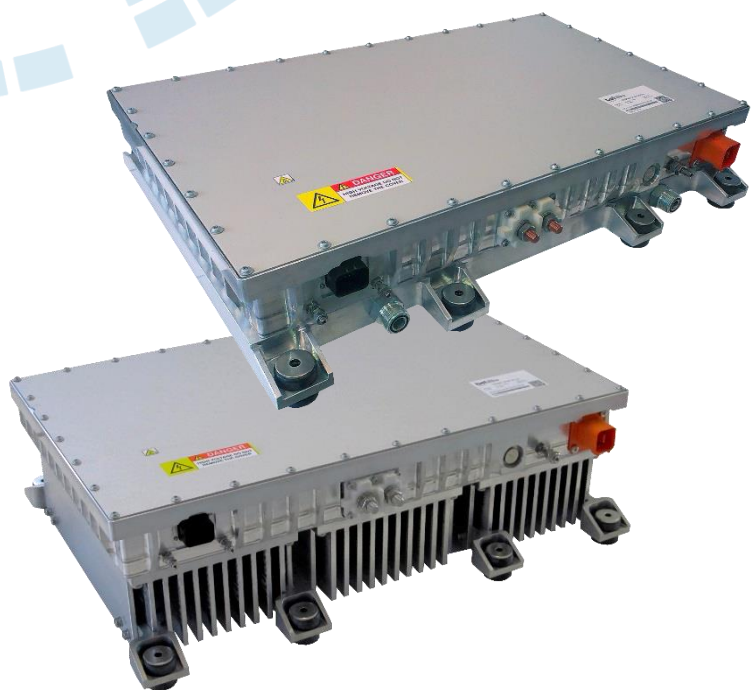


700DNC150-56-xG 700BDC150-56-xG DC/DC CONVERTER



The Bel Power Solutions **700DNC150-56-xG (700BDC150-56-xG)** is a 15000 Watts DC/DC converter that creates DC voltages in hybrid and electric vehicles necessary to power low voltage accessories. Attractive reverse energy flow is available in BDC models.

Liquid or convection cooled DC/DC converter operates at input voltages from 630 to 770 VDC and power range up to 15 kW.

Key Features & Benefits

- Very high efficiency up to 96.5%
- Input voltage range from 630 to 770 VDC
- Up to 15 kW power
- Full galvanic isolation between input and output
- CAN bus serial interface
- Adjustable output voltage
- Over temperature, output overvoltage and overcurrent protection, input and output reverse polarity protection
- Liquid or convection cooled models available
- Protection degree IP67

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700DNC150-56-xG

700BDC150-56-xG

Model Selection

MODEL	INPUT VOLTAGE	NOMINAL OUTPUT VOLTAGE	INPUT CURRENT	POWER RATING	COOLING TYPE	UNIT TYPE	POWER FLOW
700DNC150-56-CG	700 V	56 V	265 A	15 kW	Air Natural Convection Cooled	Stand Alone	Unidirectional
700DNC150-56-8G	700 V	56 V	265 A	15 kW	Liquid Cooled	Stand Alone	Unidirectional
700BDC150-56-CG	700 V	56 V	265 A	15 kW	Air Natural Convection Cooled	Stand Alone	Bidirectional
700BDC150-56-8G	700 V	56 V	265 A	15 kW	Liquid Cooled	Stand Alone	Bidirectional

TECHNICAL DATA

Input (HVDC Side)

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Input Voltage		630	700	770	VDC
HVDC Input Line Current	@ 630 VDC		15.0 kW unit	23	ADC
ELX Line Current	Switched + Unswitched @ 12 V		2500		mA
LVDC Line Current	@ 56 V		15.0 kW unit	268	ADC
Efficiency	@ Vin = 700 VDC, Vo = 56 V, 75% Irated < Io_nom < Irated		96		
	@ Vin = 700 VDC, Vo = 56 V, 50% Irated < Io_nom < 75% Irated		95		%
	@ Vin = 700 VDC, Vo = 56 V, 25% Irated < Io_nom < 50% Irated		93		
Input Line Interruption	Converter shutdown			630	VDC
Input Capacitance	HVDC DC/DC Converter		8		µF
HVDC Inrush Current	External pre-charging circuit required			50	Apk

Output (LVDC Side)

