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# Combined RCD/MCB Devices NdRBM 2-pole digital

Catalog

Powering Business Worldwide

sg00719_r


## Description

- High-quality residual current device / miniature circuit breaker combination, line voltage-dependent
- Increased protection in applications with 1-phase frequency converter due to the detection of mixed frequencies (type F)
- Reduction of nuisance tripping (type F or G/A) thanks to
  - time delayed tripping
  - increased current withstand capability
  - 3 kA
- Higher load rating with DC residual currents up to 10 mA (Type F)
- Contact position indicator red - green
- The -OL types are specifically designed to fulfill the tripping characteristic requirements of I2 ≤ Iz in the Norwegian electrotechnical standard NEK 400-8-823.
- Fault current tripping indicator white - blue
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories can be mounted subsequently
- Wide variety of rated tripping currents
- Rated currents up to 25 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA

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| $I_n/I_{\Delta n}$ (A) | Type Designation | Article No. | Units per package |
|---|---|---|---|
| **Type F** | | | |
| **10 kA, 2-pole** | | | |
| **Surge current-proof 3 kA, sensitive to residual pulsating DC, type F** | | | |
| **Characteristic B** | | | |
| 10/0.03 | NdRBM-10/2/B/003-F-OL | 300507 | 1/60 |
| 13/0.03 | NdRBM-13/2/B/003-F-OL | 300508 | 1/60 |
| 15/0.03 | NdRBM-15/2/B/003-F-OL | 300509 | 1/60 |
| 20/0.03 | NdRBM-20/2/B/003-F-OL | 300510 | 1/60 |
| 16/0.03 | NdRBM-16/2/B/003-F | 300492 | 1/60 |
| **Characteristic C** | | | |
| 10/0.03 | NdRBM-10/2/C/003-F-OL | 300503 | 1/60 |
| 13/0.03 | NdRBM-13/2/C/003-F-OL | 300504 | 1/60 |
| 15/0.03 | NdRBM-15/2/C/003-F-OL | 300505 | 1/60 |
| 20/0.03 | NdRBM-20/2/C/003-F-OL | 300506 | 1/60 |
| 6/0.03 | NdRBM-6/2/C/003-F | 300485 | 1/60 |
| 16/0.03 | NdRBM-16/2/C/003-F | 300495 | 1/60 |
| 25/0.03 | NdRBM-25/2/C/003-F | 300501 | 1/60 |
| 6/0.1 | NdRBM-6/2/C/01-F | 300484 | 1/60 |
| 10/0.1 | NdRBM-10/2/C/01-F | 300487 | 1/60 |
| 13/0.1 | NdRBM-13/2/C/01-F | 300490 | 1/60 |
| 16/0.1 | NdRBM-16/2/C/01-F | 300494 | 1/60 |
| 20/0.1 | NdRBM-20/2/C/01-F | 300497 | 1/60 |
| 25/0.1 | NdRBM-25/2/C/01-F | 300498 | 1/60 |
| **Characteristic D** | | | |
| 16/0.03 | NdRBM-16/2/D/003-F | 300496 | 1/60 |
| 25/0.1 | NdRBM-25/2/D/01-F | 300502 | 1/60 |

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| $I_n/I_{\Delta n}$ (A) | Type Designation | Article No. | Units per package |
|---|---|---|---|
| **Type G/A** | | | |
| **10 kA, 2-pole** | | | |
| **Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A** | | | |
| **Characteristic B** | | | |
| 10/0.03 | NdRBM-10/2/B/003-G/A-OL | 300636 | 1/60 |
| 13/0.03 | NdRBM-13/2/B/003-G/A-OL | 300637 | 1/60 |
| **Characteristic C** | | | |
| 10/0.03 | NdRBM-10/2/C/003-G/A-OL | 300634 | 1/60 |
| 13/0.03 | NdRBM-13/2/C/003-G/A-OL | 300635 | 1/60 |
| 16/0.03 | NdRBM-16/2/C/003-G/A | 193879 | 1/60 |
| 25/0.03 | NdRBM-25/2/C/003-G/A | 193880 | 1/60 |

