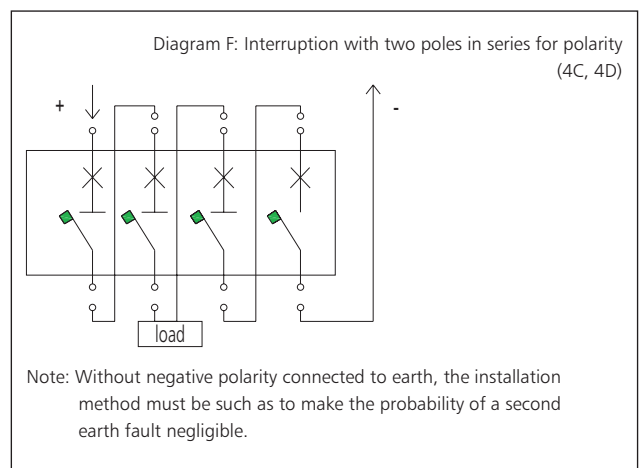
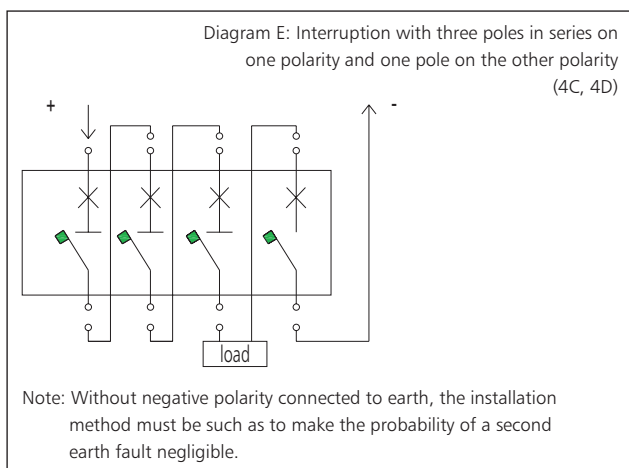
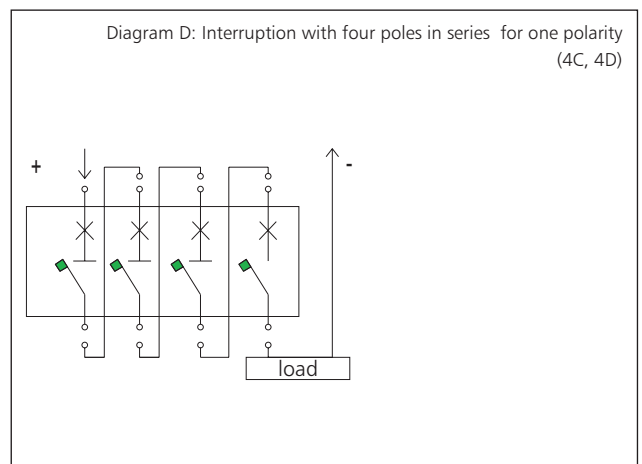
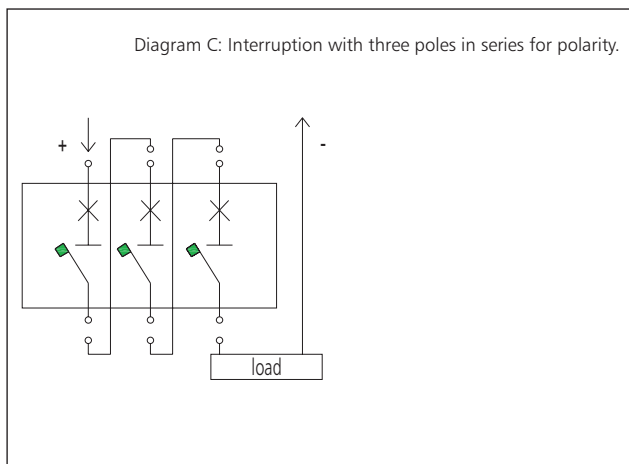
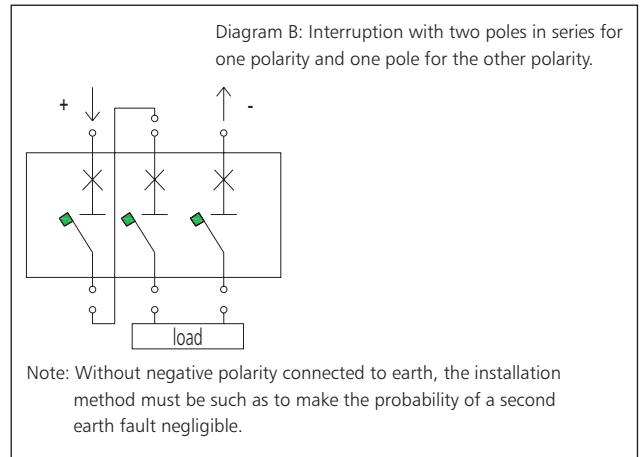
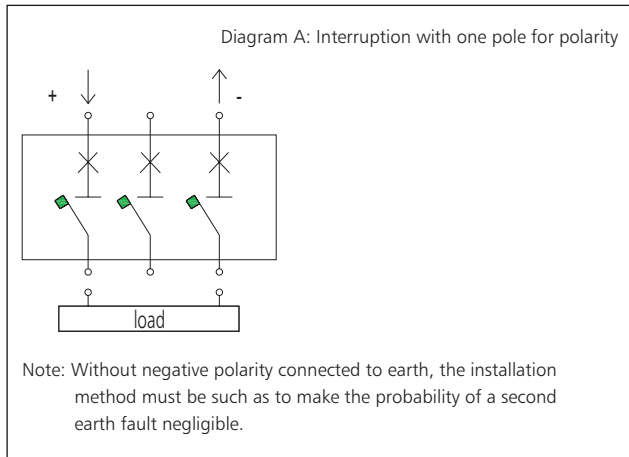


5.2 Special applications
Use of DC apparatus

To obtain the number of poles in series needed to guarantee the required breaking capacity at the various operating voltages, suitable connection diagrams must be used. For the breaking capacity (I_{cu}), according to the voltage and the number of poles connected in series with reference to the connection diagrams. Protection and isolation of the circuit with three-pole circuit-breakers $I_{cs}=I_{cu}=10kA$ with any one connection in the following diagrams.



The following table shows which connection diagram to use according to the number of poles to be connected in series to obtain the required breaking capacity, in relation to the type of distribution network:

Rated voltage V	protection function	Isolation	Earth-insulated network	Network with one polarity ⁽¹⁾ earthed	Network with a middle point earthed
≤250	■	■	A	A	A
	■	-	-	-	-
≤500	■	■	A	B	A
	■	-	-	C	-

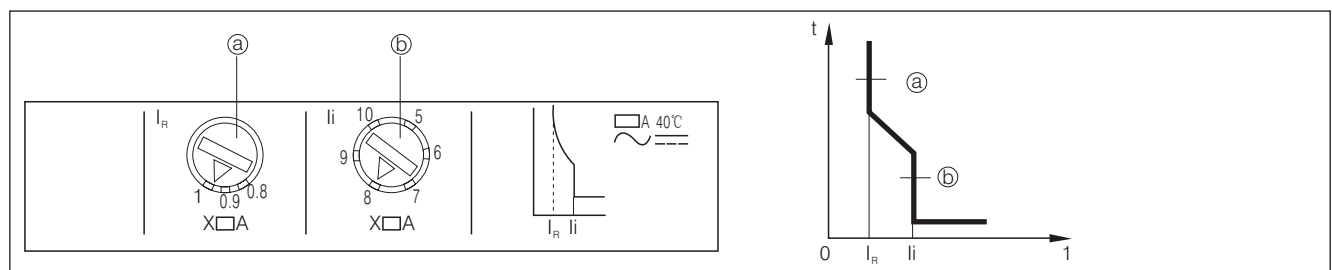
Note:

- a The risk of double earth fault is nil, therefore the fault current only involves a part of the interruption poles.
- b For connection with four poles in series, circuit-breakers with neutral at 100% of the phase settings must be used.

