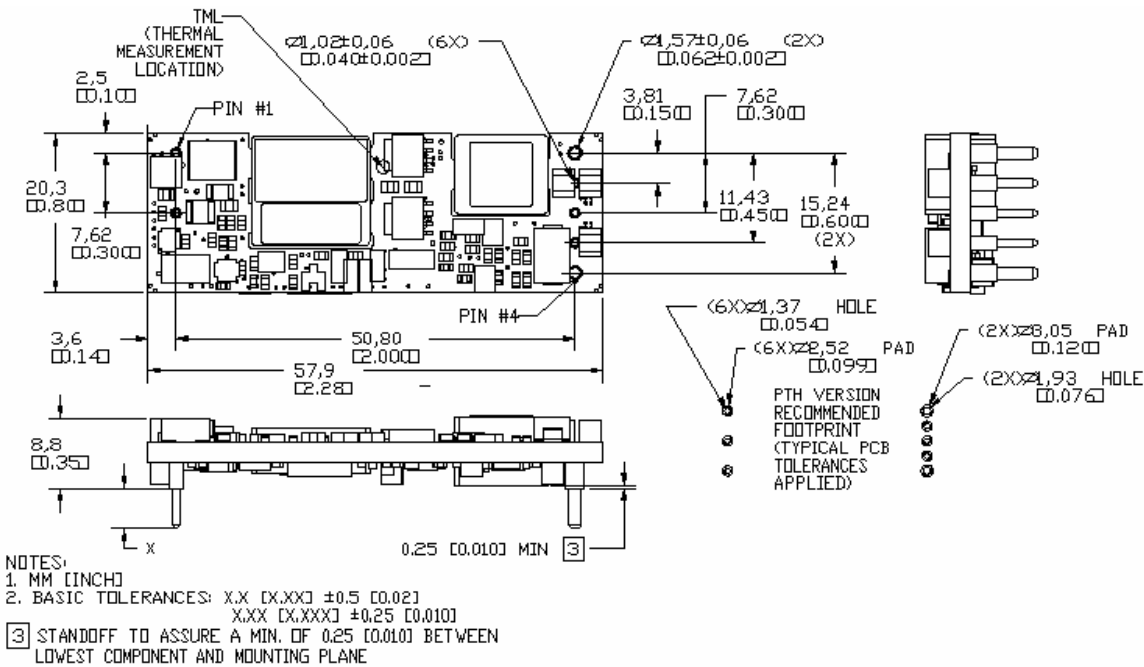


| Model | | 1.8V | Units |
|--|-----------------|--------------|---------------------|
| Parameter | | | |
| Output Voltage Setpoint | | 1.78 – 1.82 | V _{dc} |
| Line/Load Regulation | Max | 0.1% / 0.2% | % V _o |
| Output total regulation | | 1.75 – 1.85 | V _{dc} |
| Output adjust (note 4) | | 90-110 | %V _{o,nom} |
| Remote-sense Comp. | | 10% | V |
| Output Ripple & Noise (note 2) | Max | 100 | mVp-p |
| Output Current | | 0 - 20 | A |
| Efficiency (48V, Full load, 25C) | Typ | 87% | % |
| External Capacitance | | 1,000-10,000 | μF |
| Transient Response (typ) (3) | ΔV _o | 165 | mV |
| 25% step, 1A/μs | T _s | 400 | μs |
| Over-voltage trip point (latching) | | 2.1 – 2.6 | V |
| Over-current trip point (non-latching) | Typ | 25 | A |

All specifications, waveforms, charts at T_a=25C, V_{in}=48V, unless otherwise specified

