

# Satellite Time Reference

## STR-100 / STR-100-IRIG-B

### Product Highlights

- Accurate time synchronization +/- 50  $\mu$ sec
- GPS Smart antenna input
- Time sync out via DCF77, 1per10, or IRIG-B
- Simple installation. DIN-rail or panel mount
- Global standards compliance



STR-100 Satellite Time Reference (DCF77, 1per10 Output)



STR-100-IRIG-B Satellite Time Reference (IRIG-B Output)

### Accurate time reference

The reliable Satellite Time Reference STR-100 and STR-100-IRIG-B supply accurate time synchronization for one or many intelligent electronic devices (IEDs) such as Sequence of Events Recorders (SER), meters, protective relays, or other power monitoring devices used in critical power applications. Both STR models use Global Positioning System (GPS) technology to provide accurate time and date information essential for electric distribution system synchronization. The STR-100 and STR-100-IRIG-B accept an input from a Trimble Acutime™ 360 “smart antenna” and output a highly accurate time reference signal using standard time protocols: DCF77 and 1per10 (STR-100 base model) or unmodulated IRIG-B (STR-100-IRIG-B).

### Applications

- Critical power installations—data centers, hospitals, and refineries
- Electrical power monitoring systems (EPMS)
- Microgrids and alternative energy projects
- Smart Grid for electric utilities
- Sequence of Events Recording

### Benefits

#### Accurate time synchronization

*Provides time synchronization for up to 32 power-system devices.*

#### Flexible Application

*Accepts GPS smart antenna input or IRIG-B input (or both, for redundancy).*

#### Reliable operation

*Designed for harsh environments, with isolated inputs/outputs.*

#### Easy setup

*Simple setup using a PC and “Hyperterminal” or equivalent software.*

#### Troubleshooting aids

*LED indicators confirm proper operations, aid diagnostics.*

#### Standard time synchronization outputs

*DCF77 and 1per10 (base model, STR-100) or IRIG-B (STR-100-IRIG-B model).*

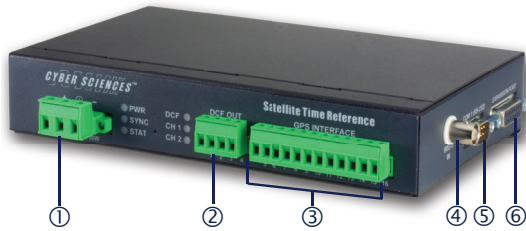
#### Convenient mounting

*DIN-rail mounting (brackets provided).*

#### Regulatory approvals

*UL-Listed (UL-508), cUL, CE, and FCC class-A compliant.*

Key Features



STR-100 Base Model Shown Above

①	Control Power
②	DCF77 or 1per10 Time Sync Output
③	GPS Smart Antenna Inputs
④	Modulated IRIG-B Time Sync Input
⑤	Configuration Port (RS-232)
⑥	Expansion Port