6. Release

6.1 Thermo-magnetic release

6.1.1 Thermo-magnetic release of NM8-125, 250, 400, 630, 800 and 1250 breakers can be set to meet protection requirements



Adjustable setting of over-load protection (a)

Adjustable setting of short-circuit protection or fixed (b)

Thermo-magnetic release	NM8-125	NM8-250	NM8-400	NM8-630	NM8-800	NM8-1250
Rated value (A)	16, 20, 25, 32, 40, 50,	100, 125, 160, 180,	250,315,	250, 315, 350,	630, 700,	630, 700, 800,
I_n 40°C	63, 80, 100, 125	200, 225, 250	350, 400	400, 500	800	1000, 1250
Over-load protection	Thermo protection					
Tripping current I_R (A)	Adjustable range 0.8~1X I_n	Adjustable range 0.8~1X I_n	Adjustable range 0.8~1X I_n	Adjustable range 0.8~1X I_n	Adjustable range 0.8~1X I_n	Adjustable range 0.8~1X I_n
N-pole protection (A)	Without protection	Without protection	Without protection	Without protection	Without protection	Without protection
4A, 4B	1.0X I_n	1.0X I_n	1.0X I_n	1.0X I_n	1.0X I_n	1.0X I_n
4C, 4D	0.5 X I_n	0.5 X I_n	0.5 X I_n	0.5 X I_n	0.5 X I_n	0.5 X I_n
Short-circuit protection	Magnetic protection					
Tripping current I_i (A)	10 I_n (for power distribution protection) 12 I_n (for motor protection)	Adjustable range 5~10 X I_n 8~12 I_n (for motor protection)	Adjustable range 5~10 X I_n 8~12 I_n (for motor protection)	Adjustable range 5~10 X I_n 8~12 I_n (for motor protection)	Adjustable range 5~10 X I_n 8~12 I_n (for motor protection)	Adjustable range 5~10 X I_n 8~12 I_n (for motor protection)

6.1.2 Characteristic of thermo protection operation of thermo-magnetic release for power distribution

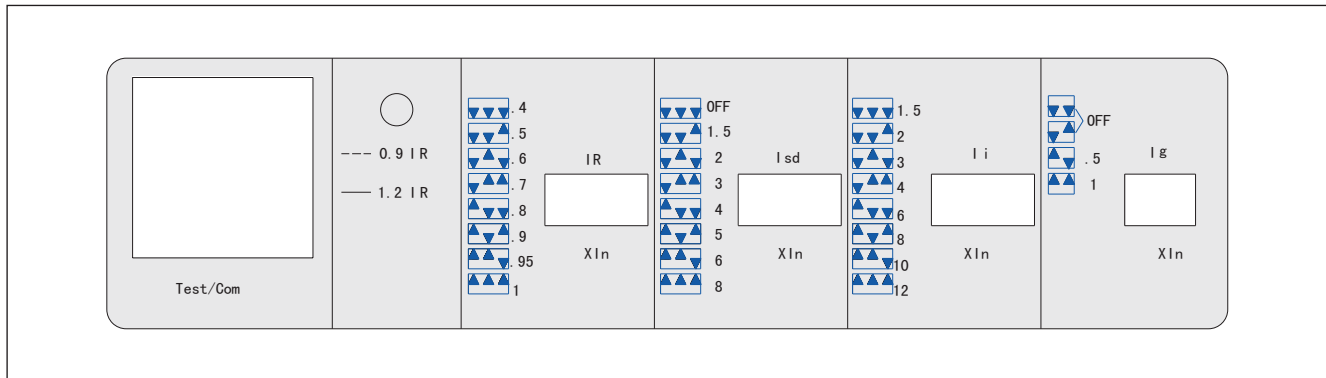
Serial No.	Test current	I/I_n	Conventional time	Initial status
1	Conventional non-tripping current	1.05	>1h ($I_n \leq 63A$) >2h ($I_n > 63A$)	Cold status
2	Conventional tripping current	1.3	$\leq 1h$ ($I_n \leq 63A$) $\leq 2h$ ($I_n > 63A$)	Right after test 1

6.1.3 Characteristic of thermo protection operation of thermo-magnetic release for motor protection

Serial No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-tripping current	1.0	>2h	Cold status
2	Conventional tripping current	1.2	≤2h	Right after test 1
		1.5	≤4min	
		7.2	4s≤T≤10s	

6.2 Electronic Release

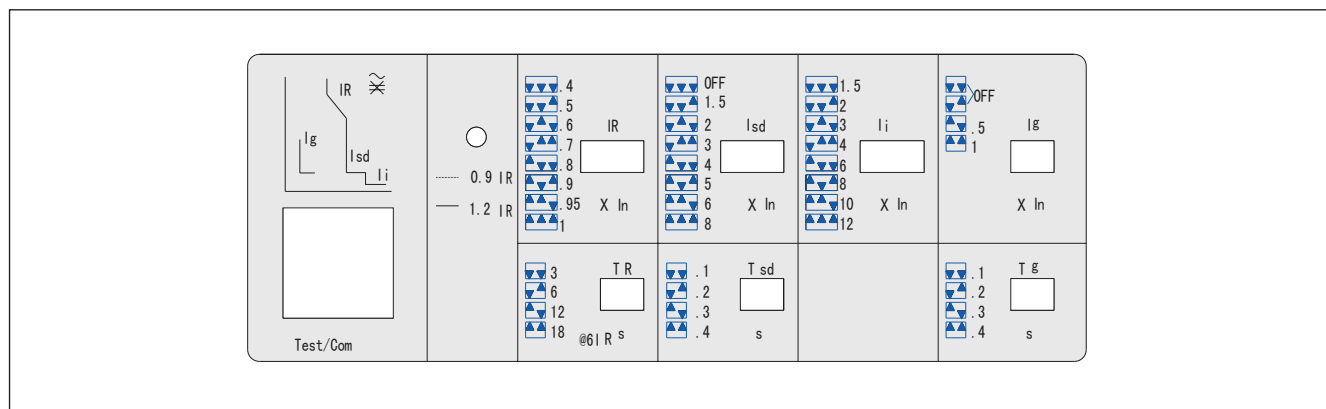
6.2.1 NM8S-125, 250 electronic release is an universal module. It is of 11 current specifications: 40A, 50A, 63A, 80A, 100A, 125A, 160A, 180A, 200A, 225A and 250A to adjust setting values and to meet protection requirements.



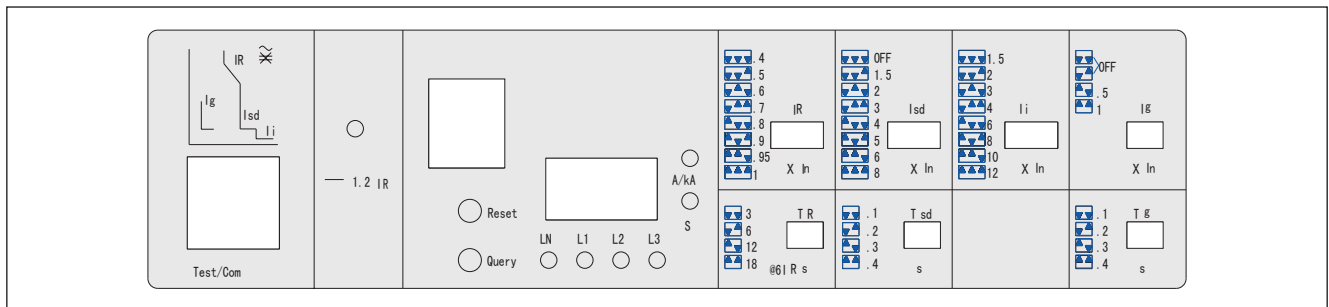
The indicator light flashes, when single-phase operational current is ≤90% I_R.
The indicator light is always lit, when single-phase operational current is ≥115% I_R.

