	830.0	670.0	7.0
FMX5000 IR	14.0	46.0	17.0	0.0

Bosch Sicherheitssysteme GmbH
Robert-Bosch-Platz 1
70839 Gerlingen
Germany
www.boschsecurity.com
© Bosch Sicherheitssysteme GmbH, 2025

Building solutions for a better life

202511261025