

CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



2910410

<https://www.phoenixcontact.com/us/products/2910410>

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Multi-channel electronic circuit breaker with IO-Link interface for protecting four loads at 24 V DC in the event of overload and short circuit. With electronic locking of the set nominal currents. For installation on DIN rails.

Your advantages

- System transparency, thanks to comprehensive diagnostics capabilities
- Worldwide access to the device, thanks to integration into your IO-Link infrastructure
- Secure locking, thanks to interlock
- Plan service calls more efficiently since regular service interval calls can be performed conveniently via the interface.
- Convenient error diagnostics, thanks to precise error categorization and recording
- Autonomous operation since the device is fully functional even without the IO-Link interface connection

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2910410 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CL14 |
| Product key | CLA152 |
| GTIN | 4055626448558 |
| Weight per piece (including packing) | 130 g |
| Weight per piece (excluding packing) | 128 g |
| Customs tariff number | 85362010 |
| Country of origin | DE |

Technical data

Notes

General

| Note | |
|------|---|
| | Repeated hard short circuits can reduce the melting integral of the integrated backup fuse. |
| | Always connect the negative pole to terminal IN- to ensure the internal power supply. Return currents from the loads must not be fed back to the power supply via IN- of the circuit breaker. |

Product properties

| | |
|---------------------|----------------------------|
| Product type | Device circuit breakers |
| Product family | CBMC |
| Type | DIN rail module, one-piece |
| Number of positions | 1 |
| No. of channels | 4 |

Insulation characteristics

| | |
|------------------|-----|
| Protection class | III |
| Pollution degree | 2 |

Electrical properties

General

| | |
|--|---|
| Operating voltage | 18 V DC ... 30 V DC |
| Rated voltage | 24 V DC |
| Rated current I_N | max. 16 A (IN+) max. 40 A (per terminal position when bridging additional devices via IN+) |
| Rated current I_N | 1 / 2 / 3 / 4 A DC (adjustable per output channel) |
| Rated current (pre-adjusted) | 4 A |
| Rated surge voltage | 0.5 kV |
| Tripping method | E (electronic) |
| Feedback resistance | max. 35 V DC |
| Required backup fuse | Only required if I_{max} of the power supply > the short-circuit switching capacity. Integrated failsafe element. |
| Short-circuit switching capacity | 300 A |
| Dielectric strength | max. 35 V DC (Load circuit) |
| Fuse | electronic |
| Efficiency | > 99 % |
| Closed circuit current I_0 | typ. 25 mA |
| Power dissipation | typ. 0.6 W (No-load operation) < 4 W (Nominal operation) |
| Module initialization time | 1.6 s |
| Waiting time after switch off of a channel | 5 s (at overload / short circuit) |

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| | |
|----------------------------|---------------------------------------|
| Measuring tolerance I | ± 15 % |
| MTBF (IEC 61709, SN 29500) | 6896552 h (at 25 °C with 21 % load) |
| | 2597403 h (at 40 °C with 34.25% load) |
| | 443066 h (at 35 °C with 100 % load) |
| Fail-safe element | 15 A DC (per output channel) |
| Contact switching type | without electrical isolation |

Load circuit

| | |
|-------------------------|---|
| Shutdown time | ≤ 10 ms (for short circuit > 2.0 x I _N) |
| | 1 s (1.2 ... 2.0 x I _N) |
| Undervoltage switch-off | ≤ 17.8 V DC (active) |
| | ≥ 18.8 V DC (inactive) |
| Overvoltage switch-off | ≥ 30.5 V DC (active) |
| | ≤ 29.5 V DC (inactive) |
| Max. capacitive load | 30000 µF (Depending on the current setting and the short-circuit current available) |
| Switch-on delay | 0.1 s (per output channel) |

Connection data

Main circuit IN+

| | |
|---|--|
| Connection method | Push-in connection |
| Stripping length | 15 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 10 mm ² |
| Conductor cross-section AWG | 24 ... 8 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 4 mm ² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm ² ... 6 mm ² |

Main circuit IN-

| | |
|---|--|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 12 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 1.5 mm ² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm ² ... 2.5 mm ² |

Main circuit OUT

| | |
|---|--|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 12 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 1.5 mm ² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm ² ... 2.5 mm ² |

