

## Timer/Counter/Analyzer with 2.8 nanosecond resolution

- Digitizes Time Intervals
- USB controlled instrument
- TTL/CMOS logic inputs/outputs
- Flexible Arming/Triggering
- Windows 10, Linux, 32/64 bit

### Features

- 2.8 ns resolution, 6 ns minimum Pulse Width, 100 MHz fMax
- Two independent input channels
- External reference and trigger channels
- Jitter, Frequency, Time Interval, Pulse-width Measurements
- Two channel start/stop measurements
- Repetitive measurements: Single-Stop Histogram, Multi-Stop Histogram

### Applications

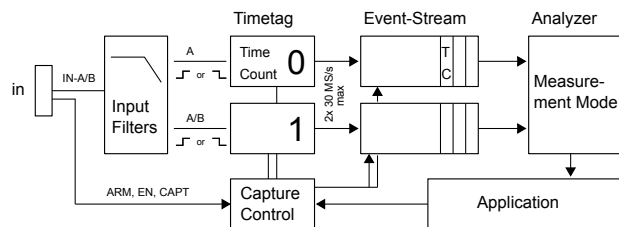
- Edge Counter, Time Stamping
- Pulse-Width, Pulse, Semi-Period, Frequency, Period, Position Measurement
- Simple Pulse, Pulse Train, Frequency Generation
- Time-to-digital conversion (TDC)
- Time-of-flight (TOF) measurements



### Overview

The TIC-8420 is a novel Timer/Counter/Analyzer based on digitization of time intervals in pulse trains with 2.8 ns resolution.

### TIC Architecture

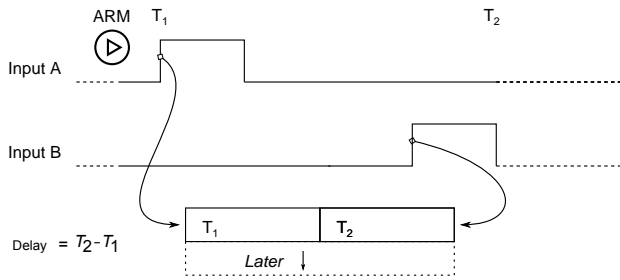


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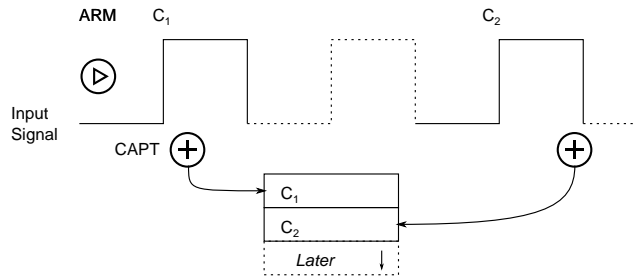


## Measurement Modes

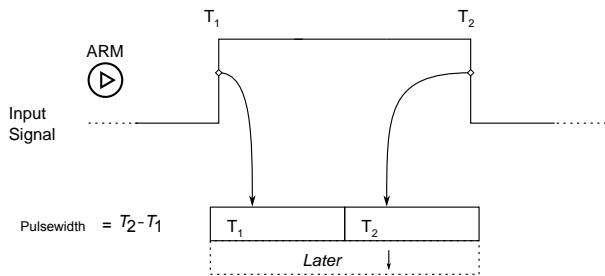
### MDEL Measurement Mode



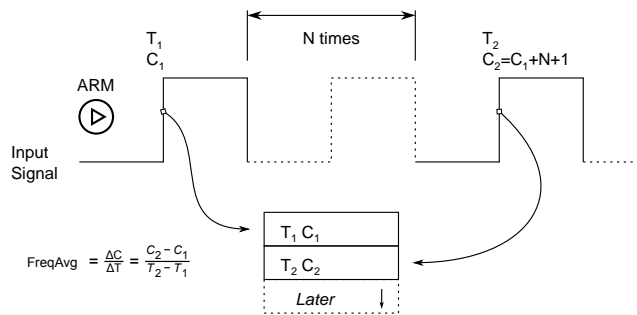
### MTOC Measurement Mode



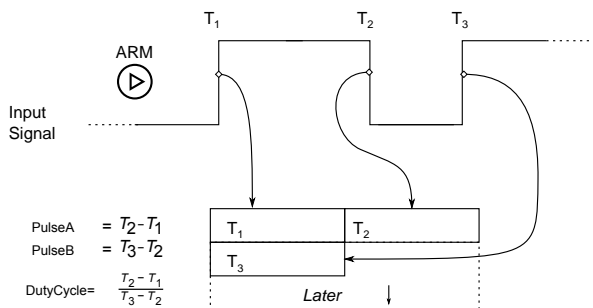
### MPWI Measurement Mode



### MFAV Measurement Mode



### MPUL Measurement Mode



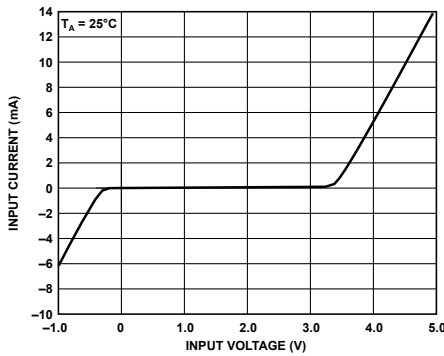
## Specifications

### Time Base

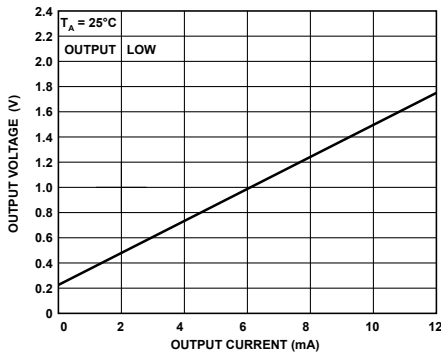
**Stability** (vs. ambient temperature):  $\pm 3.0$  ppm  
**Aging** (first year):  $\pm 2.0$  ppm

### Electrical Data

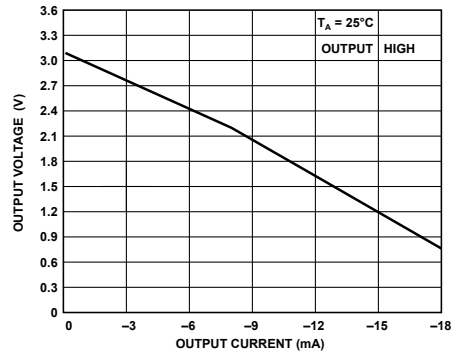
**Overvoltage Protection** (permanent, all inputs):  $-5.0V \dots +8.7V$   
**Overvoltage Protection** (peak, max. 10 ms, 2% duty cycle):  $\pm 20V$   
**Input Characteristics** (Pull-down  $33k\Omega$  at each input):  
 Logic L  $\leq 0.8V$ , Logic H  $\geq 2.0V$



### Output Characteristics (low):



### Output Characteristics (high):



**Supply Voltage** (USB):  $5V \pm 5\%$

**Supply Current** (USB): 150 mA max.

### Environmental and Physical

**Size** (excluding connectors): 111 mm L x 76 mm W x 29 mm H

**Weight:** 160 g

**Operating ambient temperature:**  $0 \dots 50^\circ C$

**Storage temperature:**  $-20 \dots 80^\circ C$

**Relative humidity:**  $5 \dots 95\%$ , noncondensing

**USB connector:** Extraction force  $\geq 15N$ , Mating force  $\leq 35N$

### Ordering Information

TIC-8420 - Instrument, USB cable (1m), Software Download Card

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