

Low Temperature Rise

Hevi-Duty low temperature rise transformers feature a 220°C insulation system and temperature rise of only 80°C or 115°C under full nameplate load. The result is 13-21% lower operating losses than conventional 150°C rise units. Reduction in temperature rise increases reliability.

The 35°C thermal reserve on 115°C rise units and 70°C reserve on 80°C rise units definitely mean higher reliability. The extra benefit is being able to operate either of these transformers as a 150°C rise unit and have a short term overload capacity of 15-30% *without* compromising normal life expectancy (See Figure 2).

Low temperature rise transformers are designed for any critical application requiring extra overload capability, lower than average total losses and/or cooler operating temperatures. All are available with either a 115°C or 80°C thermal rise and a class 220°C insulation system.



Listed

E25872



Certified

Accessories and Optional Design Styles

- Wall mounting brackets (500 lbs maximum)
- Weather Shields (UL-3R)*
- Stainless Steel Enclosures
- Totally enclosed non-ventilated designs (TENV) (Non UL)
- Open core and coil designs (UR) (Non CSA)
- Copper Wound designs
- Compliant to NEMA TP-1 standards

* Not all optional designs are UL listed. Contact Technical Services.

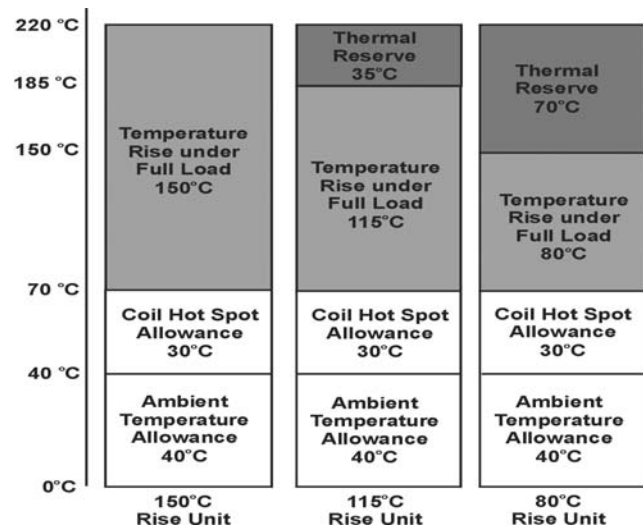


Figure 2

Selection Tables: Low Temperature Rise Single Phase, 80°C Rise



Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz

| kVA | Catalog Number 80°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ES5HB15S | WS-15 | 28 | 16 | 16 | 199 | 1 | 1 | 62.5/31.3 | 125/62.5 |
| 25 | ES5HB25S | WS-17 | 31 | 18 | 18 | 239 | 1 | 1 | 104/52.1 | 208/104 |
| 37.5 | ES5HB37S | WS-17 | 31 | 18 | 18 | 308 | 1 | 1 | 156/78 | 313/156 |
| 50 | ES5HB50S | WS-09 | 44 | 23 | 21 | 398 | 1 | 1 | 208/104 | 416/208 |
| 75 | ES5HB75S | WS-09 | 44 | 23 | 21 | 560 | 1 | 1 | 313/156 | 625/313 |
| 100 | ES5HB100S | WS-16 | 46 | 26 | 24 | 980 | 1 | 1 | 417/208 | 833/417 |

Group 2: 600 Volt Primary, 120/240 Secondary, 60 Hz

| kVA | Catalog Number 80°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ES10HB15S | WS-15 | 28 | 16 | 16 | 199 | 1 | 4 | 25.0 | 125/62.5 |
| 25 | ES10HB25S | WS-17 | 31 | 18 | 18 | 239 | 1 | 4 | 41.7 | 208/104 |
| 37.5 | ES10HB37S | WS-17 | 31 | 18 | 18 | 308 | 1 | 4 | 62.5 | 313/156 |
| 50 | ES10HB50S | WS-09 | 44 | 23 | 21 | 398 | 1 | 4 | 83.3 | 416/208 |
| 75 | ES10HB75S | WS-09 | 44 | 23 | 21 | 555 | 1 | 4 | 125.0 | 625/313 |
| 100 | ES10HB100S | WS-16 | 46 | 26 | 24 | 980 | 1 | 4 | 167.0 | 833/417 |