## Specifications | Combined RCD/MCB Devices NdRBM, digital

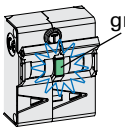
### Description

- Combined RCD/MCB device
- Line voltage-dependent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. Under special conditions (e.g. damply and/or dusty environments, environments with polluting and/or corroding conditions, environments with large temperature fluctuations, installations with a risk of overvoltages due to switching of equipment and/or atmospheric discharges, portable equipment ...), it's recommended to test in monthly intervals.
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ($R_E$), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A**: Protects against special forms of residual pulsating DC which have not been smoothed.
- **Type -G**: 10 ms time delay to avoid unwanted tripping (e.g. during thunderstorms).
- **Type -F**: Sensitive to pulsating DC residual current and detection of multi-frequency residual currents up to 1 kHz
  - Increased protection due to the detection of mixed frequencies
  - Higher load rating with DC residual currents up to 10 mA
  - Reduction of nuisance tripping thanks to time delayed tripping and increased current withstand capability of 3 kA

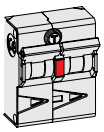
  Recommended for washing machines, dish washers, or motor applications with single-phase drives.
- **-OL Types**: Specifically designed to fulfill the tripping characteristic requirements of $I2 \leq Iz$ in the Norwegian electrotechnical standard NEK 400-8-823.

| **Accessories:** | | |
|---|---|---|
| Auxiliary switch for subsequent installation | ZP-IHK | 286052 |
| | ZP-WHK | 286053 |
| Tripping signal switch for subsequent installation | ZP-NHK | 248437 |
| Shunt trip release | ZP-ASA/.. | 248438, 248439 |

## Local Indication RCD

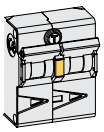



Self check (power ON) 2 s



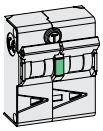
red

$I_\Delta \geq 50\% I_{\Delta n}$



amber

$I_\Delta = 30\text{-}50\% I_{\Delta n}$

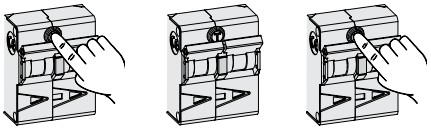


green

$I_\Delta \leq 30\% I_{\Delta n}$

## Service Mode (measuring of residual current $I_\Delta$)

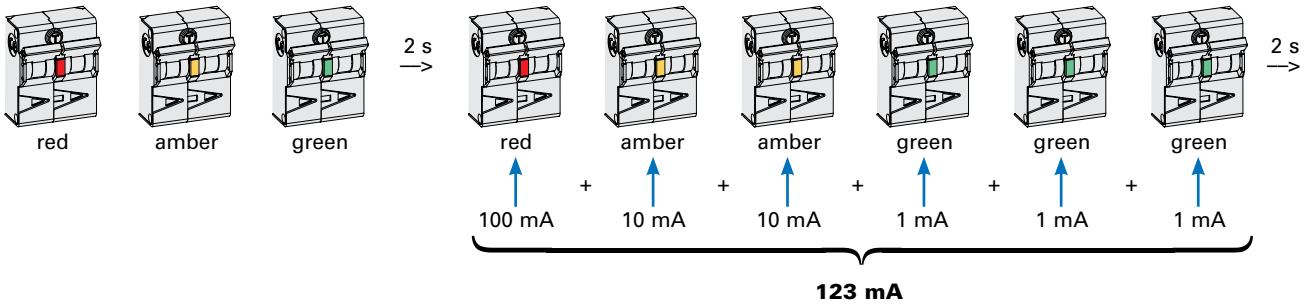
Pressing test button twice to activate Service-Mode



press (0,1 - 0,4 s) | release (0,1 - 0,4 s) | press (0,1 - 0,4 s)

| | |
|---|---|
| Measurement delimiter | red |
| Measurement delimiter ON time | 400 ms |
| 10 mA measurement color | amber |
| 1 mA measurement color | green |
| Double-pressing test button to activate Service Mode | press (0.1-0.4 s) -> release (0.1-0.4 s) -> press (0.1-0.4 s) |
| Time duration of Service Mode | 4 min (during activated Service Mode all protection functions are still working) |

