TEST SET

I-AC-PRO-MP-TS | AC-PRO-MP® TRIP UNIT

INSTRUCTION MANUAL

Secondary Injection Test Set
for AC-PRO-MP® Trip Units

URC Utility Relay Company

Chagrin Falls, OH 44023
Phone: 888.289.2864
www.utilityrelay.com

Table of Contents

1.0 Introduction

The Model B-291-MP secondary injection test set is a single-phase test set specifically designed for testing the operation of the AC-PRO-MP microcontroller based trip units manufactured by Utility Relay Co.

The AC-PRO-MP is a plug-in, direct replacement trip unit for the STR trip units on the Merlin Gerin & Square D Masterpact MP breakers.

NOTICE

The Model B-291-MP test set will:

- ONLY test the AC-PRO-MP trip units
- NOT test the AC-PRO trip units

For AC-PRO-MP

Not for AC-PRO

The standard AC-PRO test set cannot be used on the AC-PRO-MP trip unit because of the 0.1 Amp secondary current transformers (CTs) in the Masterpact MP breaker.

The B-291-MP test set can test pick-up and time delays of the various protection functions by driving current into the AC-PRO-MP on the secondary side of the CT circuit.

The test set will test AC-PRO-MP trip units programmed for 60 or 50 Hertz operation.

The test set will test the AC-PRO-MP trip system with the exception of the CTs and associated wiring harness.

⚠ CAUTION

Secondary injection testing is not a substitute for primary injection testing that should be performed for any circuit breaker retrofit.

2.0 Overview

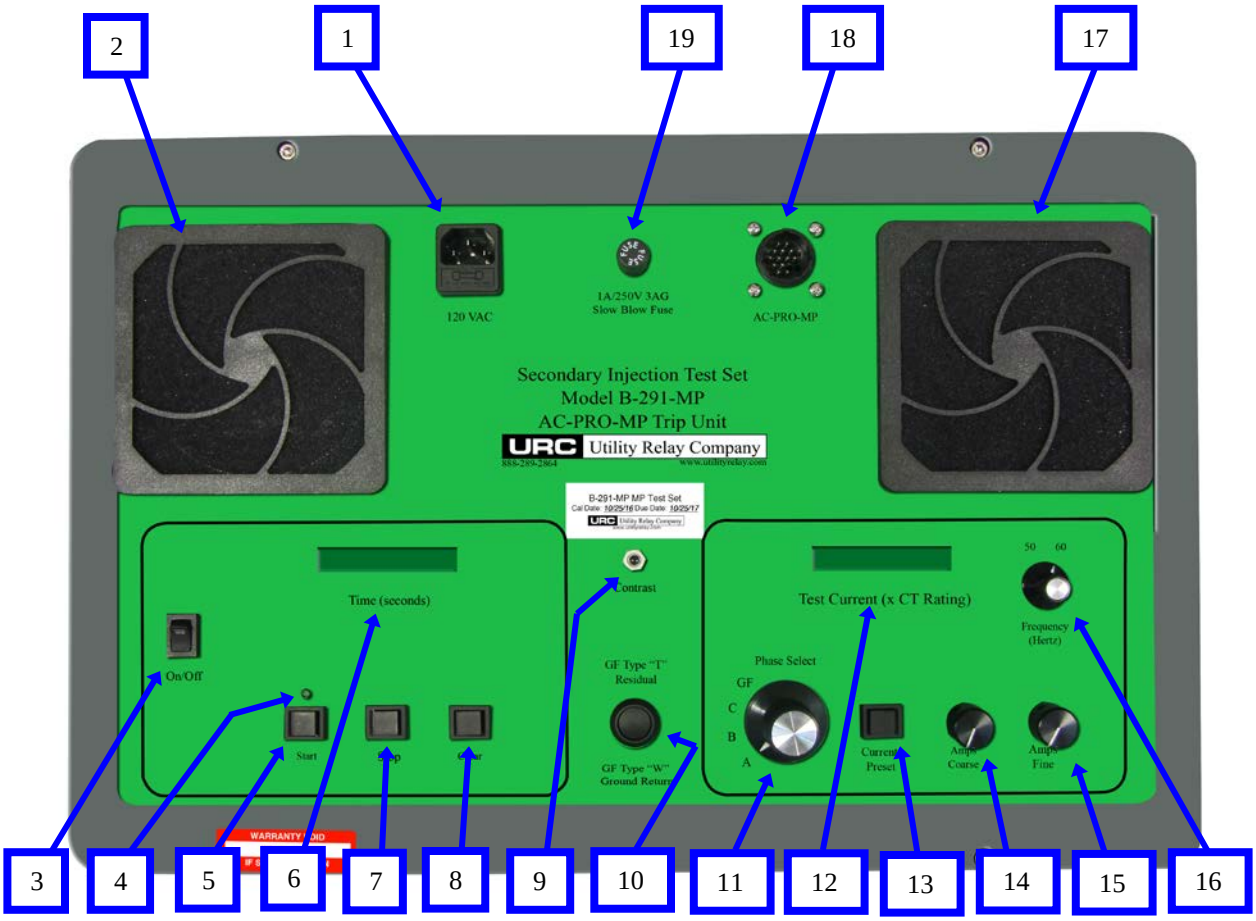
The basic function of the test set is to deliver an accurate level of AC current directly to the AC-PRO-MP trip unit under test and to verify the pick-up values and times required for the AC-PRO-MP to trip.

The technician running the test will operate the Start (5), Stop (7), Clear (8) and Current Preset (13) push buttons, adjust the Amp Coarse (14) and Amp Fine (15) potentiometers (pots), and adjust the Phase (11) and Frequency (16) Selector switches. The two displays (6 & 12) are used to indicate elapsed time in seconds and test current.

NOTICE

Numbers in parentheses refer to the labeled items in Figure 1.

Please reference the AC-PRO-MP instruction manual for complete installation, programming and operating instructions.



1 Power Cable/Fuse Holder
Power cable connector with main fuse. (120Vac 50/60Hz).

2 Cooling Airflow Exhaust
Cooling air for the test set exits via this filter opening. (Must not be blocked)

3 Power ON/OFF Switch

4 Start LED
Illuminates when test current is flowing.

5 Start Push Button
Starts test current flow and starts the timer.

6 Timer Display
Displays elapsed time of test current flow in seconds.

7 Stop Push Button
Stops test current flow and freezes the timer.

8 Clear Push Button
Resets the timer to zero.

9 Contrast Push Button
Hold this input in until the desired display contrast is reached.

10 Ground Fault Type Switch
Type "T", normal 4-wire residual GF.
Type "W", used with a ground return CT.

11 Phase Select Switch
Selects one of the phases (A,B,C) or ground fault as the test current path.

12 Current Display
Displays measured true RMS current and Current Preset value in multiples of the CT rating.

13 Current Preset Push Button
When held, the current display indicates the setting of the Amp Coarse and Fine pots but does not send current to the trip unit.

14 Amp Coarse Pot
Used to make large adjustments in the test current.

15 Amp Fine Pot
Used to make small adjustments in the test current.

16 Frequency Select Switch
This switch selects the AC frequency; 50 or 60 Hertz.

17 Cooling Airflow Intake
Cooing air for the test set enters via this filter opening. (Must not be blocked).

18 AC-PRO-MP Test Harness Connector
The AC-PRO-MP connects to the test set with the supplied wire harness and circuit board via this connector.

19 Control Fuse Holder
Control fuse.
(1A, 250V, 3AG)

Figure 1

Control Panel Overview

3.0 Test Set Controls

A brief description of the operation of the various test set controls is given below.

The numbers in parentheses refer to the labels in Figure 1.

3.1 Power (3)

Power to the test set is controlled with the Power On-Off switch.

An AC cord is supplied with the test set. The recommended AC power source is 120V AC at either 50 or 60 Hz. The 120 VAC receptacle (1) also contains the 5 Amp, 250V, 5 x 20mm main power fuse.

3.2 Time Display (6)

The test set will measure the time elapsed while current is being delivered to the AC-PRO-MP and display the time on the Timer display.

The displayed time is in seconds with 1/100 of a second resolution.

