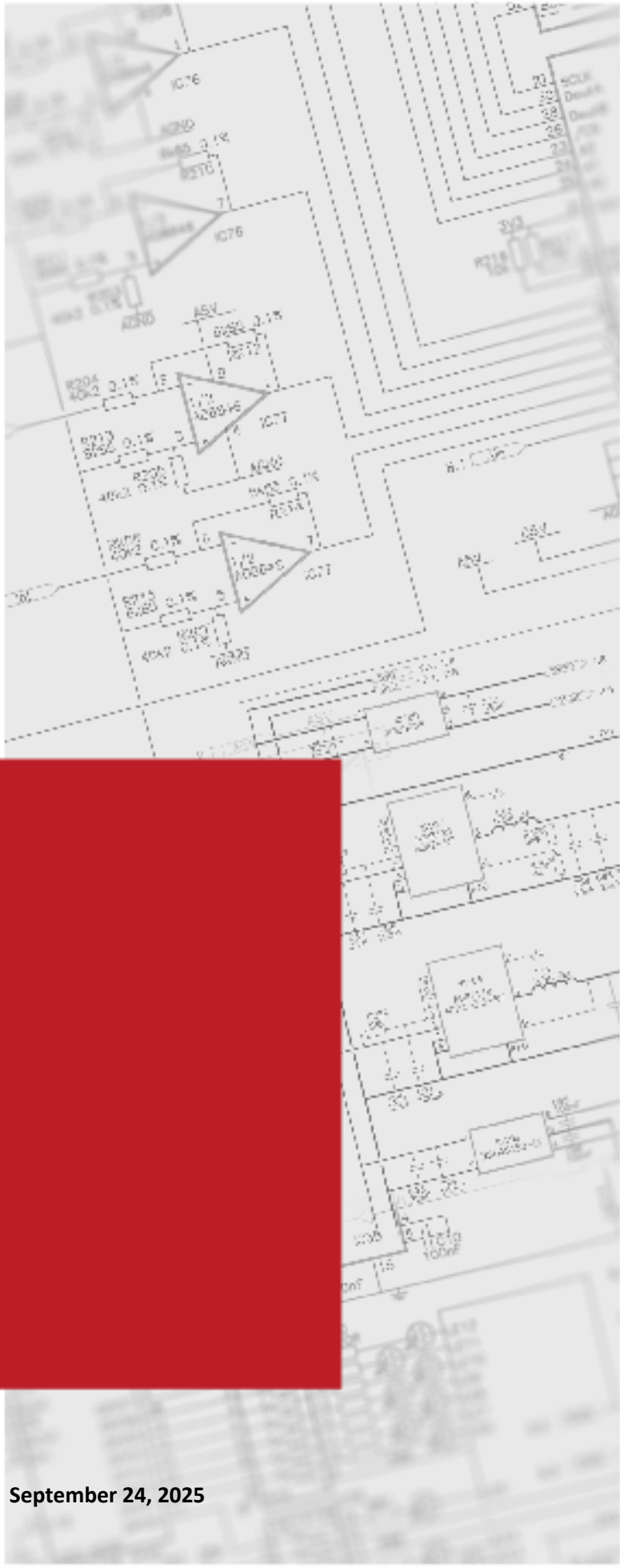


ENTRON™

Data Sheet

700265 Rev1

Product Model

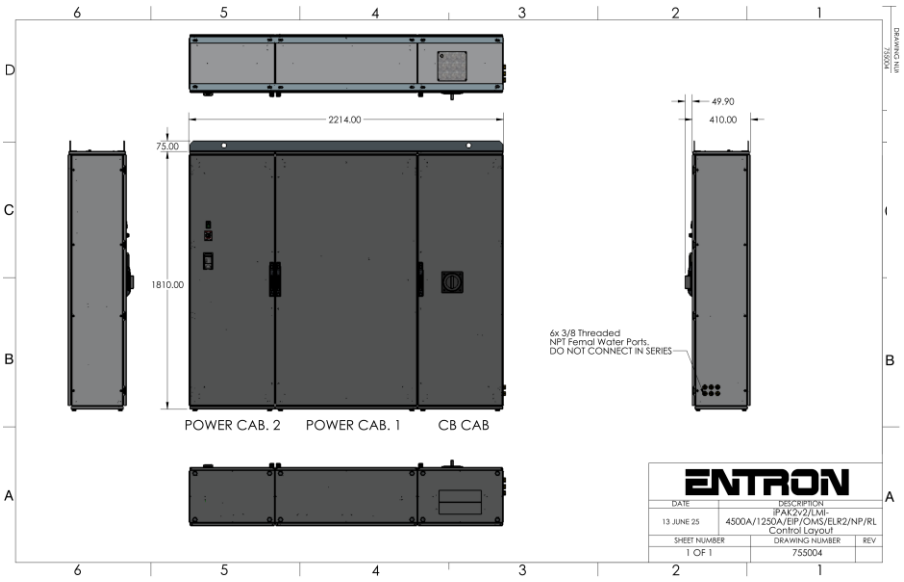
iPAK 4500AW

September 24, 2025

1 iPAK 4500AW water cooled resistance welding inverter

Typical Configurations

The 4500-amp High Current inverter is suitable for the following resistance welding applications: - Grating & Cross wire welding, Large annular ring projection welds e.g., Spuds including Industrial heat treating of metal parts.