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Output Voltage	Vo1 to be controlled via CAN BUS, 10bit resolution	48	56	57	VDC
Output Current		268	268	263	ADC
Output Power		12864	15000	15000	W
Line Regulation	Vin min - Vin max, at 134 A, Tcoolant = 70°C (liquid cooled) Tambient = 50°C (convection cooled)	- 0.3		+ 0.3	VDC
Load Regulation	Output voltage droop between 10 A and 268 A load, Tcoolant = 70°C (liquid cooled), Tambient = 50°C (convection cooled)			+1.0	VDC
Output Voltage Set Point	@ 134 A, Tcoolant = 70°C (liquid cooled) Tambient = 50°C (convection cooled)	-0.4%	56	+0.4%	VDC
Output Voltage Range	Adjustable via CAN BUS	48.0		57.0	VDC
Thermal Drift	After 15 min warm up period	-0.05		+0.05	%/°C
Periodic and Random Deviation	@ 56 VDC (Differential Mode) 10 to 50 % and back 50 to 100 % and back		1500		mVpk-pk
Transient Response	Voltage over/under shoot: Response time within 1 % of V _{0SET} :	-4000		+4000	mV
				3000	µs
Turn-on Overshoot	V _{onom} , < 100 ms			1	%
Redundant Parallel Operation	Up to 4 converters operating in parallel			60	kW
Remote Sense	Cable Drop (V) @ Maximum Load			2	V
Turn-On Delay	Rise time (Cext = 0 µF)			400	ms
	Power-on-delay (From applying DC input voltage to Vo = 90 %)			1	s
	Power-on-time from ELX Switched (From ELX Switched = High to Vo = 90% of nom)			800	ms
Turn-Off Timing	ELX Switched delay (Vo Fall time must be monotonic)	0		100	ms
Capacitive Load	@ 56 VDC		0	100000	µF
Up-conversion LVDC to HVDC	LVDC clamping		2		s

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Protection

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Output Over-Current Protection	If voltage drops below approximately 30 VDC for more than 1s, the output goes to hiccup mode	100		268	A
Output Over-Voltage Protection	Latch type, Max. OV duration 200 ms		CAN Adjustable	57	V
Output Under-Voltage Protection	Max. UV duration 500 ms		CAN Adjustable	57	V
Over-Temperature Protection	Current limit de-rating and Converter shutdown				
Input and Output Reverse Polarity Protection	Protective elements connected in series				
Input Fuse Protection	HVDC Input: internal primary fuse, safety approved		40		A
Input Low Line Protection	CAN Adjustable	500		780	V
Input Overvoltage Protection	CAN adjustable	500		780	V

Interface & Control Signals

PARAMETER	DESCRIPTION / CONDITION	
CAN BUS SAE J1939	500 kBit/s (250 kBit/s on request)	
Remote sense signals	Sense positive Sense negative	2 V compensation
Address bits	Internally pulled up to LOGIC HIGH (3.3 V 100 kohm)	Adr. 0 Adr. 1
ELX Switched (Enable)	Logic input signal	9-36 VDC
ELX Unswitched	Supply of internal Bias converter	9-36 VDC
HVIL function	HVIL pin shorted internally	Part of HV connector

Safety Specifications

PARAMETER	DESCRIPTION / CONDITION	CRITERION
Approvals	Designed according IEC-61800-5-1	
Insulation	HVDC to Chassis Input to Output LVDC Power to Chassis	Basic: 2000 VDC Reinforced: 3000 VDC or 2120 VAC Basic: 100 VDC

Environmental Specifications

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Altitude	Operating @ Tambient = 40 °C	3500		5000	m
Operating Temperature	Air / Coolant	-40 / -40		50 / 70	°C
Storage Temperature		-55		105	°C
Humidity	SAE J1455				
Shock	SAE J1455				
Vibration	SAE J1455, MIL-STD-202G				

Connectors

PARAMETER	DESCRIPTION / CONDITION	MANUFACTURER	MPN
Input Connector (IN)	High voltage connector	TYCO	HVA 630 variant A
Output Connector (OUT)	Two pole output terminals with M10 thread		
CAN BUS and Signal Interface (CTRL)	Panel mounted	TYCO	776276-1