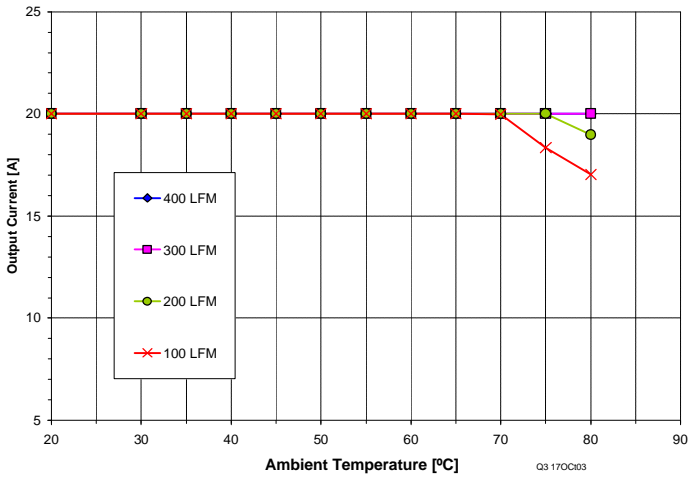
| Parameter | Conditions | Min. | Typ. | Max. | Units |
|----------------------|--|--|------|-----------------|------------------|
| Input | Input Voltage (Vin) | 36 | 48 | 75 | Vdc |
| | Reflected Ripple Current | See note (1) | | 25 | mA p-p |
| | Inrush Transient | | | 0.2 | A ² s |
| | Input Voltage Transient | 100mS 10% duty cycle | | 100 | V |
| Undervoltage Lockout | Turn-on | 32 | | 35 | Vdc |
| | (non-latching)Turn-off | 31 | | 34 | Vdc |
| Over-voltage lockout | (non-latching)Turn-off | 77 | | 81 | Vdc |
| Isolation | Input-Output | 1500 | | | Vdc |
| | Resistance; input-output | 10 | | | Mohm |
| Temperature | Operating Ambient | -40 | | 90 | °C |
| | Storage | -40 | | 125 | °C |
| Protection | Over-Temperature (non-latching)Measured on PCB | | 125 | | °C |
| Physical Information | Dimensions | 2.30" L x 0.82" W x 0.36" H (58.4 x 20.8 x 9.3 mm) | | | |
| MTBF(Bellcore) | Calculated at 40C ambient, (Bellcore) | 1,000,000 Hrs | | EHS15/20 Series | |
| | Demonstrated at 40C ambient with 90% confidence: | 2,800,000 Hrs | | | |
| Safety | Complies with IEC/EN/CSA/UL 60950, provides basic insulation, input to output. c-UL-us (US and Canada) recognized, TUV certified (Bauart). | | | | |



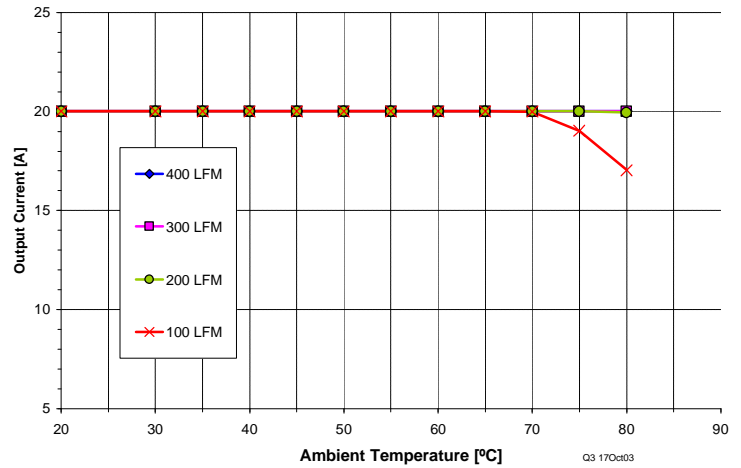
Pin Assignments

| Pin # | Description | Pin # | Description | Pin # | Description |
|-------|-------------|-------|-------------|-------|-------------|
| 1 | Vin (+) | 4 | Vout(-) | 7 | Sense + |
| 2 | Enable | 5 | Sense - | 8 | Vo (+) |
| 3 | Vin(-) | 6 | Vo adj | | |

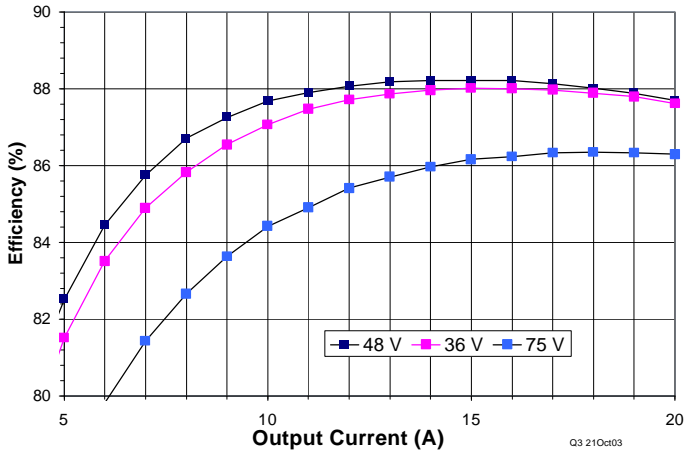
EHS20-018 Thermal Derating
Airflow from Vo(-) to Vo(+), Tj= 120°C



