

Microprocessor-controlled tap changer (10–500 kVA, three-phase)



Eaton's electronic voltage regulator (EVR) reduces equipment downtime through constant voltage regulation. It is the ideal solution for equipment or facilities experiencing brownouts and voltage regulation problems. The EVR's patented design offers a high in-rush current, rapid response and operating advantages over other manufacturers.

Overview

The appropriate transformer tap is automatically activated through a silicon-controlled rectifier (SCR), maintaining a tightly regulated output voltage. Tap changes are initiated within one electrical cycle—switching at zero current crossing to ensure a minimum amount of noise during tap transitions.

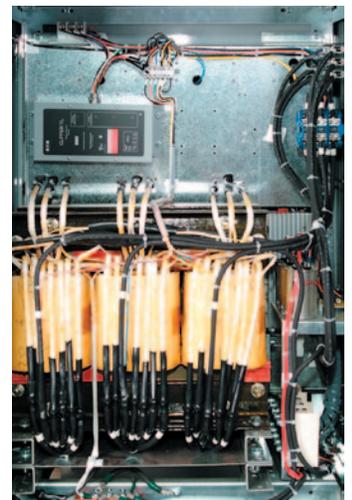
Seven taps per phase are used for optimal voltage regulation. Also, the EVR is a low output impedance, shielded isolation transformer. As a result of the low impedance, load changes do not affect other equipment connecting the system.

The EVR's patented design ensures high efficiency at 97% and 1000% in-rush capability. It is equipped with a thermal-magnetic breaker that allows for proper system coordination to prevent nuisance trips.

The EVR provides the triple function of isolation, noise attenuation and voltage regulation. The power transformer supplies the first two functions. The third function, voltage regulation, is supplied by the SCRs connected to taps on the power transformer. This sequential tap-changing design eliminates voltage "overshoot" from typical electronic voltage regulators, providing a seamless transition between the required power transformer taps.

EVR features

- $\pm 3\%$ voltage output for a +10/–23% voltage input
- Power factor—the EVR is not affected by load power factor
- Total harmonic distortion (THD)—the EVR adds less than 1% THD
- High Efficiency—97%
- Wide input frequency range—the EVR operates within a broad input frequency range from 57–63 Hz
- Seven taps per phase used to provide optimal voltage regulation
- Fail-safe bypass circuit, triple-shielded isolation transformer and overtemperature protection
- Two-year parts and labor warranty with no startup required



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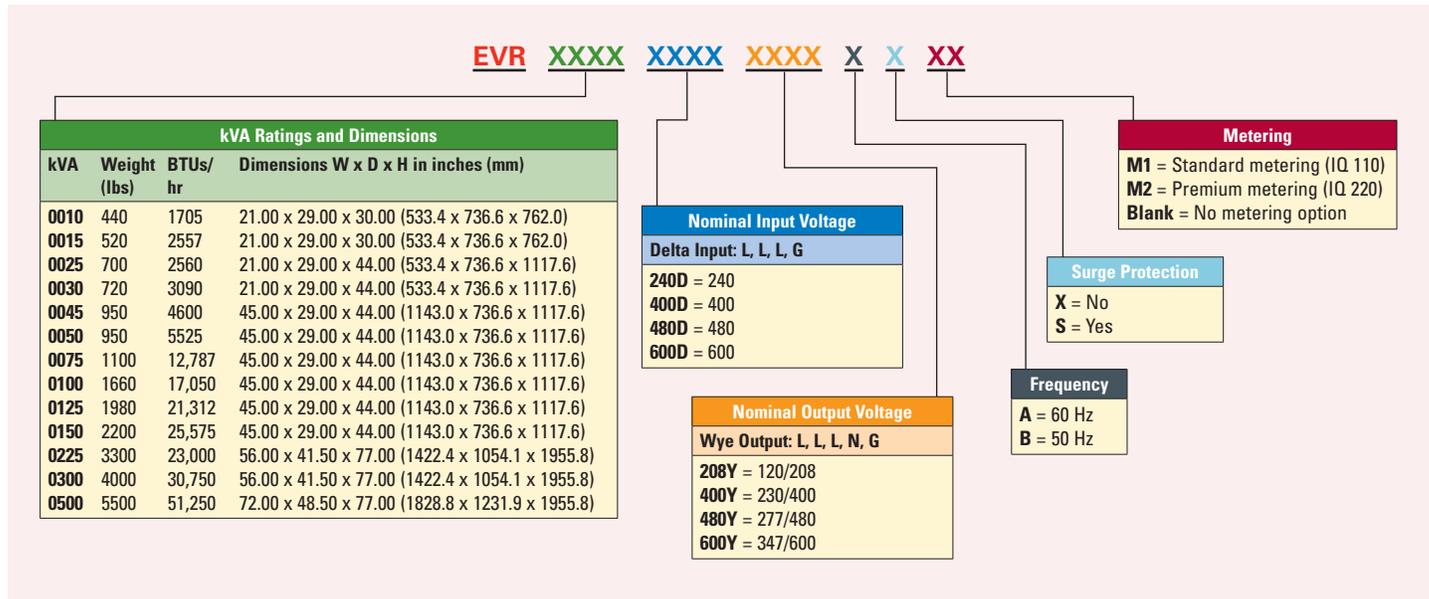
EVR Specifications	
Technology	Electronic tap changer
Input voltages	208–600V, three-phase (three-wire)
Input voltage range	+10% to –23% of nominal rated input
Output voltage	±3% of nominal
Response time	1/2 cycle
Frequency	60 Hz, ±3%
Efficiency	97% typical
Line regulation	Output is ±3% of nominal for input variations of +10% to –23% of nominal
Load regulation	Output is maintained within 3% from no load to full load
Correction time	Output will be corrected in one step to within ±3% of nominal in 1.5 cycles or less
Harmonic distortion	Less than 1.0% THD
Noise attenuation Common mode Normal mode	140 dB 3 dB down at 1000 Hz, 40 dB/decade to below 50 Hz with resistive load
Turn-on characteristics	When energized, voltage overshoot will be less than 5% of nominal for 1 cycle or less
Overload rating	1000% for 1 cycle and 200% for 10 seconds
Ambient rating	–10° to 40°C
Monitoring	Three green LEDs (phase power on indication), one red LED (alert indication)
Surge protection (optional)	CVL 100 kA SPD device
Input breaker	MCCB rated 125% of full rated current
Bypass switch	Normal and bypass selector
Metering (optional)	Standard metering—voltage and current Premium metering—voltage, current, frequency, power, energy, communications capabilities
Warranty	2-year parts and labor

For custom design, call the support number below.

Application support

If you are having trouble understanding a problem related to power quality, reliability or energy management, call an application engineer at 800-809-2772 (Option 1).

EVR ordering guidelines



Eaton Corporation
 Electrical Sector
 1111 Superior Ave.
 Cleveland, OH 44114
 United States
 877-ETN-CARE (877-386-2273)
 Eaton.com

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