

■ Model Code No.

● VM-21G Signal Conditioner Socket VM-21G

■ Specification

Model	VM-21G Signal Conditioner Socket
Terminal Screw Size	M3
Number of Mountable Signal Conditioners	1
Operating Temperature	0 to 50°C (32 to 122°F REF.)
Relative Humidity	10 to 90%RH (no condensation)
Installation	DIN rail, wall-mounted
External Dimensions	W29.5×H72×D30 (mm)
Casing Material (color)	Polyphenylene oxide (black)
Weight	Approx. 50g (0.11lb)
CE Marking	Only as for 24VDC power supply specifications

■ Terminal Arrangement

Terminal No.	VM-21K	VM-21U	VM-21B	VM-21A	VM-21T	VM-21R		VM-21P	VM-21D	VM-21F			VM-21E
						FK input	MS input			Thermocouple	RTD	mV signal	
1	- 24V	/	/	/	- 24V	- 24V	/	IN (A)	IN (F)	IN	A	IN	IN(+)
2	IN	IN	IN	IN	IN	IN	IN	IN (B)	IN (D/E)	/	/	/	/
3	COM	COM	COM	COM	COM	COM	COM	IN (C)	IN (C)	COM	B	COM	COM(-)
4	/	/	/	WAVE	/	PULSE	PULSE	IN (A)	/	/	B	/	/
5	COM	COM	COM	COM	COM	COM	COM	TR (-)	IN (B) / TR (-)	/	/	/	/
6	BUF	BUF	BUF	BUF	BUF	BUF	BUF	TR (+)	TR (+)	/	/	/	/
7	OUT												
8	GND												
9	COM												
10	L +												
11	N -												

(VIBRATION, THRUST, REVOLUTION,
LVDT, TEMPERATURE, PROCESS)
SIGNAL CONDITIONER

VM-21

SERIES



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* Specifications, outline drawings and other written information can be changed without notice.

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VM-21

SIGNAL CONDITIONER

SHINKAWA Intelligent Conditioners. The Smart

The latest technology for maintaining safety in large industrial complexes. Up to now, plant maintenance was performed according to the TBM (Time Based Maintenance) system, that is, a preventive maintenance schedule was set up based on the MTBF (Mean Time Between Failures) obtained by analyzing the data of past failures.

However, examined from the aspect of cost, this method results in long maintenance cycles as well as reduced productivity and increased maintenance costs due to plant stoppages. And from the aspect of safety, the potential of an unforeseen breakdown touching off a major accident should be kept in mind. The CBM (Condition Based Maintenance) system is a new maintenance system that satisfies the difference requirements for plant safety and efficiency and has rapidly been gaining popularity in recent years.

In this system, trouble is detected early by continuous monitoring of the condition of the equipment, i. e., maintenance can be performed before trouble actually occurs. Other topical concepts aimed at unmanned maintenance and reduction of maintenance costs include centralized monitoring through continuous monitoring systems, DCS (Distributed Control System) and different means of data acquisition.

The VM-21 series, still more compact and fully geared to satisfy the requirements of engineers making the move toward continuous monitoring systems. A new trendsetter in plant maintenance.



Model Code No. (Ordering Information)

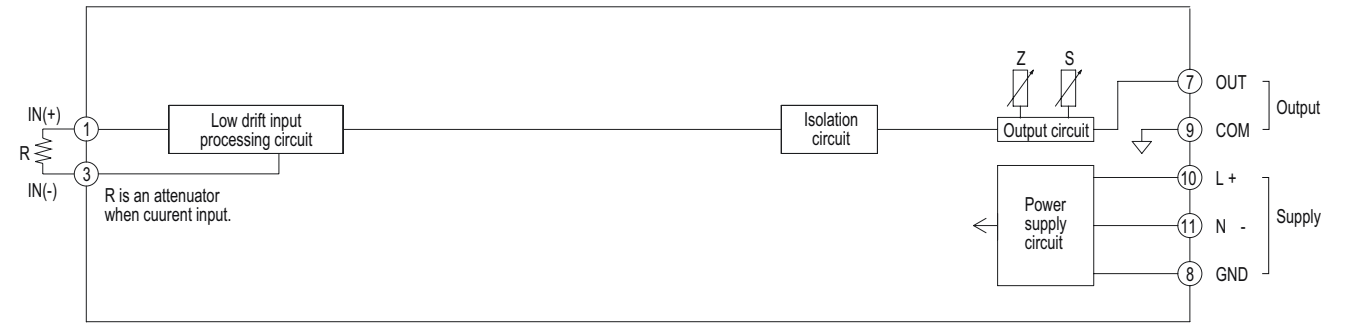
Standard

VM-21E Process

Power supply		Measuring range		Output		Conditioner socket	
1	24VDC	1	1 to 5VDC	1	1 to 5VDC	0	Without
2	100-240VAC/DC	2	4 to 20mADC	2	4 to 20mADC	1	Include

