VM-5 SERIES MONITOR

SPECIFICATIONS

MODEL VM-5S DUAL TACHOMETER

*6

CE

Model Code / Additional Spec. Code(No entry if additional spec. code is not specified.)

VM-5S- □□□ - □

Monitor range		Input signal		Recorder output	
1	to 1,000rpm	1	VK,RD,FK Series*1	0	4 to 20mADC
2	to 2,000rpm	2	VE Series*2	1	1 to 5VDC
3	to 5,000rpm	3	MS Series*3	2	Output card (/IS□ or /RE□ option
4	to 10,000rpm	4	VC Series*2 (Voltage output only)		
5	to 15,000rpm				
6	to 20,000rpm				
7	to 30,000rpm				
8	to 50,000rpm				
A	to 99,999rpm				

Note)
*1 VK transducer can not detect the wire break in the sensor system, so RD or FK driver which can detect the wire break shall be recommended. Especially in case of the application for zero speed monitor, RD or FK driver shall be strongly recommended for safety.

Relay output				
1	CH1 : 4 points (SR1,SR2,SR3,SR4) SR1,SR2,SR3,SR4 Individual output			
2	CH1 : 2 points (SR1,SR2) SR1,SR3 Individual output	CH2 : 2 points (SR3,SR4) SR2,SR4 Individual output		
3	CH1 : 2 points (SR1,SR2) SR1,SR3 Individual output	CH2 : 2 points (SR3,SR4) SR2,SR4 OR output		
4	CH1 : 2 points (SR1,SR2) SR1,SR3 Individual output	CH2 : 2 points (SR3,SR4) SR2,SR4 AND output		
5	CH1 : 2 points (SR1,SR2) SR1,SR3 OR output	CH2 : 2 points (SR3,SR4) SR2,SR4 Individual output		
6	CH1 : 2 points (SR1,SR2) SR1,SR3 OR output	CH2 : 2 points (SR3,SR4) SR2,SR4 OR output		
7	CH1 : 2 points (SR1,SR2) SR1,SR3 OR output	CH2 : 2 points (SR3,SR4) SR2,SR4 AND output		
8	CH1 : 2 points (SR1,SR2) SR1,SR3 AND output	CH2 : 2 points (SR3,SR4) SR2,SR4 Individual output		
A	CH1 : 2 points (SR1,SR2) SR1,SR3 AND output	CH2 : 2 points (SR3,SR4) SR2,SR4 OR output		
B	CH1 : 2 points (SR1,SR2) SR1,SR3 AND output	CH2 : 2 points (SR3,SR4) SR2,SR4 AND output		

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Note) *2 Input abnormal alarm is not applicable in case of VC and VE input signal.
*3 Short circuit is not detectable in case of MS input signal.

Speed relay type (SR1)		Speed relay type (SR2)		Speed relay type (SR3)		Speed relay type (SR4)		Hysterisis set value (shaped waveform circuit) (CH1)		Hysterisis set value (shaped waveform circuit) (CH2)	
0	Over speed	0	Over speed	0	Over speed	0	Over speed	0	1.0V	0	1.0V
1	Under speed	1	Under speed	1	Under speed	1	Under speed	1	0.1V	1	0.1V
								2	0.2V	2	0.2V
								3	0.5V	3	0.5V

Alarm reset (SR1)		Alarm reset (SR2)		Alarm reset (SR3)		Alarm reset (SR4)		Alarm reset (OK)	
0	AUTO-RESET	0	AUTO-RESET	0	AUTO-RESET	0	AUTO-RESET	0	AUTO-RESET
1	SELF-HOLD	1	SELF-HOLD	1	SELF-HOLD	1	SELF-HOLD	1	SELF-HOLD

Note) *4 It is necessary to set all monitor units in the same rack in first out function ON when it is used first out function.

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Relay mode (SR1)		Relay mode (SR2)		Relay mode (SR3)		Relay mode (SR4)		Relay mode (OK)		First output*4		Trigger mode*5	
0	NORMALLY DE-ENERGIZED	0	NORMALLY DE-ENERGIZED	0	NORMALLY DE-ENERGIZED	0	NORMALLY DE-ENERGIZED	0	NORMALLY DE-ENERGIZED	0	OFF	0	AUTO
1	NORMALLY ENERGIZED	1	NORMALLY ENERGIZED	1	NORMALLY ENERGIZED	1	NORMALLY ENERGIZED	1	NORMALLY ENERGIZED	1	ON	1	MANUAL

Monitor/pulse output		Isolate output		Recorder option output		Input power supply requirements*6	
0	Pulse output	0	4 to 20mADC	2	0 to -10VDC	0	85 to 264VAC
		1	1 to 5VDC	3	0 to 10VDC	1	24VDC
1	Monitor output	2	0 to -10VDC	4	0 to -5VDC	2	110VDC
		3	0 to 10VDC	5	0 to 5VDC		
		4	0 to -5VDC				
		5	0 to 5VDC				

When recorder output code 2 is selected, specify this option code.

Tropical spec.

Note) *5 Auto trigger mode is not selectable, in case of zero speed use.

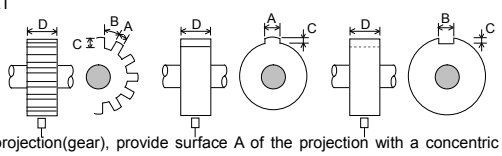
*6 The product that the power supply voltage specification is 0 or 2 does not conform to CE.

