



AVR

Digital Control AC Automatic Voltage Regulator

With a double-shielded transformer board with built-in noise filter in the same housing.

| | | |
|-------|--------------------------------|--|
| Model | SD - 1 (for single-phase use) | Acceptable range of input voltage fluctuation: $\pm 10\%$ |
| Model | SD - 3 (for three-phase use) | Acceptable range of input voltage fluctuation: $\pm 10\%$ |
| Model | SD - 1S (for single-phase use) | Acceptable range of input voltage fluctuation: $+10\%$, -20% |
| Model | SD - 3S (for three-phase use) | Acceptable range of input voltage fluctuation: $+10\%$, -20% |

Digital Control A.C. Automatic Voltage Regulator

Application

Although it is desirable to operate general electrical equipment using a high-quality power source (a power source with no noise and a stable sinusoidal waveform at the rated voltage), in actuality the power source voltage is constantly fluctuating for a variety of reasons and includes various kinds of noise.

The new automatic voltage regulator (AVR) developed by our company supplies stable high-quality power by absorbing noise in the power source voltage and automatically regulating voltage surges or drops to provide a uniform voltage.

As a result, by using our AVR, operation of electrical equipment will be maintained at peak conditions and service life will be extended. Further, our AVR is extremely economical: it contributes to energy conservation by reducing excess voltage, the AVR itself is highly efficient due to the use of transformers, and it is virtually maintenance-free.

With today's demands for energy conservation, we are sure that our AVR will play an important role.

Features

Wide acceptable range of input voltage fluctuations

Within $\pm 10\%$ (for SD-1 and SD-3) or $+10\%$, -20% for SD-1S and SD-3S.

Compact and lightweight

Its size is approximately $2/3$ that of existing models and weight is approximately $1/2$ (for three-phase 50KVA model).

Highly efficient

High-efficiency transformer is used.

Great output waveform

Since distortion is less than 1%, distortion produced by electrical equipment is virtually non-existent.

Maintenance-free

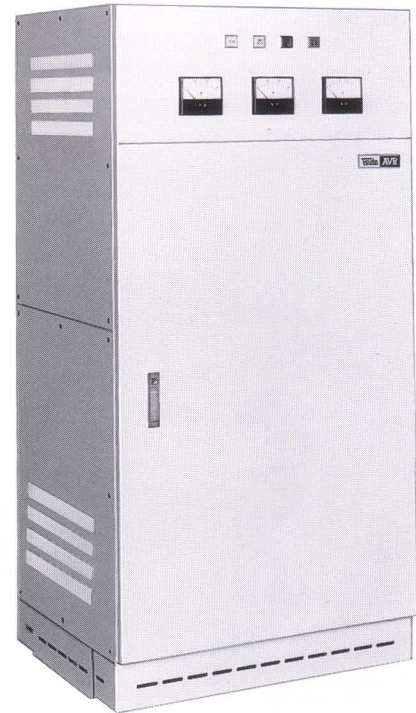
Our quiet AVR utilizes no moving parts.

Quick switching response

Fluctuations due to changes in load are small and the response to fluctuations in input voltage is fast.

Built-in safety circuit.

If the load is excessive or if the output voltage fluctuates more than $\pm 10\%$ of the specified value.



Magnetic leakage is low

Since no reactor of any kind is used, magnetic leakage is virtually non-existent.

Transformer with built-in noise filter

SD models use our patented double-shielded noise filter transformer to eliminate noise.

Low operating noise

Our AVR is extremely quiet because no reactor or cooling fan is used (however, if the voltage for a single-phase model exceeds 25KVA or the voltage for a three-phase model exceeds 75KVA, the fan will operate).

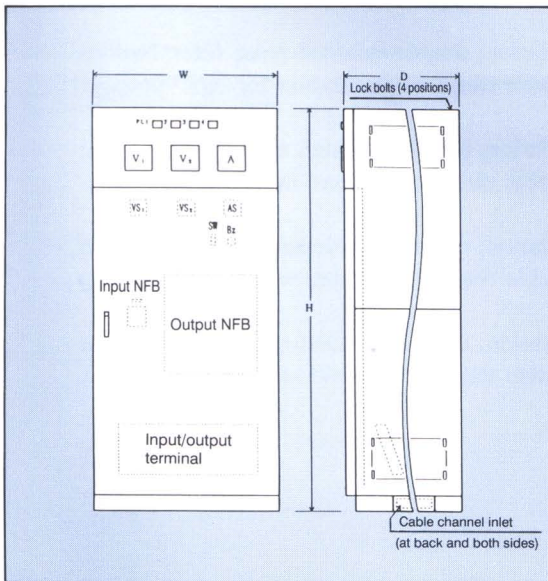
Transformer from AVR can be easily cut out

AVR can be easily cut out of the circuit.

Detection by efficiency value

By using an efficiency value detection circuit in the RMS/DC converter IC, accuracy can be maintained without any effects from fluctuations in the input power.

