

# EM-453N AC

## STANDARD SERIES

- DESIGN: MODULAR
- DEGREE OF PROTECTION: IP65
- UV RESISTANCE: YES
- READY TO CONNECT: YES
- WEIGHT: 3.13 KG



The connection switchgear is designed to power photovoltaic inverters in grounded and isolated photovoltaic installations. It realizes protection against the effects of short circuits and overloads, as well as protection against the effects of indirect discharges on the AC side. 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 AC SIDE

AC Surge Protector   Type	Noark   T2
Overcurrent circuit breaker	Noark B40A 3F
Residual current circuit breaker	1 x 300mA type A

### ELECTRICAL AND MECHANICAL PARAMETERS OF THE HOUSING

Model	PHS 12 T
Number of fields	12
Dimensions of housing without chokes and MC4 (Length Width Height)	144.00   259.00   325.00
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

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Working temperature -25°C - +60°C

### Overcurrent circuit breaker used (MCB) (1)

Manufacturer / Model	Noark / Ex9BN 3P B40
Rated current	40A; 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)

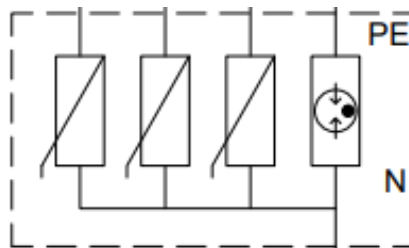
### Overvoltage limiter used AC (SPD)

Manufacturer / Model	Noark Ex9UE2 20 3PN 275	
Connection	L-N/PE	N-PE
Made in accordance with	EN 61643-11	
Type of delimiter	Typee 2 (klasa II, C, T2)	
Making the insert	MOV (Warystor)	GDT (Iskiernik)
Rated voltage $U_n$	230 / 400 V AC	
Reference test voltage $U_{REF}$	255 V AC	
Continuous working voltage $U_c$	275 V AC	255 V AC

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Frequency $f$	50/60 Hz	
Nominal discharge current $I_n$ (8/20 $\mu$ s)	20 kA to the pole	40 kA to the pole
Maximum impulse current $I_{imp}$ (10/350 $\mu$ s)	-	12 kA to the pole
Maximum discharge current $I_{max}$ (8/20 $\mu$ s)	40 kA to the pole	
Voltage protection level $U_p$ for electricity $I_n$	1.4 kV	1.5 kV
Voltage protection level $U_p$ for electricity $I_{max}$	2 kV	1.5 kV
Voltage protection level $U_p$ dla 5 kA (8/20 $\mu$ s)	1 kV	-
N-PE Follow current extinguishing capability $I_{fi}$	-	100 A
Occasional surges $U_t$ (paused)	335 V	1200 V
Residual current $I_{PE}$ by $U_{REF}$	$\leq 1$ mA	-
Limiter voltage for current 1mA	387 - 473 V	-
Response time	$\leq 25$ ns	$\leq 100$ ns
Maximum fuse protection	125 A gG	-
Ability to withstand short-circuit current	50kA	-
Short-circuit withstand $I_{SCCR}$	10kA	-
Current factor $k$	1kA	
Type of system LV	TN-S, TT (3+1)	



### Residual current circuit breaker used (RCD)

Manufacturer / Model	Noark / Ex9L-N 300mA
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

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Rated residual current  $I_{\Delta n}$  300mA

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)

