



Installation and Operation Manual

for the

TIME SYNC

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Software Version TS1/111700

Manual Revised 06/30/2001

All specifications and features for this product are subject to change without notice.

Time Sync Broadcast Tools, Inc.

INTRODUCTION

Thank you for your purchase of a Broadcast Tools, Inc., Time Sync. We re confident this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the unit.

⚡ **NOTE:** This manual should be read thoroughly before installation and operation.

SAFETY INFORMATION

Only qualified personnel should install Broadcast Tools products. Incorrect or inappropriate use and/or installation could result in a hazardous condition.

Broadcast Tools Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product, or you need assistance, please contact your distributor from whom you purchased this equipment or contact us directly.

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Time Sync

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PRODUCT DESCRIPTION

The Time Sync provides three separate GPS time referenced outputs. The first is a SPDT relay, which pulses once every 15 minutes. These times are programmed for 13:00, 28:00, 43:00 and 58:00 after each hour. The second SPDT relay pulses at the Top of the Hour (00:00). The third output is an open collector with a 100 ms pulse every second. The final feature is the SIG led and SPDT relay, furnished as fail-safe for either loss of satellite, power or invalid time. The Time Sync is supplied in a small profile chassis, along with a Garmin 12 Channel GPS receiver with embedded antenna. The receiver is housed in a water-resistant case and designed to withstand rugged outdoor operating conditions. The Time Sync chassis furnishes power to the receiver. The receiver is supplied with a 15-foot cable; longer cable lengths up to 125 feet may be used.

FEATURES

* Time Sync of automation systems and clock systems

APPLICATIONS

* Automation system time synchronization * Clock system synchronization

REAR PANEL DESCRIPTION

The rear panel contains a power connector, screw terminals for all outputs, Power, Loss of signal, Top of hour, Time sync, 1PPS status led s and the GPS receivers 9-Pin D-sub connector.

POWER

Connect the 2.1mm barrel type power connector into the unit and the 9vac, 500 ma wall transformer into a 120 Vac 50-60 Hz power source. The rear panel green power LED indicates when power is applied to the unit. (220 Vac 50-60 Hz wall transformer OPTIONAL)

INSTALLATION

Installation of the Time Sync in **high RF environments** should be performed with care. Shielded cable is suggested for all connections. All shields should be tied to the EGND terminal. The station ground should be connected to the chassis ground screw located on the far right side of the Time Sync as viewed from the rear. It is recommended that all cables connected to the Time Sync be looped through ferrite cores to suppress RF. Surge protection with RF filtering is also suggested for the wall transformer. The purchase of an inexpensive UPS will provide back up power in case of a power outage.

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INSTALLATION, continued

The Time Sync is very simple to install. The majority of the connections are via screw terminals. Installation of the Time Sync consists of five steps:

1. Inspection
2. Jumper selection, if applicable
3. Bench test
4. Mount the unit on a rack shelf, rack panel (RM-3 or 2) if needed.
5. Connect your equipment to the unit

STEP 1: INSPECTION

Please examine your Time Sync carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the Time Sync, Garmin GPS35-HVS or GPS36 GPS Receiver with embedded antenna, 9vac, 500 ma wall power transformer and this manual.

STEP 2: JUMPERS

See page 5, if applicable.

STEP 3: BENCH TEST

Place the unit on a workspace and install the receiver in an area that has a clear, unobstructed view of the sky. Do not allow the receiver to sit in water. Connect the 9 pin D-Sub from the receiver to the GPS Receiver connector J2 on the Time Sync. Connect the wall transformers power connector to the Time Syncs power connector. Check to see if the green power LED is lit. It may take as much as 15 minutes for the receiver to acquire the needed satellites on the first power up. During this time, the SIG led will be extinguished and the SIG relay will be relaxed. If after 15 minutes you still haven't acquired a lit SIG led, try realigning your receiver.

When the SIG led is lit, you should see the following actions:

1. The 1PPS led should flash (100 ms) every second.
2. The TS led will flash and K1 should pulse (700 ms) at the following minutes: 13:00, 28:00, 43:00 and 58:00
3. The TOH led should flash and K3 will pulse (700 ms) at the Top Of the Hour (00:00)

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INSTALLATION, continued

STEP 4: MOUNTING

The Time Syncs main chassis may be mounted just about anywhere. Number six screw holes are provided. **The receiver must be mounted in an area that has a clear, unobstructed view of the sky.** The receiver is supplied with VELCRO for mounting. Attach the receiver to a secure location. **Do not allow the receiver to sit in water.**

Main chassis mounting Options: Mount the unit on a rack shelf, such as the Broadcast Tools RM-3 (1-RU) or the Broadcast Tools RM-2 rack panel (3-RU). Allow adequate airflow for cooling.

STEP 5: CONNECT YOUR EQUIPMENT

The Time Sync interfaces to your equipment through rear panel screw terminals. Follow the silk-screened legends on the PCB for the desired connections. Use a small screwdriver to loosen each screw terminal, insert the stripped wire (18 to 26 gauge wire) and tighten the screw. The Receiver is supplied with either a 15 foot (GPS35-HVS) or 30-foot (GPS36) data/power cable. Additional cable may be added, up to a total of 125 feet. The grid below gives you the pin-out if you plan on constructing an extension cable.

J2, Pin # 1	J2, Pin # 2	J2, Pin # 5	J2, Pin # 9
Shield <u>Pin 1 must be utilized.</u>	RS-232 data from the GPS Receiver	Data/Power ground	Unregulated 12Vdc to the receiver

SPECIFICATIONS

LOGIC: Microprocessor

RELAYS: TS , 1 SPDT & 1 - SPST, 500 ma @ 24Vdc / 500ms.
SIG , SPDT, 500 ma @ 24Vdc / Latched
TOH , SPDT, 500 ma @ 24Vdc / 500ms.

NOTE: For safety, never connect 120 vac circuits to these relays !

OPEN COLLECTOR: 1PPS , 200 ma @ 24Vdc / 100ms.

CONNECTORS: Screw terminals & DB-9 Male.

POWER REQUIREMENTS: 9 Vac, 500 ma. 120 Vac wall transformer. Supplied

PHYSICAL DIMENSIONS: 7.75 x 4.00 x 1.25 (WDH)

WEIGHT: 3.0 lb.

MOUNTING OPTIONS: RM-2 Rack Panel. 3 - RU

RM-3 Rack shelf. 1 RU

Time Sync Broadcast Tools, Inc.

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If Broadcast Tools is notified of in writing of a failure of any item manufactured by Broadcast Tools to conform to the foregoing Limited Warranty within one (1) year following the date of the Buyer's acquisition of the item, and if the item is returned in to Broadcast Tools in accordance with Broadcast Tools' instructions for confirmation by inspection of the defect (which at Broadcast Tools' election may include, without limitation, a requirement that the Buyer first obtain a Return Authorization number from Broadcast Tools, that the Buyer furnish proof of purchase in the form of an invoice and/or receipt, and that the Buyer prepay all freight charges associated with any return of the item to Broadcast Tools using such freight service as Broadcast Tools reasonably may specify), Broadcast Tools will repair or replace the defective item, or will refund the purchase price paid by the Buyer for the item. Broadcast Tools shall have the exclusive right to choose between these alternative remedies.

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