

TACHOMETERS, TEMPERATURE METERS & ILLUMINATION METERS

Product Group
Catalog

Tachometers are essential to maintaining the safe and efficient operation of electric motors and machinery. Likewise, thermometers are important for checking the condition of electrical equipment and facilities, and for detecting internal abnormalities. Finally, illuminometers are essential for maintaining and controlling appropriate levels of illumination in working and living spaces. Tachometers, thermometers, and illuminometers –important measuring devices for checking facilities and maintenance of the living environment.

(TACHOMETER)

3403 DIGITAL TACHO
HiTESTER

3404 DIGITAL TACHO
HiTESTER

(TEMPERATURE METER)

3412 TEMPERATURE
HiTESTER

3414 TEMPERATURE
HiTESTER

(ILLUMINATION METER)

3421 LUX HiTESTER

3423 LUX
HiTESTER



High-resolution, high-precision digital tachometer

3403·3404
DIGITAL TACHO HITESTER



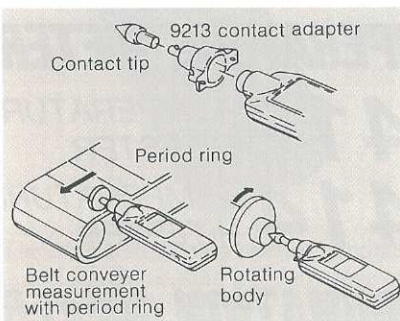
HIOKI digital tachometers providing previously unavailable precision and resolution, and covering a wide range up through 100,000rpm. Available in two types to match your needs: the simple 3403 and the multi-function 3404.

3403·3404 Common features

- **High-precision, high-resolution** Minimum 0.01 rpm resolution and high ± 1 dgt. precision make the tachometer effective for precise measurements.

- **Double performance from one tachometer**

By using the optional 9213 contact adapter the 3403 and 3404 become contact-type tachometers, while the period ring can be used in applications like measurement of conveyor line speed (period).



- **Simple reflector detection check** LED and buzzer signals confirm that the light pulses reflected from the tape on the rotating body are being picked up. Signals can be turned on and off freely.

- **rpm \leftrightarrow rps**

Units can be switched during measurement.

- **Auto-ranging function covers from 30 to 100,000rpm.**

- **Tripod mounting socket provided.**

- **AC and DC power supplies may be used.**

3404 Individual features

- **Internal micro-computer for multi-function performance**

MIN, MAX-Holds minimum and maximum rpm/rps values.

TOTAL-Provides total rotation counts from 0 to 500,000 for real-time rotation count measurement.

PERIOD-Can accurately measure rotation pulses from 600 μ s to 2.000 seconds.

- **FAST \leftrightarrow SLOW mode.**

Can change the sampling speed.

- **Analog output (3404 only)**

Stable analog signal output from low to high speeds, makes possible clear recording by merely connecting your present recorder. Output sampling mode can be set to slow or fast to meet different application needs.

General specifications

Measurement method : Visible light reflectance
 Display : LCD4 1/2 digits (5 digit display for 20,000 counts or higher, lowest digit fixed to zero).
 TOTAL measurement 5 digits (3404 only).
 [HOLD] · rpm · rps · \square mark (MAX · MIN · TOTAL · PERIOD · μ sec · msec · sec [3404 only])
 Overscale display : ----- displayed
 Detection range : 50 to 200 mm
 Reflected light detection check : Buzzer and LED
 Operating temperature/humidity : 0 to 40°C 80% RH maximum (no condensation)
 Analog output : 1000mV DC f.s. (3404 only). Output accuracy $\pm 1\%$ rdg. ± 1 mV, output resistance 1k Ω
 Power supply : R6P(AA) \times 4
 Continuous battery operation time-approx. 17h (3403) approx. 16h (3404)
 AC adapter also available (6V 300mA)
 Dimensions and weight : 180H \times 62W \times 38Dmm, (approx.) 250g(3403), 260g(3404)
 Accessories : 9211 Reflective tape (1 sheet), carrying case, 9094 output cord (3404 only)

Measurement range

Note: Contact adapter may be used up to 20,000 rpm.
 NORMAL, MIN and MAX modes (MIN and MAX modes only on the 3404)
 SLOW sampling (3403 and 3404)

