

Model 1200B GNSS Synchronized Clock



The Arbiter Systems®, Inc. Model 1200B GNSS Synchronized Clock is a multi-satellite system (GPS/GLONASS/Galileo/BeiDou) timing source for precision timing applications. Designed with the advanced features of our 12xx line of clocks to give optimum performance without a holdover oscillator at an economical price. The Model 1200B is compatible with Arbiter's earlier clock models, supporting the standard options and outputs, while enabling the transition to a modern design.

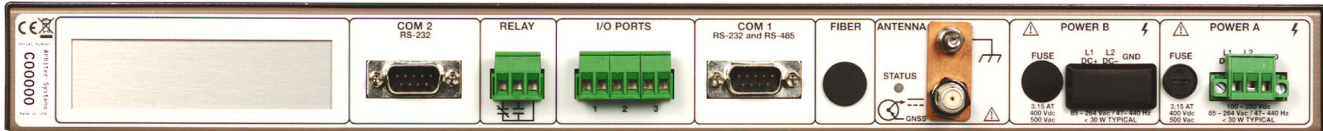
The Model 1200B has eight status LEDs, an LCD setup/status back-lit display, and a keyboard. The Model 1200B comes standard with 72 receiver channels, capable of tracking GNSS satellites simultaneously, providing optimum performance. The Model 1200B has 100 ns worst-case accuracy to meet the requirements of a broad range of applications from relay synchronization to synchrophasor timing. In addition to enhanced performance, Arbiter Systems' new security feature provides six levels of user security selectable from Level 0 security (none) to Level 5 security (front panel display, keyboard, and legacy serial commands disabled).

Three pluggable terminal strip outputs (jumper configurable) provide IRIG-B unmodulated, 1 PPS, Programmable Pulse or Event Input. A modulated IRIG-B output is also available on the center pluggable terminal

strip output. These outputs are configurable to provide 5 V CMOS bus drivers (± 75 mA drive capability) or 1 watt power dissipation open-drain FET (excludes IRIG-B modulated) or 4 Vpp, 20 ohms source impedance (IRIG-B modulated only) drivers. An event timer channel with 100 ns resolution is standard. This function may be driven by the start bit of a received character on the serial port or an external 5 V CMOS/TTL signal at one of the terminal strip connectors, jumper-selectable. The Model 1200B comes standard with two DB-9 serial communication ports. One also provides an RS-422/485 transmit only driver and a programmable pulse output.

An SPDT (form C) fail-safe relay is also included and is configurable to Out-of-Lock, Fault, Alarm, Stabilized, or Programmable Pulse. The Model 1200B accepts one or two power supplies in a redundant configuration. Standard power options include an 100 Vac to 240 Vac/100 Vdc to 350 Vdc or 24 Vdc to 48 Vdc supplies with secure terminal strip inlets and surge-withstand capability. The surge-withstand network is designed to meet ANSI/IEEE C37.90-1 and IEC 61000-4 specifications. Available options include Four Additional Configurable Outputs; High Drive IRIG-B Outputs; Power System Time, Frequency, and Phase Monitor; NTP/PTP Server; Four BNC Output Connectors (parallels main outputs).

Model 1200B Specifications



Receiver Characteristics

Timing Accuracy

Specifications apply at the 1 PPS/IRIG-B/PP outputs when receiving four or more satellites, as of date of publication.

UTC/USNO ± 100 ns peak
 ± 40 ns typical

Position Accuracy

2 meters, rms

Satellite Tracking

Seventy-two (72) channel receiver: L1 GPS C/A, L1 GLONASS CT, Galileo, BeiDou.

Acquisition

55 seconds, typical, cold start
 25 seconds, typical, warm start
 3 seconds, typical, hot start

I/O Configuration

Connectors

Three pluggable terminal strip connectors:

- Port 1: IRIG-B unmodulated, 1 PPS, Programmable Pulse or Event Input; jumper-selectable
- Port 2: IRIG-B modulated, 1 PPS, IRIG-B unmodulated, Programmable Pulse or Event Input; jumper-selectable
- Port 3: IRIG-B unmodulated, 1 PPS, Programmable Pulse or Event Input; jumper-selectable

Jumper-selectable outputs are 5 V CMOS bus drivers with 10 ohms source impedance and ± 75 mA drive capability or 4 Vpp, 20 ohms source impedance (IRIG-B modulated only) or 1 watt power dissipation open-drain FET drivers

I/O Configuration (Continued)

IRIG-B

One IRIG-B channel that controls both the unmodulated and modulated outputs. Configurable to Local or UTC time with C37.118.1 on or off, settings independent from Programmable Pulse IRIG-B output.

Programmable Pulse

One programmable pulse output (by a jumper connection) that may be output on a terminal strip connector and the AUX OUT pin on either COM port.

Seven modes:

- IRIG-B unmodulated (UTC/Local, C37.118.1 On/Off)
- Every 1 to 60,000 seconds, starts top of the second
- Hourly at a specified offset
- Daily at a specified time of day
- One shot at a specified time of year
- Slow Code (UTC/LCL)
- DCF-77

Pulse polarity and pulse duration are programmable, duration from 0.01 to 600 seconds, except in one-shot mode, where the output is Low prior to the specified time and High thereafter. IRIG-B settings are independent from main IRIG-B signal.

Relay

Form C (SPDT) fail-safe, 8 A at 250 Vac (5 A at 30 Vdc) ; configurable to Out-of-Lock, Fault, Alarm, Stabilized, or Programmable Pulse

Event

One event timer channel with 100 ns resolution is standard. This function may be driven by the start bit of a received character on the serial port, or an external 5 V CMOS/TTL signal at one of the terminal strip connectors (jumper-selectable).

