CIRCUIT SHIELD®
Types MICRO-51 and MICRO-51/FT
Microprocessor-Based Time-Overcurrent Relays

Application

Micro-51 microprocessor-based overcurrent relays are used for phase and ground overcurrent protection in utility, industrial, and commercial electrical power systems. The Micro-51 operates from conventional 5A or 1A secondary current transformers. The relay is self-powered from the current; therefore, there is no continuous drain on the control voltage supply. Settings are made by front panel switches.

Eight time-current curves are built-in, selectable on the front panel:
- Inverse
- Long Time Inverse
- Very Inverse
- Long Time Very Inverse
- Extremely Inverse
- Long Time Extremely Inverse
- Definite Time
- Inverse
- Short Time Inverse

Wide current tap ranges with exceptional setting resolution are offered: 1.5-12A in 0.25A increments, and 0.3-2.4A in 0.05A increments. The time dial is adjustable from 1 to 10 in increments of 0.1.

An instantaneous element is standard. Instantaneous pickup is adjustable from 1 to 20 multiples of the time-pickup, in increments of 0.1 multiples. The instantaneous unit may be disabled by setting the pickup to zero.

The Micro-51 can be set for operation on a 50 Hz or 60 Hz system by positioning an internal link.

The Micro-51 has three electrically isolated normally-open output contacts: Trip, Inst. Trip, and Trip Alarm.

A led is provided on the front panel to indicate when the current is above the pickup setting. Two targets are provided for Time and Instantaneous trip indication. Target operation is by trip circuit current. Reset is manual by a front panel magnetic device.

The Micro-51 has self-diagnostics that continuously perform functional checks when the input current to the relay is above a minimum level. The integrity of the ROM, RAM, EEPROM, and analog elements are monitored. A red led on the front panel indicates the detection of a problem.

Features
- Eight selectable curves
- Wide current tap ranges
- Exceptional setting resolution
- Self-powered, low burden
- Transient and EMI immunity
- Total-drawout construction
- Retrofit existing CO installations
- 2 year warranty
**Construction**

The Micro-51 is packaged for conventional semi-flush panel mounting. An automatic CT shorting feature allows the relay to be fully withdrawn from its case. A unique, patented, rear circuit board accepts direct test connections using standard banana plugs. A test plug is available for testing the external circuits.

The Micro-51/FT is packaged in an FT-11 case for conventional semi-flush panel mounting. The Flexistez switches provide CT shorting that allows the relay to be fully withdrawn from its case. The switches and companion test plug allow tests to be performed to the relay in its case mounted in the panel.

**Retrofit Kit**

The Micro-51/FT design enables the relay to be retrofitted in existing CO installations. With the same terminal connections as most CO relays, the drawout chassis can be placed into existing CO cases. This eliminates any rewiring.

Figure 2. Retrofit Kit. Add "-R" suffix to Micro-51/FT catalog number
Specifications

Pickup:
- 1.5-12.0A in 0.25 amp increments.
- 0.3-2.4A in 0.05 amp increments.
- Instantaneous: 1-20 times pickup in 0.1 increments.
- For other ranges, consult factory.

Accuracy:
- Time pickup ±3%.
- Inst. pickup ±10%

Curves:
- Switch selectable on front panel:
  - Inverse
  - Definite Time
  - Very Inverse
  - Long Time Inverse
  - Extremely Inverse
  - Long Time Very Inverse
  - Short Time
  - Long Time Ext. Inverse
- Time Dial — adjustable 1-10 in increments of 0.1
- Accuracy: ±7% or ±1 cycle whichever is greater.

Burden:
- 1.5-12A unit: 2.8 VA at 5A (non-linear, see IB)
- 0.3-2.4A unit: 2.8 VA at 1A (non-linear, see IB)

Output Contact Rating:
- 30 amperes tripping at 250 Vdc
- 5 amperes continuous
- 0.3 amperes break inductive at 125 Vdc

Series Target
- 30 Amp Tripping (1 amp minimum
  trip circuit current req'd. to set targets)
  For trip circuit currents below 1 amp, .25
  amps minimum, add "ST" to catalog number
  for sensitive target coil.

Operating Frequency:
- 50 Hz or 60 Hz, selectable by internal jumper

Control Power Drain:
- Zero. Unit is self-powered

Temperature Range:
- Minus 20°C to Plus 70°C

Transient Immunity:
- More than 2500V, 1MHz bursts at 400 Hz
  repetition rate continuous (ASNSI C37.90.1
  SWC); Fast transient test; EMI test.

Dielectric:
- 2000 Vac, 60 seconds
  all circuits to ground

Weight:
- Micro-51
  - Unboxed: 4.7 lbs. (2.1 kg)
  - Boxed: 5.4 lbs. (2.3 kg)
- Micro-51/FT
  - Unboxed: 7.8 lbs. (3.5 kg)
  - Boxed: 9.6 lbs. (4.4 kg)

Volume:
- Micro-51
  - 0.26 cubic feet
- Micro-51/FT
  - 0.48 cubic feet

Testing

Conventional overcurrent relay test procedures
using commercially available test sets may be
used.

How To Order

For a complete listing of available overcurrent
relays see TD 41-025.

To place an order or for further information,
contact the nearest District Office.

How To Specify

Time overcurrent relays shall be Asea Brown
Boveri Type Micro-51 Series. Relay shall be
microprocessor based with eight selectable
curves, self-powered, self-checking, and of
total drawout construction.

Further Information

List Prices: PL 41-020
Technical Data: TD 41-025
Instruction Book: IB 7.2.1.7-15©
Test Plug: IB 7.7.1.7-9©
Other Protective Relays:
  - Application Selector Guide, TD 41-016

© Available upon request, only from Allentown Plant.
Figure 3. Outline and Drilling – Micro-51

Figure 4. Outline and Drilling – Micro-51 in FT-11 Case
Circuit Shield®
Types MICRO-51 and MICRO-51/FT
Microprocessor-Based Time-Overcurrent Relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Curves (8)</th>
<th>Continuous Rating</th>
<th>Time Unit Pickup Range</th>
<th>Instantaneous Range (in multiples of pickup setting)</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICRO-51</td>
<td>Inverse, Very Inverse, Extremely Inverse, Short Time Inverse, Definite Time, L.T. Inv., L.T. Very Inv., L.T. Ext. Inv.</td>
<td>4A</td>
<td>0.3-2.4A</td>
<td>1-20</td>
<td>446S1101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20A</td>
<td>1.5-12A</td>
<td>1-20</td>
<td>446S1201</td>
</tr>
<tr>
<td>MICRO-51/FT</td>
<td>Inverse, Very Inverse, Extremely Inverse, Short Time Inverse, Definite Time, L.T. Inv., L.T. Very Inv., L.T. Ext. Inv.</td>
<td>4A</td>
<td>0.3-2.4A</td>
<td>1-20</td>
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</tr>
</tbody>
</table>

Sensitive Target Coil: Add "-ST" to catalog number.
Retrofit Kit: Add "-LC" to catalog number.
Internal Connections: 16D446A, 10F446A

To place an order, or for further information, contact the nearest District Office.

Internal Connection Diagrams

16D446A Micro-51
Time-Overcurrent Relay
Drawout Test Case

10F446A Micro-51/FT
Time-Overcurrent Relay
FT-11 FlexiTest Case

TAR = LOW IMPEDANCE SERIES TARGET COIL.

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