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VALCOM®

VPRHS-U TYPE
VPRVS-U TYPE

Operation Manual

1. General Specifications
2. Placement of Internal Adjusting Controls and Operation Keys
3. Terminal Connections
4. Particularly Important Precautions
5. Zero-shifting Function
6. Optional Peak-holding Function
7. Optional Auto-zeroing Function
8. Maintenance, Inspection, and Adjustment
9. I/O Schematics
10. Appearance and Dimensions

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No.Q-0600-0057-05

For safe use

Thoroughly read the precautions described below for correct use. Improper use will cause failures or accidents such as fire and shock hazards.
To avoid such accidents, be sure to observe the precautions. Save this manual in an appropriate place for future reference even after you read it.
"WARNING" and "CAUTION" are used depending on the severity of accidents caused by improper handling.

⚠WARNING This is used to indicate a potentially hazardous situation which, if not avoided, will result in death or serious personal injury.

⚠CAUTION This is used to indicate a potentially hazardous situation which, if not avoided, could result in personal injury or property damage.

⚠WARNING

Never splash water or oil onto the sensor.
Neglecting this will cause fire, shock hazards, or failures.

Never damage or forcedly bend the power cord, sensor cable, I/O lines.
Neglecting this will cause short circuits, resulting in ignition.

Be sure to apply the specified power-supply voltage only.
Applying any voltage other than the specified power-supply voltage will cause fire, shock hazards, or failures.

Never modify the sensor or its accessories.
Neglecting this will cause fire, shock hazards, or failures.

Never touch any terminal or wire on the rear panel with wet hand.
Neglecting this will cause fire, shock hazards, or failures.

Be sure to use for the specified input only.
Neglecting this will cause fire, shock hazards, or failures.

Securely carry out wiring.
Any poor contact will cause fire, shock hazards, or failures.

Explanation of pictograms
" ⚠ " indicates a description to which attention must be given.
" ⃠ " indicates a prohibited action.
" ❗ " indicates an action which must be done or instructions.

⚠ CAUTION

When installing the sensor, avoid a humid or dusty place or a place subjected to steam or greasy fumes.
Neglecting this may cause fire or shock hazards.

Securely install the sensor.
Loose installation will cause the sensor to drop, resulting in personal injury.

Be sure to confirm that power is turned OFF before relocating the sensor or changing the wiring.
Neglecting this may cause shock hazards or failures.

When one of abnormal conditions shown below is detected, turn OFF the power, and notify your local dealer or VALCOM of it, or return the amplifier for repair.

○Smoking occurs.

○There is an unusual smell.

○Foreign matter such as water and oil entered the inside of the sensor.

○The sensor does not operate normally.

