

**MS96-11Ex-R...**

- Remote signal processor for Ex insertion-style flow monitors
- Intrinsically safe input circuit for Zone 1 [EEx ib] II C
- One SPDT relay output for flow control
- Six LEDs for flow indication
- Wire-break monitoring
- Built-in switch OFF delay, from 0 to 25 seconds

The single channel MS96-11Ex-R signal processor is designed for use with intrinsically safe insertion-style flow monitors.

Flow set point adjustments are achieved by means of a coarse and a fine potentiometer. The coarse adjustment tunes the flow set point to the different flow speed ranges of the remote flow monitor. The fine adjustment calibrates the flow set point to the exact desired flow speed.

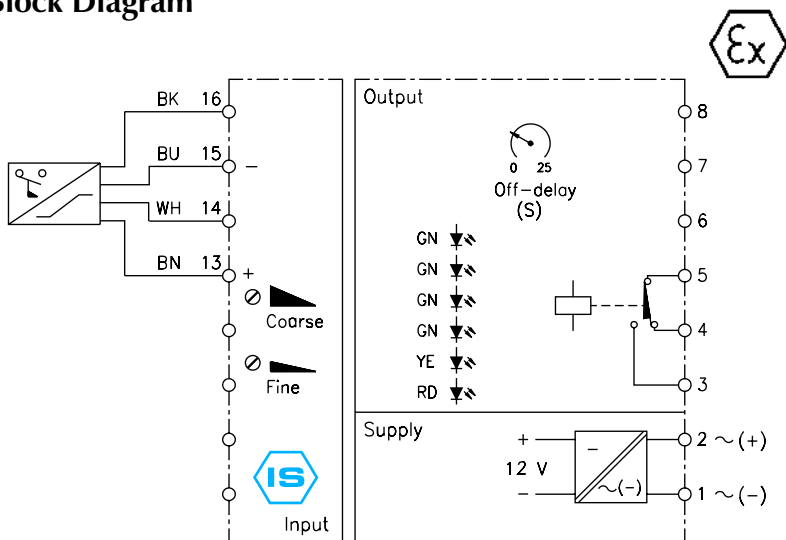
The output is de-energized when the flow speed is below the set point; it is energized when the flow speed is above the set point.

Six LEDs indicate the actual flow conditions relative to setpoint (preset range).

- Red LED: flow is below set point (output de-energized)
- Yellow LED: flow is at or above set point (output energized)
- Green LEDs: each LED indicates a percentage of flow above the set point

The switch OFF time-delay feature is used to override the output during short-duration underflow conditions. The timer can be set for 0 to 25 seconds and is set by means of the OFF-delay potentiometer. When the switch OFF delay feature is activated, both the red and the yellow LED will illuminate at the same time.

**Block Diagram**



## Flow Monitors Signal Processor for Hazardous Areas MS96-11Ex-R... 1 Channel

<b>Type</b>	MS96-11Ex-R/115VAC	MS96-11Ex-R/24VDC
ID Number	M5231202	M5231207
<b>Supply Voltage</b>	115 VAC ±10%	24 VDC ±10%
Power / Current consumption	≤75 mA	≤75 mA
<b>Output Circuits</b>	1 SPDT relay output	1 SPDT relay output
Switching voltage	≤250 VAC/60 VDC	≤250 VAC/60 VDC
Switching current	≤4 A/0.5 A	≤4 A/0.5 A
<b>Hazardous Area Approvals, Listings or Certifications</b>		
<b>PTB No.</b>	Ex-93.C.2039	Ex-93.C.2039
Maximum nominal values		
- No-load voltage $V_O$	≤12.6 V	≤12.6 V
- Short-circuit current $I_K$	≤200 mA	≤200 mA
Maximum external inductances/capacitances		
- [EEx ib] II C	$L_A \leq 0.5 \text{ mH}; C_A \leq 1200 \text{ nF}$	$L_A \leq 0.5 \text{ mH}; C_A \leq 1200 \text{ nF}$
<b>Operating Range</b>	Depends on remote flow monitor type.	Depends on remote flow monitor type.
Additional Logic Functions		
Switch OFF delay	0 to 25 s (adjustable by potentiometer)	0 to 25 s (adjustable by potentiometer)
<b>LED Indications</b>		
Flow below setpoint, output de-energized	red	red
Flow at setpoint, output energized	yellow	yellow
Flow above setpoint, output energized	4 green	4 green
<b>Housing</b>	Polycarbonate ABS	Polycarbonate ABS
Mounting	(H x W x D) 75 x 50 x 110, page 11 snap-on clamps for hat rail (DIN 50 022)	(H x W x D) 75 x 50 x 110, page 11 snap-on clamps for hat rail (DIN 50 022)
Connection	2 x 8 self-lifting pressure plates	2 x 8 self-lifting pressure plates
Connection profile	2 x 14 AWG conductors per terminal	2 x 14 AWG conductors per terminal
Enclosure	IP 30	IP 30
Operating temperature	-25° to +40°C (-13° to +104°F)	-25° to +40°C (-13° to +104°F)



The single channel MS96-12R signal processor is designed for use with insertion and in-line style flow monitors. In addition to monitoring flow speed, the unit will also monitor flow temperature.

