RoHS

Modbus

Bridging Gaps in Technology

SeethaRam Mechatronics Pvt Ltd

BRIDGING GAPS IN TECHNOLOGIES

Rameshwar Engineering
SeethaRam Mechatronics Pvt Ltd.

Sensors for Automation
Bridging Gaps in Technology

Bridging Gaps in Technology

Sensors for Automation

Table of Contents

Overview

- 1994 - Started as a Liaison, Marketing Company
- 2004 – Trading firm for Sensors &Transducers
- 2007 – Add Engineering, Calibration & Service Capability
- 2011 - Add Customization, Mechatronics capability
- 2013 – Technology driven In-house development
- 2015 – Manufacturing & development of import substitution and Indigenization

Promoter's Background

- 1st Generation, Technocrat Initiative
- 2 decades of Hands-on Techno-Commercial experience
- Varied Engineering Domain experience
- Marketing skills among varied Client Base

Bridging Gaps in Technology

Strengths

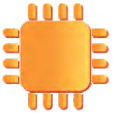
- Application Engineering Capability
- In-house Calibration
- Key Accounts, Institutional Business
- Quality Systems
- Solutions catering varied clientele
- Cross-functional expertise
- Manufacturing Capability

Application Engineering

Calibration Service

Development & Prototyping

Mechatronics



Hardware Design

Business Development

Key Accounts

Activity Segment

Analysis & Solution

Measurement

Detection

Products

Projects

Machinery

Sensors for Automation

Products, Services & Skills

- Sensors & Transducers
- Signal Conditioning, Analogue / Digital Electronics
- Wireless Systems
- Solutions, Systems & Special Products
- Testing and Validation machinery
- Import Substitution

Skills

Electronics

- Embedded Design & Development of Hardware, Firmware & Software
- Controllers – 8 BIT TO 32 BIT
- ADCs – 8 BIT TO 24 BIT /DACs
- Protocols – SPI, I2C, RS 232, RS 485,MODBUS, CAN, Ethernet, Wireless - Bluetooth, ZigBee, GSM & GPRS

Mechanical

- Conceptual Designing
- Reverse Engineering, Modification
- 2D, 3D drawing
- Finite Element Analysis (FEA)
- Rapid Prototyping, Design Optimization
- Experience in varied Material and finish (Steel, Aluminium, Plastics)

Focus Domains for Business

- R&D Institutions
- Defence
- Industrial
- Automotive
- Atomic Energy and Energy Conservation
- Railways

Test Certificate

SAMEER

Certificate No.T-0464

S-CEM/EMCD/TR/2015-2016/233

EMI/EMC TEST REPORT FOR UNIPOT
MANUFACTURED BY M/s. SEETHARAM MECHATRONICS PVT. LTD., CHENNAI

SAMEER

SAMEER-CENTRE FOR ELECTROMAGNETICS
(An Institution Setup by Ministry of Communications and Information Technology, Government of India)
2nd Cross Road, CIT Campus, Taramani, Chennai - 600 113, India
Tel :+91-44-22541352 / 22541817 **Fax** :+91-44-22541424 / 1938 **Email**: ccc@scemcd.gov.in **Web**: www.scemcd.gov.in

November 2015

SAMEER	Equipment Under Test (EUT)	:	Unipot
	Model Number of EUT	:	UP106
	Serial Number of EUT	:	10615027
	Manufactured by	:	M/s. Seetharam Mechatronics Pvt Ltd., Chennai

Certificate No.T-0464

EMI/EMC TEST REPORT FOR UNIPOT
MANUFACTURED BY M/s. SEETHARAM MECHATRONICS PVT. LTD., CHENNAI

Test Request Particulars

1. Test Request From	:	M/s. Seetharam Mechatronics Pvt. Ltd., Chennai
2. Equipment Under Test (EUT)	:	Unipot
3. Number of Test Sample(s)	:	One
4. Type of Tests Requested *(Applicable Standard)*	:	1. Conducted Emission Test as per CISPR 11, Class A, 2010 2. Electrostatic Discharge Immunity Test as per IEC 61000-4-2, 2008
5. Manufacturer	:	M/s. Seetharam Mechatronics Pvt. Ltd., Chennai
6. Model Number of EUT	:	UP106
7. Serial Number of EUT	:	10615027
8. Test plan concurred by *(Customer Representative)*	:	Mr. R. Aswinkumar, Senior Engineer (PDU). Seetharam Mechatronics Pvt. Ltd., Chennai
9. EUT Arrived On	:	October 12, 2015
10. Tested On	:	October 13, 2015
11. Test Venue	:	SAMEER-CEM, Chennai
12. Status of the EUT on Receipt	:	Functional

