MODEL 1095A/C QUICK SETUP GUIDE

ARBITER SYSTEMS

Introduction

This document covers the basics of getting the Model 1095A/C unpacked, installed and running. For complete details covering the Model 1095A/C, please consult the operation manual available for download from www.arbiter.com, or purchase a printed copy through Arbiter Sales.

1095A/C Clock Differences

Model 1095A/C may be ordered with and without an external antenna. Clocks without an external antenna have an internal GNSS antenna. Clocks may also be purchased with either an opaque or transparent (smoked) cover, and with or without an LED time display.

Unpacking

Several accessories included with the clock are located inside the packing material. For clocks with an internal GPS antenna, these accessories include a Programming Port Cable with RJ-11 to DB9 adapter, this Quick Setup Guide and Sealing Cable Port. If ordered with Option 01 the clock also comes with a Grounding Block Kit and GNSS Antenna. If included, handle the GNSS antenna carefully as it may be damaged if dropped.

Attaching Mounting Hardware

Included Mounting Tabs

Included with each clock are four tabs and stainless hardware to mount the clock to a flat surface. The clock may also be mounted to a pole using a worm drive adjustable strap (not included).

DIN Rail Mounting – Optional

Arbiter Systems sells an optional DIN rail mounting kit that allows you to mount the clock vertically or horizontally. For installation instructions, download DIN Rail Mounting documentation from the Model 1095A/C Arbiter website product page.

Installing Clock

Internal Antenna

The Model 1095A/C is designed to operate outside in the weather, and has a GPS antenna mounted inside the enclosure. Mount the 1095 with top pointed up (the gland is on the bottom) so that the GPS antenna has a complete view of the sky in all points of the compass.

External Antenna

If your clock was ordered with an external GNSS antenna, it is designed to be threaded onto a piece of 3/4 in pipe nipple. Follow these instructions to mount the antenna. Make sure to mount the antenna so that it has a clear view of the sky in all directions of the compass.
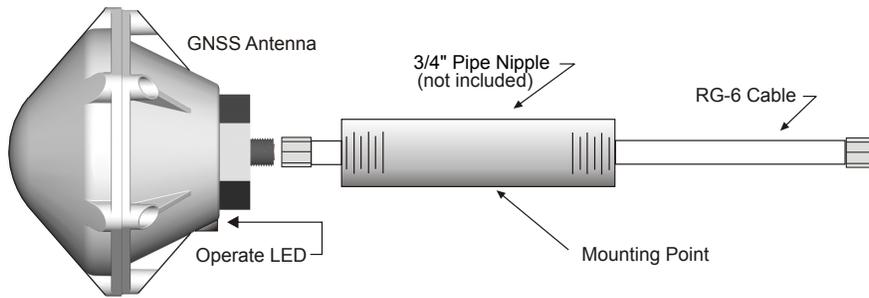
1. Pass the antenna cable through the pipe nipple and attach the cable to the antenna. Tighten by hand, and do not spin the antenna onto the cable connector, as it may damage the antenna/cable connection.
2. Thread the pipe nipple into the base of the antenna and snug by hand.
3. Mount the pipe nipple to a fixture, such as the side or top of a building, or to a pipe. You can also purchase the antenna mounting kit (AS0044600) available from Arbiter Systems.
4. Also available is a surge arrester (AS0094500) that can protect the Model 1094 from induced voltages that may appear on the antenna cable and potentially damage the clock.
5. Connect the antenna cable to the clock so the clock can synchronize with the GNSS.

Connecting Signal Cables

All input and output cables run through the gland located at the bottom of the clock, and attach to the terminals on the mainboard. The only exception to this is that clocks with an external GNSS antenna will have a female Type F connector next to the gland. Figure 1 shows the connector block inside the clock with labels to all the signal and power connections.

Figure 1: Mainboard Connections
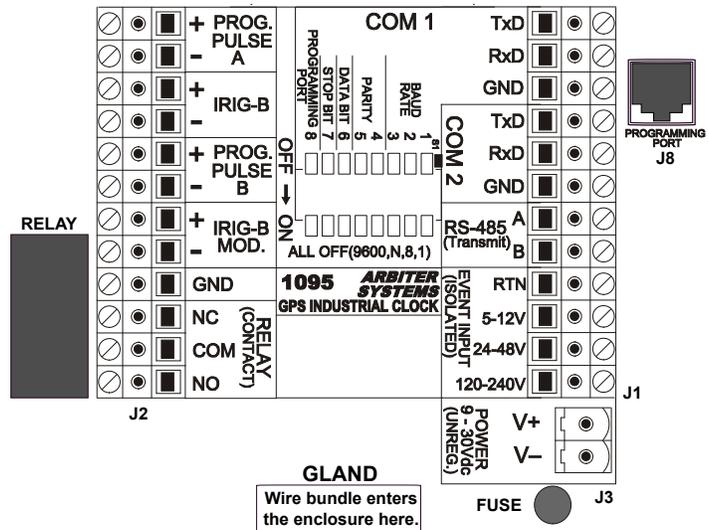
See *Main Gland Specifications* in the operation manual for details about wire type, especially if the clock is mounted outside. NOTE: Strip the wire insulation about 1/4 in and DO NOT TIN the bare wire with solder.

- **Timing Outputs** Model 1095A/C has four timing output ports, labeled PROG. PULSE A, IRIG-B (unmodulated), PROG. PULSE B, and IRIG-B MOD. PROG. PULSE B can also be selected for a separate and independent instance of IRIG-B unmodulated.

