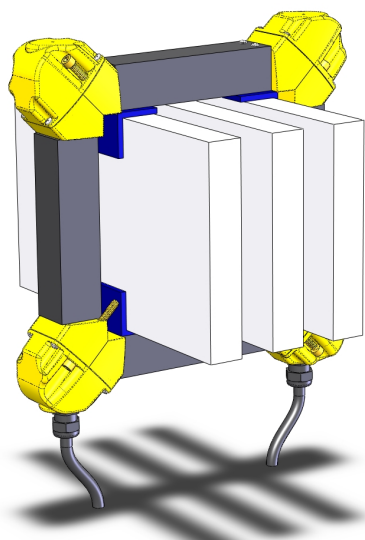


DynAmp

LKAT²

Bi-Directional High Current Measurement System with Rectifier Protection Function



Description

The new LKAT² combines accurate high current measurement with reverse and overcurrent protection into a single rugged and cost effective system.

LKAT² offers a new level of accuracy and stability to accurately and reliably measure uni- and bi-directional DC as well as AC bus currents. The LKAT² represents the next generation of DynAmp's well proven OLOP™ technology.

The LKAT² consists of a new, ruggedized two-piece measuring head with integrated mounting hardware connected to an electronics enclosure via two cables. All are all IP65 rated for harsh industrial environments.

Application

The LKAT² is particularly well suited to measure power rectifier 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. No sensitivity analysis needed.
- Alarm relay provides reverse or over-current protection.
- Extremely compact with excellent environmental specifications for installation flexibility, inside or outside.
- Accuracy Diagnostics monitors system performance.
- Optional "Protection Extensions" provides a second, fully isolated and independently scaled measurement signal, plus two additional alarm relays (3 alarm relays in total).
- Optional 3.5 digit digital display of measured current can be viewed through the front door of the metering electronics enclosure. Display can be DC or RMS AC.
- Optional low voltage DC mains allows system to be powered by safety mains supplies or batteries.

Specifications

Input : Typical Full Scale Current 5kA to 150 kA AC/DC

Output: Measurement Signal	<u>BUS</u>	<u>Signal Output</u>
	0kA	= 0 or 4mA
	+/-FS	= +/- 20mA
		10V max burden
		Switchable to mV or V out
		Switchable low-pass filter

Measurement accuracy**	±0.25% of FS
Repeatability	± 0.1% of FS or better
Linearity	± 0.1% of FS or better
Temperature sensitivity	± 50 ppm / ° C or better

Standard Relay Outputs :	Accuracy Diagnostics
	Protection : -FS to +FS
Relay Rating	120/250VAC 8A
	30VDC 8A

Relay Timing	10mS
Other indication	green/red LED in electronics

Optional Protection Extensions (PE)
 Adds 2nd scaled isolated analog output plus
 2 additional Protection Relays
 (Same specification as std. output and protection relay)

Optional Digital Display available In electronics enclosure

Mains Supply: Standard	85 to 264 VAC RMS, @ 47 to 440Hz and 110 to 264 VDC
Optional Power	24VDC (9 to 36VDC) 30VA max.

Isolation: (each system 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: Head, Cables, Connectors, Electronics: IP65

Operating	Head	-20° ... 80°C (-4° ... 176°F)
	Electronics	-10° ... 60°C (14° ... 140°F)
Storage	Head/Electronics	-40° ... 70°C (-4° ... 150°F)

Physical:

