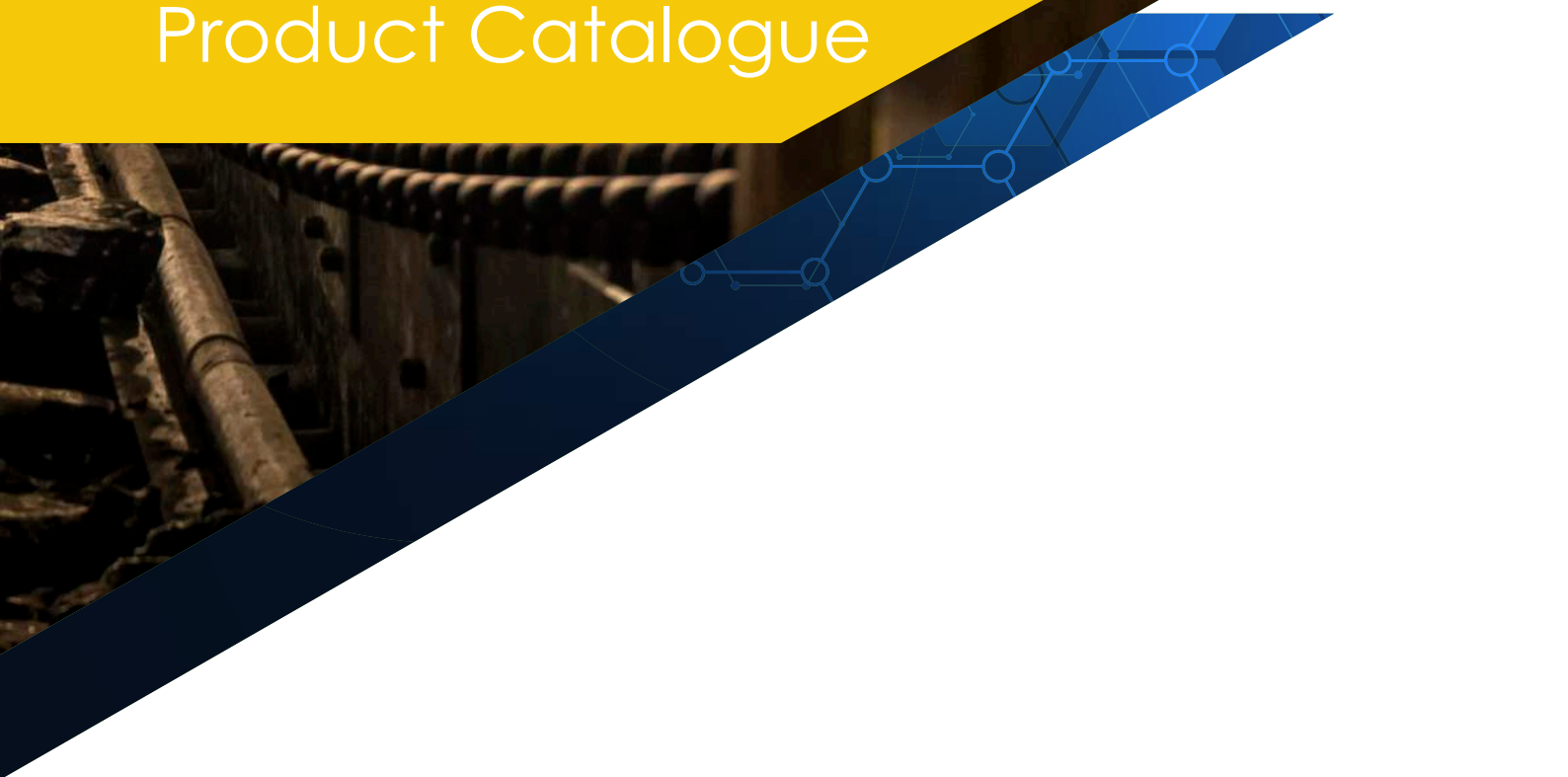




# 2020 Motor Control Product Catalogue



# Contents

AC Motor Variable Frequency Drive	3
DC Motor Variable Speed Drive	5
DC Smart Drive Connector Cable Assemblies	5
DOL - Smart Contactors	6
UberMate 2.0	7
MotorMate	9
IsoMate	11
AC VFD Line Choke	12
AC VFD Line Filter	14



## AC Motor Variable Frequency Drive

**AC Variable Frequency Drive 1140V 100kW - 110/220V  
Control PS - 110/220V Relay - 5V Encoder  
Part Number: L0W40201**

**AC Variable Frequency Drive 1140V 100 kW - 110/220V  
Control PS - 110V/220V Relay - 15V Encoder  
Part Number: L0W40301**

**AC Variable Frequency Drive 1140V 150kW -  
110V/220V Control PS - 110V/220V Relay - 5V Encoder  
Part Number: L0TJ0501**

**AC Variable Frequency Drive 1140V 150kW -110V/220V  
Control PS - 110V/220V Relay - 15V Encoder  
Part Number: L0TJ0301**

**AC Variable Frequency Drive 480V 150kW -110V/220V  
Control PS - 110V/220V Relay - 5V Encoder  
Part Number: L0UP0201**

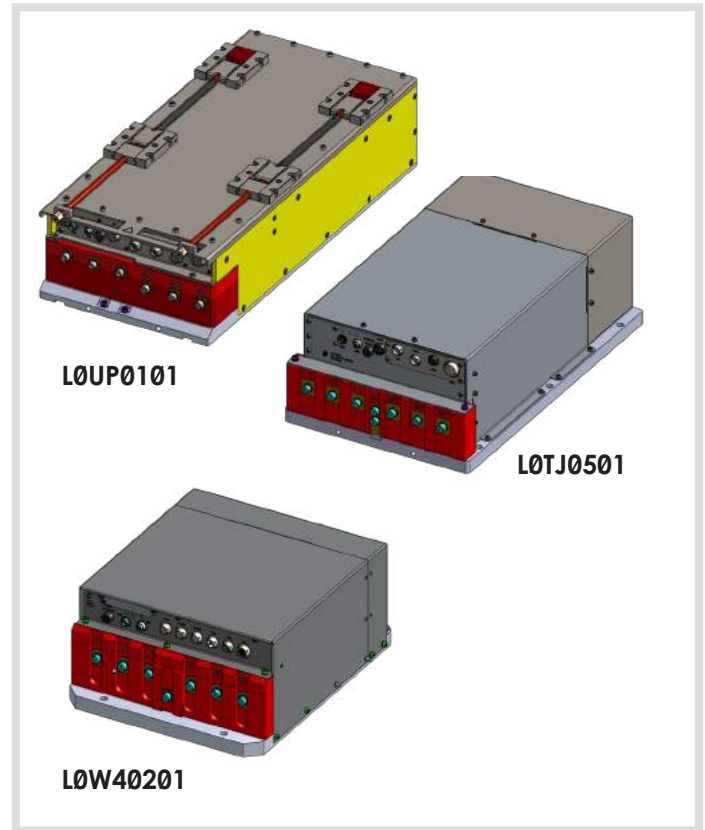
**AC Variable Frequency Drive 600V 150kW -  
110V/220V Control PS - 110V/220V Relay - 5V Encoder  
Part Number: L11W0101**

Pempek's AC Variable Frequency Drive is a product range of frequency converters for high-performance control of 380V ~ 1140 V induction motors in demanding industrial applications.

