PAPERLESS RECORDER
(color LCD display)

MODEL **71VR1**

71VR1 COMPATIBLE MODULE

• **R3 Series**

MODEL	ITEM	REMARKS
R3-AD4	4 – 20mA input alarm w/exc., 4 ch.	Max. 8 points
R3-AR4	RTD input alarm, 4 ch.	Max. 8 points
R3-AS4	DC current input alarm, 4 ch.	Max. 8 points
R3-AS8	DC current input alarm, 8 ch.	Max. 8 points
R3-AT4	Thermocouple input alarm, 4 ch.	Max. 8 points
R3-AV4	DC voltage input alarm, 4 ch.	Max. 8 points
R3-AV8	DC voltage input alarm, 8 ch.	Max. 8 points
R3-CT4	CT (AC current) input, 4 ch.	
R3-CT4A	AC current input, 4 ch., clamp-on current sensor CLSA use	0 – 300A [1], 0 – 500A [2]
R3-CT4B	AC current input, 4 ch., clamp-on current sensor CLSB use	0 – 200A [1], 0 – 400/600A [2]
R3-CT4C	AC current input, 4 ch., clamp-on current sensor CLSB-R3 use	
R3-CT8A	AC current input, 8 ch., clamp-on current sensor CLSA use	0 – 300A [1], 0 – 500A [2]
R3-CT8B	AC current input, 8 ch., clamp-on current sensor CLSB use	0 – 200A [1], 0 – 400/600A [2]
R3-CT8C	AC current input, 8 ch., clamp-on current sensor CLSB-R3 use	
R3-CZ4	Zero-phase current input, 4 ch.	
R3(Y)-DA16	Optical isolation discrete input, 16 ch. (13V DC)	Max. 8 points
R3(Y)-DA16A	Optical isolation discrete input, 16 ch. (ext. 24V DC)	Max. 8 points
R3-DA16B	Optical isolation discrete input, 16 ch. (ext. 100V AC)	Max. 8 points
R3-DA32A	Optical isolation discrete input, 32 ch. (ext. 24V DC)	Max. 8 points
R3-DA64A	Optical isolation discrete input, 64 ch. (ext. 24V DC)	Max. 8 points
R3-DAC16	Discrete I/O (Di 8 ch., Do 8 ch.)	
R3(Y)-DC16	Relay output, 16 ch.	Max. 8 points
R3-DC16A	Open collector output, 16 ch. (NPN)	Max. 8 points
R3-DC16B	Triac output, 16 ch.	Max. 8 points
R3-DC16C	Open collector output, 16 ch. (PNP)	Max. 8 points
R3-DC32A	Open collector output, 32 ch. (NPN)	Max. 8 points
R3-DC64A	Open collector output, 64 ch. (NPN)	Max. 8 points
R3-DS4	4 – 20mA input w/exc., 4 ch.	
R3-DS4A	4 – 20mA input w/exc. (switch provided), 4 ch.	
R3-DS8N	4 – 20mA input w/exc., 8 ch., non-isolated	
R3-LC2	Strain gauge input, 2 ch.	
R3-MS4	Potentiometer input, 4 ch.	
R3(Y)-MS8	Potentiometer input, 8 ch.	
R3(Y)-PA16	Totalized pulse input, 16 ch.	
R3-PD16	One-shot pulse output 16 ch. (Relay)	Max. Di 8 points, Do 8 points
R3-PD16A	One-shot pulse output 16 ch. (NPN)	Max. Di 8 points, Do 8 points
R3-PD16B	One-shot pulse output 16 ch. (Triac)	Max. Di 8 points, Do 8 points
R3-PD16C	One-shot pulse output 16 ch. (PNP)	Max. Di 8 points, Do 8 points
R3-PT4	PT (AC voltage) input, 4 ch.	
R3-RS4	RTD input, 4 ch.	Within conformance range [3]
R3(Y)-RS8	RTD input, 8 ch.	Within conformance range [3]
R3-RS8A	RTD input, 8 ch., high accuracy	Within conformance range [3]
R3-SS16N	DC current input, 16 ch., non-isolated	
R3-SS4	DC current input, 4 ch.	

