

## Model 1095A/C Industrial GPS Clock



Model 1095C

The Arbiter Systems<sup>®</sup>, Inc. Model 1095A/C Industrial GPS Clock is a GPS timing source for industrial applications that require common timing signals, such as IRIG-B, 1 PPS, and RS-232 serial time codes, in a small, rugged enclosure suitable for indoor and outdoor applications. The Model 1095A/C with 250 ns (typical < 100 ns) worst-case accuracy meets the most demanding requirements including synchrophasors. The Model 1095C has a see-through cover with 4 LEDs to monitor operating status and a large 7-segment LED time display. The Model 1095A has an opaque cover. The 1095A/C comes standard with a built-in GPS antenna or can be configured with an optional external antenna.

Four outputs, with terminal strip connectors, provide three high-drive 5 Vdc (250 mA at > 4 V) outputs: IRIG-B00x level-shift, programmable pulse A and programmable pulse B, and one 4.5 Vpp modulated IRIG-B (IRIG-B12x) signals. All of the outputs have substantial drive capability to easily drive multiple loads in parallel. Two serial (RS-

232) ports can be used for setup, or for serial time codes such as IRIG-J. An RS-485 port (transmit only) is also included.

Standard features include a GPS Data Backup Battery, one Form C fail-safe relay, and Event Capture capability. The GPS Data Backup Battery maintains the real-time clock, almanac and ephemeris data in the 12-channel GPS receiver to speed acquisition. Satellites are acquired in as little as 15 seconds after a brief power loss. One Form C (SPDT) fail-safe relay is selectable to Fault, Unlocked, or Programmable Pulse functions and is compatible with digital fault recorder inputs. The Event Capture records events triggered from the dedicated, optically-isolated input or from either serial port receive line with 100 ns resolution.

The Model 1095A/C accepts nominal 12 Vdc or 24 Vdc (9 Vdc to 30 Vdc) power from battery or other power sources.

*Specifications subject to change without notice.*

## Model 1095A/C Specifications

### Receiver Characteristics

#### Timing Accuracy

Specifications apply at the 1 PPS, IRIG-B Level-Shift and Programmable Pulse outputs, with US Department of Defense Selective Availability (SA) as of date of publication.  
UTC/USNO  $\pm 250$  ns peak;  $< \pm 100$  ns typical (SA off)

#### Position Accuracy

10 meters, rms, 90% confidence

#### Satellite Tracking

12 channel, C/A code (1575.42 MHz). Receiver simultaneously tracks up to twelve satellites.

#### Acquisition

150 seconds typical, cold start  
15 minutes, 90% confidence, cold start  
40 seconds, typical, with almanac  $< 1$  month old  
15 seconds, typical, with ephemeris  $< 4$  hours old

### I/O Configuration

#### Outputs

Four Total: three high-drive 5 Vdc (250 mA at  $> 4$  V), one analog (4.5 Vpp), terminal strip connectors.

- Output 1: Programmable Pulse A
- Output 2: IRIG-B00x level-shift
- Output 3: Programmable Pulse B
- Output 4: Modulated IRIG-B

#### Event Input

One opto-isolated event capture input with 100 ns resolution, terminal strip inputs for 5 Vdc to 12 Vdc, 24 Vdc to 48 Vdc, and 120 Vdc to 240 Vdc nominal input.

#### Relay Contact

One, Form C (SPDT) fail-safe, 0.3 A at 130 Vdc; jumper selectable to Fault, Out-of-Lock, Programmable Pulse A (PPA), Programmable Pulse B (PPB), Stabilized, and Event-In functions.

Fail-safe means the relay indicates 'fault' or 'unlocked' condition with power off.

### I/O Configuration (cont.)

#### Programmable Pulse Output

Two programmable pulse outputs (5 Vdc), PPA and PPB.

Modes:

- 1 PPS
- Every 1 second to 60,000 seconds
- Hourly at a specified offset
- Daily at a specified time of day
- One shot at a specified time of year
- 1 PPS to 1000 PPS squarewave (PPB only)
- Aux IRIG Mode (PPB only)

Pulse duration is programmable from 0.01 seconds to 600 seconds, except in one-shot mode, where the output is Low prior to the specified time and High thereafter.

