

## Low Temperature Rise

SolaHD 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.



UL Listed  
E25872

### Accessories and Optional Design Styles

- Wall mounting brackets (500 lbs maximum) (Item WB1C)
- Weather Shields (UL-3R)\*
- Stainless Steel Enclosures
- Totally enclosed non-ventilated designs (TENV) (Non UL)
- Open core and coil designs (UL Recognized)
- Copper Wound designs
- Compliant to NEMA TP-1 standards

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

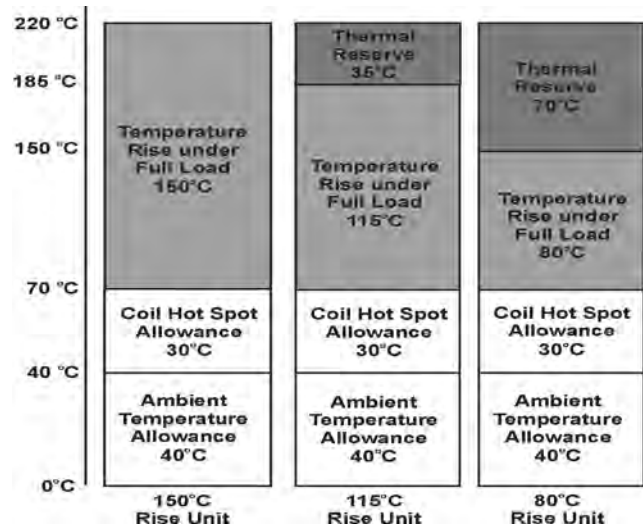


Figure 2

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

#### Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz, 80°C Rise

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| kVA  | Catalog Number<br>80°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15   | ES5HB15S                    | WS-15                      | 28               | 16              | 16              | 265                          | 1                 | 1              | 62.5/31.3       | 125/62.5          |
| 25   | ES5HB25S                    | WS-17                      | 31               | 18              | 18              | 340                          | 1                 | 1              | 104/52.1        | 208/104           |
| 37.5 | ES5HB37S                    | WS-17                      | 31               | 18              | 18              | 425                          | 1                 | 1              | 156/78          | 313/156           |
| 50   | ES5HB50S                    | WS-09                      | 44               | 23              | 21              | 655                          | 1                 | 1              | 208/104         | 416/208           |
| 75   | ES5HB75S                    | WS-09                      | 44               | 23              | 21              | 750                          | 1                 | 1              | 313/156         | 625/313           |
| 100  | ES5HB100S                   | WS-16                      | 46               | 26              | 24              | 980                          | 1                 | 1              | 417/208         | 833/417           |

#### Notes:

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

\*\*Design Style and Electrical Connections can be found on pages 204-205.

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

### Group 2: 600 Volt Primary, 120/240 Secondary, 60 Hz, 80°C Rise



| kVA  | Catalog Number<br>80°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15   | ES10HB15S                   | WS-15                      | 28               | 16              | 16              | 265                          | 1                 | 4              | 25.0            | 125/62.5          |
| 25   | ES10HB25S                   | WS-17                      | 31               | 18              | 18              | 340                          | 1                 | 4              | 41.7            | 208/104           |
| 37.5 | ES10HB37S                   | WS-17                      | 31               | 18              | 18              | 425                          | 1                 | 4              | 62.5            | 313/156           |
| 50   | ES10HB50S                   | WS-09                      | 44               | 23              | 21              | 655                          | 1                 | 4              | 83.3            | 416/208           |
| 75   | ES10HB75S                   | WS-09                      | 44               | 23              | 21              | 750                          | 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, 80°C Rise



| kVA   | Catalog Number<br>80°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|-------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15    | ET2HB15S                    | WS-14                      | 28               | 23              | 16              | 292                          | 1                 | 5              | 18.1            | 41.7              |
| 30    | ET2HB30S                    | WS-14                      | 28               | 23              | 16              | 376                          | 1                 | 5              | 36.1            | 83.4              |
| 45    | ET2HB45S                    | WS-30                      | 34               | 28              | 22              | 569                          | 1                 | 5              | 54.2            | 125.0             |
| 75    | ET2HB75S                    | WS-30                      | 34               | 28              | 22              | 768                          | 1                 | 5              | 90.3            | 208.0             |
| 112.5 | ET2HB112S                   | WS-10                      | 44               | 33              | 21              | 933                          | 1                 | 5              | 135.0           | 313.0             |
| 150   | ET2HB150S                   | WS-11                      | 46               | 36              | 24              | 1342                         | 1                 | 5              | 181.0           | 417.0             |
| 225   | ET2HB225S                   | WS-11                      | 46               | 36              | 24              | 1525                         | 1                 | 5              | 271.0           | 625.0             |
| 300   | ET2HB300S                   | WS-12                      | 65               | 45              | 35              | 2460                         | 1                 | 5              | 361.0           | 834.0             |

