

AETECHRON



7548RLY / 7796RLY

Operator's Manual Supplement

For Variable Very-Low-Impedance Loads in Controlled-Current Mode

APPLIES TO UNITS WITH MAINBOARD V4 PART NUMBER 65-8005300-H

574.295.9495 | www.aetechron.com
2507 Warren Street, Elkhart, IN 46516

NOTE

This Supplement only provides information specific to the 7548RLY and 7796RLY models and is intended to be used together with the AE Techron 7548/7794/7796/7796HC Operator's Manual. Please refer to the Operator's Manual for general information about safety, installation, operation and trouble-shooting.

1 Introduction

The 7548RLY / 7796RLY amplifiers are special models of the AE Techron 7548 or 7796 amplifier that have been modified to make them suitable for driving a protection relay or other variable very-low impedance loads in controlled-current mode.

With an output capability of 100Ap (7548RLY) or 200Ap (7796RLY), these amplifiers are powerful enough to put protection relays, fuses and other critical components through a full range of tests. They are capable of a controlled voltage bandwidth of DC – 100 kHz, and a controlled current bandwidth of DC – 10 kHz. Their low noise floor, low distortion and minimal phase error make these ideal amplifiers for power grid modeling.

1.1 Features

- Factory preset for controlled-current operation.
- Multi-pole compensation optimized for resistive loads below 2 ohms.

1.2 About AE Techron

- AE Techron focuses on the development of power conversion and amplifier solutions for difficult environments. In addition to a line of standard power supplies and power amplifier products, AE Techron provides the design and manufacture of custom, high-quality, low-volume electronic products for research, military and industrial applications.

2 Factory Configuration (Factory Default Settings)

Your 7548RLY/7796RLY amplifier differs from a standard AE Techron 7548 or 7796 amplifier in the following ways:

1. The 7548RLY/7796RLY ships with **Controlled Current** set as the default mode of operation. Note that the amplifier operation mode can be changed to Controlled Voltage mode by moving DIP switch #1 to the UP (CV) position. The DIP switches are located on the amplifier main board. For more information, see the “Advanced Configuration” section of the 7548/7794/7796/7796HC Operator's Manual.
2. The 7548RLY/7796RLY ships with a multi-pole compensation enabled for the compensation setting for Controlled Current mode. The compensation is optimized for resistive loads below 2 ohms but is stable with higher impedances. Note that the amplifier Compensation Setting can be changed to the standard 7548/7796 setting by moving DIP switch #2 to the UP (CC!) position. The DIP switches are located on the amplifier main board. For more information, see the “Advanced Configuration” section of the 7548/7794/7796/7796HC Operator's Manual.

3 Setup, Operation and Troubleshooting

Please refer to the **7548/7794/7796/7796HC Operator's Manual** for 7548RLY/7796RLY Setup Instructions. Note that the 7548RLY/7796RLY comes with the mode setting pre-configured at the factory for Controlled-Current setup and connections.

Please refer to the **7548/7794/7796/7796HC Operator's Manual** for standard 7548RLY/7796RLY Operation and Troubleshooting instructions.

3.1 Main Board Functions: DIP Switch, and Jumper Settings

These configuration settings and locations are valid for 7548RLY/7796RLY amplifiers with a Rev 4 main board.

Your 7548RLY/7796RLY amplifier has configuration options that enable and can enhance the amplifier's operation and performance for power grid simulation and relay testing. Please refer to the chart in **Figure 3.1** for details of main board

FUNCTION, NAME	FACTORY DEFAULT SETTING	DESCRIPTION
Controlled-Current/ Controlled-Voltage Mode, DIP Switch #1	DOWN (CC)	Set this DIP switch in the UP position for Controlled-Voltage (CV) mode, and DOWN for Controlled-Current (CC) mode. When configured for Controlled-Voltage mode, the amplifier's output voltage will be controlled by its input voltage signal. When configured for Controlled-Current mode, the input voltage signal controls the output current. NOTE: For RLY loads, Controlled-Current (CC) mode MUST be used.
Compensation Network Selection, DIP Switch #2	DOWN (CC2)	The MODEL 7548RLY/7796RLY is factory-configured to be used in the CC mode as a controlled current amplifier. In CC mode, the current control loop is optimized with an RC network. The main board has provision for two of these networks. When DIP switch #2 is in the DOWN position (default), the custom network CC2 is selected. When DIP switch #2 is in the UP position, the network CC1 is selected. NOTE: For RLY loads, the CC2 network MUST be used.
Standby on Overload, Jumpers JP406	DISABLED (shunt absent)	The MODEL 7548RLY/7796RLY is factory-configured with the OL Latch disabled. When a shunt is in place across the two pins of the OL Latch, any activation of the IOC (Input Output Comparator) distortion alert circuit will cause the amplifier to move to a Standby condition. Note that activation occurs at 0.5% error. Once in Standby, the amplifier must be reset by pressing the front-panel RESET button or by presenting a remote RESET signal on the I/O Connector to move the amplifier back to a Run/ Ready (Operational) condition.
Enable/Stop on Start-up, Jumpers JP408	ENABLE (shunt across two lower pins)	The MODEL 7548RLY/7796RLY is factory-configured to automatically move into ENABLE mode on Start Up. In ENABLE mode, the amplifier will amplify an input signal. To place the amplifier in STOP mode on Start Up, move the shunt to the two upper pins. When in STOP mode on Start Up, the amplifier will be placed in Standby mode until the front-panel ENABLE button is pressed or a remote ENABLE signal is received on the I/O Connector. To return the amplifier to ENABLE mode on Start Up, move the shunt to the two lower pins.

