Data Sheet

RISH Max - 10
Digital Multimeter

Application

RISH Max10 digital multimeters are suited for universal, general applications in the electrical and electronics fields, as well as in radio and television service, training and education.
They are of especially flat design, and thus fit into any bag. The protective cover, which is provided as standard equipment, can be opened at an angle for convenient reading from the workbench, and provides for easy transport.

Product Features

Hold

By pressing the HOLD/ON key, the currently displayed measurement value can be held and “HOLD” is simultaneously displayed.

Relative measurement (REL)

By pressing the REL key, the zero correction is made and Relative Value is measured. All functions can measure Relative Value except Hz/Duty, Diode, Continuity and °C functions.

Automatic/manual measuring range selection

The measurement function are chosen with the rotary selector switch. The measuring range is automatically adjusted to the measurement value. The measuring range can also be manually selected with the AUTO/MAN button.
Note: For Temperature (°C), Frequency (Hz), Duty cycle (%) and Capacitance (F) measuring range is AUTO. No Manual range selection is possible.

Temperature Measurement

Rish Max - 10 allows you to measure temperature with “K” type Thermocouple (NiCr - Ni) sensor in the range from 0C0 to +1300 C.

Diode and continuity testing

This provides for the testing of the polarity of diodes, as well as inspection for short -circuits and circuit interruptions. In addition to the display, resistance of less than 100 (approx.) are indicated with an acoustic signal.

Overload warning

An acoustic signal occurs when measuring AC voltage>750V, DC Voltage>1000V, AC/DC mA current>400.0mA, AC/DC current>10.00A.

Energy saving circuit

The instrument is switched off automatically, if none of the operating elements have been activated for about 15 minutes.

Protective cover for rough operating conditions

A protective cover of ABS with a built-in stand protects the instrument against jolts and falls. It also secures the test probe for one-hand operation, and allows for winding of the measurement cable which provides protection during transport.

Calibration

Rish Max -10 multimeters are calibrated using precision calibrators having accuracy better than at least 5 to 10 times depends upon the functions and ranges. These sources are calibrated at regular intervals.

Theft protection

Company name and name of the user can be entered into the field next to the display with an indelible etching needle for identification of the owner.

- Direct and alternating voltages from 100V ... 1000V
- Direct and alternating currents from 10 A ... 10.00A
- Resistances from 100m ... 40.00M with zero correction
- Capacitance from 1pF ... 200.00 F with zero correction .
- Frequencies from 10.00Hz ... 500.0kHz
- Diode measurement and continuity testing
- Hold measurement .
- Relative measurement
- Duty cycle (%) measurement
- Temperature measurement with K type Thermocouple

Characteristic values for Rish Max - 10

Meas. Function	Measuring Range	Resolution	Input Impedance V(AC)/V(DC)	Digital display inherent deviation at reference condition ±(...%rdg + ...digits)	Overload capacity [1] Overload value	Overload capacity [1] Overload Duration
V(DC)	400.0mV	100 V	>20M	0.75+2	1050V(DC)	Continuous
	4.000V	1mV	11M	0.5+2		
	40.00V	10mV	10M			
	400.0V	100mV	10M			
	1000.0V	1V	10M			
V(AC)	400.0mV	100 V	11M	1.5+5	1050V(AC) rms	Continuous
	4.000V	1mV	11M	1+5		
	40.00V	10mV	10M			
	400.0V	100mV	10M			
	1000V	1V	10M Approx. voltage drop at max. meas. current	1+10		
A(DC)	40.00mA	10 A	450mV	0.8+2	480mA	Continuous
	400.0mA	100 A	4.2V			
	10.00A [4]	10mA	750mV	1.5+5	[4]	[4]
A(AC)	40.0mA	10 A	450mV	1+5	480mA	Continuous
	400.0mA	100 A	4.2V			
	10.00A [4]	10mA	750mV	2+5	[4]	[4]

Meas. Function	Measuring Range	Resolution	Input Impedance	Digital display inherent deviation at reference condition	Overload capacity [1]	
			V(AC)/V(DC)	±(...%rdg + ...digits)	Overload value	Overload Duration
			Open - circuit voltage			
	400.0	100m	approx. 0.45V	0.8+5	500V DC/AC rms	10 min
	4.000K	1		0.8+2		
	40.00K	10				
	400.0K	100				
	4.000M	1K		1+5		
	40.00M	10K		2+5		
BUZZER	400.0	100m		0.8+5 Acoustic signal for 0...<100 approx 2+10		
DIODE	1.000V	1mV	approx. 1V			
F	5.000nF	1pF		3+40 [2]	500V DC/AC rms	10 min
	50.00nF	10pF		2+10 [2]		
	500.0nF	100pF		0.5+3 [2]		
	5.000 F	1nF		1+2 [2]		
	50.00 F	10nF		1.5+2 [2]		
	200.0 F	100nF	fmin	5+10 [3]		
Hz [5]	10.000Hz	0.001Hz	10Hz	0.2+2	≤1KHz : 1000V ≤10KHz : 400V ≤500KHz : 40V except 400mV	Continuous
	100.00Hz	0.01Hz	10Hz			
	1.0000KHz	0.1Hz	10Hz			
	10.000KHz	1Hz	10Hz			
	100.00KHz	10Hz	10Hz			
	500.0KHz	100Hz	10Hz	10Hz...1KHz: +5D 1KHz...10KHz: +5D/KHz		
%	2.0...98.0%	0.1%	-			
			Sensor			
?C	0...+1300 °C	1°C	K NiCr-Ni	2+3	500V DC/AC rms	10 min

- At 0°C ... + 40 °C
- With zero adjustment „REL";
- Time requirement for measurement approximately 60 seconds.
- max. 10 A/30 min
  12 A/5 min
  16 A/30 s
- Indication of the frequency measurement expanded to up to 9999 digit.

