F6050

UNIVERSAL TIME SYNCHRONIZER

TOGETHER WE POWER THE WORLD

Access to Sky is *Not Required*

Originally designed for use underground in hydrostations, Doble's F6050 Universal Time Synchronizer extends the benefits of GPS Synchronized End-to-End Testing to your entire power system – regardless of location – eliminating the need for costly staged fault testing.

GPS-synchronized end-to-end testing has long been regarded as the ultimate method for cost effectively evaluating protection system performance. Because of physical obstructions or remoteness, GPS satellite reception is not always possible, but the F6050 solves that problem.

Used in conjunction with the F6150 Power System Simulator, the F6050 Universal Time Synchronizer provides end-to-end synchronization at remote locations where access to GPS signals is not possible. Users of the Doble F2250 with the 2885 option can also use the F6050 if they add the F6055 option.

After acquiring an initial signal, the F6050 Universal Time Synchronizer will continue generating simulated GPS Time accurately for eight hours. Now, you can increase the reliability and confidence of your power system protection performance by testing critical lines that were once inaccessible to GPS signal.

F6050 Benefits

- Access to sky *not required*. The F6050 Universal Time Synchronizer extends GPS-synchronized end-to-end testing to once inaccessible areas, furthering the reliability of your entire power system
- Synchronized point-by-point control can test the response of the protection system to real-world power system conditions
- Increases confidence with predictable and repeatable results
- A cost effective alternative to expensive staged fault testing
- Replay actual transient end-to-end events in the field to analyze unexpected operations

F6050
GPS Precision and Flexibility to Gain Confidence in Your Protection System.

F6050 Technical Specifications

Accuracy:	Rubidium crystal 1 pulse per second (PPS) output ± 10 microseconds
Dimensions:	18 x 13 x 7 in. 46 x 33 x 17.8 cm
Weight:	18 lb / 8.2 kg
Line Power Supply:	100 – 264 V, 50/60 Hz
Interfaces:	Control via PC using RS232 Connect to test instrument via Doble furnished D15 connector cable
Operating Temperature:	0° to 50°C 32° to 122°F
Storage Temperature:	-25° to 70° C -13° to 158° F

Specifications are subject to change without notice.

F6050 Features

Extend the benefits of GPS-synchronized end-to-end testing for your entire protection system, eliminating the need for costly staged fault testing

Extra-high precision: Rubidium crystal provides 1 pulse per second (PPS) output ± 10 microseconds

Portability: A fully charged battery will provide backup power for approximately 8 hours.

Compactness: Comes with built-in GPS antenna/receiver

Reliability: Rugged construction and proven state-of-the art design provides laboratory accuracy in field environments — no compromises!

Methods of synchronization

1. Using GPS directly via satellite (used for end-to-end tests).
2. Using IRIG-B.
3. Line Synchronization – when connected to 50/60 Hz, 240/120 AC source, the F6050 will synchronize the output of F6150 with that of the 50/60 Hz supply.
4. Self Synchronization – the F6050 can lock into it's own internal clock. Once the first unit is locked in, a second F6050 can be synchronized to the first.

APPLICATIONS:

Critical lines must be tested to ensure system reliability. The F6050 Universal Time Synchronizer provides GPS satellite synchronization to once inaccessible areas, such as underground substations, inside large buildings, and in hydro plants.

GPS synchronization is required to conduct end-to-end testing of the complete line protection and communication scheme under all fault conditions, including external faults and current reversals. GPS synchronized end-to-end testing with the F6050 eliminates the need for costly staged fault testing.

Unlike traditional steady-state testing, which only test individual relays, satellite-synchronized testing lets you easily and quickly evaluate overall protection scheme performance. This dramatically increases confidence in reliability and proper operation. And since the test results describe how the relay scheme operates under power system conditions, the test results can be used to help evaluate future relay operation.

For more information, email fserieshelp@doble.com

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Doble Engineering Company
85 Walnut Street
Watertown, MA 02472 USA
tel +1 617 926 4900
fax +1 617 926 0528

www.doble.com

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Doble is an ESCO Technologies Company

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