Block Diagram

VM-21E Process

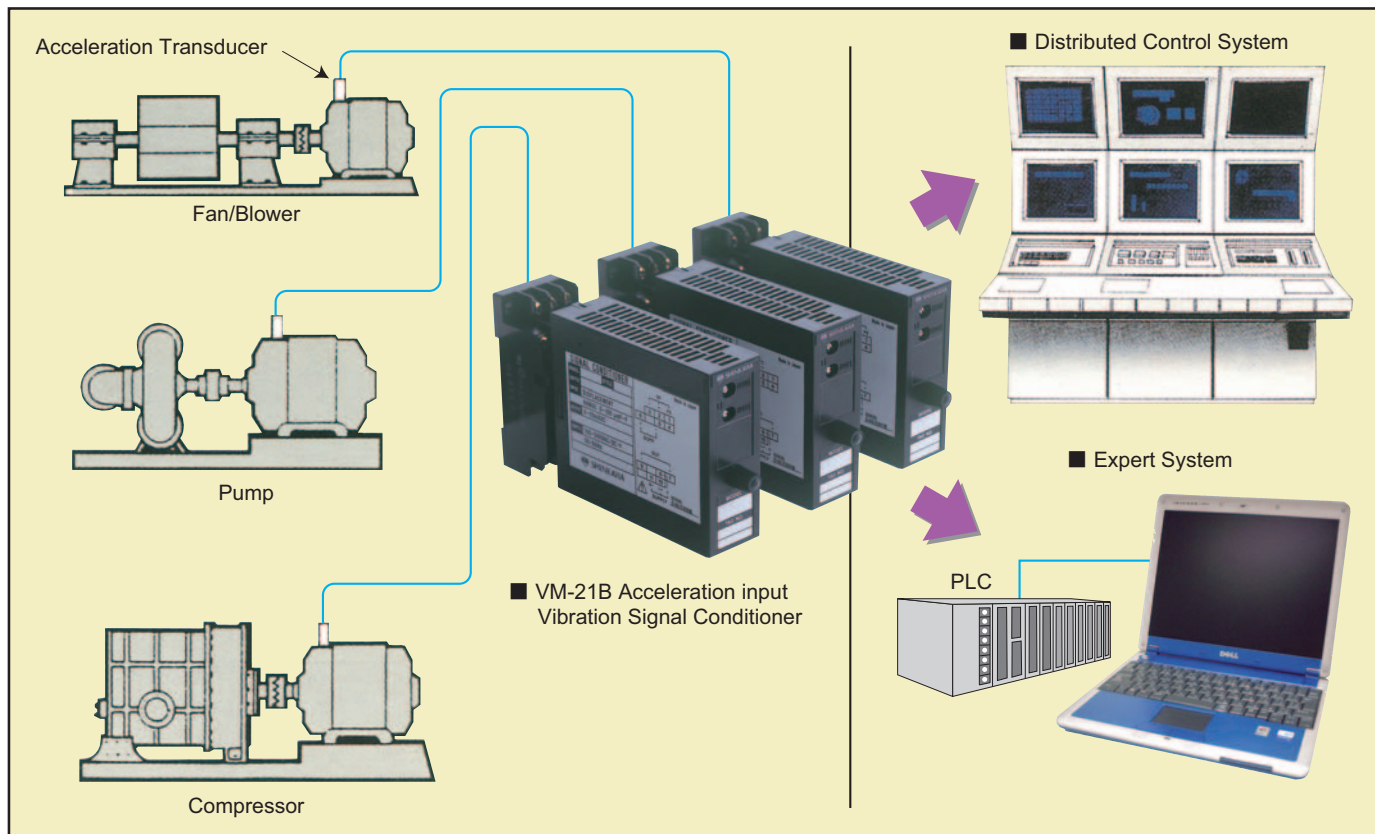


Specification

Model	VM-21E Process
Input Range	1 to 5VDC, 4 to 20mADC
Input Resistance	1 to 5VDC : 1M , 4 to 20mADC : 250
Output (isolated)	1 to 5VDC load resistance: 2k or more , 4 to 20mADC permissible load resistance: 600 or less) * 1
I/O Conversion Accuracy	± 0.5% of F.S. at 25
Response Time	= 120ms 63% response (input change 10 to 90%)
Reception Resistance	Attaching externally (Installation for current input)
Supply Permissible Voltage	24VDC ± 10% or 85 to 264VAC/DC 50/60Hz)
Power Consumption	24VDC: 2.4W, 110VDC: 2.6W, 100-240VAC: 7.1VA
Insulation Resistance	100M minimum at 500VDC between input-output-power-GND mutually.
Withstanding Voltage	2,000VAC for one minute between input-output-power-GND mutually. (With VM-21H : 1,000VAC between output-GND.)
Operating Temperature	0 to 50 (32 to 122°F REF)
Relative Humidity	10 to 90%RH (no condensation)
Casing Material (color)	Modified polyphenylene oxide (black)
Weight	Approx. 116g (0.26lb)
CE Marking	Only as for 24VDC power supply specifications.

* 1 The output mode is not changeable on the field.

※ Specifications, outline drawings and other written information can be changed without notice.



Typical Application

Model Code No. (Ordering Information)

Standard

VM-21K Displacement Input Vibration

VM-21K □-□□ B 1 □-□

Power supply	Measuring range	Input transducer	Frequency response	Output	Conditioner socket
1 24VDC	21 0 to 100μm pk-pk	B FK-202F VK-202A (787mV/100μm)	1 5Hz to 4kHz (-3dB)	1 1 to 5VDC	0 Without
2 100 to 240VAC/DC	22 0 to 125μm pk-pk			2 4 to 20mADC	1 Include
	23 0 to 200μm pk-pk				

VM-21U Velocity Input Vibration

VM-21U □-□□ V □-□

Power supply	Measuring range ^{*1}	Input transducer	Frequency response	Output	Conditioner socket
1 24VDC	21 0 to 100μm pk-pk	V CV-86 (3.94mV/mm/s pk)	1 10Hz to 2kHz (-3dB) 2 20Hz to 2kHz (-3dB)	1 1 to 5VDC	0 Without
2 100 to 240VAC/DC	22 0 to 200μm pk-pk			2 4 to 20mADC	1 Include
	61 0 to 25mm/s pk				
	62 0 to 50mm/s pk				
	63 0 to 100mm/s pk				
	64 0 to 200mm/s pk				
	71 0 to 20m/s ² pk				
	72 0 to 50m/s ² pk				
	73 0 to 100m/s ² pk				
	74 0 to 200m/s ² pk				

*1 In the measuring ranges for displacement vibration measurement (e.g., 0 to 100μm pk-pk), it has possibility that the monitor also picks up low-frequency vibrations from the surroundings, such as transmitted by the piping and foundation, so that the output may be greater than the vibrations produced by the monitored object itself.

VM-21B Acceleration Input Vibration

VM-21B □-□□ A □-□

Power supply	Measuring range ^{*1}	Input transducer	Frequency response	Output	Conditioner socket
1 24VDC	Velocity 20 0 to 15mm/s pk 21 0 to 25mm/s pk 22 0 to 50mm/s pk 23 0 to 100mm/s pk	A CA Series (100mV/9.8m/s ² pk)	1 10Hz to 5kHz (-3dB) (Velocity output)	1 1 to 5VDC	0 Without
2 100 to 240VAC/DC				2 4 to 20mADC	1 Include
	Acceleration 61 0 to 2g pk 62 0 to 5g pk 63 0 to 10g pk 64 0 to 20g pk		2 1kHz to 10kHz (-3dB) (Acceleration output)		
	71 0 to 20m/s ² pk 72 0 to 50m/s ² pk 73 0 to 100m/s ² pk 74 0 to 200m/s ² pk		3 10Hz to 1kHz (-3dB) (Velocity output) 4 10Hz to 5kHz (-3dB) 5 1kHz to 10kHz (-3dB)		

*1 In the measuring ranges for velocity vibration measurement (e.g., 0 to 15mm/s pk), it has possibility that the monitor also picks up low-frequency vibrations from the surroundings, such as transmitted by the piping and foundation, so that the output may be greater than the vibrations produced by the monitored object itself.

VM-21A Vibration

VM-21A □-□□□□□-□

Power supply	Measuring range ^{*1}	Input transducer	Frequency response	Wave Output ^{*3}	Output	Conditioner socket
1 24VDC	11 0 to 100μm pk 12 0 to 200μm pk	A CA Series (100mV/9.8m/s ² pk)	1 10Hz to 2kHz (-3dB)	1 Velocity	1 1 to 5VDC	0 Without
2 100 to 240VAC/DC					2 4 to 20mADC	1 Include
	21 0 to 25mm/s pk 22 0 to 50mm/s pk 23 0 to 100mm/s pk	V CV-86 or CV-88 (3.94mV/mm/s pk)	2 5Hz to 1kHz (-3dB) 3 10Hz to 1kHz (-3dB) 4 10Hz to 5kHz (-3dB) 5 1kHz to 10kHz (-3dB)	2 Acceleration 3 Displacement		
	72 0 to 50m/s ² pk 73 0 to 100m/s ² pk 74 0 to 200m/s ² pk					

*1 Input transducer is A : Can not select 11 and 12 of measuring range.
Input transducer is V : Can not select 61 and 64, 71 and 74 of measuring range.
*2 When the input transducer V, frequency response code 0 (standard), 3 or 4 is highly recommended.
When the frequency response code 1 or 2 is selected, an excessive vibration output may result at low-frequency.
*3 Input transducer is A : Can not select 3 of waveform output.
Input transducer is V : Can not select 2 of waveform output.