1. General Specifications

Type : VPR(*1)-(*2)-(*3) (*4)-(range)-(*5)-<*6>-(*7)U(*8)-<*9>

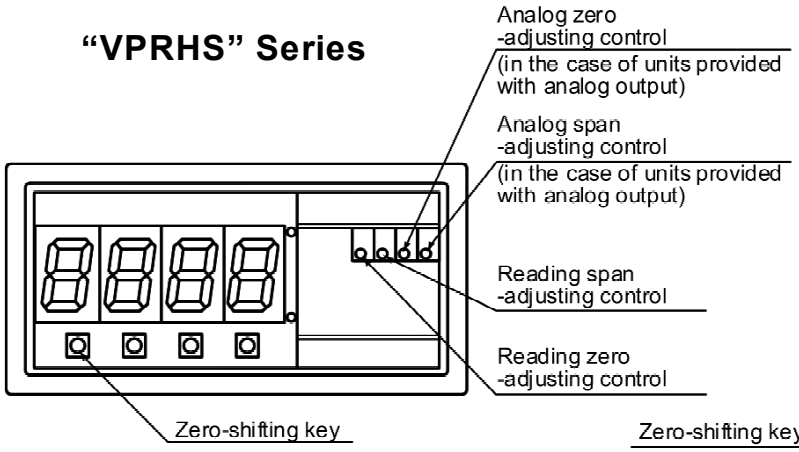
* Specification

*1	Display		HS Type (Horizontal type)	3 1/2 Digit (-1999～1999 max.) Red LED letters height 15mm			
			VS Type (Vertical type)	3 Digit (<->999～999 max.) Red LED letters height 15mm			
	Sampling time		4 times/sec. (Standard)				
			1 ～ 10 times/sec. is available at required				
	temperature	-10 ℃ ～ 55 ℃, humidity 0 ～ 90 %R.H. (Condensation circurmstance is unsuitable)					
	Accuracy	±0.05 %F.S. ±1 digit {Contoroller(AMP) only}					
*2	Data output	D/A output(Resolution : ±1999 max.)、 response times about 10 msec. (63% response) Output range : at"** to **"					
				Indication only		A1	1mV/digit<Safe load resistance:10KΩ over> Output impedance : 100Ω
			A2	1 ～ 5V <Safe load resistance:10KΩ over> Output impedance : 100Ω		A3	4 ～ 20mA<Safe load resistance:250Ω under>
			A4	0 ～ 5V <Safe load resistance:10KΩ over> Output impedance : 100Ω		A5	0 ～ 10V <Safe load resistance:10KΩ over> Output impedance : 100Ω
*3	Setting output		2S	2 Relay outout (AC250V 4A)			
			2So	2 Photomos relay output (AC/DC250V 0.1A)			
			1S	1 Relay outout (AC250V 4A)			
			1So	1 Photomos relay output (AC/DC250V 0.1A)			
*4	Setting output operation	H=HI setting type:Setting value≦Display→Output ON			L=LOW setting type:Setting value≧Display→Output ON		
			SET1 = H	SET1 = L		SET2 = H	SET2 = L
*5	Data input		A2	1 ～ 5V		A3	4 ～ 20mA
			A4	0 ～ 5V		A5	0 ～ 10V
*6	Peak-hold (Option)		P	Peak-hold is made by connecting terminal No.10 [P] and No.12 [COM.] . Reset with the terminals set open.			
*7	Power suuply		1	AC100V･2VA		11	AC110V･2VA
			2	AC200V･2VA		22	AC220V･2VA
			4	DC24V･100mA		6	Others = ( )
*8	Soft filter		Unfilling in	Standard. Constsnt about 20msec. at soft filter. (about 0.02sec.)			
			100	Constsnt about 200msec. at soft filter. (about 0.2sec.)			
*9	Auto zero (Option)		Z	Auto zero is made by connecting terminal No.11 [Z] and No.12 [COM.] . Reset with the terminals set open.			
	Input/Output terminal	R1.25 M3 screw connector which cancontribute					
	Case	DIN size 48 × 96mm ABS resine					
	Front panel	Color : Purple, Material : Acrylic fiber					
	Bracket	Processing : Chrome Plating, Material : SPCC					
	Panel cut size	(Horizontal type) $92^{+0.8}_{-0}$(W) × $45^{+0.5}_{-0}$(H) (Vertical type) $45^{+0.5}_{-0}$(W) × $92^{+0.8}_{-0}$(H)					

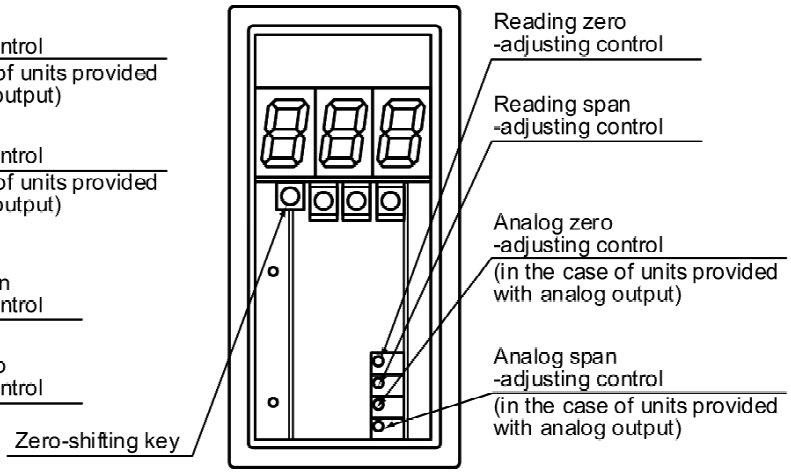
Attention) As for VPRVS, a minus sign is not displayed.

