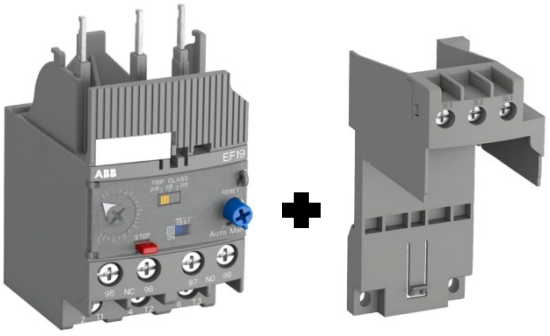
Application

# Electronic Overload Relays with Current Transformer CTxL

## EF19 series with CT4L185R/4, CT4L310R/4, CT5L500R/4, CT5L850R/4

**The external current transformers transform the primary current related to their transformation ratio into a smaller secondary current.**
**The secondary current can be measured by Electronic overload relays.**



EF19 + DB19EF

CT4L...

CT5L...

**Customer Values**

- Standardized design: Freedom of variation
  - Better planning
  - Less variances
- CT's in the electrical distribution - overload relays in the operating area
- Suitability for ATEX / IECEx application

**Features**

- Economic overload protection with separate mounting
- Motor applications from 40 A up to 850 A
- For three phase motors
- Automatic and manual reset
- RESET, TEST, and STOP functions
- Trip Class 10E, 20E, 30E

**Components which can be used for this application**

- Electronic overload relays EF19-2.7, EF19-6.3

II (2) G [Ex eb Gb] [Ex db Gb] [Ex pxb Gb]
II (2) D [Ex tb Db] [Ex pxb Db]

BVS 15 ATEX F 001
IECEx BVS 17.0016
[Ex]

- Single mounting kit DB19EF for EF19
- Current transformers CT4L185R/4, CT4L310R/4, CT5L500R/4, CT5L850R/4

**Safety requirements**

The installation and the operation of this device and any maintenance must be carried out by a qualified person in accordance with specific local standards and safety regulation. Before installing this device, read the respective operating instructions carefully.
For use in potentially explosive areas please refer to Operating instructions for electronic overload relays 2CDC107043M6801

This document cannot claim to contain all detailed information of this product and can even not consider every possible application of the products.

Further information and data is obtainable from the catalogues and data sheets of this product, from the local ABB sales organization as well as on the ABB homepage www.abb.com/contacts.

## Order data

| | Type | Order code | Setting range |
|---|---|---|---|
| **Electronic overload relays** | EF19-2.7 | 1SAX111001R1103 | 0.8 … 2.7 A |
| | EF19-6.3 | 1SAX111001R1104 | 1.9 … 6.3 A |
| **Single mounting kits** | DB19EF | 1SAX101910R1001 | |
| **Current transformers** | | | **Rated primary current range Ie** |
| | CT4L185R/4 | 1SAJ929500R0185 | 60 … 185 A |
| | CT4L310R/4 | 1SAJ929500R0310 | 150 … 310 A |
| | CT5L500R/4 | 1SAJ929501R0500 | 200 … 500 A |
| | CT5L850R/4 | 1SAJ929501R0850 | 400 … 850 A |

## Current ranges ... [A]

| CT | ratio | With EF19-2.7 | | | With EF19-6.3* | | |
|---|---|---|---|---|---|---|---|
| | | Imin | Imax | Min setting | Imin | Imax | Max setting |
| CT4L185R/4 | 46.5 | 40 | 125 | 0,8 | 90 | 185 | 4 |
| CT4L310R/4 | 77.5 | 150 | 210 | 1,9 | 150 | 310 | 4 |
| CT5L500R/4 | 125 | 200 | 340 | 1,6 | 240 | 500 | 4 |
| CT5L850R/4 | 212.5 | 400 | 570 | 1,8 | 400 | 850 | 4 |

* EF19-6.3 used up to the 4A setting max.