	Range	Accuracy
rpm	30.00 to 199.99	30.00 to 99.99 ± 1 dgt. 100.00 to 199.99 ± 2 dgt.
	200.0 to 1999.9	200.0 to 999.9 ± 1 dgt. 1000.0 to 1999.9 ± 2 dgt.
	2000 to 19999	2000 to 9999 ± 1 dgt. 10000 to 19999 ± 2 dgt.
	20000 to 99990	± 10 dgt.
	0.5000 to 1.9999	± 2 dgt.
rps	2.000 to 19.999	2.000 to 9.999 ± 1 dgt. 10.000 to 19.999 ± 2 dgt.
	20.00 to 199.99	20.00 to 99.99 ± 1 dgt. 100.00 to 199.99 ± 2 dgt.
	200.0 to 1600.0	200.0 to 999.9 ± 1 dgt. 1000.0 to 1600.0 ± 2 dgt.
	2000 to 19999	2000 to 9999 ± 1 dgt. 10000 to 19999 ± 2 dgt.

Note: Display will read 0.0 below 30rpm or 0.5rps.

FAST sampling (3404 only)

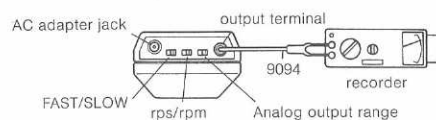
	Range	Accuracy
rpm	120.00 to 199.90	± 40 dgt.
	200.0 to 1999.0	200.0 to 999.0 ± 20 dgt. 1000.0 to 1999.0 ± 40 dgt.
	2000 to 19990	2000 to 9990 ± 20 dgt. 10000 to 19990 ± 40 dgt.
	20000 to 99900	± 200 dgt.
rps	2.000 to 19.990	2.000 to 9.990 ± 20 dgt. 10.000 to 19.990 ± 40 dgt.
	20.00 to 199.90	20.00 to 99.90 ± 20 dgt. 100.00 to 199.90 ± 40 dgt.
	200.0 to 1600.0	200.0 to 999.0 ± 20 dgt. 1000.0 to 1600.0 ± 40 dgt.
	2000 to 19990	2000 to 9990 ± 20 dgt. 10000 to 19990 ± 40 dgt.

Note: Display will read 0.0 below 120rpm or 2rps.

TOTAL mode (3404 only)-0 to 499999 5-digit display (decimal point code used for 100,000 counts and over)

PERIOD mode (3404 only) 600 μ s to 2.000s ± 1 dgt. for 4digit display, ± 2 dgt. for 4 1/2-digit display.

Example of the combination with recorder (3404 only)



Optional accessories

9211 Reflective tape (10 sheets)

(30 pieces per sheet, each sheet 12 \times 12mm)

9094 Output cord (1.5m provided with 3404)

9213 Contact adapter	(includes 9032, two 9033 and 9212)		
	9032 Metal contact tip	9033 Rubber contact tip	9212 Peripheral ring

9213 dimensions: 70H \times 62W \times 39Dmm (Not including contact tip)

Monitors and records temperatures (3412-50)

3412-3412-50-3414 TEMPERATURE HI TESTER



The Models 3412-3412-50 and 3414 are a portable type digital temperature meter designed for simple measurement of temperatures. Four types of probes are available for use depending on the application; The 3412-50 produces a 1mV voltage for each degree (Celsius) from its analog output terminal. Used in combination with a recorder, it is ideal for monitoring and recording temperatures.

3412

- Wide measurement range -50 to 999°C
- Thermocouple burnout display
- Display hold function
- Analog output (3412-50 only)

3414

- 0.1°C resolution from -50 to 200°C
- Thermocouple burnout display
- Display hold function