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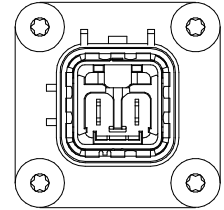
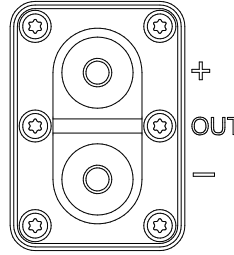
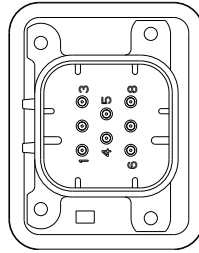
Signal Connector Pin Description

Signal Connector

Output Connector (LVDC)

Input Connector (HVCD)

PIN	NAME
1	DII1 Digital identification input / ADR0
2	ELV_GND
3	CAN shield
4	NC
5	Sense positive (+56V SENSE)
6	DII2 Digital identification input / ADR1
7	ELV_GND
8	CAN_H
9	NC
10	ELV Unswitched
11	ELV Switched
12	CAN_L
13	NC
14	Sense negative (-56V SENSE)



Other Possible Variants

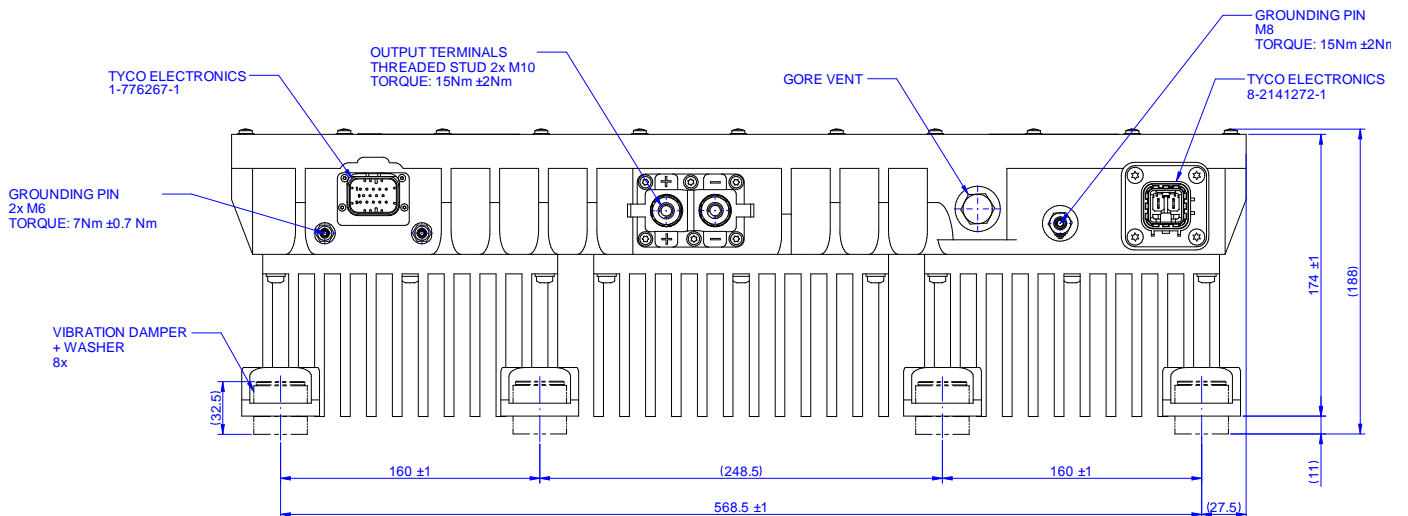
Cooling	Convection (CG) / Liquid Cooled (8G)
Power Rating	7.5 kW (700DNC75-56-CG, 700DNC75-56-8G, 700BDC75-56-CG, 700BDC75-56-8G) 15 kW (700DNC150-56-CG, 700DNC150-56-8G, 700BDC150-56-CG, 700BDC150-56-8G) 22.5 kW (700DNC225-56-CG, 700DNC225-56-8G, 700BDC225-56-CG, 700BDC225-56-8G)
Power Conversion	Unidirectional (DNC), Bi-directional (BDC)

Mechanical Specifications

MODEL	MAX WEIGHT	MECHANICAL DIMENSIONS
700DNC150-56-CG	52 kg	626 x 446 x 188 mm
700DNC150-56-8G	43.5 kg	626 x 446 x 122 mm