Flow setpoint adjustments are achieved by means of a coarse and a fine potentiometer. The coarse adjustment tunes the flow setpoint to the different flow speed ranges of the remote flow monitor. The fine adjustment calibrates the flow setpoint to the exact desired flow speed.

The output is de-energized when the flow speed is below the setpoint; the output is energized when the flow speed is above the setpoint.

Six LEDs indicate the actual flow conditions relative to setpoint (preset range).

- Red LED: flow is below setpoint (output de-energized)
- Yellow LED: flow is at or above setpoint (output energized)
- Green LEDs: each LED indicates a percentage of flow above the setpoint

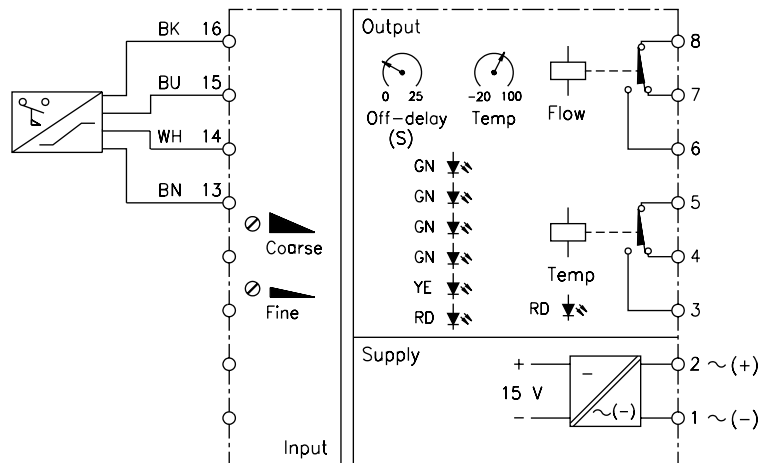
The switch OFF delay feature is used to override the output during short-duration underflow conditions. The timer can be set for 0 to 25 seconds and is set by means of the OFF delay potentiometer. When the switch OFF delay feature is activated, both the red and the yellow LED will illuminate at the same time.

Fluid temperature monitoring from -20° to +100°C (-4° to +212°F) is available and set by means of a potentiometer. When the temperature is above the temperature setpoint, the relay de-energizes and the red LED is on.

**MS96-12R...**

- Remote signal processor for use with insertion and in-line style flow monitors
- Units available for 115 VAC or 24 VDC
- Two SPDT relay outputs for flow and temperature control
- Six LEDs for flow indication
- Wire-break monitoring
- Adjustable temperature control over -20° to +100°C (-4° to +212°F) range
- Built-in switch OFF delay, from 0 to 25 seconds

**Block Diagram**



## Flow Monitors Signal Processor MS96-12R... 1 channel

<b>Type</b>	MS96-12R/115VAC	MS96-12R/24VDC
ID Number	M5231000	M5231007
<b>Supply Voltage</b>	115 VAC +10%/-20%	24 VDC ±20%
Power / Current consumption	≤75 mA	≤125 mA
<b>Output Circuits</b>	2 SPDT relay outputs	2 SPDT relay outputs
Switching voltage	≤250 VAC	≤250 VAC
Switching current	≤2 A	≤2 A
Switching capacity	≤500 VA/60 W	≤500 VA/60 W
<b>Additional Logic Functions</b>		
Temperature control	-20° to +100°C (-4° to +212°F) adjustable by potentiometer	-20° to +100°C (-4° to +212°F) adjustable by potentiometer
Repeat accuracy	≤ ±2°C (±3.6°F)	≤ ±2°C (±3.6°F)
Setting tolerance	≤ ±10°C (±18°F)	≤ ±10°C (±18°F)
LED indication	red (1)	red (1)
Switch OFF delay	0 to 25 s (adjustable by potentiometer)	0 to 25 s (adjustable by potentiometer)
<b>LED Indications</b>		
Flow below setpoint, output de-energized	red	red
Flow at setpoint, output energized	yellow	yellow
Flow above setpoint, output energized	4 green	4 green
Temperature control	red	red
<b>Housing</b>	Polycarbonate ABS (H x W x D) 75 x 50 x 110, page 11	Polycarbonate ABS (H x W x D) 75 x 50 x 110, page 11
Mounting	snap-on clamps for hat rail (DIN 50 022)	snap-on clamps for hat rail (DIN 50 022)
Connection	2 x 8 self-lifting pressure plates	2 x 8 self-lifting pressure plates
Connection profile	2 x 14 AWG conductors per terminal	2 x 14 AWG conductors per terminal
Enclosure	IP 30	IP 30
Operating temperature	-25° to +60°C (-13° to +140°F)	-25° to +60°C (-13° to +140°F)