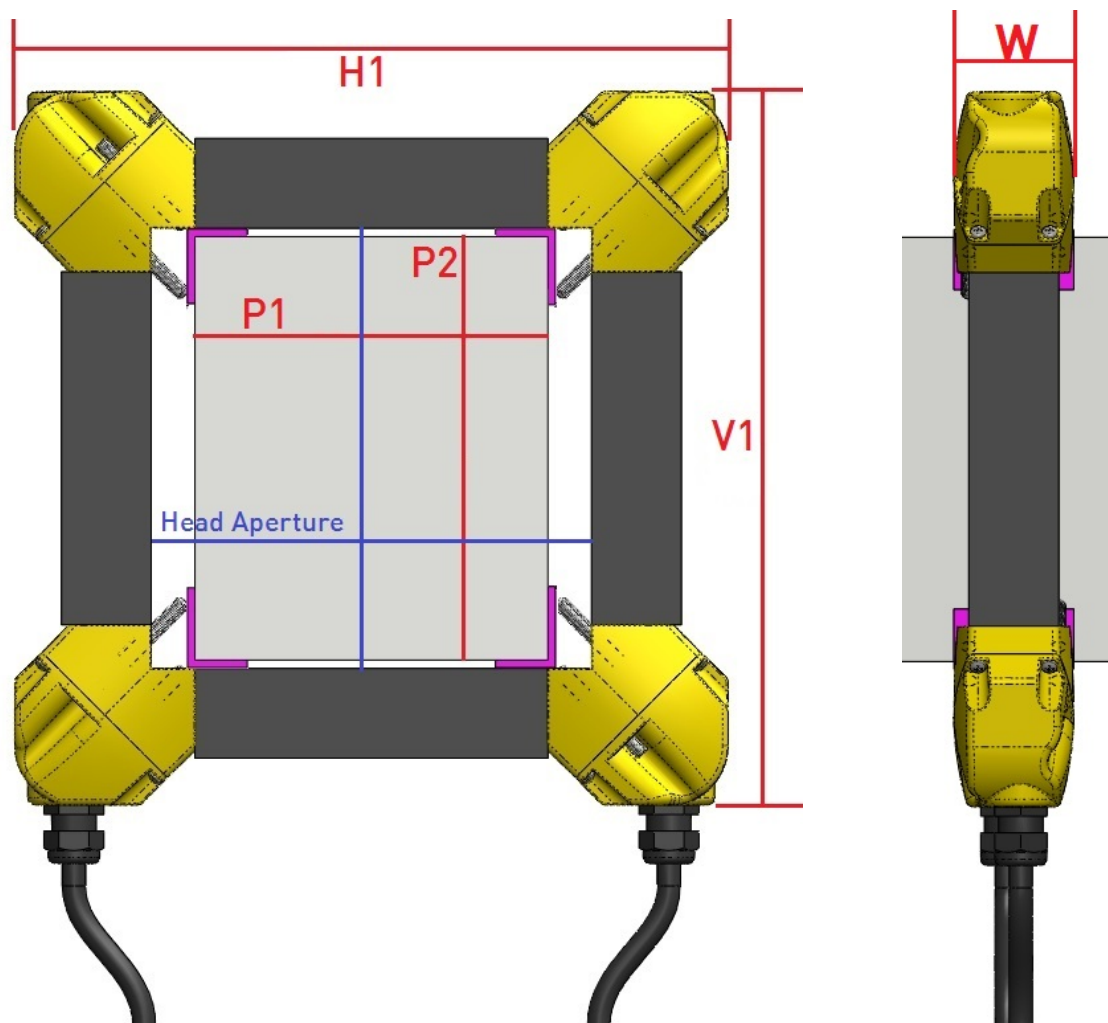
Typical measuring head	1.5...5.5kg (3.3...12.1lbs)
Typical electronics unit	3kg (7 lbs)
Cables: Standard Head (fixed at head)	2 @ 10m (33ft)
Standard Signal output	1 @ 30m (100ft)
Standard Mains input	1 @ 10m (33ft)

Specifications subject to change without notice

** At DynAmp reference conditions : 25°C ± 2°C (77°F ± 4°F)
 120/240Vac RMS ± 2%, 60Hz ± 1Hz



Measuring Head Physical Configuration



DIMENSION	
Bus Size P1 & P2	Nominal head dimensions start at 60mm (fits $\leq 60\text{mm}$ bus) and increases in 30mm steps (Min. bus dimension for standard mounting hardware 30mm)
H1 & V1	Nominal 'outside' dimension size = P1 or P2 +130mm (190mm minimum)
W	60mm

Head installation : Two head halves are joined around the bus bar and locked together via locking screws
Complete head is held in position on bus bar using 8 bus mounting screws (2 at each corner)
Bus mounting screws are adjusted inward to contact 4 bus corner angles (included)

Head Notes : LKAT² measurement heads are sized per order in 30mm increments.
LKAT² head aperture is typically nominal head size (60mm min. + (X*30mm)) plus 10mm.

