**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 OLOPTM 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 environments.

**Application**

The LKAT² is particularly well suited to measure power rectifier outputs for control and protection purposes in electrochemical processes such aluminum, chlorine, copper, manganese, titanium, zinc, electroplating, etc.

**Key Features**

- True bi-directional performance. Ideal for difficult magnetic applications. No position or bus 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 freely 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

<table>
<thead>
<tr>
<th>Input</th>
<th>BUS Signal Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>0kA</td>
<td>= 0 or 4mA</td>
</tr>
<tr>
<td>+/-FS</td>
<td>= +/- 20mA</td>
</tr>
<tr>
<td>10V max burden</td>
<td>Switchable to mV / V out</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Relay Rating</th>
<th>250VAC / 30VDC, 3A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay Timing</td>
<td>10mS</td>
</tr>
<tr>
<td>Other indication</td>
<td>green/red LED in electronics</td>
</tr>
</tbody>
</table>

Optional Protection Extensions (PE)

- Adds 2nd freely scalable, 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 250 VDC
- 24VDC (9 to 36VDC)
- Power 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 -20ºC ... 80ºC ( -4º ... 176ºF)
- Electronics -10ºC ... 60ºC (14º ... 140ºF)
- Storage Head/Electronics -40ºC ... 70ºC ( -4º ... 150ºF)

**Physical**

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

**CE**

- Installation Category III Pollution Degree 2

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

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>Nominal head dimensions start at 60mm (fits &lt; 60mm bus) and increases in 30mm steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Size P1 &amp; P2</td>
<td>(Minimum bus dimension for standard mounting hardware is 30mm)</td>
</tr>
<tr>
<td>H1 &amp; V1</td>
<td>Nominal 'outside' dimension size = P1 or P2 +130mm (190mm minimum)</td>
</tr>
<tr>
<td>W</td>
<td>60mm</td>
</tr>
</tbody>
</table>

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

Head Notes: LKAT\(^2\) measurement heads are sized per order in 30mm increments.
LKAT\(^2\) 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
**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 43614

- **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 43639

- **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 (Shipping Q4’13)**

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