

Power Supply Module

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89NG08/R0200/R0300/R0400

Application

This power supply module is used for switching–on/off, distributing, overvoltage–limiting, and monitoring the two redundant power supplies A and B of a PROCONTROL cabinet. There are three versions of this module available:

- 89NG08/R0200 for a PROCONTROL cabinet housing 1 station equipped with modules for 5 V and/or 24 V
- 89NG08/R0300 for a PROCONTROL cabinet housing 1 station equipped with modules for 5 V and/or 24 V and a communication controller module set, A or B
- 89NG08/R0400 for a PROCONTROL cabinet housing 2 stations equipped with modules for 24 V

Description

The two voltage supplies, USA and USB, are monitored separately inside the module. Absence or failure of one of the supply voltages will effect a signal.

For module versions R0200 and R0300, supply voltages USA and USB are additionally decoupled via diodes and are combined as US voltages to be fed to the 89NG03 power supply modules assigned to the individual subracks. Four voltage outputs US1 through US4, decoupled via diodes, are available.

Direct outputs USA1, USA2 and USB1, USB2 are provided for dual–channel supply of the subracks.

Overvoltage protection

An overvoltage protection against introduced overvoltages reduces the supply voltages USA and USB to uncritical levels until a disconnection is effected outside the module.

Voltage distribution

Different circuits are formed for voltage distribution. The fuses are accessible from the module front.

The following circuits are used in the different module versions:

- R0200** (see Figure 1)
 Redundant circuits USA1 (F11) and USB1 (F21) for parallel supply of a maximum of 4 subracks.
 Four outputs decoupled via diodes (US1 through US4, terminals 1.21 – 1.3, 2.2 – 2.3, 3.2 – 3.3, 4.2 – 4.3) for feeding power supply units, supplied from fused circuits USA1 and USB1.
 When only one power supply unit is required, this unit can be connected to US1 using terminals 21, 31, additionally fused by F1.
 When several power supply units are used in one cabinet, fused output US1 must not be used. In that case, a connection is established using US2 to US4 as well as non-fused output US1 in order to prevent parasitic voltages from being introduced from one subrack to another over the station bus.
- R0300** (see Figure 2)
 Redundant circuits USA1 (F11) and USB1 (F12) for parallel supply of a maximum of 4 subracks.
 A decoupled and separately fused circuit US1 (F5) for an independent consumer (master station).
 Three decoupled outputs (US2 through US4, terminals 5.1 – 5.4 or 6.1 – 6.4, 9.1 – 9.4, 12.1 – 12.4) for feeding power supply modules, supplied from fused circuits USA1 and USB1.
 When only one power supply unit is required, this unit can be connected to US2 using terminals 5.1 – 5.4, additionally fused by F6.
 When several power supply units are installed in one cabinet, the fused output, US2, must not be used. A connection is then to be established using US3 and US4 as well as non-fused output US2 in order to prevent parasitic voltages from being introduced from one subrack to another over the station bus.
- R0400** (see Figure 3)
 Two times two redundant circuits, USA1 (F11) and USB1 (F12) as well as USA2 (F21) and USB2 (F22) for parallel supply of a maximum of 2 subracks each.

The internal supply of the modules for monitoring and flashing voltages is provided via two miniature fuses (F1, F2 or F13, F23). For measuring functions, circuits plus appropriate reference conductors are available on the module front at measuring sockets (X10, X11, X12 or USA, USB, Z).

Annunciation functions

One or two 89NU01 modules for monitoring and flashing voltages are integrated in the power supply modules. As to function and setting of the modules for monitoring and flashing voltages see the 89NU01 module description.

The modules for monitoring and flashing voltages form measuring voltage UM, flashing voltages BLS, BLM, BLL and combine the individual signals for activating a cabinet disturbance lamp and/or cabinet row lamp (optional) and for putting out general disturbance signals.

Signals are annunciated on the front of the modules for monitoring and flashing voltages. Light-emitting diodes (H1, H2 or H11, H12, H21, H22) are provided for single annunciations of external signals, "Power supply disturbed" (MSP).

On module version R0200, the X3 connector has two diodes for establishing an OR function with connections ML1, ML2 and ML.