Aux IRIG Mode provides an additional unmodulated IRIG-B signal on the PPB output

### Interface

#### Operator

1095C Display	6-digit LED Time of Day (20 mm)
Status LEDs	Operate (green) Stabilized (green) Unlocked (red) Fault (red)
Setup (via remote interface)	Local time offset IRIG Setup: Local/UTC/IEEE 1344 Daylight Saving Time LED Brightness control Event input: Event/1 PPS Deviation Programmable Pulse Setup Antenna Cable Delay Out-of-Lock Time Auto-Survey Relay Control RS-485 Output Serial port 2 (RS-232) Serial port 1 (RS-232): DIP Switches

## Model 1095A/C Specifications

### Interface (cont)

**System**

RS-232	1200 baud to 115200 baud; 7 or 8 data bits; 1 or 2 stop bits; even/odd/no parity (TXD, RXD, COM) Broadcast modes include: ASCII, Extended ASCII, ASCII with Time Quality, and Vorne (output once every second), Status (output on change of Status) and Custom Configurable Serial Time Code
RS-422/485	Transmit only, to drive multiple devices. Available Signals include: Serial Port 1, Serial Port 2, IRIG-B, PPA, PPB, and 1 PPS.

### Power Requirements

**Standard**

Voltage	9 Vdc to 30 Vdc, 3 W max.; negative common 3.81 mm pluggable terminal strip
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### General

**Physical**

Size	180 mm x 120 mm x 60 mm (7.1 in x 4.7 in x 2.4 in) plus cable gland
Weight	1 kg (2.2 lbs), net 2 kg (4.4 lbs), shipping
Mounting	4 mounting feet included
Antenna	Built-in or optional external
Sealing Cable Port	Accepts up to a 16 conductor cable with an OD from 6 mm to 12 mm (0.24 in to 0.47 in)
Degree of Protection	IP65 (IEC 60529) NEMA 1, 2, 4, 4x, 12, 13

**Environmental**

Temperature	Operating: - 40 °C to + 85 °C
EMC	Radiated susceptibility: passes walkie-talkie test

### Certifications and Approvals

CE mark/label and certificate

### Options

<u>Description</u>	<u>Order No.</u>
External Antenna	1095Aopt01 1095Copt01
Internal antenna is removed when the external antenna option is ordered.	

### Accessories

**Included**

<u>Description</u>	<u>Order No.</u>
Quick Setup Guide	PD0052900
Sealing Cable Port: Accepts cable OD from 6 mm to 12 mm (0.24 in to 0.47 in)	HP0022601

**Available**

<u>Description</u>	<u>Order No.</u>
Operation Manual	AS0096400
Programming Port Cable <sup>2</sup>	AS0067200
DIN Rail Mounting Assembly	AS0093700
GNSS Antenna, pipe mountable <sup>1,3</sup>	AS0099200
GNSS Antenna Mounting Kit <sup>1</sup>	AS0044600
2 m (6 ft) RG-6 Antenna Cable <sup>1</sup>	CA0021302
6 m (20 ft) RG-6 Antenna Cable <sup>1,3</sup>	CA0021306
15 m (50 ft) RG-6 Antenna Cable <sup>1</sup>	CA0021315
30 m (100 ft) RG-6 Antenna Cable <sup>1</sup>	CA0021330
Antenna Grounding Block Kit <sup>1,3</sup>	AS0048900
GNSS Surge Protector <sup>1</sup>	AS0094500
Sealing Cable Port: Accepts cable OD from 5 mm to 9 mm (0.20 in to 0.35 in)	HP0022602

<sup>1</sup> For use with external antenna. Longer cable lengths are available.

<sup>2</sup> Modular DB9 to RJ11 Adapter and RJ11 Cable 7 ft.

<sup>3</sup> Included with 1095Aopt01 and 1095Copt01