Selection Tables: Low Temperature Rise Three Phase, 80°C Rise

Group A: 480 Δ Primary, 208Y/120 Secondary, 60 Hz

| kVA | Catalog Number 80°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|-------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ET2HB15S | WS-14 | 28 | 23 | 16 | 305 | 1 | 2 | 18.1 | 41.7 |
| 30 | ET2HB30S | WS-14 | 28 | 23 | 18 | 405 | 1 | 2 | 36.1 | 83.4 |
| 45 | ET2HB45S | WS-30 | 34 | 28 | 22 | 535 | 1 | 2 | 54.2 | 125.0 |
| 75 | ET2HB75S | WS-30 | 34 | 28 | 22 | 805 | 1 | 2 | 90.3 | 208.0 |
| 112.5 | ET2HB112S | WS-10 | 44 | 33 | 21 | 972 | 1 | 2 | 135.0 | 313.0 |
| 150 | ET2HB150S | WS-11 | 46 | 36 | 24 | 1325 | 1 | 2 | 181.0 | 417.0 |
| 225 | ET2HB225S | WS-11 | 46 | 36 | 24 | 1515 | 1 | 2 | 271.0 | 625.0 |
| 300 | ET2HB300S | WS-12 | 65 | 45 | 35 | 2460 | 1 | 2 | 361.0 | 834.0 |

* Weather shields (set of two) must be ordered separately.

**Design Style and Electrical Connections can be found on pages 165-166.

Selection Tables: Low Temperature Rise Single Phase, 115°C Rise


Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz

| kVA | Catalog Number 115°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ES5HF15S | WS-15 | 23 | 16 | 16 | 175 | 1 | 1 | 62.5/31.3 | 125/62.5 |
| 25 | ES5HF25S | WS-15 | 28 | 16 | 16 | 265 | 1 | 1 | 104/52.1 | 208/104 |
| 37.5 | ES5HF37S | WS-17 | 31 | 18 | 18 | 340 | 1 | 1 | 156/78 | 313/156 |
| 50 | ES5HF50S | WS-17 | 31 | 18 | 18 | 425 | 1 | 1 | 208/104 | 416/208 |
| 75 | ES5HF75S | WS-09 | 44 | 23 | 21 | 655 | 1 | 1 | 313/156 | 625/313 |
| 100 | ES5HF100S | WS-09 | 44 | 23 | 21 | 750 | 1 | 1 | 417/208 | 833/417 |
| 167 | ES5HF167S | WS-16 | 46 | 26 | 24 | 980 | 1 | 1 | 695/348 | 1392/695 |

Group 2: 600 Volt Primary, 120/240 Secondary, 60 Hz

| kVA | Catalog Number 115°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ES10HF15S | WS-15 | 23 | 16 | 16 | 175 | 1 | 4 | 25.0 | 125/62.5 |
| 25 | ES10HF25S | WS-15 | 28 | 16 | 16 | 265 | 1 | 4 | 41.7 | 208/104 |
| 37.5 | ES10HF37S | WS-17 | 31 | 18 | 18 | 340 | 1 | 4 | 62.5 | 313/156 |
| 50 | ES10HF50S | WS-17 | 31 | 18 | 18 | 425 | 1 | 4 | 83.3 | 416/208 |
| 75 | ES10HF75S | WS-09 | 44 | 23 | 21 | 655 | 1 | 4 | 125.0 | 625/313 |
| 100 | ES10HF100S | WS-09 | 44 | 23 | 21 | 750 | 1 | 4 | 167.0 | 833/417 |
| 167 | ES10HF167S | WS-16 | 46 | 26 | 24 | 980 | 1 | 4 | 278.0 | 1392/695 |

Selection Tables: Low Temperature Rise Three Phase, 115°C Rise

Group A: 480 Δ Primary, 208Y/120 Secondary, 60 Hz

| kVA | Catalog Number 115°C Rise | NEMA 3R Weather Shield* | Height (inch) | Width (inch) | Depth (inch) | Approx. Ship Weight (lbs) | Design Style** | Elec Conn** | Primary Amps | Secondary Amps |
|-------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15 | ET2HF15S | WS-02 | 23 | 18 | 14 | 187 | 1 | 2 | 18.1 | 41.7 |
| 30 | ET2HF30S | WS-14 | 28 | 23 | 16 | 292 | 1 | 2 | 36.1 | 83.4 |
| 45 | ET2HF45S | WS-14 | 28 | 23 | 16 | 376 | 1 | 2 | 54.2 | 125.0 |
| 75 | ET2HF75S | WS-30 | 34 | 28 | 22 | 569 | 1 | 2 | 90.3 | 208.0 |
| 112.5 | ET2HF112S | WS-30 | 34 | 28 | 22 | 768 | 1 | 2 | 135.0 | 313.0 |
| 150 | ET2HF150S | WS-10 | 44 | 33 | 21 | 933 | 1 | 2 | 181.0 | 417.0 |
| 225 | ET2HF225S | WS-11 | 46 | 36 | 24 | 1342 | 1 | 2 | 271.0 | 625.0 |
| 300 | ET2HF300S | WS-11 | 46 | 36 | 24 | 1525 | 1 | 2 | 361.0 | 834.0 |
| 500 | ET2HF500S | WS-12 | 65 | 45 | 35 | 2460 | 1 | 2 | 602.0 | 1390.0 |

* Weather shields (set of two) must be ordered separately.

