



DynAmp

LKAT Plus

Bi-Directional
High Current Measurement
with Basic Rectifier Protection



Description

The LKAT Plus combines high current measurement and reverse or overcurrent protection into a single rugged system. Based on innovative OLOP™ technology which is designed to accurately and reliably measure uni- and bi-directional DC and AC bus currents up to 100kA. The LKAT Plus consists of a two-piece measuring head, constructed to match the dimensions of the measured bus, electronics enclosure, mounting hardware and interconnection cables.

Application

The LKAT Plus is particularly well suited to measure power rectifiers outputs for control and protection purposes in electro-chemical processes such aluminum, chlorine, copper, manganese, titanium, zinc, electroplating, etc.

Key Features

- True bi-directional performance. Ideal for difficult magnetic applications.
- Setpoint relay can be used for reverse or overcurrent protection of rectifiers.
- Extremely compact with excellent environmental specifications for installation flexibility, inside or outside.
- System includes Accuracy Diagnostics.
- Optional digital display can be scaled for DC or RMS.

Specifications

Input : Full Scale Bus Current	5kA to 100 kA FS
Output : Output Signal Range	-20mA... 20mA 10V maximum burden
Typical Output Signal Scaling	<u>BUS</u> <u>Signal Output</u>
DC	0kA = 0mA or 4mA + FS = 20mA or 20mA
DC w/ reverse or AC	- FS = 4mA or -20mA 0kA = 12mA or 0mA + FS = 20mA or 20mA
Protection Relay	Factory Scaled
DC	0 to +FS
DC w/reverse or AC	-FS to +FS
Rating	120/250VAC 8A 30VDC 8A
Timing	10mS
Measurement accuracy**	±0.75% of FS or better
Repeatability	± 0.1% of FS or better
Linearity	± 0.1% of FS or better
Temperature sensitivity**	± 200 ppm / ° C
Optional Digital Meter	In electronics enclosure

Mains

Input : Universal power supply	85 to 264 VAC RMS, @ 47 to 440Hz or 110 to 250 VDC
Power requirements	30VA max.
Mains impact on accuracy (Variation per Vrms)	120VAC: ±0.001% FS 240VAC: ± 0.0005% FS

Isolation (Hi-Pot tested at 60Hz)

Head to output	6.0kVAC for 1 minute
Mains supply to output	1.0kVAC for 1 minute
Mains or Output to chassis	2.0kVAC for 1 minute

Environmental

Operation : Head	-4 to 176°F / -20 to 80°C
Electronics	14 to 122°F / -10 to 50°C
Storage Temperature	-40 to 158°F / -40 to 70°C
Storage Humidity	85%, non-condensing

Physical

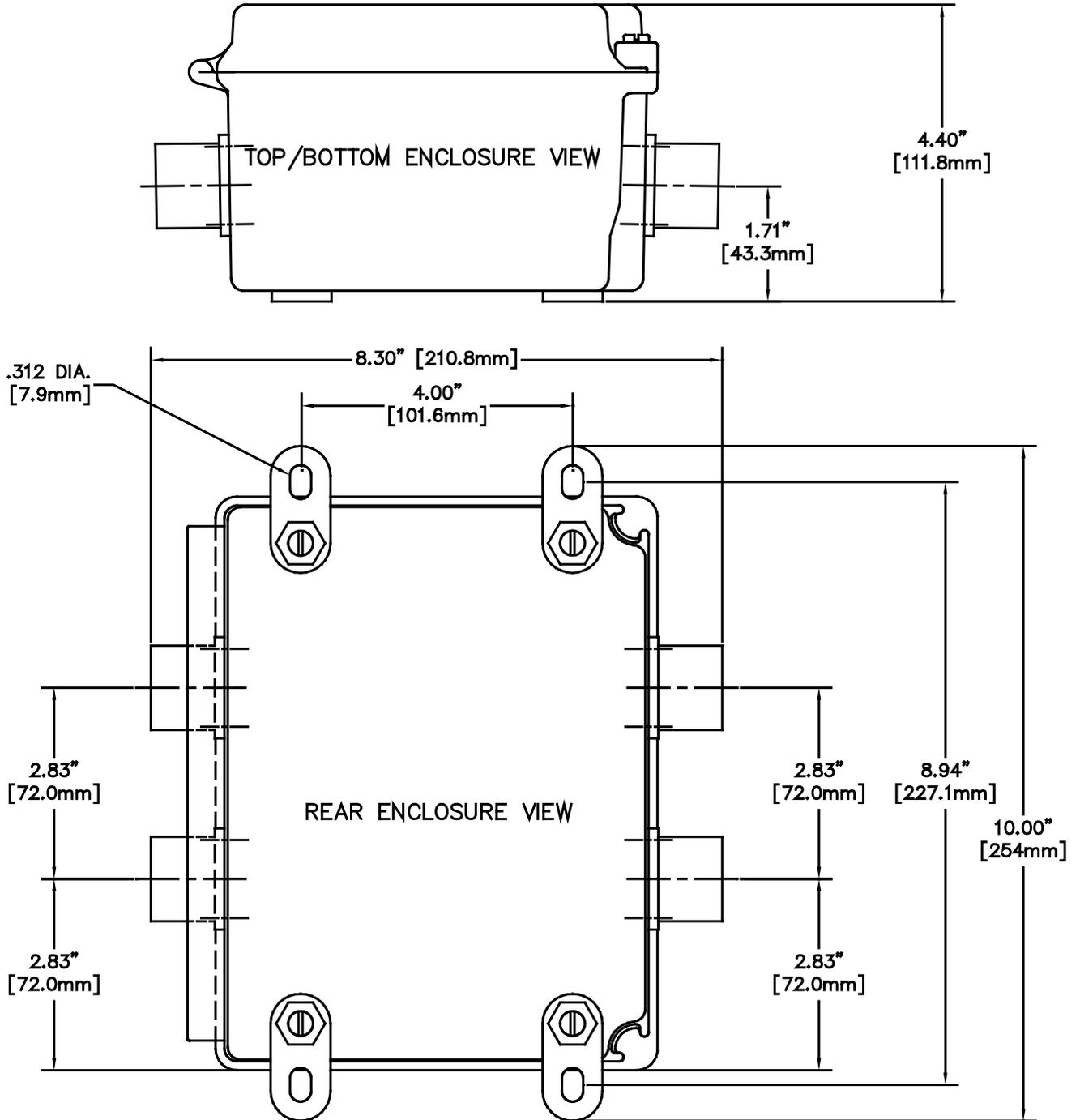
Measuring head weight	2...8 lbs/1...4 kg typical
Electronics unit weight	10 lbs / 5.5 kg estimate
Cables	Head connection 2 @ 33 Ft / 10 m std.
Signal output	1 @ 100Ft / 30 m std.
Mains input	1 @ 33 Ft / 10 m std.
Enclosure	Head/Electronics IP65