Single drive modules configuration contains a rectifier, DC link and an inverter in one single AC drive unit.

### Typical Application

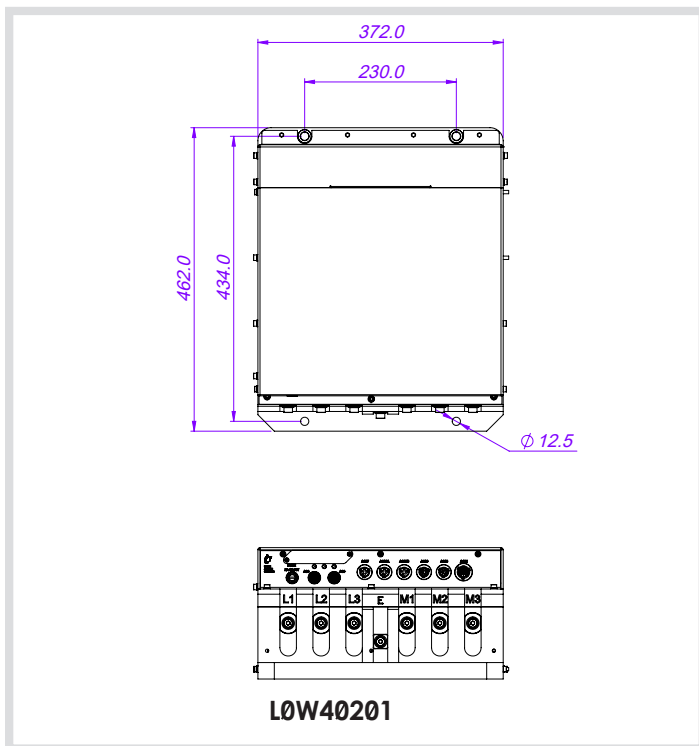
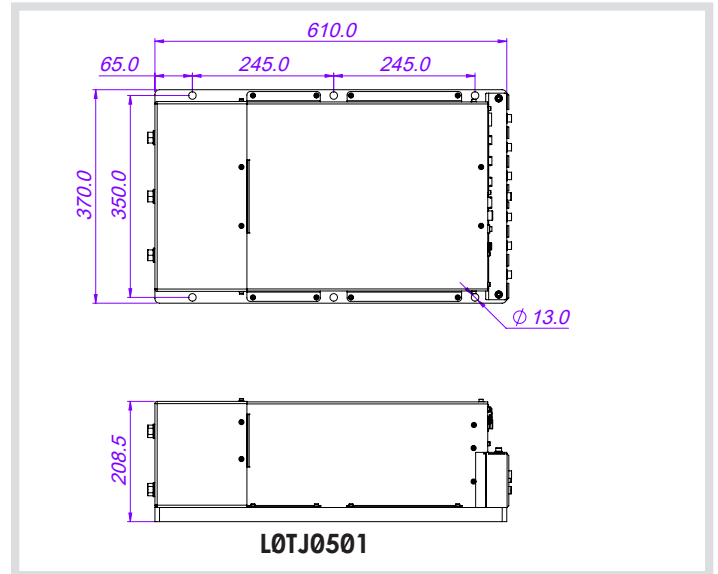
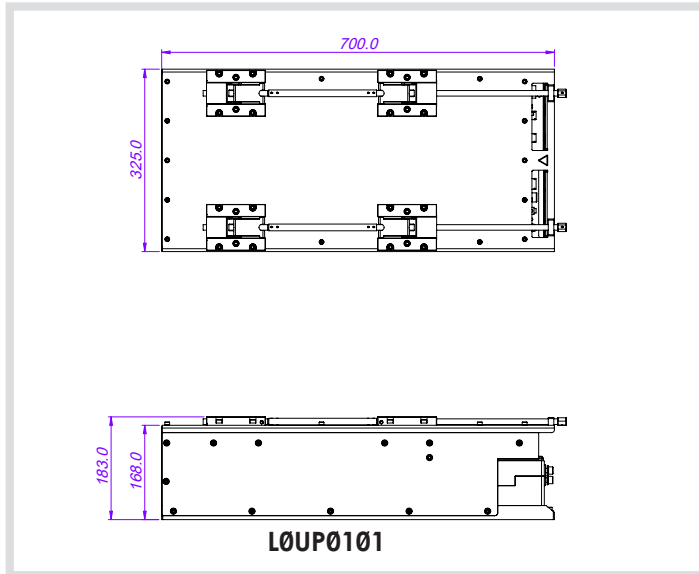
- Continuous Bolter/Miners
- Longwall Shear
- Shuttle Car
- Continuous Haulage
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Any industrial AC Motor application within power specification



### Features & Benefits

- Four quadrant operation with full regeneration
- Integrated pre-charging unit
- Integrated safety relay
- Isolated CAN interface with CANOpen protocol
- Two CAN connectors to enable daisy-chaining of bus.
- Method for externally setting the CAN Sub ID for the module
- Motor temperature monitoring
- Sophisticated direct torque control
- Sensorless vector speed control
- Maximum torque at zero speed
- Two-times of overload capability
- Water cooling
- 110/220V control power

## Dimensions (mm)



## Specification Chart

Pempek VFD	VFD rated voltage	Max current	Suitable motor Max power @1140V	Suitable motor Max power @960V	Suitable motor Max power @860V	Suitable motor Max power @660V	Suitable motor Max power @460V	Suitable motor Max power @380V	Dimension
L0W4	1140V	200A	150KW	133KW	119KW	91KW	64KW	52KW	462x372x200
L0TJ	1140V	300A	230KW	200KW	178KW	178KW	137KW	79KW	610x370x213
L0UP	480V	500A	NA	NA	NA	228KW	159KW	130KW	700x325x168
L11W	660V	500A	NA	NA	NA	228KW	159KW	130KW	430x350x201

## DC Motor Variable Speed Drive

**DC Smart Drive Auto-Reversing SCR 45kW**  
**Part Number: L0MR0101**

**DC Smart Drive Auto-Reversing SCR**  
**45kW - 350-volt Version**  
**Part Number: L0MR0301**

The L0MR 3-Phase 45kW SCR Drive is a precision drive module designed to support industrial DC drive applications without the need for external DC contactor or overload module support

By utilizing a rugged communications interface and advanced DSP technology, these drives represent the avant-garde in SCR DC drive technology