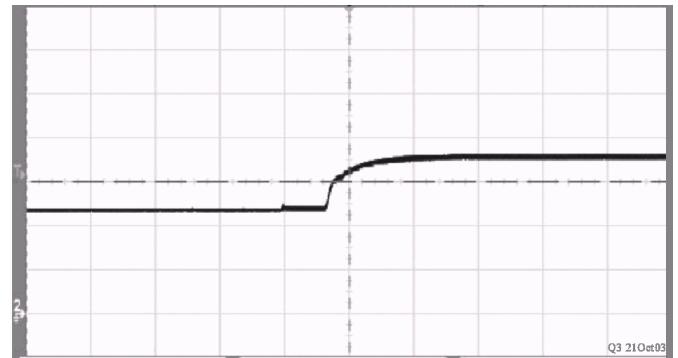
EHS20-018 Thermal Derating
Airflow from Vin to Vo, Tj = 120°C



EHS20-018 Efficiency



EHS20-018 Enable with Pre-Bias



Output Voltage @ 0.5 V/div., 2 ms/div.
Prebias voltage = 1.2 Vdc. Input Voltage 48 V
Load current = 0, Load capacitance = 2,200 uF.

Trim Up/Down Formula : 1.8V model

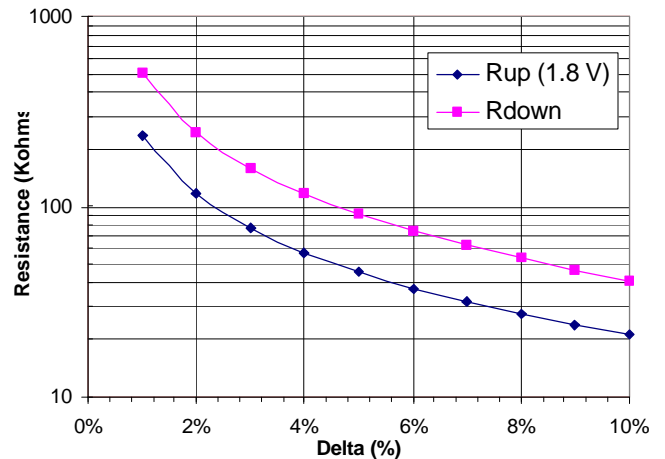
$$R_{up} := \left[\frac{5.10 \cdot V_{nom} \cdot (100 + \Delta\%) - 510}{1.225 \Delta\%} - 10.2 \right] \text{ K}\Omega$$

Where $\Delta\% := \frac{(V_{out} - V_{nom}) \cdot 100}{V_{nom}}$ and, V_{out} = Target output voltage

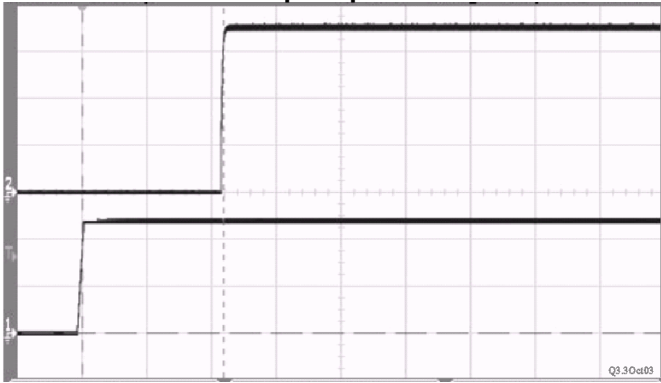
$$R_{down}(\Delta\%) := \left(\frac{510}{\Delta\%} - 10.2 \right) \text{ K}\Omega$$

