AC/AC Sine Wave Converter SWC 4300

for commercial heating processes

Product data sheet

Smarter. Greener. Together.

4300 Watts AC/AC Sine Wave Converter

for commercial heating processes

Features

- Patented technology that avoids flicker and harmonics which are inherent in other technologies
- High efficiency: up to 94.5 %
- Wide adjustable output voltage range: 0 V_{AC} to 175 V_{AC}
- Wide operating temperature range: +5 °C to +45 °C
- Safety: EN 60950-1 / IEC 60950-1 (UL recognized) / CCC
- RoHS compliant

Description

The AC/AC Sine Wave Converter SWC 4300 is highly efficient and capable of delivering up to 4.3 kW output power. The AC output voltage is adjustable from 0 V_{AC} to 175 V_{AC} and is controlled by an external PWM input. The output is capable of driving fixed resistance loads [1]. Typical applications include the fine control of infra-red loads for heating during production processes.

1) For non-linear loads, please call Delta for application advice.

AC Input (X1)

	Sine Wave Converter 4300 W
Nominal AC Input voltage range	200 V_{AC} to 240 V_{AC}
AC Input voltage range	176 V_{AC} to 269 V_{AC}
Nominal AC Input frequency	50 / 60 Hz
AC Input frequency range	47 Hz to 63 Hz
Maximum AC Input current	25 A
Efficiency at 4.3 kW	94.5 %

AC Output (X4)

	Sine Wave Converter 4300 W
AC Output voltage range	0 V_{AC} to 175 V_{AC}
AC Output power range	0 kW to 4.3 kW
AC Output frequency	Follows AC Input frequency
Maximum AC Output load current	25 A
Ripple voltage (peak-to-peak)	< 20 V
Ripple current (peak-to-peak)	< 3 A

Auxiliary DC Input (J1)

	Sine Wave Converter 4300 W
Nominal DC Input voltage	24 V_{DC} ± 5 %
Nominal DC Input current	1 A

Voltage / Current Feedback (J1)

	Sine Wave Converter 4300 W
Input voltage monitor (V_MON)	Scaling ratio 0.1 V: 10 V_{AC}
Output current monitor (I_MON)	Scaling ratio 0.1 V: 1 A

PWM Control Input (J1)

	Sine Wave Converter 4300 W
Voltage thresholds	
HIGH (OFF)	> 22 V_{DC}
LOW (ON)	< 1 V_{DC}
Frequency	500 Hz ± 10 %
Duty cycle range [1]	2 % to 76 % [2]
Maximum source current	10 mA

1) For rated output
2) When PWM signal is in the range 2% < PWM < 9%, a perfect sine wave shape is not guaranteed but no damage can occur as a consequence.

Environmental Conditions

	Sine Wave Converter 4300 W
Operating ambient temperature range	+5 °C to +45 °C (+41 °F to +113 °F)
Storage ambient temperature range	-15 °C to +70 °C (+5 °F to +158 °F)
Relative humidity	15 % to 85 %, non-condensing
Maximum operating altitude	3000 m (9850 ft)
Protection degree	IPX0

Protection and Reliability

	Sine Wave Converter 4300 W
AC Input under voltage protection	< 130 V_{AC} to 144 V_{AC}
AC Output over current protection (typically)	28.5 A to 31.5 A
Short circuit protection	Yes
MTBF (Mean Time Between Failures)	100,000 hrs [1]
Leakage current	< 1 mA [2]
Fan speed control	Yes
PWM duty cycle protection (turnoff)	90 % ± 2 %
Isolation	
AC Input/Output (Primary) - J1 Control /Casing (SELV)	2.0 kV_{AC} or 2,828 V_{DC}

1) At 25 °C, 200 V_{AC}, 75% duty cycle
2) At 264 V_{AC}, 60 Hz

Safety standards and directives

	Sine Wave Converter 4300 W
CE	Yes
Safety	IEC / EN 60950-1 + A11 (2009) + A1 (2010) +A12 (2011) + A2 (2013) CSA C22.2 No. 60950-1-07, 2014 UL 60950-1, 2nd Edition 2014 CCC GB17625.1-2012, GB9254-2008 (Class A), GB4943.1-2011
Protection class	I

Ecological characteristics

	Sine Wave Converter 4300 W
WEEE (Waste Electrical and Electronic Equipment Directive)	2012/19/EU
RoHS (Restriction of Hazardous Substances Directive)	2011/65/EU