Electronic release	NM8S-125	NM8S-250
Rated value I _n (A) 20~70°C	40, 50, 63, 80, 100, 125	100, 125, 160, 180, 200, 225, 250
Over-load protection	Thermal protection	
Tripping current I _R	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn
Tripping time	1.05 I _R	>2h non tripping
	1.3 I _R	≤1h
	1.5 I _R	96s
	6I _R	6s
N-line protection tripping current I _g	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn
Tripping current I _i	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn
Short time-delay short current protection tripping current I _{sd}	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8XIn

6.2.2 NM8S-400, 630 electronic release is an universal module. It is of 6 current specifications: 250A, 315A, 350A, 400A, 500A, and 630A to adjust setting values and to meet protection requirements. The release is of wide setting range and multi-functional modules can be selected. NM8S-400, 630 electronic release.



6.2.3 NM8S-800, 1250 electronic release is an universal module. It is of 5 current specifications: 630A, 700A, 800A, 1000A, and 1250A to adjust setting values and to meet protection requirements.
 The release is of wide setting range and multi-functional modules can be selected.



Tripping current I_{Rr} , I_{sd} , I_i should be set with three-digit switch or rotary knob as per current.

- I_R setting of over-load protection
 I_R could be adjusted as per customers' requirements,
 and TR, tripping time at the status of 6IR can be set as per customers' requirements.

Model	1.05 I_R	1.3 I_R	1.5 I_R (s)	2.0 I_R (s)	6 I_R (s)
NM8S-400, 630	>2h non-tripping	<1h tripping	48,96, 192, 288	27, 54, 108, 162	3, 6, 12, 18
NM8S-800, 1250	>2h non-tripping	<1h tripping	48, 96, 192, 288	27, 54, 108, 162	3, 6, 12, 18

- I_i indicator light for over-load status indication
 The indicator light flashes, when single-phase operational current is $<90\% I_R$
 The indicator light is always lit, when single-phase operational current is $\geq 115\% I_R$

- I_{sd} setting of short-circuit protection and tripping time
 Setting value of current I_{sd} could be adjusted as per customers' requirements and OFF stands for status without ST protection;
 T_{sd} the tripping time could be adjusted as per customers' requirements.

- I_i setting of short-circuit protection
 Value of setting current could be adjusted as per customers' requirements

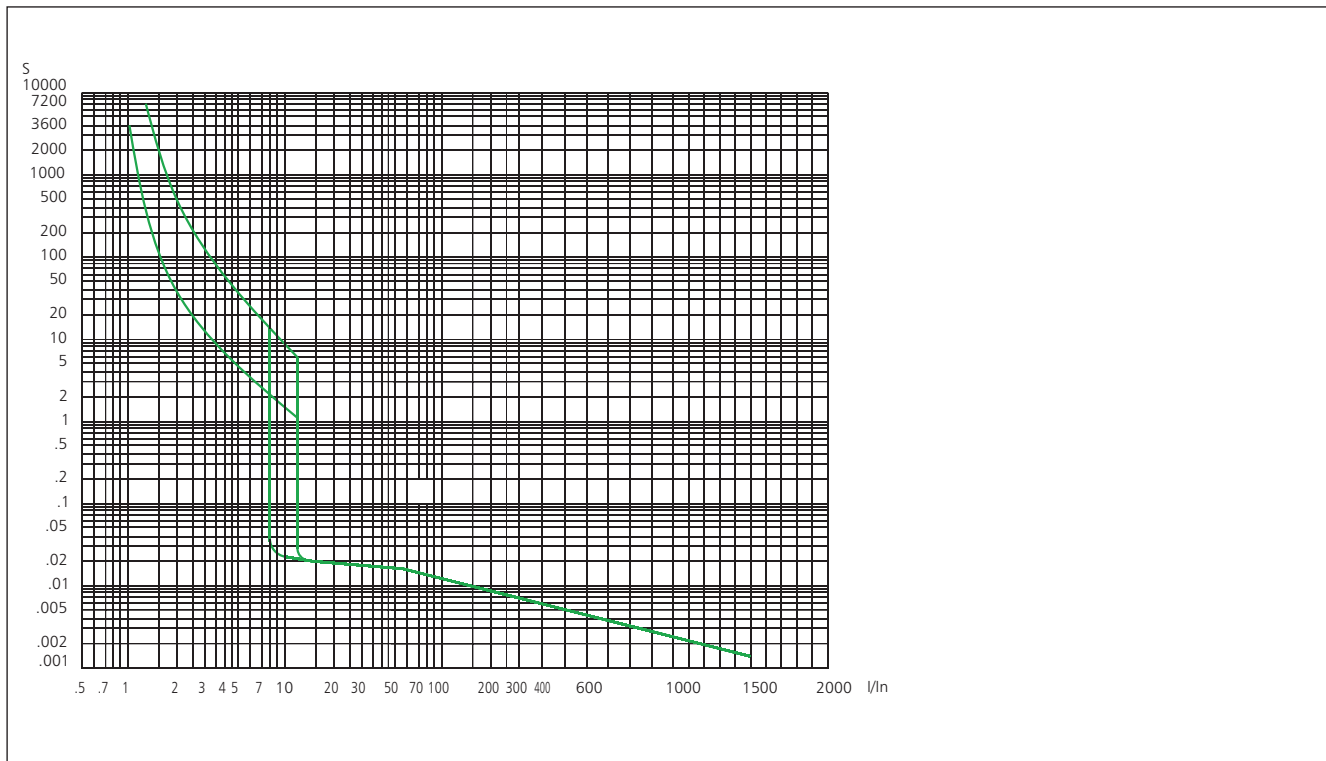
- I_g setting of protection operations
 As a 4P circuit breaker with N-line protection, setting value of current I_g could be adjusted as per customers' requirements and OFF stands for status without protection of N-pole; T_g , the operating time of N-pole could be adjusted as per customers' requirements.

Electronic release	NM8S-400	NM8S-630	NM8S-800	NM8S-1250
Rated value A In 20~70°C	250, 315, 350, 400	250, 315, 350, 400, 500, 630	630, 700, 800	630, 700, 800, 1000, 1250
long time-delay over-load protection (thermal protection)				
Tripping current I_R (A)	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn
Tripping time $6I_R$ (s)	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18
short time-delay short-circuit protection				
Tripping current I_{sd} (A)	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn
Tripping time T_{sd} (s)	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4
(Instantaneous) short-circuit protection				
Tripping current I_i (A)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)
(N-line) protection				
Tripping current I_g (A)	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn
Tripping time T_g (s)	Adjustable range 0.1,0.2, 0.3, 0.4	Adjustable range 0.1,0.2, 0.3, 0.4	Adjustable range 0.1,0.2, 0.3, 0.4	Adjustable range 0.1,0.2, 0.3, 0.4