**Design Style and Electrical Connections can be found on pages 165-166.

Electrical Connections

240 x 480 Volt Primary,
120/240 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

| Primary Voltage | Interconnect | Connect Lines To |
|-----------------|--------------------|------------------|
| 504 | 1 to 2 | H1 & H2 |
| 492 | 2 to 3 | H1 & H2 |
| 480 | 3 to 4 | H1 & H2 |
| 468 | 4 to 5 | H1 & H2 |
| 456 | 5 to 6 | H1 & H2 |
| 444 | 6 to 7 | H1 & H2 |
| 432 | 7 to 8 | H1 & H2 |
| 252 | H1 to 2 H2 to 1 | H1 & H2 |
| 240 | H1 to 4 H2 to 3 | H1 & H2 |
| 228 | H1 to 6 H2 to 5 | H1 & H2 |
| 216 | H1 to 8 H2 to 7 | H1 & H2 |

| Secondary Voltage | Interconnect | Connect Lines To |
|-------------------|----------------------|------------------|
| 240 | X2 to X3 | X1 & X4 |
| 120-0-120 | X2 to X3 X2 to ⚬ | X1-X2-X4 |
| 120 | X1 to X3 X2 to X4 | X1 & X4 |

S5 Series

480 Δ Volt Primary,
208Y/120 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

| Primary H1-H2-H3 | | Secondary Voltage | |
|------------------|---------|-------------------|----------------|
| @ Tap | Voltage | X1, X2, X3 | X0- X1, X2, X3 |
| 1 | 504 | 208 | 120 |
| 2 | 492 | | |
| 3 | 480 | | |
| 4 | 468 | | |
| 5 | 456 | | |
| 6 | 444 | | |
| 7 | 432 | | |

T2 Series

480 Δ Volt Primary,
240 Δ W/120 CT Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

| Primary H1-H2-H3 | | Secondary Voltage | |
|------------------|---------|-------------------|--------------|
| @ Tap | Voltage | X1, X2, X3 | X6-X1, X6-X3 |
| 1 | 504 | 240 | 120 |
| 2 | 492 | | |
| 3 | 480 | | |
| 4 | 468 | | |
| 5 | 456 | | |
| 6 | 444 | | |
| 7 | 432 | | |

T5 Series

600 Volt Primary,
120/240 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

| Primary H1-H2-H3 | Interconnect | Connect Lines To |
|------------------|--------------|------------------|
| 630 | 1 to 2 | H1 & H2 |
| 615 | 2 to 3 | H1 & H2 |
| 600 | 3 to 4 | H1 & H2 |
| 585 | 4 to 5 | H1 & H2 |
| 570 | 5 to 6 | H1 & H2 |
| 555 | 6 to 7 | H1 & H2 |
| 540 | 7 to 8 | H1 & H2 |

| Secondary Voltage | Interconnect | Connect Lines To |
|-------------------|----------------------|------------------|
| 240 | X2 to X3 | X1 & X4 |
| 120-0-120 | X2 to X3 X2 to ⚬ | X1-X2-X4 |
| 120 | X1 to X3 X2 to X4 | X1 & X4 |

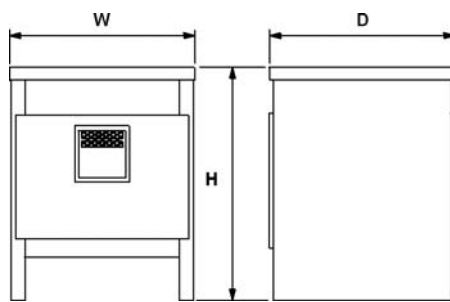
S10 Series

480 Δ Volt Primary
380/220 or 480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN

| Primary H1-H2-H3 | | Secondary Voltage | |
|------------------|---------|-------------------|----------------|
| @ Tap | Voltage | X1, X2, X3 | X0- X1, X2, X3 |
| 1 | 504 | 380 480 | 220 277 |
| 2 | 492 | | |
| 3 | 480 | | |
| 4 | 468 | | |
| 5 | 456 | | |
| 6 | 444 | | |
| 7 | 432 | | |

T79 & T81 Series

Design Style



Ventilated Design Style 1