



- DESIGN: MODULAR
- DEGREE OF PROTECTION: IP65
- YEARS OF WARRANTY: 5
- UV RESISTANCE: YES
- READY TO CONNECT: YES
- WEIGHT: 4.600 KG



The connection panel from the Polish manufacturer KENO is intended for supplying power to photovoltaic inverters., Protections against short circuits and overloads., It also ensures protection against the effects and direct on the alternating and direct current sides. The distribution board should be used in grounded and isolated photovoltaic installations. Due to the high degree of IP protection, outdoor installation is possible. The design of the switchgear is intended for surface mounting. Depending on the equipment, switchboards can perform various functions.

BASIC PARAMETERS DC SIDE

Number of inputs PV string outputs	2 2
Quantity Type of DC surge arrester Type	2 Phoenix T1/T2
Connection type	Array MC4 Stäubli

BASIC PARAMETERS AC SIDE

AC Surge Protector Type	Phoenix T1/T2
Overcurrent circuit breaker	Noark B20A 3F
Residual current circuit breaker	1 x 100mA type A

ELECTRICAL AND MECHANICAL PARAMETERS OF THE HOUSING

Model	PHS 24 T
Number of fields	24
Dimensions of housing without chokes and MC4 (Length Width Height)	120.00 128.00 201.00
Design in accordance with	EN 60670-1, EN 62208
Level of security	IP65

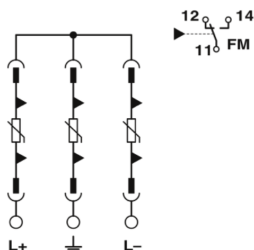
Protection class	II
Rated insulation voltage U_i	400 V AC, 1500 V DC
The incandescent rod test	650°C
Impact resistance	IK08
UV resistance	YES
Recyclable plastic	bezhalogenowy
Working temperature	-25°C - +60°C

DC surge arrester used (SPD)

Manufacturer / Model	PHOENIX/VAL-MS-T1/T21000DC-PV/2+V
Surge protection	T1 / T2
Idle voltage U_{OCSTC}	≤ 975 V DC
Maximum discharge current I_{max} (8/20) μs	40 kA
Response time t_A	≤ 25 ns
Testing lightning current (10/350) μs , ładunek	2,5 As
Testing lightning current (10/350) μs , energia specyficzna	6,25 kJ/ Ω
Test lightning current (10/350) μs , wartość szczytowa I_{imp}	5 kA
Total current discharged I_{total} (8/20) μs	40 kA
Total current discharged I_{total} (10/350) μs	5 kA
Insulation resistance R_{iso}	> 5 G Ω (by 500 V DC)
Nominal discharge current I_n (8/20) μs	15 kA
Rated load current I_L	80 A
Long-term operating current I_{CPV}	< 20 μA
Maximum permanent voltage U_{CPV}	1170 V DC
Short circuit resistant I_{SCPV}	2000 A
Residual voltage U_{res}	$\leq 3,5$ kV (by I_n)
-	$\leq 2,9$ kV (by 5 kA)
-	$\leq 3,2$ kV (by 10 kA)
-	$\leq 3,7$ kV (by 20 kA)
-	$\leq 4,1$ kV (by 30 kA)
-	$\leq 4,6$ kV (by 40 kA)
Current of the protective conductor I_{PE}	≤ 20 μA DC
-	≤ 350 μA AC
Protection level U_p	$\leq 3,5$ kV
Power consumption in standby mode P_C	≤ 25 mVA

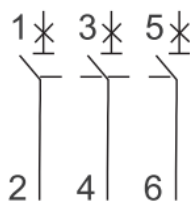
Connection configuration

Configuration Y



Overcurrent circuit breaker used (MCB) (1)

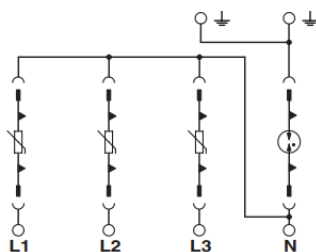
Manufacturer / Model	Noark / Ex9BN 3P B20
Rated current	20A; 3-F
Rated operational voltage U_e	230/415 V AC
-	72 V DC to the pole (1P, 2P)
-	48 V DC to the pole (3P, 4P)
Minimum voltage	12 V AC/DC
Rated impulse withstand voltage U_{imp} in accordance with IEC 60898-1	6 kV
Rated impulse withstand voltage U_{imp} in accordance with IEC 60947-2	6 kV
Rated short-circuit breaking capacity I_{cn} in accordance with IEC 60898-1	6 kA
Rated short-circuit breaking capacity I_{cn} in accordance with IEC 60947-2	10 kA
Rated voltage of the insulation U_i	690 V AC
Number of poles	3
Frequency	50/60 Hz
Characteristic	B
Design in accordance with	IEC/EN 60898-1, IEC/EN 60947-2
Mechanical durability	20 000 connections
Electrical durability	10 000 connections
Energy limitation class	3
Category of use	A
Feed direction	Any (top or bottom)



Overvoltage limiter used AC (SPD)