CE89/336/EEC , 73/23/EEC , 93/68/EEC , EN/IEC61010-1
Installation Category III Pollution Degree 2

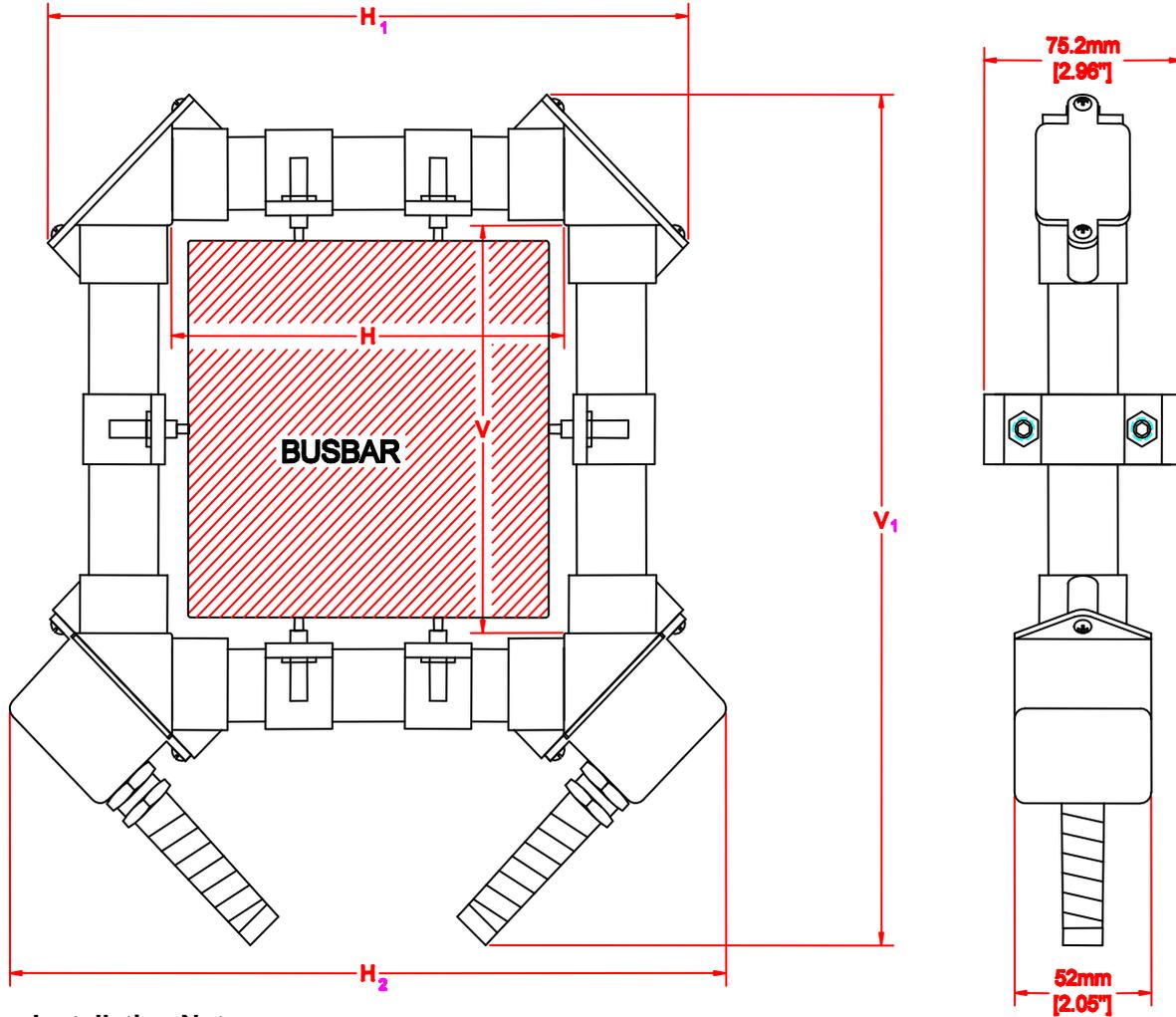
** At DynAmp reference conditions : 77°F ± 4°F (25°C ± 2°C)
120/240Vac RMS ± 2%, 60Hz ± 1Hz, ≤20m interconnecting
cable length.

