Pulse Stretcher Input Modules

G-Type I/O

G-IPS5FS-INV

I/O Compatibility

G-Series
'G4' types
'C4' types
'G5' types

Overview

G-IPS5FS-INV Input Pulse Stretcher Modules allow detection of momentary input signals by "stretching" the input signal. Upon detecting intermittent inputs such as push buttons, proximity sensors, flowmeters, contact closures (relays, etc.) and communications signals, a single logic low 'ON' pulse may be read by the computer. A one-second pulse output is standard (other pulse lengths are available). This is especially useful when an input occurs too fast for controller detection or debouncing contacts which might otherwise be read multiple times if "contact bounce" occurs.

Basic **G-IPS5FS-INV** types trigger on the pulse "ON-edge" of the input signal. (See timing diagrams). It offers event-triggered one-shot operation in several modes, including Non-retriggerable (-NR), Non-retriggerable/Sustained (-NRS) and retiggerable (standard). 4.5V to 32V Input pulses can be detected.

*Refer to **G-IPS5FS** types for "OFF-edge" triggered model(s).*

Product Features

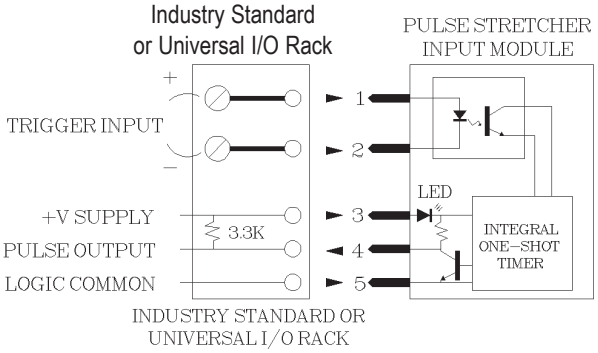
- *Ultra-fast Detection 5µS typ*
- *5000 Vrms Optical Isolation*
- *Opto Isolated 4.5V to 32V Input*
- *Fits Standard "G4" I/O Racks*
- *White I/O Case*
- *High Reliability*
- *Captive #4-40 Screw*
- *LED Output Indicator*
- *Operating Temp -40°C to +85°C*
- *3 Year Limited warranty***
- *Encapsulated Design*
- ❖ *Configuration Options Available*

Recommended Operating Parameters

SYMBOL	PARAMETER	LIMITS			UNIT	CONDITION
		MIN	TYP	MAX		
V+	Supply Voltage	3.5		5.25	VDC	Pins 3(+) & 5(-)
I_{SUPPLY}	Supply Current		20	25	mA	Output Active Low
T_A	Operating Temperature	-40		+85	°C	Ambient Temperature
F_{MAX}	Maximum Input Trigger Frequency		50	100	KHz	Input Pins 1(+) & 2(-) 50% duty cycle, 14Vp-p
T_{MIN}	Minimum Pulse Width (Re-trigger time)	5	10		µS	Input Pins 1(+) & 2(-) 50% duty cycle, 14Vp-p
T	Standard Timeout		1		Sec	Output Pulse, Pin 4, Negative True. Tolerance ±15%
R_{IN}	Input Resistance		1.5		KOHMS	Input Pins 1(+) & 2(-)
V_{TRIG}	Input Trigger Voltage	4.5	5	32	Vp-p	Input Pins 1(+) & 2(-)
I_C	Output Sink Current			50	mAdc	Pin 4

Consult factory for other logic voltages.

Connection Diagram



**** Refer to warranty section for limited warranty details.**

Pulse Stretcher Input Modules

***Absolute Maximum Ratings**

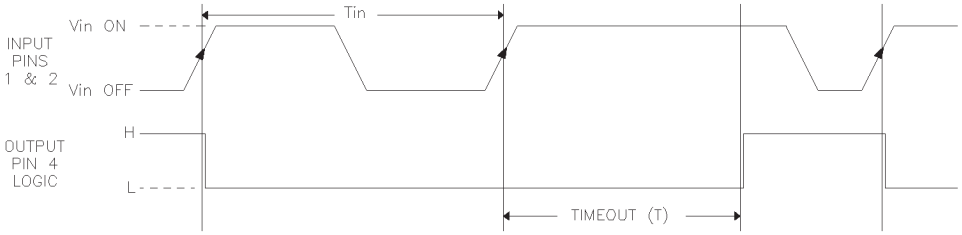
Supply Voltage (between pins 3 & 5)...	(see recommended operating parameters)	
Input (pins 1 & 2).....	±36 V	
Output Sinking Current (pin 4).....	75 mA	
Output Transistor Voltage.....	35 Vdc	
Isolation Voltage (Input to Output).....	5000 Vrms	
Ambient Operating Temperature.....	–40 to +85°C	

***NOTE:** STRESSES ABOVE THOSE LISTED UNDER ABSOLUTE MAXIMUM RATINGS MAY CAUSE PERMANENT DEVICE DAMAGE. OPERATION AT THESE RATINGS FOR EXTENDED PERIODS MAY AFFECT RELIABILITY.