External dimensions



| Capacity (KVA) | Model SD-1 | | | | Model SD-1S | | | |
|----------------|------------|--------|--------|------------------------|------------------------|--------|--------|------------------------|
| | W (mm) | D (mm) | H (mm) | Weight (Approx; in kg) | W (mm) | D (mm) | H (mm) | Weight (Approx; in kg) |
| 3 | 400 | 500 | 1300 | 180 | Special specifications | | | |
| 5 | 400 | 500 | 1300 | 200 | | | | |
| 7.5 | 400 | 600 | 1300 | 230 | | | | |
| 10 | 400 | 600 | 1300 | 250 | | | | |
| 15 | 500 | 600 | 1400 | 300 | | | | |
| 20 | 500 | 750 | 1400 | 350 | | | | |
| 30 | 600 | 700 | 1700 | 450 | | | | |
| 40 | 700 | 700 | 1700 | 500 | | | | |
| 50 | 700 | 700 | 1700 | 600 | | | | |

| Capacity (KVA) | Model SD-3 | | | | Model SD-3S | | | |
|----------------|------------|--------|--------|------------------------|------------------------|--------|--------|------------------------|
| | W (mm) | D (mm) | H (mm) | Weight (Approx; in kg) | W (mm) | D (mm) | H (mm) | Weight (Approx; in kg) |
| 10 | 650 | 550 | 1500 | 280 | Special specifications | | | |
| 15 | 650 | 600 | 1500 | 300 | | | | |
| 20 | 750 | 600 | 1600 | 350 | | | | |
| 30 | 750 | 600 | 1600 | 470 | | | | |
| 40 | 750 | 650 | 1700 | 550 | | | | |
| 50 | 750 | 700 | 1700 | 600 | | | | |
| 75 | 800 | 750 | 1800 | 800 | | | | |
| 100 | 800 | 900 | 1950 | 1000 | | | | |
| 150 | 900 | 1000 | 1950 | 1500 | | | | |

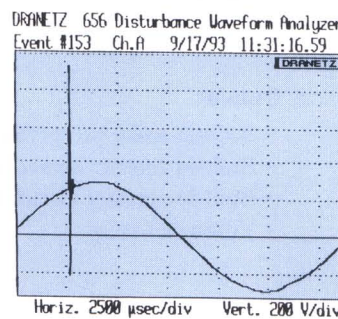
Note: Above values are minimum values. They may be changed due to the output circuit or other changes in specifications.

Specifications

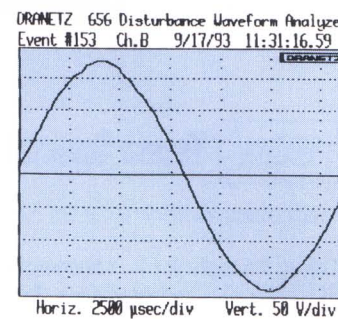
| | Model SD-1, 3 | Model SD-1S, 3S | Remarks |
|--|---|-----------------|--|
| Number of phases | Single phase or three phase | | |
| Frequency | 50 or 60Hz | | |
| Rated input voltage | 100, 200, or 400V | | Can also be manufactured to other specifications |
| Acceptable range of input voltage fluctuations | ± 10% | (+ 10%, - 20%) | |
| Rated output voltage | 100, 200, or 400V | | Can also be manufactured to other specifications |
| Output voltage accuracy | Within ± 1.5% | Within ± 2% | |
| Load change range | 0~100% | | |
| Waveform distortion | Within 1% | | |
| Efficiency | Less than 15KVA: At least 90% 15KVA or more: At least 93% 30KVA or more: At least 95% | | At rated input voltage and rated load |
| Response time for changes in power source | 50Hz- Less than 0.24s 60Hz- Less than 0.2s | | |
| Response time for changes in load | 50Hz- Less than 0.12s 60Hz- Less than 0.1s | | |
| Temperature dependence | According to JEC standards | | H-type insulation is used for transformer type |
| Withstand voltage resistance | According to JEC standards | | |
| Color | Standard 5Y7/1 | | Models with other specifications can also be made. |

Input and output waveforms when noise occurs

(SD-3 50KVA)



(A) Input waveform (between R and S)



(B) Output waveform (between U and O)

Main specified items

1. Model Matching specification

- SD-1 (single-phase) Primary and secondary insulation; double-shielded noise filter; built-in fixed voltage device; acceptable range of fluctuation for input voltage: $\pm 10\%$
- SD-3 (three-phase) Primary and secondary insulation; double-shielded noise filter; built-in fixed voltage device; acceptable range of fluctuation for input voltage: $\pm 10\%$
- SD-1S (single phase) Primary and secondary insulation; double-shielded noise filter; built-in fixed voltage device; acceptable range of fluctuation for input voltage: $+10\%, -20\%$
- SD-3S (three phase) Primary and secondary insulation; double-shielded noise filter; built-in fixed voltage device; acceptable range of fluctuation for input voltage: $\pm 10\%$

2. Rated input voltage _____ V

3. Frequency _____ Hz

4. Rated output voltage and capacity

_____ phase _____ line type _____ V _____ KVA

_____ phase _____ line type _____ V _____ KVA

5. Make/break device (fuseless breaker) and number of output circuits

Input side: Necessary Unnecessary

Output side: Necessary Unnecessary

_____ phase _____ AF _____ AT _____ Circuit

_____ phase _____ AF _____ AT _____ Circuit

6. Measuring device

Voltmeter: Input side: Necessary: Unnecessary

Voltmeter: Output side: Necessary: Unnecessary

Ammeter: Input side: Necessary: Unnecessary

Ammeter: Output side: Necessary: Unnecessary

7. Paint color

Specified: Yes No

If not specified, 5Y7/1

8. Options

- Built-in spike protection circuit
- Built-in remote control circuit
- Built-in arrester circuit (circuit to absorb lightning surges, etc.)
- Voltmeter relay



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