The time will stop accumulating when the AC-PRO-MP trips or when the Stop (7) push button is pushed.

The timer display is cleared when the Clear (8) push button is pushed.

3.3 Timer Clear Push Button (8)

The Clear push button clears the Timer display (6).

3.4 Start Push Button (5) and LED (4)

The Start push button starts the test current flow to the AC-PRO-MP and simultaneously starts the Timer (6).

The green LED located above the Start push button indicates test current flow.

3.5 Stop Push Button (7)

The Stop push button stops the test current flow and simultaneously freezes the Timer (6).

3.6 Test Current display (12)

The Test Current display indicates the RMS test current in multiples of the CT rating, going to the AC-PRO-MP during a test.

To determine the equivalent CT primary current, multiply the test set current by the CT rating entered into the trip unit.

Example:
If CT rating = 2000 Amp
And test current reading = 1.50
The equivalent primary current is:

1.50 x 2000 = 3000 Amps primary

3.7 Current Preset Push Button (13)

While the Current Preset push button is pushed, the test set will display the current setting (from the Amp Coarse and Fine adjust pots) in the Current display (12) without actually driving any current to the AC-PRO-MP.

The sum of the Amp Coarse (14) and Fine (15) pots is displayed in the Current display (12) and is continually updated while the Current Preset switch is pushed.

After the current pots are adjusted to the desired test current as seen on the display, release the Current Preset push button.

The test set limits the current set point level to 40.0 times the CT rating (4000%).

3.8 Amp Coarse Adjust (14)

The Amps Coarse adjustment quickly changes the test current to the trip unit or the test Current Preset. Clockwise rotation increases the value (from 0.00 Amp to 39.0 Amp).

3.9 Amp Fine Adjust (15)

The Amps Fine adjustment slowly changes the test current to the trip unit or the test Current Preset. Clockwise rotation increases the value (adds 0.00 Amp to 1.00 Amp to the Coarse adjustment current).

3.10 Phase Selector (11)

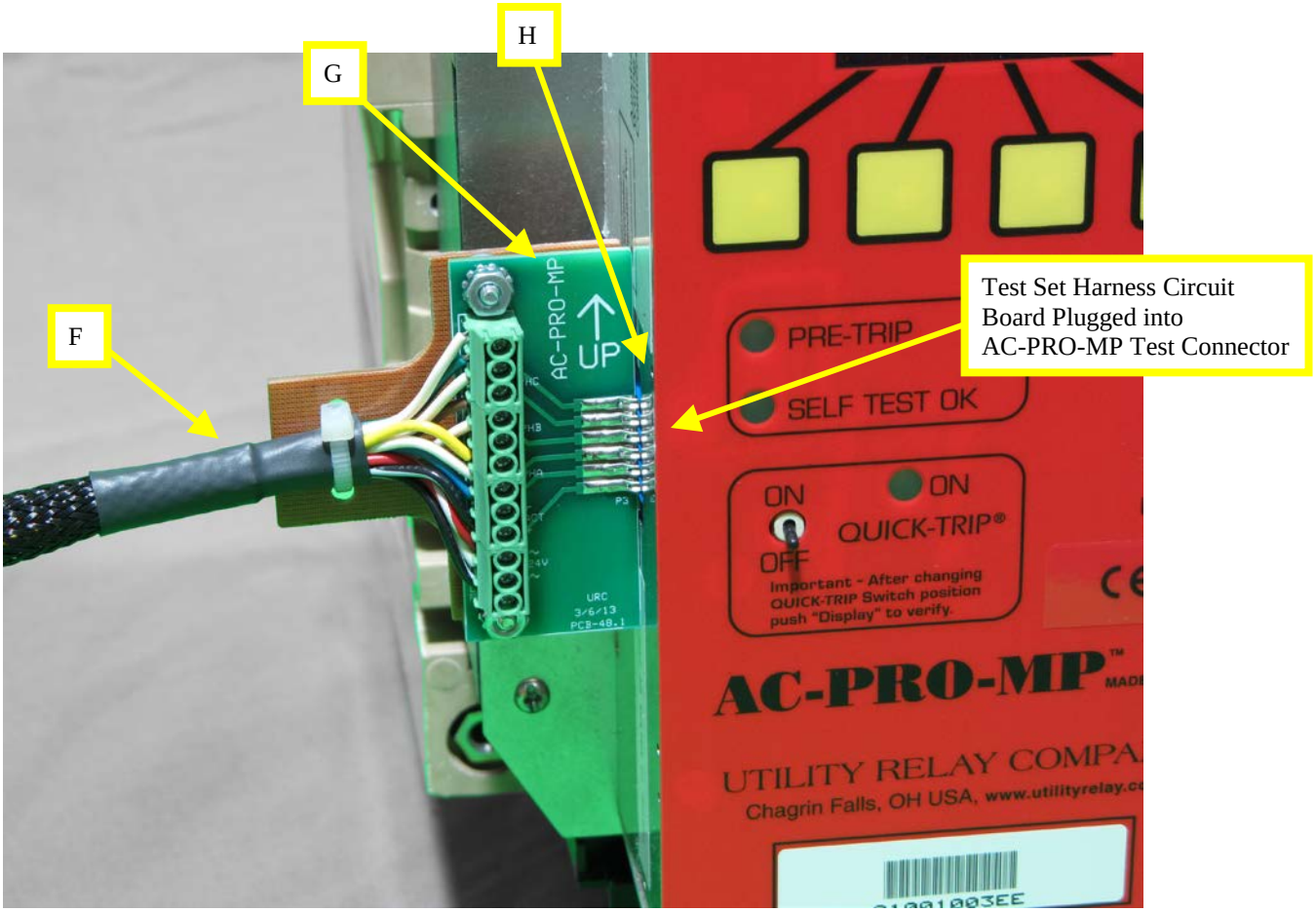
The Phase Select selector switch is used to select which phase of the AC-PRO-MP the test current is driven into. It selects between Phase A, Phase B, Phase C or Ground Fault.

3.11 Frequency Selector (16)

The Frequency selector switch is used to select the AC test current frequency. This is used to select either 50 or 60 Hz.

3.12 Contrast Push Button (9)

The Contrast push button changes the contrast of both the Timer (6) and Current (12) displays. The push button should be pushed until the desired contrast is seen in the displays.



F) AC-PRO-MP Test Set Harness.
G) Harness Circuit Board.
H) Test Port on AC-PRO-MP.

Figure 2
AC-PRO-MP Test Set Connections

4.0 Connecting to the AC-PRO-MP

WARNING

Remove the breaker from service before connecting the secondary injection test set or performing any tests.

Failure to do so could result in serious injury or death.

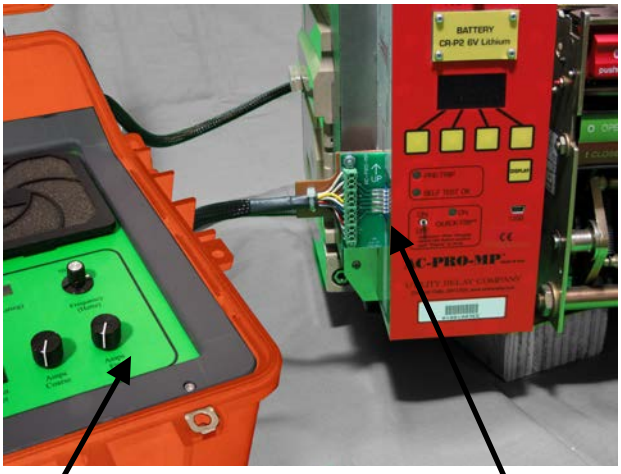


Figure 3
Test Set Connected to AC-PRO-MP

The following describes the connection of the test set to the AC-PRO-MP trip unit.

NOTICE

Letters in parentheses refer to the labeled items in Figure 2.

Numbers in parentheses refer to the labeled items in Figure 1.

1) Verify that the Power switch (3) is in the off position.

2) Connect the power cord to connector (1) on the test set. Plug the power cord into a 120Vac outlet.

3) Connect the round connector on the test set harness (F) to the connector on the test set marked “AC-PRO-MP” (18). Twist the outer ring clockwise to fully seat and lock the connector in place.