## Lamp test

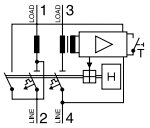


## Technical Data

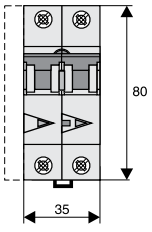
| | | NdRBM |
|---|---|---|
| **Electrical** | | |
| Design according to | | IEC/EN 61009<br>Type G according to ÖVE E 8601 |
| Current test marks as printed onto the device | | |
| Number of protected poles | | 2 |
| Tripping | | |
| Type G / Type F | | line voltage-dependent, 10 ms delay, 3 kA (8/20µs) surge current-proof |
| Rated voltage | $U_n$ | 240 V AC, 50 Hz |
| Rated operational voltage | $U_e$ | 204-260 V AC |
| Voltage range test circuit | | 195-264 V AC |
| Rated tripping current | $I_{\Delta n}$ | 30, 100 mA |
| Rated non-tripping current | $I_{\Delta no}$ | 0.55 $I_{\Delta n}$ |
| Sensitivity | | AC and pulsating DC, Type F according to IEC 62423 |
| Press of test button duration | | > 0.5 s |
| Selectivity class | | 3 |
| Service short circuit capacity | $I_{cs}$ | 7.5 kA |
| Rated short circuit capacity | $I_{cn}$ | 10 kA |
| Rated current | | 6 - 25 A |
| Rated impulse withstand voltage | $U_{imp}$ | 4 kV (1.2/50µs) |
| Characteristic | | B, C, D |
| Maximum back-up fuse (short circuit protection) | | 100 A gL (>10 kA) |
| Endurance | | |
| electrical components | | ≥ 4,000 operating cycles ($I_n$, $U_n$, cos$\varphi$ = 0.87) |
| mechanical components | | ≥ 10,000 operating cycles |
| **Mechanical** | | |
| Frame size | | 45 mm |
| Device height | | 80 mm |
| Device width | | 35 mm (2MU) |
| Mounting | | 3-position DIN rail clip, permits removal from existing busbar system |
| Degree of protection switch | | IP20 |
| Degree of protection, built-in | | IP40 |
| Upper and lower terminals | | open mouthed/lift terminals |
| Terminal protection | | finger and hand touch safe, DGUV VS3, EN 50274 |
| Terminal capacity | | 1 - 25 mm² |
| Terminal screw | | M5 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2) |
| Terminal torque | | 2 - 2.4 Nm |
| Busbar thickness | | 0.8 - 2 mm |
| Operation temperature | | -25°C to +40°C |
| Storage- and transport temperature | | -35°C to +60°C |
| Resistance to climatic conditions | | acc. to IEC 68-2 (25..55°C / 90..95% RH) |
| Line side (supply) | | lower terminals |
| Load side | | upper terminals |

