Model 1092A/B/C
GPS Satellite-Controlled Clock

The Arbiter Systems®, Inc. Model 1092A/B/C GPS Satellite-Controlled Clock is a tabletop GPS timing source for applications not requiring the ultimate 100 ns accuracy of our higher-performance models. The Model 1092A/B/C has 500 ns worst-case accuracy to meet the requirements of a broad range of applications. The Model 1092A has two LEDs to monitor operating status. The Model 1092B adds an LCD setup/status display and keyboard. The Model 1092C adds a large (14 mm or 0.56 in) LED time display to the status LEDs. In all versions, twelve receiver channels provide optimum performance.

Two pluggable terminal strip outputs provide unmodulated IRIG-B and 1 PPS. A modulated IRIG-B output (1092opt92) is available on a third pluggable terminal strip output. These outputs have substantial drive capability to easily drive multiple loads wired in parallel and can be reconfigured to provide other output signals or an event-capture input.

The GPS Data Backup Battery is now included in the Model 1092A/B/C. This feature improves acquisition time to as little as 15 seconds after a brief power loss by supplying constant power to the real-time clock and RAM in the GPS receiver module.

Another available option is the Form C (SPDT) fail-safe, LOCKED relay (1092opt93) that is compatible with 129 Vdc digital fault recorder inputs.

An event-capture input is standard, and may be wired to one of the pluggable terminal strip connectors or used for synchronizing data collection on an external computer via the serial port. This input has 1 µs resolution. A programmable pulse output may be used to generate an output pulse at the IRIG-B unmodulated or the 1 PPS outputs in addition to the AUX OUT on the RS-232 Port.

Power is provided from an external (wall-mount) plug-in power supply. The Model 1092A/B/C can also be rack mounted with the available Rack Mount Kit (AS0044500), in a standard, 483 mm (19 in) EIA rack.

Also available, the Model 1093B/C GPS Satellite-Controlled Clock provides the same performance and functionality as the Model 1092A/B/C, but has a full-size rack-mountable chassis more available options and several internal power supply options.

ARBITER SYSTEMS

Model 1092A/B/C Specifications

Receiver Characteristics

Timing Accuracy

Specifications apply at the 1 PPS output, in the presence of Selective Availability (SA), as of date of publication.

UTC/USNO   ± 500 ns peak; < ± 100 ns typical (SA off)

Position Accuracy

10 meters, rms, 90 % confidence

Satellite Tracking

Twelve (12) channel, GPS-L1, C/A code (1575.42 MHz). Receiver simultaneously tracks up to twelve satellites. Results from all tracked satellites are averaged in Position-Hold Mode or, with Position-Hold Mode off, using least-squares estimation.

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

The GPS Data Backup Battery is included in the Model 1092A/B/C. This feature improves acquisition time by supplying constant power to the real-time clock and RAM in the GPS receiver module.

Connectors

Two standard; one IRIG-B Unmodulated and one 1 PPS; bus driver, 5 V CMOS; 10 ohms source impedance; ± 75 mA drive capability; pluggable terminal strip. 400 V, 220 mA, 1 watt power dissipation open-drain FET drivers can also be fitted; contact factory

I/O Configuration

Optional equipment may be shown

Event A Input

One event timer channel with 1 μs resolution is standard. This function may be driven by the start bit of a received character on the serial port, or (by internal connection) an external 5 V CMOS/TTL signal at one of the terminal strip connectors.

Programmable Pulse Output

One programmable output pulse (by a jumper connection) that may be output on a terminal strip connector or the AUX OUT pin on either RS-232 Port.

Four modes:
- Every 1 s to 60,000 s, starts top of the minute
- Hourly at a specified offset
- Daily at a specified time of day
- One shot at a specified time of year

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

I/O Options

IRIG-B Modulated (1092opt92): bus driver, 4 Vpp, 20 ohms source impedance; drives a 50-ohm load at 3 Vpp; pluggable terminal strip

Second RS-232 Port (1092opt19): Provides all the same capabilities as the standard RS-232C serial port except there is no AUX IN line. AUX OUT provides programmable pulse function at RS-232 levels.

Relay contacts (1092opt93): 1 set, Form C (SPDT) fail-safe, 0.3 A at 130 Vdc; Locked function

Model 1092A/B/C Specifications

Interface

Operator

Display	Status LEDs (Models 1092A/B/C) 2 x 20 LCD (Model 1092B) 14 mm (0.56 in) LED; 9 digits (Model 1092C)
Functions	UTC or local Time Position: latitude, longitude, altitude Receiver and clock status 1 PPS (input) deviation Event time
Status LEDs	Operate (green) Unlocked (red)
Keypad	8 keys; select display functions or setup menus (Model 1092B)
Setup	Local time offset Output code select: Local/UTC Daylight Saving Time: Off/On/Auto Backlight control: On/Off/Auto Event input: Event/1 PPS Programmable Pulse setup Antenna delay Out-of-Lock time: 1 min. to 99 minutes, Off, or Zero Delay Auto-Survey: On/Off, Survey duration Position Hold: On/Off, Position Auto/ Manual Option Configuration and Setup Serial port: RS-232