2.Placement of Internal Adjusting Controls and Operation Keys

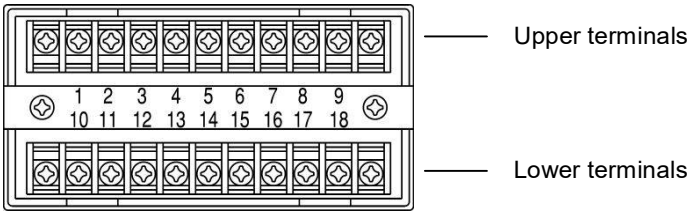
"VPRHS" Series

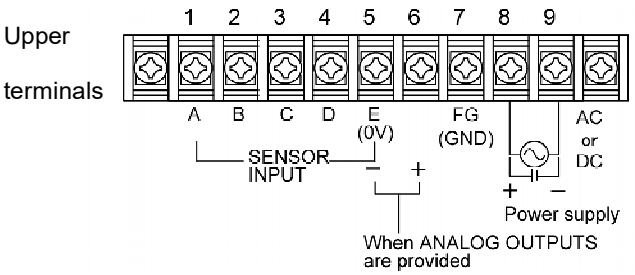


"VPRVS" Series

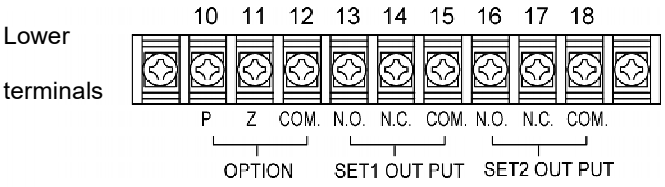


3. Terminal Connections

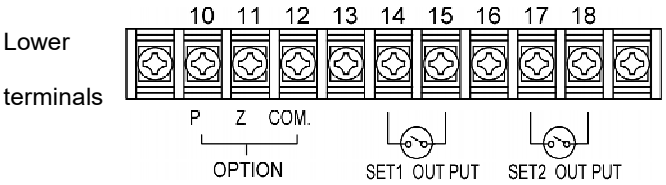




For relay output (Types: 1S, 2S)



For open-collector output (Types: 1SO, 2SO)



1	Sensor connection A (+EXCITATION)	10	Peak-holding terminal (activated when short-circuited together with the terminal No. 12)
2	Sensor connection B (-INPUT)	11	Auto-zeroing terminal (activated when short-circuited together with the terminal No. 12)
3	Sensor connection C (-EXCITATION)	12	Common terminal for control input
4	Sensor connection D (+INPUT)	13	SET1 output (S: N.O. SO: Unused)
5	Sensor connection E (Shield)/Analog output (-)	14	SET1 output (S: N.C. SO: N.O.)
6	Analog output (+)	15	SET1 output (COM.)
7	Grounding terminal (F.G.)	16	SET2 output (S: N.O. SO: Unused)
8	Power-supply terminal (+ for DC)	17	SET2 output (S: N.C. SO: N.O.)
9	Power-supply terminal (- for DC)	18	SET2 output (COM.)

Caution: Do not use any unused terminal.

Caution: The sensor power supply (EXCITATION) is the power supply for a sensor with VALCOM built-in amplifier.

(If the power supply specification for the model (*2) specifies an AC power supply, the standard specification is 12 VDC, 25 mA.)

(If the power supply specification for the model (*2) specifies a 24VDC power supply, the standard specification is 15 VDC, 40 mA.).

Caution: Follow the instructions described below to avoid malfunction of the unit due to noise caused by surge or induction.

* Be sure to use a shielded cable as the sensor cable. When extending the sensor cable, be sure to use a shielded cable.
* Be sure to connect the shielded wire to the terminal No. 5 with the shortest possible leads A through D exposed from the shield.
* Avoid connecting the sensor cable in parallel with a power line, etc. or in the same conduit.
* Securely ground the grounding terminal F.G. (frame ground).

4. Particularly Important Precautions

* Be sure to use the amplifier and sensor bearing the same serial number.
  (Otherwise, correct readings cannot be obtained.)

* Be sure to confirm that the power-supply voltage is correct, and perform wiring correctly.