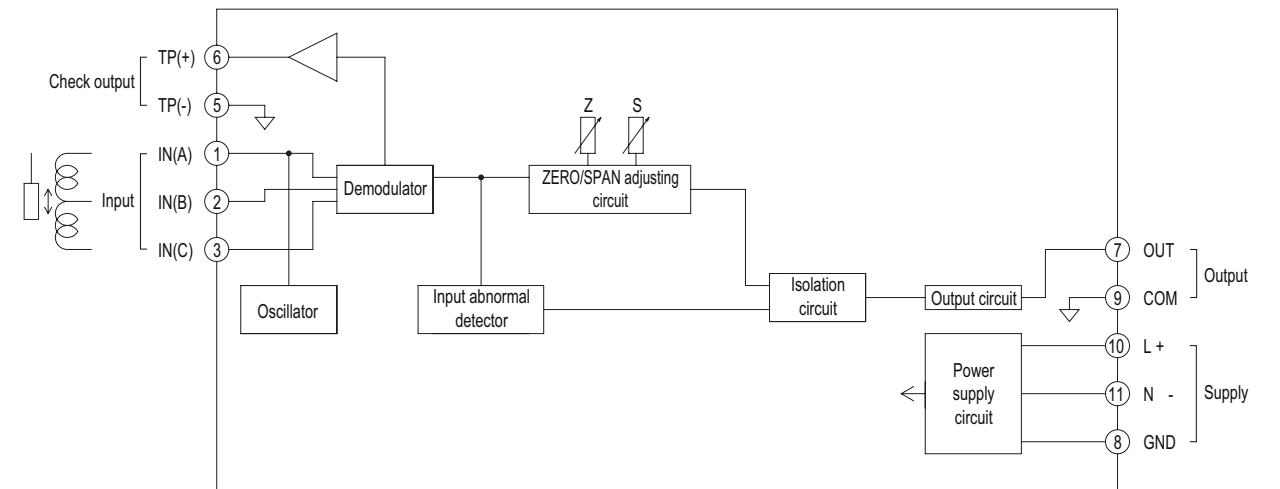
Specification

Model	VM-21K Displacement Input Vibration	VM-21U Velocity Input Vibration	VM-21B Acceleration Input Vibration	VM-21A Vibration
Input Transducer	FK-202F, VK-202A	CV-86	CA-302, CA-721, CA-722	CA-302, CA-721, CA-722 or CV-86, CV-88
Input Sensitivity	787mV/100μm	3.94mV/mm/s pk	100mV/9.8m/s ² pk (100mV/g pk REF.)	3.94mV/mm/s pk 100mV/9.8m/s ² pk (100mV/g pk REF.)
Input Resistance	50k			
Measuring Range	See Model Code above			
Output (isolated)	1 to 5VDC (output resistance : 250 Ω) or 4 to 20mADC (permissible load resistance : 600 Ω or less)			
I/O Conversion	±1% of F.S. at 25°C, ±2% of F.S. at 0 to 50°C			
Response Speed	τ = 500ms, 63% response			
Frequency Response	5Hz to 4kHz (-3dB)	10Hz to 2kHz (-3dB) or 20Hz to 2kHz (-3dB)	Vel. output : 10Hz to 5kHz (-3dB) or 20Hz to 5kHz (-3dB) Acc. output : 1kHz to 10kHz (-3dB)	5Hz to 1kHz (-3dB), 10Hz to 2kHz (-3dB) 5Hz to 10kHz (-3dB), 10Hz to 1kHz (-3dB) 10Hz to 5kHz (-3dB), 1kHz to 10kHz (-3dB)
Burn-down Function	Detects transducer failure and causes the 4 to 20mADC (1 to 5VDC) output to go to less than 0.8mADC (0.2VDC).			
Buffered Output	Input signal is outputted via a buffer amplifier. Signal level : -2 to -22VDC Output impedance : 100 Ω	Input signal is outputted via a buffer amplifier. Signal level : 2 to 22VDC Output impedance : 100 Ω		
Wave Output				5Vpk-pk at F.S. (Sine wave)
Power Supply Output	-24VDC (30mA with short-circuit protection)	24VDC (4mA constant current)		
Supply Permissible Voltage	24VDC ±10% or 85 to 264VAC/DC (50/60Hz)			
Power Consumption	24VDC: 3.5W, 110VDC: 3.5W, 100-240VAC: 10VA			
Insulation Resistance	100MΩ minimum at 500VDC between input—output—power—GND mutually.			
Withstanding Voltage	2,000VAC for one minute between input—output—power—GND mutually. (with VM-21H : 1,000VAC between output—GND.)			
Operating Temperature	0 to 50°C (32 to 122°F REF.)			
Relative Humidity	10 to 90%RH (no condensation)			
Casing Material	Modified polyphenylene oxide (black)			
Weight	Approx. 110g (0.24lb)			
CE Marking	Only as for 24VDC power supply specifications.			

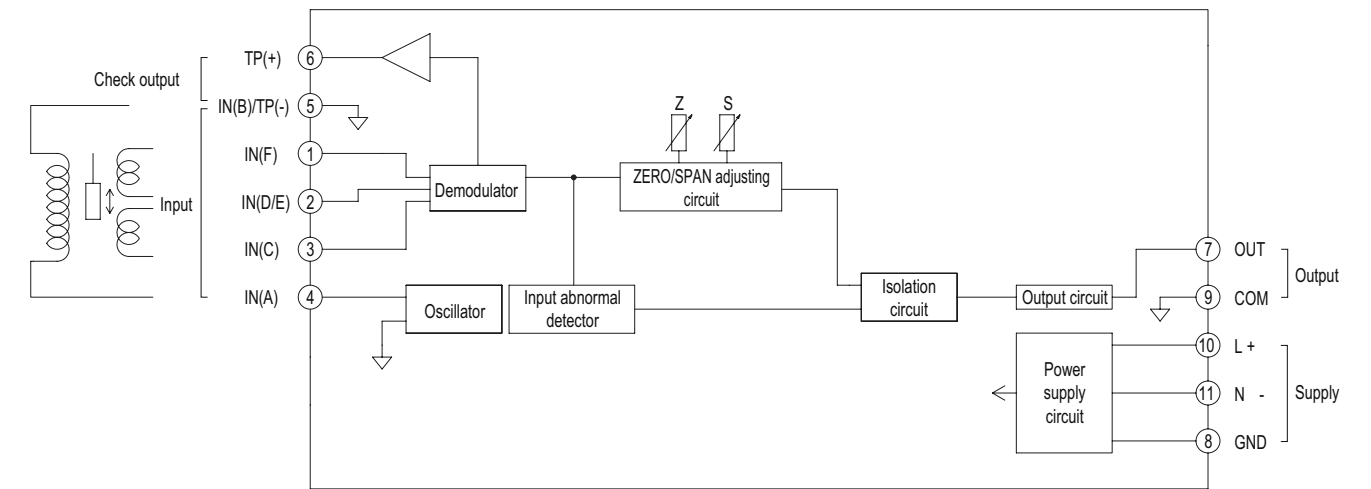
* Specifications, outline drawings and other written information can be changed without notice.

