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Specifications
CSI Format: ................................................................. 1995 2010
                      Section 16313  Section 26 11 16.13

Unitized Power Center
Unitized Power Centers

General Description and Application

Eaton's unitized dry-type power centers are self-contained metal-enclosed unit substations especially designed to supply and distribute low voltage power from medium voltage lines in modern commercial and industrial systems. They are ideal where considerations of equipment size, accessibility, maintainability, ease of installation, and overall economy are uppermost.

Due to the inherent compactness of unitized power centers, they are easily and conveniently applied in multiples throughout a distribution system at physical locations close to centers of load concentration. The distribution voltage is thus stepped down to the utilization voltage only at or near the areas of demand with kVA being allocated as required for new construction or renovation in existing buildings. The application of unitized power centers in this manner results in several advantages not available with conventional secondary unit substations.

Advantages

- Moving into place is facilitated by the rugged channel base construction and lifting eyes included with each assembly
- All standard unitized power centers are especially designed to minimum dimensions consistent with safety and reliability
- Standard unitized power centers are front-only accessible, making against-the-wall installations possible—minimum of 6.00 inches (152.4 mm) from wall for seismic applications, 2.00 inches (50.8 mm) for non-seismic
- Future load growth is easily accommodated by the addition of unitized power centers to the system without affecting the units serving the original load areas
- Losses in the medium voltage portion of the distribution system are lower, resulting in a continuous operating savings
- Secondary output voltage may be adjusted at each unitized power center to compensate for unusual load conditions without affecting the voltage setting of other apparatus in the system
- Trouble is more quickly isolated with individual units located at or near their served loads
- Primary power is purchased from the utility at the lower primary power rates, resulting in operational cost savings throughout the life of the equipment
- Overall installed cost is lower because of the cost benefits of medium voltage distribution cable as compared to low voltage cable or busway
- IQ Energy Sentinel™ devices can be provided on each feeder circuit to interface with an Eaton PowerNet™ system to monitor and display electrical energy (kWh). See Tab 3 for more information
- The IQ family of electronic meters can be provided to monitor the parameters unique to each type of device. With a PONI accessory, each of these devices can be connected to an Eaton PowerNet power monitoring system. See Tab 2 for more information

Ratings

- Three-phase kVA:
  - 112.5–1000
- Primary voltages:
  - 2.4 kV Class with 20 kV LIWV (BIL), 60 Hz
  - 5 kV Class with 30 kV LIWV (BIL), 60 Hz
  - 15 kV Class with 60 kV LIWV (BIL), 60 Hz
- MV power system grounding—solid or low resistance grounded (≥100 A) only. UPC product is not to be used on high-resistance or ungrounded MV power systems
- Transformer windings:
  - Primary connections—three-wire delta only
  - Copper or aluminum
  - Type AA, ventilated dry-type
  - NEMA® Class 220 °C insulation
  - 80, 115, 150°C rise. When transformer must meet requirements of Federal 10CFR431K, the 750 and 1000 kVA units are only available in 150 °C rise
  - Type FA (forced air) available, increases kVA ratings by 33%
  - Primary taps at 95%, 97.5%, 100%, 102.5%, 105% of rated primary voltage
- Secondary voltages:
  - 208Y/120 V, four-wire
  - 240 V, three-wire
  - 480Y/277 V, four-wire
  - 480 V, three-wire
  - 575/380 V, four-wire
- Transformer efficiency per 10CFR431K

MV Power System Grounding

Please note that due to lower LIWV (BIL) and power frequency withstand ratings of the UPC transformers, the UPC product is not suitable for use on high-resistance or ungrounded MV power systems where a voltage escalation caused by an arcing type single phase-to-ground fault can cause insulation failures within the UPC. The UPC product should only be applied on solidly grounded systems or low resistance grounded power systems designed to allow minimum 100 A primary ground fault current during a single phase-to-ground fault.

For more information, visit: www.eaton.com/consultants
### Advantages (continued)

#### Third-Party Listing

The UPC is UL® listed.

#### Seismic Qualification

Refer to Table 1 for information on seismic qualification for this and other Eaton products.

### Technical Data

#### Table 15.0-1. Primary Disconnect Switch Ratings—Type MVS Load Interrupter

<table>
<thead>
<tr>
<th>Rated Maximum Voltage kV rms</th>
<th>Impulse Withstand Voltage kV peak</th>
<th>Continuous and Load Break Current Ampere</th>
<th>Short-Time Short-Circuit Withstand Current (2 second) kA, rms sym</th>
<th>Non-Fused Switch Fault Close and Momentary Rating (10 cycles) kA, rms Asym</th>
<th>Fused Switch Fault Close Rating kA, rms Asym</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.76</td>
<td>60</td>
<td>600</td>
<td>25</td>
<td>40</td>
<td>101</td>
</tr>
<tr>
<td>4.76</td>
<td>60</td>
<td>600</td>
<td>25</td>
<td>61</td>
<td>101</td>
</tr>
<tr>
<td>15</td>
<td>95</td>
<td>600</td>
<td>38</td>
<td>101</td>
<td>101</td>
</tr>
<tr>
<td>15</td>
<td>95</td>
<td>600</td>
<td>38</td>
<td>101</td>
<td>101</td>
</tr>
</tbody>
</table>

(1) UL listing available with fused switch only.