### Features & Benefits

#### Intelligent Digital SCR Drive

- 110V Control Logic Supply
- 240V RMS Drive Supply
- Variable output to 300V in voltage mode
- Variable output to 400A peak in current mode
- Forward & Reverse Motor Control
- Full Digital Signal Processor Control
- True Closed Loop Control
- Embedded Thermal Overload Protection
- Embedded Phase Imbalance Protection
- Embedded Phase Loss Protection

#### Embedded Diagnostics

- Reports 3-Phase Line Voltage & Current
- Shaft Encoder support for RPM measurement
- External Temperature Measurement via two Wire PT100 support
- Internal Temperature Measurement

#### Embedded 110VAC Relay Output

- 1 x N/C 110VAC Relay for Transformer Contactor isolation control (Designed for in series wiring)
- Microprocessor Controlled

#### CAN Network

- Opto-Coupler Isolation
- CAN 2.0B Compatible

#### Operates -10°C to +85°C

- All industrial components

#### Heavy Duty Enclosure

- Electroless Nickel Plated Mild Steel
- Alodined Aluminum Heat Transfer Base
- Rugged Construction

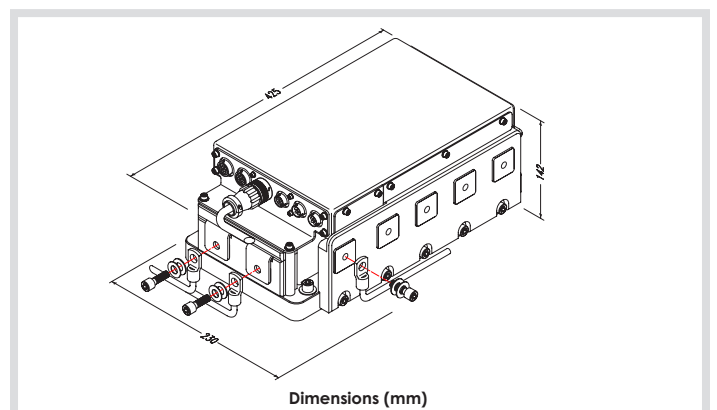


### Typical Application

- Continuous Bolter/Miners
- Continuous Haulage
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Any industrial DC Motor application within power specification

### DC Smart Drive Connector Cable Assemblies

Part Number	Description
H0MR0201	DC Connector Assembly 39A
H0MR0301	DC Connector Assembly 39B
H0MR0401	DC Connector Assembly 40
H0MR0501	DC Connector Assembly 39A to 39B
H0MR0601	DC Connector Assembly A2 to A2
H0MR0701	DC Connector Assembly 38 CAN-Address-0
H0MR0801	DC Connector Assembly 38 CAN-Address-1



## DOL - Smart Contactors

**Smart Contactor 160A NEMA4**  
Part Number: L0SU0101

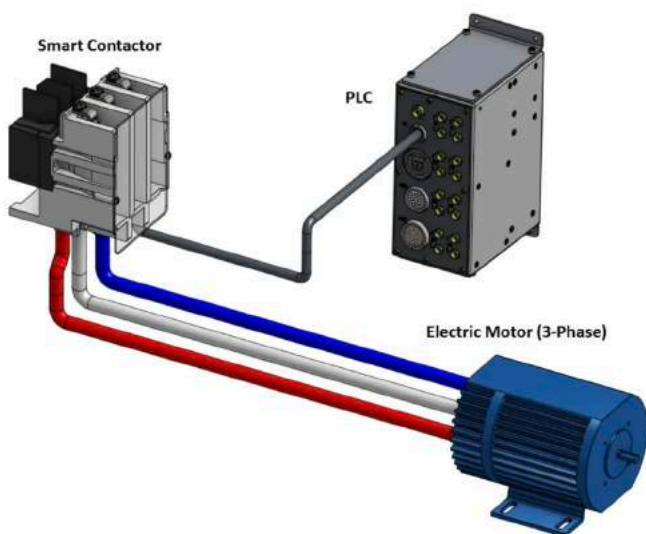
**Smart Contactor 320A NEMA5**  
Part Number: L0UJ0101

**Smart Contactor 160A NEMA4 Reversing**  
Part Number: L0VX0101

**Safety Contactor NEMA6**  
Part Number: L0X10101

Pempek Smart Contactors are a line of 3-phase vacuum motor starter contactors with integrated control and protection electronics. The contactor is controlled and monitored by a host PLC via CAN field bus connection. The PLC uses coded CAN bus messages to turn on and off the contactor contacts (to turn on and off the electric motor). The PLC can also monitor motor current and contactor status via the CAN bus connection.

Motor overload protection is provided by the on-board electronics in the contactor. The host PLC configures the motor protection settings via a CAN configuration message (motor full load current, motor jam trip current etc). The contactor then opens the vacuum contacts when motor current exceeds the PLC-configured settings.



**Smart Contactor 160A NEMA4**  
Part Number: L0SU0101

This model of smart contactor uses vacuum bottles rated for 160 Amperes continuous current.

**Smart Contactor 320A NEMA5**  
Part Number: L0UJ0101

The L0UJ model uses a larger switching chassis supporting vacuum bottles rated to 320 Amperes continuous current.

**Smart Contactor 160A NEMA4 Reversing**  
Part Number: L0VX0101

This model uses the same vacuum bottles and contactor switching chassis as the L0SU model; but supports reversing the phases to the motor by using 2 switching units. This model also supports control of two motors simultaneously via two branch circuit outputs.

**Safety Contactor NEMA6**  
Part Number: L0X10101

This is the highest current capacity model in the smart contactor range – with vacuum bottles supporting 540 Amperes.

## UberMate 2.0

### UberMate DOL Motor Controller Part Number: L11E0101

Pempek's UberMate provides integrated I/O features required to control a vacuum contactor or motor starter, monitor 3-Phase induction motor current and RTD inputs

Electrical installation and maintenance has never been easier

With additional I/O for peripheral devices, the UberMate makes for an exceptionally capable control system addition



### Features & Benefits

- Motor Protection** Motor overload protection is implemented in the firmware of the UberMate. Motor protection routines include Instantaneous Overload, Locked Rotor Overload, Thermal Rating Overload, Phase Imbalance, Phase Loss, and Under Load
- True RMS current measurement** with range from less than 100mA up to 1600 Amps is implemented using Rogowski coils. No need for different current transducers for different application as often required by traditional current measurement systems
- Directly control** one [ON/OFF] or two [FORWARD/REVERSE] contactors without the need for interposing relays. Controller switching contacts support inrush current of up-to 80 Amps. There are two contacts in series to comply with 61508 SIL requirements. One auxiliary change-over relay output that can be used as a general purpose relay or to trip the upstream supply on a fault
- All relay outputs are protected by independent hardware watchdog timers
- UberMate 2.0 has 4 individual inputs and each can be factory configured to AC110V or DC24V (Default AC110V)
- UberMate 2.0 has two banks of Digital inputs. One bank is 4 x AC110V and second bank 8 x DC24V