EMC

Standard	Test level	Acceptance criteria
CISPR22 EN 55022 FCC CFR47 Part 15 Radiated Emissions	Class A Limits	≥ 6 dB Margin
CISPR22 EN 55022 FCC CFR47 Part 15 Conducted Emissions	Class A Limits	≥ 6 dB Margin
EN / IEC 61000-4-2 Electrostatic Discharge (ED)	± 8 kV Contact discharge ± 15 kV Air discharge	No hard fails No Performance Citeria C fails < 15 kV No Performance Citeria B fails < 10 kV
EN / IEC 61000-4-3 Radiated Immunity	12 V/m (80 MHz to 1,000 MHz) 5 V/m (1.4 GHz to 2.0 GHz) 3 V/m (2.0 GHz to 2.7 GHz)	Performance Criteria A
EN / IEC 61000-4-4 Electrical Fast Transient	2 kV Power lines 1 kV Signals	Performance Criteria A
EN / IEC 61000-4-5 Surge Immunity	2 kV Common mode 1 kV Differential mode	Performance Criteria A
EN / IEC 61000-4-6 Conducted Immunity	10 V_{rms} Frequency range: 150 kHz to 80 MHz	Performance Criteria A
EN / IEC 61000-4-8 Magnetic Susceptibility	30 A_{rms}/m, 50 / 60 Hz	Performance Criteria A
EN / IEC 61000-4-11 Voltage Dips and Interruptions	0 % for 1 cycle 0 % for 5 sec 40 % for 200 msec 70 % for 500 ms	Performance Criteria B Performance Criteria C Performance Criteria C Performance Criteria C
EN / IEC 61000-3-2 Line Harmonics	–	Limits as per table 3 of the standard (class A equipment)
EN / IEC 61000-3-2 Line Flicker	–	Pst ≤ 1; Plt ≤ 0.65; Dc ≤ 3.3 %; D(t) ≤ 3.3 % up to 500 msec; Dmax ≤ 4 %

Mechanical data

	Sine Wave Converter 4300 W
Dimensions (W x H x D)	80 x 140 x 300 mm (3.15 x 5.51 x 11.81 in)
Weight	2.25 kg (5 lb)
Cooling	Forced air. Integrated fan is speed controlled based on temperature
Case material	Aluminium
Connector type	
AC input (X1)	Molex, MiniFit, part number: 42820-2213, 2-pin, see *Fig. 3, page 6*
AC output (X4)	Molex, MiniFit, part number: 42820-2213, 2-pin, see *Fig. 4, page 6*
Control (J1)	TE Connectivity, part number: 5-103673-7, 8-pin, see *Fig. 5, page 6*
Noise	
Standby	40 dB(A)
Normal operation	75 dB(A)