- **Out-of-Lock Relay** Connect the three wires – normally open (NO), normally closed (NC) and common (COM) – to the SPDT relay contact terminals. "Normally" refers to the relay condition with the clock powered off.
- **RS232 ports** Every Model 1095A/C has two RS232 serial ports: COM 1 and COM 2. Connect a null-modem serial cable between the computer and the clock. The *Programming Port* at J8 provides a convenient point to initially configure the clock. Use the phone cable and RJ-11 to DB9 adapter to connect between J8 and the computer.
- **Event Input** The Model 1095A/C has one dedicated BNC event input. There are three input voltage ranges: 5 Vdc to 12 Vdc, 24 Vdc to 48 Vdc, and 120 Vdc to 240 Vdc. Use the separate terminals to select the input voltage range.

Energizing the Clock

Before connecting voltages to the clock, make sure to read the power inlet label to verify the correct voltage. The Model 1095A/C accepts an unregulated input between 9 Vdc and 30 Vdc, at 2 W max. Make sure that the voltage you are connecting is in the correct range supplied on the label.

Model 1095A Startup

The green Operate LED and the red Unlocked LED should illuminate, when power is first applied to the Model 1095A. After a short time of tracking satellites, the Unlocked LED should go out. After a few minutes of operation while being locked to the GPS, the green Stabilized LED should light up.

These indications will only be visible with the opaque clock cover removed. With a transparent (smoked) cover they are visible with the cover in place. Lock and stabilization times above depend greatly on satellite reception, and are under fairly ideal circumstances[1].

Model 1095C Startup

When inlet power is first applied to the Model 1095C, you should see the green Operate and the red Unlocked LED light up, and the large LED display should produce six dashes then zeros. After a short time of tracking satellites, the Unlocked LED should go out and the time display will begin counting. After a few minutes of operation, while being locked to the GNSS, the green Stabilized LED should light up and the Model 1095C should display the correct time.

Configuring the Clock Settings

Every Model 1095A/C is shipped from the factory with default settings, which can be changed using the 1095 Utility software through one of the serial ports. This section discusses configuring the clock using the front panel in which two common configuration examples are given. For a complete configuration of the clock, download the pdf version of the manual, or order a printed version from Arbiter Systems.

Configuring Time and IRIG-B Settings

Two of the most common and important settings to configure on a clock are the Time and IRIG-B. Time needs to be set up for a specific locale, and IRIG-B uses time zone settings in the time code.

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[1]Clock, or antenna, should be mounted with a clear view of the sky from 10 degrees above the horizon to directly overhead for all points of the compass.

Download the 1095 Utility software from www.arbiter.com and start the program. Connect the RS232 null-modem cable and adapter between your computer and the clock. Select Settings and make sure you have the correct COM port and baud rate selected.

NOTE: To use the programming port (J8) set DIP switch 8 to ON.

1. Click the Read icon first to read the clock's configuration. This also serves to verify your connection to the clock.
2. Select the Time tab and adjust the Local Offset and Daylight Saving Time settings to your locale. For example, Eastern Standard Time in the U.S. is 5 hours earlier than UTC. Therefore, the Local Time Offset would be –5:00.
3. Select the IRIG tab and set the Time Reference and IEEE 1344 Mode to your preference. IRIG-B includes a time zone setting and can turn on the IEEE 1344 settings. When the IEEE 1344 is ON the IRIG-B includes extra bits for time quality and year information.
4. Click the Write icon to upload the new settings to the clock.
5. To verify that the newly uploaded configuration in the clock agrees with the utility settings, click the Verify icon, which will indicate any differences.
6. You may also save this configuration for later use by clicking the Save icon.
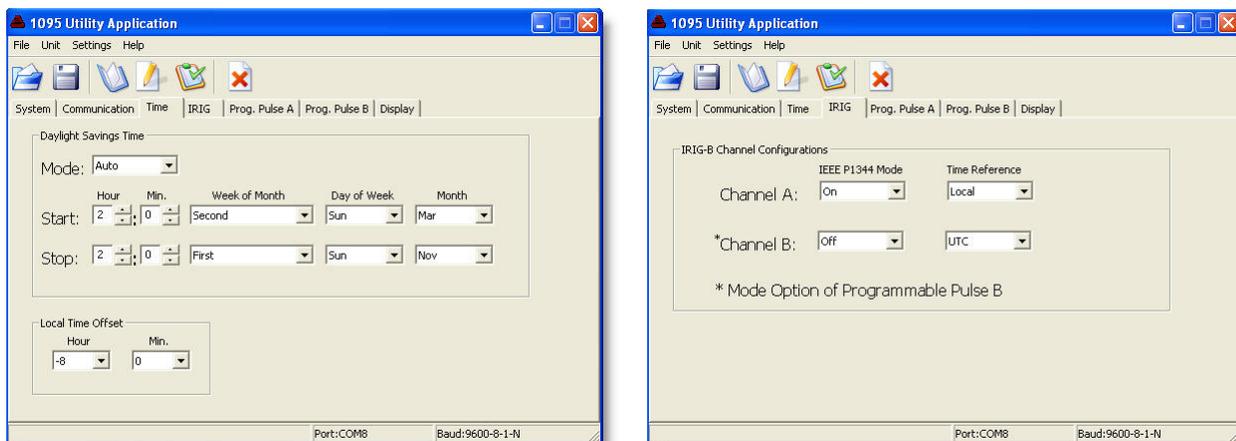
Figure 2: Time Adjustment Screen (left) and IRIG-B Screen (right)

Additional Help

For complete details concerning the setup and operation of the Model 1095A/C, please go to www.arbiter.com and download the operation manual from the Model 1095A/C product page. A printed manual is also available for purchase. See the contact information for Arbiter Systems[2].

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