The test set harness circuit board (G) will plug into the port (H) on the left side of the AC-PRO-MP.

4) Remove the breaker front cover.

5) Remove the test port cover on the left side of the AC-PRO-MP.

6) Plug the test set harness (F) with circuit board (G) onto the AC-PRO-MP test port (H).

7) Once all connections are made the test set power can be turned on. The AC-PRO-MP will also power up.

NOTICE

The OLED display on the AC-PRO-MP is normally off.

Pushing the DISPLAY button on the AC-PRO-MP will turn the display on.

If no buttons are pushed for 30 seconds, the display will turn off.

5.0 Testing the AC-PRO-MP

The protective functions provided by the AC-PRO-MP depend on the type of STR trip unit the AC-PRO-MP is programmed to replace.

	Protection Provided
STR-18M	Instantaneous only
STR-28D	Long Time (1 delay band) Instantaneous
STR-38S	Long Time (1 delay band) Short Time Instantaneous Ground Fault
STR-58U	Long Time (6 delay bands) Short Time Instantaneous Ground Fault Load Monitoring

Quick-Trip® arc flash reduction is a standard feature on all versions of the STR trip units. Only the STR types that have Ground Fault will have Quick-Trip® Ground Fault available.

See the Time Current Curves in Section 8 for each of the STR trip units.

5.1 Select the Frequency

Select the desired frequency of operation using the Frequency (16) selector switch.

This must match the AC-PRO-MP frequency setting.

5.2 Calculate Long Time Pick-Up (LT-PU) Test Current

Calculate the LT-PU test current as follows:

$$\text{LT-PU Test Current} = \frac{\text{LT Pick-Up in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 2000 Amp
LT pick-up = 1000 Amps, then

$$\text{LT-PU Test Current} = \frac{1000}{2000} = 0.50 \text{ Amp}$$

Example:
CT rating = 3000 Amp
LT pick-up = 3000 amps, then

$$\text{LT-PU Test Current} = \frac{3000}{3000} = 1.00 \text{ Amp}$$

5.3 Long Time Pick-Up (LT-UP) Test

The Pre-Trip LED on the AC-PRO-MP is used to test LT-PU.

The Pre-Trip LED responds to the highest Phase current as follows:

Pre-Trip LED	Current
Off	Less than 90% of LT-PU
Solidly On	Greater than 90% but less than 105% of LT-PU
Flashing	Greater than 105% of LT-PU

Test the LT-PU by verifying that the Pre-Trip LED turns solidly on at 90% of the LT-PU setting:

1) Hold down the Current Preset Button (13) while adjusting the Amp Coarse (14) and Fine (15) pots until the Current display (12) shows about 80% of the LT-PU test current previously calculated. Release the Current Preset Button.
2) Set the Phase selector switch (11) to either Phase A, B or C.
3) Push the Start (5) button.
4) Using the Fine pot (15) increase the current until the Pre-Trip LED just turns on. This is 90% of the LT-UP setting.
5) Verify that the current display (12) on the test set reads 90% of the previously calculated LT-PU test current ±5%.
6) Push the Stop (7) button.
7) If desired, test the LT-PU on the other two Phases in the same way.

Long Time Delay Trip Times									
STR Type	LT Delay	% Error	1.5X	2X	2.5X	3X	4X	5X	6X
28D	120	15%	124.55	70.06	44.84	31.14	17.51	11.21	7.78
		0	108.30	60.92	38.99	27.08	15.23	9.75	6.77
		-19%	87.72	49.34	31.58	21.93	12.34	7.90	5.48
38S	120	15%	124.55	70.06	44.84	31.14	17.51	11.21	7.78
		0	108.30	60.92	38.99	27.08	15.23	9.75	6.77
		-19%	87.72	49.34	31.58	21.93	12.34	7.90	5.48
58U	15	15%	15.57	8.76	5.60	3.89	2.19	1.40	0.97
		0	13.54	7.61	4.87	3.38	1.90	1.22	0.85
		-19%	10.97	6.17	3.95	2.74	1.54	0.99	0.69
	30	15%	31.14	17.51	11.21	7.78	4.38	2.80	1.95
		0	27.08	15.23	9.75	6.77	3.81	2.44	1.69
		-19%	21.93	12.34	7.90	5.48	3.08	1.97	1.37
	60	15%	62.27	35.03	22.42	15.57	8.76	5.60	3.89
		0	54.15	30.46	19.49	13.54	7.61	4.87	3.38
		-19%	43.86	24.67	15.79	10.97	6.17	3.95	2.74
	120	15%	124.55	70.06	44.84	31.14	17.51	11.21	7.78
		0	108.30	60.92	38.99	27.08	15.23	9.75	6.77
		-19%	87.72	49.34	31.58	21.93	12.34	7.90	5.48
	240	15%	249.09	140.11	89.67	62.27	35.03	22.42	15.57
		0	216.60	121.84	77.98	54.15	30.46	19.49	13.54
		-19%	175.45	98.69	63.16	43.86	24.67	15.79	10.97
	480	15%	498.18	280.23	179.34	124.55	70.06	44.84	31.14
		0	433.20	243.68	155.95	108.30	60.92	38.99	27.08
		-19%	350.89	197.38	126.32	87.72	49.34	31.58	21.93

Figure 4
LT Delay Trip Times Chart

5.4 Long Time Delay (LT-D) Time Test

To test the LT-D trip time:

1) The first step is to select an overload (OL) and calculate the LT-D test current.

   LT-D Test Current
   = OL x LT-PU Test Current

Example:
Desired Overload (OL) = 3X
LT-PU Test Current = 0.50 Amp

LT-D Test Current = 3 x 0.50 = 1.50 Amp

2) The easiest way to determine the LT-D trip time range is to use the chart in Figure 4.

Example:
Desired Overload (OL) = 3X
LT Delay Band = 120 Sec

From LT Delay Trip Time Chart:
LT Trip Time at 3X is 21.96 to 31.19 Sec.

3) Hold down the Current Preset Button (13) while adjusting the Amp Coarse (14) and Fine (15) pots until the Current display (12) shows the previously calculated LT-D test current. Release the Current Preset Button.

4) Set the Phase selector switch (11) to either Phase A, B or C.

5) Push the Clear button (8) to reset the Timer (6) to zero.

6) Push the Start button (5) and quickly make any minor adjustments required to the Amp Fine (15) pot

7) When the AC-PRO-MP trips, the test set current will stop and the Timer (6) will freeze and display the total trip time.

8) Compare the trip time with the LT trip time chart in Figure 4.

9) Verify that the AC-PRO-MP saved the proper last trip data.

10) Repeat for the other two Phases if desired.

5.5 Calculate Short Time Pick-Up (ST-PU) Test Current

Calculate the ST-PU test current as follows:

$$\text{ST-PU Test Current} = \frac{\text{ST Pick-Up in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 3000 Amp
ST pick-up = 12,000 Amp, then

$$\text{ST-PU Test Current} = \frac{12{,}000}{3000} = 4.00 \text{ Amp}$$

Example:
CT rating = 1600 Amp
ST pick-up = 3430 Amp, then

$$\text{ST-PU Test Current} = \frac{3430}{1600} = 2.14 \text{ Amp}$$

5.6 Short Time Pick-Up (ST-PU) Test

To test the ST-PU:

1) Hold down the Current Preset button (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 85% of the calculated ST-PU test current.

2) Set the Phase selector (11) to either Phase A, B or C.

3) Push the Start (5) button but leave the test current on only long enough to see if a ST trip occurs. If the current is left on long enough a LT trip will occur.

With 85% of ST-PU test current, a ST trip should NOT occur.

4) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 115% of the calculated ST-PU test current.

5) Push the Clear (8) button to reset the Timer (6) to zero.

6) Push the Start (5) button.

With 115% of ST-PU test current, a ST trip should occur.

7) The test set current will stop and the Timer (6) will freeze displaying the trip time.

8) Repeat for the other two Phases if desired.

5.7 Short Time Delay (ST-D) Test

To test the ST delay trip time:

1) The first step is to select a test value. For example, 150% of the ST-PU. The test value is then 1.5 times ST-PU test current.