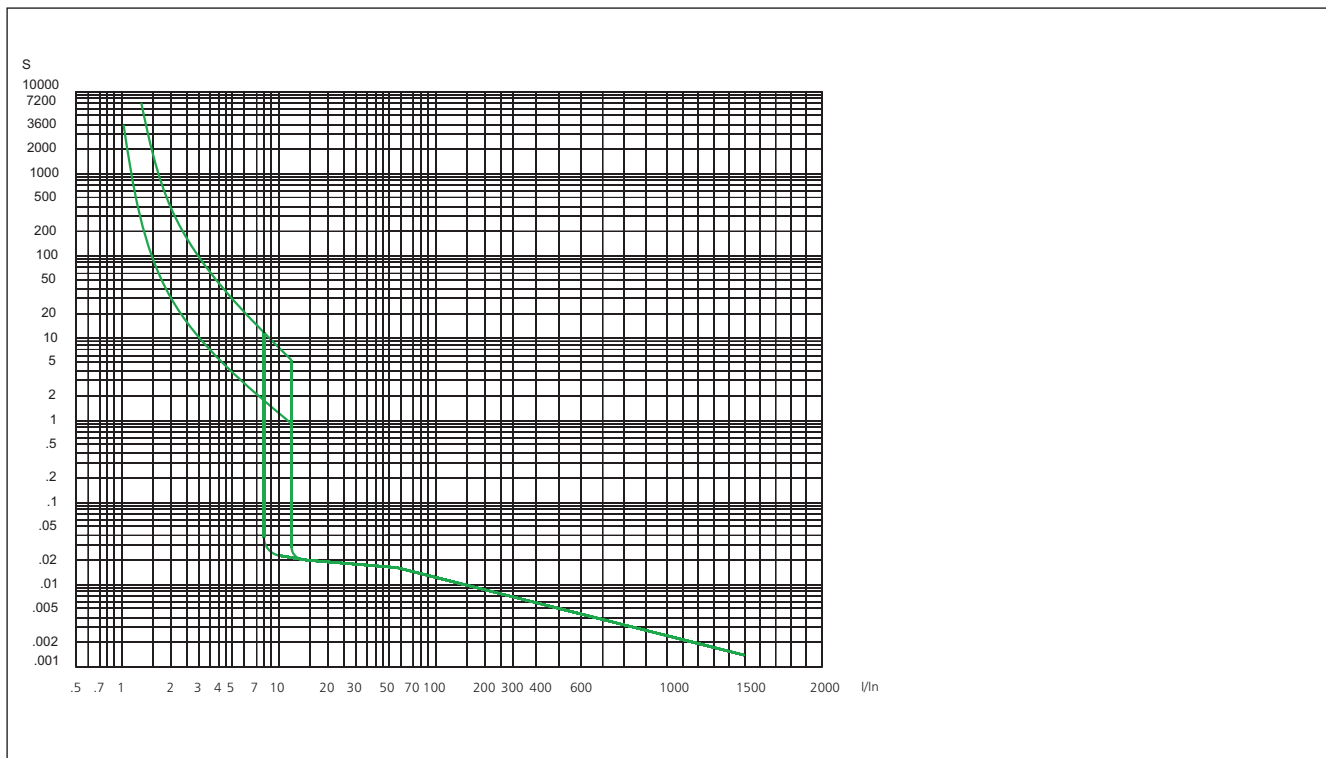
7. Curves

7.1 Tripping curve (ambient temperature +40°C)

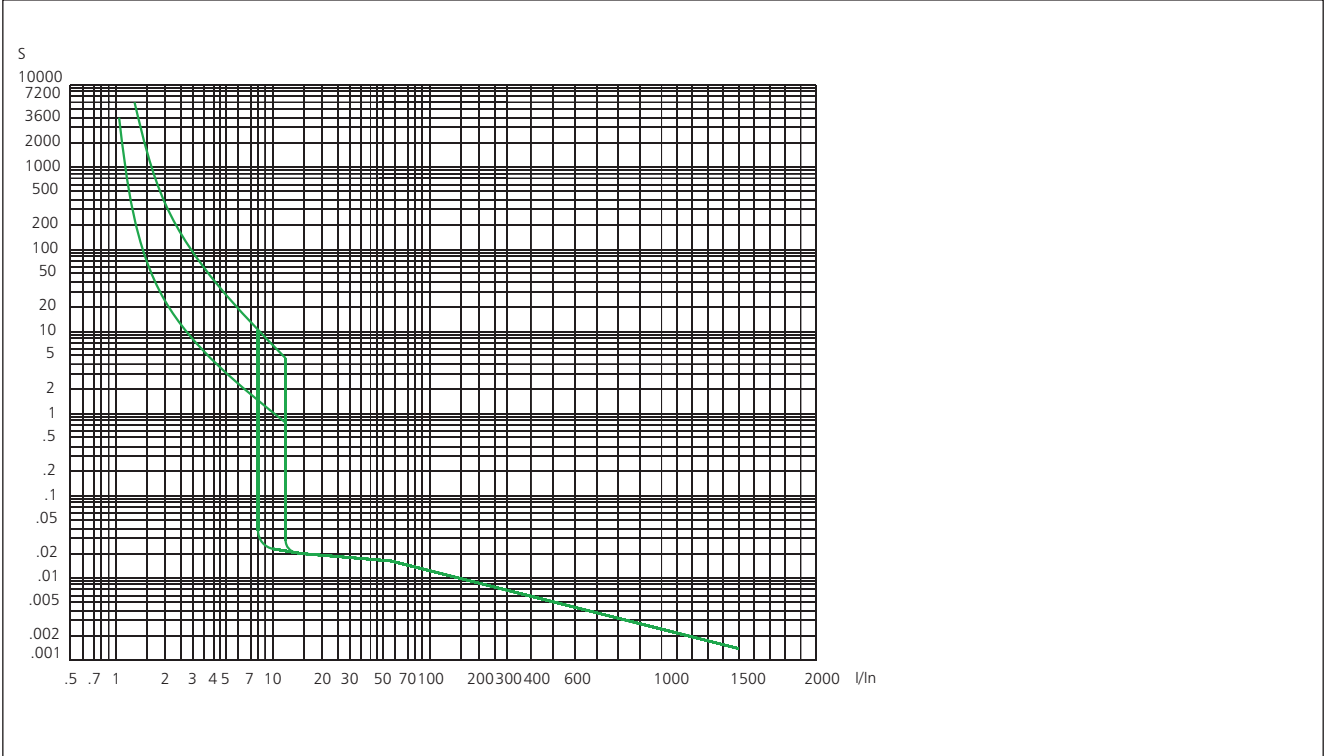
NM8-125 (16A, 20A)



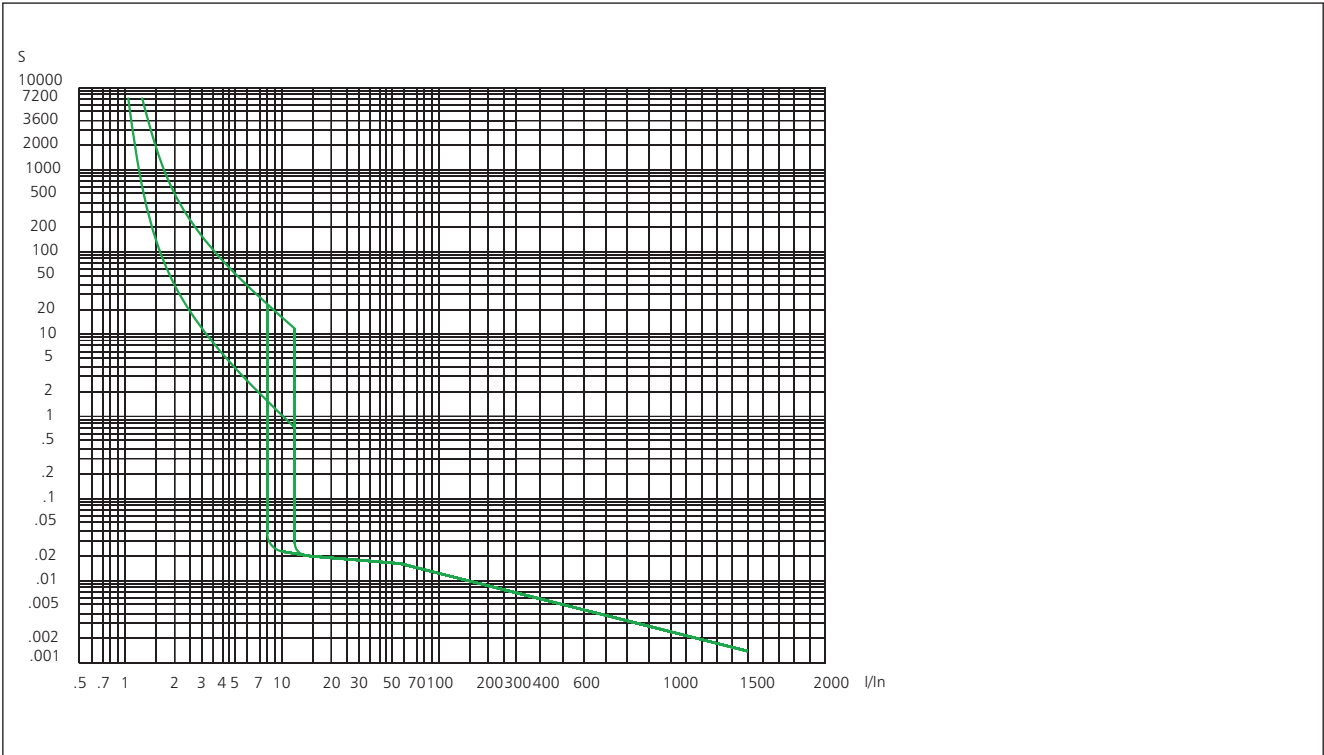
NM8-125(25A, 32A)