### Typical Application

- Continuous Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Shuttle Cars
- Feeder Breakers

### UberMate vs UberMate 2.0

	UberMate	UberMate 2.0
Dimensions	W167 x H164.5 x D 97.7 (mm)	W138 x H110.5 x D 94 (mm)
Digital Inputs	11	4
PT100 Inputs	3	3
Relay Outputs	3	3
Phase Measurement	3	3
4-20mA Inputs	3	0
Counter Inputs	2	0
Fieldbus Interface	CANopen	CANopen (identical)



L0XW0101



L11E0101

## Specification

### Mechanical

Housing Plated	Plated mild steel, 3mm
Dimensions	Volume (W) 138mm x (H) 110.5mm x (D) x 94mm
Dimensions	Mounting (W) 100mm x (D) 82.3mm
Conductor Aperture	25mm x 50mm (A comfortable fit for lugged 120mm <sup>2</sup> )
Mass	?
Installation	4 x M6 x 12mm + Pressure Washer Recommended Max. Torque = 9Nm

### Environmental

IP Rating	N/A
Temperature Rating	Component -40°C ..+85°C
Temperature Rating	Ambient Operating -35°C +75°C

### Supply / Interface

Voltage / Power	18..30 VDC / < 5W
Polarity Safe	YES
Network	CAN 2.0B, CANOpen Compliant

### Inputs

Current	3 x True RMS Rogowski Coils – 1..1600A @ 1% Linear Scale (10000A peak)
Digital	4 x AC110V / 8 x DC24V
RTD	3 x PT100 Line Fault Protected – isolation UL 1577: 5000 V RM
Frequency	2 x Frequency / Counter (to 5KHz, 3.2k)

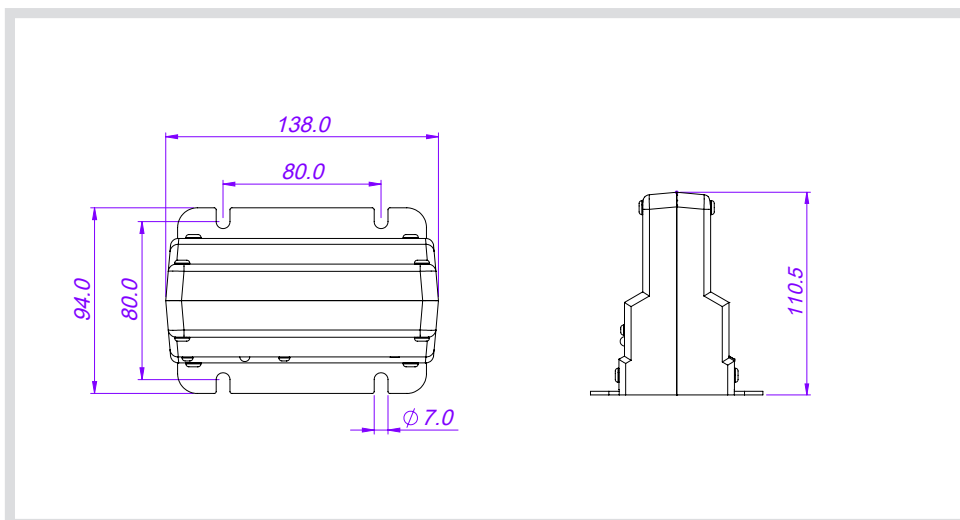
### Outputs

Relays	2 x Contact(s) Voltage Free – Forward / Reverse Configuration
Relays	1 x Contact(s) Voltage Free – Auxiliary
All contacts are	240V / 16A rated, make / break 4000VA, inrush 80Amps

### Test Standards:

Climatic Test	EN 60068-2-30 (Damp heat, non-condensing)
Mechanical Stability	EN 60068-2-6 (Vibration)
Immunity to Interfering Fields	EN 61000-6-2 2005
Interference Emission	EN 61000-6-4 2007

## Dimensions (mm)





## MotorMate

**MotorMate 200A/80A/200A Vertical Top Entry**  
Part Number: L0HC1701

**MotorMate 500A/200A/500A Vertical**  
Part Number: L0HC1801

**MotorMate 200A/200A/200A Vertical Top Entry**  
Part Number: L0HC1901

**MotorMate 500A/150A/500A Horizontal Side Entry**  
Part Number: L0HC5001

**MotorMate 120A/50A/120A Horizontal Side Entry**  
Part Number: L0HC5101

**MotorMate 250A/125A/250A Horizontal Side Entry**  
Part Number: L0HC5201

**MotorMate 200A/80A/200A Horizontal Side Entry**  
Part Number: L0HC5401

**MotorMate 200A/100A/200A Horizontal**  
Part Number: L0HC5501

**MotorMate 50A/20A/50A Horizontal Side Entry**  
Part Number: L0HC5601

**MotorMate 10A/4A/10A Vertical Top Entry**  
Part Number: L0HC5901

**MotorMate 3A/1A/3A Vertical Top Entry**  
Part Number: L0HC6001

## Features & Benefits

### Triple Inductive Current Transducers (ICT)

- 3-Phase Inductive Current Monitoring
- Fully Customisable Scales
- High Noise Tolerance

### Industry Standard 4-20mA Outputs

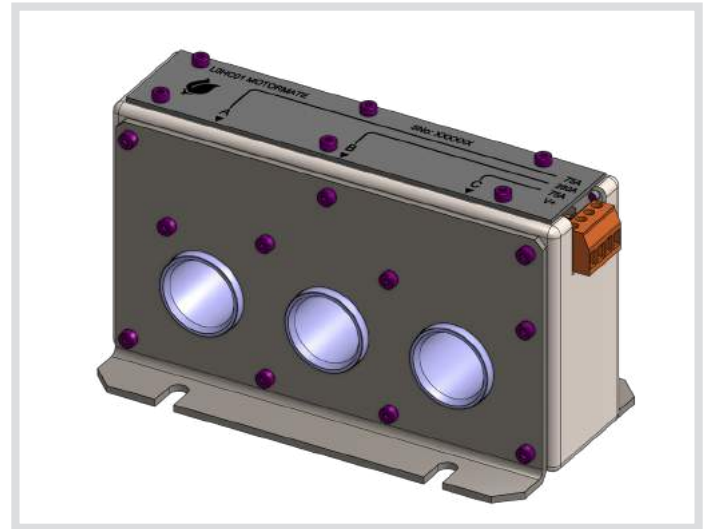
- 3 x 4-20mA Calibrated Outputs

### Operates -20°C to +85°C

- All industrial components

### Heavy Duty Enclosure

- Electroless Nickel Plated Mild Steel
- Stainless Steel Flanges
- Rugged Construction



The L0HC Series Motor Mate is an integral triple output inductive current transducer designed for 3-phase electric motors, drives and transformers

The L0HC Series Motor Mate can be factory calibrated to suit any monitoring requirement and is guaranteed to operate to within 5%\* of full-scale over the entire monitoring range

These devices are commonly used, in part, as current sensing protection devices in the application of AC Motor Protection schemes relative to AS1023.2.