Where $\Delta\% := \frac{(V_{nom} - V_{out}) \cdot 100}{V_{nom}}$

EHS20-018 Trim-up and Trim-down Resistance

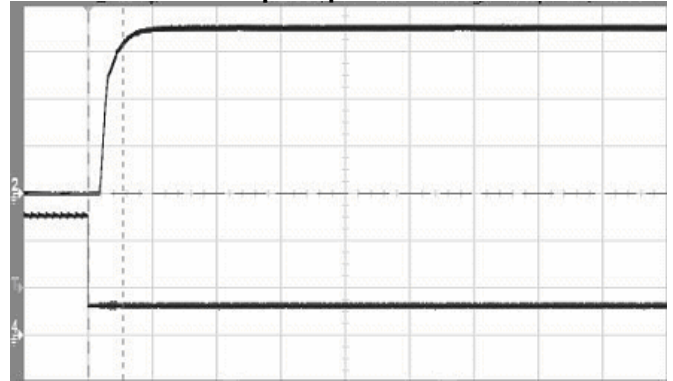


EHS20-018 Startup Sequence from Vin



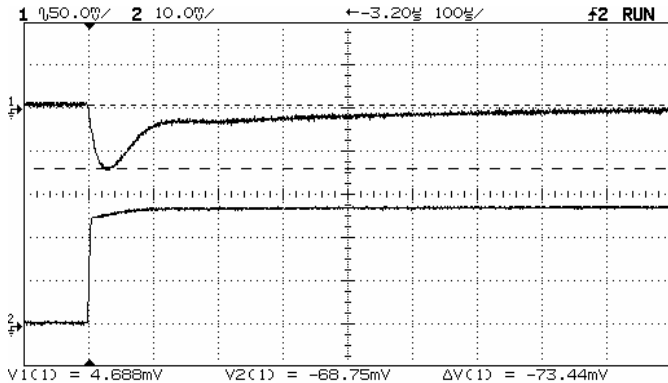
Top Trace: Vout @ 0.5 V/div.
Bot. Trace: Vin @ 20V/div. (48Vdc)
Horiz. @ 50 ms/div.
Load: 20 A, Turn-on delay: 110ms

EHS20-018 Startup Sequence from Enable



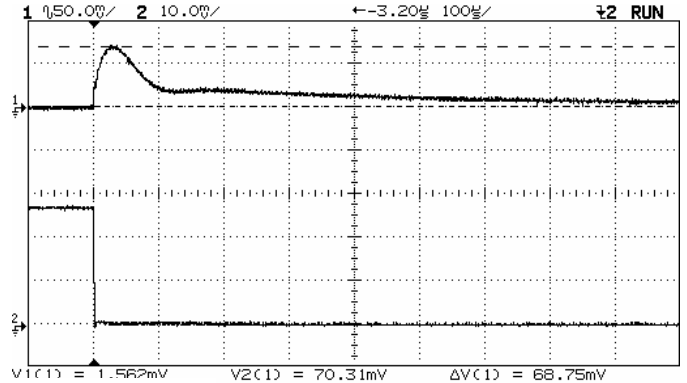
Top Trace: Vout @ 0.5 V/div.
Bot. Trace: Venable @ 2 V/div.
Horiz. @ 5 ms/div. Vin= 36Vdc
Load: 20 A., 10,000 uF, Turn-on delay: 4.8 ms

EHS20-018 Transient Response, 50-75% step 1A/ms



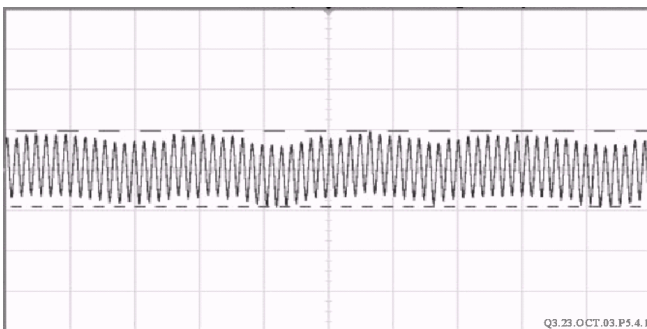
$\Delta V_o = 73.4 \text{ mV}$

EHS20-018 Transient Response, 50- 25% step 1A/ms



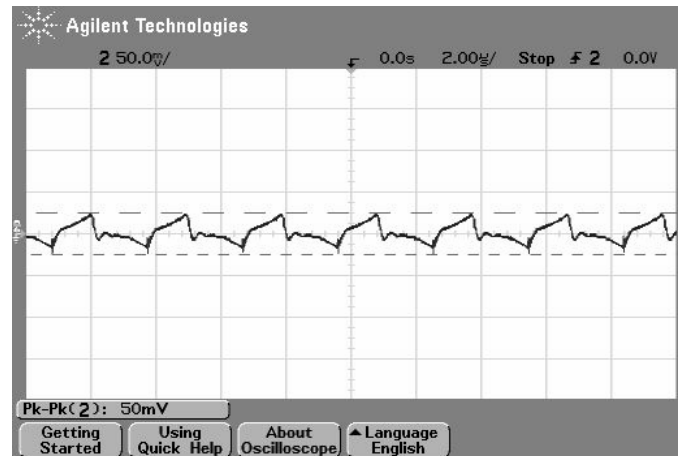
$\Delta V_o = 68.8 \text{ mV}$

EHS20-018 Input Reflected Ripple, Io=20A



Input Current @ 5 mA/div., 20 us/div. (9.4 mApp)
Input Voltage: 48 Vdc, Load Current: 20 A
Note: see test circuit on following page.