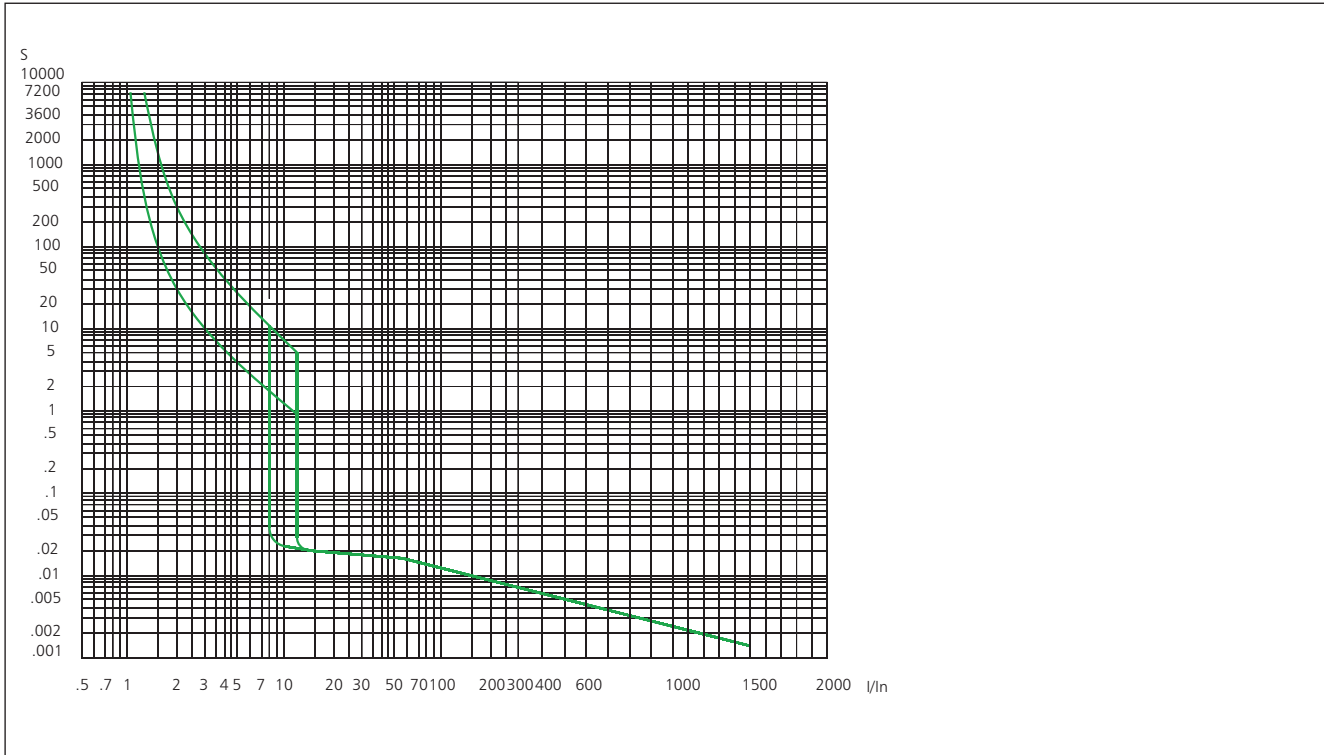
NM8-125 (40A, 50A)



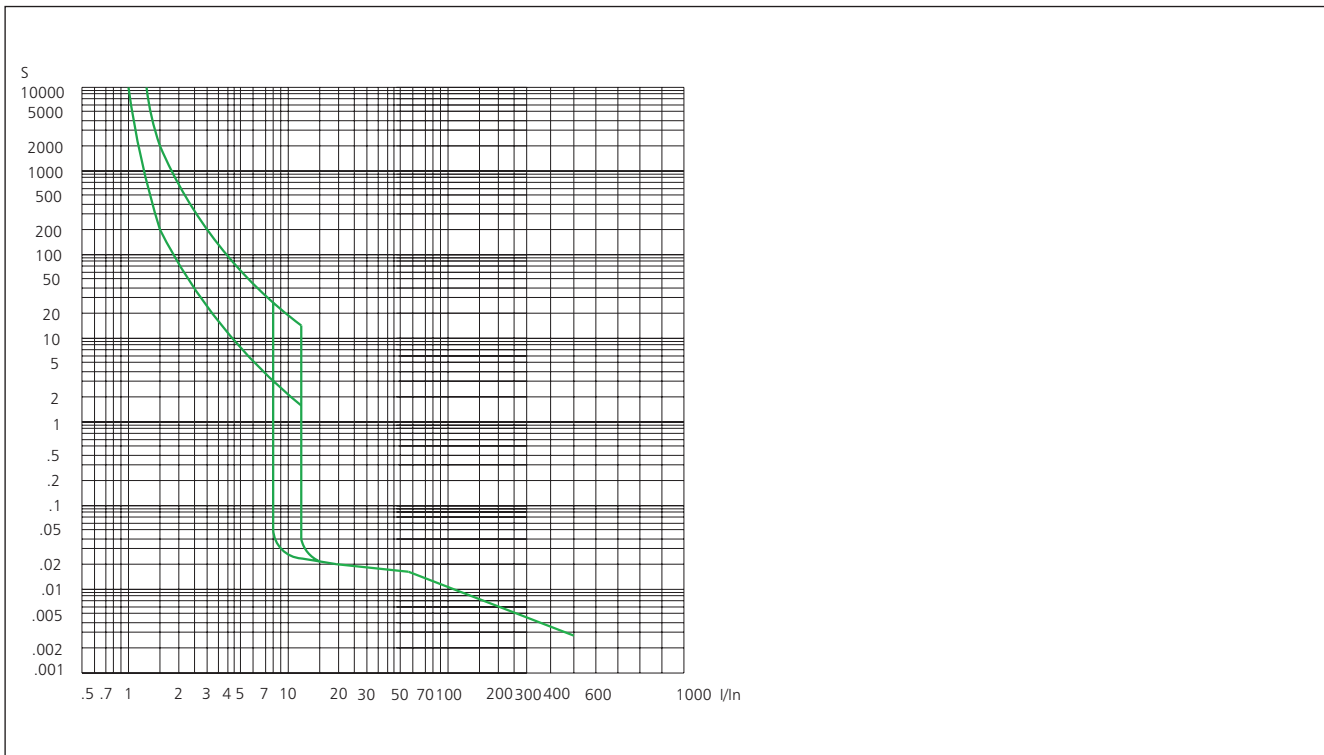
NM8-125 (63A, 80A, 100A)