#### Table 15.0-2. Primary Fuse Ampere Rating

Continued from Eaton Type HCL, 63,000 A

#### Table 15.0-3. Unit Weights—Lb (kg)

<table>
<thead>
<tr>
<th>kVA</th>
<th>Weight in Lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>112.5</td>
<td>4097 (1858)</td>
</tr>
<tr>
<td>150</td>
<td>4317 (1958)</td>
</tr>
<tr>
<td>225</td>
<td>4744 (2152)</td>
</tr>
<tr>
<td>300</td>
<td>5247 (2380)</td>
</tr>
<tr>
<td>500</td>
<td>5659 (2567)</td>
</tr>
<tr>
<td>750</td>
<td>6721 (3049)</td>
</tr>
</tbody>
</table>

Table 150.3 continued from 1000 kVA = 10834 (4924)

#### Table 15.0-4. Unitized Power Center, Circuit Breaker Interrupting Ratings

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>Range of Rated Continuous Current, Amperes</th>
<th>Rated Maximum Interrupting Capability, kA Sym.</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 V</td>
<td>460 V</td>
<td></td>
</tr>
</tbody>
</table>

- EDB          | 100-225                                    | 22                                             |
- EDS          | 100-225                                    | 42                                             |
- ED           | 15-225                                     | 65                                             |
- EDH          | 15-225                                     | 100                                            |
- EDC          | 100-225                                    | 200                                            |
- EHD          | 15-100                                     | 18                                             |
- FDB          | 15-150                                     | 14                                             |
- FD           | 15-225                                     | 65                                             |
- FDC          | 15-225                                     | 65                                             |
- FDH          | 15-225                                     | 100                                            |
- FDE          | 15-225                                     | 100                                            |
- FDHE         | 15-225                                     | 100                                            |
- JD           | 70-250                                     | 35                                             |
- JHD          | 70-250                                     | 100                                            |
- JDC          | 70-250                                     | 100                                            |
- DK           | 250-400                                    | 65                                             |
- KD           | 100-400                                    | 65                                             |
- KDC          | 100-400                                    | 100                                            |
- LGE          | 250-600                                    | 65                                             |
- LGH          | 250-600                                    | 65                                             |
- LGD          | 300-600                                    | 65                                             |
- LHD          | 300-600                                    | 65                                             |
- LDC          | 250-600                                    | 100                                            |
- LGE          | 250-600                                    | 65                                             |
- LGH          | 250-600                                    | 65                                             |
- LGC          | 250-600                                    | 100                                            |
- LGU          | 250-600                                    | 200                                            |
- MDL          | 300-800                                    | 65                                             |
- MHDL         | 300-800                                    | 100                                            |
- NGS          | 500-1200                                   | 65                                             |
- NGH          | 500-1200                                   | 100                                            |
- NGC          | 500-1200                                   | 100                                            |
- RGH          | 1600-2500                                  | 125                                            |
- RGC          | 1600-2500                                  | 200                                            |

(4) Not panel mounted; supplied only in added auxiliary distribution section.

- Single primary, LV distribution in front of the transformer.
- Single primary, Separate LV switchboard close coupled to transformer.
<table>
<thead>
<tr>
<th>kVA</th>
<th>Impedance %</th>
<th>kV Class</th>
<th>LIWV (BIL)</th>
<th>Primary Taps</th>
<th>Secondary Full Load Ampere</th>
<th>kVA</th>
<th>Secondary Full Load Ampere</th>
</tr>
</thead>
<tbody>
<tr>
<td>112.5</td>
<td>4.5</td>
<td>5</td>
<td>2400, 4160 or 4800</td>
<td>20 kV, 30 kV</td>
<td>±2–2-1/2%</td>
<td>208Y/120 or 480Y/277</td>
<td>150</td>
</tr>
<tr>
<td>150</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>625</td>
</tr>
<tr>
<td>225</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>833</td>
</tr>
<tr>
<td>300</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>1389</td>
</tr>
<tr>
<td>500</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>2082</td>
</tr>
<tr>
<td>750</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>2776</td>
</tr>
<tr>
<td>1000</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>36205</td>
</tr>
<tr>
<td>112.5</td>
<td>4.5</td>
<td>15</td>
<td>7200, 12470 or 13200</td>
<td>30 kV, 60 kV</td>
<td>±2–2-1/2%</td>
<td>208Y/120 or 480Y/277</td>
<td>150</td>
</tr>
<tr>
<td>150</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>625</td>
</tr>
<tr>
<td>225</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>833</td>
</tr>
<tr>
<td>300</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>1389</td>
</tr>
<tr>
<td>500</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>2082</td>
</tr>
<tr>
<td>750</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>2776</td>
</tr>
<tr>
<td>1000</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208Y/120 or 480Y/277</td>
<td>36205</td>
</tr>
</tbody>
</table>

1 Refer to Table 15.0-6 for available temperature rise, fan and secondary voltage options.
2 Short circuit currents assume unlimited utility source, and do not include motor contributions.
3 Maximum load/output is limited to 1200 A due to chassis limitation.
4 Maximum load/output is limited to 3000 A (cross bus limitation).

