Model 1095A/C
Industrial GPS Clock

Model 1095C

The Arbiter Systems®, 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   ± 250 ns peak; < ± 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

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

Description	Order No.
External Antenna	1095Aopt01 1095Copt01

Internal antenna is removed when the external antenna option is ordered.

Accessories

Included

Description	Order No.
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

Description	Order No.
Operation Manual	AS0096400
Programming Port Cable[2]	AS0067200
DIN Rail Mounting Assembly	AS0093700
GPS Antenna, pipe mountable[1,3]	AS0087800
GPS Antenna Mounting Kit[1]	AS0044600
2 m (6 ft) RG-6 Antenna Cable[1]	CA0021302
6 m (20 ft) RG-6 Antenna Cable[1,3]	CA0021306
15 m (50 ft) RG-6 Antenna Cable[1]	CA0021315
30 m (100 ft) RG-6 Antenna Cable[1]	CA0021330
Antenna Grounding Block Kit[1,3]	AS0048900
GPS Surge Protector[1]	AS0094500
Sealing Cable Port: Accepts cable OD from 5 mm to 9 mm (0.20 in to 0.35 in)	HP0022602

[1] For use with external antenna. Longer cable lengths are available.

[2] Modular DB9 to RJ11 Adapter and RJ11 Cable 7 ft.

[3] Included with 1095Aopt01 and 1095Copt01