Mechanical Drawings

Convection Cooled Model - Front View



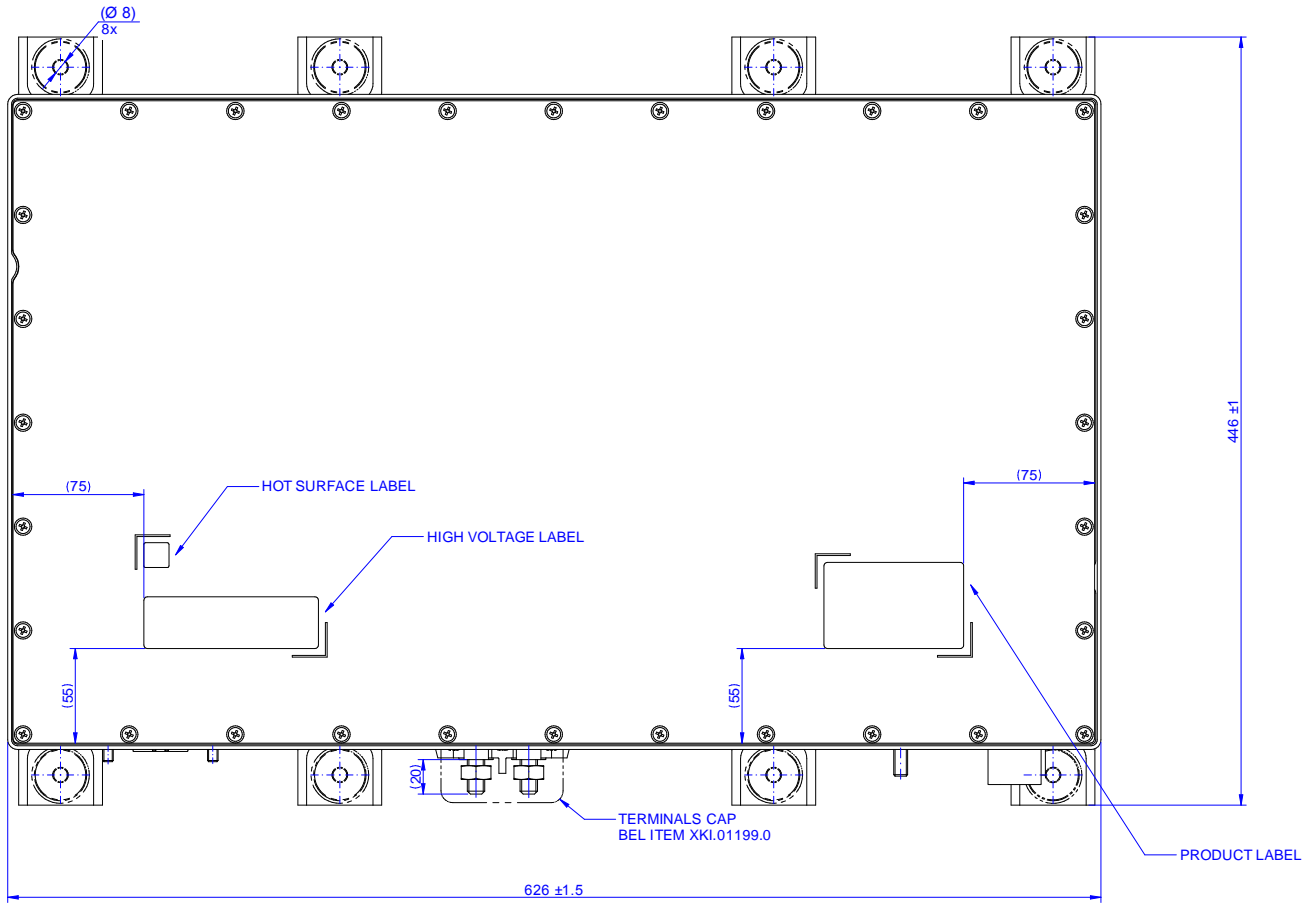
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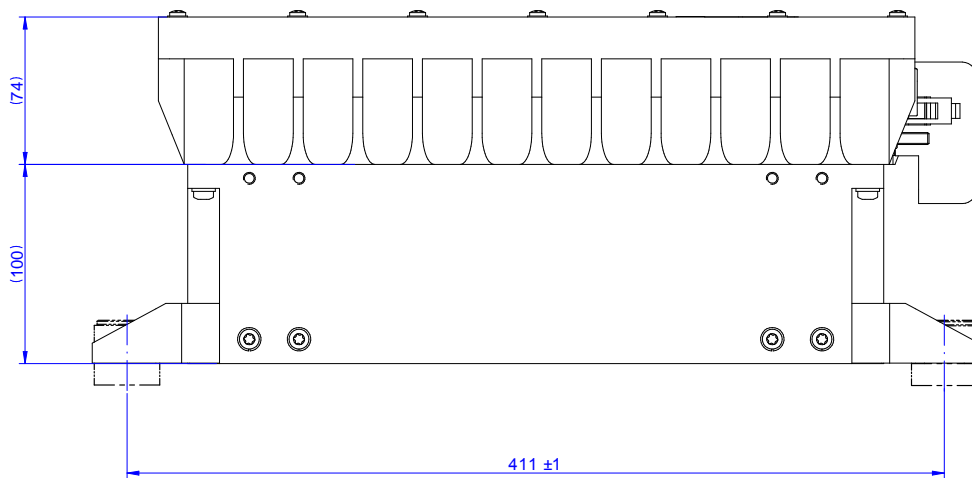
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Convection Cooled Model - Top View