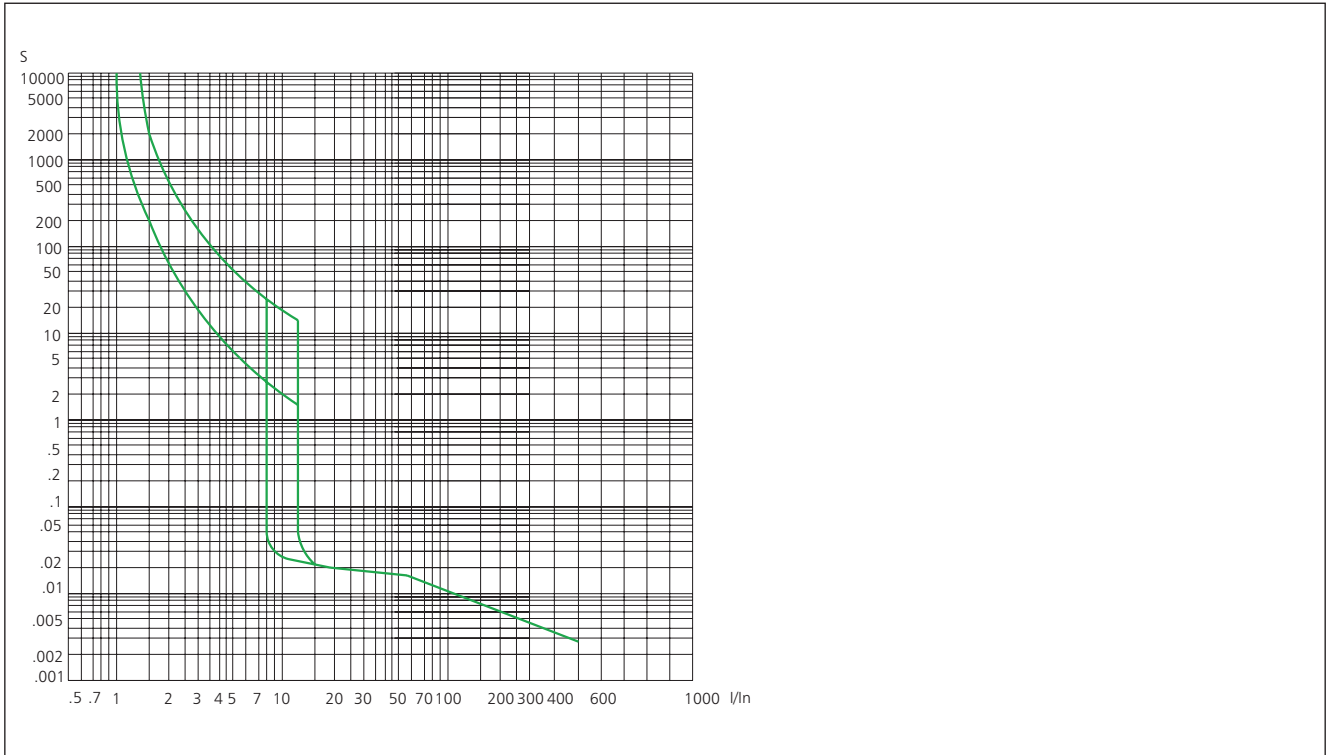
NM8-125 (125A)



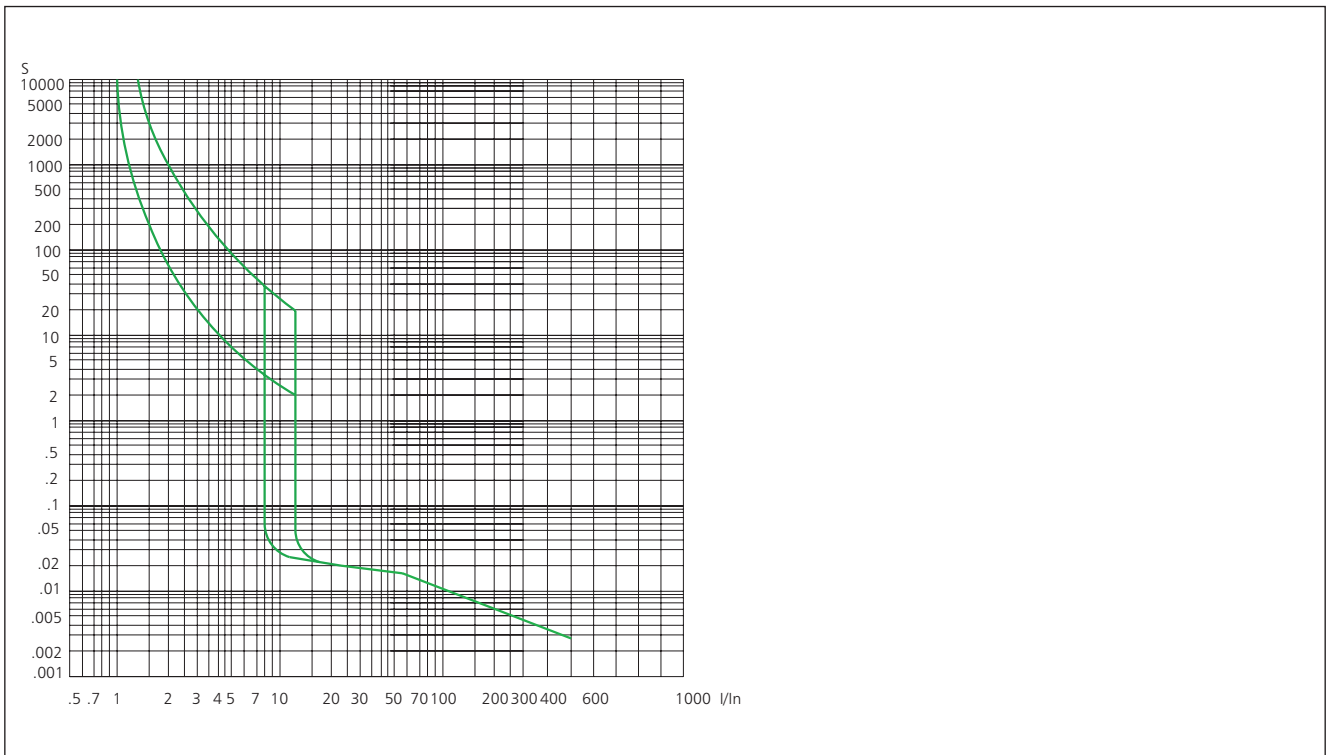
NM8-250 (100A)



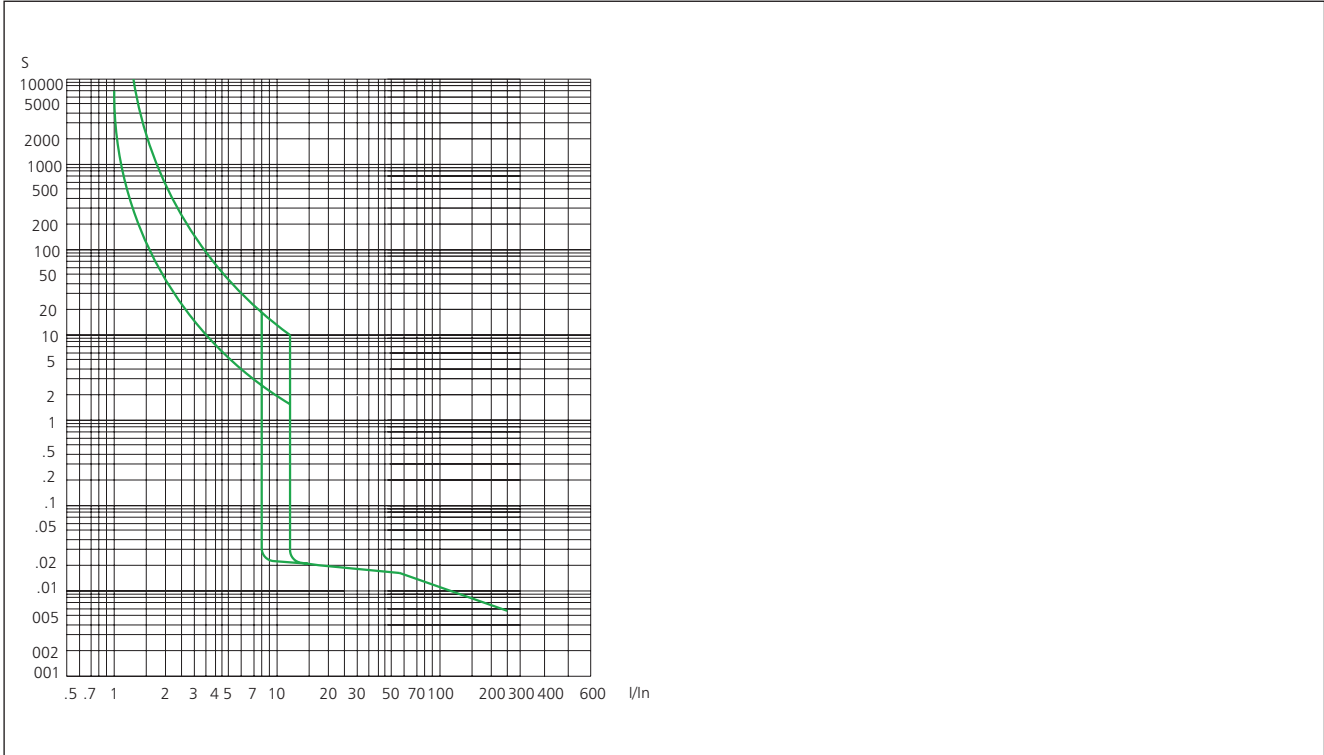
NM8-250 (160A)



