

PRECISION ROTATIONAL RHEOMETER

(A.C./D.C./PULSE)

Introduction:

MPRA series of precision rotational rheo-analyzer are available in 4 different regular models apart from tailor made solutions virtually covering all industrial and research applications meeting all electrical, thermal, mechanical, and environmental specifications. These indicators are first choice for online monitoring/identifying rheological parameter of liquid/gases material at simulated temperature. These finds applications in polymer, paint, medicine, food, coating, defense, electrical/mechanical m/c testing instrument, industrial electronics, railway, and avionics and solid state physical application like dielectrics characterization, switch gears, MEMS and many research and development activities. These precision instruments are compatible to any standard or hall/shunt/thermocouple sensor and display with very high degree of accuracy/repeatability/reliability and are available in different constructional material like ceramic-coated MS, poly carbonate cabinets.

Benefits:

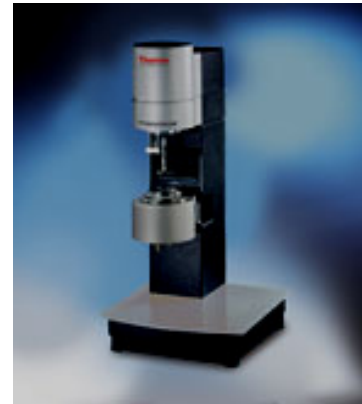
- High input impedance/Low input biased current /higher accuracy/.
- 5-1/2 & 6-1/2 digit display /consistent performance
- ce over large temperature/humidity range (70°C and 80 % RH)
- Scaled directly in nano/pico/femto ampere with repeatable accuracy.
- Auto/manual zero offset without drift.
- Auto drift tracking
- RS-32 interface/high sample rate – 10,000 sample/second.
- Feed back current measurement technique.



MPRA-0009991



MPRA-0099991



MPRA-9999992

Precision Rheometer

Range < 999999 nano N.m.

Model	Range R.P.M.	Range $10^{-9}/10^{-12}/10^{-15}$ Ampere	Angular Rotation/ Frequency/option	Burdon	Accuracy Restricted to Resolution level	Resolution Quantified/ optional	Voltage/current source Volt/current/optional As demanded	INTERFACE
MPRA-9999990101	10.0/5.0 -0.999999	05.0/01.0 -999999nN 1.0 mN-10.0N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5nN	015 /001.0 A	RS-232USB
MPRA-9999990401	10.0/5.0 -0.999999	05.0/01.0 -999999nN 1.0 mN-20.0N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5nN	040 /001.0 A	RS-232/USB
MPRA-9999990102	05.0/1.0 -9.99999	10.0/05.0 -999999pN 0.001 m.N-1.00N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5pN	015 /001.0 A	RS-232/USB
MPRA-9999990402	05.0/1.0 -9.99999	10.0/05.0 -999999pN 0.001 m.N-2.00N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5pN	040 /001.0 A	RS-232/USB
MPRA-9999991002	05.0/1.0 -99.9999	10.0/05.0 -999999pN 0.001 m.N-10.0N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5pN	100 /001.0 A	RS-232/USB
MPRA-9999992002	05.0/1.0 -99.9999	10.0/05.0 -999999pN 1.0 mN-199N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5pN	200 /001.0 A	RS-232/USB
MPRA-9999992003	05.0/1.0 -99.9999	10.0/05.0 -999999pN 0.0001 mN-10.0 N	300rad 0-400.Hz	< 100 nano Nm	99.99999%	5 u.R.P.M./5fN	200 /010.0m A	RS-232/USB

Six digit after product code indicate count, next, Two digit indicate voltage and last digit indicate
01- nano amp/02-pico amp/03-femto amp.

General electrical/mechanical specifications:

Operating voltage: 220 volt A.C. (50-20,000 Hz)/ 12 D.C.
 Measurement range (full scale): as above in different model.
 Range (R.P.M.): 10^{-06} - 10^{-01} / 10^{-1} - 10^{+5} † least count- 5.0 R.P.M.
 Torque (N.m.) rang : 10^{-12} - 10^{-07} / 10^{-7} - 10^{-2} / 10^{-02} - 10^{+2} least count- 5.0 pico Newton
 Angular rotation range: 0-300 degree with resolution of 0.001 degree
 Oscillation frequency: 0.0009 – 999.999 Hz
 Viscosity range: upto 3000.000 Pas
 Temperature range -20 °C to +180 °C
 Response time: 1000 sample/sec
 Burden: less than 100 micro volt/full scales current or better
 Input capacitance: 10 nF
 Accuracy: 99.999 % reading
 Repeatability: 100 of reading
 Resolution: 1/5 pico N.m. 2. /1/2/5 mill rpm or optional and may be altered based on time behaviour of signal
 Linearity adjustment: upto 100 nano-Newton
 Input imedence: ultra low(<1000 burdon),
 Filtering: low pass(adjustable)
 Offset: variable upto 10,000 nano (manual/auto)
 CMMR: >80 db at 50-60 Hz
 Isolation: > 100 giga ohm
 Connector: BNC-9 pinx2 and BNC-25 pinx2
 Size: 5X8X8 inches/rack mounted or portable
 Interface: RS-232

Option : Additional software to plot V/I OR ANY DESIRED INFERENCEAL PARAMETER.
 THESE SPECIFICATIONS OR PART THERE OF MAY BE MODIFIED TO MEET ANY TAILOR MADE SOLUTIONS.

