

16 Hz 2/3 network protection

Micrologic 5 A-Z trip unit

Compact NSX circuit breakers may be used on 16 Hz 2/3 systems with special thermal-magnetic and electronic (Micrologic 5 A-Z) trip units.

16 Hz 2/3 networks

Single-phase distribution networks with a frequency of 16 Hz 2/3 are used for railroad applications in certain European countries.

Breaking capacity for 16 Hz 2/3 at 250/500 V

Compact NSX circuit breakers of the 3P 2D or the 3P 3D type protect 16 Hz 2/3 networks at 250 V or 500 V.

They can be equipped with either:

- a TM-D thermal-magnetic trip unit for Compact NSX100 to 250
- or an electronic Micrologic 5.2 A-Z trip unit for Compact NSX100 to 250 or a 5.3 A-Z for Compact NSX400/630.

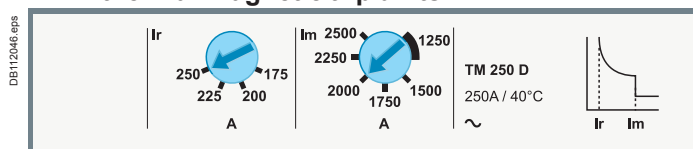
The possible breaking-capacity performance levels are B, F, N and H as indicated below.

Breaking capacity I_{cu}

Operating voltage	Performance	TMD and Micrologic 5 A-Z trip units			
		B	F	N	H
250 V / 500 V	I _{cu} (kA)	25	36	50	70

Protection

TM-D thermal-magnetic trip units

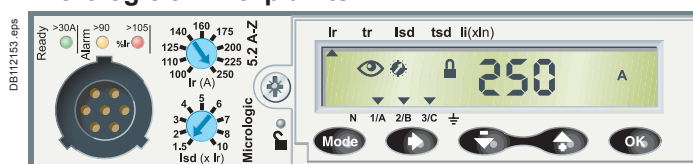


The 16 Hz 2/3 frequency does not modify the thermal settings with respect to those at 50 Hz (see page A-17). The magnetic pick-ups are modified as shown below.

Magnetic protection for Compact NSX 100/160/250 at 50 Hz and at 16 Hz 2/3

Rating (A) I _n at 40 °C	16	25	32	40	50	63	80	100	125	160	200	250
Pick-up (A) I _m accur. ±20%	Fixed											Adjustable
NSX100 50Hz	190	300	400	500	500	500	640	800				
16Hz 2/3	170	270	360	450	450	450	580	720				
NSX160/250 50Hz	190	300	400	500	500	500	640	800	1250	1250		5 to 10 I _n
16 Hz 2/3	170	270	360	450	450	450	580	720	1100	1100		4.5 to 9 I _n

Micrologic 5 A-Z trip units



Micrologic 5.2 A-Z and 5.3 A-Z are dedicated to 16 Hz 2/3 networks.

They use a suitable sampling frequency. The protection settings are identical to those of Micrologic 5 A (see page A-21). They also offer a current-measurement function for this specific frequency.

Trip-unit selection

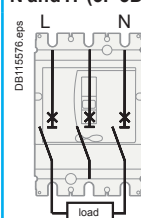
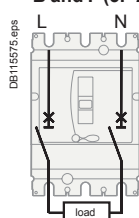
Rating	16	63	100	160	250	400	630
Compact							
NSX100		TM-D					
NSX160			TM-D				
NSX250				TM-D			
NSX100 to 250				Micrologic 5.2 A-Z			
NSX400/630						Micrologic 5.3 A-Z	

Wiring for NSX100 to 630 A

Phase and isolated neutral interrupted- 250 / 500 V

B and F (3P 2D version)

N and H (3P 3D version)



Remark. For an operating voltage > 250 V, the installation must be designed to eliminate all risk of double earth faults.

2 poles in series - Earthed neutral - 250 / 500 V

B and F (3P 2D version)

N and H (3P 3D version)