Annunciation signals formed outside of the supply module that are to be integrated in the module's general disturbance annunciations can – in the case of module versions R0300 and R0400 – be connected to MSP (power supply disturbed) and MTE (temperature too high) and can this way be combined through an OR function.

Other signals formed outside the module are connected directly to the pins of the modules for monitoring and flashing voltages.

The X3 connector of the supply module provides for multiple connections.

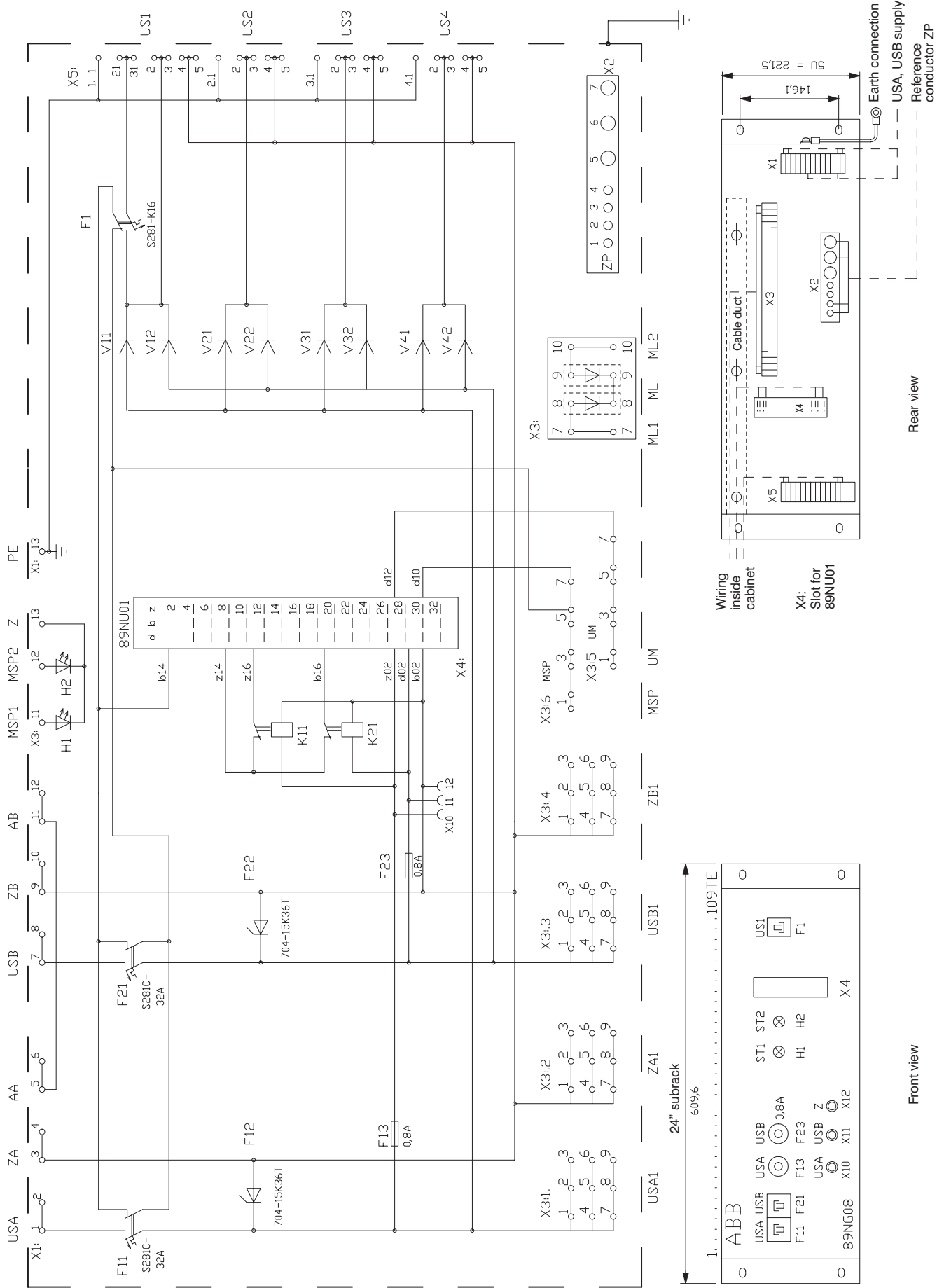


Figure 1: 89NG08/R0200 function diagram

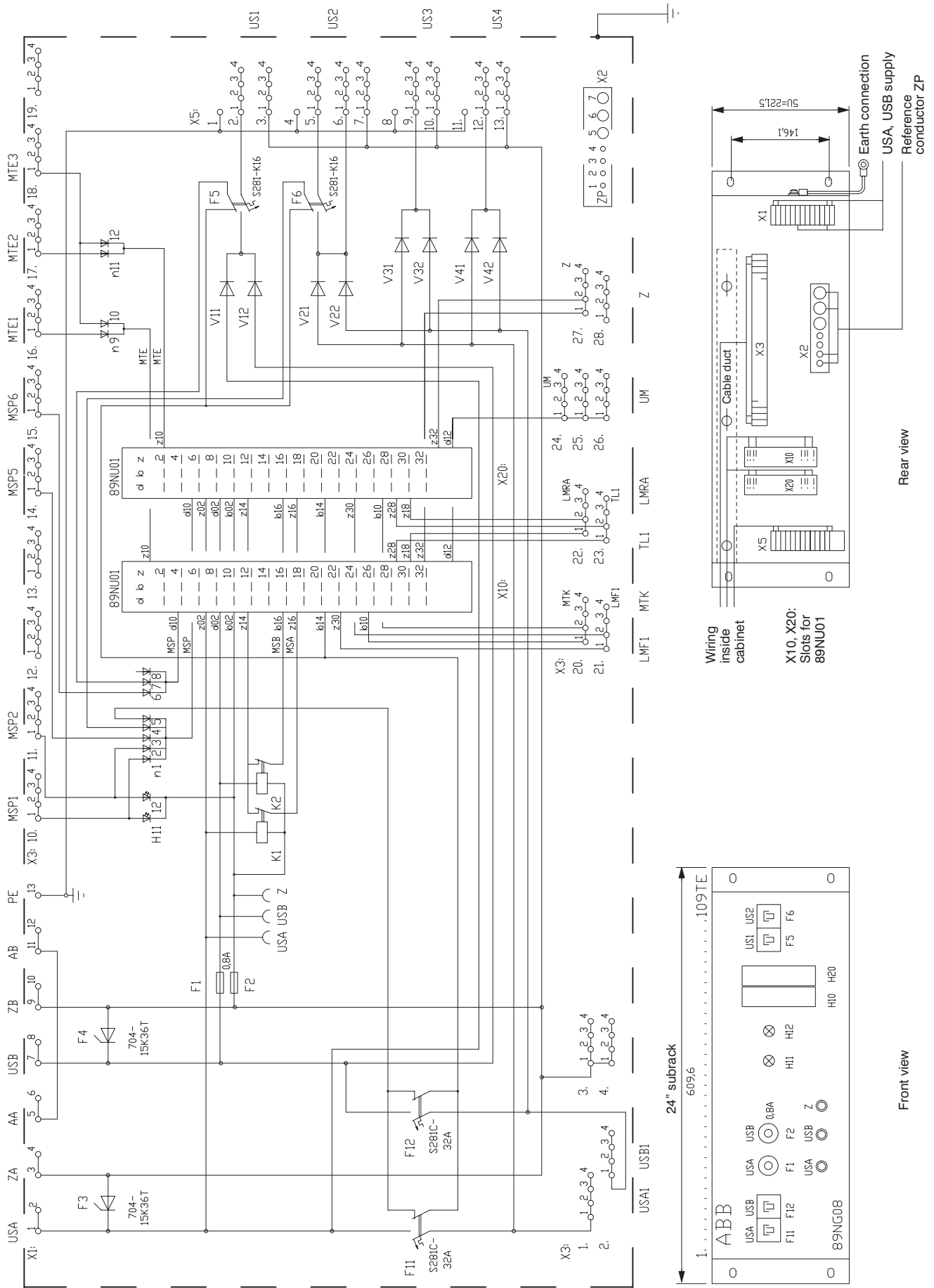


Figure 2: 89NG08/R0300 function diagram

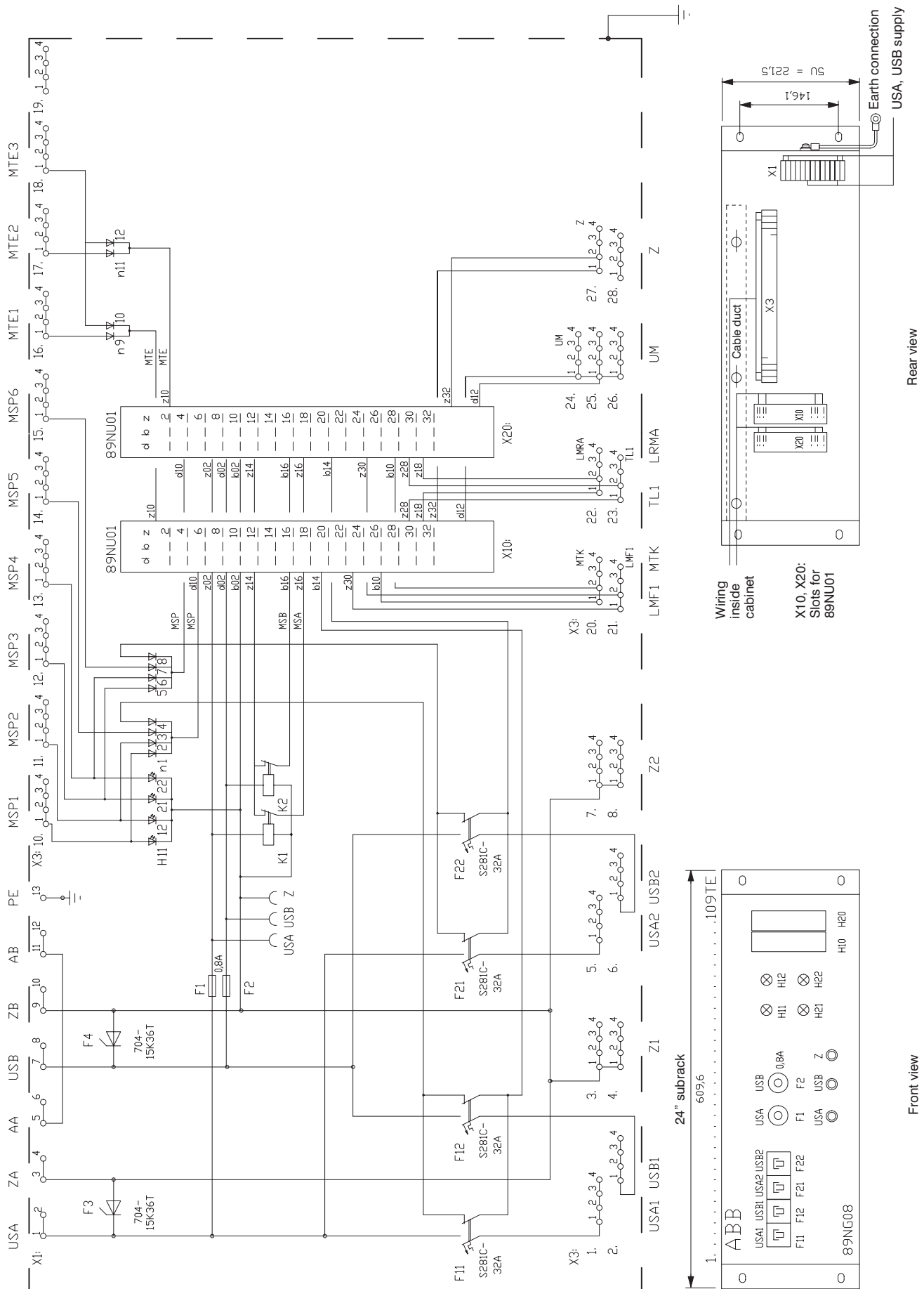


Figure 3: 89NG08/R0400 function diagram

Technical data

Mechanical features

Dimensions	Based on the 19" design acc. to DIN 41494, IEC 297		
Height	5 U = 221.5 mm		
Width	609.6 mm		
Depth	250 mm		
Weight	approx. 9.5 kg		
Type of protection	Front and back	IP30	
	top and bottom	IP00	
Color	RAL 7022 on the front, other parts blank metal		
Connections	X1, voltage supply	Screw-type terminal, 35 mm ²	
	X2, Reference conductor ZP	Cu - bar with 3 x M10 and 4 x M6 hexagon bolts	
	X3, power distribution and signalling	terminal block 1 x screw-type connection, 4 mm ² 3 x 2.8/6.3 mm flat connector	
	X4, X10, X20 Signalling	48-pole female connector with maxi-termi-point pins	
	X5, Power distribution	as for X3	
Casing earth	2.5 mm ² line, length 250 mm, with ring-cable lug for M5		