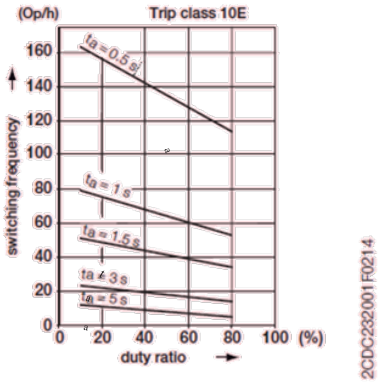
| | |
|---|---|
| Accuracy of combination<br>(CT + DB+ EF19) | The current transformer increases the tolerance of the tripping time for currents between 3 ... 8 times Ie by 3% |
| Wire size connection:<br>Current transformer - Overload relay | 1.5 $mm^2$ |
| Max. cable length between:<br>Current transformer - Overload relay | 10 m |
| Max impedance connection:<br>Current transformer - Overload relay | 120 mΩ per pole |

## Short Circuit Coordination

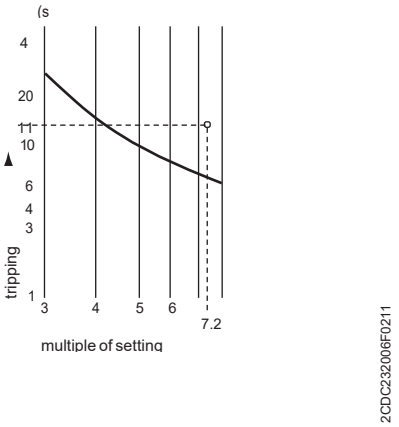
For other tables please refer to ABB „Coordination tables for motor protection“