Front view and back view

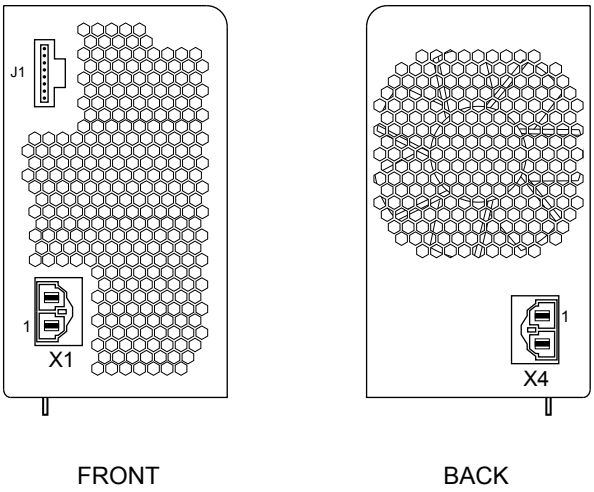

Fig. 1: Front view and back view

Dimensional drawings

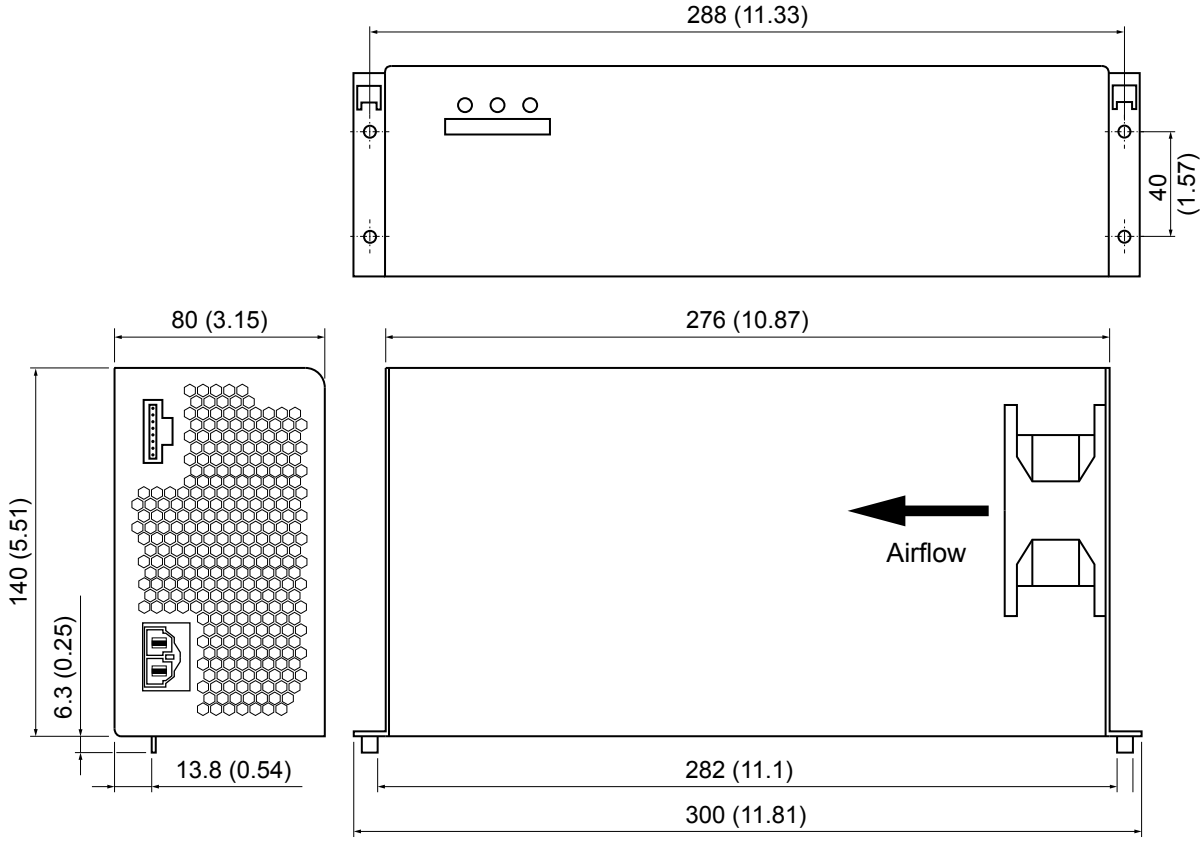

Fig. 2: Dimensional drawing, Dimensions in mm (inch)

Connector pin assignments

AC Input (X1)

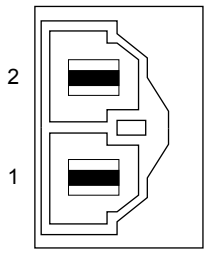

Fig. 3: Pin assignment X1

Pin	Assignment
1	Live
2	Neutral

Mating housing: Molex, Part number 42816-0212

Mating receptacle: Molex, Part number 42815-0012

AC Output (X4)

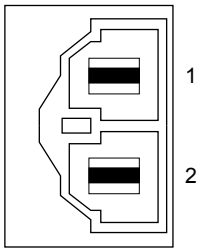

Fig. 4: Pin assignment X4

Pin	Assignment
1	Neutral
2	Live

Mating housing: Molex, Part number 42816-0212

Mating receptacle: Molex, Part number 42815-0012

Control / Auxiliary DC Input (J1)

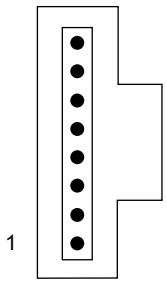

Fig. 5: Pin assignment J1

Pin	Assignment
1	+24 VDC (external supply)
2	SECONDARY GND
3	FAULT
4	ACOK
5	PWM
6	CURRENT FEEDBACK (I_MON)
7	VOLTAGE FEEDBACK (V_MON)
8	SECONDARY GND

Mating housing: Molex, Part number 50-57-9408

Mating receptacle: Molex, Part number 16-02-1111 (22 AWG)

LED indications

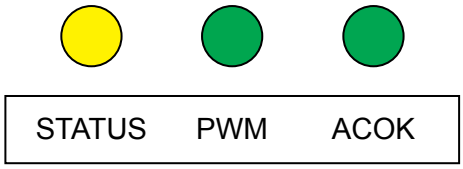

Fig. 6: LEDs

STATUS: *ON* when OCP or OTP condition is active

PWM: *ON* when PWM is in duty cycle range (2 % to 90 ± 2 %)

ACOK: *ON* when is > 130 V_{AC} to 144 V_{AC}

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