EHS20-018 Output Ripple Voltage, Io=20A

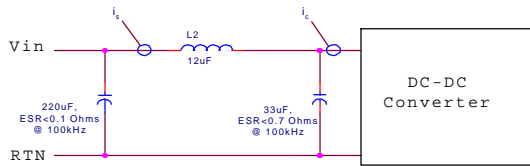


Pk-Pk(2): 50mV

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Notes:

1. Input Reflected Ripple is specified when measured with the filter shown below



2. Output Ripple and noise is specified when measured with a 10uF tantalum and a 1uF ceramic capacitor at the converter output pins
3. Transient response is specified with a 470uF tantalum capacitor at the output of the converter
4. Trim resistor connection: Rtrim-up connected from Vo adj to Vo(+), Rtrim-down connected from Vo adj to Vo(-).

EHS20-018 Enable Pin Connection Table

| | ENABLE POWER SUPPLY | DISABLE POWER SUPPLY |
|------------------------|--|--|
| NEGATIVE LOGIC VERSION | 0V < Venable < 0.8V (internal pull-up > 50Kohms @ 5V) | 2.5V < Venable < 15V (external pull-up > 1Kohms) |
| POSITIVE LOGIC VERSION | 2.5V < Venable < 15V (external pull-up > 1Kohms) | 0V < Venable < 0.8V (internal pull-up > 50Kohms @ 5V) |

Note: Power Supply has internal pull-up resistor. Enable pin is in a valid “high” state if left open-circuit.

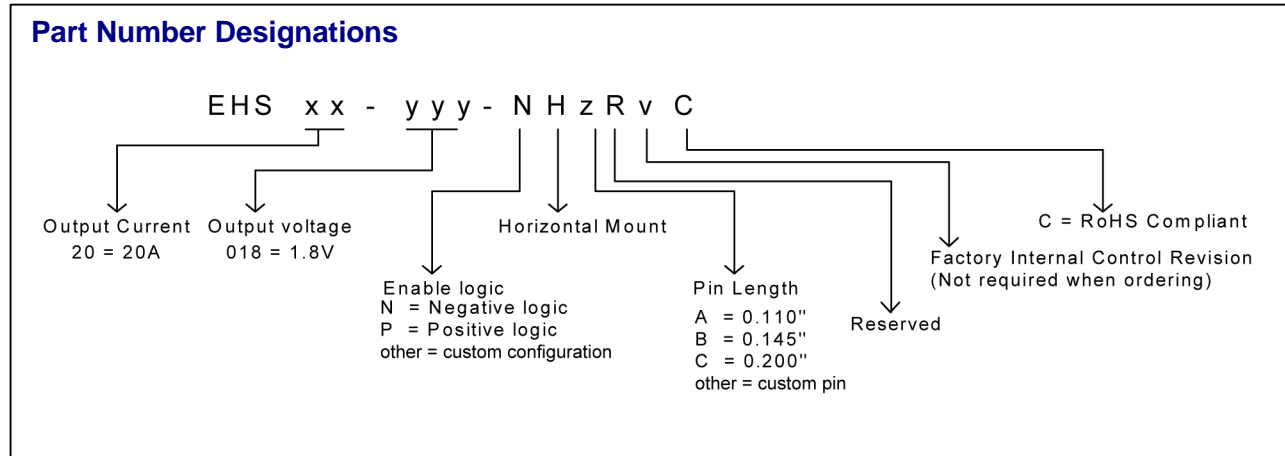
Safety considerations

The EHS series of converters are certified to IEC/EN/CSA/UL 60950. If this product is built into information technology equipment, the installation must comply with the above standard.

An external input fuse (5A to 30A recommended), must be used to meet the above requirements.

The output of the converter [Vo(+)/Vo(-)] is considered to remain within SELV limits when the input to the converter meets SELV or TNV-2 requirements.

The converters and materials meet UL 94V-0 flammability ratings.



RoHS Compliant

The EHS series of converters is in compliance with the European Union Directive 2002/95/EC (RoHS) with respect to the following substances: lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

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