

# MSC OPEN SIGNAL Family

## Model MSC-FRQ/V Single Channel Module

NOTE: THIS IS A FACTORY CONFIGURED UNIT

### FACTORY CONFIGURATION

Each MSC-FRQ/V unit is configured and calibrated at the factory for the input signal range and voltage output range printed by the factory on the MSC unit's side-label.

The MSC-FRQ/V unit is capable of accommodating a 1Hz to 25KHz input frequency at a signal magnitude of up to 250 volts and provides a 0 to 5V or 0 to 10V output signal. Unit re-configuration requires SensorPulse's SignalFlex™ Configurator Utility

This MSC unit may be reconfigured by a user at any time via their personal computer (PC) or handheld personal computer (HPC) by installing SensorPulse Corp.'s Windows®/PC or Windows®/CE HPC based SignalFlex™ Configurator Utility, interfacing the MSC unit to the computer's RS-232C comm port with an MSF Configuration Cable (sold separately), and then changing the unit's input/output configuration settings.

### OPERATIONAL DESCRIPTION

The MSC family of single channel signal conditioning and isolating modules are intelligent, user programmable, high-accuracy, user friendly, signal conditioning units.

Each MSC model supports one (1) specific analog signal-type on its input channel and outputs either one (1) high-level current or voltage signal depending upon model. A diverse MSC model family permits users to select the model which meets their unique signal conditioning needs.

MSC models may be purchased with a factory preset configuration for plug-n-play application

or available unconfigured so user may configure the unit to meet their unique need. All MSC models may be configured/reconfigured by a user at anytime through use of an optional SignalFlex™ Configuration Package.

**Theory of Operation** - An analog world input signal arriving at the MSC unit is isolated, filtered, amplified, scaled and/or linearized (as required) by the units onboard microprocessor under the direction of the unit's configuration parameters set by the user (or factory) via Windows®/PC or Windows®/CE HPC (Handheld Personal Computer) based SignalFlex™ Configurator Utility.

The conditioned signal is then converted to a high level analog current or voltage output signal (depending upon model) and presented at the unit's isolated output.

### REQUIREMENTS

Mandatory:

- 15 - 32VDC, 50mA external supply voltage

Optional:

- SignalFlex™ Configuration Package (Part No. MSF-CC-A1) Package consists of: SignalFlex™ Configurator Utility and MSF Configuration Cable.

### INSTALLATION

1. Mount MSC unit on standard TS32 or TS35 DIN rail.
2. See wiring diagram on reverse side. Connect external 15 to 32VDC power source to MSC unit: Positive (+) to MSC terminal +VDC Negative (-) to MSC terminal -FRQ/-VDC



3. Connect input frequency device to MSC unit: Positive (+) to MSC terminal +FRQ Negative (-) to MSC terminal -FRQ/-VDC
4. Connect output actuator/device to MSC unit: Positive (+) to MSC terminal +V OUT Negative (-) to MSC terminal -OUT

### DIAGNOSTIC TOOLS

Two LEDs one RED and one GREEN are located on the front face of the MSC's enclosure and provide user with visual indication as to unit operation.

### LED FUNCTIONALITY

LED's have three operational states:

**Steady ON**

**Steady OFF**  
**Blinking**

Condition: GREEN = BLINKING  
RED = Steady OFF

Meaning: Module is processing data.

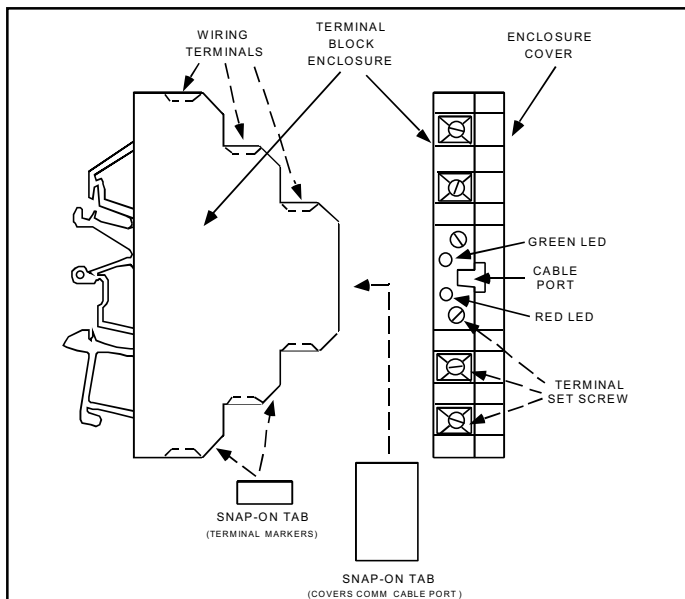
Condition: GREEN = Steady ON  
RED = Steady ON

