



Distribution Voltage Regulators

Type JFR™ Single Phase 2.5 to 19.9 kV

Type SFR™ Three Phase 13.2 to 34.5 kV

Power Transmission & Distribution

SIEMENS

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Siemens JFR & SFR Voltage Regulators

Improving Quality of Service and Increasing Utility Revenues

Utility companies invest enormous amounts of resources in plant and equipment to assure enough capacity to meet their peak demand which occurs once every year. During the remainder of the year, that investment remains under utilized.

Step voltage regulators can improve the return on utility investment by increasing demand at off peak periods, and with certain accessories, even reduce the demand peak load. This translates into improved revenue for the utility company while also improving the quality of service to the end user— the customer.

The step type voltage regulator takes an incoming voltage that will vary with load conditions and maintains a constant output voltage. As the loading increases along the distribution feeder, the voltage will drop. This reduction in voltage reduces the amount of power used by the lighting portion of the load. By increasing the voltage to this lighting load, additional power is consumed. This increased power translates into increased revenue for the utility company. The same principle can work for the utility company when it needs to reduce the voltage by predetermined amount thus reducing the overall power demand and delaying capital investments to meet peak demand.

Combining Cutting Edge Technology with Decades of Experience

For over a half century Siemens has led voltage regulator technology, continuously refining and improving its reliable, sturdy and innovative regulator product line. Pioneered in 1933, the 5/8% step voltage is now considered to be an industry wide standard. Siemens led the way to innovations such as static controls and the evolution of state-of-the-art microprocessor based control panels. Siemens gives you a full range of ratings for most system voltages and current applications. Siemens supplies everything

from the smallest single-phase pole mount units to large substation regulators. When it comes to voltage regulation, Siemens provides technology that serves the customer. Our manufacturing experience of voltage regulators and controls is unsurpassed in the industry. Today, Siemens has the largest population of installed regulators in the United States, as well as worldwide.

JFR™ Single Phase Voltage Regulator



- 1 Electrostatically applied polyester paint gives greater resistance to corrosion in harsh environments.
- 2 Type 316 stainless steel external hardware is standard on all JFR regulators. No rust. No galling.
- 3 Sealed tank with pressure relief device to vent gases produced during tap changes. With the 65°C insulation system, Siemens 55°C rise regulators can be loaded up to 12 percent above nameplate rating.
- 4 External MOV bypass arrester gives superior protection to the regulator series winding from surge and system transients.
- 5 Oil sight gauge allows oil levels and oil conditions to be checked without de-energizing the regulator.
- 6 Motor capacitor installed in the control cabinet allows replacement without bypassing and taking the regulator out of service.
- 7 Polarized disconnect switch (PDS) facilitates easy control installation or change out without taking the regulator out of service.
- 8 Cover mounted terminal block provides easier access to wiring by eliminating the need to go under oil to change tap connections.
- 9 Monitor and automatically control output voltage through the use of state-of-the-art microprocessor control panels MJ-4A & MJ-4B.
- 10 High creep bushings provide a minimum creep distance of 17 inches.
- 11 Oil drain valve that includes an oil sampling valve for easy access.
- 12 Platform base is equipped with provisions to securely attach regulator to sub-base assembly.





JFR Modification Capabilities

External Modifications

- Line Terminals
- Special Ground Pads/Connectors
- Lowered Control Enclosure
- Special Ultra-Creep Bushings
- Thermometers or Fans (if possible)
- Special Drain Valves
- Nameplate Changes/Modifications

Internal Modifications

- Source Side Potential Transformer (Not required with MJ-4A Control)
- Special Current Transformers

Accessories

- Remote Mounting Cables (15'-50')
- Substation Bases
- Lightning Arrester
- Bird Guards
- Auxiliary Potential Transformer
- Auxiliary Current Transformer
- Bypass Switches
- Paralleling Balancers

Siemens Type JFR Single Phase Distribution Voltage Regulators

Technical Information:

Catalog Number (includes kVA)	Application	Line Amps	BIL (kV)
10-02.5-100.0	Rated:	400	60
10-02.5-167.0	2500V/4330V Grd. Y	668	60
10-02.5-250.0	For:	1000	60
10-02.5-333.0	2500-2400 volt circuits	1332	60
11-02.5-416.3		1665	60
10-07.6-038.1	Rated:	50	95
10-07.6-057.2	5000V/7620V/13200V Grd. Y	75	95
10-07.6-076.2	For:	100	95
10-07.6-114.3	5000-8000-7620-7200-6930	150	95
10-07.6-167.0	volt circuits	219	95
10-07.6-250.0		328	95
10-07.6-333.0		438	95
10-07.6-416.3		548	95
10-07.6-500.0		656	95
10-07.6-667.0		875	95
11-07.6-889.0		1167	95
10-13.8-069.0	Rated:	50	95
10-13.8-138.0	13800V	100	95
10-13.8-207.0	For:	150	95
10-13.8-276.0	12000-13800 volt circuits	200	95
10-14.4-072.0	Rated:	50	150
10-14.4-144.0	14400V/24940V Grd. Y	100	150
10-14.4-288.0	For:	200	150
10-14.4-333.0	14400 or 7200 volt circuits	231	150
10-14.4-432.0		300	150
10-14.4-576.0		400	150
11-14.4-720.0		500	150
10-14.4-833.0		578	150
10-19.9-100.0	Rated:	50	150
10-19.9-200.0	19920V/34500V Grd. Y	100	150
10-19.9-333.0	For:	167	150
10-19.9-400.0	19900 volt circuits	200	150
10-19.9-667.0		335	150
11-19.9-833.0		418	150

Notes:

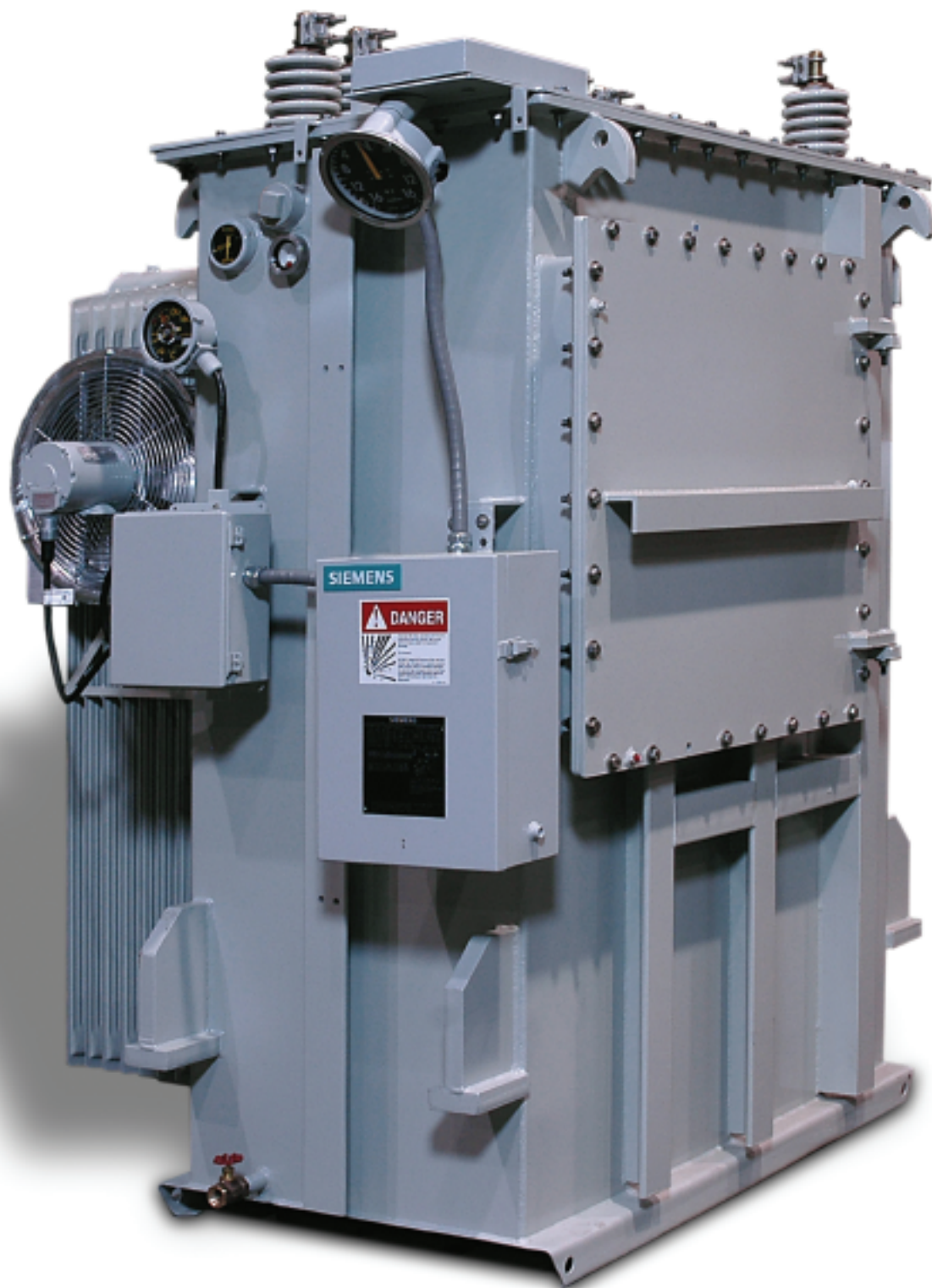
Units with catalog number starting with:

10 = self cooled

11 = forced air cooled

SFR™ and SFR-X™

3-Phase Voltage Regulator



As a vertically integrated manufacturer of 3-phase regulators, Siemens offers distinct advantages. All of our 3-phase regulators are engineered and manufactured in-house.

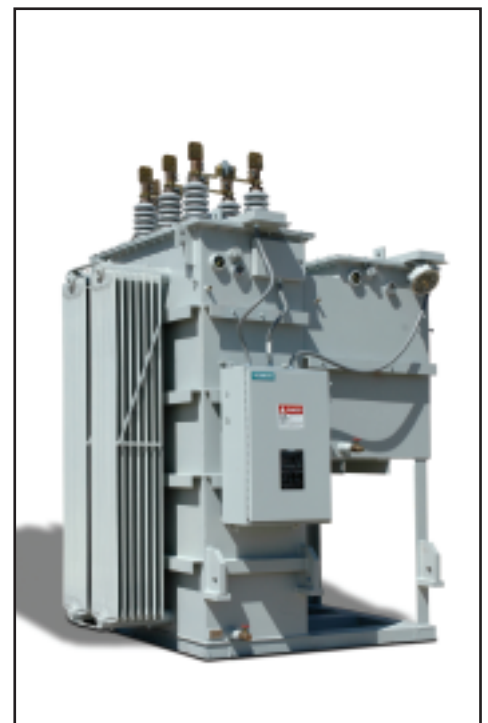
Our expertise in both technology and service gives us an additional advantage in the custom engineering necessary for most 3-phase regulator applications. Many times refined and improved since, the SFR voltage regulator has proven its reliability and durability in the toughest environments. Unit construction, tough paint and side inspection door are just a few of the time-tested features of today's SFR.

In addition, Siemens offers the popular SFR-X which features a separate tap-changing mechanism compartment, allowing for easy inspection and maintenance. By separating the regulator tap-changer significantly increases the life of the regulator by eliminating arcing in the main tank containing the coil and core.

