

## Key Features

- Easy to use
- RF or IF output
- Accepts External 50Hz Data
- 1/20 Chip Control of C/A Code
- Doppler & Signal Level Control

# GPS100SCS

## GPS Signal Simulator

**GPS100SC Single Channel Receiver  
for educational, engineering , scientific  
and R&D applications**



### Simple Operation

The all new GPS100SCS single channel simulator allows for basic testing of L1 GPS receivers. The user can select any of the 32 C/A codes using the front panel switches. Doppler offset and Signal level can be set with simple potentiometers from front panel or as control voltages via rear panel connector. Doppler can be set from +/-5KHz about nominal carrier at 1575.42MHz. Output level is adjustable from +10dB to -20dB about nominal output level. Nominal level is set at -110dBm.

### Supports GPS100SC

The GPS100SCS signal simulator was designed to support the DKD Instruments GPS100SC single channel receiver. By driving the GPS100SCS clock from the receiver systems clock C/A code synchronism is achieved.

This mode of operation is quite useful for investigating correlation circuit dynamics inside the receiver, see below

### Bi-Phase Modulation Selection

The GPS100SCS allows the user to select which Bi-Phase modulations are used. The L1 or IF Carrier can be selected with no modulation (CW), C/A Code only, 50Hz Data Only, 1.0.23Mhz Code Clock and C/A code with 50Hz Data. This feature allows evaluation of various receiver functions independently of each other.

### 50Hz Data Generator

The 50Hz data can be supplied internally or from an external source. For an external 50Hz data the data clock signal is used to sample the 50Hz data input line which is on rear panel connector.

The internal 50Hz data source is a pseudo random sequence that is combined with the 8 bit preamble every 300 bits. This allows for realistic evaluation of receiver data demodulator performance while also keeping the basic element of 300bit sub-frame format.

### Adv/ Ret of C/A Code

Two front panel buttons allow manual advance or retard of the C/A code. remote control of C/A code ADV/RET can be done via rear panel connector. If simulator is driven by the receiver reference clock an extremely useful method emerges for investigating the behavior of the receivers correlation process. Properly setup the user can manually step through the receivers correlator in 1/20 chip steps.

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## STANDARD FEATURES

- L1 Band (1575.42MHz) Output at Front Panel SMA
- 32 C/A Codes Supported
- Doppler and Signal Level Control
- C/A Code (1.023MHz) Chip Rate
- 50Hz Data and 50Hz Data Clock Output
- 50Hz Data External Input
- Manual and Remote Stepping of C/A Code with 1/20 Chip Resolution
- Optional IF Output @46MHz
- Internal 10.23MHz Reference Clock TCXO +/- 2.5ppm, 0 to 40 Deg.C
- External 10.23MHz Reference Input SMB
- C/A Code Select, Doppler Control, Level Control, ADV/RET C/A Code, Modulation Select Are All Available at Rear Panel DB-25 connector

## TECHNICAL SPECIFICATIONS

- RF Output Level -100dBm Max./-130dBm Min@ 1575.42MHz
- Doppler Range +/- 5KHz
- IF Output Level -70dBm @ 46MHz
- C/A Code Resolution 1/20 Chip
- L1 Carrier Phase noise <-75dBc @ 1KHz Offset
- Suppression of Output Mixer Image > 45dB down w.r.t. Desired Output
- Spurious response > 45dB down within +/- 300MHz of L1 Output @ 1575.42MHz
- Internal 50Hz Data Pseudo Sequence length 65535 bits
- Carrier Suppression of Bi-Phase Modulator >30dB
- Phase Imbalance of Bi-Phase Modulator <3 Degrees

## PHYSICAL CHARACTERISTICS

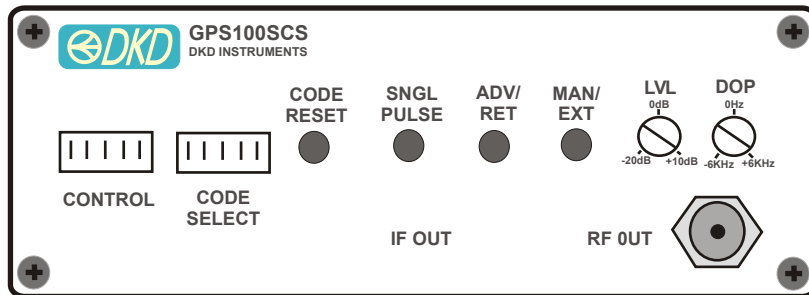
Case Dimensions: 4.25 W X 1.5H X 6.5D (Inches)

Power consumption; 300ma @ 12VDC

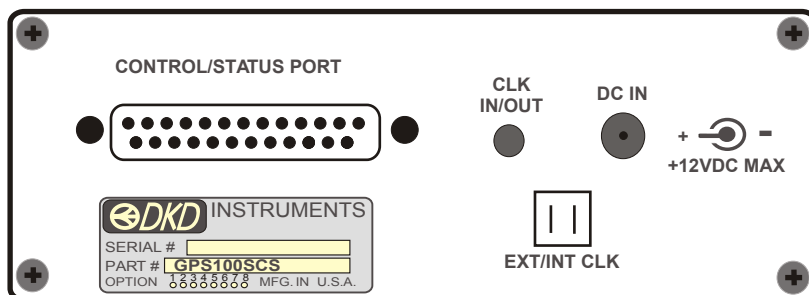
## ORDERING INFORMATION

Standard GPS100SC Part # GPS100SC  
SMA 46MHz IF Output Part#GPS100SC-IF

Warranty: 1 year parts and Labor FOB DKD Instruments



Front Panel



Rear Panel

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