Note: All units are three-phase, 60 Hz, 150 °C rise, 220 °C insulation system.
Unitized Power Centers—Available Configurations

- MV switch will be fused or non-fused. UL listing available with fused switch only
- MV fuse class: current limiting, Eaton Type HCL only
- Primary surge protection shown is optional
- Use separate LV switchboard if:
  - LV distribution chassis required is >1200 A
  - LV chassis-mounted devices will consume more than 36X of available chassis space
- Bottom or top entry incoming high voltage cable size and quantity is limited to 250 kcmil, two per phase
- Vent screens, filters, door gaskets or space heaters are not available in this product
- FA rating (33% increase in kVA) is optional
- Available transformer options—see Table 15.0-6
- Optional low voltage side customer metering and surge protection devices are chassis mounted in panelboard or switchboard

### Table 15.0-6. Available Transformer Options

#### Transformer Section

<table>
<thead>
<tr>
<th>48-Inch Wide With LV Distribution in Front</th>
<th>48-Inch Wide With Separate LV Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>112.5</td>
<td>80, 115, 150</td>
</tr>
<tr>
<td>150</td>
<td>80, 115, 150</td>
</tr>
<tr>
<td>225</td>
<td>80, 115, 150</td>
</tr>
<tr>
<td>300</td>
<td>80, 115, 150</td>
</tr>
</tbody>
</table>

#### Transformer Section

<table>
<thead>
<tr>
<th>60-Inch Wide With LV Distribution in Front</th>
<th>60-Inch Wide With Separate LV Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>150</td>
</tr>
<tr>
<td>500</td>
<td>80, 115</td>
</tr>
<tr>
<td>500</td>
<td>150</td>
</tr>
<tr>
<td>750</td>
<td>150</td>
</tr>
</tbody>
</table>

1. Available secondary voltages: 208/120 V wye (four-wire), 240 V delta (three-wire), 480/277 V wye (four-wire), 480 V delta (three-wire) and 575/380 V wye (four-wire).
2. 33% increased kVA capacity with fans.
3. At 208 or 240 V secondary, maximum load (output) is limited to 1200 A due to chassis limitation.
4. 33% increased kVA capacity with fans, except for 1000 kVA transformer using 208 V secondary, maximum load/output is limited to 3000 A (cross bus limitation).
Available Configurations

Figure 15.0-1. Single Primary, LV Distribution in Front of the Transformer

Note: These UPCs are shipped fully assembled, except 5.00-inch (127.0 mm) top vent is shipped separately.
Figure 15.0-2. Single Primary, Separate LV Distribution Switchboard Close-Coupled to Transformer

Note: In addition to shipping splits shown, 5.00-inch (127.0 mm) top vent is shipped separately.
Figure 15.0-3. Duplex Primary, LV Distribution in Front of the Transformer

Note: In addition to shipping splits shown, 5.00-inch (127.0 mm) top vent is shipped separately.
Figure 15.0-4. Duplex Primary, Separate LV Distribution Switchboard Close-Coupled to Transformer

Note: In addition to shipping splits shown, 5.00-inch (127.0 mm) top vent is shipped separately.
Figure 15.0-5. Distribution Panel Layout Mounted in Front of Transformer up to 1200 A Panel-Mounted Main and Feeder Devices

Notes: For main devices or main bus 1200 A and below. Feeder devices mounted in front of transformer. For auxiliary switchboard section layout—adjacent to transformer, refer to Figure 15.0-7 for switchboard section information. Neutral conductor is always gutter mounted.
Figure 15.0-6. Base Plan View—HV Left, LV Distribution in Front of the Transformer

1. Minimum recommended clearance on each side and rear = 2.00 inches (51.0 mm) for non-seismic applications, 6.00 inches (152.4 mm) for seismic applications. Local jurisdictions may require more.

2. Minimum recommended clearance in the front = 36.00 inches (863.6 mm). Local jurisdictions may require more.

Note: Finished foundation surface shall be level within 0.06 inches (1.5 mm) in 36.00 inches (914.4 mm) left-to-right, front-to-back and diagonally, as measured by a laser level. Refer to actual order drawings for power cable conduit entrance locations.

Lifting Handles (2) (Can Be Removed)

Figure 15.0-7. Base Plan View—HV Left, LV Switchboard Close-Coupled to Transformer on the Right

3. Minimum recommended clearance on each side and rear = 2.00 inches (51.0 mm) for non-seismic applications, 6.00 inches (152.4 mm) for seismic applications. Local jurisdictions may require more.

4. Minimum recommended clearance in the front = 36.00 inches (863.6 mm). Local jurisdictions may require more.

Note: Finished foundation surface shall be level within 0.06 inches (1.5 mm) in 36.00 inches (914.4 mm) left-to-right, front-to-back and diagonally, as measured by a laser level. Refer to actual order drawings for power cable conduit entrance locations.