

**Trig-Tek™**

**313A**

**Frequency Divider**

**User Manual**

**Publication No. 980975 Rev. A**

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**THANK YOU FOR PURCHASING THIS  
ASTRONICS TEST SYSTEMS PRODUCT**

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2. Product model number
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## RETURN OF PRODUCT

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Authorization is required from Astronics Test Systems before you send us your product or sub-assembly for service or calibration. Call or contact Customer Support at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7139. We can also be reached at: [atshelpdesk@astronics.com](mailto:atshelpdesk@astronics.com).

If the original packing material is unavailable, ship the product or sub-assembly in an ESD shielding bag and use appropriate packing materials to surround and protect the product.

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# FOR YOUR SAFETY

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Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.



This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.



If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.



Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.



Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid “live” circuit points.

Before operating this instrument:

1. Ensure the proper fuse is in place for the power source to operate.
2. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until performance is checked by qualified personnel.

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## DOCUMENT CHANGE HISTORY

Revision	Date	Description of Change
A	03/30/2011	Document Control release

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# Chapter 1

## Introduction

The 313A Frequency Divider (**Figure 1-1**) is used where it is necessary to divide high frequency signals to obtain exact division to lower frequency signal. It features a wide frequency range from 1 Hz to 1 MHz with 1 integer divisor steps between 1 and 9999.

Features include:

- Divides input frequency from 1/0001 to 1/9999
- Input 1 Hz to 1 MHz
- Square wave output
- Absolute division
- Used for events counting
- Used for division of timing signals
- 115 – 230 Volts AC power
- 12 or 24 Volts DC power option.



**Figure 1-1, 313A Frequency Divider**

The 313 can be used for:

- Timing Signals – where a clock frequency is available needing an integer division.
- Counting Shaft RPM – where the tachometer is picking up multiples of the shaft RPM such as from gear teeth.

The 313A in conjunction with the 311A Frequency Multiplier will provide much improved resolution. The 311A will multiply frequency by 0001 to 9999 to provide up to 3-digit resolution.

## Description

The 313A Frequency Divider is used to divide a high frequency to a lower frequency with an exact integer division. It features a wide frequency range at its input and has 1-digit divisor increments from 0001 to 9999.

Any application where frequency division is required this unit can be helpful. The 313A also works in conjunction with the 311A Frequency Multiplier. Using the Multiplier and Divider together enhances the possible Frequency combinations.

## Applications

- Events counting where it is desired to get a pulse out after a specific number of pulses are applied.
- For dividing a clock frequency.
- For counting shaft RPM where the tachometer sensor has multiple outputs as from a gear.

## Specifications

### Input

Impedance	>10 kiloOhms	
Waveform	Square wave	
Level	1 to 60 VRMS	1 Hz –1 MHz
	0.5 to 100 VRMS	1 Hz –50 kHz
Connector	BNC	

**Output X D (Denominator)**

Impedance	<100 Ohms
Level	TTL 0 – 5 Volts
Connector	BNC

**Output X1/10**

Impedance	<100 Ohms
Level	TTL 0 – 5 Volts
Connector	BNC

**POWER**

	115 or 230 VRMS (less than 10 watts)
	(12 or 24 VDC power optional)

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## Chapter 2

# Operation

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The 313A Frequency Divider will accept input frequencies from 1 Hz to 1 MHz at the input and provide a square wave output frequency which has been divided by the number set in on the four-digit thumb switch. The signal input level requirements are stated on the specification sheet.

### **CAUTION**

**If you apply 230 Volts to the unit when the internal switch is on the 115 Volts position, it might damage the unit.**

Set the thumb switch to the required divider number. The TTL outputs is the input frequency divided by the number set in "D", the divisor. The divider number should be set BEFORE the POWER is ON as the counter is reset when the power is applied.

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