* Do not touch the diaphragm with a screwdriver, etc. inserted through the pressure introduction port of the sensor.

* When installing the sensor, tighten it with an appropriate torque so that no leakage is caused.
  (*Applying an excessive torque can cause a permanent set, preventing the sensor from showing its guaranteed accuracy. (The reading is not zeroed.))

* Do not make any modification or touch any control or switch by opening the case unless required.
  (*If you touch a control coated with red paint, preventing the guaranteed accuracy from being obtained, we are not liable for the failure.)

* When you must perform calibration, follow the procedure described in "8. Maintenance, Inspection and Adjustment." (*While performing calibration, do not touch any control which does not need adjustment.)

* When a measurable limit (FS.±approx. 2%) is exceeded, the display starts flashing.
(The reading remains unchanged.)
When zero-shifting has been performed, the zero-shifting amount is added to or subtracted from the original measurable limits.

5. Zero-shifting Function

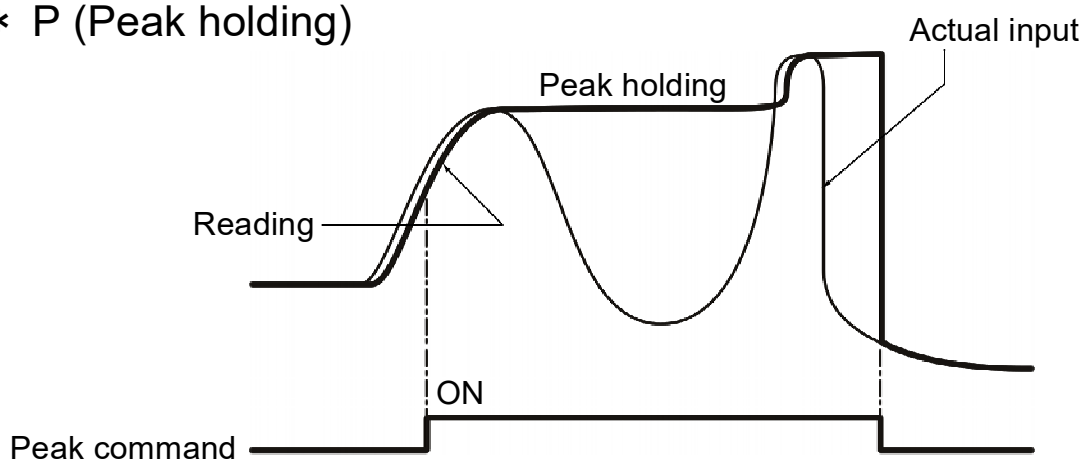
Zero adjustment can be performed by operating the zero-shifting key hidden behind the front panel.
Perform zero adjustment when, for example, the zero point for measurement is deviated.

* Remove the outer frame of the front panel, and then take the front panel out by hooking the notch with a screwdriver, etc.
* Place the sensor in a state where the reading should be zero.
* Pressing the zero-shifting key for at least 2 seconds, the reading is forcefully zeroed. (Zero shifting)
* Pressing the zero-shifting key for 5 seconds or longer, zero shifting is canceled.
* Do not operate any switch other than the zero-shifting key.
* When the difference between the readings before and after zero shifting becomes ±2%FS or more, a warning message "oUEr" is temporarily shown.
(Zero shifting is performed even if the warning message "oUEr" is shown.)
(If the warning message "oUEr" is shown, it may be impossible to measure FS.)
(When FS needs to be measured, cancel zero shifting, and make adjustment with the reading zero-adjusting control.)

6. Optional Peak-holding Function

* Short-circuiting the terminal No. 10 (P) and the terminal No. 12 (COM.) activates the peak-holding function.
* When the terminals are opened, the unit returns to normal measurement operation.