Operation(s)

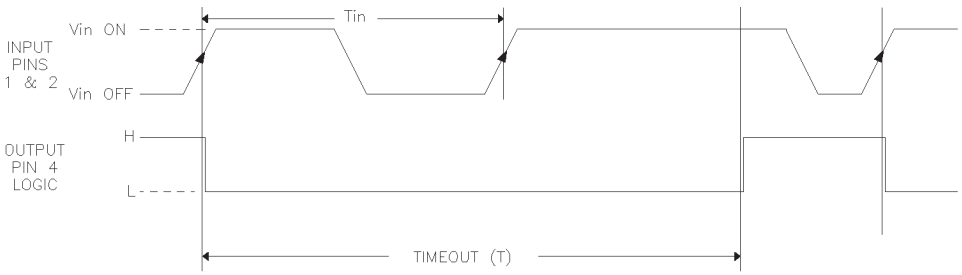
RETRIGGERABLE — *Standard*

G-IPS5FS-INV Input Pulse Stretcher modules provide a very reliable way to condition ON/OFF input signals. An input voltage applied across pins 1(+) and 2(–) is detected by an optical isolator which in turn resets an event-triggered internal timer circuit. Output pin 4 is pulled to a logic low state during the time-out period (standard time-out is one second). Standard "RETRIGGERABLE" types allow the internal timer to be reset each time the input voltage is applied only timing out after the last input is detected. This mode is especially useful for Watchdog or Communication Timer applications.



NON-RETRIGGERABLE — *"–NR" Option*

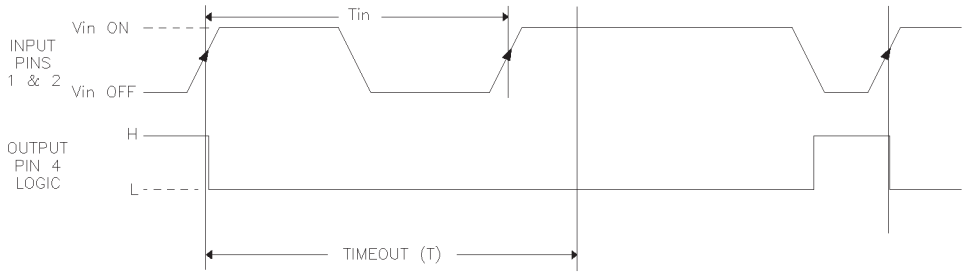
The "NON-RETRIGGERABLE" (–NR) option operates much the same way as Retriggerable types, except internal timer will reset on the first detection of an input voltage and will ignore additional input signals during the time-out period. Again, pin 4 is low during the time-out period and then returns to a high logic state. This mode is applicable to Pulse Stretching and Detecting Intermittent Inputs which occur to fast for reading on a polled input system.



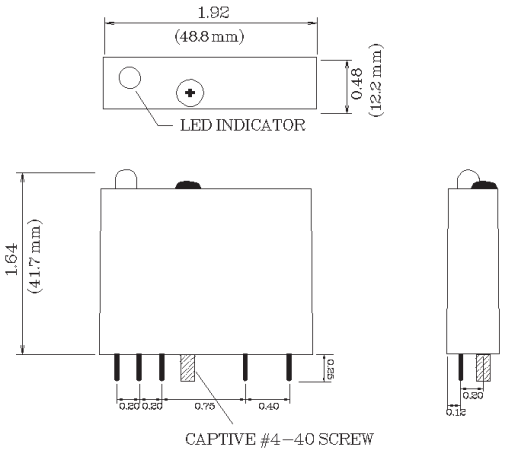
Operation(s) - con't

SUSTAINED — *"-NRS" Option*

The "**SUSTAINED**" (**–NRS**) option is well suited to Debouncing Contact Inputs and Detecting Intermittent Inputs. The operation is identical to the (**–NR**) described above, but maintains a logic low on pin 4 as long as the input voltage is present, even after time-out occurs. This ensures a minimum period for pin 4 to indicate a voltage was present at pins 1 and 2 and provides a "real-time" voltage-still-present indication. This mode is ideal for use as typical input for polled control systems where inputs might occur to fast to be detected at times or to ensure multiple input signals are not processed caused by contact bounce.



Dimensions



Units are in inches unless noted otherwise.

Part Numbering

G-IPS5 - OPTION - OPTION

Standard logic voltage is 5V.
Consult factory for other logic voltage models.

Timeout

[Blank] - 1 Second
-Tx.x - Specify 0.1 to 16 Seconds ± 15%

Operating Mode

[Blank] - Retriggerable
-NR - Non-retriggerable
-NRS - Non-Retriggerable/Sustained