Block Diagram

VM-21P 3-Wire LVDT (LS Series)



VM-21D 6-Wire LVDT (LF Series)



Model Code No. (Ordering Information)

Standard

VM-21T Thrust

Power supply		Measuring range ^{*1*2}		Input transducer		Intrinsically safe		Polarity ^{*3}		Output		Conditioner socket	
1	24VDC	21	0 to 2mm	B	FK-202F VK-202A (787mV/100μm)	0	Non-intrinsically safe spec.	0	Direct	1	1 to 5VDC	0	Without
2	100-240VAC/DC	22	0 to 4mm	C	FK-452F VK-452A (394mV/100μm)	1	Intrinsically safe spec.	1	Reverse	2	4 to 20mADC	1	Include

Note) *1 In the case of Intrinsic safety specification, measuring range decrease as below,
0 to 1.8mm (Input transducer : B),
0 to 3.6mm (Input transducer : C).

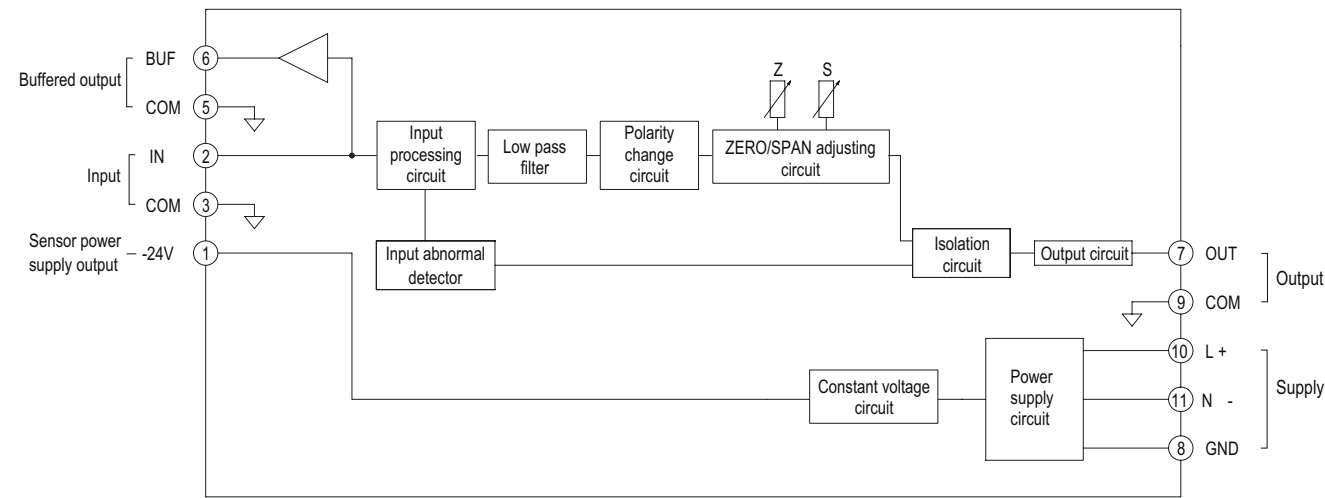
*2 Input transducer is B : Don't select 22 of measuring range.
Input transducer is C : Don't select 21 of measuring range.

Note) *3 Polarity

Polarity	Display and recorder output	
	In the direction toward the sensor	In the direction away from the sensor
Direct	Increase	Decrease
Reverse	Decrease	Increase

Brock Diagram

VM-21T Thrust



Specification

Model	VM-21T Thrust
Input Transducer	FK-202F, VK-202A, FK-452F, VK-452A
Input Sensitivity	787mV/100μm (FK-202F, VK-202A), 394mV/100 μm (FK-452F, VK-452A)
Input Resistance	50k
Measuring Range	See Model Code No. above
Output (isolated)	1 to 5VDC (output resistance:250) or 4 to 20mADC (permissible load resistance:600 or less)
I/O Conversion Accuracy	± 1% of F.S. at 25 , ± 2% of F.S. at 0 to 50
Response Speed	= 50ms 63% response (input change 10 to 90%)
Burn-down Function	Detects transducer failure and causes the 4 to 20mADC (1 to 5VDC) output to go to less than 0.8mADC (0.2VDC).
Buffered Output	Input signal is outputted via a buffer amplifier. Signal level : -2 to -22VDC Output impedance: 100
Power Supply Output	- 24VDC 30mA with short-circuit protection)
Zero-shift	- 20% (± 5%) to 0 to +20% (± 5%) of F.S.
Supply Permissible Voltage	24VDC ± 10% or 85 to 264VAC/DC 50/60Hz)
Power Consumption	24VDC:6.0W, 110VDC:6.0W, 100-240VAC:20VA
Insulation Resistance	100M minimum at 500VDC between input—output—power—GND mutually.
Withstanding Voltage	2,000VAC for one minute between input—output—power—GND mutually. (with VM-21H : 1,000VAC between output—GND.)
Operating Temperature	0 to 50 (32 to 122°F REF.)
Relative Humidity	10 to 90%RH (no condensation)
Casing Material (color)	Modified polyphenylene oxide (black)
Weight	Approx. 110g (0.24lb)
CE Marking	Only as for 24VDC power supply specifications.

※ Specifications, outline drawings and other written information can be changed without notice.

Model Code No. (Ordering Information)

Standard

VM-21R Revolution

Power supply		Measuring range		No. of input P/R		Input transducer		Output		Conditioner socket	
1	24VDC	21	0 to 5,000rpm	ex.1) 120P/R 1 2 0	D	RD Tacho Driver FK Driver ^{*1} VK Driver	1	1 to 5VDC	0	Without	
2	100-240VAC/DC	22	0 to 10,000rpm	ex.2) When specifying without an integral numbers. Z Z Z	J	MS Magnetic Pickup	2	4 to 20mADC	1	Include	
		23	0 to 15,000rpm								
		24	0 to 20,000rpm								
		25	0 to 50,000rpm								
		26	0 to 100,000rpm								

Note) *1 VK transducer can not detect break in the sensor system, so RD tacho driver or FK driver which can detect the wire break shall be recommended.