> **NOTICE**
>
> To accurately test the ST delay, the test value must be at least 115% of the ST-PU test current.

2) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots until the Current (12) display shows the test value calculated in step 1.

3) Set the Phase selector (12) to either Phase A, B or C.

4) Push the Clear (8) button to reset the Timer (6) to zero.

5) Push the Start (5) button.

6) When the AC-PRO-MP trips, the test set current will stop and the Timer (6) will freeze displaying the trip time.

7) Using the appropriate Time-Current-Curve, verify that the trip time is within the time band limits.

8) Verify that the AC-PRO-MP saved the proper last trip data.

9) Repeat for the other two Phases if desired.

5.8 Calculate Instantaneous Pick-Up (I-PU) Test Current

Calculate the I-PU test current as follows:

$$\text{I-PU Test Current} = \frac{\text{I-PU in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 3000 Amp
I-PU = 24,000 Amps, then

$$\text{I-PU Test Current} = \frac{24{,}000}{3000} = 8.00 \text{ Amp}$$

Example:
CT rating = 1600 Amp
I-PU = 6400 Amps, then

$$\text{I-PU Test Current} = \frac{6400}{1600} = 4.00 \text{ Amp}$$

5.9 Instantaneous Pick-Up (I-PU) Test

To test the I-PU:

1) Hold down the Current Preset button (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 85% of the calculated I-PU test current.

2) Set the Phase selector (11) to either Phase A, B or C.

3) Push the Start (5) button but leave the test current on only long enough to see if an Instantaneous trip occurs. If the current is left on long enough a LT or ST trip will occur.

With 85% of the I-PU test current, an Instantaneous trip should NOT occur.

4) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 115% of the calculated I-PU test current.

5) Push the Clear (8) button to reset the Timer (6) to zero.

6) Push the Start (5) button.

With 115% of the I-PU test current, an Instantaneous trip should occur.

7) The test set current will stop and the Timer (6) will freeze displaying the trip time.

8) Verify that the AC-PRO-MP saved the proper last trip data.

9) Repeat for the other two Phases if desired.

5.10 Calculate Ground Fault Pick-Up (GF-PU) Test Current

Calculate the GF-PU test current as follows:

$$\text{GF-PU Test Current} = \frac{\text{GF-PU in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 3000 Amp
GF-PU = 600 Amp, then

$$\text{GF-PU Test Current} = \frac{600}{3000} = 0.20 \text{ Amp}$$

Example:
CT rating = 1600 Amp
GF-PU = 1200 Amp, then

$$\text{GF-PU Test Current} = \frac{1200}{1600} = 0.75 \text{ Amp}$$

5.11 Ground Fault Pick-Up (GF-PU) Test

1) Switch the selector switch (10) on the test set to the appropriate type of GF measurement used by this particular breaker:
   Type “T” for residual GF
   Type “W” for Ground Return GF

NOTICE

The GF “T” setting is for normal 3-Wire or 4-Wire residual GF.

The GF “W” setting is for source ground return GF where a “ground return” CT is installed.

The “W” source ground return GF is usually used on main and tie breakers in double ended subs.

2) Hold down the Current Preset button (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 85% of the calculated GF-PU test current.

3) Set the Phase selector (11) to the “GF” position.

4) Push the Start (5) button but leave the test current on only long enough to see if a GF trip occurs.

With 85% of the GF-PU test current, a GF trip should NOT occur.

5) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 115% of the calculated GF-PU test current.

6) Push the Clear (8) button to reset the Timer (6) to zero.

7) Push the Start (5) button.

With 115% of the GF-PU test current, a GF trip should occur.

8) The test set current will stop and the Timer (6) will freeze displaying the trip time.

9) Verify that the AC-PRO-MP saved the proper last trip data.

5.12 Ground Fault Delay (GF-D) Test

To test the GF delay trip time:

1) The first step is to select a test value. For example, 150% of the GF-PU. The desired test current is then 1.5 times GF-PU test current.

> **NOTICE**
>
> To accurately test the GF delay, the test value must be at least 115% of the GF-PU test current.

2) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots until the Current (12) display shows the test value calculated in step 1.

3) Set the Phase selector (11) to GF.

4) Push the Clear (8) button to reset the Timer (6) to zero.

5) Push the Start (5) button.

6) When the AC-PRO-MP trips, the test set current will stop and the Timer (6) will freeze displaying the trip time.

7) Using the GF Time-Current-Curve, verify that the trip time is within the time band limits.

8) Verify that the AC-PRO-MP saved the proper last trip data.

6.0 Quick-Trip® Testing

6.1 Calculate Quick-Trip® Instantaneous Pick-Up (QT-I-PU) Test Current

Calculate the QT-I-PU test current as follows:

$$\text{QT-I-PU Test Current} = \frac{\text{QT-I-PU in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 3000 Amp
QT-I-PU = 18,000 Amp, then

$$\text{QT-I-PU Test Current} = \frac{18{,}000}{3000} = 6.00 \text{ Amp}$$

Example:
CT rating = 1600 Amp
QT-I-PU = 7200 Amp, then

$$\text{QT-I-PU Test Current} = \frac{7200}{1600} = 4.50 \text{ Amp}$$

6.2 Instantaneous Pick-Up (QT-I-PU) Test

To test the QT-I-PU:

1) Move the Quick-Trip selector switch on the AC-PRO-MP to Quick-Trip ON.

2) Hold down the Current Preset button (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 85% of the calculated QT-I-PU test current.

3) Set the Phase selector (11) to either Phase A, B or C.

4) Push the Start (5) button but leave the test current on only long enough to see if a QT-I trip occurs. If the current is left on long enough a LT or ST trip will occur.

With 85% of the QT-I-PU test current, a QT-I trip should NOT occur.

5) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 115% of the calculated QT-I-PU test current.

6) Push the Clear (8) button to reset the Timer (6) to zero.

7) Push the Start (5) button.

With 115% of the QT-I-PU test current, a QT-I trip should occur.

8) The test set current will stop and the Timer (6) will freeze displaying the trip time.

9) Verify that the AC-PRO-MP saved the proper last trip data.

10) Repeat for the other two Phases if desired.

6.3 Calculate Quick-Trip® Ground Fault Pick-Up (QT-GF-PU) Test Current

Calculate the QT-GF-PU test current as follows:

$$\text{QT-GF-PU Test Current} = \frac{\text{QT-GF in Amps}}{\text{CT Rating in Amps}}$$

Example:
CT rating = 3000 Amp
QT-GF = 800 Amps, then

$$\text{QT-GF-PU Test Current} = \frac{800}{3000} = 0.27 \text{ Amp}$$

Example:
CT rating = 1600 Amp
QT-GF = 480 Amps, then

$$\text{QT-GF-PU Test Current} = \frac{480}{1600} = 0.30 \text{ Amp}$$

6.4 Quick-Trip® Ground Fault Pick-Up (QT-GF-PU) Test

1) Switch the selector switch (10) on the test set to the appropriate type of GF measurement used by this particular breaker:
   Type “T” for residual GF
   Type “W” for Ground Return GF

2) Move the Quick-Trip selector switch on the AC-PRO-MP to Quick-Trip ON.

NOTICE

The GF “T” setting is for normal 3-Wire or 4-Wire residual GF.

The GF “W” setting is for source ground return GF where a “ground return” CT is installed.

The “W” source ground return GF is usually used on main and tie breakers in double ended subs.

3) Hold down the Current Preset button (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 85% of the calculated QT-GF-PU test current.

4) Set the Phase selector (11) to the “GF” position.

5) Push the Start (5) button but leave the test current on only long enough to see if a QT-GF trip occurs.

With 85% of the QT-GF-PU test current, a QT-GF trip should NOT occur.

6) Hold down the Current Preset (13) while adjusting the Amp Coarse (14) and Fine (15) pots to 115% of the calculated QT-GF-PU test current.

7) Push the Clear (8) button to reset the Timer (6) to zero.

8) Push the Start (5) button.

With 115% of the QT-GF-PU test current, a QT-GF trip should occur.

9) The test set current will stop and the Timer (6) will freeze displaying the trip time.