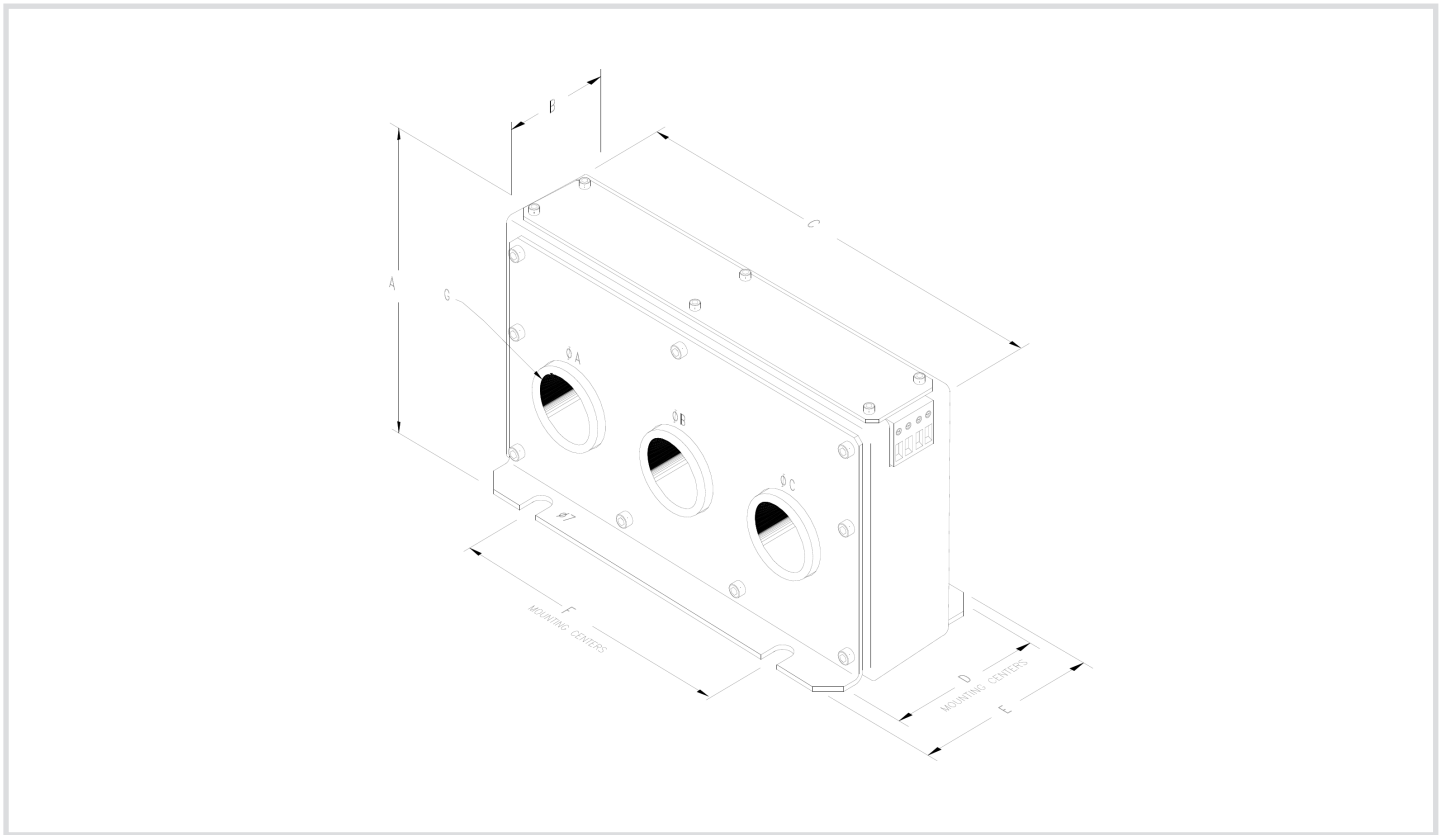
For more information as to how motor protection is achieved, see the Pempek Systems White-paper PSWP - Application of AC Motor Protection

\* Typical Error is  $\pm 2$  percent

## Typical Application

- Continuous Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Shuttle Cars
- Feeder Breakers
- Any industrial 3-Phase Electric Motor / Drives and Transformer

## Dimensions



Dimension	Measurement	Description
A	97	Height
B	56	Depth
C	167	Width
D	71	Mounting Centre – Depth
E	86.5	Mounting Flange – Depth
F	100	Mounting Centre – Width
G	24	Cable Gauge

### Notes

- All dimension measurements are in millimetres.

### Material

- Enclosure is Electroless nickel plated mild steel.
- Mounting brackets are stainless steel.

### Fasteners

- M4 x 10mm x 20
- M3 x 6mm x 10

### Mass

1.7kg (3.7lb)

## IsoMate

IsoMate is used to measure leakage (isolation) resistance of 3-phase inductive load (AC motors, transformers, etc).

**Part Number: L11J5001**

### Features & Benefits

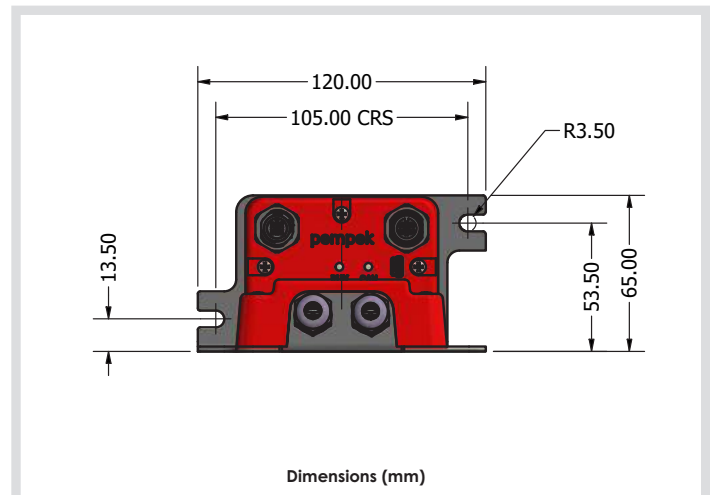
- Suitable from AC 380V up to 3.3KV Mains lines.
- Optimised from 100 kilo-ohms to 10 mega-ohms (usable from 10 kilo-Ohms to 100 mega-Ohms).
- Test voltage: DC3000V ~ DC4000V. Test current: <math><400\mu\text{A}</math>
- Line Voltage detection. Detection threshold ~AC200V
- Robust CANopen protocol for automated testing.
- Autonomous safety – can directly control UberMate.