Reference Conditions

Ambient temperature	+ 23 °C + 2 K
Relative humidity	45 % ... 55 %
Frequency of meas. quantity	Sine 50 Hz
Operating voltage	3V + 0.1V

Power Supply

Battery	2 numbers of 1.5V mignon cell Zinc- carbon cell as per IEC R6 Alkaline manganese dry cell as per IEC LR 6
Service life	Zinc-carbon cell: approx. 300 hours Alkaline manganese dry cell: appox. 600 hrs
Battery test	Automatic display of „ " symbol when battery voltage falls below following value: approx. 2.4 V

Fuse

Fuse for ranges up to 400 mA	1.6 A / 1000V; 6.3 mm x 32 mm
Fuse for 10 A range	16 A / 600V; 6.3 mm x 32 mm

Ambient Conditions

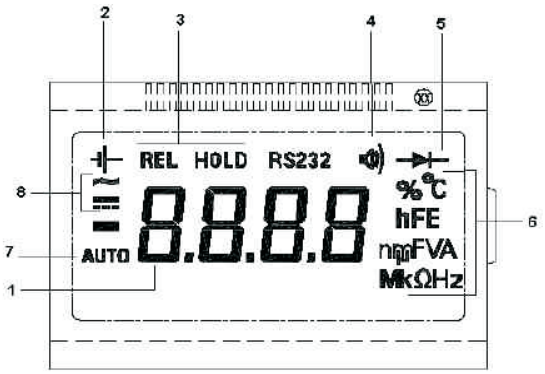
Operating temperature range	-10 °C ... + 50 °C
Storage temperature range	- 25 °C ... + 70 °C (without batteries)
Relative humidity	45 ... 75 %
Elevation	up to 2000 m

Display

LCD display field (50 mm x 30 mm) with digital display, and with display of measurement unit, type of current and various special functions.

Digital

Display	7 segment
Character height	10 mm
Number of digits	3 3/4 digit 3999 steps
Overflow display	OL
Polarity display	„–" sign is displayed when plus pole at „ "
Measurement rate	3 measurement/s for V, I, , Capacitance, Frequency and Duty cycle measurements



RISHmax display

1 Digital display with dot and polarity
2 Low Battery Indication
3 Display for REL and HOLD
4 Continuity test display:
speaker symbol appears when acoustic signal is switched on
5 Display for diode measurement
6 Measurement unit display
7 Display for automatic measuring range selection
8 Display for selected type of Voltage/Current (AC or DC)

Influence variable and effects

Influence variable	Influence range	Meas. Quantity / Meas. Range	Influence Effect
Temperature	0 °C ... +21 °C and +25 °C ... +50 °C	V ⎓	0.1 x intrinsic error / K
		V	
		mA / A ⎓	
		mA / A	
		F	
		Hz	
		Duty (%)	
		C	

Influence variable	Influence range (max. resolution)	Frequency	Inherrent Error at Ref. ±(...%rdg. + ...digits)
Frequency VAC	400mV, 1000V	20Hz ... <50Hz >50Hz ... 500Hz	2 + 3
	4V, 40V, 400V	20Hz ... <50Hz 750Hz ... 1KHz	2 + 3

Influence variable	Influence range	Meas. Quantity / Meas. Range	Influence Effect
Relative humidity	55 ... 75%	V ⎓	1 x Inherent error
		mA / A ⎓	
		F	
		Hz	
		Duty (%)	
		°C	

Influence variable	Interference Magnitude	Meas. Quantity / Meas. Range	Attenuation
Common Mode Interference Voltage	1000V DC/AC 50Hz sinusoidal	All V DC	>100 dB
	1000 VDC	All V DC	>100 dB
	1000V AC 50Hz sinus	400 mV / 4 V AC	>80 dB
		40 V AC	>63 dB
		400 V AC	>43 dB
		1000 V AC	>23 dB
Series - Mode Interference voltage	MAX. 1000 V AC 50/60Hz	V DC	>43 dB
	MAX. 1000 V DC	V AC	>55 dB

Aux. Voltage Influence (without ⊣⊢ display) — all ranges except Cap : ± 8 D; Cap range : ± 20 D

Applicable regulations and standards

DIN 43751	Digital measuring instruments
DIN EN 60529 DIN VDE 0470 part 1	Test instruments and test procedures -Degree of protection provided by enclosures (IP code)
IS 13875	Digital measuring instruments

Mechanical Design

Protection	Instruments: IP 50 Connector sockets: IP 20
Dimensions	W x H x D: 92 mm x 154 mm x 25 mm
Weight	Approx. 0.25 Kg with battery

Standard Scope Of Supply

1 Cable set
1 Multimeter
1 Copy Operating Instructions
1 Protective Case with tilt stand

Designation	Type	Order Code
Digital multimeter	RISHmax 10	CONTACT FACTORY
RISHmax Probe Set		
Safety cover RISHmax 10		

Subject to change without notice

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007,India.
Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in