Complete engineered welding control in self-contained easy to install cabinet, including safety screens, circuit breaker with door interlocking, power supplies and earth leakage protection.

iPAK 4500AW with Typical Suitable Transformer/Rectifier (Averaging Time 2 Seconds)				
Transformer type	TDC-6007	TDC-6007	TDC-8342	TDC-8342
kVA	600 kVA	600 kVA	900 kVA	900 kVA
Transformer primary V	650 volts	650 volts	650 volts	650 volts
Secondary Voltage	13.0 volts	16.2 volts	17.1 volts	23.2 volts
Turns Ratio	50:1	40:1	38:1	28:1
Sec. Current @ 3%	225,000 Amps (C)	180,000 Amps (C)	171,000 Amps (C)	126,000 Amps (C)
Sec. Current @ 10%	179,000 Amps (D)	179,000 Amps (D)	171,000 Amps (C)	126,000 Amps (C)
Sec. Current @ 20%	142,000 Amps (D)	142,000 Amps (D)	137,000 Amps (D)	126,000 Amps (C)
Sec. Current @ 50%	108,000 Amps (D)	108,000 Amps (D)	107,000 Amps (D)	79,000 Amps (C)
Sec. Current @ 100%	91,000 Amps (D)	80,000 Amps (C)	76,000 Amps (C)	56,000 Amps (C)
3 phase voltage	480 V max	480 V max	480 V max	480 V max

C=Limited by the inverter
D=Limited by secondary diodes

Important note:
The current values shown in the above tables take no account of the secondary resistance of the machine, which in most circumstances will have a significant effect on the maximum current available from the system. The figures given are only intended as a guide and to demonstrate some of the limiting factors.

Consult your transformer supplier to confirm the KVA is suitable for the welding process.

General Power Specification	
Maximum output power @ 20% Duty-cycle @ 2 seconds averaging time	2,925 kVA @ 480 V line voltage
Maximum line input voltage	480 V ac +10%-20% @ 50/60 Hz
Maximum output current – Limited electronically	4,500 Amps
Maximum Continuous output current	2,012 Amps
Maximum line input current per phase	2,598 Amps
Continuous equivalent rms line current per phase (4,500A@20% duty)	1,162 Amps
Power Factor	Leading
Current regulation and feedback	Primary and secondary
Current regulation accuracy	±2 %
Current regulation repeatability	±1%
Inverter switching frequency	1 kHz
Maximum averaging time	2 seconds
Water flow rate	8 US gallons per minute (2.6 US gal/module) 30 liters per minute (10 liters/module)
Maximum inlet water temperature	77 degrees Fahrenheit 25 degrees centigrade

2 Installation of water-cooled iPAK AW inverter modules to qualify for warranty

These notes are provided to assist customers who are installing inverter modules into their own equipment. Failure to follow these rules will render the warranty void.

1. The inverter must be fitted into a customer cabinet which is sealed against ingress of dust.
2. There must be a free air space around all sides of the inverter module of at least four inches or 100mm.
3. The cabinet internal ambient temperature must not rise above 104 degrees Fahrenheit or 40 degrees Centigrade when under normal operating conditions.
4. All entry and exit conduits must be sealed with appropriate bulkhead fittings or glands.
5. All unused holes must be sealed.
6. The inverter must be supplied with three phase AC via an earth leakage circuit breaker (ELCB or GFI), suitably rated for the inverter (please see ENTRON Data sheet), with thermal and magnetic trips. This is required to provide protection for the inverter in the event of a device failure.
7. Maximum load/transformer primary current must not exceed the inverter rated current at the machine maximum duty cycle specified over the averaging time of two seconds (see ENTRON graph).
8. Duty cycle limits must not be exceeded beyond those specified in the ENTRON data sheet.
9.