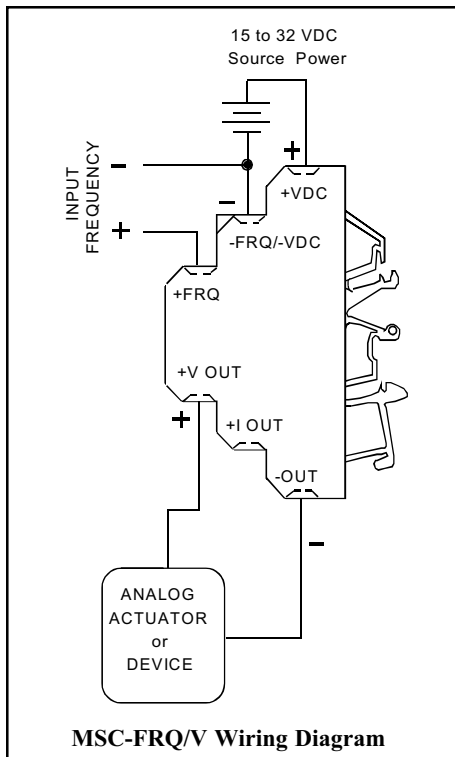
Meaning: 1) Configuration data is not loaded in module memory. -OR- 2) During module re-configuration both LED's are normally ON indicating data is being properly transferred to or from module memory.

Condition: GREEN = BLINKING  
RED = BLINKING

Meaning: The measured input signal is outside the modules configured range. When the signal is within configured range the LED's indicate normal operation.

All other combinations indicate the module is not operating correctly.





MSC-FRQ/V Wiring Diagram

## CONFIGURATION CHANGE

An MSC's configuration can only be changed through use of a personal computer running our Windows® based SignalFlex™ Configurator Utility and a special configuration communication cable to interface the MSC unit and personal computer together. (See Requirements - on reverse side for purchasing information.)

Instructions on how to accomplish configuration change are included with SignalFlex™ Configuration Package and not covered here.

## SPECIFICATIONS

Input Power: 15-32VDC  
 Isolation: 2 way output to power/output 1500V rms  
 Step Response 10 to 90% of full scale: 1 second  
 Operating Temp.: -40 to +75°C  
 Storage Temp.: -40 to +85°C  
 Mounting: 32 and 35mm DIN Rail & G Rail  
 Dimensions: 75mm H X 12.2mm W X 60 mm D (2.95" X 0.485" X 2.5"), 24 modules can be installed per linear foot of DIN Rail  
 Diagnostics LEDs: Active and alarm indications  
 Maximum Wire Size: 14 AWG  
 Torque for wiring to terminal set screws: 2.0 in/lb Max.  
 Input Type: Frequency  
 Input Range: (Fully scalable to user input specifications)

Frequency Input:	1Hz to 25 KHz 1Hz to 1KHz	1Hz to 10 KHz 1Hz to 100 Hz
At a magnitude of: (requires hardware change)	0 to 5V 0 to 24V 0 to 250V	0 to 12V 0 to 50V
Output:	Voltage -- 0 to 5V or 0 to 10V	
Accuracy:	±0.05% of full scale	

**Warning:** Initial power-up requires a minimum of 15Vdc and a maximum of 32 Vdc. Any voltage outside this range this will cause damage to the unit. When installing or servicing the unit, take precautionary steps in preventing any electrostatic discharge to the unit.

**Caution:** The torque specification for tightening the wire terminal set screws is 2.0 in/lb. Any torque greater than this will cause damage to the unit.

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## INSTALLATION AND SAFETY GUIDANCE NOTES

**Environment** - SensorPulse Corp. products are designed to operate reliably and safely in their specified environment. However the following guidelines must be followed to ensure Safety, Electromagnetic Compatibility and Performance.

- Products have been tested for the Industrial Environment (BS EN 50081-2 and 50082-2) unless otherwise stated. Operation in any other environment is not guaranteed and at the risk of the User.
- The User is required to suppress high energy transients, such as those caused by lightning strikes, unless the product is specified for such purposes. Non-resistive loads and contact arcing must be suppressed at source.
- Products are intended for installation inside an equipment cabinet or suitable enclosure unless otherwise specified. This should be accessible only to qualified personnel during commissioning and maintenance. Open chassis products for use above 50V should only be accessible by the removal of a cover using a key or tool.
- Anti-static precautions and conventional Instrumentation best practice must always be observed. Each active module should be protected by a suitably rated fuse or equivalent protection device.

**Product EMC Performance** - The performance of SensorPulse Corp. products that fall within the scope of the EMC directive will meet the requirements of the relevant performance criteria as determined by the particular tests listed in the EMC standards. Products may temporarily be affected by the application of some electromagnetic disturbances but will return to published specification thereafter. Individual product details on request.

**Directives** - SensorPulse Corp. products are intended for installation by qualified personnel into a larger piece of equipment or system and are not accessible by the operator or that equipment or system under normal use. They do not contain any moving parts as defined by the Machinery Directive and do not fall within the scope of either the Machinery Directive or the Low Voltage Directive unless otherwise stated. The responsibility for the final equipment or system lies with the builder of that equipment or system. It is the duty of the system designer or installation engineer to ensure that our products are used in accordance with our instructions and that current safety, wiring and other relevant regulations are followed.



For order entry, application, or customer service assistance, call toll-free 800-447-5900

All Prices and Specifications subject to change without notice

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