Model 1200B Specifications

Interface

Operator

Display 2 x 20 character supertwist LCD
White LED backlight

Functions Time and date
Antenna status and position
Timing status
System status

Status LEDs Normal (green)
Survey (orange)
Unlocked (red)
Alarm (red)
Operate (green)
Power A (green)
Power B (green)
Fault (red)

Keypad 8 keys; select display functions or
setup menus

Setup COM 1 (RS-232 port 1)
COM 2 (RS-232 port 2)
Local time offset
Out-of-Lock Time
Relay Configuration
Backlight Control
Event/Deviation
Programmable Pulse
System Delays
IRIG Time Data
Option Configuration

System

RS-232 1200 baud to 230400 baud; 7 or 8 data
bits; 1 or 2 stop bits; even/odd/no parity
2 Male 9-pin D-subminiature
Has Interrogate (normal) and six
Broadcast modes: standard ASCII
(IRIG-J), Vorne large-display,
status/alarm, extended ASCII,
event data, ASCII with time-quality
and user configurable serial time code

COM1 RS-232 (TXD, RXD, AUX IN, AUX OUT)
RS-422/485 (TXD+, TXD-, AUX OUT)

COM2 RS-232 (TXD, RXD, AUX OUT)

Power Requirements

Accommodates any combination of the two available
power supplies in a single or redundant configuration.
Choices include a universal supply or a low dc supply,
both with surge withstand capability.

Universal

Voltage 100 Vac to 240 Vac, 47-440 Hz, 20 VA max.
or 100 Vdc to 350 Vdc, 30 W maximum

Inlet Secure Pluggable Terminal Strip

Low DC

Voltage 24 Vdc to 48 Vdc, 30 W maximum

Inlet Secure Pluggable Terminal Strip

General

Physical

Size 438 mm x 280 mm x 44 mm
(17.25 in x 11 in x 1.75 in)
19 in, 1 Rack Unit; 280 mm deep FMS.
Rack mounts included
635 mm x 381 mm x 229 mm
(25 in x 15 in x 9 in), shipping

Weight 2 kg (4.5 lbs), net
5.5 kg (12 lbs), shipping

Ground Block Antenna protective ground
Copper, with M5 (10-32) stud and nut
Internal lightning surge suppressor
(20 kA Gas Discharge Tube (GDT))

Antenna 3/4 in NPT (1 in - 14 marine) thread
Cable Connection: F-type
Temperature: - 55 °C to + 70 °C
Size: 80 mm dia. x 84 mm (3.2 in x 3.3 in)
Weight: 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: - 40 °C to + 65 °C
Nonoperating: - 40 °C to + 75 °C

Humidity Noncondensing

EMC Conducted emissions: power supply
complies with FCC 20780, Class A
and VDE 0871/6.78 Class A
Surge withstand capability (SWC),
power inlet: designed to meet
ANSI/IEEE C37.90-1 and IEC 61000-4

Model 1200B Specifications

Options

One option can be selected from each of the categories listed below; except Power Supply which accommodates two. A power supply must be specified.

Description Order No.

Power Supply

Terminal Power Strip, Surge Withstand,
100 Vac to 240 Vac, 100 Vdc to 350 Vdc A01/B01

Terminal Power Strip, Surge Withstand,
24 Vdc to 48 Vdc A02/B02

Main Board I/O

Single Configurable Fiber-Optic Output D01

Auxiliary I/O

Four Configurable Outputs E01

Four Configurable Fiber-Optic Outputs E02

Eight-Channel High-Drive IRIG-B Output E03

Power System Time, Frequency
and Phase Monitor E04

Four Additional Outputs with Dry
Contact and +25/50 Vdc E05

NTP/PTP Server Copper/Copper E06

NTP/PTP Server Copper/Fiber E07

NTP/PTP Server Fiber/Fiber E08

Four BNC Output Connectors
(Parallel to Pluggable Terminal Strip) E09

Relay

Standard Voltage (30 Vdc/250 Vac) F01

High DC-Voltage (300 Vdc/250 Vac) F02

Accessories

Description Order No.

Included

Arbiter Universal GNSS Antenna AS0099200

Quick Setup Guide PD0057100

15 m (50 ft) RG-6 Antenna Cable¹ CA0021315

Rack Mount Kit AS0094800

Available

Operation Manual AS0110500

Antenna Mounting Kit AS0044600

15 m (50 ft) RG-6 Antenna Cable¹ CA0021315

30 m (100 ft) RG-6 Antenna Cable¹ CA0021330

45 m (150 ft) RG-6 Antenna Cable¹ CA0021345

60 m (200 ft) RG-6 Antenna Cable¹ CA0021360

75 m (250 ft) RG-6 Antenna Cable¹ CA0021375

21 dB In-Line Preamplicifier
for cable lengths greater than 100 m AS0044700

GNSS Antenna Surge Arrester AS0094500

Antenna Grounding Block Kit AS0048900

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

¹ RoHS compliant

Order Guide

Model	Power Supply A	Power Supply B	Holdover Oscillator	Main Board I/O	Auxiliary I/O	Relay
1200B	A01 A02	B00* B01 B02	C00*	D00* D01	E00* E01 E02 E03 E04 E05 E06 E07 E08 E09	F01 F02

*Indicates option not installed.

Example:

1200B-A01-B00-C01-D00-E06-F01

Model 1200B with LCD display
Power Supply A: 100 to 240 Vac/
100 to 350 Vdc
Power Supply B: Not installed
Holdover Oscillator: 1 ms/24 h
Main Board I/O: Not installed
Auxiliary I/O: NTP/PTP Server
with RJ-45 Ethernet connectors
Relay: Std. V (30 Vdc/250 Vac)