Water flow must be at least the following	
iPAKv2 100AW	1.3 US gal/min or 5 liters/min
iPAKv2 360AW	1.3 US gal/min or 5 liters/min
iPAKv2 600AW	2 US gal/min or 7.5 liters/min
iPAKv2 1000AW	2.6 US gal/min or 10 liters/min
iPAK 1500AW	2.6 US gal/min or 10 liters/min
iPAK 3000AW	5.3 US gal/min or 20 liters/min
iPAK 4500AW	8 US gal/min or 30 liters/min
iPAK 6000AW	10.5 US gal/min or 40 liters/min

10. A water management system must be used which is independent of both the machine and the welding transformer cooling systems.
11. The water management system must have the following components in each flow path:
    I. A manual flow regulator or constant flow valve.
    II. A programmable flow switch which is monitored by the welding control or line PLC.
    III. A shut off valve.
    IV. The water flow must drain to atmosphere.
12. Inlet water temperature must not exceed 77 degrees Fahrenheit or 25 degrees Centigrade.
13. The water temperature must not be low enough to cause the formation of condensation inside the inverter.
14. Water savers may be used, but should be used on the water outlet of the inverter. Water flow should be started at least half a second before a weld commences and the water must remain flowing for at least one minute after the weld has finished.

If the above conditions cannot be met ENTRON can supply a self-contained cabinet with earth leakage circuit breaker.

Important Notes – Warranty Exclusions:

a. Excessive dust or moisture contamination may render the warranty void.
b. Excessive internal cabinet temperatures may cause the inverter to be damaged and the warranty will be void.
c. Evidence of significant inverter damage as a result of unprotected flash over as a result of no ELCB (GFI) being fitted will render the warranty void**.**

Suggested Minimum Installation Data for iPAK 4500AW:

Important Note:

All the calculations for cable sizing assume that the inverter will be used at maximum permissible current and maximum permissible duty cycle, but within the inverter specification.

WARNING!

WARNING!

The calculations given below are intended as a guide, and should therefore be checked by a professional electrical engineer to ensure that local installation regulations are met.

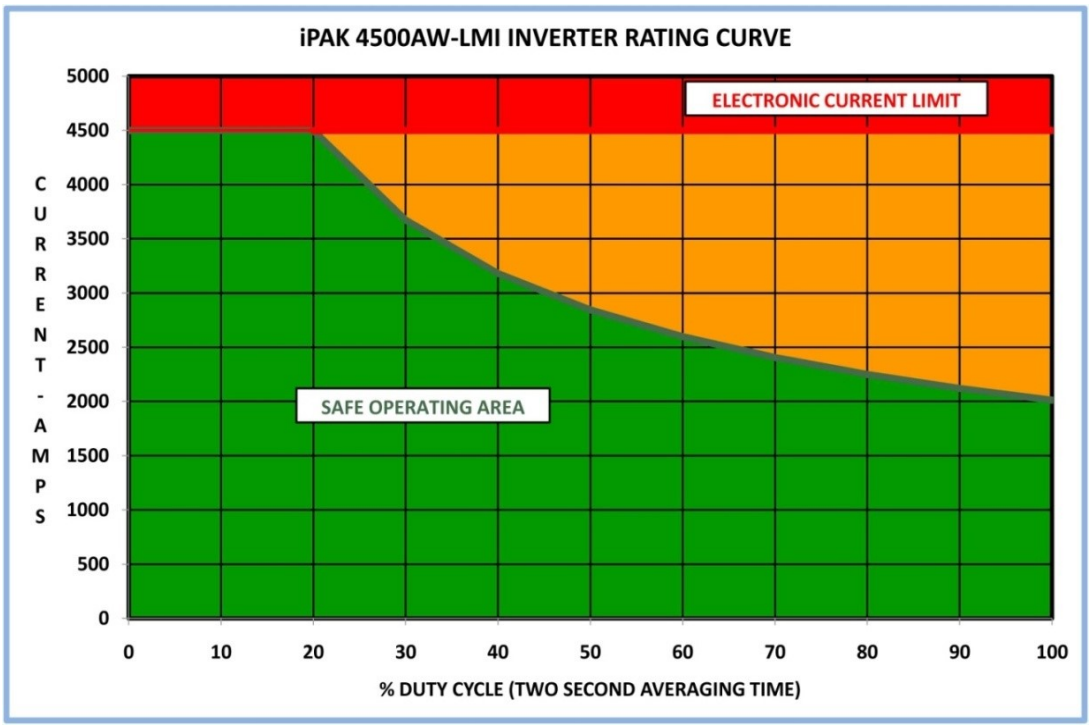
Assumptions for three phase supply feed:

Ambient temperature	= 30°C (86°F)
Cable Insulation	= H07RN-F
Conductor temperature	= 85°C (185°F)
Maximum volts drop at full load	= 5% of nominal supply voltage.
Continuous current rating for cable sizing	= 1,162 Amps (thermal equivalent current)
Current Rating for volts drop	= 2,598 Amps
Recommended fusing	= 1500 Amps HRC
Recommended thermal/magnetic circuit breaker	= 1200 Amps
Minimum cable size for 10 metre (*33 feet*) feed cable	= 2 x 240 sq. mm (2 x 474 kMCM) (flat spaced)
Volts drop over 10 metres (*33 feet*) of cable @ 2,598 Amps	= 2.20 volts/10 metre (*33 feet*) length of run

