

Self-Monitor, IRIG-B Distribution System, and Second RS-232

Available for Model 1088

The Arbiter Systems[®], Inc. Model 1088B GPS Satellite-Controlled Clock, equipped with the System Self-Monitor, IRIG-B Distribution and Second RS-232 Option, provides a buffered, high-level modulated IRIG-B signal capable of driving numerous loads at substantial distances from the timing source. The exact number of loads and distances are dependent on system topology; 24 loads, each terminated in 600 ohms, along a 500 meter bus is one possibility.

Each output tap from this system provides 3750 Vrms hipot isolation, to break ground loops. The distribution bus provides comprehensive monitoring of the bus status, and is capable of detecting loss of the IRIG-B drive signal, any open circuit (using a 10 mA dc pilot current), any short-circuit, or any other overload condition. See Application Note 101 for more information on the IRIG-B bus topology, drive capability, and installation.

Available accessories include the Model 10882A IRIG-B Distribution Tap, used to connect a load to the bus; the Model 10883A IRIG-B Distribution Splitter, used to split a distribution bus into two branches, and detecting faults on either branch; the Model 10884A IRIG-B

Distribution Terminator, used to provide a dc monitor-current return at the end of a bus or branch; and the Model 10885A IRIG-B Redundant Ring Adapter, used to build a distribution loop which can detect any break in the distribution loop while providing uninterrupted service to all taps.

Fault monitoring is provided by two Form C (SPDT) fail-safe relay contact sets which indicate the Unlocked and Fault conditions; this includes not only IRIG-B bus faults but also other clock faults, such as power supply out of limit, VCXO tuning error, GPS receiver fault or watchdog fault. These conditions may also be monitored via the status byte available through the RS-232 interface.

The option board also includes a redundant clock interface / second serial (RS-232) port. Using the redundant clock interface, two Model 1088B clocks may be connected together to provide a fully-redundant timing system. However, if not used in this manner, the port may be used as a second communications port with all the capability of the main RS-232 port in the clock.

IRIG-B Distribution Bus Specifications

IRIG-B Distribution Bus

Output

Signal	IRIG-B Modulated (1 kHz)
Level	11 V _{pp} ±5%
Impedance	21 ohms, nominal, balanced to ground
Load	50 ohms, minimum ¹
Connector	5 mm pluggable terminal strip

Configurations¹

Linear	Single bus; requires one Model 10882A tap per load, plus one Model 10884A terminator for the bus
Branched	Linear bus with one or more branches; requires one Model 10883A splitter per branch in addition to the above linear bus requirements
Ring	Redundant ring, with terminal brought back to source; requires one Model 10882A tap per load and one Model 10885A redundant-ring adapter
Complex	Combinations of the above elements; see Application Note 101 for details

Redundant Clock Control Interface

Adds a serial port having all of the same capabilities of the main Model 1088B serial port; 1200 to 19,200 baud; 7 or 8 data bits; 1 or 2 stop bits; even/odd/no parity; plus a redundant clock interface. The serial port is used for clock-to-clock communications in the redundant mode. If not used as part of a redundant system, this interface port is available for general I/O.

Fault Monitor

Faults

Type	Loss of Signal Short/Overload Open Circuit Power Supply Out of Limit VCXO Tuning Error GPS Receiver
Current	10 mAdc ±10%; 8.5 Vdc maximum open circuit
DCR, Loop	500 ohms, maximum, including wiring and system components ¹

Interface

Status	Via Fault LED on front panel or the RS-232 port
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Relay Contacts

Two sets, Form C (SPDT) fail-safe, 0.3 A at 130 Vdc; one is a Locked function and the other is a Fault Indicator

¹ See Application Note 101: *Distributing Timing Signals in a High-EMI Environment* for more information