Specifications subject to change without notice

Metering Unit Outline and Mounting Diagram and Information



Measuring Head Outline and Mounting Diagram and Information



Installation Note:

Horizontal Bus: Mounting hardware provided on top and bottom of bus only. Add 3.5 mm to vertical bus dimension to accommodate mounting hardware.

Vertical Bus: Mounting hardware provided on all sides of bus. Add 3.5 mm to both vertical and horizontal bus dimensions to accommodate mounting hardware.

DIMENSION	Metric (mm)	Unified (inches)
H(min) & V(min) =	60.0mm	(2.36")
H(max) & V(max) =	1080mm	(42.50")
H ₁ =	H + 94mm	H + (3.70")
H ₂ =	H + 122mm	H + (4.80")
V ₁ =	V + 160mm	V + (6.30")

Measurement head dimensions made to order in 30mm increments.

For accurate sizing, simply provide DynAmp with actual bus dimensions



Standard System Includes

- Split apart, 2-piece measuring head
- Busbar mounting kit
- 10 meter / 33 foot head to meter connecting cables
- Metering Electronics
- Accuracy Diagnostics with LED indication and relay out
- One configurable protection relay
- 30 meter /100 foot output cable with connector
(Measurement, Accuracy Diagnostic, Protection Relay plus other optional output signals)
- 10 meter / 33 foot mains input cable
- Operator / installation manual
- Calibration result data tables and graphs
- 2 year warranty
- Weather resistant shipping packaging

Options

• **Protection Extensions**

The optional LKAT "Protection Extensions", (PE), provides additional functionality for protection of high current rectifiers. This option provides two additional key features:

Second Analog Output : This second analog output is independently scaled and fully isolated from the standard LKAT measurement output. In typical applications, it is scaled to provide accurate measurement above the rectifier standard operating range for advanced protection purposes. Using a 50kA application for example, the primary LKAT output would be scaled to 50kA to provide the highest degree of accuracy and resolution for normal rectifier control. The second output would be scaled to 75kA to provide the rectifier control system with the information to intelligently manage overcurrent situations. Using this signal, the rectifier control system could integrate overcurrent operation to allow 5 minutes at 110%, 1 minute at 120%, 10 sec at 140%.

Two Additional Relays : These relays bring the total number of user configurable relays to three, each of which can be configured to provide reverse or various degrees of over current protection

Specify Item 46386

• **Display and RMS conversion**

Provides a 3.5 digit integral display in the meter unit for bus current. The option also includes an RMS converter to provide accurate display in AC measurement applications.

Specify Item 46388

• **Custom Head Cable Length**

Systems are supplied with a standard recommended 10 meters (33 ft.) of interconnecting cable. Cable lengths of up to 50 meters (165 ft.) are available in 1m increments. Cable lengths of >20m may exhibit increased temperature sensitivity up to $\pm 200\text{ppm} / ^\circ\text{C}$ per 10m of additional cable. Specify additional length required when ordering.

Specify Item 43623

Accessories

• **Extended Burn-In :**

Standard systems are operated for 4 hours before final tests and calibration. Extended burn-in periods can be ordered in 24-hour increments.

$\leq 60\text{kA}$: Specify Item 99920

$>60\text{kA}$: Specify Item 99922

Suggested Support Services

On-Site Commissioning: Factory trained technicians and specialized equipment on-site to verify correct operation in application during start-up.

Contact DynAmp

Annual / Bi-Annual Calibration: Experienced field service technicians and specially calibrated equipment are available to verify proper operation and calibrate your system to internationally traceable standards.

Contact DynAmp

Ordering Information

1. Accurately measure and provide maximum bus width (H), and maximum bus height (V).
2. Specify options and accessories by item number.
3. Complete LKAT System Worksheet BEN093.
4. Submit completed worksheet to DynAmp for quotation and to receive complete measurement system item numbers for order.