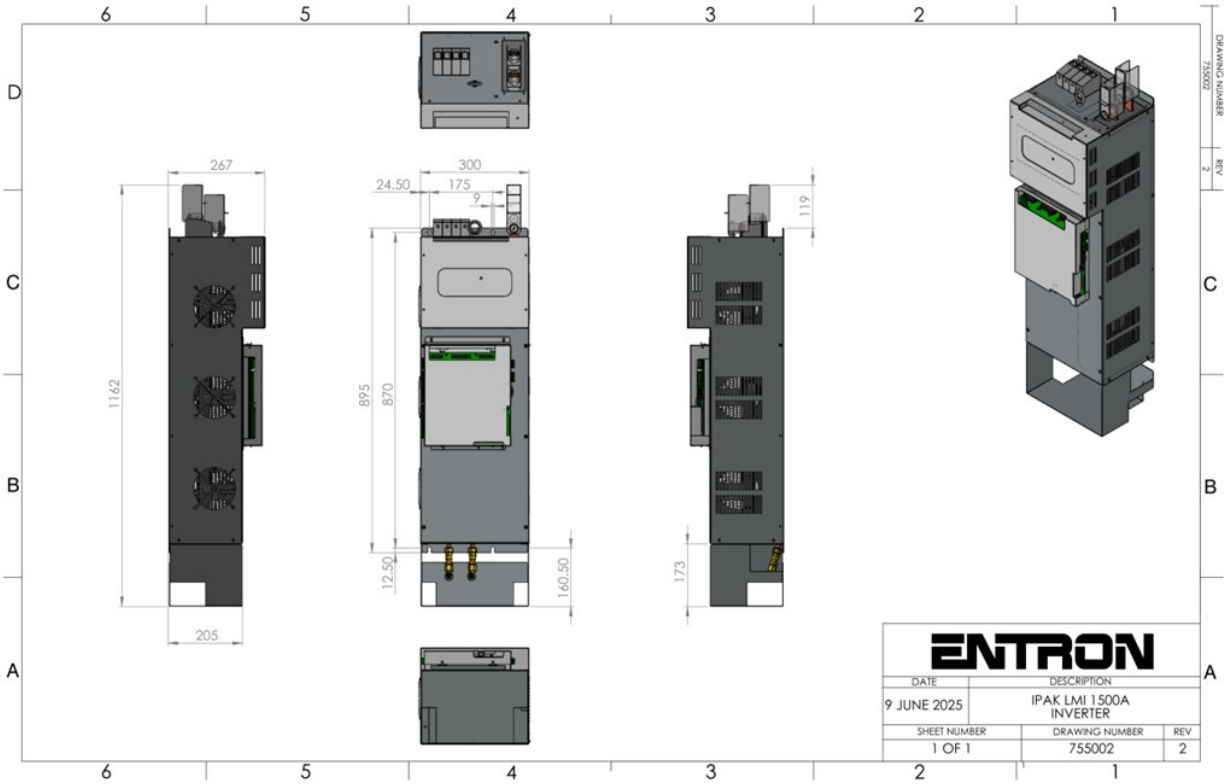
Assumptions for Welding transformer feed:

Ambient temperature	= 30°C (86°F)
Cable Insulation	= H07RN-F
Conductor temperature	= 85°C (185°F)
Maximum volts drop at full load	= 5% of nominal supply voltage.
Continuous current rating for cable sizing	= 2,012 Amps (thermal equivalent current)
Current Rating for volts drop	= 4,500 Amps
Minimum cable size for 10 metre(*33 feet*) feed cable	= 3 x 240 sq. mm (3 x 474 kMCM) (flat spaced)
Volts drop over 10 metres(*33 feet*) of cable @ 4,500 Amps	= 2.550 volts/10 metre (*33 feet*) length of run

Rating Curve:



Outline Drawings – Inverter Modules (3 modules used per Inverter):



3 Technical Support

3.1.1 Internet

The latest version of the documentation and other helpful resources in the ENTRON Document Library page found in the Resource section of the ENTRON website: https://www.entroncontrols.com

3.1.2 Documentation Request

Documentation, user instructions and technical information can be requested by emailing ENTRON Controls at customerservice@entroncontrols.com or support@entroncontrols.com

Please include your name and email

3.1.3 Service and Technical Support

For service and technical support, we request that customers fill out the Technical Support Form found on our website at link below:

TECHNICAL SUPPORT FORM LINK

https://www.entroncontrols.com/resources/technical-support.html

After the web form has been completed, your case will be assigned to one of our technical specialists who will contact you directly.

ENTRON Controls can also be contacted by phone or email:

- Phone: +1-864-416-0190
- Email: tech.support@entroncontrols.com