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2910410

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IO-Link

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 24 ... 16 |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.25 mm ² ... 0.75 mm ² |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.25 mm ² ... 1.5 mm ² |

Interfaces

IO-Link

| | |
|--------------------------------|---|
| Interface type | IO-Link |
| Specification | V1.1 |
| Reverse polarity protection | yes |
| Transmission speed | 230.4 kbps (COM3) |
| Cycle Time | min. 40 ms |
| Amount of process data | 8 Byte (Input data) 3 Byte (Output data) |
| Nominal voltage for I/O supply | 24 V DC |
| Current consumption | max. 30 mA (IO-Link L+) |
| IO-Link Vendor ID | 176 _{dec} , 00 B0 _{hex} |
| IO-Link Device ID | 393520 _{dec} , 06 01 30 _{hex} |

Signaling

| | |
|--------------------|---|
| IO-Link LED off | off (No communication) |
| IO-Link LED green | flashing (IO-Link connection exists) |
| Channel LED off | off (Channel switched off) |
| Channel LED yellow | lit (Channel switched on, channel load > 80%) flashing (Programming mode active) |
| Channel LED green | lit (Channel switched on) |
| Channel LED red | lit (Channel switched off, over- or undervoltage active) ON temporarily (Channel switched off, 5 s cool-down phase, overload or short-circuit release) flashing (Channel switched off, ready to be switched back on, overload or short-circuit release) two flashes (Channel switched off, device total current limit 40 A exceeded) |

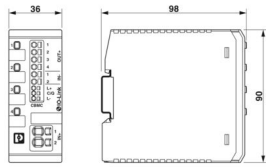
Dimensions

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| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 36 mm |
| Height | 90 mm |
| Depth | 98 mm (incl. DIN rail 7.5 mm) |

Material specifications

| | |
|--|-----------------------|
| Color | light gray (RAL 7035) |
| Material | PC |
| | PA 6.6 |
| | PA 6.3T |
| | POM |
| Flammability rating according to UL 94 | V-0 |

Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 60 °C |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Altitude | ≤ 3000 m up to 52 °C (amsl) |
| | ≤ 4000 m up to 46 °C (amsl) |
| Humidity test | 96 h, 95 % RH, 40 °C |
| Shock (operation) | 30g (IEC 60068-2-27, Test Ea) |
| Vibration (operation) | 10 Hz ... 57.6 Hz (Amplitude ±0.35 mm; in accordance with IEC 60068-2-6, Test Fc) |
| | 57.6 Hz ... 150 Hz (Acceleration 5g; in accordance with IEC 60068-2-6, Test Fc) |

Approvals

UL approval

| | |
|----------------|----------------------------------|
| Identification | UL/C-UL Listed UL 508 |
| | UL Recognized UL 2367 |
| | NEC Class 2 according to UL 1310 |

Standards and regulations

| | |
|--------------------------|---|
| Standards/specifications | EN 61000-6-2 |
| Note | EMC – Immunity for industrial areas |
| Standards/specifications | EN 61000-6-3 |
| Note | EMC – Emission for residential, business and commercial properties and small operations |

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| | |
|--------------------------|---|
| Standards/specifications | EN 60068-2-6 |
| Note | Environmental influences – Vibrations (sinusoidal) |
| Standards/specifications | EN 60068-2-27 |
| Note | Environmental influences – Shocks |
| Standards/specifications | EN 60068-2-78 |
| Note | Environmental influences – Moisture and heat, constant |
| Standards/specifications | EN 50178 |
| Note | Equipping power installations with electronic equipment |

Mounting

| | |
|---------------|-----------------|
| Mounting type | DIN rail: 35 mm |
|---------------|-----------------|