Certified that the data reported in this report are valid only for the test sample mentioned above at the time of and und+-er the stated conditions of measurement. Particulars of Manufacturer / Supplier, given in this report, are based on the information given by the customer, along with test request and SAMEER-CEM does not assume any responsibility for the correctness of that information for the above mentioned equipment under test.

Test Plan & Reviewed by:

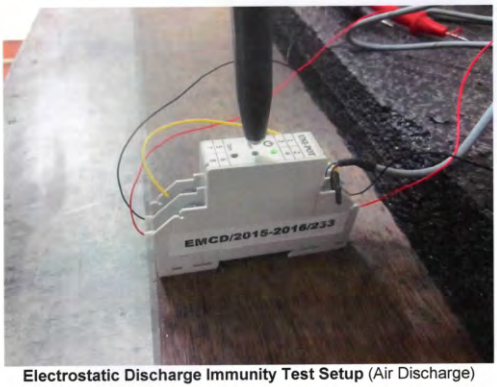
(P. Salil)
Scientist – E

Authorized Signatory:

(Dr. Sanjay Baisakhiya)
Scientist - E

Office Seal

Annexure-4



Electrostatic Discharge Immunity Test Setup (Air Discharge)

Annexure-5

Electrostatic Discharge Immunity Test Setup (Contact Discharge)

Few Clients


WABCO
Rane
TATA
ASHOK LEYLAND
BRIDGESTONE
MAGNA
DAIMLER
MRF
TI
INDIA
GRUPO
ANTOLIN
DELPHI - TVS
Diesel Systems Limited
pricol
IGARASHI
ELECTRIC WORKS LTD.
TEL
Turbo Energy Ltd
A Unit of TVS Group
saparo
SAINT-GOBAIN
WL
Wheels India Limited
Ford
ALSTOM
CATERPILLAR
BOSCH
Brakes India Limited
Where Safety Matters
NISSAN
TAFE
JK TYRE
TOTAL CONTROL
APOLLO TYRES
ROYAL ENFIELD
Mahindra
RENAULT NISSAN
NISSAN


पऊवि
DAE

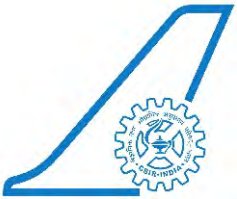

INDIAN INSTITUTE OF TECHNOLOGY MADRAS
सिद्धिर्भवति कर्मजा


CMERI
यन्त्रसेवासाकम् मन्त्र


राष्ट्र की सेवा में परमाणु
पऊवि
DAE
ATOMS IN THE SERVICE OF THE NATION


NATIONAL INSTITUTE OF OCEAN TECHNOLOGY
NIOT
CHENNAI


INDIAN ORDNANCE FACTORIES




राष्ट्र की सेवा में परमाणु
BARC
ATOMS IN THE SERVICE OF THE NATION


ARAI
Progress through Research


SUZLON


Schneider
Electric


Fenner
J.K. Fenner (India) Ltd.


PARRYS
E.I.D - PARRY (INDIA) LIMITED


HATSUN


KPR
Mill Limited


KOB


GARWARE-WALLROPES


FLSmidth


JINDAL
JINDAL SAW LTD.
TOTAL PIPE SOLUTIONS


TITAN
COMPANY


Lucas-TVS Limited

INDEX

Applications

Industry Wise

Product Wise

Solutions

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Displacement, Inclination & Acceleration

Displacement Sensor

Inclinometer

.... Torque, Signal Conditioner, Indicator Controller & Loggers ....

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.... Indicator Controller & Loggers ....