10) Verify that the AC-PRO-MP saved the proper last trip data.

7.0 Error/Fault Conditions

7.1 Current Error

The test set monitors the current level while a test is in progress. Should the current level be outside of the expected range, a current error will occur and the test set will stop current flow and display “Current Error”.

The most likely causes for a "Current Error" are:

1) The trip unit is not powered up.
2) There are loose connections in the test cable.

After correcting the problem, push the Clear (8) button to clear the current error. After this, normal operation on the test set should be restored.

7.2 Thermal Limit

As a protective feature, the test set will stop delivering current and display a “Thermal Limit” message if high levels of test current remain for a prolonged time period. The timeout for the thermal limit shutdown begins when any test current exceeds eight amps.

If a thermal limit occurs it must be cleared by pressing the Clear (8) button. The test set will not allow a test to be restarted for about five seconds. Before restarting the test, verify that there are no loose connections.

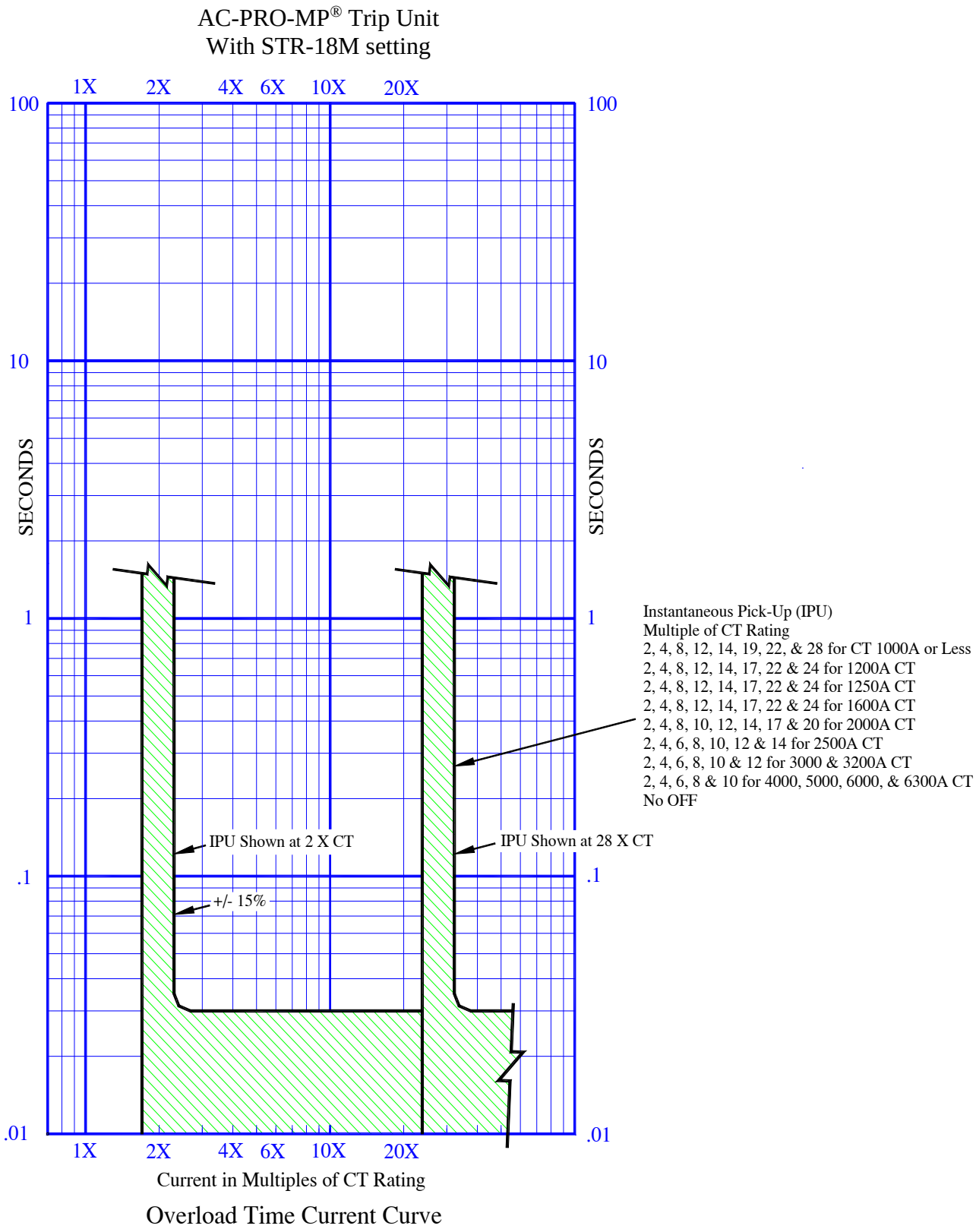


Figure 5
AC-PRO-MP STR-18M Time-Current-Curve

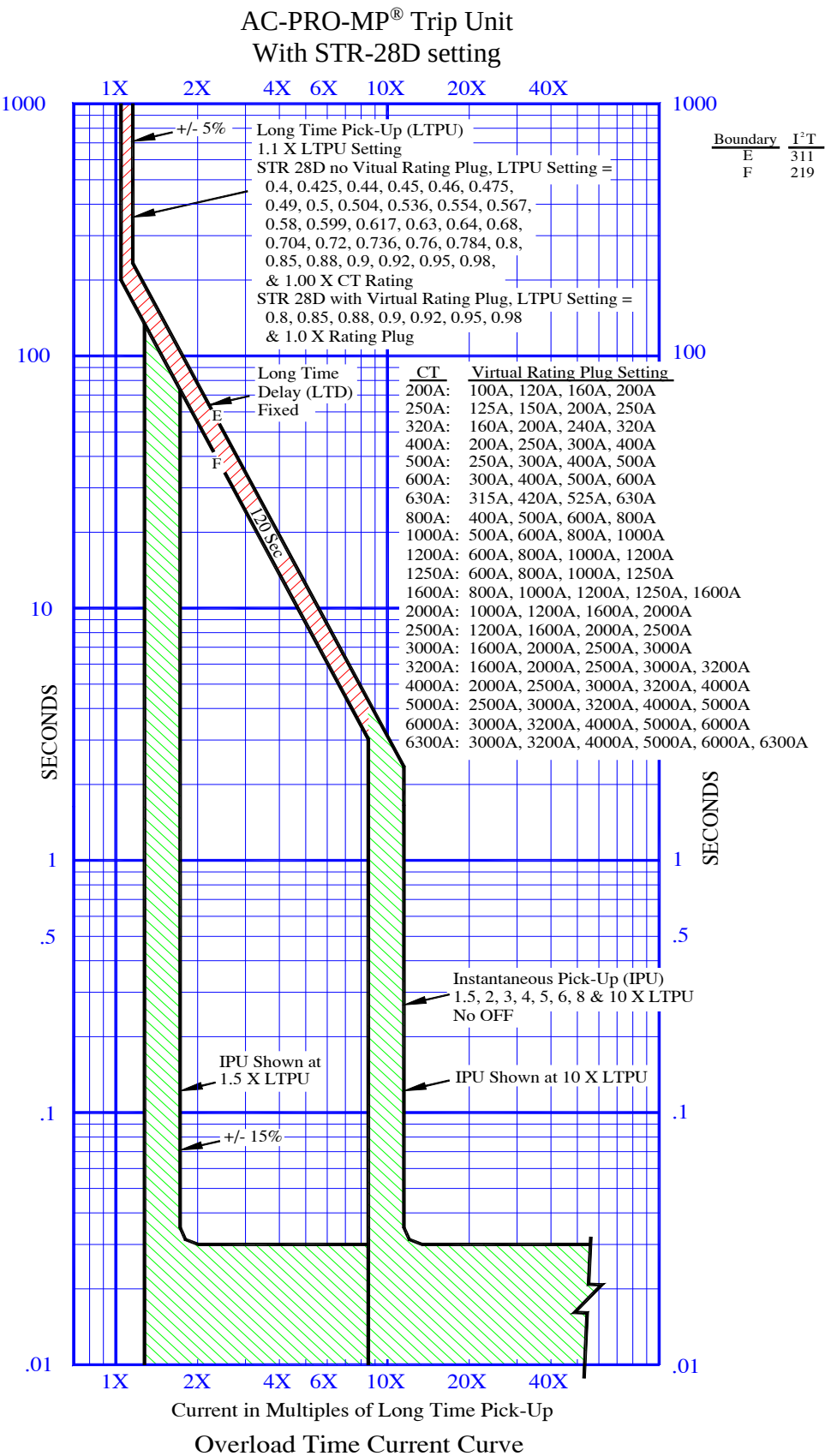


Figure 6
AC-PRO-MP STR-28D Time-Current-Curve

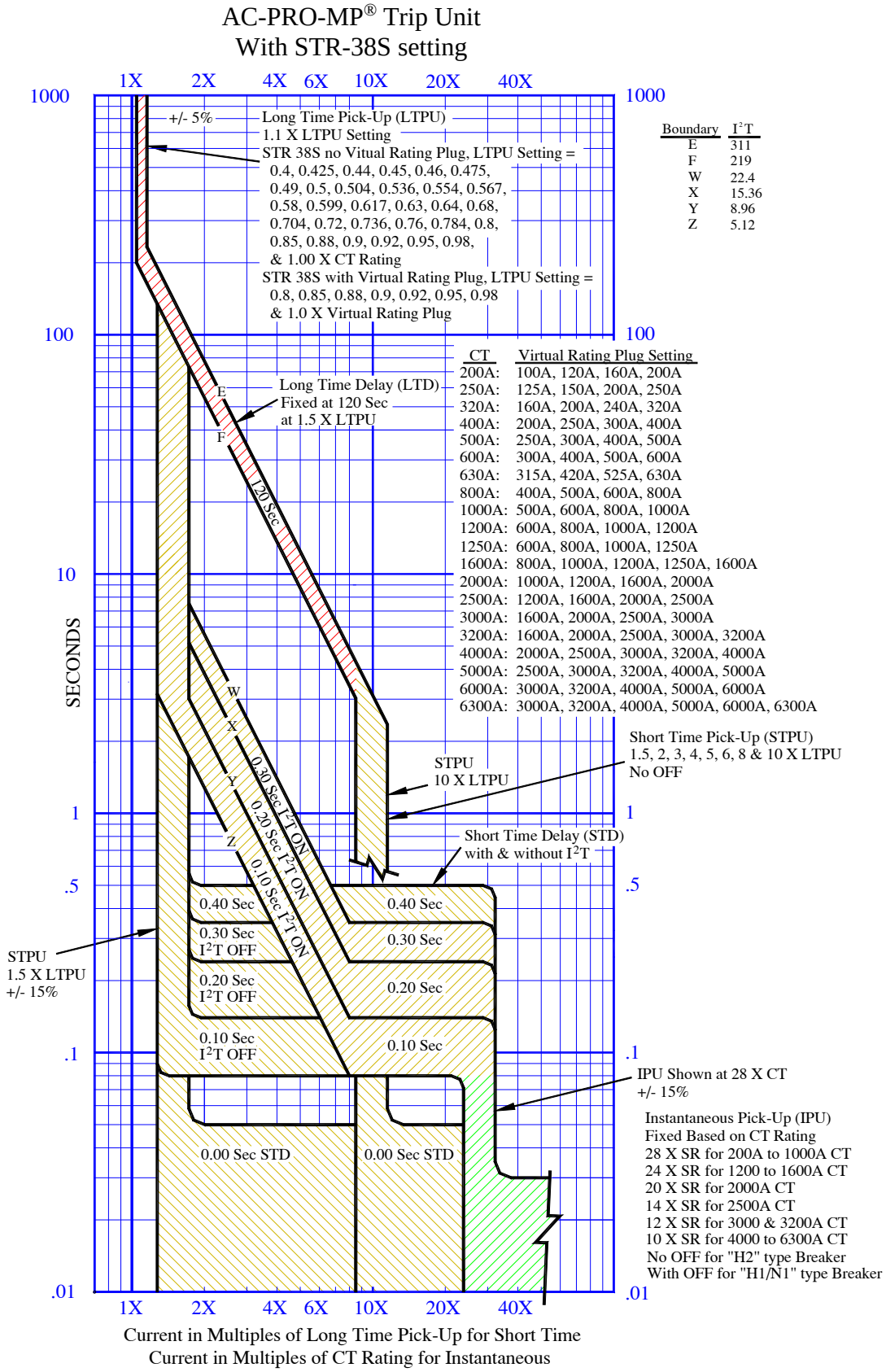
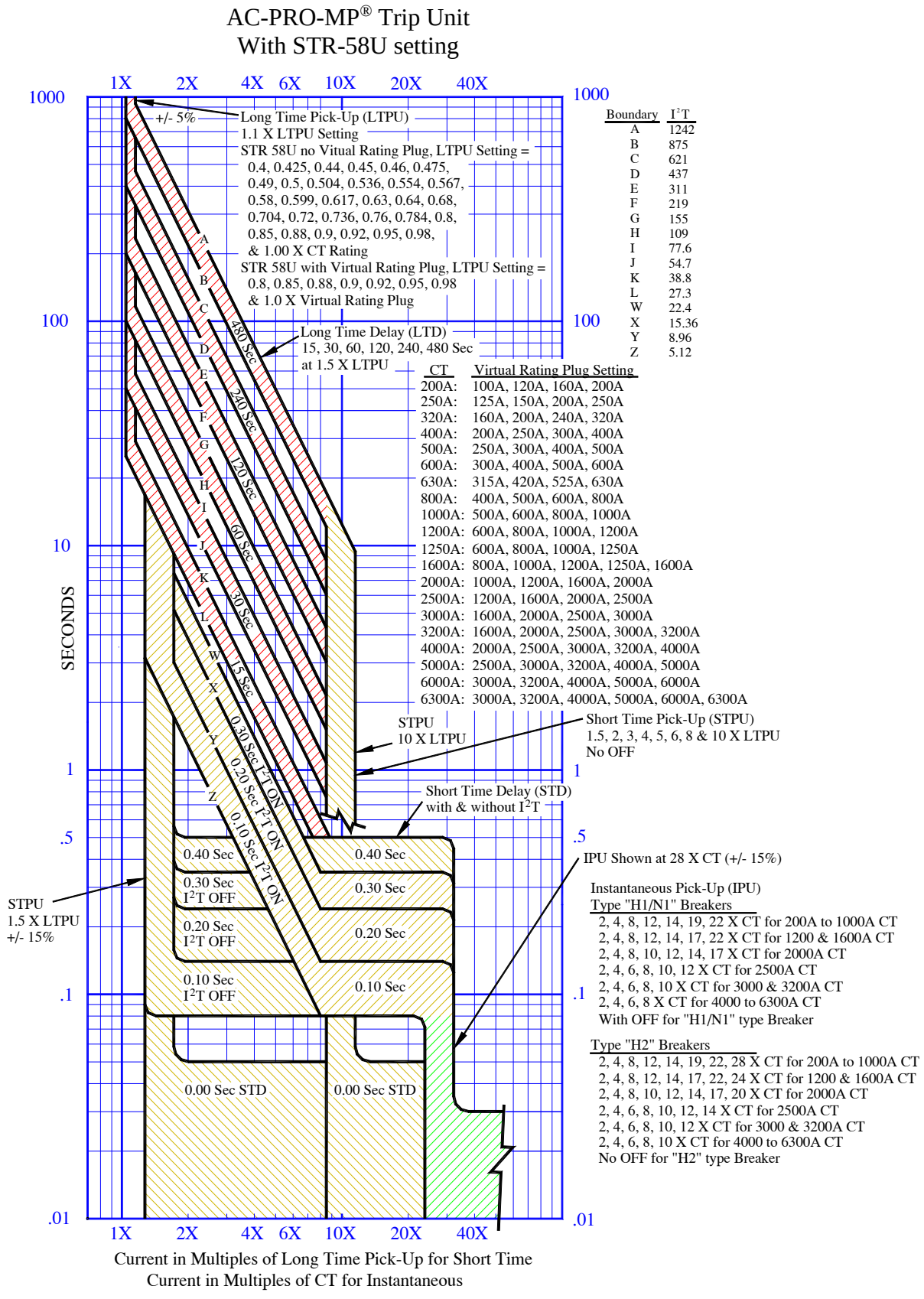
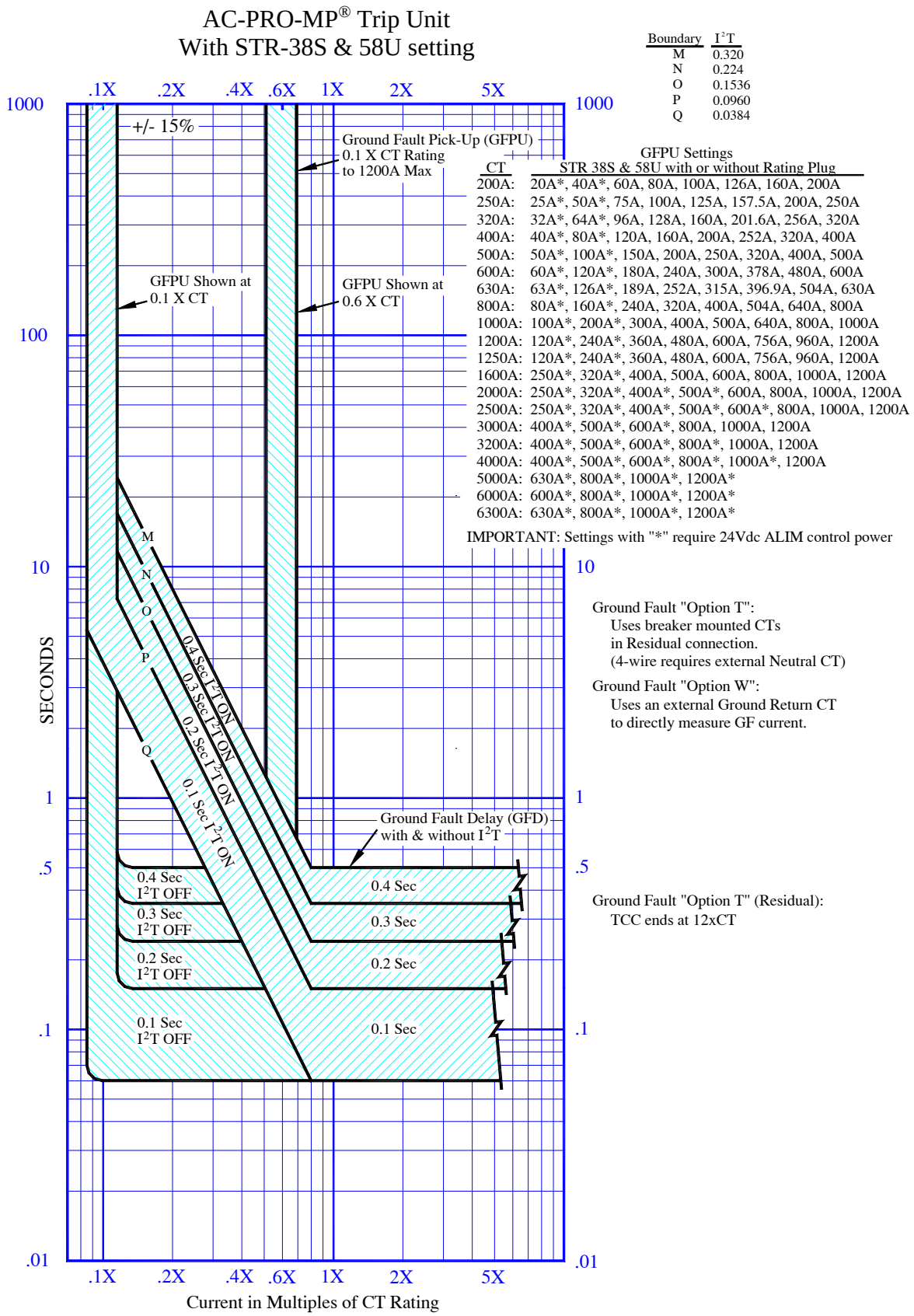