For accurate sizing, provide DynAmp with actual bus dimensions via product worksheet.



Metering Electronics Enclosure Physical Configuration



Formerly known as Halmar and LEM DynAmp, High Current Systems

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Standard System Includes

- Split-apart, 2-piece measuring head with bus bar positioning hardware
- Bus bar mounted corner angles
- Measurement Head to Electronics connecting cables (cables fixed at head, connector at metering electronics)
- Metering Electronics enclosure
- One configurable Protection Relay with LED indication
- One Accuracy Diagnostics relay with LED indication
- Output cable : includes analog output signal, Accuracy Diagnostic and Protection Relay connections. (connector at metering electronics). Cable also supports second analog output signal and two additional relay connections with optional Protection Extensions (PE)
- Mains cable (connector at metering electronics)
- Operator / installation manual
- Calibration result data tables and graphs
- 2 year warranty
- Weather resistant shipping packaging

System Options

• **Protection Extensions**

Optional LKAT² "Protection Extensions", (PE), provides additional functionality for protecting high current rectifiers.

Second Freely Scalable Analog Output : This second analog output is independently scaled and fully isolated from the standard LKAT² 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 LKAT² output may be scaled to 50kA to provide the highest degree of accuracy and resolution for normal rectifier control. The second output may be scaled to 75kA to provide 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 Protection Relays : These relays bring total number of configurable relays to three. Each can be configured to provide reverse or various degrees of overcurrent protection
Specify Item 46389

• **Display and RMS conversion**

Displays bus current on a 3.5 digit digital display behind the clear meter unit front door. The option also includes an RMS converter to provide current display in AC measurement applications.
NOTE: This option changes electronics maximum ambient temperature from 60°C to 50°C

Specify Item 46391

• **Custom Head Cable Length**

Systems are supplied with standard 10 meter (33 ft.) of interconnecting cable between head and metering electronics. Other cable lengths are available in 1m increments
Specify total length required when ordering.

Specify Item 43623

(Signal output and Mains Supply cables can easily be cut to length by user.)

Accessories

• **Summing multiple systems :**

A dedicated external module is available for totalizing/ summing up to 10 LKAT measurement signals. This is typically used to provide a true 'total' current signal when multiple rectifiers are used in parallel.

Item number specified with order

• **Functional Tester :**

Hand-held test set allows users to verify system operation and scaling as well as test relay trip points and output signals. See Datasheet D_LKAT_MUT for details.

Specify Item 45708

• **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.

≤ 60kA: Specify Item 99920

> 60kA: Specify Item 99922

• **Extended Warranty :**

Standard 2-year Warranty can be extended in 2-year increments

Specify Item 99981

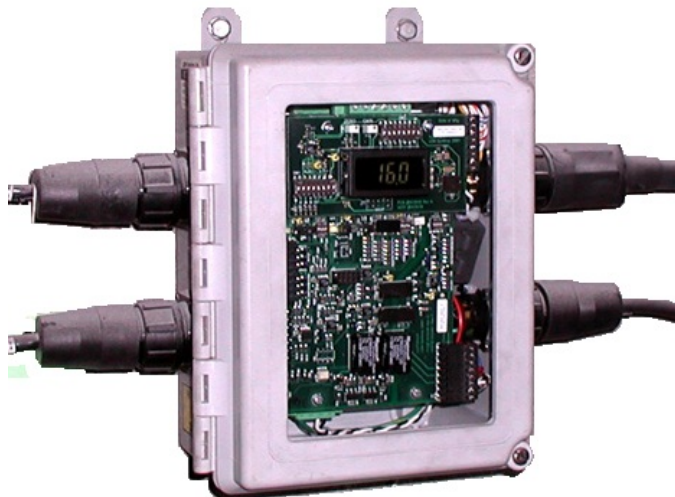
Support Services

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

Complete the LKAT² System Worksheet (BEN091, downloadable from www.DynAmp.com on the LKAT product page) and submit to DynAmp for quotation and system item numbers.