Convection Cooled Model - Side View

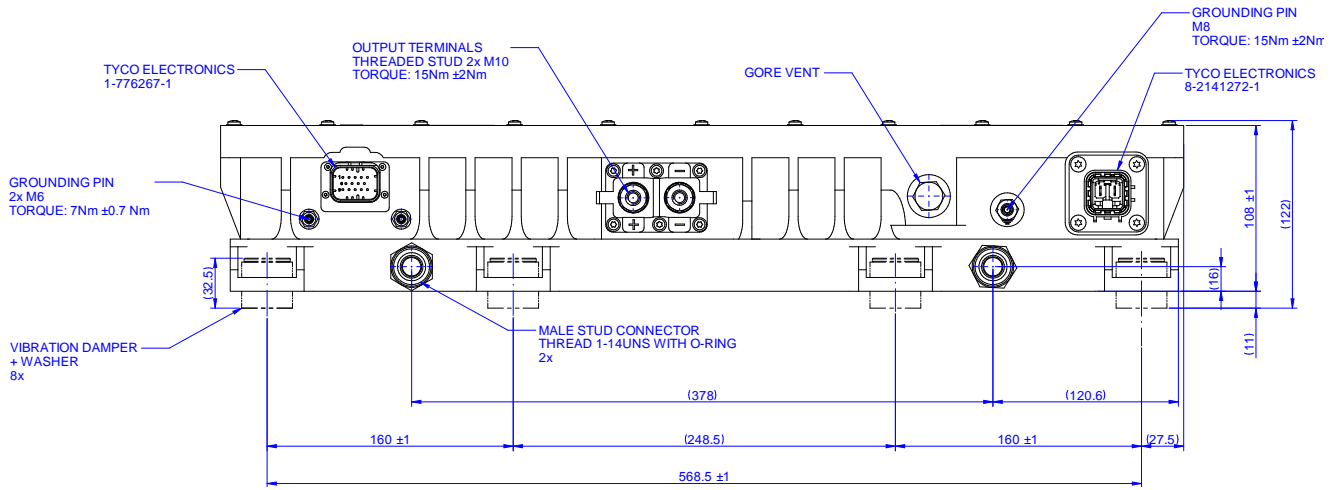


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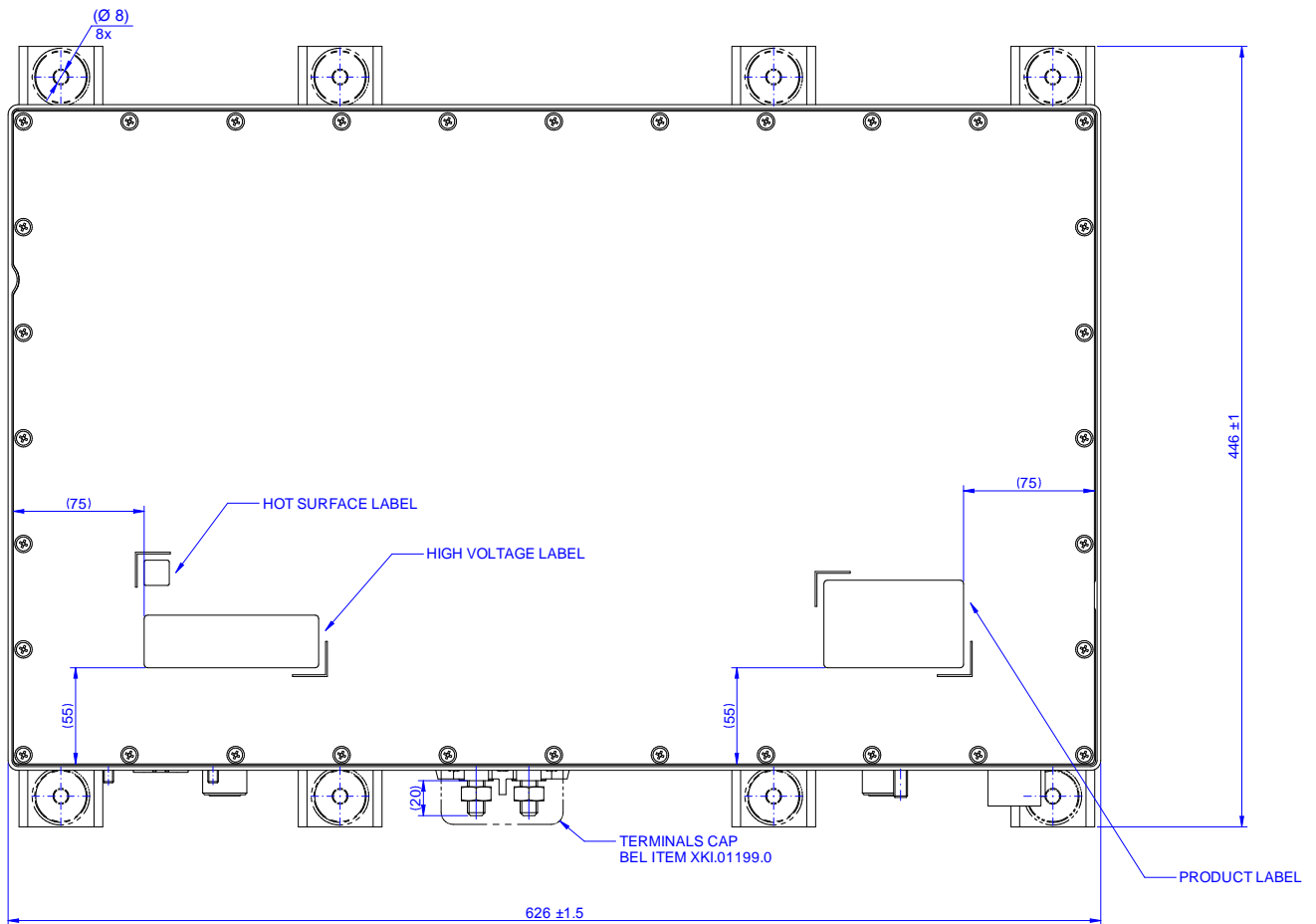
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Mechanical Drawings – Liquid Cooled Model - Front View



