

# SKF Energy monitoring kit

## CMAK 450-ML

### For compressed air systems

This basic SKF Energy monitoring kit makes it possible for any facility to lower their energy cost and reduce their CO<sub>2</sub> emissions by monitoring and optimizing the energy used by their compressed air systems.

#### Features

- **Cost savings** – Can facilitate significant energy and cost reductions without major capital expense
- **Dualistic approach** – Measure energy data and condition monitoring data at the same time
- **Basic kit** – Measurements are easy to set up and perform

All basic instruments to measure energy efficiency of compressed air systems are featured in one convenient carrying case.

#### SKF Machine Condition Advisor CMAS 100-SL

The SKF Machine Condition Advisor simultaneously measures machine vibration signals and temperature to indicate machine health and bearing condition.

#### SKF External sensor kit for the SKF Machine Condition Advisor CMAC 105

The external vibration sensor with magnet provides convenience for hard-to-reach surfaces and more repeatable and accurate measurements.

#### SKF Infrared Thermometer CMSS 3000-SL

The heavy duty SKF Infrared Thermometer is a dual laser sighted, non-contact instrument for long range application.

#### SKF Inspector 400 Ultrasonic Probe CMIN 400-K

The SKF Inspector 400 Ultrasonic Probe senses high frequency sounds produced by operating equipment, leaks, and electrical discharges and makes them audible. The SKF Basic condition monitoring kit features all of the accessories from the SKF Inspector 400 Ultrasonic Probe kit.

#### Hioki Clamp-on Power Meter CPT3169-20



Instrument used for obtaining energy related measurements for energy conservation programs, ISO 14001 testing, and electrical equipment diagnosis.

For technical details on this product, see next page.



#### Hioki Power Meter Clamps CPT9661

Designed for use with the Hioki Clamp-on Power Meter. CE approved for input of up to 500 Ampere AC.



For technical details on this product, see next page.

#### Carrying case

The instruments are packaged in a light, durable aluminium carrying case for industrial environment.

- Weight: 4,2 kg (9.3 lb.) case only
- Dimensions:
  - Length: 660 mm (26 in.)
  - Width: 330 mm (13 in.)
  - Depth: 178 mm (7 in.)
- Color: Anodized and color dyed exterior finish (Blue)

SKF Machine  
Condition Advisor



External sensor kit



SKF Infrared  
Thermometer



SKF Inspector 400  
Ultrasonic Probe



Carrying case



For additional information on the instruments included in the kit, please refer to the previous, respective sections.

## Hioki Clamp-on Power Meter CPT3169-20

### Description

Power measuring instrument for factory power supply maintenance, and to improve energy-saving efficiency.

Measures voltage, current, active power, reactive power, apparent power, power factor, integrated value, frequency, and harmonics.

### Features

- New approach to energy-related measurement, such as energy conservation, ISO 14001 testing, equipment diagnosis, and harmonics measurement
- Measure up to two three-phase, two-wire systems
- Measure up to four single-phase, two-wire systems
- 5 A to 5 000 A range, PC card data storage
- Power recording for individual waveforms
- Simultaneous recording of demand values and harmonics

### Specifications

- Measurement line type (50/60 Hz):
  - Single-phase, two-wire system
  - Single-phase, three-wire system
  - Three-phase, three-wire system
  - Three-phase, four-wire system
- Number of systems that can be measured (for systems that share the same voltage)
  - Single-phase:
    - two-wire, four systems
    - three-wire, two systems
  - Three-phase:
    - three-wire (measures the voltage and current for two lines) two systems
    - three-wire (measures the voltage and current for all three lines) one system
    - four-wire (measures the voltage and current for three lines) one system
    - four-wire (measures the voltage for three lines and the current for four lines) one system
- Measurement range:
  - Voltage: 150 to 600 V, three ranges
  - Current (when using Hioki Power Meter Clamps CPT9661): 5 to 500 A, five ranges
  - Power: 75 W to 9 MW, 108 combination patterns

- Basic accuracy:  $\pm 0.2\%$  single reading,  $\pm 0.1\%$  full scale plus clamp-on sensor accuracy (active power, at 45 to 66 Hz)
- Clamp sensor accuracy: Hioki Power Meter Clamps CPT9661 (rated for 500 A)  $\pm 0.3\%$  single reading,  $\pm 0.01\%$  full scale (full scale is the sensor's rated primary current value)
- Frequency characteristic: Fundamental waveforms up to the 50<sup>th</sup> order  $\pm 3\%$  full scale plus measurement accuracy (of a 45 to 66 Hz fundamental waveform)
- Other functions:
  - PC card (One slot, PC card standard compliant Type II, Flash ATA card type), (9727/9728 PC card, 256 to 512 MB)
  - RS 232C (Printer or PC connected to an RS 232C interface)
  - External input/output
- Display update rate: Approximately every 0.5 seconds (except when using a PC card while accessing the internal memory, or when performing RS 232C communications)
- Power supply voltage rating: 100 to 240 V AC, 50/60 Hz
- Dimensions:
  - Width: 210 mm (8.27 in.)
  - Height: 160 mm (6.30 in.)
  - Depth: 60 mm (2.36 in.)
- Weight: 1,2 kg (42 oz.)
- Accessories supplied:
  - Voltage cord set (one cord each of black, red, yellow, and blue), one (1) set each
  - Power cord, one (1) each
  - Input cord label, one (1) each
  - Operating manuals – advanced edition and Quick Start Guide
  - Advanced edition and RS 232C interface operating manuals (CD)

## Hioki Power Meter Clamps CPT9661

### Description

Clamp-on sensor for use with the Hioki Clamp-on Power Meter CPT3169-20 and for input up to AC 500 A. Sensors are designed with a safety barrier to protect the user from direct contact with live conductors and meets CE marking requirements.

### Specification

- Rated input current: 500 AAC
- Rated output current: 0.5 V AC
- Accuracy (at 45 to 66 Hz):
  - Amplitude:  $\pm 0.5\%$  single reading,  $\pm 0.2\%$  full scale
  - Phase:  $\pm 0.5^\circ$  or less
- Frequency characteristics: 66 Hz to 5 kHz ( $\pm 1\%$  or less from accuracy)
- Maximum allowable input: Continuous 550 A rms (45 to 66 Hz)
- Maximum circuit voltage: 600 V AC rms (insulated wire)
- Core jaw diameter:  $\varnothing$  46 mm (1.81 in.)
- Dimensions:
  - Width: 77 mm (3.03 in.)
  - Height: 151 mm (5.94 in.)
  - Depth: 42 mm (1.65 in.)
- Weight: 360 g (12.7 oz.)
- Cord length: 3 m (9.84 ft.)

## Ordering information

### SKF Energy monitoring kit [CMAK 450-ML] includes:

- SKF Machine Condition Advisor [CMAS 100-SL]
  - External sensor kit, 100 mV/g accelerometer with 1,5 m integral cable and magnet [CMAC 105]
- SKF Infrared Thermometer [CMSS 3000-SL]
- SKF Inspector 400 Ultrasonic Probe Kit [CMIN 400-K]
  - Ultrasonic Probe housing with LED bargraph meter
  - Lightweight foam lined headset [CMAC 8600-1]
  - Stainless steel unisonic scanning module [CMAC 8600-6]
  - Stainless steel stethoscope/contact module [CMAC 8600-7]
  - Stethoscope extension rods [CMAC 8600-8]
  - Rubber focusing probe [CMAC 8600-9]
- Hioki Clamp-on Power Meter [CPT3169-20]
- Hioki Power Meter Clamps [CPT9661]