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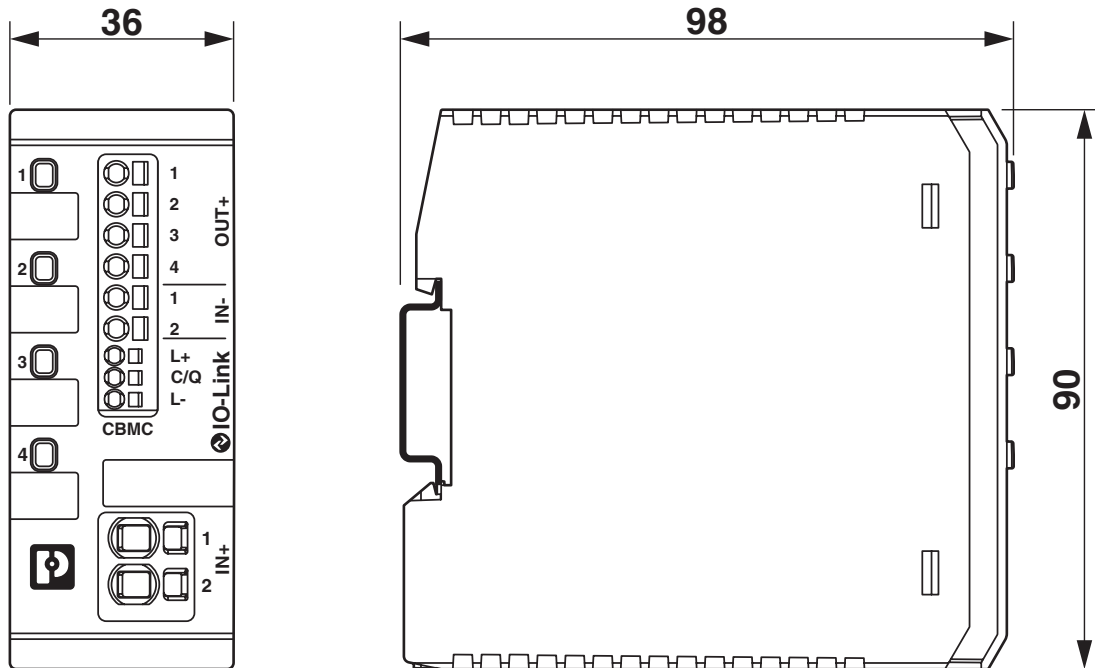


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Drawings

Dimensional drawing



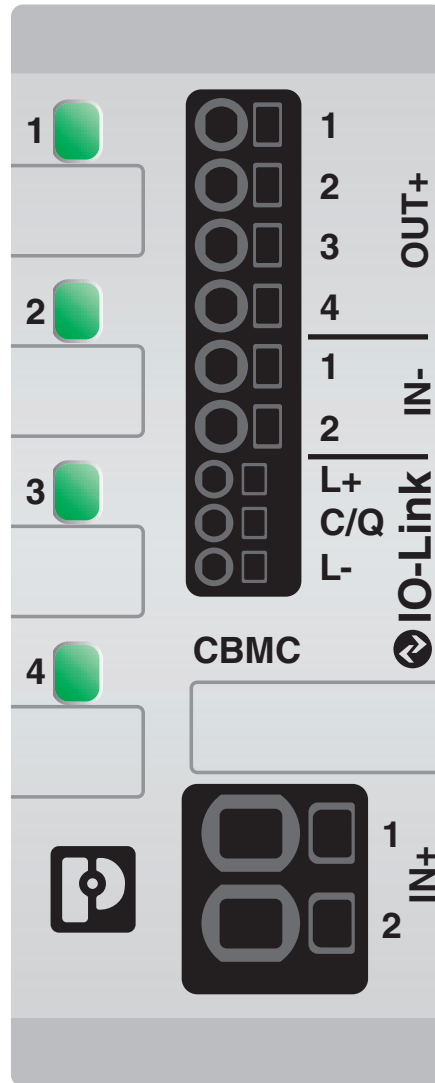
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Product drawing