INDEX

Indicator Controller & Loggers

Koal Touch Series

Meya Series

Sangrah Series

APPLICATIONS

Aerospace

- Hydraulic pressure monitoring.
- Hydraulic actuation in Landing Gear
- Torque & Swivel measurement
- Testing and Monitoring of Hydraulic Systems

Nuclear Power

- Special pebble testing and compression machine designed for testing the pebble on load versus displacement method.
- Reactor tube profiling after use

Alternate Energy

- Flanged Non-contact torque measurement system for various wind turbines prototypes.
- Gear oil temperature & pressure measurement
- Wireless measurement & Logging of electrical & weather parameters

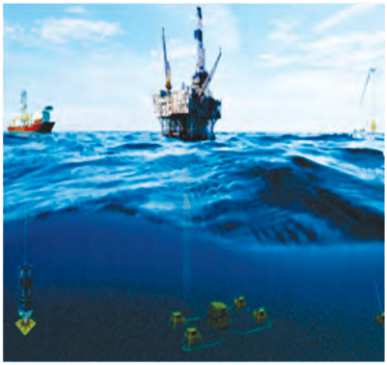
Automotive Manufacturing

- Industrial assembly Press applications based on load Vs displacement for closer tolerances,
- Torque vs angle measurements,
- Assembly Force, Torque, Displacement,
- Pressure/ Leakage Testing
- Poke – Yoke (Mistake Proofing)

Automotive R&D

- Impact measurement
- Pedal force and travel
- Steering Angle and force
- Body Dynamics
- Shock Absorbers
- Seating comfort
- Power windows
- Airbags

Sub Sea Energy



- Pressure and Torque Calibration
- Underwater tugging force
- Temperature and Pressure measurement
- Wave force and displacement
- Under-water dynamometer

Bridging Gaps in Technology

Medical & Pharmaceuticals

- Scales
- Patient monitoring
- Infusion pumps
- Pressure

Electrical & Power

- Switch gear Endurance Testing
- Fuse compaction
- Switch testing

Quality, Fatigue and Endurance Test

- Wire ropes
- Light Poles
- Material
- Test pieces in Civil Engineering
- Transmission shafts
- Critical components
- Wear components
- Automotive parts

Process Industries

- Temperature
- Pressure
- Level
- Mixing torque
- Tank Weighing

PRODUCT BASED APPLICATIONS

Displacement Transducer

Hydraulic Actuator displacement in vertical injection molding machine (Rubber molding)

Non contact Laser displacement sensor used to measure flatness of auto components

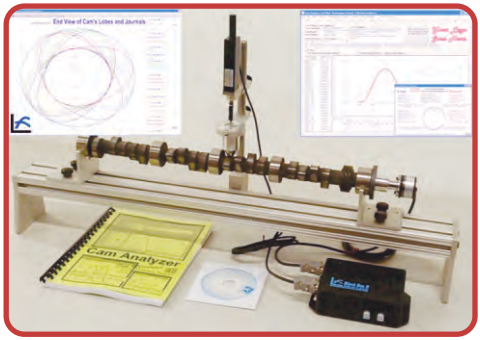
Magnetic cursor potentiometer for construction equipment to precisely measure the arm movements

Oleodynamic cylinder positioning with magnetostrictive sensor

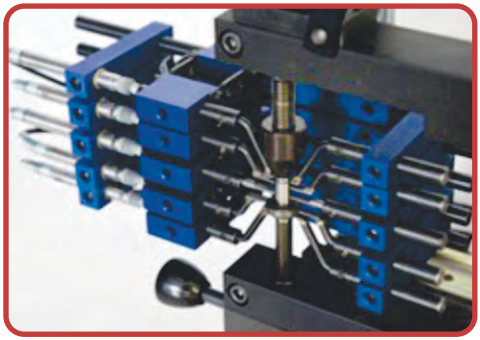
Level gauge coupled with an Magnetostrictive level transmitter

Magnetostrictive sensors integrated in hallow shaft hydraulic actuators to achieve precise position feed backs in mobile hydraulic & pressing applications