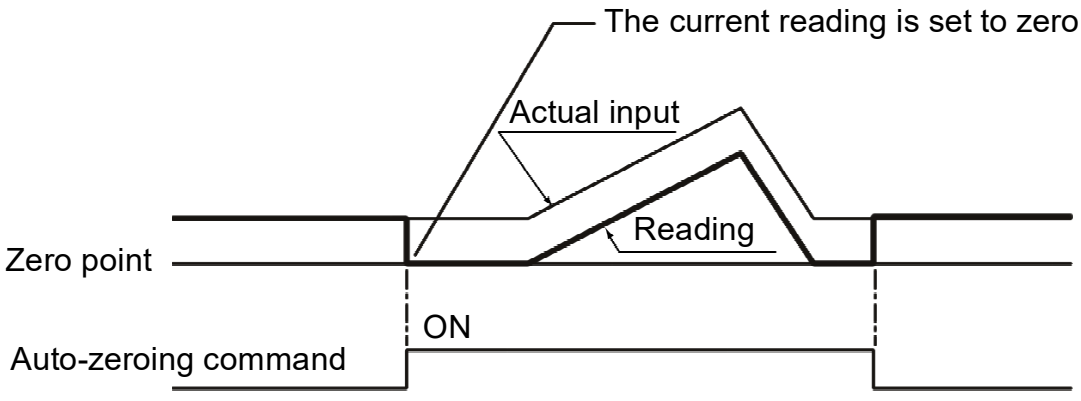
∗ P (Peak holding)



7. Optional Auto-zeroing Function

* Short-circuiting the terminal No. 11 (Z) and the terminal No. 12 (COM.) automatically zeros the current reading.
* When the terminals are opened, the unit returns to normal measurement operation

∗ Z (Auto-zeroing)



8. Maintenance, Inspection, and Adjustment

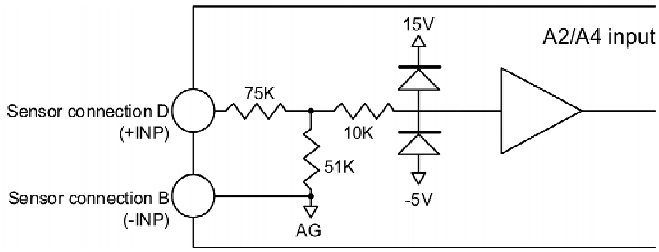
It is recommended to perform periodical inspection at least once a year although the appropriate inspection interval depends on the operating environment.
In addition, check the zero point every 3 months, and perform zero adjustment when necessary before use.
Normally, this unit requires only zero adjustment for maintaining high accuracy. When this unit needs recalibration, send it to VALCOM or perform calibration by following the procedure below.

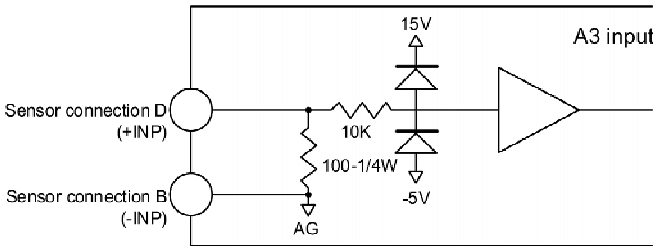
1) Prepare a calibrator with guaranteed accuracy.
2) If the input must correspond to the "0" indication, make sure that the indicated value is "0".
3) Make sure that the reading falls within the limits when the rated pressure is applied and when 1/2 of the rated pressure is applied.
4) If the reading is out of the limits, perform calibration by following the procedure below.

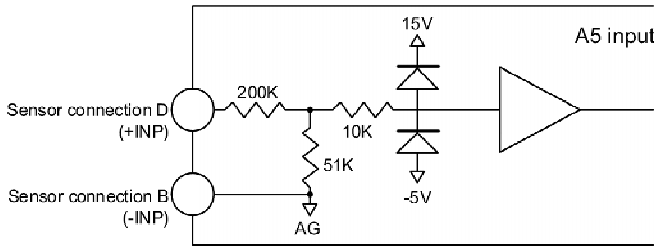
1. Remove the outer frame of the front panel, and then take the front panel out by hooking the notch with a screwdriver, etc. (When the front panel is secured with the panel mounting bracket, loosen it first.)
2. If the input must correspond to the "0" indication, turn the indication zero adjustment trimmer to set the indicated value to "0".
   (For absolute pressure, zero the reading when 20Pa･abs or lower is applied.)
3. While applying the rated pressure, adjust the reading by turning the reading span-adjusting control.
4. Perform the above-mentioned calibration again for confirmation, and then check the non-linearity, etc. under 1/2 of the rated pressure.
5. In addition, adjust the analog output by following the above-mentioned procedure.