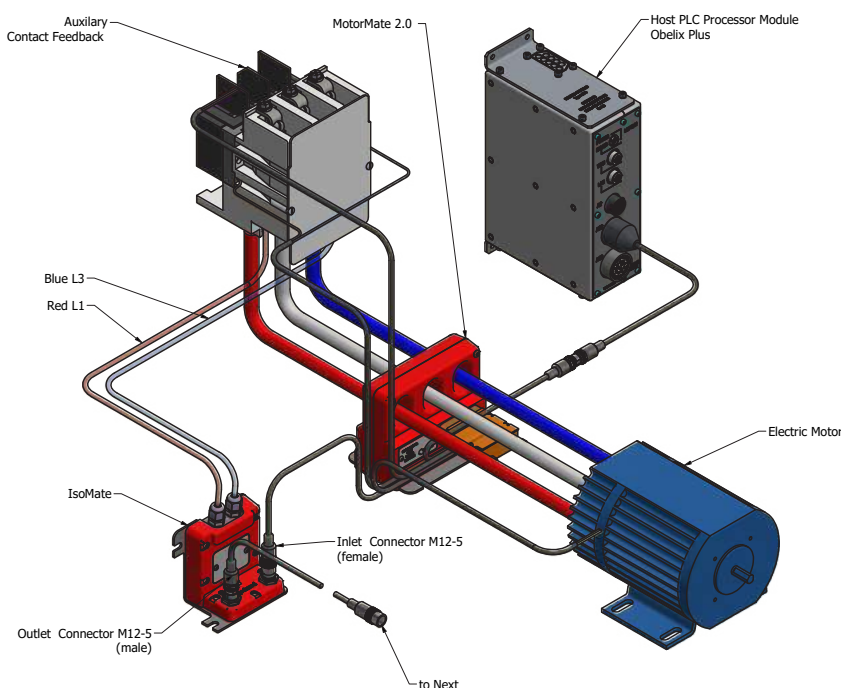
### Specifications

#### Connectors:

Two M12-5 (male + female) as per CiA-303.1 + two HV flying leads terminals to Mains line connection.



### IsoMate | Control and Monitoring Concept



## AC VFD Line Choke

AC line chokes are added to the input of the VFD and placed in series with the incoming line.

They help to mitigate harmonics and because they are between the line and the drive, they are able to act as a buffer for surges and other transients.

### AC Drive 1140V Choke 100A Part Number: L0XL0301

- 1140V 3Phase 100A
- Typically used for 1140V 150KW motor with VFD L0T

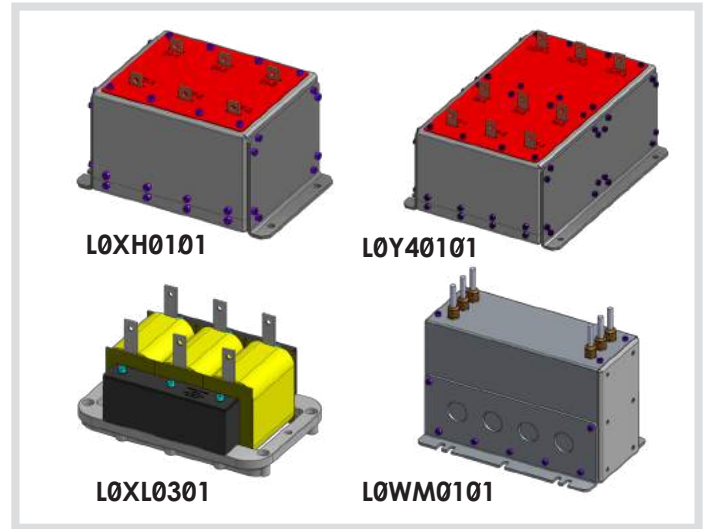
Inductance per phase	0.56	mH
Inductance tolerance at 25 Arms	±10	%
Operating line-line voltage, maximum	1300	Vrms
Insulation rating, phase to phase	3000	Vrms
Insulation rating, phase to core/chassis	3000	Vrms
Line current, 1 hour thermal rating	100	Arms
Line current, core saturation	200	Arms

### AC Drive 1140V Choke 40A Long Side Mounting Part Number: L0WM0101

### AC Drive 1140V Choke 40A Front/Rear Mounting Part Number: L0WM0201

- 1140V 3Phase 40A
- Typically used for 1140V 60KW Motor with VFD L0W4)

Inductance per phase	1.4	mH
Inductance tolerance at 25 Arms	±10	%
Operating line-line voltage, maximum	1300	Vrms
Insulation rating, phase to phase	3000	Vrms
Insulation rating, phase to core/chassis	3000	Vrms
Line current, 1 hour thermal rating	40	Arms
Line current, core saturation	80	Arms