Figure 3.1 – Configuration Defaults for RLY models

DIP switches and jumpers controlling functions and the factory default settings. Refer to **Figure 3.2** for control locations on the amplifier main board. **Figure 3.3** details the factory default settings for all 7548RLY/7796RLY DIP switches.

CAUTION

The 7548RLY/7796RLY is designed for pulsed operation and should not be run at high power levels for long periods of time (greater than 5 minutes). Damage to components in the output of the amplifier can result from extended high-power usage (1,000 watts or above).

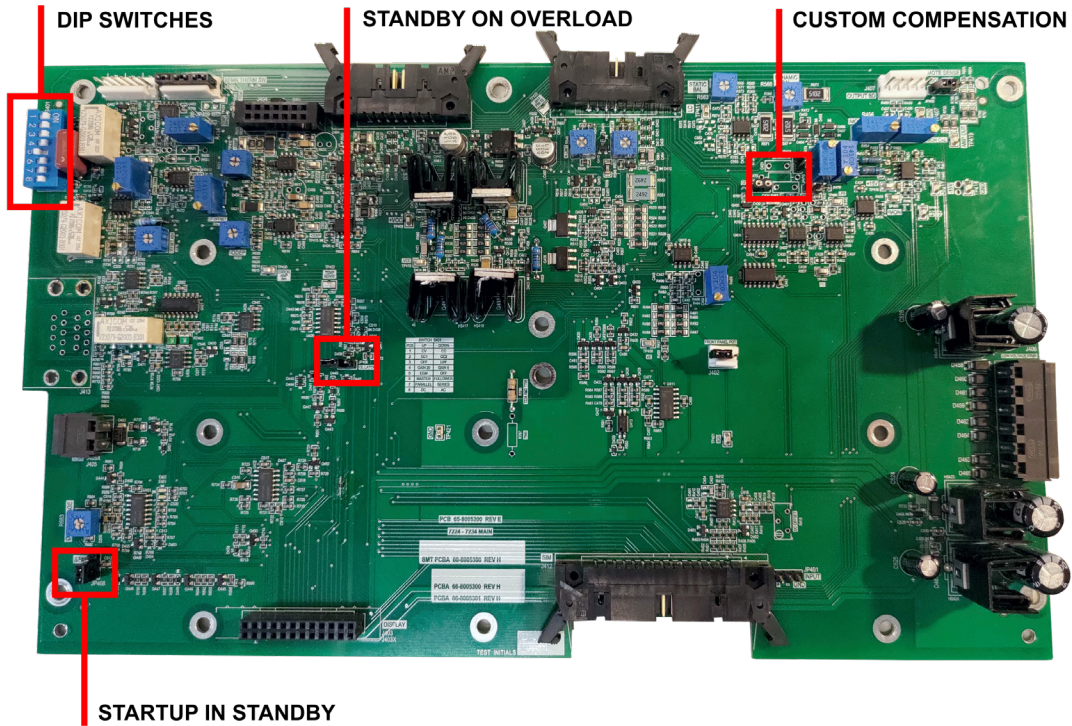


Figure 3.2 – Main Board Configuration Locations

ON		DIP SWITCH SETTINGS		
		Models 7548RLY and 7796RLY		
		DEFAULT DIP SWITCH SETTINGS SHOWN		
1 2 3 4 5 6 7 8				
DIP SWITCH SETTINGS 1 OPERATION (CV / CC) 2 COMPENSATION (CC1 / CC2) 3 LOW PASS FILTER 4 GAIN (20 / 6) 5 ELECTRONIC GAIN MATCHING 6 MASTER / FOLLOWER 7 VOLTAGE INPUT (LOW / HIGH) 8 DC / AC COUPLING	UP CV CC1 OFF 20 ON MASTER LOW DC	DOWN CC CC2 ON 6 OFF FOLLOWER HIGH AC	— Controlled-voltage or controlled-current operation — Compensation network (for controlled-current operation) — Enable 50 kHz low-pass filter — Gain selection (20 / 6) — Enable electronic gain matching (for parallel multi-amp operation) — Multi-amp configuration — Low (line-level) input or high input (up to 180V) — DC enable or DC block	
RED = FACTORY DEFAULT				

Figure 3.3 – Default DIP Switch Settings and Descriptions

4 Accuracy

Amplitude vs. Frequency 1V input, 20A output, amplifier transconductance set to 20:			
Load	Input Signal	Transconductance	
		1 kHz	100 Hz
2 ohms	Sine	19.9	20
1 ohm	Sine	20	20
0.5 ohm	Sine	20	20
Short (unimpeded wire)	Sine	20	20

5 Specifications

Please refer to the **7548RLY** or **7796RLY** data-sheets for information about the product's performance, features and physical characteristics. The product datasheet is available for download from the AE Techron website at www.aetechron.com.