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• **R3 Series (Continued)**

MODEL	ITEM	REMARKS
R3(Y)-SS8	DC current input, 8 ch.	
R3(Y)-SS8N	DC current input, 8 ch., non-isolated	
R3-SV16N	DC voltage input, 16 ch., non-isolated	
R3-SV4	DC voltage input, 4 ch.	
R3-SV4A	DC voltage input, 4 ch., narrow span	
R3-SV4B	DC voltage input, 4 ch., wide span	
R3-SV4C	DC voltage input, 4 ch., wide span up to ±50V	
R3(Y)-SV8	DC voltage input, 8 ch.	
R3-SV8A	DC voltage input, 8 ch., narrow span	
R3-SV8B	DC voltage input, 8 ch., wide span	
R3-SV8C	DC voltage input, 8 ch., wide span up to ±50V	
R3(Y)-SV8N	DC voltage input, 8 ch., non-isolated	
R3-TS4	Thermocouple input, 4 ch.	When input range is not within 0 – 10000, refer to *2.
R3-TS8	Thermocouple input, 8 ch.	When input range is not within 0 – 10000, refer to *2.
R3-WT4	AC power input, 4 points	1 word data
R3-WT4A	AC power input, 4 ch., clamp-on current sensor CLSA use	1 word data
R3-WT4B	AC power input, 4 ch., clamp-on current sensor CLSB use	1 word data
R3-WTU	AC power input, 2 ch., clamp-on current sensor CLSE use	1 word data *1, *4
R3Y-SV16	DC voltage input, 16 ch, non-isolated	

*1. RANGE setting is necessary. (Resolution degraded)
*2. The scale must be set as 0 – 10000 with R3CON. (Resolution degraded)
*3. At burnout, it may reach -2000 or 12000.
*4. The phase angle direction of the power factor is not available.

• **R5 Series**

MODEL	ITEM	REMARKS
R5-DA16	Optical isolation discrete input, 16 ch.	Max. 8 points
R5-DA4	Optical isolation discrete input, 4 ch.	
R5-DC16	Open collector output, 16 ch.	Max. 8 points
R5-DC4	Relay output, 4 ch.	
R5-DS	4 – 20mA input with excitation	
R5-DS1A	4 – 20mA input with excitation, 1 ch.	
R5-MS	Potentiometer input	
R5-MS1A	Potentiometer input, 1 ch.	
R5-PA2	Totalized pulse input, 2 ch.	0 – 10000 *1
R5-RS	RTD input	Whithin conformance range *2
R5-RS1A	RTD input, 1 ch.	Whithin conformance range *2
R5-RSA	RTD input, (high resolution)	
R5-SS	DC current input	
R5-SS1A	DC current input, 1 ch.	
R5-SV	DC voltage input,	
R5-SV1A	DC voltage input, 1 ch.	
R5-TS	Thermocouple input	
R5-TS1A	Thermocouple input, 1ch.	
R5H-RS	4-Wire RTD input	
R5T-CT	CT (AC current) input	
R5T-CTA	AC current input, clamp-on current sensor CLSA use	0 – 300A *3, 0 – 500A *4
R5T-CTB	AC current input, clamp-on current sensor CLSB use	0 – 200A *3, 0 – 400/600A *4
R5T-DA4	Optical isolation discrete input, 4 ch.	
R5T-DC4	Relay output, 4 ch.	
R5T-DS	4 – 20mA input with excitation	

● **R5 Series (Continued)**

MODEL	ITEM	REMARKS
R5T-PA2	Totalized pulse input, 2 ch.	0 – 10000 [1]
R5T-PT	PT (AC voltage) input	
R5T-RS	RTD input	Within conformance range [2]
R5T-SS	DC current input	
R5T-SV	DC voltage input	
R5T-TS	Thermocouple input	When input range is not within 0 – 10000, refer to [3].

[1]. In case that the maximum input value has been changed exceeding 10000, RANGE setting is necessary. (Resolution degraded)
[2]. At downscale burnout, it may reach -2000.
[3]. RANGE setting is necessary. (Resolution degraded)
[4]. The scale must be set with R5CON. (Resolution degraded)

● **R7 Series**

MODEL	ITEM	REMARKS
R7M-CT4E	AC power input, 4 points, clamp-on current sensor CLSE use	0 – 200A [1], 0 – 400/600A: [2]
R7M-DA16	Discrete input, 16 points	Max 8 points
R7M-MS4	Potentiometer input, 4 points	
R7M-RS4	RTD input, 4 points	Within conformance range [3]
R7M-SV4	DC voltage/current input (10V/20mA), 4 points	
R7M-TS4	Thermocouple input, 4 points	When input range is not within 0 – 10000, refer to [1].
R7M-EA8	Discrete input, 8 points	Max. 8 points
R7M-EA16	Discrete input, 16 points	

[1]. RANGE setting is necessary. (Resolution degraded)
[2]. The scale must be set with R7CON. (Resolution degraded)
[3]. At downscale burnout, it may reach -2000.
Note. Modbus communication parameters of R7M must be configured by using R7CON and the dedicated cable.