### Group B: 480 Δ Primary, 240 Δ Secondary with 120V Reduced Capacity Center Tap\*\*\*, 80°C Rise



| kVA   | Catalog Number<br>80°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|-------|-----------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15    | ET5HB15S                    | WS-14                      | 28               | 23              | 16              | 292                          | 1                 | 7              | 18.1            | 36.1              |
| 30    | ET5HB30S                    | WS-14                      | 28               | 23              | 16              | 381                          | 1                 | 7              | 36.1            | 72.3              |
| 45    | ET5HB45S                    | WS-30                      | 34               | 28              | 22              | 580                          | 1                 | 7              | 54.2            | 108.0             |
| 75    | ET5HB75S                    | WS-30                      | 34               | 28              | 22              | 760                          | 1                 | 7              | 90.3            | 181.0             |
| 112.5 | ET5HB112S                   | WS-10                      | 44               | 33              | 21              | 940                          | 1                 | 7              | 135.0           | 271.0             |
| 150   | ET5HB150S                   | WS-11                      | 46               | 36              | 24              | 1342                         | 1                 | 7              | 181.0           | 361.0             |
| 225   | ET5HB225S                   | WS-11                      | 46               | 36              | 24              | 1525                         | 1                 | 7              | 271.0           | 542.0             |
| 300   | ET5HB300S                   | WS-12                      | 65               | 45              | 35              | 2460                         | 1                 | 7              | 361.0           | 723.0             |

#### Notes:

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

\*\*Design Style and Electrical Connections can be found on pages 204-205.

\*\*\*See the Technical Notes section with respect to capacity of center tap.

Selection Tables: Low Temperature Rise, Single Phase, **115°C Rise**Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz, **115°C Rise**

| kVA  | Catalog Number<br>115°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15   | ES5HF15S                     | WS-15                      | 28               | 16              | 16              | 210                          | 1                 | 1              | 62.5/31.3       | 125/62.5          |
| 25   | ES5HF25S                     | WS-15                      | 28               | 16              | 16              | 245                          | 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              | 610                          | 1                 | 1              | 313/156         | 625/313           |
| 100  | ES5HF100S                    | WS-09                      | 44               | 23              | 21              | 750                          | 1                 | 1              | 417/208         | 833/417           |

Group 2: 600 Volt Primary, 120/240 Secondary, 60 Hz, **115°C Rise**

| kVA  | Catalog Number<br>115°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15   | ES10HF15S                    | WS-15                      | 28               | 16              | 16              | 175                          | 1                 | 4              | 25              | 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             | 625/313           |
| 100  | ES10HF100S                   | WS-09                      | 44               | 23              | 21              | 750                          | 1                 | 4              | 167             | 833/417           |

## Notes:

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

\*\*Design Style and Electrical Connections can be found on pages 204-205.

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

### Group A: 480 Δ Primary, 208Y/120 Secondary, 60 Hz, **115°C Rise**



| kVA   | Catalog Number<br>115°C Rise | NEMA 3R<br>Weather Shield* | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|-------|------------------------------|----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15    | ET2HF15S                     | WS-02                      | 23               | 18              | 14              | 187                          | 1                 | 5              | 18.1            | 41.7              |
| 30    | ET2HF30S                     | WS-14                      | 28               | 23              | 16              | 292                          | 1                 | 5              | 36.1            | 83.4              |
| 45    | ET2HF45S                     | WS-14                      | 28               | 23              | 16              | 378                          | 1                 | 5              | 54.2            | 125.0             |
| 75    | ET2HF75S                     | WS-30                      | 34               | 28              | 22              | 569                          | 1                 | 5              | 90.3            | 208.0             |
| 112.5 | ET2HF112S                    | WS-30                      | 34               | 28              | 22              | 768                          | 1                 | 5              | 135.0           | 313.0             |
| 150   | ET2HF150S                    | WS-10                      | 44               | 33              | 21              | 933                          | 1                 | 5              | 181.0           | 417.0             |
| 225   | ET2HF225S                    | WS-11                      | 46               | 36              | 24              | 1342                         | 1                 | 5              | 271.0           | 625.0             |
| 300   | ET2HF300S                    | WS-11                      | 46               | 36              | 24              | 1525                         | 1                 | 5              | 361.0           | 834.0             |

### Group B: 480 Volt Δ Primary, 240 Volt Δ, Secondary with reduced capacity center tap, 60 Hz, **115°C Rise**



| kVA   | Catalog<br>Number | NEMA 3R<br>Weather Shield** | Height<br>(inch) | Width<br>(inch) | Depth<br>(inch) | Approx. Ship<br>Weight (lbs) | Design<br>Style** | Elec<br>Conn** | Primary<br>Amps | Secondary<br>Amps |
|-------|-------------------|-----------------------------|------------------|-----------------|-----------------|------------------------------|-------------------|----------------|-----------------|-------------------|
| 15    | ET5HF15S          | WS-02                       | 23               | 19              | 14              | 189                          | 1                 | 6              | 18.1            | 36.1              |
| 30    | ET5HF30S          | WS-14                       | 28               | 23              | 16              | 292                          | 1                 | 6              | 36.1            | 72.3              |
| 45    | ET5HF45S          | WS-14                       | 28               | 23              | 16              | 381                          | 1                 | 6              | 54.2            | 108.0             |
| 75    | ET5HF75S          | WS-30                       | 34               | 28              | 22              | 560                          | 1                 | 6              | 90.3            | 181.0             |
| 112.5 | ET5HF112S         | WS-30                       | 34               | 28              | 22              | 760                          | 1                 | 6              | 135.0           | 271.0             |
| 150   | ET5HF150S         | WS-10                       | 44               | 33              | 21              | 940                          | 1                 | 6              | 181.0           | 361.0             |
| 225   | ET5HF225S         | WS-11                       | 46               | 36              | 24              | 1342                         | 1                 | 6              | 271.0           | 542.0             |
| 300   | ET5HF300S         | WS-11                       | 46               | 36              | 24              | 1525                         | 1                 | 6              | 361.0           | 723.0             |

**Notes:**

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

\*\*Design Style and Electrical Connections can be found on pages 204-205.

\*\*\*See the Technical Notes section with respect to capacity of center tap.