

SSS-HF480-400

Passive line harmonic filter | 480 V 3-phase 60 Hz | 400 A

Three-phase passive harmonic filter connected in series ahead of a 6-pulse variable frequency drive with an uncontrolled B6 rectifier. Input-output line reactor with a contactor-switched trap circuit (trap reactors and delta-connected power capacitors). THDi 5 % at nominal load.

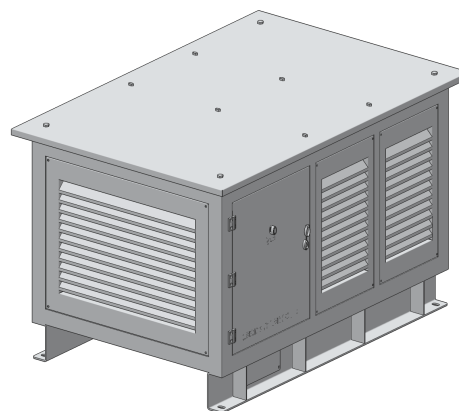
ELECTRICAL

Filter type	3-phase line harmonic filter
Rated voltage	480 V, 3-phase
Voltage range	480 V ± 10 %
Rated frequency	60 Hz
Rated current	400 A
Nominal motor load *	280 kW [375 hp]
Load	Symmetrical load of a converter with uncontrolled B6 rectifier
Supply requirement	EN 61000-2-4 Class III
THDi	5 % at nominal load
Overload capacity	150 % for 60 s, once per hour
Power loss	1415 W [4,828 BTU/h]
Test voltage	3.0 kV
Insulation class	H

* IE2 motor efficiency and inverter efficiency > 95 % assumed.

ENVIRONMENT AND ENCLOSURE

Ambient temperature	-25 to +45 °C [-13 to +113 °F]
Temperature rise	≤ 100 K [180 °F rise]
Cooling	Forced air; fans under top cover, thermostat-switched at 75 °C
Enclosure	IP54
Standards (manufacturer declaration)	EN 61558-1, EN 61558-2-20



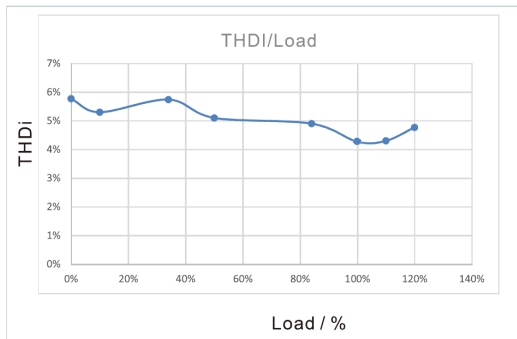
DIMENSIONS AND WEIGHT

Length (top cover)	1200 mm [47.24 in]
Width (top cover)	800 mm [31.50 in]
Height (to top cover)	744.5 mm [29.31 in]
Cabinet body (L x W)	1100 x 720 mm [43.31 x 28.35 in]
Weight	To be confirmed by SSS
Base	Two base rails, 120 mm [4.72 in] high; 4 anchor slots, 15 x 25 mm at 1040 x 670 mm centres - see drawing sheet 2
Service access	Hinged door, 376 mm [14.79 in] leaf, on one long side

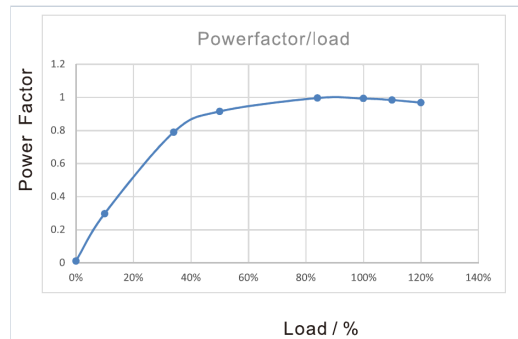
CONNECTIONS

Line input	L1, L2, L3 - copper bar
Load output (to VFD)	L1', L2', L3' - copper bar
A1 - A2	Capacitor-branch enable. Link or dry contact; open = trap circuit disconnected. At line potential (autotransformer-fed): wiring and contact rated for the 480 V system
TA - TB	Over-temperature contact, voltage-free, NC, opens at 160 °C