NOTES: The numeral after product code indicates the (ampere meter) range and last digit corresponds to size (5x5x8, 8x8x12)

MOTORON SEMICONDUCTORS CORPORATION

11, Shri Nagar Colony, Shakti Nagar Extension, Delhi-110052 .Tel: 011-23648181/23655454

motoronenergy@hotmail.com

PRECISION CONSTANT VOLTAGE/CURRENT POWER SUPPLIES

Programmable/Non-programmable

MHCLS-Series

Introduction:

MHCLS series of precision current/voltage supplies are available in (15.0 to 5000 watts), more than 20 different models working in constant voltage/current mode virtually offering solutions to precision measurement, electrochemical, corrosion, petrochemical industry, organic/inorganic chemical, heavy electrical/mechanical industries, non-conventional energy, solids state physics application and many uncountable defense/nuclear applications. Updated design topology ensures better controllability and efficiency with additional integrated power/voltage and frequency control/protection. These power supplies may operate in parallel to make it more redundant. Company offers tailor made solution to custom requirement.

Benefits:

- Each lower current/voltage ripple (available in nano/pico range).
- Faster control action.
- Better repeatability/reproducibility.
- Better electrical stability
- Serial interface
- Five/Six digit display



MHCLS-024100



MHCLS-024100



MHCLS-100100

SPECIFICATIONS OF CONSTANT VOLTAGE POWER SOURCE

Power range <400

Model	Watts	Vmax	I _{max}	Repetition rate in case of pulse/sec x10	Resolution Quantified/ optional	Ripple	Accuracy %-reading	Zout 10-6	Step down range	cooling
MHCLS1-012002	024.0	12.0	002.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-012004	048.0	12.0	004.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-012008	096.0	12.0	008.0	100-10000	5 nV/5pA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-025005	050.0	25.0	002.0	100-10000	5 nV/5pA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-025010	0100.0	25.0	004.0	100-10000	5 nV/5pA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-025020	0200.0	25.0	008.0	100-10000	5 nV/5pA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-025032	0325.0	25.0	015.0	100-10000	5 nV/5fA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-050020	0200.0	50.0	004.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-050004	0400.0	50.0	008.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-100010	0100.0	100.0	001.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-100020	0200.0	100.0	002.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-200004	0400.0	200.0	002.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-200008	0800.0	200.0	004.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-400020	2000.0	400.0	005.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air
MHCLS1-999002	2000.0	1000.0	002.0	100-10000	5 nV/5nA	0.000001%	99.99999%	< 10	1:1000000	Air

Company offer voltage source in high voltage ranges upto 100 kilo /10 milli amps. These are not part of our Regular model.

SPECIFICATIONS OF CONSTANT CURRENT POWER SOURCE

POWER RANGE <200

Model	Watts	Vmax	I _{max}	Repetition rate in case of pulse/sec x10	Resolution % of FSM	Ripple	Accuracy %-reading	Zout	step down Range	cooling
MHCLS1-012002	024.0	12.0	002.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-025005	050.0	25.0	002.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-025002	025.0	25.0	001.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-025005	050.0	25.0	002.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-050005	005.0	50.0	000.1	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-050005	050.0	50.0	001.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-100001	010.0	100.0	000.1	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-100020	100.0	100.0	001.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-200002	020.0	200.0	000.1	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-200002	200.0	200.0	001.0	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air
MHCLS1-200004	040.0	400.0	000.1	100-10000	0.0000001%	0.000001%	99.999999%	1018	1:1000000	Air

Three numerals x 100 after MHCLS indicates voltage of power supply and last three digit Indicates current. All dimensions are in inches.

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PRECISION CONTANT VOLTAGE/CURRENT POWER SUPPLIES*Programmable/Non-programmable***MHCLS-Series****Constant voltage/ current power source specification:**

Operating voltage 220 , 1phase, 40-60 Hz

Output current/voltage :as in data sheet(ineare/pulse)

Voltage/current control accuracy: 99.9999% of set point or better for CC/CV

Ripple: 0.000001% of set point for voltage/0.000001% for CC or optional/amended

Resolution: 1/5 nV & 1/5 nano amps or 1/5 nV & 1/5 pico-amp or optional and may be altered based on time behaviour of signal

Range (V/I): Voltage: 10-09-10-04 volt/10-4-10+1 volt least count- 5.0 nano volt

Current: 10-12-10-07 amp/10-7-10-2 amp least count- 5.0 pico ampere or optional

Accuracy: 0.0000001% of set for (CV mode/0.0000001% of set current (CC mode)

Interface Signal 0.0-12.0 D.C. (proportional to Voltage/current control range)

Step down ratio 0-1000000 or option

Temperature coefficient of variation: < 10-912ppm

Control options 1.cascade feedback control with soft start

2. Constant voltage mode with external adjustment.

Display 5^{1/2} & 6^{1/2} digit LED display

OTHER OPTION: DC/AC/PULSE (100-10000 PULSE/SEC)

Protection over voltage/short ckt

Option: These power supplies may offer in pulse mode.

Interface: RS-232/U.S.B.

Constant voltage/current power source dimension:

MHCLS-006050	08X06X06	MHCLS-050150	14X12X12
MHCLS-012050	10X06X06	MHCLS-050200	16X14X14
MHCLS-012100	12X08X08	MHCLS-100025	18X16X16
MHCLS-025025	12X10X10	MHCLS-100050	20X18X18
MHCLS-025050	12X10X10	MHCLS-100100	20X18X18
MHCLS-025100	12X10X10	MHCLS-100150	20X18X18
MHCLS-0025200	08X06X06	MHCLS-100200	14X12X12
MHCLS-050050	10X06X06	MHCLS-100400	16X14X14
MHCLS-200050	18X16X14	MHCLS-200100	18X16X16

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