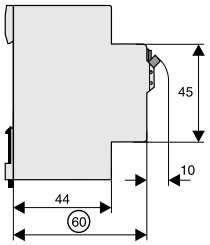
## Connection diagram

2-poles



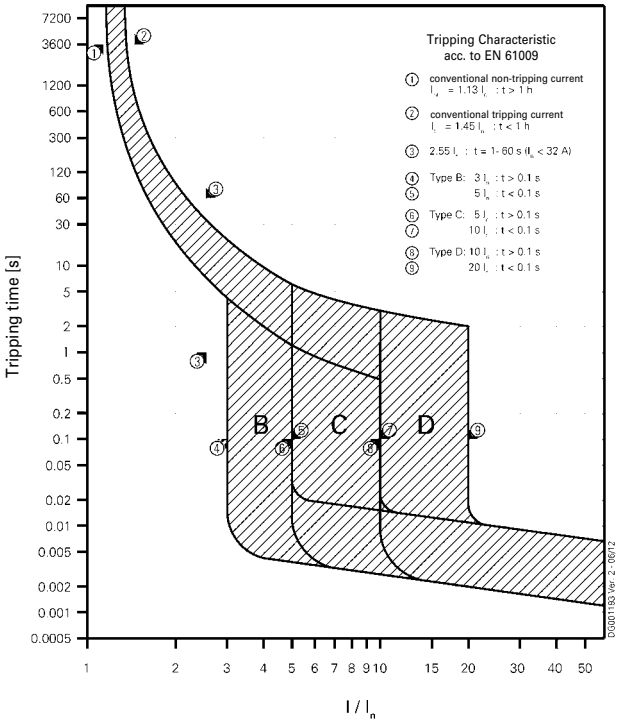

## Dimensions (mm)



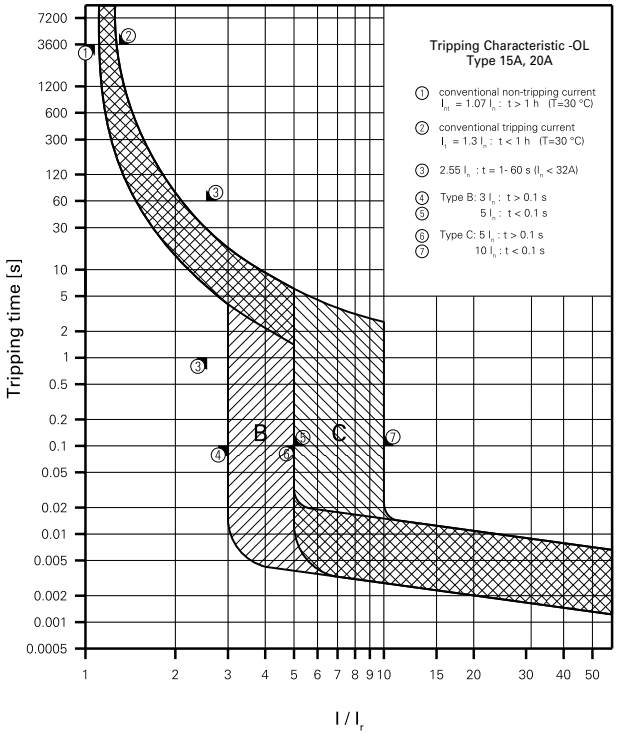



## Tripping Characteristic NdRBM

Tripping Characteristic NdRBM, Characteristics B, C and D




Tripping Characteristic NdRBM, -OL Type 10,13,15, 20 A



## Internal Resistance NdRBM

| **Type B** | |
|---|---|
| At room temperature (single pole) | |
| $I_n$ [A] | R* [mΩ] |
| 10 | 17.9 |
| 13 | 12.3 |
| 16 | 7.6 |
| * 50Hz | |

| **Type C** | |
|---|---|
| At room temperature (single pole) | |
| $I_n$ [A] | R* [mΩ] |
| 6 | 28.5 |
| 10 | 17.7 |
| 13 | 9.0 |
| 16 | 6.7 |
| 20 | 5.5 |
| 25 | 3.0 |
| * 50Hz | |

| **Type D** | |
|---|---|
| At room temperature (single pole) | |
| $I_n$ [A] | R* [mΩ] |
| 6 | 28.5 |
| 10 | 14.9 |
| 13 | 9.0 |
| 16 | 6.7 |
| 20 | 5.5 |
| 25 | 3.0 |
| * 50Hz | |

## Power Loss at $I_n$ NdRBM

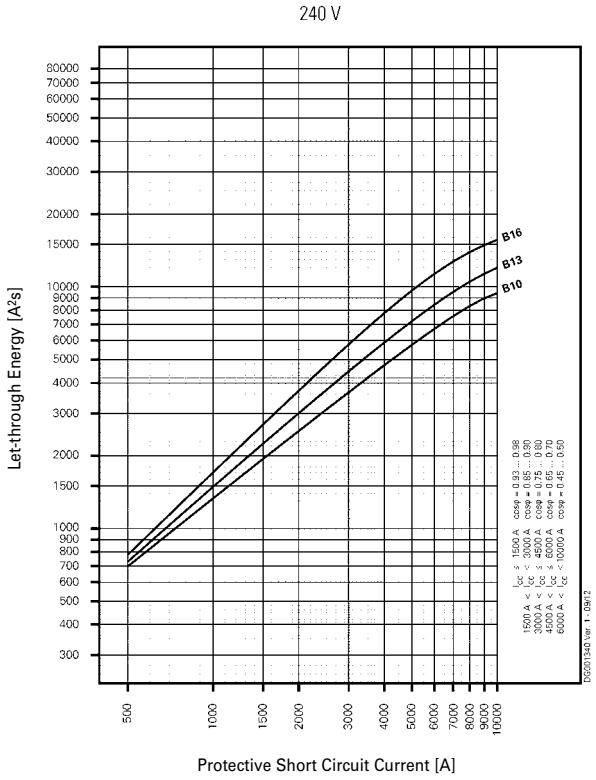
| **Type B** | |
|---|---|
| (entire unit) | |
| $I_n$ [A] | P* [W] |
| 10 | 4.0 |
| 13 | 4.9 |
| 16 | 4.5 |
| * 50Hz and ambient temperature | |