TYPICAL PERFORMANCE OVER LOAD RANGE



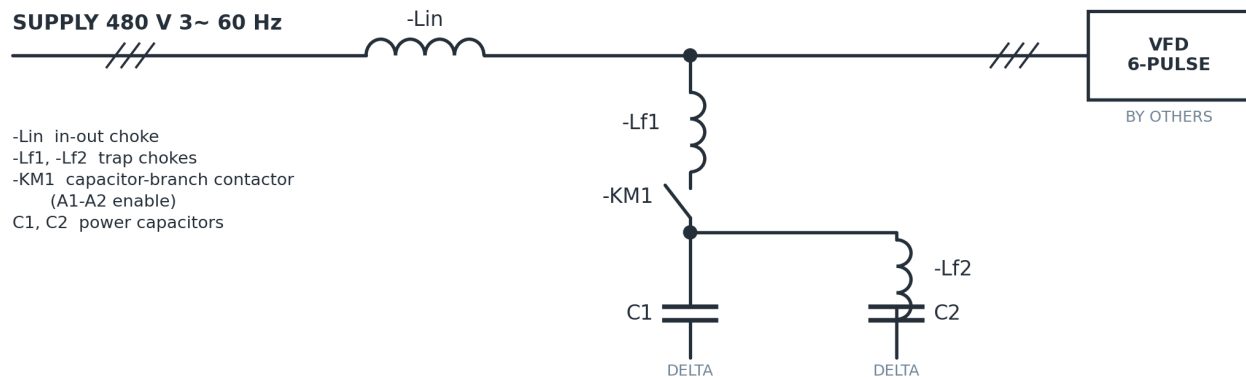
Input current THD (THDi) versus load.



Input power factor versus load.

Load = DC-link power of the frequency inverter connected to the filter. 100 % = nominal load. Typical values; they vary with material and production tolerances.

CIRCUIT



One-line, power circuit. Control: -KM1 coil and cooling fans are fed from a tapped autotransformer across L1-L2; fans switched by a 75 °C thermostat; 160 °C thermostatic switch on TA-TB. Full schematic: page 3 and drawing SSS-HF480-400-D01 sheet 3.

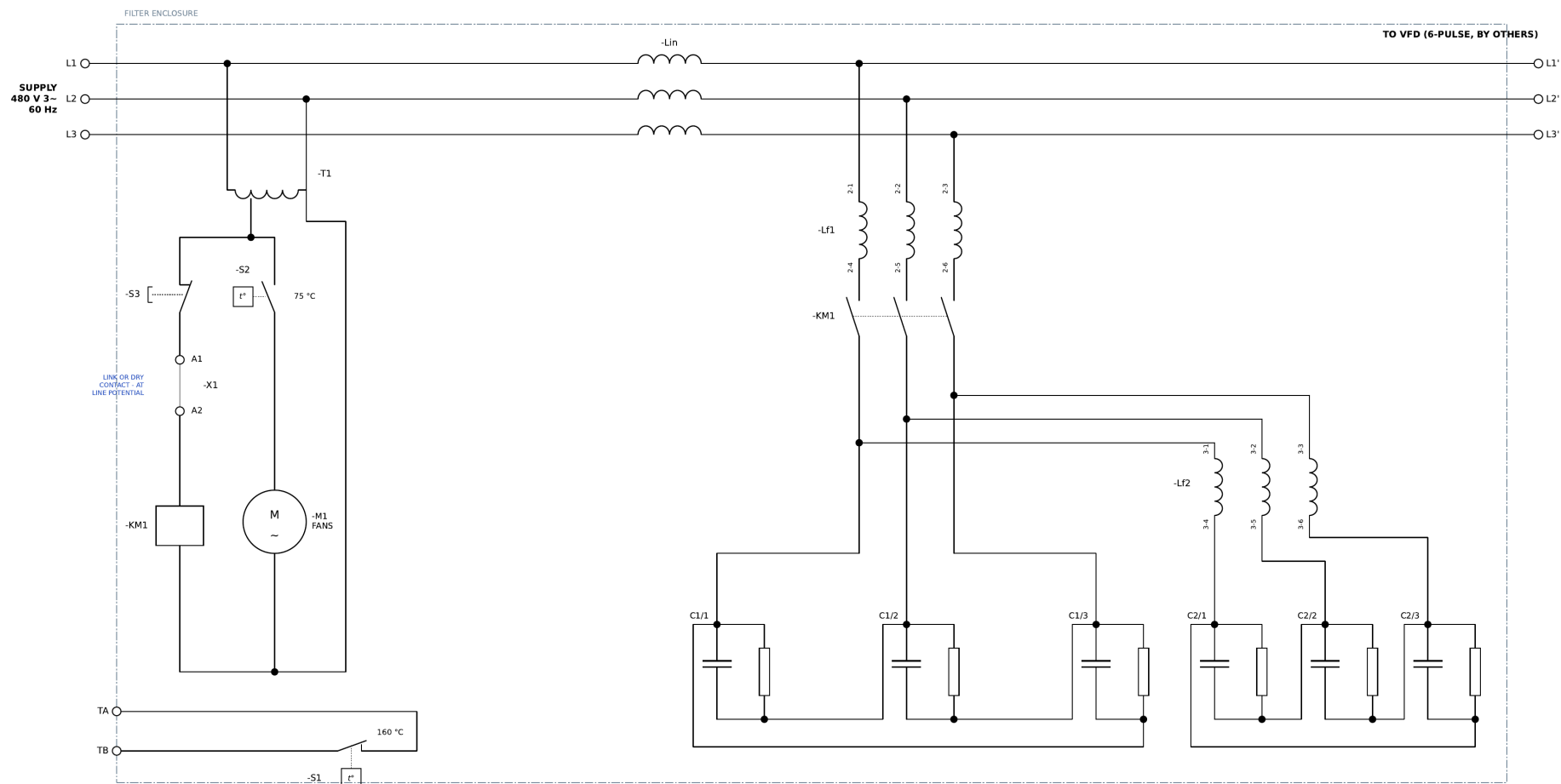
END-PANEL EXTENSION BOX (ACCESSORY)