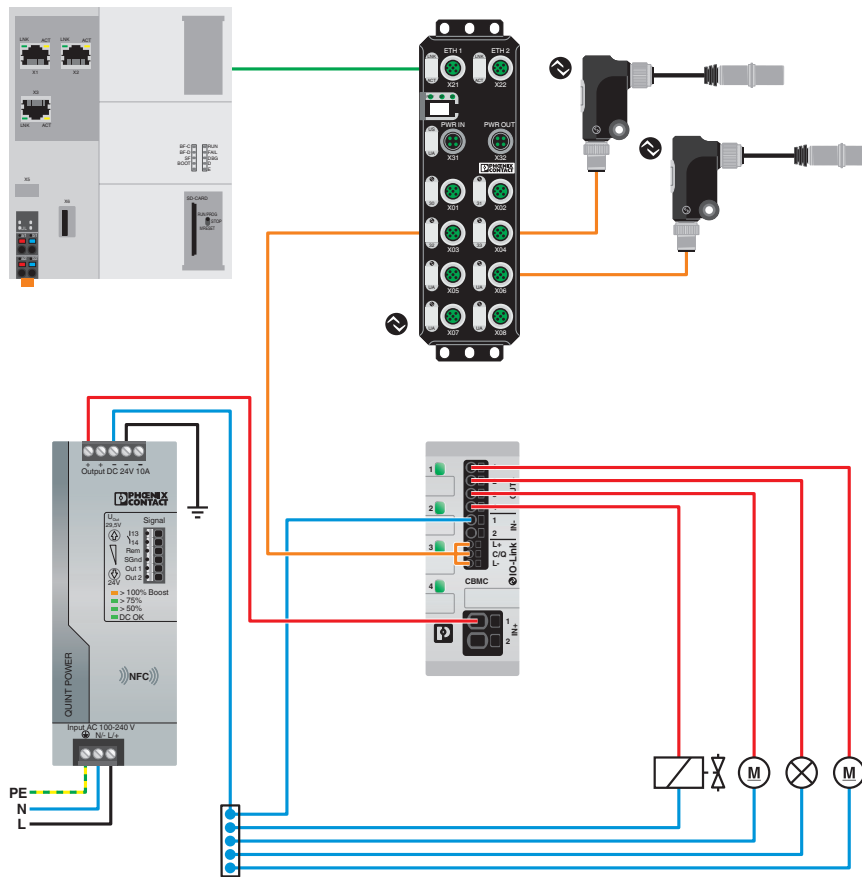
CBMC E4 24DC/1-4A+ IOL - Electronic circuit breaker



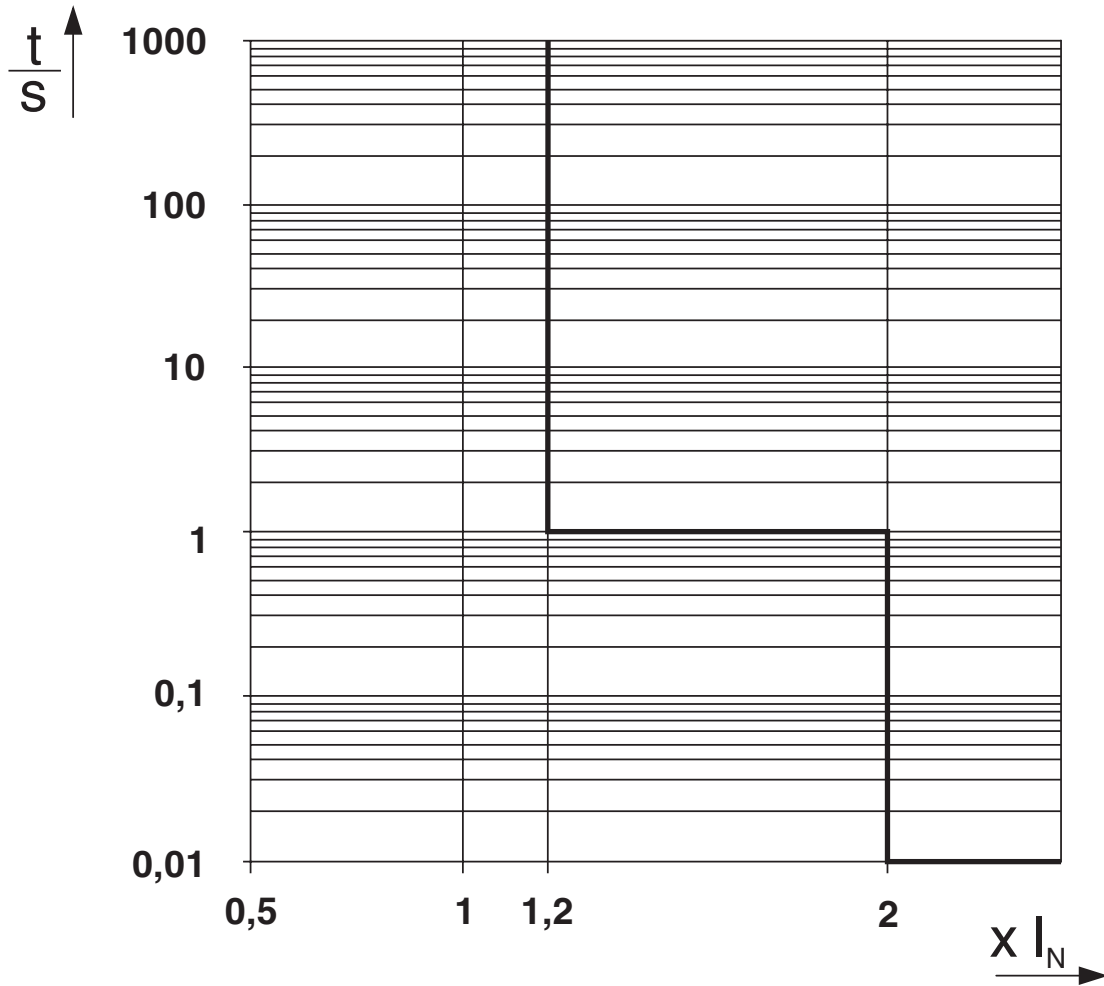
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Application drawing