9. I/O Schematics

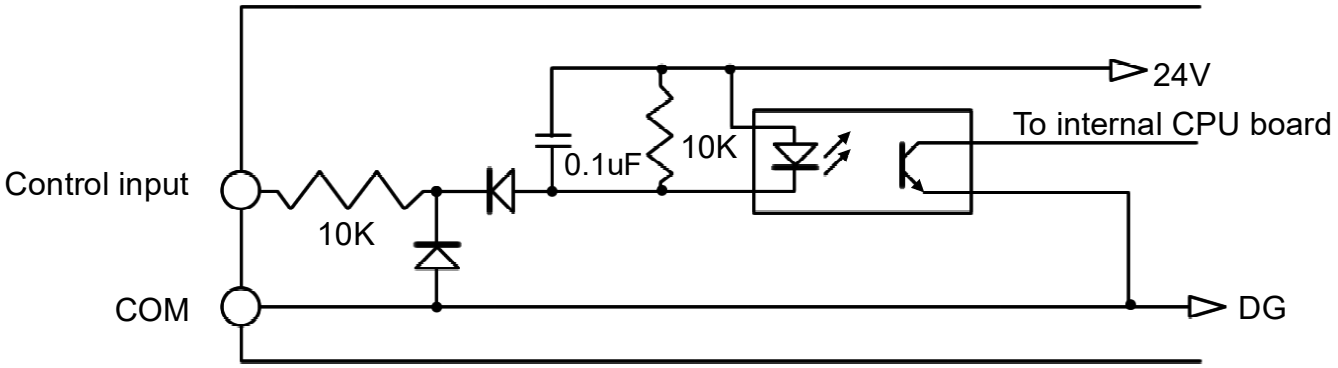
Analog input schematic (A2, A3, A4, and A5)



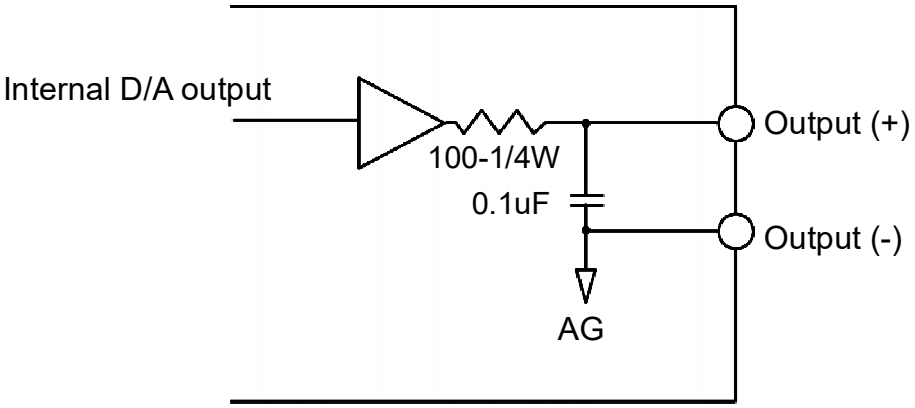




Control input schematic (P and Z)



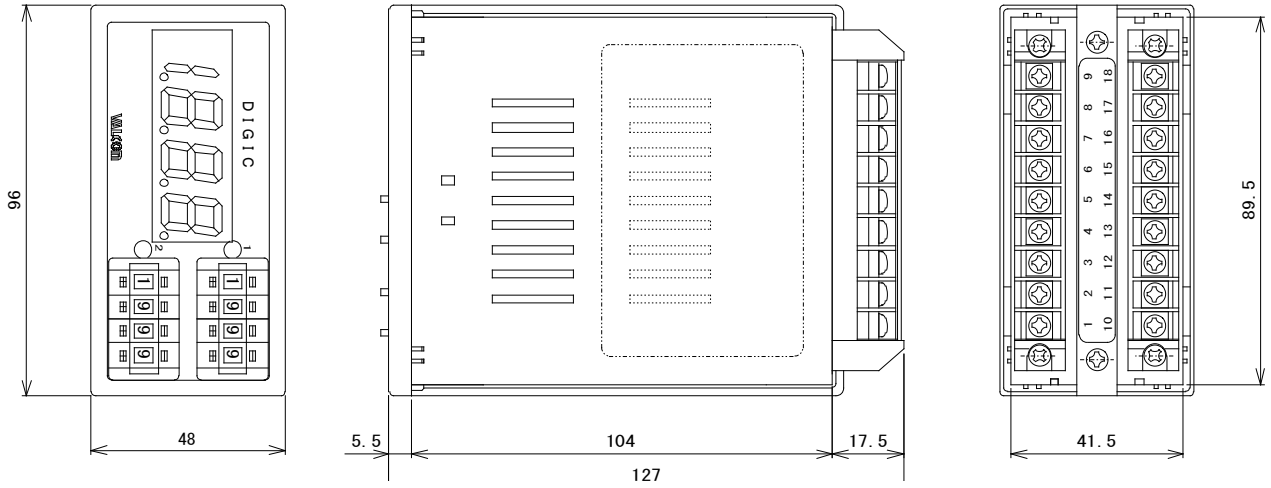
Analog output schematic (A1, A2, A4, and A5)