Function	Replaces the louvered end panel at the door-hinge end; conduit entry
Conduit entry	8 holes for 2-1/2 in liquidtight flexible conduit connectors. All cable entry is through the box; no floor or bottom penetrations
Projection from cabinet end	304.8 mm [12.00 in]
Overall length with box	1454.8 mm [57.28 in]
Mounting	Existing end-panel pocket and four tapped holes; no cabinet modification
Ratings with box	IP and cooling ratings above are for the filter with its louvered end panel; with the box fitted, confirm with SSS

DOCUMENTS

- SSS-HF480-400-D01 - drawing set: general arrangement, base plan and anchoring, electrical schematic, field interconnection (4 sheets)
- SSS-HF480-900-D02 - end-panel extension box (common to SSS-HF480-400 and -900) fabrication drawings (4 sheets) and 3D model (STEP)

ELECTRICAL SCHEMATIC - POWER AND CONTROL



DEVICE LEGEND

- Lin IN-OUT CHOKE (LINE REACTOR), SERIES IN L1-L3
- Lf1, -Lf2 TRAP CHOKES (REACTORS)
- C1/1-3, C2/1-3 POWER CAPACITORS, DELTA, RESISTOR ACROSS EACH
- KM1 CAPACITOR-BRANCH CONTACTOR (3-POLE)
- T1 AUTOTRANSFORMER, 1-PHASE, TAPPED, ACROSS L1-L2
- M1 COOLING FANS (2 IN SSS-HF480-900 MODEL)
- S1 THERMOSTATIC SWITCH, NC, OPENS AT 160 °C
- S2 THERMOSTATIC SWITCH, CLOSSES AT 75 °C (FAN)
- S3 PUSHBUTTON, NC
- X1 CONTROL TERMINALS A1-A2

NOTES

1. CIRCUIT AS SSS-HF480-900 (SAME TOPOLOGY AND DEVICE DESIGNATIONS).
2. CONTACTS SHOWN DE-ENERGISED, AT AMBIENT TEMPERATURE.
3. A1-A2 IS IN SERIES WITH THE -KM1 COIL, FED FROM THE -T1 TAP. -T1 IS AN AUTOTRANSFORMER: THE CONTROL CIRCUIT AND A1-A2 ARE AT LINE POTENTIAL, NOT ISOLATED. CONNECT A LINK OR A DRY CONTACT ONLY; FIELD WIRING AND CONTACT MUST BE RATED FOR THE 480 V SYSTEM. A1-A2 OPEN: -KM1 DROPS OUT, CAPACITOR BRANCH DISCONNECTED, -Lin STAYS IN CIRCUIT.
4. TA-TB: -S1 CONTACT, VOLTAGE-FREE, CLOSED BELOW 160 °C.
5. COMPONENT RATINGS (L, C, R, -T1 VA AND TAP VOLTAGE) TO BE CONFIRMED BY SSS.