| **Type C** | |
|---|---|
| (entire unit) | |
| $I_n$ [A] | P* [W] |
| 6 | 2.1 |
| 10 | 4.0 |
| 13 | 3.4 |
| 16 | 3.9 |
| 20 | 5.0 |
| 25 | 4.2 |
| * 50Hz and ambient temperature | |

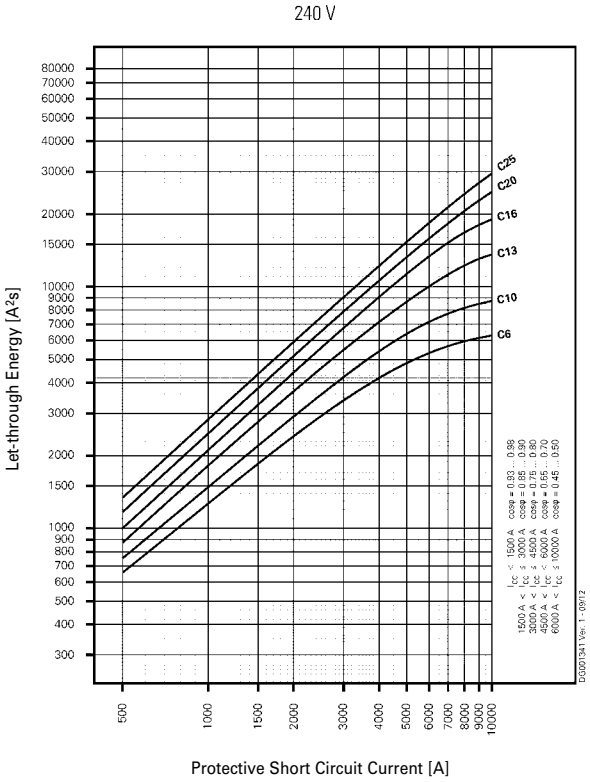
| **Type D** | |
|---|---|
| (entire unit) | |
| $I_n$ [A] | P* [W] |
| 6 | 2.1 |
| 10 | 3.2 |
| 13 | 3.4 |
| 16 | 3.9 |
| 20 | 5.0 |
| 25 | 4.2 |
| * 50Hz and ambient temperature | |

## Let-through Energy NdRBM

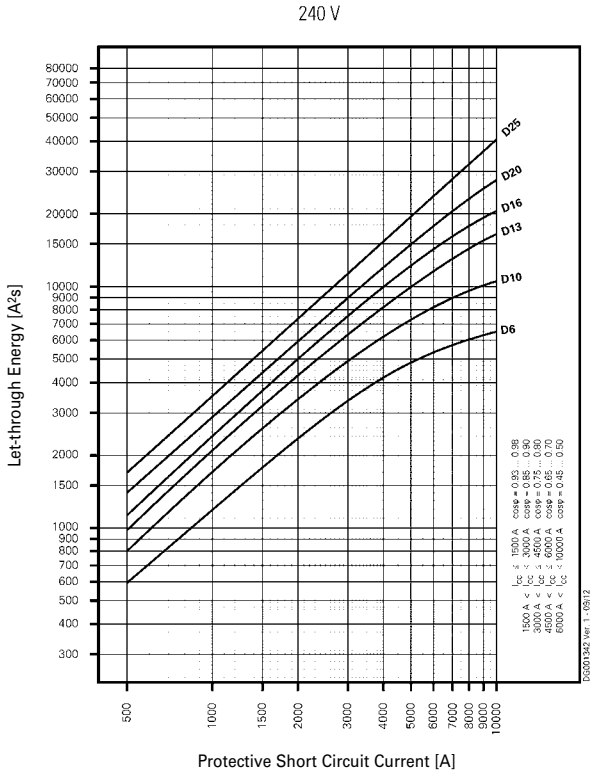
Let-through Energy NdRBM, Characteristic B