### AC Drive 1140V Choke 65A Part Number: L0XH0101

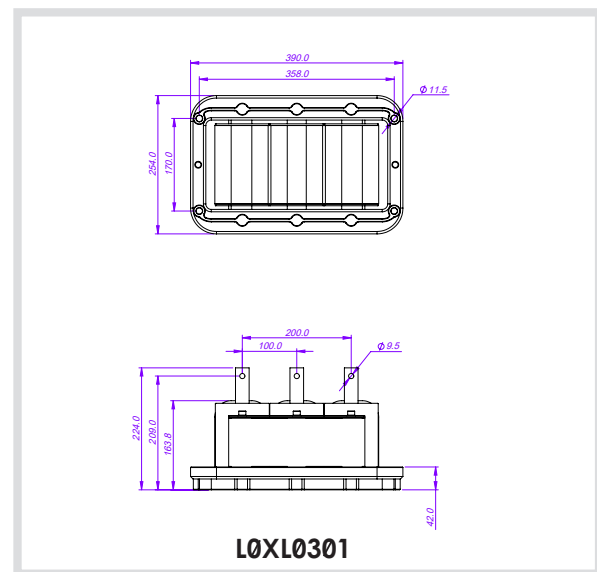
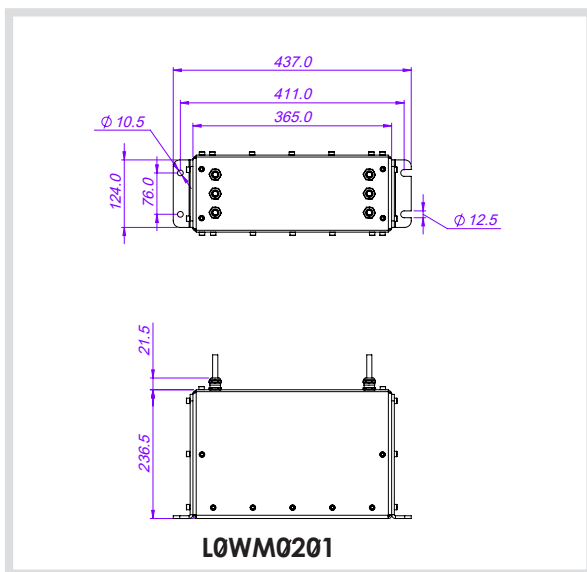
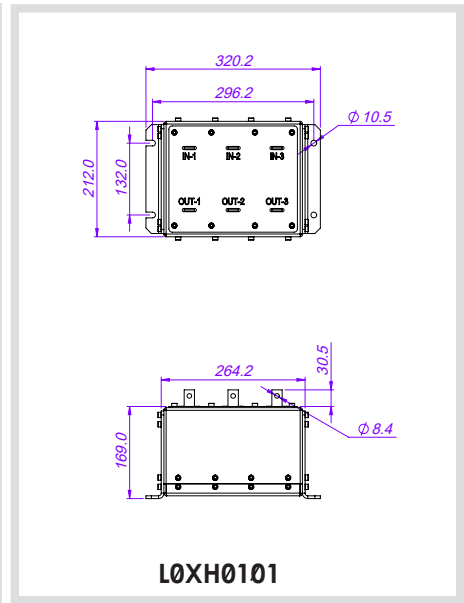
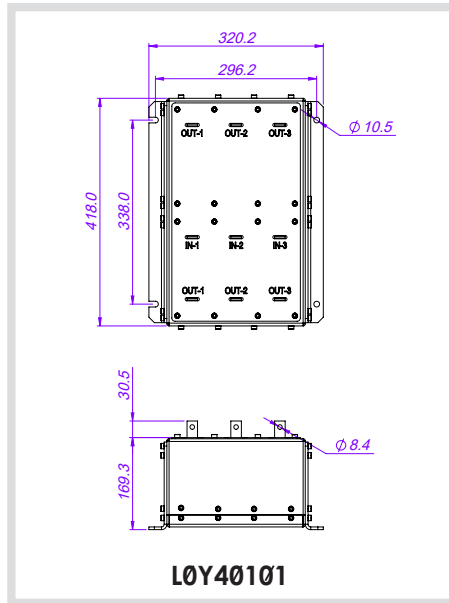
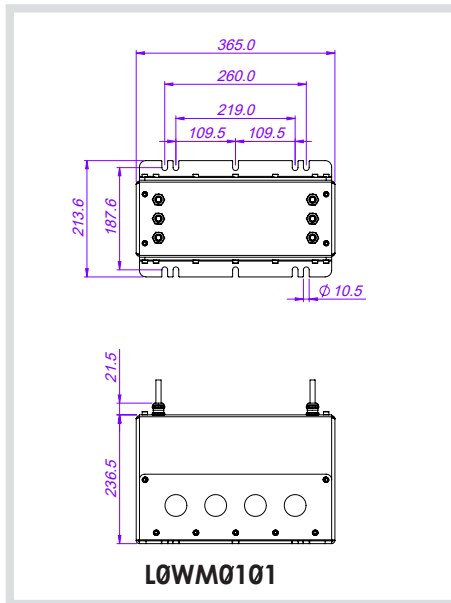
- 1140V 3Phase 65A
- Typically used for 1140V 100KW Motor with VFD L0W4

Inductance per phase	0.9	mH
Inductance tolerance at 25 Arms	±10	%
Operating line-line voltage, maximum	1300	Vrms
Insulation rating, phase to phase	3000	Vrms
Insulation rating, phase to core/chassis	3000	Vrms
Line current, 1 hour thermal rating	65	Arms
Line current, core saturation	130	Arms

### AC Drive 1140V Choke 65A 2in1 Part Number: L0Y40101

- Consists of two inner 65A chokes

## Dimensions (mm)



## AC VFD Line Filter

**AC VFD System Filter (L107 Mounting)**  
**Part Number: L10V0201**

**AC VFD System Filter (LOWN Mounting)**  
**Part Number: L10V0401**

The EMC filter is designed for variable frequency drive and high noise environment.

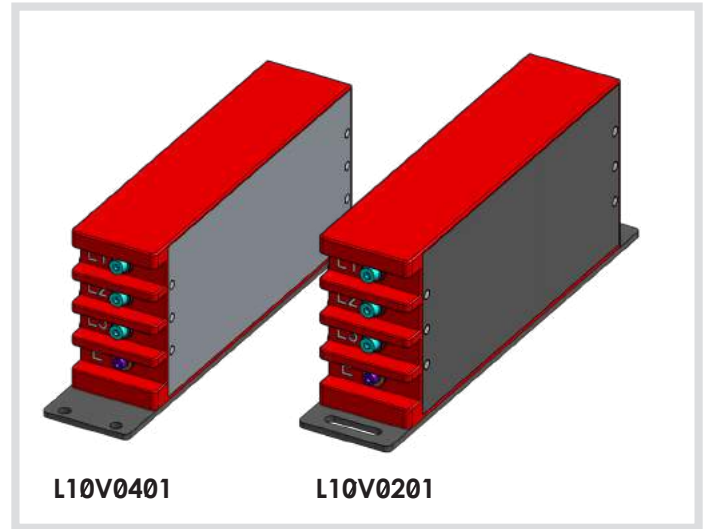
Input EMC filters reduce the conducted radio-frequency interference voltage.

### Features & Benefits

- EMC filter reduces the EMC interference and connects on the power input side to cut off or isolate the interference channel between power network and VFD.
- Suppress the harmonic or surge from power network to resolve nuisance malfunction introduced by variable frequency drive.
- EMC filter must be installed upstream on mains side of the variable frequency drive.

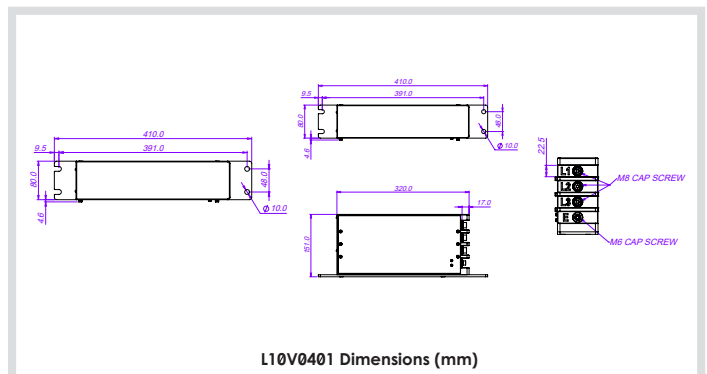
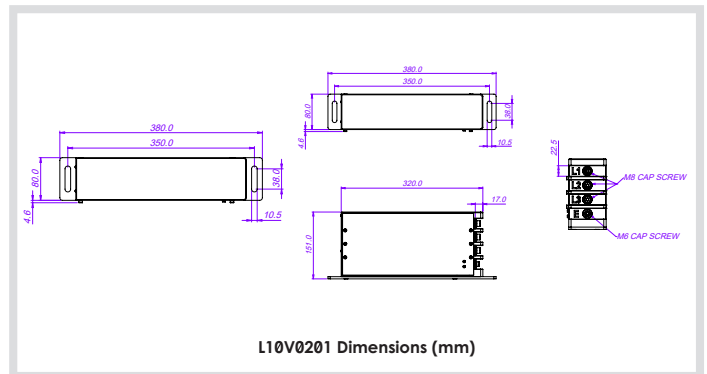
### Specifications

- Rated Voltage 1140V
- Rated Current 400A
- Rated frequency 50/60 Hz



### Typical Application

- Continuous Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Shuttle Cars
- Feeder Breakers



## AC VFD Line Filter

### AC VFD System Filter with Common Mode Choke (1140 V) Part Number: L11V0101

The L11V0101 EMC filter is designed for variable frequency drive and high noise environment.