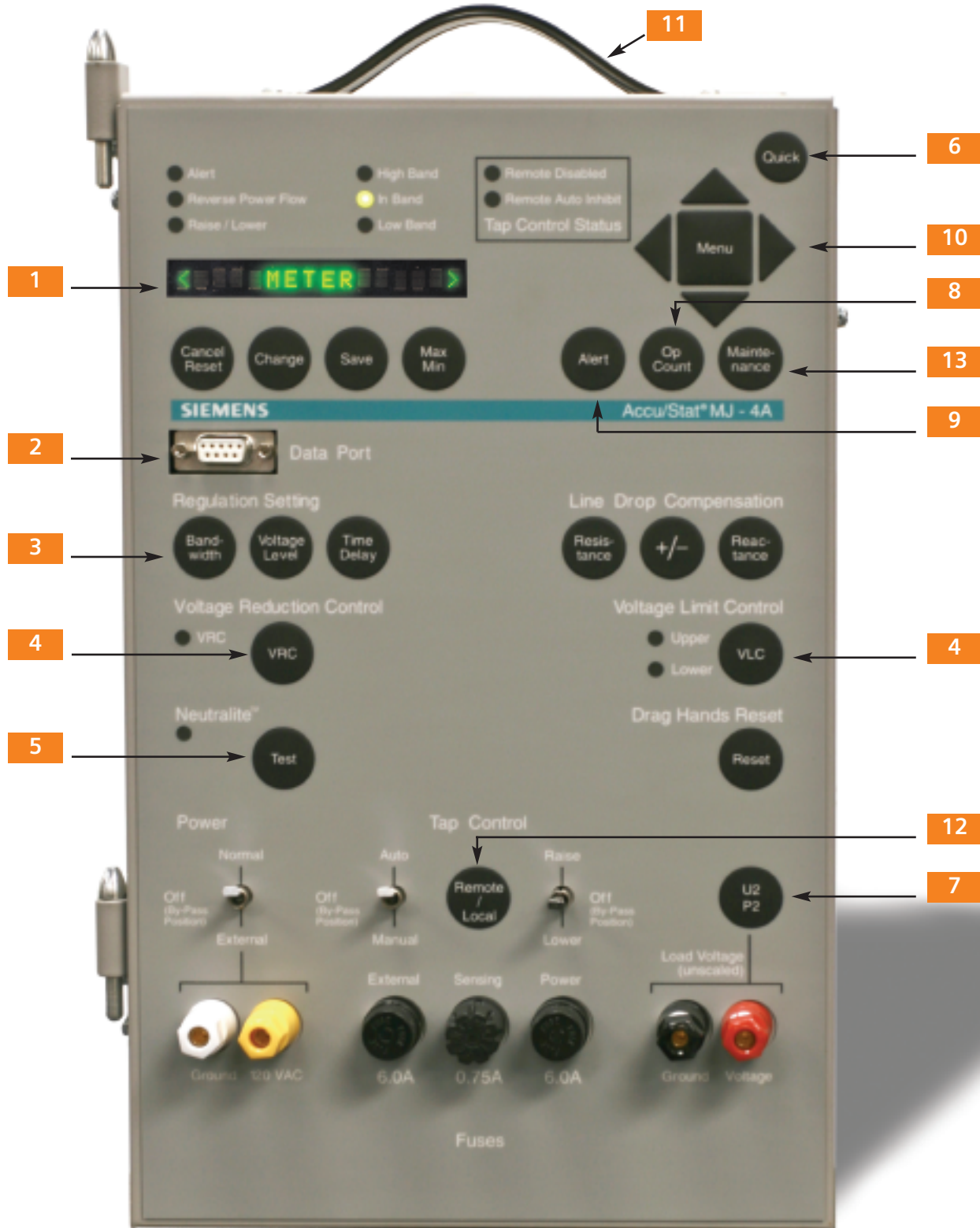
SFR Modifications

- Pressure Relief Device
- Lightning Arrester Brackets
- Magnetic type Liquid Level Indicator
- Magnetic Temperature Indicator
- Special bushings
- MR Tap Changer
- Separate Tap Changer Compartment (Available with SFR-X & SFR-MR)
- Customized Controls
- Special CT/PT
- Station Class Arresters

Catalog Number	Nominal Voltage	Rated KVA	Line Amps	OA/FA
40-13.2-0500	13200	500	219	OA
40-13.2-0750	13200	750	328	OA
40-13.2-1000	13200	1000	437	OA
40-13.2-1500	13200	1500	656	OA
40-13.2-2000	13200	2000	874	OA
40-13.2-2500	13200	2500	1093	OA
40-13.2-2972	13200	2972	1300	OA
41-13.2-0625	13200	625	274	FA
41-13.2-0937	13200	937	410	FA
41-13.2-1250	13200	1250	546	FA
41-13.2-2000	13200	2000	874	FA
41-13.2-2667	13200	2667	1166	FA
41-13.2-3333	13200	3333	1458	FA
41-13.2-4000	13200	4000	1750	FA
40-34.5-0500	34500	500	84	OA
40-34.5-1000	34500	1000	167	OA
40-34.5-1500	34500	1500	251	OA
40-34.5-2000	34500	2000	335	OA
41-34.5-0625	34500	625	105	FA
41-34.5-1250	34500	1250	209	FA
41-34.5-2000	34500	2000	335	FA
41-34.5-2667	34500	2667	446	FA