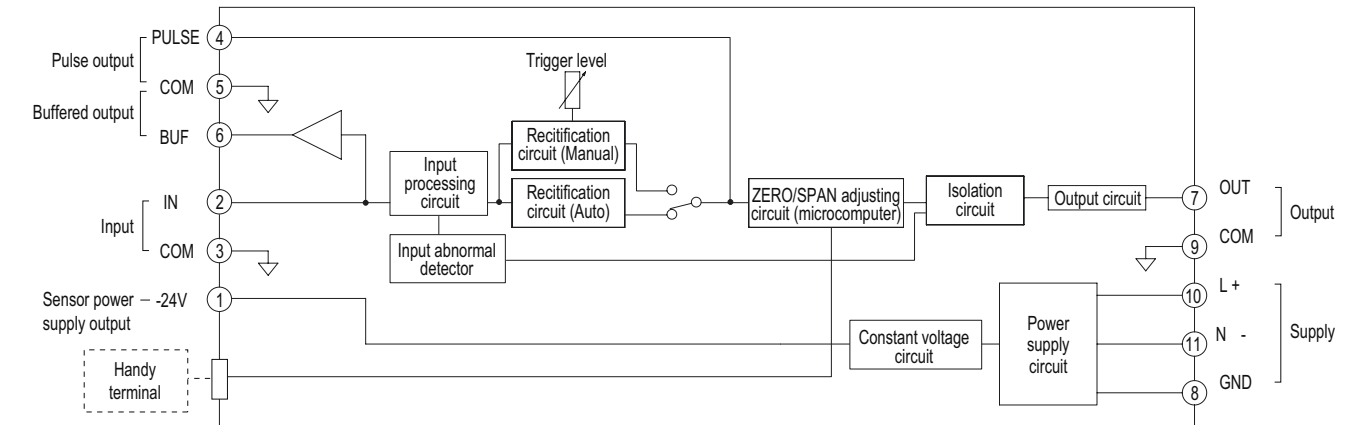
Note) *2 Dimension of Target (Model FK, VK, RD)

Note) Normal operating range is,
10Hz Max. rotor speed(rpm) x No. of P/R 10kHz
60

WARNING
This signal conditioner is designed for monitoring but not for controlling the rotor speed.
- Use the conditioner output only for data recording.
- Do not use this signal for zero-speed monitoring.

Block Diagram

VM-21R Revolution



Specification

Model	VM-21R Revolution
Input Transducer	RD series, FK series, VK series, MS series
Input Resistance	50k (Model Code No. of input transducer "D"), 5k (Model Code No. of input transducer "J")
Input Frequency	Min. Input frequency : 0.01Hz, Max. Input frequency : 10kHz, Min Pulse width : 50 μsVp-p
Minimum Input Voltage	2Vp-p
Hysteresis	1Vp-p, 5Vp-p
Output (isolated)	1 to 5VDC output resistance:250) or 4 to 20mADC permissible load resistance:600 or less)
Measuring Range	See Model Code No. above
I/O Conversion Accuracy	± 1% of F.S. at 25 , ± 2% of F.S. at 0 to 50
Buffered Output	Model Code No. of input transducer "D" : Approx. - 2 to - 22VDC, Model Code No. of input transducer "J" : Approx. - 10 to 10VDC
Pulse Output	V _L : 0V, V _H : 5V
Trigger Level Setting ^{*2}	Automatic (trigger level is adjustable by internal trigger level V.R.)
Power Supply Output	- 24VDC, approx. 30mA (for Model Code No. of input transducer "D")
Burn-down Function	Detects transducer failure and causes the 4 to 20mADC (1 to 5VDC) output to go to less than 0.8mADC (0.2VDC).
Supply Permissible Voltage	24VDC ± 10% or 85 to 264VAC/DC 50/60Hz)
Power Consumption	24VDC:5.0W, 110VDC:5.0W, 100-240VAC:10VA
Insulation Resistance	100M minimum at 500VDC between input—output—power—GND mutually
Withstanding Voltage	2,000VAC for one minute between input—output—power—GND mutually. (with VM-21H : 1,000VAC between output—GND)
Operating Temperature	0 to 50 (32 to 122°F REF.)
Relative Humidity	10 to 90%RH (no condensation)
Casing Material (color)	Modified polyphenylene oxide (black)
Weight	Approx. 110g (0.24lb)
CE Marking	Only as for 24VDC power supply specifications.

*2 Measuring by manual trigger is recommended in case that duty ratio of input signal is without 10 to 90% or input frequency is measured under 1 to 10Hz.

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Model Code No. (Ordering Information)

Standard

VM-21P 3-Wire LVDT (LS Series)

Power supply		Measuring range		Input LVDT		Full range of input LVDT		Output		Conditioner socket	
1	24VDC	20	25mm	S	LS Series	050	50mm	1	1 to 5VDC	0	Without
2	100 to 240VAC/DC	21	50mm			100	100mm	2	4 to 20mADC	1	Include
		22	75mm			150	150mm				
		23	100mm			200	200mm				
		24	150mm			250	250mm				
		25	200mm			300	300mm				
		26	250mm			350	350mm				
		27	300mm			400	400mm				
		28	350mm			450	450mm				
		30	400mm								
		31	450mm								

Note) -Standard specifications, when measuring range and full range of input LVDT are the same.

-Satisfy the following when using LS Series LVDT :

$$1 \leq \frac{\text{Full range of input LVDT}}{\text{Measuring range}} \leq 2$$

-Satisfy the following when using single coil type LVDT except LS Series LVDT :

1) Impedance (between A and C) $\begin{cases} \text{At 50\% (Null point)} & 500 \text{ to } 700 \\ \text{Within LVDT stroke} & \text{More than } 400 \\ \text{Core comes out} & \text{Less than } 250 \end{cases}$

2) $4.33 \times \text{LVDT sensitivity (mV/mm/V)} \times \text{Measuring range (mm)} \geq 1,000$

-This signal conditioner does not support the zero shift function, so the null point is always the center position of measurement.

VM-21D 6-Wire LVDT (LF Series)

Power supply		Measuring range		Input LVDT		Full range of input LVDT		Output	
1	24VDC	21	50mm	F	LF Series	100	100mm	1	1 to 5VDC
2	100 to 240VAC/DC	23	100mm			250	250mm	2	4 to 20mADC
		24	150mm			300	300mm		
		25	200mm			400	400mm		
		26	250mm						
		27	300mm						
		30	400mm						

Note) -Standard specifications, when measuring range and full range of input LVDT are the same.

-Satisfy the following when using LF Series LVDT :

$$1 \leq \frac{\text{Full range of input LVDT}}{\text{Measuring range}} \leq 2$$

-This signal conditioner does not support the zero shift function, so the null point is always the center position of measurement.