Ambient conditions

Storage temperature	-40 °C to +70 °C
Operating temperature	0 °C to +55 °C
Relative humidity	Classification E to DIN 40040 95 % rel. humidity without moisture condensation
Type of cooling	Natural cooling

Electrical features

Input values

Voltage	USA, USB = +24 V Tolerance at supply terminal 22.0 ... 30.0 V			
Harmonics	≤ 5 % depending on connection to unfiltered three-phase bridge connection			
Overvoltage	35 V / 500 ms 45 V / 10 ms 2 x U _N at T = 0.4 ms half-value duration (overvoltage strength class 2) DIN VDE 0160 (draft)			
Reference potential	supply voltage	ZA, ZB = 0 V		
	system voltage	ZP = 0 V		
Voltage variation	upon connection and disconnection			
	during operation	≥ 0.2 V/ms ≤ 0.1 V/ms at U ≥ 5 V ≤ 1 V/μs at U < 5 V		
	within 22.0 ... 30.0 V			
Current		R0200	R0300	R0400
	ISA	32 A	32 A	32 A
	ISB	32 A	32 A	32 A
	Total current			
	ISA + ISB max.	32 A	32 A	63 A
Back-up fuse	max. 63 A gL			
Min. short-circuit current	≥ 100 A at cabinet supply terminals			
Protection measure	Functional extra-low voltage with safety-separation			
Protective conductor	PE for local equipotential bonding			
Casing earth	⏚ earthing connector			
Shielding connection	AA, AB			

Current, signal inputs at $U_N = 24\text{ V}$

	R0200	R0300	R0400
MSP	5 mA	–	–
MSP1	25 mA	25 mA	30 mA
MSP2	25 mA	25 mA	30 mA
MSP3	–	–	30 mA
MSP4	–	–	30 mA
MSP5	–	5 mA	5 mA
MSP6	–	5 mA	5 mA
MTE1	–	5 mA	5 mA
MTE2	–	5 mA	5 mA
MTE3	–	10 mA	10 mA
MTK	–	5 mA	5 mA
TL1	–	1.6 mA	1.6 mA
ML1	500 mA	–	–
ML2	500 mA	–	–

Output values

Voltage for power circuit at connectors X3/X5

$U_N = 24\text{ V}$ –
Tolerance:
Input voltage minus internal voltage drop
at X3 max. 0.1 V
at X5 max. 0.8 V

Annunciation voltage U_M

$U_N = 24\text{ V}$ –
Tolerance: as for input voltage minus 0.5 V

Voltage variation

As for input voltage

Current, power circuit

	R0200	R0300	R0400
USA1	32 A	32 A	32 A
USA2	–	–	32 A
USB1	32 A	32 A	32 A
USB2	–	–	32 A
US1–US4	10 A	10 A	–

For versions R0200 and R0300:
The total current USA1 + (US1 to US4) or
USB1 + (US1 to US4) respectively, must not exceed 32 A.
For version R0400:
The total current USA1 + USA2 + USB1 + USB2
must not exceed 63 A.

Annunciation current at U_M

$I_M \leq 300\text{ mA}$
Tolerance: as for input voltage minus 0.5 V

Current, annunciation outputs at $U_N = 24\text{ V}$

	R0200	R0300	R0400
ML	max. 500 mA	–	–
LMF1	annunciation lamp, cabinet $I_a \leq 100\text{ mA}$		
LMRA	annunciation lamp, cabinet row $I_a \leq 500\text{ mA}$		

Fuses F1, F2, F13, F23

Fuse element 0.8 A, 5 x 20 mm
time–lag characteristic, high breaking capacity

ORDERING DATA

Type designation: 89NG08/R0200
89NG08/R0300
89NG08/R0400

Order number: GKWN 000 297 R0200
GKWN 000 297 R0300
GKWN 000 297 R0400

Annunciation module 89NU01–E/R0100
(not included in scope of supplies for 89NG08)

Order number: GJR2 329 100 R0100

Technical data subject to change without notice!



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