System

RS-232	1200 baud to 19,200 baud; 7 or 8 data bits; 1 or 2 stop bits; even/odd/no parity
	Male 9-pin D-subminiature (TXD, RXD, AUX IN, AUX OUT)
	Has Interrogate (normal) and six Broadcast modes: standard ASCII (IRIG-J), Vorne large-display, status/alarm, extended ASCII, event data, and ASCII with time-quality
	AUX OUT can provide programmable pulse function at RS-232 levels.
	RS-422/485 driver also available; contact factory
	Second RS-232 port available (1092opt19)

Power Requirements

Plug-in transformer

Wall mount	9 Vdc/500 mA, 120 Vrms, 60 Hz UL/CSA; Contact factory for other voltages (input accepts 9 Vdc to 15 Vdc)

General

Physical

Size	43 mm H x 218 mm W x 257 mm deep 1 RU with Rack Mount kit, AS0044500 635 mm x 381 mm x 229 mm (25 in x 15 in x 9 in), shipping
Weight	1.4 kg (3 lbs), net 5.5 kg (12 lbs), shipping
Antenna	0.75 in. pipe (1 in - 14 marine) thread Cable Connection: F-type 80 mm hex (across flats) x 84 mm (3.2 in x 3.3 in) 170 grams (6.0 oz)
Antenna Cable	RG-6 type, 15 m (50 ft) provided Weight: 0.69 kg (1.52 lbs) per 15 m

Environmental

Temperature	Operating: 0 °C to + 50 °C (- 20 °C to + 70 °C typical) Nonoperating: - 40 °C to + 75 °C
Humidity	Noncondensing
EMC	Radiated susceptibility: passes walkie-talkie test

Certifications and Approvals

CE mark/label and certificate

Model 1092A/B/C Specifications

Options

Options may be ordered in any combination.

I/O

Description	Order No.
Second RS-232 Port	1092opt19
IRIG-B Modulated Output	1092opt92[2]
Out-of-Lock Relay, 1 Form C (SPDT)	1092opt93[2]
RS-422/485 Driver	1092opt94[2]
1 PPS Output Reconfigured to Programmable Pulse	1092opt96[2]
IRIG-B Output Reconfigured to Programmable Pulse	1092opt97[2]
1 PPS Output Reconfigured to Event Input	1092opt98[2]

General Options

Description	Order No.
LCD Backlight (1092B)	1092Bopt01

Cordset and Plug Styles

The following are the available wall mount power supply choices and specifications:

No.	Country	Specification	Rating
P01W	Continental Europe	CEE 7/7	220V
P02W	Australia/NZ/PRC	AS 3112-1981	240V
P03W	U.K.	BS 1363	240V
P04W	Denmark	Afsnit 107-2-01	240V
P05W	India	BS 546	220V
P06W	Israel	SI 32	220V
P07W	Italy	CEI 23-16/VII 1971	220V
P08W	Switzerland	SEV 1011.1959	220V
P09W	North America and ROC	NEMA 5-15P CSA C22.2 #42	120V
P10W	Japan	JIS8303	120V

Accessories

Included

Description	Order No.
GPS Antenna, pipe mountable	AS0087800
15 m (50 ft) RG-6 Antenna Cable	CA0021315
Operation Manual	AS0035400
Power Supply	P09W

Available

Description	Order No.
Power Supply	P01W-P10W
Rack Mount Kit	AS0044500
GPS Antenna Mounting Kit	AS0044600
15 m (50 ft) RG-6 Antenna Cable	CA0021315
30 m (100 ft) RG-6 Antenna Cable	CA0021330
45 m (150 ft) RG-6 Antenna Cable	CA0021345
60 m (200 ft) RG-6 Antenna Cable	CA0021360
75 m (250 ft) RG-6 Antenna Cable	CA0021375
21 dB In-Line Preamplifier	AS0044700[1]
Antenna Grounding Block Kit	AS0048900
GPS Surge Protector	AS0094500
GPS Antenna Cable Splitter	AP0013400
BNC (Male) Breakout to 100 mm Wires	AP0003400
BNC (Female) Breakout to 100 mm Wires	AP0008900
BNC (Female) Breakout to Screw Terminal	AP0014900
BNC (Male) Breakout to Screw Terminal	AP0015000
300 m (1000 ft) Roll RG-6 Cable	WC0005000
RG-6 Stripping Tool	TF0013200
RG-6 Type F Crimp Tool	TF0006400
RG-6 Type F Male Crimp-on Connector	CN0027700
300 m (1000 ft) Roll RG-11 Cable	WC0004900
RG-11 Stripping Tool	TF0013300
RG-11 Type F Crimp Tool	TF0006000
RG-11 Type F Male Crimp-on Connector	CN0027800

[1] For use with cable lengths greater than 75 m (250 ft)

[2] May be combined with other I/O options