Specification

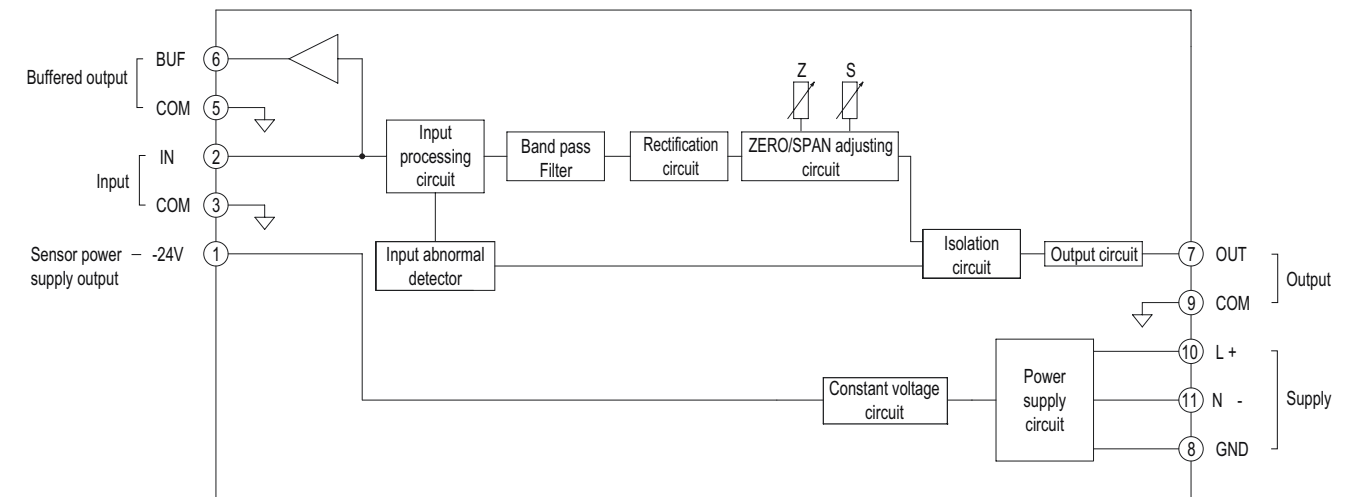
Model	VM-21P 3-Wire LVDT	VM-21D 6-Wire LVDT
Input LVDT	LS Series	LF Series
Measuring Range	See Model Code above	
Output (isolated)	1 to 5VDC (output resistance : 250) or 4 to 20mADC (permissible load resistance : 600 or less)	
I/O Conversion Accuracy	$\pm 1\%$ of F.S. at 25°C, $\pm 2\%$ of F.S. at 0 to 50°C Deviation from an ideal linear output of voltage or current in combination with LS Series LVDT. However, when measuring range and full range of input LVDT are the same.	$\pm 1.5\%$ of F.S. at 25°C, $\pm 3\%$ of F.S. at 0 to 50°C Deviation from an ideal linear output of voltage or current in combination with LF Series LVDT. However, when measuring range and full range of input LVDT are the same.
Response Speed	$\tau = 45\text{ms}$, 90% response	
Polarity	Can be changed by wiring	
Burn-down Function*1	Detects transducer failure and causes the 4 to 20mADC (1 to 5VDC) output to go to less than 0.8mADC (0.2VDC)	
T.P. Output (test point output for confirmation null point)	Output 0V when core position is on Null point. Output impedance : 100	Output 0V when core position is on Null point. Output impedance : 1k
Output for LVDT Excitation	Voltage : 5Vrms, Frequency : 3kHz, Max. current : 50mA, Sine wave	Voltage : 7Vrms, Frequency : 1kHz, Max. current : 35mA, Sine wave
Supply Permissible Voltage	24VDC $\pm 10\%$ or 85 to 264VAC/DC (50/60Hz)	
Power Consumption	24VDC : 3.5W, 110VDC : 3.5W, 100-240VAC : 10VA	
Insulation Resistance	100M minimum at 500VDC between input—output—power—GND mutually.	
Withstanding Voltage	2000VAC for one minute between input—output—power—GND mutually. (with VM-21H : 1,000VAC between output—GND.)	
Operating Temperature	0 to 50°C (32 to 122°F REF.)	
Relative Humidity	10 to 90%RH (no condensation)	
Casing Material (color)	Modified polyphenylene oxide (black)	
Weight	Approx. 110g (0.24lb)	
CE Marking	Only as for 24VDC power supply specifications.	

*1 Abnormal condition

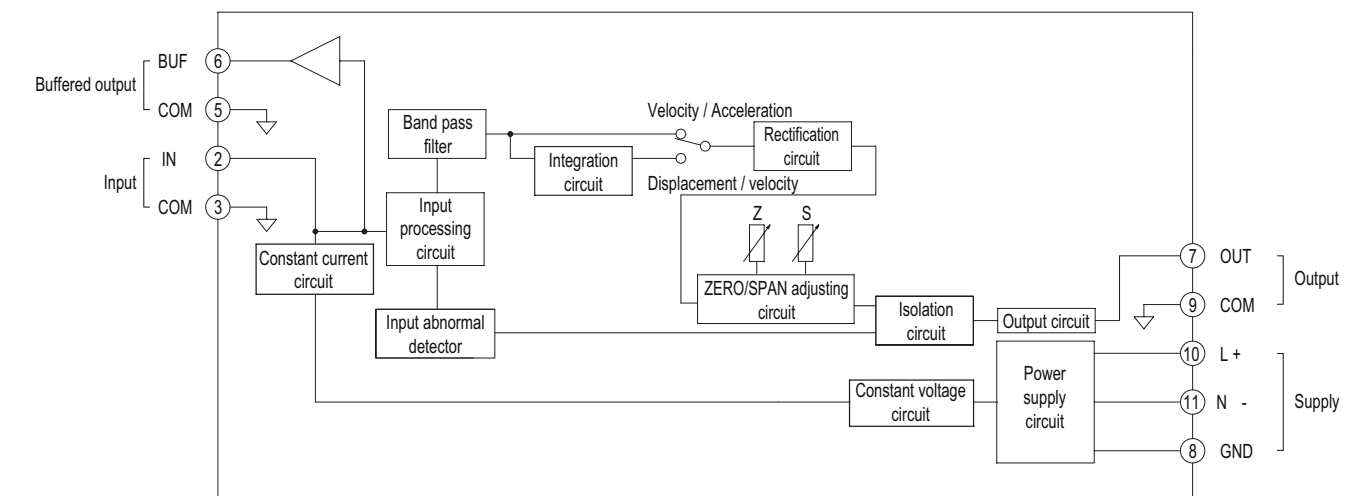
- When there is an abnormality in the LVDT or signal cable (breaking in LVDT wiring, breaking or short circuit in signal cable). However, VM-21D may be some instances where these conditions will not be detected.
- When there is an abnormality in LVDT excitation output (oscillation has stopped).