Liquid Cooled Model – Top View



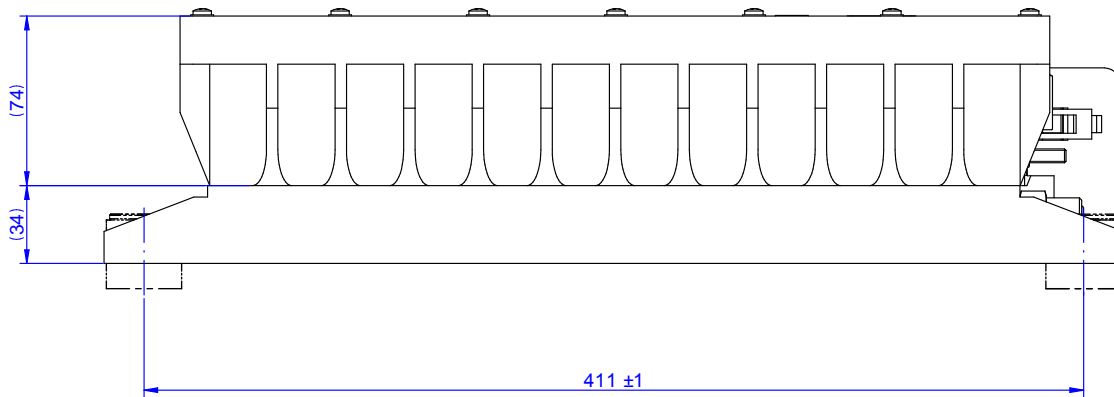
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Liquid Cooled Model – Side View



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