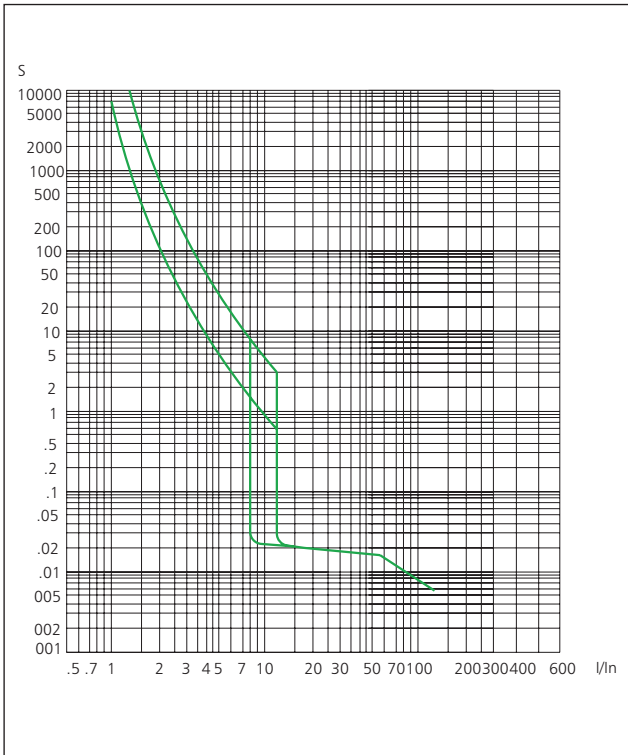
NM8-250 (200A, 250A)



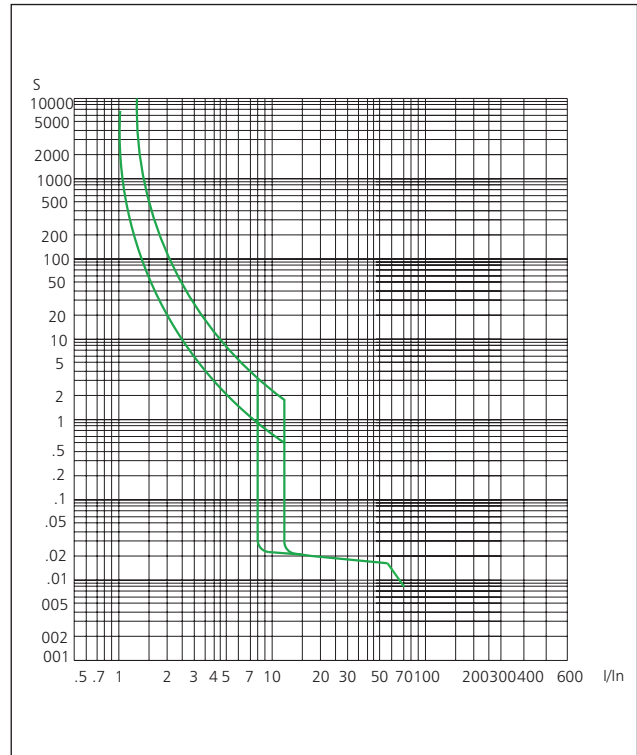
NM8-630 (250A~500A)



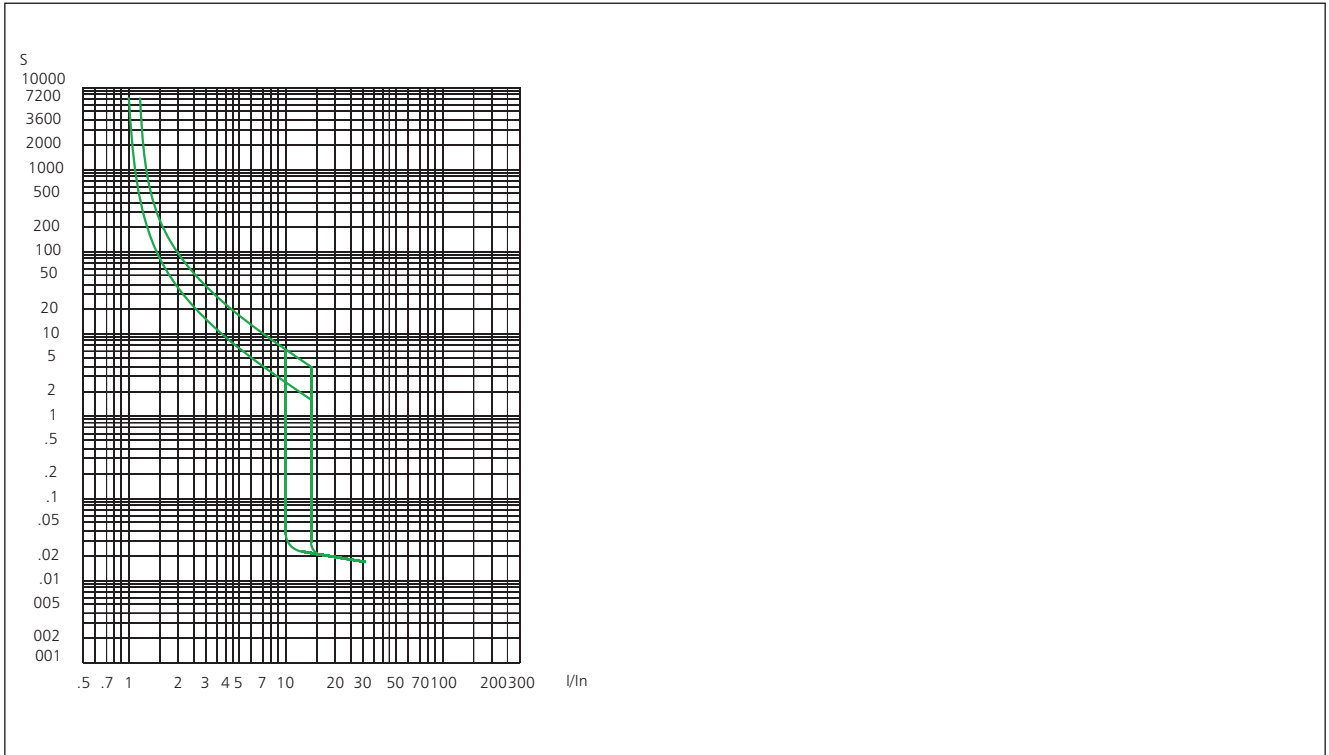
NM8-1250(630A ~ 800A)