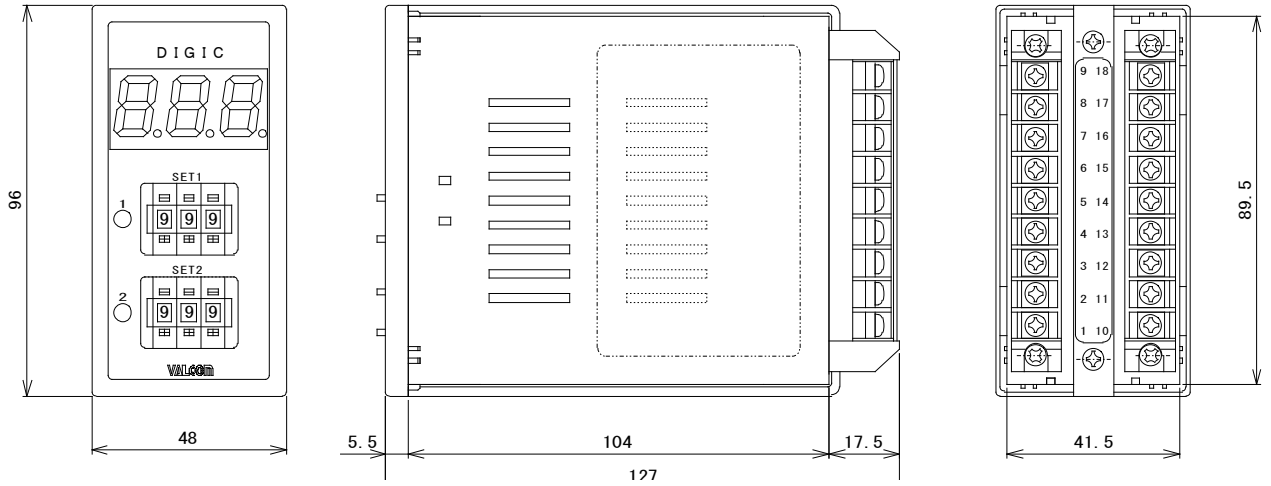
10. Dimensional drawing

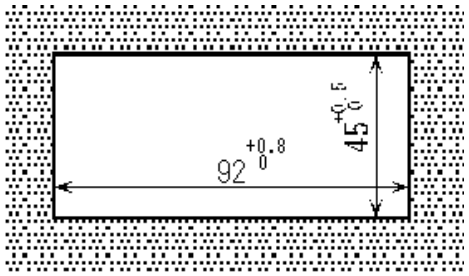
Unit: mm

“VPRHS” Series



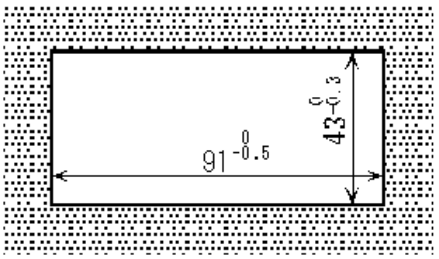
“VPRVS” Series





Panel Cutout Dimensions
(New Version)

※ Cut the spacers when you use this product with the dimensions described as below



Panel Cutout Dimensions
(Previous Version)

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