Input EMC filters reduce the conducted radio-frequency interference voltage.

The EMC filter has integrated Common Mode Choke and earth switching relay.

### Features & Benefits

- L11V0101 EMC filter reduces the EMC interference and connects on the power input side to cut off or isolate the interference channel between power network and VFD.
- Suppress the harmonic or surge from power network to resolve nuisance malfunction introduced by variable frequency drive.
- L11V0101 EMC filter must be installed upstream on mains side of the variable frequency drive.
- Integrated earth switching relay can be used for delayed earth connection to avoid inrush charging current
- Integrated Common Mode Choke can resolve nuisance malfunction of distribution boxes (like Ampcontrol IPD etc)

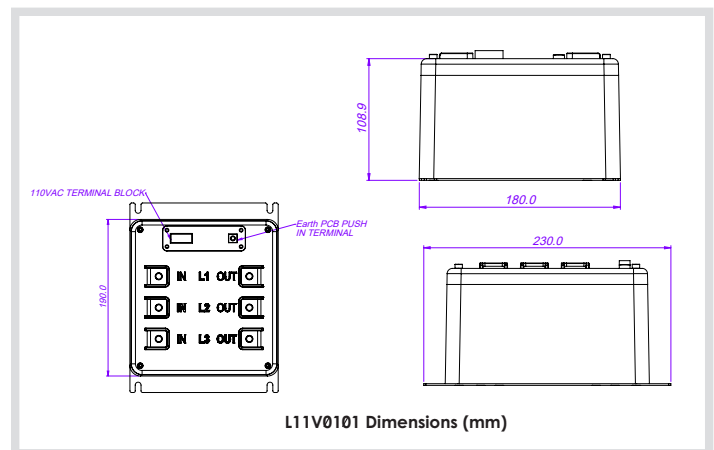
### Specifications

- Rated Voltage 1140V
- Rated Current 400A
- Rated frequency 50/60 Hz



### Typical Application

- Continuous Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Shuttle Cars
- Feeder Breakers



## AC VFD Line Filter

### AC VFD System Filter with MOV Protection (1140 V ) Part Number: L10W0101

The L10W0101 EMC filter is designed for variable frequency drive and high noise environment. Input EMC filters reduce the conducted radio-frequency interference voltage.

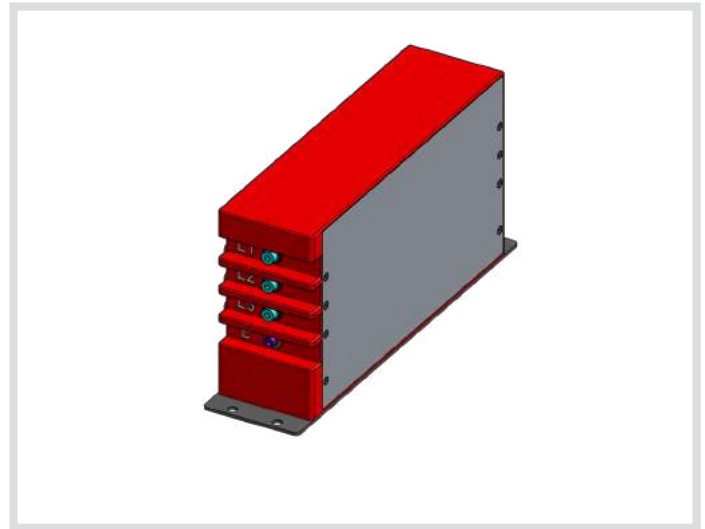
The L10W0101 EMC filter has integrated MOVs.

### Features & Benefits

- L10W0101 EMC filter reduces the EMC interference and connects on the power input side to cut off or isolate the interference channel between power network and VFD.
- Suppress the harmonic or surge from power network to resolve nuisance malfunction introduced by variable frequency drive.
- L10W0101 EMC filter must be installed upstream on mains side of the variable frequency drive.
- Integrated MOVs can protect variable frequency drive from incoming power source surge and transient.

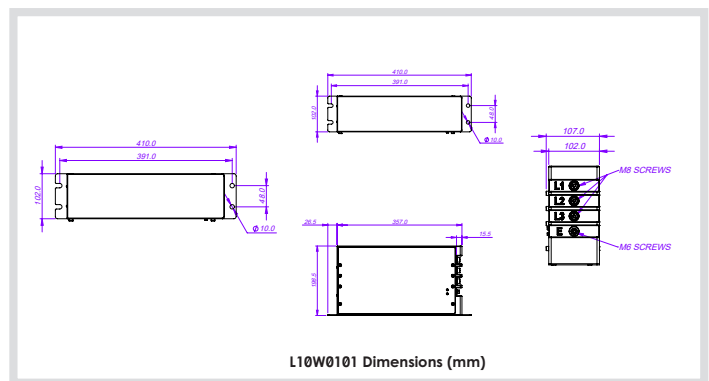
### Specifications

- Rated Voltage 1140V
- Rated Current 400A
- Rated frequency 50/60 Hz



### Typical Application

- Continuous Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders
- Shuttle Cars
- Feeder Breakers





# Index

LOW40201	3	L0HC1801	9
LOW40301	3	L0HC1901	9
LOTJ0501	3	L0HC5001	9
LOTJ0301	3	L0HC5101	9
LOUP0201	3	L0HC5201	9
L11W0101	3	L0HC5401	9
LOMR0101	5	L0HC5501	9
LOMR0301	5	L0HC5601	9
HOMR0201	5	L0HC5901	9
HOMR0301	5	L0HC6001	9
HOMR0401	5	L11J5001	11
HOMR0501	5	PLOXL0301	12
HOMR0601	5	LOWM0101	12
HOMR0701	5	LOWM0201	12
HOMR0801	5	LOXH0101	12
LOSU0101	6	LOY40101	12
LOUJ0101	6	L10V0201	14
LOVX0101	6	L10V0401	14
LOX10101	6	L11V0101	15
L11E0101	7	L10W0101	16
L0HC1701	9		





[www.pempek.com.au](http://www.pempek.com.au) | [sales@pempek.com.au](mailto:sales@pempek.com.au) | +61 02 8853 4800

Pempek Systems Pty Ltd reserves the right to make corrections, enhancements, improvements and other changes to its products and services as needed. All products are sold subject to Pempek's terms and conditions of sale supplied at the time of order acknowledgment. Pempek warrants the performance of its products to the specifications applicable at the time of sale, in accordance with the warranty specified by the terms and conditions of sale.