Diagram



Trigger characteristic in the DC range

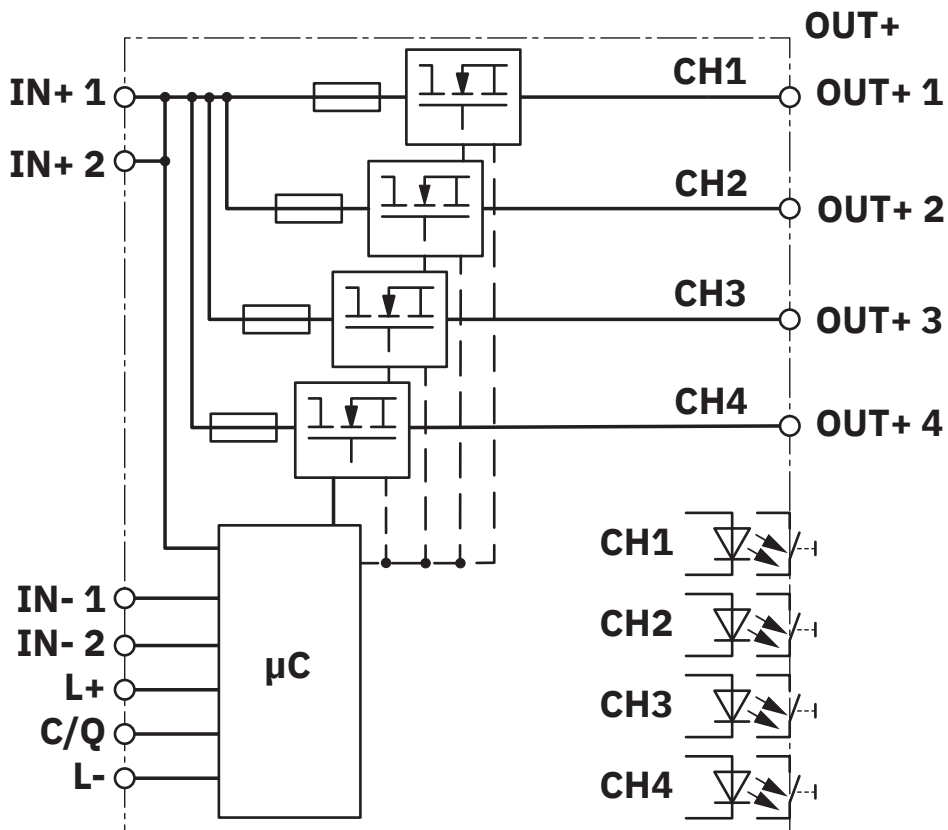
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Block diagram



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Approvals

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UL Recognized

Approval ID: FILE E 317172



UL Listed

Approval ID: E123528



cUL Listed

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27140401 |
| ECLASS-15.0 | 27140401 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC003538 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|--|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| | Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a) |
| SCIP | cf0e870d-4d39-4026-9a6e-21123e10589e |

EF3.1 Climate Change

| | |
|---------|---------------|
| CO2e kg | 3.316 kg CO2e |
|---------|---------------|

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