Manufacturer / Model	Phoenix / VAL-MS-T1/T2 335/12.5/3+1
Made in accordance with	EN 61643-11 / IEC 61643-11
Test class IEC	I / II, T1 / T2
Type EN	T1 / T2
Power system IEC	TT, TN-S
Number of poles	4
Protective tracks	L-N, L-PE, N-PE
Direction of action	3L-N & N-PE
Rated voltage U_n	240/415 V AC (TN-S) 240/415 V AC (TT)
Rated frequency fN	50 Hz (60 Hz)
The highest working voltage U_c (L-N)	335 V AC
Maximum permanent voltage U_c (L-PE)	335 V AC
The highest working voltage U_c (N-PE)	264 V AC
Rated load current I_L	80 A
Current of the protective conductor I_{PE}	$\leq 5 \mu A$
Power consumption in standby mode P_c	$\leq 810 mVA$
Nominal discharge current I_n (8/20) μs (L-N)	12,5 kA
Nominal discharge current I_n (8/20) μs (L-PE)	12,5 kA
Nominal discharge current I_n (8/20) μs (N-PE)	50 kA
Maximum discharge current I_{max} (8/20) μs	50 kA
Testing lightning current (10/350) μs (L-N), ładunek	6,25 As
Testing lightning current (10/350) μs (L-N), Specific energy	39 kJ/ Ω
Testing lightning current (10/350) μs , (L-N) wartość szczytowa prądu I_{imp}	12,5 kA
Testing lightning current (10/350) μs (L-PE), ładunek	6,25 As
Testing lightning current (10/350) μs (L-PE), Specific energy	39 kJ/ Ω
Testing lightning current (10/350) μs , (L-PE) wartość szczytowa prądu I_{imp}	12,5 kA
Testing lightning current (10/350) μs (N-PE), ładunek	25 As
Testing lightning current (10/350) μs (N-PE), Specific energy	625 kJ/ Ω
Testing lightning current (10/350) μs , (N-PE) wartość szczytowa prądu I_{imp}	50 kA
Total current discharged I_{total} (8/20) μs	50 kA
Total current discharged I_{total} (10/350) μs	50 kA

Follow current extinguishing capability I_{fi} (N-PE)	100 A
Short circuit resistant I_{SCCR}	25 kA
Protection level U_p (L-N)	$\leq 1,2$ kV
	$\leq 1,6$ kV (30 kA - 8/20 μ s)
Protection level U_p (L-PE)	≤ 2 kV
Protection level U_p (N-PE)	$\leq 1,7$ kV
Residual voltage U_{res} (L-N)	$\leq 1,2$ kV (by I_n)
	$\leq 1,1$ kV (by 10 kA)
	≤ 1 kV (by 5 kA)
	$\leq 0,9$ kV (by 3 kA)
Residual voltage U_{res} (L-PE)	≤ 2 kV (by I_n)
	$\leq 1,5$ kV (by 10 kA)
	$\leq 1,2$ kV (by 5 kA)
	$\leq 1,1$ kV (by 3 kA)
Residual voltage U_{res} (N-PE)	$\leq 0,6$ kV (by I_n)
	$\leq 0,5$ kV (by 10 kA)
	$\leq 0,5$ kV (by 5 kA)
	$\leq 0,4$ kV (by 3 kA)
TOV behavior for U_t (L-N)	415 V AC (5 s / withstand mode)
	457 V AC (120 min / safe failure mode)
TOV behavior for U_t (N-PE)	1200 V AC (200 ms / withstand mode)
Response time t_A (L-N)	≤ 25 ns
Response time t_A (L-PE)	≤ 100 ns
Response time t_A (N-PE)	≤ 100 ns
Maximum pre-fuse in through-flow installations V	80 A (gG - 16 mm ²)
Maximum fuse value for radial installations	160 A (gG)
Maximum discharge current I_{max} (8/20) μ s	65 kA



Residual current circuit breaker used (RCD)

Manufacturer / Model

Noark / Ex9L-N 100mA

Made in accordance with	EN 61008
Number of fields	2 / 4
Characteristic	A
Rated operational voltage U_e	240/415 V AC
Rated current	40 / 63 A
Minimum voltage for the RCD function	Independence from tension
Voltage range for test button	150 — 440 V
Frequency f	50 Hz
Rated voltage of the insulation U_i	500 V
Conditional rated short-circuit current I_{nc}	6 kA
Rated residual current $I_{\Delta n}$	100mA
Tenderness	sensitive to residual sinusoidal current, rectified pulsed and smooth, high frequency (1 kHz)
Response time	immediate
Rated impulse withstand voltage U_{imp}	6 kV
Shock resistance	3000 A
Mechanical durability	20 000 connections
Electrical durability	4 000 connections
Maximum fuse protection against overload	
$I_n = 40$ A	32 A gG
$I_n = 63$ A	50 A gG
Maximum fuse protection against short-circuit effects	
$I_n = 40$ A	63 A gG
$I_n = 63$ A	63 A gG
Rated making and breaking capacity $I_m I_m$	
$I_n = 40$ A	500 A
$I_n = 63$ A	630 A
Feed direction	Any (top or bottom)