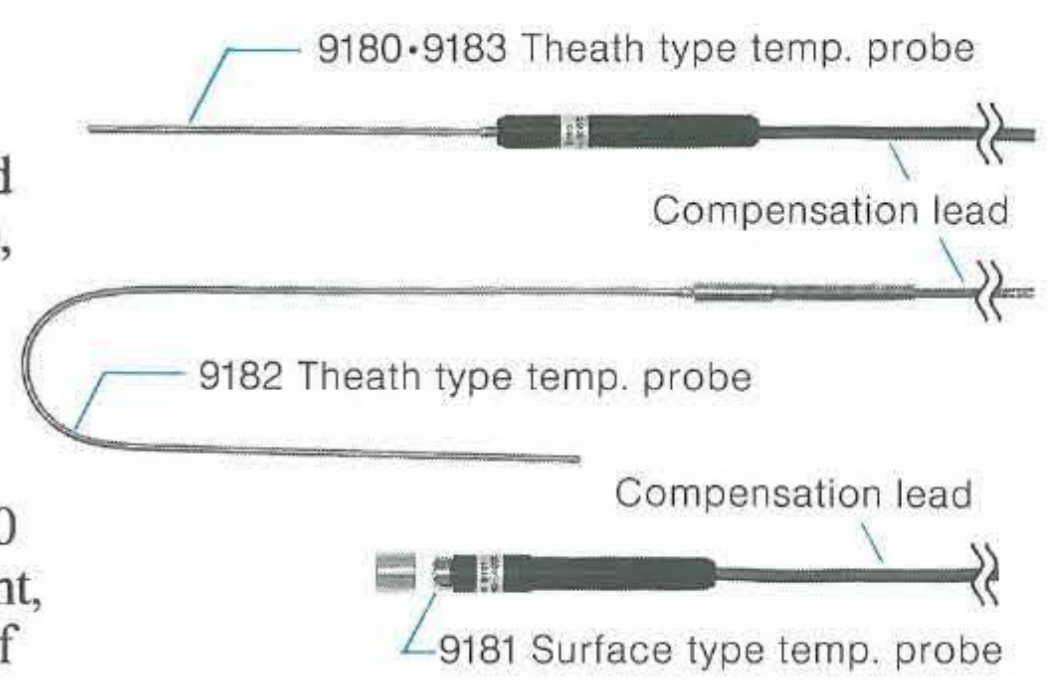
● SPECIFICATIONS (main unit)

Item	3412	3412-50	3414
Measurement Range	-50 to 999°C	-50 to 199.9°C	-50 to 199.9°C
Resolution	1°C	0.1°C	0.1°C
Measurement Sensor	Thermocouple, K type (CR/AL)		
Input Resistance	1MΩ	>2MΩ	1MΩ
Reference Junction Compensation	Automatic, by diode		
Display	999 (3-digit) LCD	1999 (3½-digit) LCD	1999 (3½-digit) LCD
Overrange	"OVER"	1□□.□	1□□.□
Burnout	"-2□□" or "-3□□ (OVER)"	-1□□.□	-1□□.□
Low Battery	"BATT"	"BATT"	"BATT"
Accuracy	±(0.2% of f.s. +1 dgt.)	±(0.3% rdg. +0.5% of f.s.)	±(0.3% rdg. +0.5% of f.s.)
Output	1mV/°C	} Only 3412-50	} Only 3412-50
Output Resistance	10Ω>		
Output Coefficient	±0.25% of f.s.		
Temp. Coefficient	0.1 dgt/°C	0.5 dgt/°C	0.5 dgt/°C
Sample Rate	Approx. 1.25s/sample		
Operating Temp./ Humidity	0~50°C/ <80% RH		
Storage Temp.	-10 to 50°C		
Power Supply	6F22 (006P) × 1, or AC adapter (9V, 200mA)		
Continuous use	100 h	25 h	80 h
Dimensions	125H(173H) × 75W × 24Dmm • 170g(220g)		
Accessories	Soft case		

() : 3412-50

Temperature Probe

- **Sheath-type temperature probe**
Used for general purpose measurement, but is especially suited to gas and liquid samples. The thermocouple is in the tip, so immerse the probe to a depth of 60 mm.
9180-9183: capable of measuring up to 800°C
9182: capable of measuring up to 1,000°C. The long 500-mm sheath can be bent, making it possible to measure objects of almost any shape.
- **Surface type temperature probe**
Temperature probe for measurement of surface temperature of solid. Used this probe up to temperatures of 400°C only.



	9180	9181	9182	9183
Sensor Type	Sheath	Surface	Sheath	Sheath
Temperature Range	-50~800°C	-50~400°C	-50~1000°C	-50~800°C
Thermocouple Material	K type (Chromel/Alumel)			
Accuracy	±2.5°C or 0.75%, whichever is greater			±1.5°C or 0.4%, whichever is greater
Compensation Lead	Conventional type (-20~90°C)		Heat-proof type (-20~150°C)	Conventional type (-20~90°C)
Lead Length	1m (approx.)		2m (approx.)	1m (approx.)
Allowable Heat (Handle)	150°C		-	150°C
Size Sensor	φ3.2 × 150mm	φ1.5 × 8mm	φ3.2 × 500mm	φ3.2 × 150mm

Optional Accessories

- 9094 Output Cord
- 9180 Sheath Type Temperature Probe
- 9181 Surface Type Temperature Probe
- 9182 Sheath Type Temperature Probe
- 9183 Sheath Type Temperature Probe



8201 MICRO RECORDER

3412-50

Output Cord.