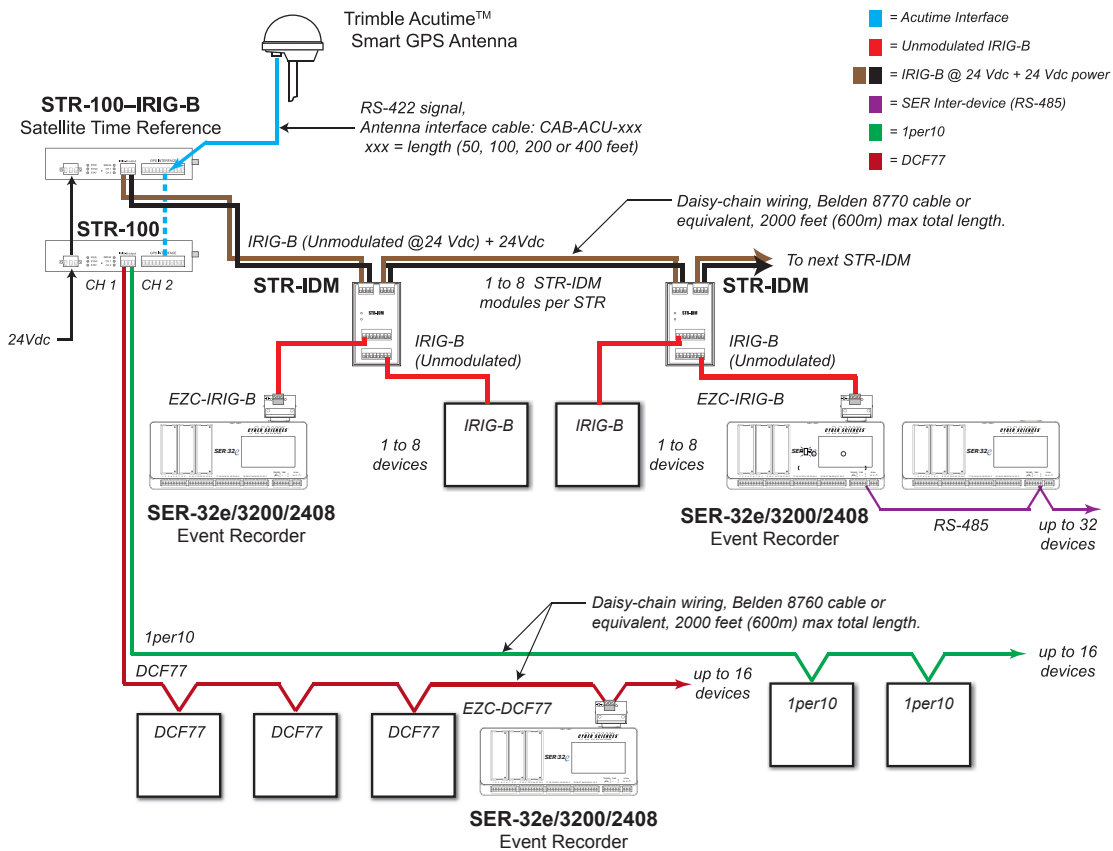
System Architecture for Time Synchronization

The STR-100 and STR-100-IRIG-B accept a GPS time signal input from a Trimble Acutime 360 GPS "smart antenna." In addition, the base model (STR-100) can accept a modulated IRIG-B input from a GPS receiver.

Time synchronization output from the STR-100 standard model includes DCF77 or 1per10 format for multiple devices. The STR-100-IRIG-B provides an unmodulated IRIG-B time synchronization output.

Typical power distribution applications include Sequence of Events Recording (SER) systems in data centers, hospitals and refineries, and electric utility "Smart Grid" applications such as Power SCADA and substation automation.

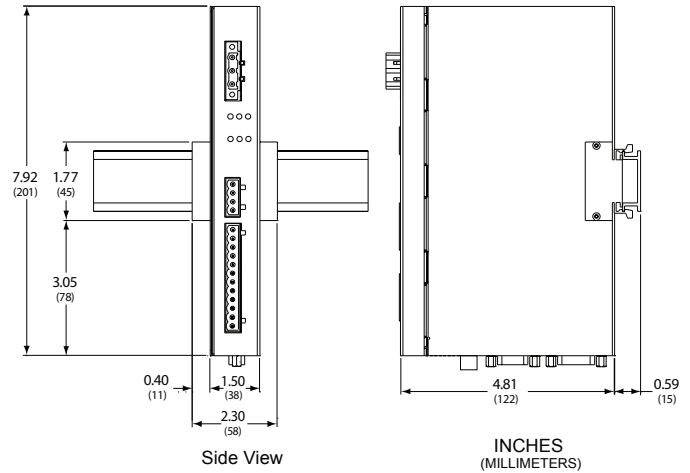
The drawing below illustrates the versatility of Cyber Sciences precision time products. One STR-100-IRIG-B provides the time reference which is distributed via the STR-IDM at 24Vdc for longer distances. The base model STR-100 is used to generate DCF77 and 1per10 to other devices. All devices in the system share the same synchronized time reference.