Figure 7
AC-PRO-MP STR-38S Time-Current-Curve



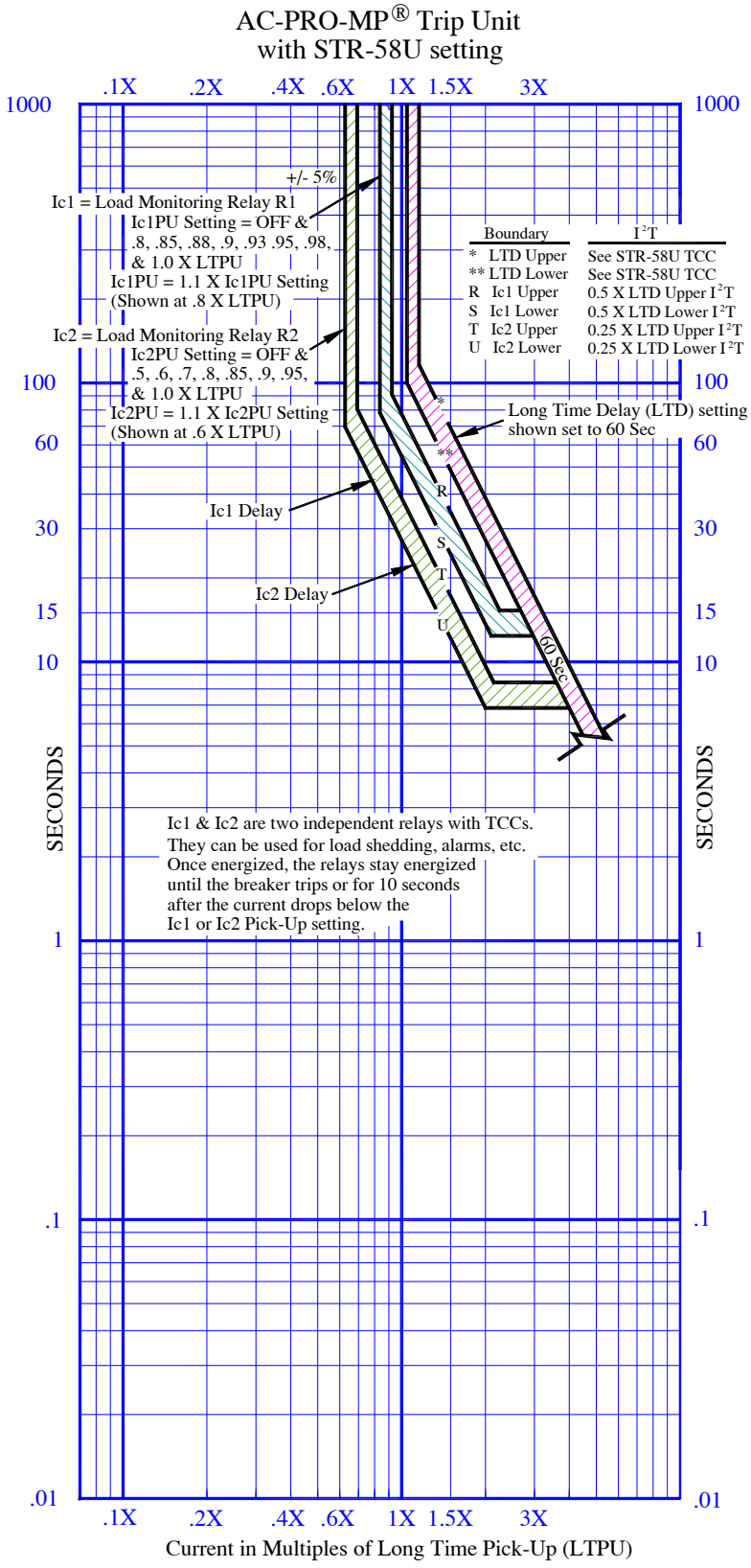
Overload Time Current Curve

Figure 8
AC-PRO-MP STR-58U Time-Current-Curve



Ground Fault Time Current Curve

Figure 9
AC-PRO-MP STR-38S & 58U Ground Fault Time-Current-Curve



Ic1 & Ic2 (Relays R1 & R2) Time Current Curve

Figure 10
AC-PRO-MP STR-58U Load Monitoring Time-Current-Curve

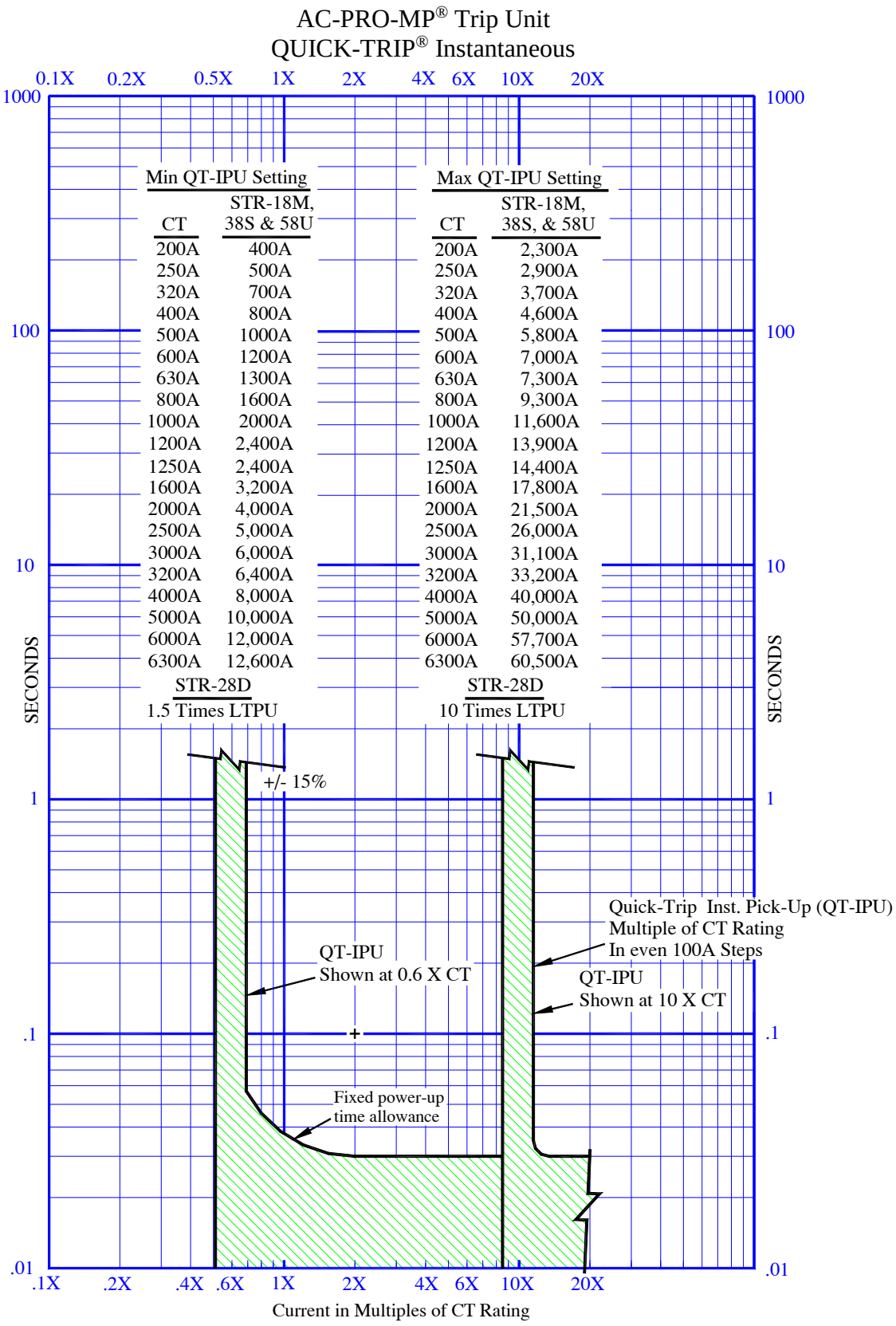


Figure 11
AC-PRO-MP Quick-Trip® Instantaneous Time-Current-Curve

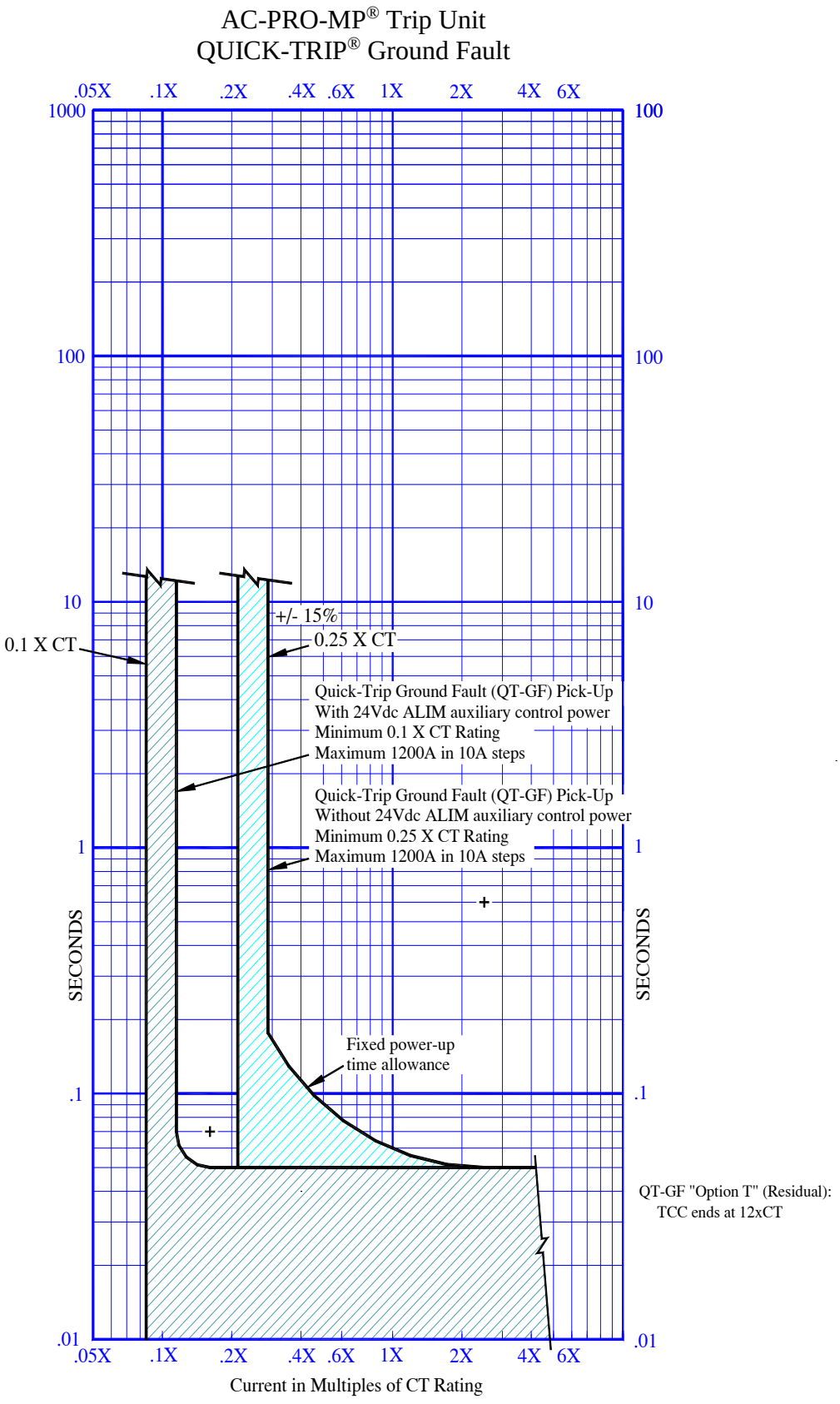


Figure 12
AC-PRO-MP Quick-Trip® Ground Fault Time-Current-Curve

This Page Intentionally Left Blank

URC Utility Relay Company

Chagrin Falls, OH 44023
Phone: 888.289.2864
www.utilityrelay.com