Block Diagram

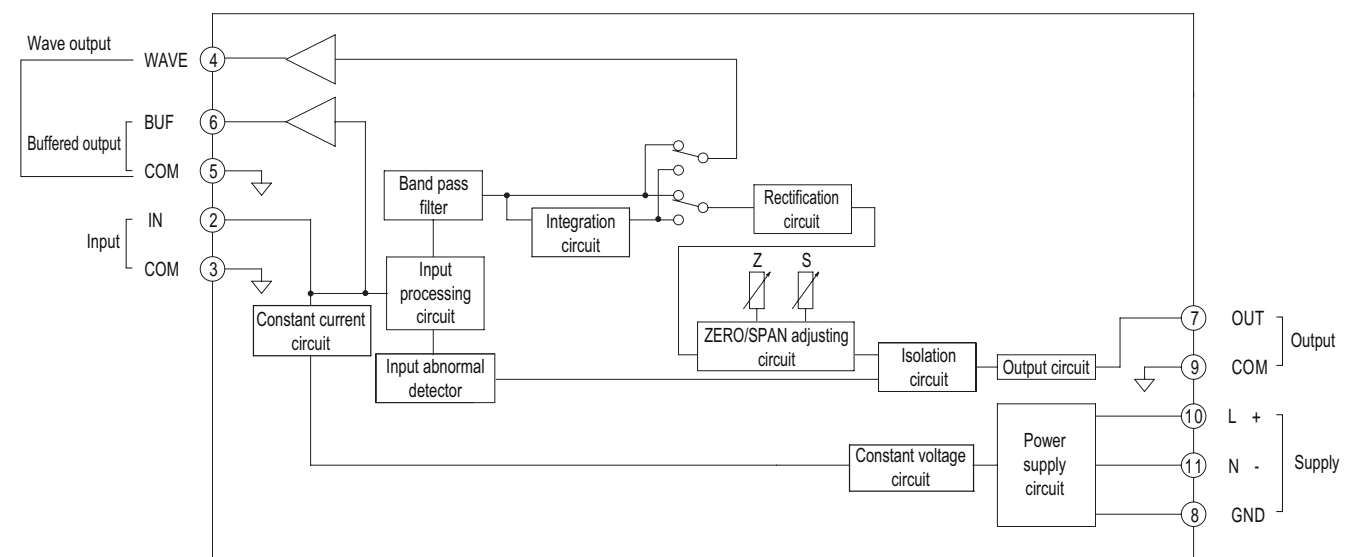
VM-21K Displacement Input Vibration



VM-21U Velocity Input Vibration / VM-21B Acceleration Input Vibration



VM-21A Vibration



Model Code No. (Ordering Information)

Standard

VM-21F Temperature

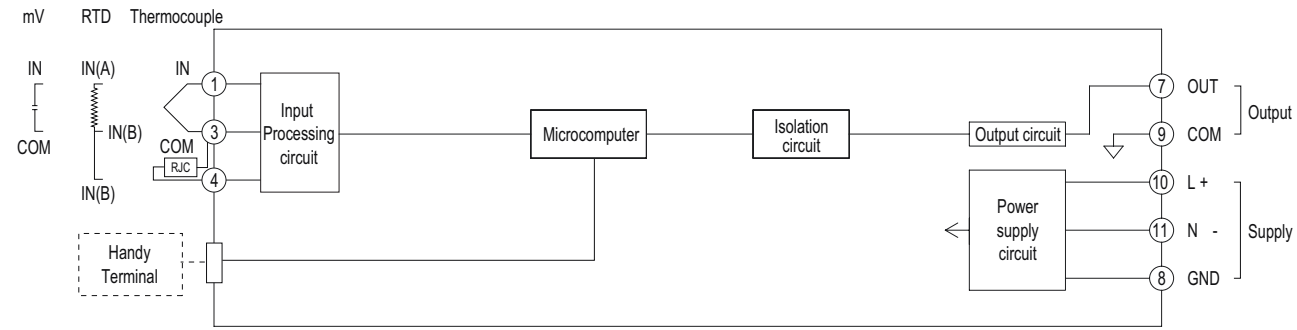
VM-21F □-□□□□-□□

Power supply	Measuring range	Input transducer*1				Output	Conditioner socket	
1 24VDC	1 0 to 100	TK	Thermocouple Type K	R1	Pt100(ITS-90)	1	1 to 5VDC	0 Without
2 100-240VAC/DC	9 Other	TE	Thermocouple Type E	R2	PT100(IPTS-68)	2	4 to 20mADC	1 Include
		TJ	Thermocouple Type J	R3	JPt100(JIS'89)			
		TT	Thermocouple Type T	R4	Pt50(JIS'81)			
		TR	Thermocouple Type R					
		TS	Thermocouple Type S	MV	mV signal (DC voltage)			
		TB	Thermocouple Type B					
		TN	Thermocouple Type N					
		TX	Thermocouple Type W3					
		TY	Thermocouple Type W5					

Note) *1 Not applicable for 4-wire RTD.