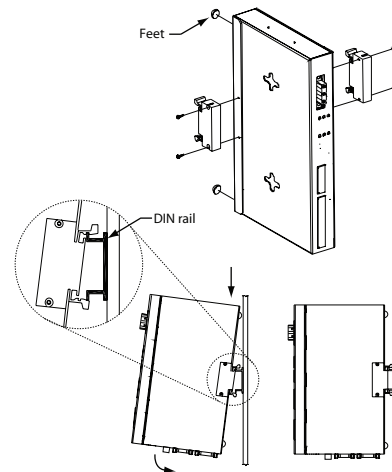
GPS system architecture showing STR-100/IRIG-B with unmodulated IRIG-B output, STR-IDM, and STR-100 with DCF77 and 1per10 time synchronization output

Product Dimensions

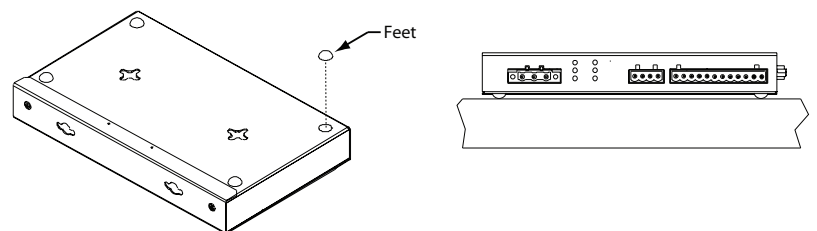
Overall physical dimensions are the same for both the STR-100 and the STR-100-IRIG-B. The difference between the two models is the input selection and available outputs for time synchronization.



STR-100 and STR-100-IRIG-B front and side views with dimensions (DIN-rail mounting)



STR-100 and STR-100-IRIG-B mounting on standard DIN rail



STR-100 and STR-100-IRIG-B flat surface placement

Ordering Information

Item	Catalog Number	Description
Satellite Time Reference	STR-100	Satellite Time Reference, DCF77 and 1per10 output
	STR-100-IRIG-B	Satellite Time Reference, unmodulated IRIG-B output
Accessories	STR-IDM	IRIG-B Distribution Module for STR

Product Specifications

Electrical		
Control Power	Voltage, nominal / Burden	24 Vdc nominal (sourced from Class 2 rated power supply)
	Burden, maximum	36 watts
	Isolation	1.5KV
GPS Antenna Interface	Compatible "smart antennas"	Trimble Acutime 360 (or Acutime Gold or Acutime 2000)
	Antenna interface signal input to STR	RS-422 (12 conductor)
IRIG-B Input (STR-100 only)	Time code	Amplitude-modulated IRIG-B (Codes B120 to B123)
	Carrier	1 kHz
	Amplitude	0.5 to 10.0 Volts peak-peak
	Input impedance	4000 ohms, transformer-isolated
DCF77 or 1per10 Output (STR-100 only)	Voltage range	11 to 28 Vdc (depends on control voltage input)
	Output current	500 mA, maximum
	Pulse rate (per DCF77 standard)	1 pulse-per-second (1PPS), accuracy = +/- 50 microseconds

Regulatory/Standards Compliance		
USA		UL listed (UL-508)
Canada		cUL (CSA C22.2)
Europe		CE mark
Electro-magnetic interference / immunity	Radiated emissions	EN55022 / FCC class A
	Conducted emissions	EN55022 / FCC class A
	Immunity for industrial environments	EN 61000-6-2
	Electrostatic discharge	EN 610000-4-2
	Immunity to surge (impulse wave)	EN 61000-4-5
	Immunity to electrical fast transients	EN-61000-4-4
	Power frequency magnetic field	EN-61000-4-8
	Voltage dips / voltage interruptions	EN-61000-4-11
	Conducted immunity	EN 61000-4-6
	Radiated immunity	EN 61000-4-3

Mechanical	
Mounting	Standard DIN Rail or panel/wall mount or surface placement
Dimensions (W x H x D)	7.92 x 1.50 x 4.811 inches (201 x 38 x 122 mm)
Weight	1.5 lbs. (0.68 kg)
Environmental	
Operating Temperature	-30 to +80 ° C
Storage Temperature	-40 to +85 ° C
Humidity Rating	5% to 95% relative humidity (non-condensing) at +40 ° C
Pollution Degree Class	Class 2



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