3421 LUX HiTESTER



This illumination meter uses a selenium photocell in the receptor, matched to a high-sensitivity meter. The high-performance internally magnetized taut band meter is designed for on-side environmental measurements, backed up with visual sensitivity and angle compensation. Ideal for illumination measurement in offices, factories and hospitals.



3423 LUX HiTESTER



The 3423 is an easy-to-operate handheld unit that can measure a broad range of luminosities, from the low light provided by induction lighting up to a maximum intensity of 199,900 lx.

This device is suited for a wide range of applications involving illumination equipment, lighting work, and facility management.

Can measure light intensities up to 3000 lx

- Can measure light intensities up through 3000 lx in any location
- Visual sensitivity and angle compensation functions

Colored filters provide visual sensitivity compensation to display the illumination felt by your eyes regardless of illumination type: in candescent bulb or fluorescent. The angle compensation globe assures accurate measurement of indirect and multi-source lighting.

Suitable Levels of Illumination Offices

Level of Illumination (lx)	Place
1,500 ~ 750	Offices, *designing, *drawing and *calculating rooms
750 ~ 300	Offices, concence rooms, computer rooms.
300 ~ 100	Kitchens, ordinary workrooms, corridors, stairways and toilets

Factories

3,000 ~ 1,500	Where such work as inspecting, testing, *selecting and especially as machine tool operation is carried out
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1,500 ~ 750	Inspecting, testing, *selecting, welding and machine
750 ~ 300	Inspecting, testing, *selecting, welding machining and *wrapping
300 ~ 150	Wrapping and crating, welding and machining

Schools

1,500 ~ 300	Precision drawing or drafting, *experimenting, library reading rooms and blackboards
750 ~ 200	Classrooms, library reading rooms, experiment demonstration room, staff rooms and gymnasias.
300 ~ 75	Lecture halls, assembly rooms, locker rooms, corridors, stairways and toilets

General Specifications

Measurement range	: 300/1000/3000 lx
Accuracy	: $\pm 7\%$ f.s. (Corrected with a standard tungsten lamp to color temp. 2856°K)
Factor collection	: Luminosity factor correction filter used
Angle collection	: Diffusion permeability opaque globe used
Photo cell	: Selenium photocell, sealed
Light sensor lead	: 70cm (Curl cord)
Dimensions/weight	: 110H x 170W x 64D mm • 520g
Accessories	: Carrying case

Digital Illumination Meter with a Maximum Display of 199,900lx

- Capable of a broad range of measurements, from low light levels to strong light levels
- Permits remote measurement with the sensor separated from the main unit
- Equipped with display hold and backlight features
- Includes analog output that can be used to record results
- Analog output includes zero adjustment function

General Specifications

Measurement range	: 20/200/2000/20,000/200,000lx
Accuracy	: $\pm 4\%$ rdg. ± 1 dgt.
Display	: Max. 1999 LCD
Angled incident light characteristics (deviation from cosine characteristics)	: Angle of 10°: $\pm 1\%$, 30°: $\pm 2\%$, 50°: $\pm 6\%$, 60°: $\pm 7\%$, 80°: $\pm 25\%$
Response characteristics in ultraviolet and infrared spectrums	: Response to ultraviolet and infrared radiation less than 1%

Fatigue characteristics	: Change in value one minute and ten minutes after light strikes sensor $\pm 1\%$
Response time	: Auto range-max. 5s Manual range-max. 2s
Characteristics regarding intermittent light	: Deviation in value when subjected to intermittent light for 1/2 cycle at a frequency of 100Hz or 120Hz, $\pm 2\%$
Relative spectral response characteristics in the visible spectrum	: Deviation from spectral luminous efficiency 8% or less
Receptor element	: Silicon photodiode
Analog output	: 200mV DC f.s. $\pm 2.5\%$ f.s. (versus the display value)
Power supply	: R6P(AA) x 2 or AC adapter (6V, 300mA)
Dimensions	: 170H x 74W x 30Dmm • 310g
Accessories	: Sensor cap, 9376 portable case

Optional accessories

9094	Output cord
9436	Connecting cable (2m, with case)

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DISTRIBUTED BY

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