Block Diagram

VM-21F Temperature



Specification

Model	VM-21F Temperature																					
Input Transducer	Thermocouple, RTD and mV signal (DC voltage)																					
Input Resistance	1M (When Input Transducer is Thermocouple or mV signal)																					
Input External Resistance	Thermocouple, mV signal : 500 or less Note : when combination with barrier (BARD600 : YOKOGAWA), it is the value connectable as external resistance besides internal resistance. RTD : input span () × 0.4 or less / wire Note : when combination with barrier (BARD700 : YOKOGAWA), it is the value connectable as external resistance besides internal resistance.																					
RTD Detective Current	Approx. 0.5mADC																					
Permissible Applicable Voltage	± 4VDC or less																					
Measuring Range	<table border="0"> <tr> <td>Thermocouple</td> <td></td> <td>RTD</td> </tr> <tr> <td>Type K : -200 to 1200</td> <td>Type S : 0 to 1600</td> <td>Pt100(ITS-90) : -200 to 660</td> </tr> <tr> <td>Type E : -200 to 800</td> <td>Type B : 600 to 1700</td> <td>PT100(IPTS-68) : -200 to 660</td> </tr> <tr> <td>Type J : 0 to 750</td> <td>Type N : -200 to 1200</td> <td>JPt100(JIS'89) : -200 to 510</td> </tr> <tr> <td>Type T : -200 to 350</td> <td>Type W3 : 0 to 2000</td> <td>Pt50(JIS'81) : -200 to 649</td> </tr> <tr> <td>Type R : 0 to 1600</td> <td>Type W5 : 0 to 2000</td> <td>mV signal : -10 to 100mVDC</td> </tr> </table>	Thermocouple		RTD	Type K : -200 to 1200	Type S : 0 to 1600	Pt100(ITS-90) : -200 to 660	Type E : -200 to 800	Type B : 600 to 1700	PT100(IPTS-68) : -200 to 660	Type J : 0 to 750	Type N : -200 to 1200	JPt100(JIS'89) : -200 to 510	Type T : -200 to 350	Type W3 : 0 to 2000	Pt50(JIS'81) : -200 to 649	Type R : 0 to 1600	Type W5 : 0 to 2000	mV signal : -10 to 100mVDC			
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Type R : 0 to 1600	Type W5 : 0 to 2000	mV signal : -10 to 100mVDC																				
Measuring span	Thermocouple, mV signal : 3mV or more, RTD : 10 or more																					
Output (isolated)	1 to 5VDC (load resistance: 2k or more), 4 to 20mADC (permissible load resistance: 600 or less)*2																					
I/O Conversion Accuracy	<table border="0"> <tr> <td colspan="2">± 0.1% of F.S. at 25</td> <td>Note : This value is limited in the following cases.</td> </tr> <tr> <td colspan="3"><Input Transducer : Thermocouple></td> </tr> <tr> <td colspan="3">Input range is -10 to 100mV, span is under 27.5mV, in thermally generated emf conversion.</td> </tr> <tr> <td>Accuracy (%) = ± 0.1% × 27.5mV / Input span [mV]</td> <td></td> <td><Input Transducer : RTD></td> </tr> <tr> <td colspan="3">Input range is 0 to 520, span is under 130 (refer to the reference resistance table)</td> </tr> <tr> <td>Accuracy (%) = ± 0.1% × 130 / Input span []</td> <td></td> <td>Input range is 0 to 176, span is under 38.6 (refer to the reference resistance table)</td> </tr> <tr> <td>Accuracy (%) = ± 0.1% × 10mV / Input span [mV]</td> <td></td> <td>Accuracy (%) = ± 0.1% × 38.6 / Input span []</td> </tr> </table>	± 0.1% of F.S. at 25		Note : This value is limited in the following cases.	<Input Transducer : Thermocouple>			Input range is -10 to 100mV, span is under 27.5mV, in thermally generated emf conversion.			Accuracy (%) = ± 0.1% × 27.5mV / Input span [mV]		<Input Transducer : RTD>	Input range is 0 to 520, span is under 130 (refer to the reference resistance table)			Accuracy (%) = ± 0.1% × 130 / Input span []		Input range is 0 to 176, span is under 38.6 (refer to the reference resistance table)	Accuracy (%) = ± 0.1% × 10mV / Input span [mV]		Accuracy (%) = ± 0.1% × 38.6 / Input span []
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Reference Junction Compensation for Thermocouple	Attaching externally																					
Reference Junction Compensation Accuracy	± 1 (except for Type R, S) ; ± 2 (Type R, S) for terminal temperature 25 ± 15																					
Response Speed	= 160ms, 63% response (input change 10 to 90%)																					
Supply Permissible Voltage	24VDC ± 10% or 85 to 264VAC/DC 50/60Hz																					
Power Consumption	24VDC: 2.5W, 110VDC: 2.9W, 100-240VAC: 6.7VA																					
Insulation Resistance	100M minimum at 500VDC between input—output—power—GND mutually.																					
Withstanding Voltage	2,000VAC for one minute between input—output—power—GND mutually. (with VM-21H : 1,000VAC between output—GND.)																					
Operating Temperature	0 to 50 (32 to 122°F REF.)																					
Relative Humidity	10 to 90%RH (no condensation)																					
Casing Material (color)	Modified polyphenylene oxide (black)																					
Weight	Approx. 170g (0.37lb)																					
CE Marking	Only as for 24VDC power supply specifications.																					

*2 The output mode is not changeable on the field.

※ Specifications, outline drawings and other written information can be changed without notice.

Choice For Continuous Monitoring Predictive Maintenance

Small and light-weight

With the use of VM-21G stand-alone sockets, the VM-21 signal conditioners require the space of mere 30mm width for mounting. VM-21 only weights 100g, and it has achieved the total minimization.

Selectable mounting types

Both the wall-mounting and DIN-Rail-mounting are available with VM-21G stand-alone socket for an easy mounting design.

Power supply options

A variety of power supplies are available: 100 to 240VAC, 100 to 24VDC and 24VDC.

Burn-down function

Each of VM-21 module has an input abnormal detecting function, which sends out burn-down output (less than 0.8mADC or 0.2VDC) as soon as input abnormality, such as sensor breaking, occurs. This special feature can be a great contribution to the reliability of a plant operation.

Waveform output for machine diagnostics

VM-21 has buffered output of raw waveform signal available for diagnostics of rotating machinery. The signal can be sent to analysis and diagnostics equipment for spectral and vector analysis.

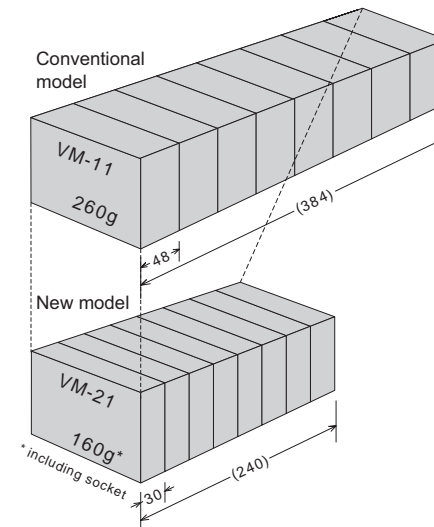
Wide module lineup to meet various vibration sensors

VM-21 product lineup caters for various vibration sensors of displacement, velocity and acceleration.

Isolated output signal

Each module of VM-21 has isolation circuit. This prevents such trouble as unstable output from signal cross-talking, often found in the instrumentation field.

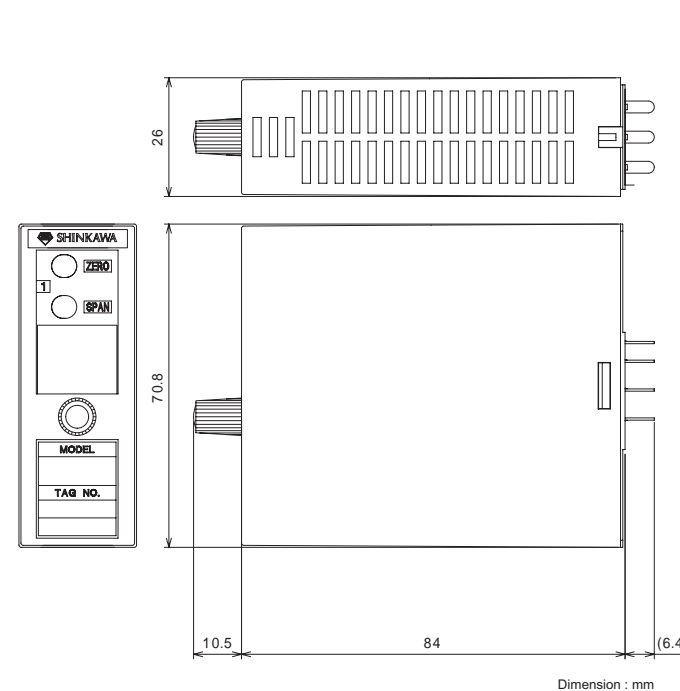
【Example of 8 module mounting】



Mounting density : Down to 5/8
Weight ratio : Down to 8/13

Outline Drawing

VM-21□ Signal Conditioner



VM-21G Signal Conditioner Socket