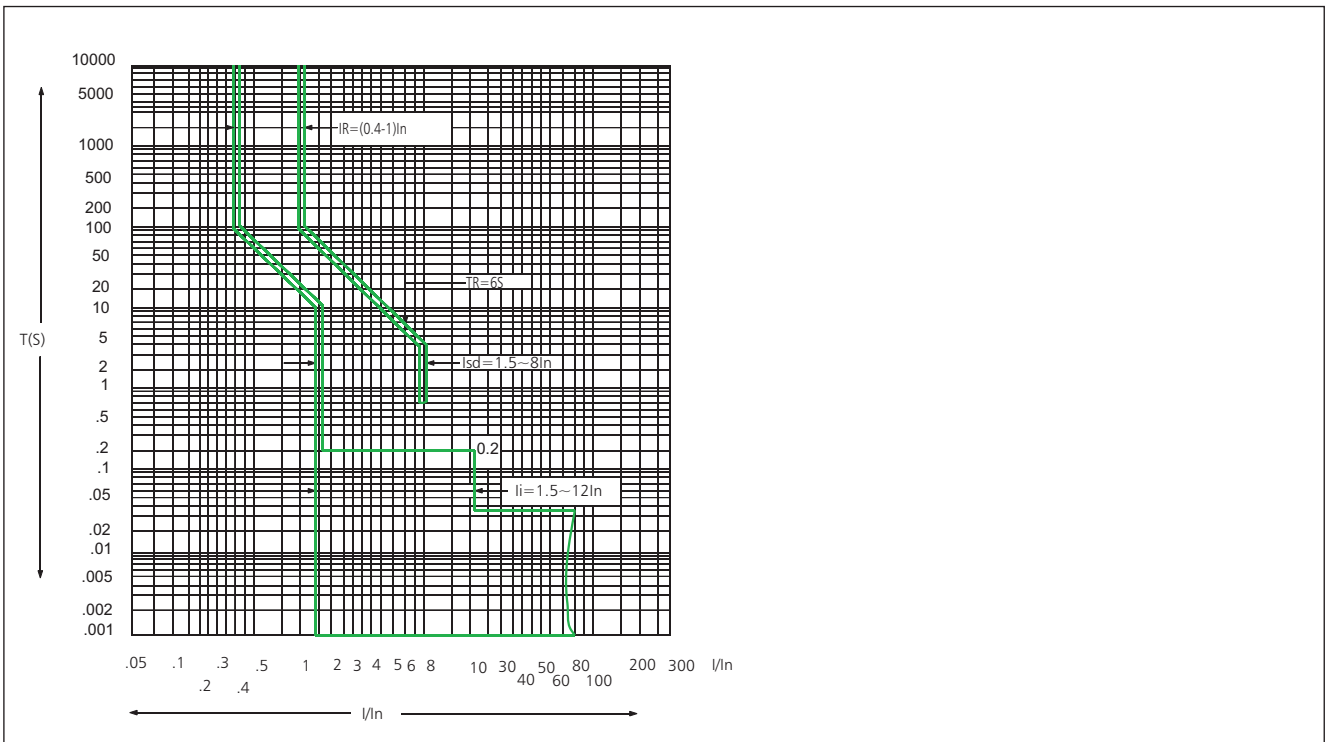
NM8-1250(1000A ~ 1250A)



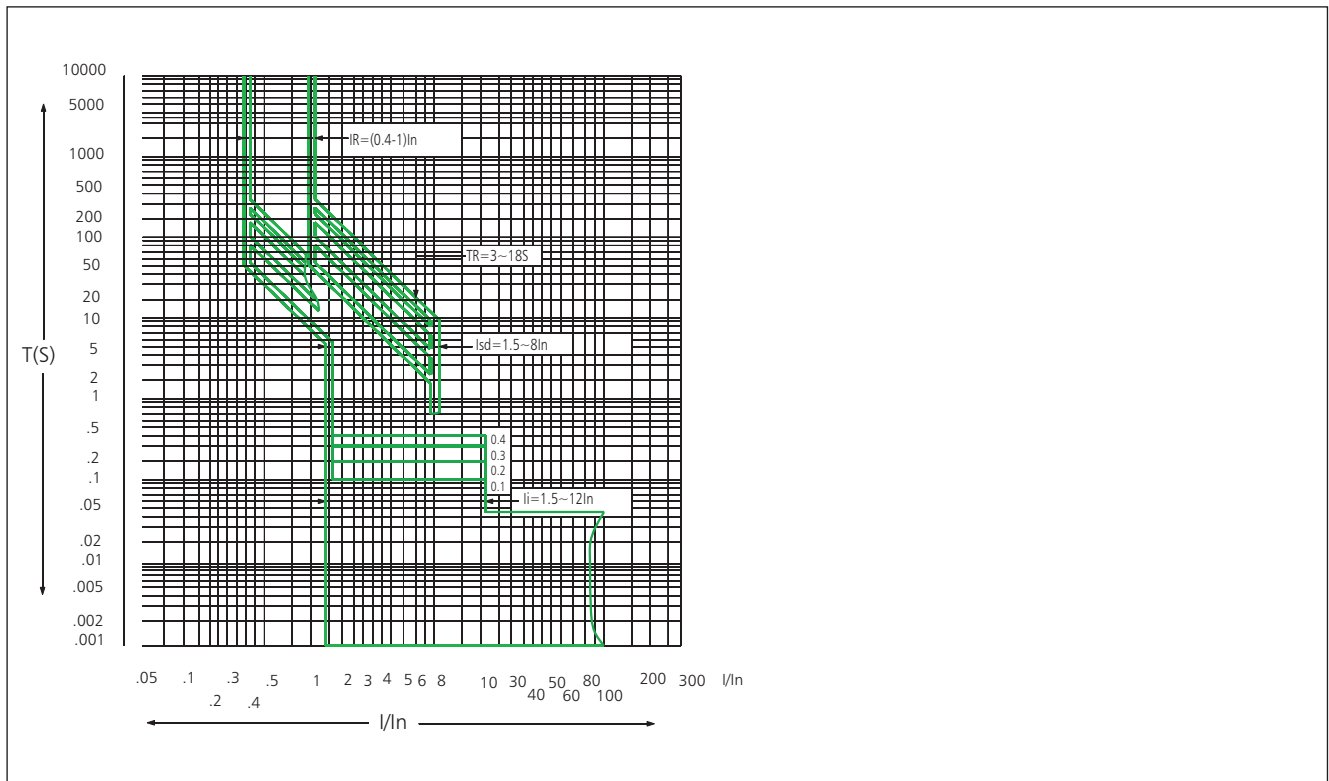
Motor protection release NM8-125, 250, 400, 630 (16A~500A)



Electronic type NM8S-125, 250(16A~250A)



Intelligent release NM8S-400, 630(250A~630A)
NM8S-800, 1250(630A~1250A)



7.2 Temperature compensation

When the ambient temperature slightly changes, tripping characteristics will change as well, please refer to the table below for temperature compensation correction.

7.2.1 Temperature compensation coefficient of breaker with thermo-magnetic release as follows.

Ambient temperature	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
Temperature compensation coefficient	1.2	1.175	1.15	1.125	1.1	1.075	1.05	1.025	1.0	0.975	0.95	0.925	0.90	0.875	0.85

Note: For reference only

7.2.2 Temperature compensation coefficient of breaker with electronic release as follows

Frame Level rated current	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
NM8S-125S/H(40~125)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NM8S-250S/H(125~160)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NM8S-250S/H(200~250)	1	1	1	1	1	1	1	1	1	1	1	0.95	0.95	0.90	0.90
NM8S-630S/H/R(250~400)	1	1	1	1	1	1	1	1	1	1	1	0.98	0.95	0.93	0.90
NM8S-630S/H/R(500~630)	1	1	1	1	1	1	1	1	1	0.98	0.95	0.93	0.90	0.88	0.85
NM8S-1250S/H/R(630~800)	1	1	1	1	1	1	1	1	1	0.975	0.975	0.95	0.95	0.925	0.925
NM8S-1250S/H/R(1000~1250)	1	1	1	1	1	1	1	1	1	0.95	0.9	0.875	0.80	0.80	0.80