⚠ WARNING
This monitor is designed for monitoring but not for controlling the rotor speed.
- Use the speed relay contact only for alarms.
- Use the recorder output only for data recording.
- When a zero speed system is designed using this monitor, other enable contact should be provided by the customer for the reliable and safe engagement of the turning gear.

Ordering Information

INPUT SPEED/INDICATED SPEED CHANGED RATIO (NON-STANDARD SPECIFICATION)	If the indicated rotation speed is different from the input rotation speed, enter into the space below. Input ratio speed _____rpm _____rpm In case of a magnification more than 1, the resolution deteriorates in proportion to the magnification factor.
SPEED RELAY SET VALUE	SR1 : _____ SR2 : _____ SR3 : _____ SR4 : _____ SR2 ≥ SR1 SR4 ≥ SR3 (SR2 ≤ SR1 SR4 ≤ SR3 in case of both under speed) Preset to 50% of monitor range unless specified otherwise.
SPEED RELAY HYSTERESIS	Speed relay hysteresis can be specified from 0 to 100rpm. (1rpm step) SR1 : _____ SR2 : _____ SR3 : _____ SR4 : _____ Preset to 10rpm unless specified otherwise.
NO. OF INPUT P/R	Can be specified from 1 to 120 pulse. Pulses/rev. : _____

DIMENSION OF TARGET (Model VK, RD,FK)



CAUTION) To detect a projection(gear), provide surface A of the projection with a concentric curve.
Do not make it flat.

A=_____ mm
B=_____ mm
C=_____ mm
D=_____ mm

	Input	VK-202A RD-05A FK-202F	VK-452A FK-452F	VK-302P
Dimension of target [recommended] (mm)	A	≥ 6	≥ 16	≥ 8
	B	≥ 7	≥ 20	≥ 8
	C	≥ 2.5	≥ 4.5	≥ 2.5
	D	≥ 16	≥ 36	≥ 20
Set gap [recommended](mm)		1.0 to 1.5	2.5 to 3.5	1.0 to 1.5

OTHERS

Standard Specifications

SPEED RELAY SET POINT	4 points (SR1,SR2,SR3,SR4)
SPEED RELAY SET RANGE	More than 1rpm : Speed relay can be set in 1 rpm increments until 110% of monitor range Less than 1rpm :Speed relay can be set in 0.1 rpm increment
SPEED RELAY SET ACCURACY	±1 digit or less(on digital indicator)
SPEED RELAY OUTPUT	4 points (SR1,SR2,SR3,SR4)
ALARM OUTPUT	1 points (OK) or 2 points (OK1,OK2)
ROTOR SPEED	LCD digital meter with 5 digits (7 segments, with back light) LCD bar graph meter (40 segments, with back light)
SPEED RELAY INDICATOR	SR1,SR3 : (yellow LED) SR2,SR4 : (red LED)
ABNOR. ALARM INDICATOR	OK : (green LED)
BYPASS INDICATOR	BYPASS :(red LED)
TRANSDUCER INPUT	VK, RD,FK Series, VE Series, MS Series, VC Series Number of input points : 2 points
INPUT IMPEDANCE	Approx.5kΩ
INPUT VOLTAGE	Min.:2Vpk-pk, Max.:100Vpk-pk
MIN. PULSE WIDTH	Approx.50μsec
MIN. INDICATED FREQUENCY	Lower of 1Hz or under speed setting.
MAX. INPUT FREQUENCY	10kHz
NO. OF INPUT PULSE	1 to 120 pulse
TRIGGER MODE	AUTO, MANUAL (selectable) In case of auto trigger mode, input pulse duty ratio should be between 10 and 90% and input pulse frequency should be 1Hz and over. it depends on the target.
EXTERNAL CONTACT INPUT (FROM REAR PANEL)	Contact type : Dry contact Contact for external reset
DIGITAL METER	±(0.003% of rdg. +1 digit) at 25°C(77°F) ±(0.03% of rdg.+1 digit) at 0 to 65°C(32 to 149°F)
BAR GRAPH METER	±2.5% of F.S.
RECORDER OUTPUT CONVERSION ACCURACY	±0.5% of F.S. at 25°C(77°F) ±2.0% of F.S. at 0 to 65°C (32 to 149°F)
RECORDER OUTPUT (FROM REAR PANEL)	Voltage or current output proportional to monitor range 1 to 5VDC (output impedance : 250Ω) 4 to 20mADC (max. load resistance : 500Ω) 0 to -10VDC*,0 to 10VDC*,0 to -5VDC*,0 to 5VDC* (output impedance : 100() (*option) Number of output points : 2 points
MONITOR/PULSE OUTPUT (FROM FRONT, REAR PANEL)	Monitor output/Pulse output, selectable Monitor output : Input signal is output via a buffer amplifier. Signal level : -0.8 to -22VDC(VK, RD) ±15V(MS),0 to 15VDC(VE), 0 to 5VDC(VC) Pulse output : Shaped pulse signal is output via a buffer amplifier. Signal level : -1 to +1V(PL),4 to 6V(PH) Output impedance: Approx.100((load resistance 50k(or more)
TEMPERATURE RANGE	Operating temperature : 0 to 65°C(32 to 149°F) Storage temperature : -30 to +85°C(-22 to +185°F) Relative humidity : 20 to 95%RH(noncondensing)
MATERIAL AND FINISH	Face plate : Aluminum Munsell N-4.0 (equiv.)
MASS	Monitor : max.0.7kg (including single unit instrument rack max.2.5kg)

SHINKAWA Sensor Technology, Inc.

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