Let-through Energy NdRBM, Characteristic C

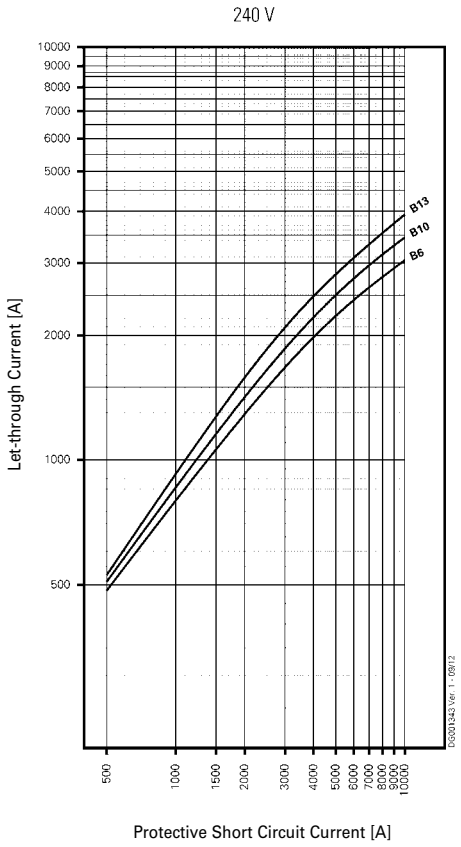



Let-through Energy NdRBM, Characteristic D

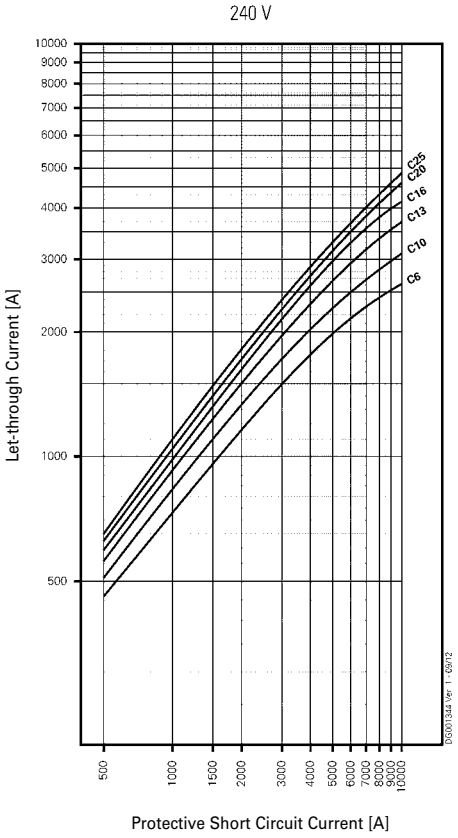


## Let-through Current NdRBM

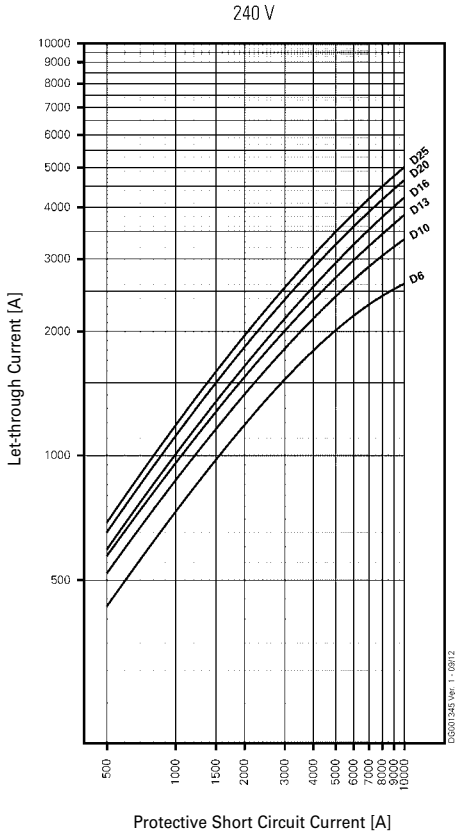
Let-through Current NdRBM, Characteristic B




Let-through Current NdRBM, Characteristic C




Let-through Current NdRBM, Characteristic D



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