● **R6 Series**

MODEL	ITEM	REMARKS
R6x-DA4	Discrete input, 4 points	
R6x-RS2	RTD input, 2 points	Within conformance range [1]
R6x-SS2	DC current input, 2 points	
R6x-SV2	DC voltage input, 2 points	
R6x-TS2	Thermocouple input, 2 points	When input range is not within 0 - 10000, refer to [2].

[1]. At downscale burnout, it may reach -2000.
[2]. RANGE setting is necessary. (Resolution degraded)

● **R1M/RZM Series**

MODEL	ITEM	REMARKS
R1M-A1	Contact input, 32 points	Max. 8 points
R1M-D1	Contact output, 32 points	Max. 8 points
R1M-GH	Thermocouple & DC input, 16 points	When input range is not within 0 - 10000, refer to [1].
R1M-J3	RTD & potentiometer input, 8 points	
R1MS	Thermocouple & DC input, 8 points, isolated	When input range is not within 0 - 10000, refer to [1].
RZMS	Universal input, 12 points, isolated	When input range is not within 0 - 10000, refer to [1].

[1]. RANGE setting is necessary. (Resolution degraded)

RANGE

In order to set SCALE (engineering unit conversion) the RANGE setting may be necessary. The RANGE converts input signal from external devices to 71VR1's internal data, 0 – 10000 (BIN data). The 71VR1 is able to handle signed 16-bit data (-32768 – +32767) with the combination of SCALE and RANGE settings.

1.   IN CASE THAT THE INPUT RANGE IS WITHIN 0 – 10000

Factory default RANGE (Low = 0, High = 10000) is effective. Set only SCALE (engineering unit conversion).

2.   IN CASE THAT THE INPUT RANGE IS NOT WITHIN 0 – 10000

2.1   In case that the input range is within -32768 – +32767

2.1.1   In case that the input span is more than 10000

Set RANGE and SCALE as following procedure.
e.g. Input range: -100 – +1860°C, R type thermocouple from R3-TS4
    -1000 for -100°C (minimum value)
    +18600 for +1860°C (maximum value)
    Both minimum and maximum values are not within 0 – 10000.
        e.g. RANGE (Low) = -1000
            RANGE (High) = 19000
            SCALE (Low) = -100.000
            SCALE (High) = 1900.000

Note. 71VR1 handles 20000 of the input span, -1000 – +19000 as 10000. Therefore, the resolution is degraded to 0.2°C despite that the resolution of input signal is 0.1°C.

2.1.2   In case that the input span is 10000 or less

When input range is not within 0 – 10000 but the span is 10000 or less, it is able to maintain the resolution. Set RANGE and SCALE as following procedure.
e.g. Input range: -272 – +500°C, T (CC) type thermocouple from R3-TS4
    -2720 for -272°C (minimum value)
    +5000 for +500°C (maximum value)
    Input span = 5000 – (-2720) = 7720 ≤ 10000.
        e.g. RANGE (Low) = -3000
            RANGE (High) = 7000
            SCALE (Low) = -300.000
            SCALE (High) = 700.000

Note. RANGE converts -3000 – +7000 to BIN data, 0 – 10000. Which does not degrade the resolution. 71VR1 handle the data with 0.1°C resolution.

2.2   In case that the input range is not within -32768 – +32767

When input range is not within -32768 – +32767, configure the input range within 0 – 10000 with its configuration software.
e.g. Input range: 0 – 600A from R3-CT8B
        0 for 0A (minimum value)
        60000 for 600A (maximum value)
        71VR1 is unable to handle 60000 as RANGE.
        Configure 0 – 60000 to 0 – 10000 with using the configuration software: R3CON. The configuration with R3CON degrades resolution 0.01A to 0.06A.