http://applications.it.abb.com/SOC/Page/Selection.aspx

## Technical diagrams

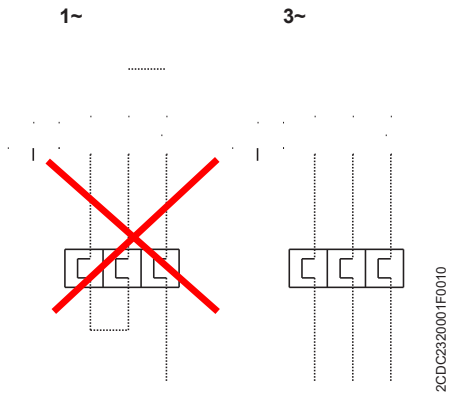



Intermittent periodic duty, $t_a$: Motor starting time

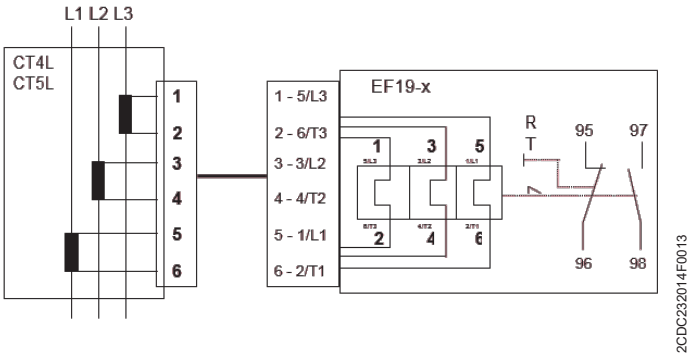



Example of a tripping curve, starting from cold state

## Wiring Diagram



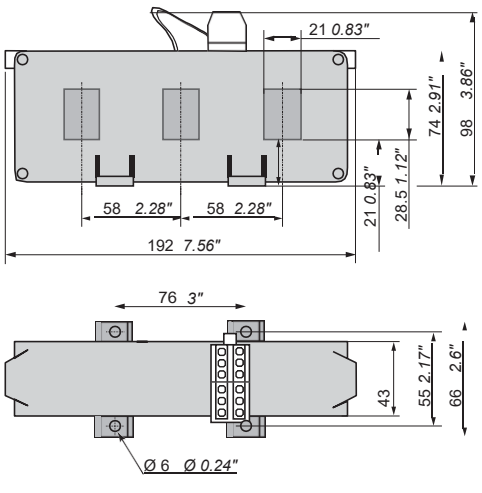

Operation mode 3-phase only



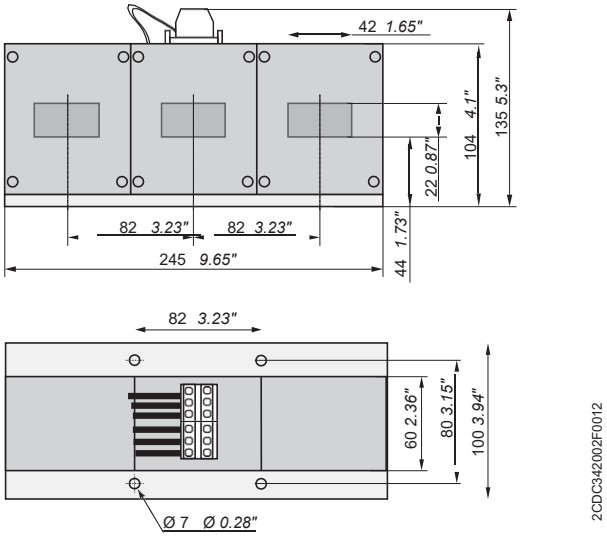

External current transformer CT with EF19

## Dimensions

in mm and inches




CT4L185R/4, CT4L310R/4




CT5L500R/4, CT5L850R/4

## Technical data

| Type | | EF + DB + CT |
|---|---|---|
| **Main circuit – Utilization characteristics according to IEC/EN** | | |
| Standards | | IEC/EN 60947–4–1, IEC/EN 60947-5-1, IEC/EN 60947-1 |
| Rated operational voltage $U_e$ | | 1000 V AC |
| Rated frequency | | 50/60 Hz |
| Trip class | | 10E |
| Number of poles | | 3 |
| Rated impulse withstand voltage Uimp | | 8 kV |
| Rated insulation voltage Ui | | 1000 V AC |
| Short-circuit protection | | Refer to Short circuit coordination http://applications.it.abb.com/SOC/Page/Selection.aspx |

**Auxiliary circuit according to IEC/EN**

| | | |
|---|---|---|
| Rated operational voltage $U_e$ | | 600 V |
| Conventional free air thermal current $I_{th}$ | N.C., 95-96 | 6 A |
| | N.O., 97-98 | 6 A |
| Rated frequency | | DC, 50/60 Hz |
| Number of poles | | 1 N.C. + 1 N.O. |
| Rated operational current $I_e$ acc. to IEC/EN 60947-5-1 for utilization category | | |
| at AC-15 at 110-120 V | N.C., 95-96 | 3.00 A |
| | N.O., 97-98 | 3.00 A |
| at AC-15 at 220-230-240 V | N.C., 95-96 | 3.00 A |
| | N.O., 97-98 | 3.00 A |
| at AC-15 at 400 V | N.C., 95-96 | 1.10 A |
| | N.O., 97-98 | 1.10 A |
| at AC-15 at 480-500 V | N.C., 95-96 | 0.75 A |
| | N.O., 97-98 | 0.75 A |
| at DC-13 at 24 V | N.C., 95-96 | 1.50 A |
| | N.O., 97-98 | 1.50 A |
| at DC-13 at 110-120-125 V | N.C., 95-96 | 0.55 A |
| | N.O., 97-98 | 0.55 A |
| at DC-13 at 250 V | N.C., 95-96 | 0.27 A |
| | N.O., 97-98 | 0.27 A |
| at DC-13 at 600 V | N.C., 95-96 | 0.10 A |
| | N.O., 97-98 | 0.10 A |
| Minimum switching capacity | | 17 V / 3 mA |
| Short-circuit protection | N.C., 95-96 | Fuse, 6 A, Type gG |
| | N.O., 97-98 | Fuse, 6 A, Type gG |
| Rated impulse withstand voltage $U_{imp}$ | | 6 kV |
| Rated insulation voltage $U_i$ | | 690 V |

# Contact us

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