MJ-4A™ Voltage Regulator Control Panel



The MJ-4A & MJ-4B Voltage Regulator control panels are the ultimate feature-rich monitoring and data communications tool, designed to save you time and money. The user friendly MJ-4A & MJ-4B provide substantial cost savings to utilities by providing quick, flexible voltage reduction to lower actual demand during peak periods.

- Fast path keys for immediate accessibility to the most commonly used functions
- Easy-to-use menu structure for panel configuration in three easy steps
- Convenient communications capabilities including data port, communication module and remote access via laptop computer or SCADA
- Customizable Quick Key™ allows the creation of a quick list to the users' most frequently accessed screens

The powerful 32 bit Microprocessor MJ-4A & MJ-4B control panels can be retrofitted to all manufacturers' regulators, eliminating costly and time-consuming replacements. The control panels mount into existing

control cabinets and include all retrofit interface circuits. They're backed by Siemens' superior technical and field support, extensive on-site customer training and on-going assistance.

- 1** Highly Visible LED Display
- 2** Local Data Port
- 3** Dedicated Fast-Path Function Keys
- 4** Voltage Reduction & Voltage Limit
- 5** Neutralite™ Test Button
- 6** Quick Key™

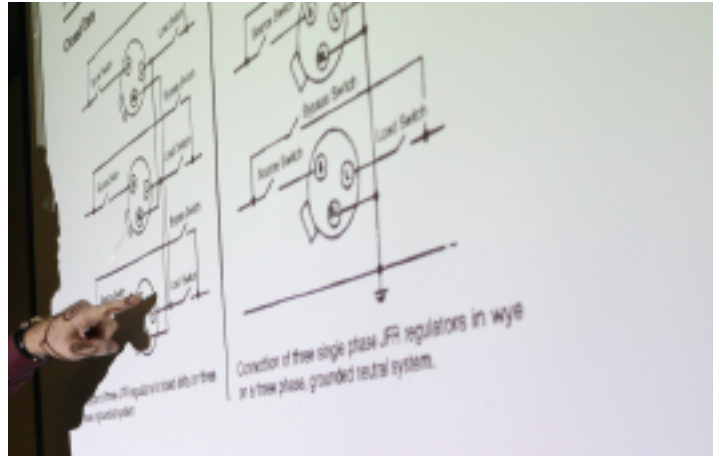
- 7** Voltage Select Key
- 8** Counters & Electronic Tap Position Fast-Path Key
- 9** Dedicated Fast-Path Alert Key
- 10** Easy-to-Use Keypad Menu
- 11** Carry Handle
- 12** Remote/Local Key
- 13** Maintenance Fast-path Key

MJ-4B™



The communication module is the interface used to connect the MJ-4A & MJ-4B control panels to SCADA. The RS232/485 connection supports RS232 multi-drop configurations and RS485 loop, star and open end configurations. The fiber optic ST connections supports a loop or star configuration. The communication module can be preinstalled in the control panel or easily retrofitted in the field.

Stay Ahead with Siemens' Voltage Regulator College of Knowledge



As regulator technology moves forward, don't leave your people behind. Siemens offers comprehensive training relevant to the voltage regulator industry. The Voltage Regulator College of Knowledge can be brought to your location or your people can attend one of our five programs conducted annually at Siemens' Power Products Division in Jackson, Mississippi.

Training can be tailored to meet your specific needs; from understanding the theories of voltage regulation, to learning the fine details of control technology, to hands-on regulator trouble shooting.

For dates of scheduled schools, or to arrange an on-site College of Knowledge, contact your local Siemens Representative.

Contact your local Siemens Representative for additional information on our voltage regulator products or log on to our website at: www.usa.siemens.com/energy

All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. The accuracy or completeness hereof is not guaranteed. Since conditions of use are outside our control, the user should determine the suitability of the product for its intended use and assumes all risk and liability whatsoever in connection herewith.

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