

# Step Voltage Regulator

PVR-32



# Step Voltage Regulator PVR-32

## Regulation Features

IEC PVR-32 feeder voltage regulators are single phase tap changing auto-transformers designed to automatically regulate distribution line voltages from ten percent raise(boost) to ten percent lower(buck) in 32steps approximately 5% or 8%.

### ■ Types

- Mounting : Outdoor pole or ground
- Cooling : Oil-filled & self-cooling
- Type : Auto-transformer with on-load tap changer

### ■ Ratings

- Voltage : 2.5KV(60KV BIL) to 20KV(150KV BIL)
- Current : 50Amps to 650Amps
- KVA : 50KVA to 833KVA
- Frequency : 50Hz or 60Hz

### ■ Applicable standard

IEC PVR-32 voltage regulators are designed, manufactured and tested in accordance with the requirements of ANSI Standard C57.15.

IEC PVR-32 voltage regulators are designed for reliable operation and ease of maintenance and are supplied with a full array of standard features for routine applications. The use of 65C rise insulation system in 55C rated designs provides an extra 12% capacity for the PVR-32 regulator without loss of insulation life span.

IEC PVR-32 voltage regulator's complete internal assembly (including tap changer switch, motor, core and coil assembly) is mounted to the cover. This design simplifies removal of the internal assembly for inspection, maintenance and repair.

Load Current & KVA Ratings. 60Hz

Voltage(KV)	Load Current(Amperes)	KVA
2.5KV 60KV BIL	200	50
	300	75
	400	100
	500	125
	668	167
5.0KV 75KV BIL	100	50
	150	75
	200	100
	250	125
	334	167
	500	250
	668	333
7.62KV 95KV BIL	50	38
	75	57
	100	76
	150	114
	219	167
	328	250
	438	333
	546	416
	656	500
13.8KV 95KV BIL	50	69
	100	138
	150	207
	200	276
	300	414
	400	552
	483	667
	604	833
14.4KV 150KV BIL	50	72
	100	144
	200	288
	231	333
	300	432
	400	576
	463	667
	578	833
19.92KV 150KV BIL	50	100
	100	200
	167	333
	200	400
	335	667
	418	833
	502	1000
22KV 150KV BIL	50	110
	90	200
	150	330
	182	400
	227	500
	273	600
	318	700
	400	880
36KV 200KV BIL	50	180
	100	360
	150	540
	200	720

# Step Voltage Regulator PVR-32

## **Solid type**

High creep porcelain Bushing

## **Clamp type terminal**

Easy connection

## **Complete internal assembly**

Tap changer switch, motor, core and coil assembly are mounted to the cover. This design simplifies removal of the internal assembly for inspection, maintenance, and repair.



Automatic Control Panel

## **ADD-AMP**

ADD-AMP feature allows PVR-32 regulator to handle increased current capacity by reducing the regulation range.

Setting of limit switches located on the tap position indicator can prevent the tap changer from traveling above or below the designed settings.



## **Sampling and drain valve**





#### *Series arrester*

Each regulator is equipped with a MOV-type surge arrester to protect the series winding of the regulator from damages.

#### *Oil level gauge*

#### *Name plates*

#### *Pressure relief device*



#### *Sealed tank*

Designed to prevent moisture and air from entering the internal environment. Tanks are constructed of mild steel or stainless steel and electro-statically coated with a tough polyester powder finish.

# IEC / UVR-1 Control

IEC / UVR-1 Universal Voltage Regulator Control is a microprocessor based step voltage regulator control with an integrated remote monitoring and control capability supporting multiple communications protocols.

## *Regulation Features*

- **Bandcenter** : Set voltage, adjustable from 100.0 to 135.0V with 0.1V resolution
- **Bandwidth** : Adjustable from 1.0 to 6.0V with 0.1V resolution
- **Time Delay** : Adjustable from 5 to 180 sec. with 1sec. resolution
- **Line Drop Compensation**
  - Resistive Compensation (-72.0 to +72.0V)
  - Reactive Compensation (-72.0 to +72.0V)
- **Reverse Power Flow Detection / Operation**

Reverse power flow is detected by monitoring the phase angle of the load current relative to the voltage, as well as the real current component
- **Multiple Mode Operation**
  - Locked Forward : Regulating and metering based on forward power flow
  - Locked Reverse : Regulating and metering based on reverse power flow
  - Idle Reverse : Regulating and metering based on power flow direction, but tap changer do not occur during reverse operation
  - Bi-directional : Regulating and metering based on power flow direction
  - Neutral reverse : Regulating and metering based on power flow direction, but regulator returns to neutral position during reverse operation
  - Co-generation : Regulating and metering based on forward power flow, except that the reverse line drop compensation setting are during reverse power flow
- **Regulation Algorithms / Timer Mode**
  - Sequential
  - Voltage-Averaging
  - Time-integrating Sequential
- **Voltage Limiting**
  - Adjustable high and low limits with auto-runback i.e. "First House Protection"
- **Operational Requirements**
  - 0.3% basic accuracy (tested per IEEE C57.15-1999 excluding VT and CT errors)
  - Operating temperature range : -40 to +85C
  - 50 and 60 Hz nominal operation
- **Communications**
  - Front panel PC Port : Serial EIA-232 port for maintenance and configuration plus data readout
  - Protocol Port : Serial EIA-232, EIA-485, or daughter board interface selectable
  - Can serve as a communications gateway for multi-dropped and loop configuration
  - Optional Daughter Board Interface-to support additional communications such as fiber-optic or modem
  - Optional Bluetooth wireless
  - All configuration parameters, set points, status, and measurements can be read and/or written via DNP

# Step Voltage Regulator PVR-32

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