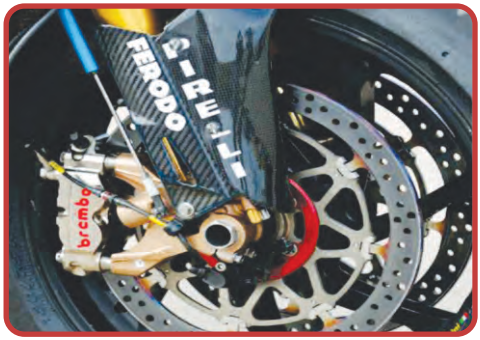
Displacement Transducer



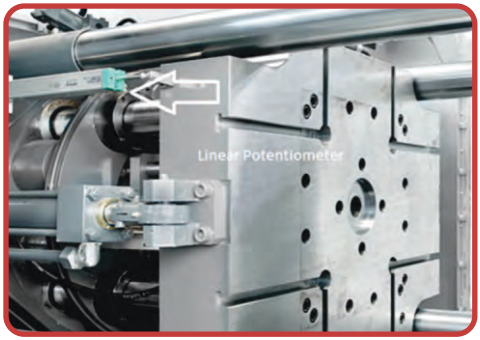
Cam shaft (Dual Axis) Analysis



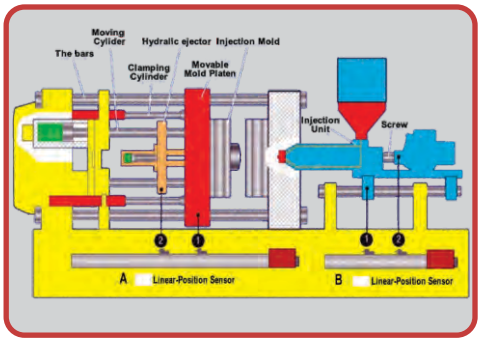
Multipoint run out testing of automobile parts



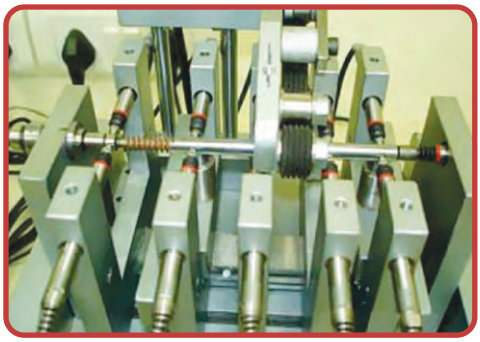
Shock absorber displacement measurement



Die displacement measurement in injection molding machine



Linear Potentiometer applications in Injection molding machines



Multipoint dimensional Poke - Yoke using LVDT

Force Sensor

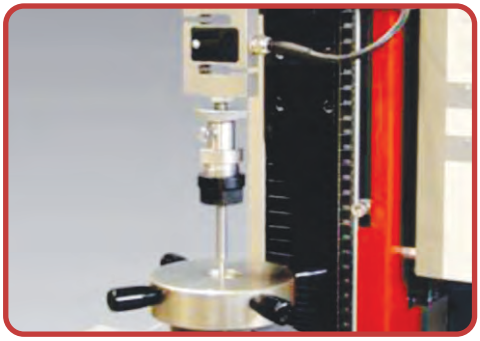
Two wheeler chain tension monitoring system

In-vehicle automotive 2 axis gear effort force sensor with indication & logging systems

2 wheeler & 3 wheeler clutch / Hand brake effort sensor for in vehicle clutch force measurement

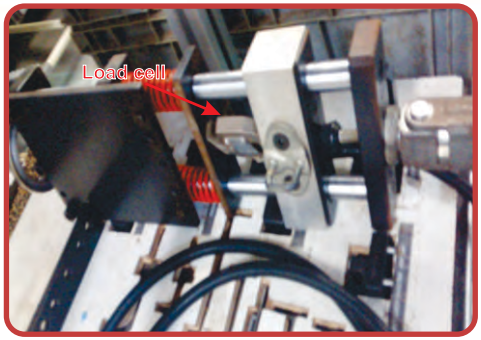
In-vehicle pedal effort sensor for automotive brake & clutch testing

Axial load cell in bush pressing press assembly



S-type load cell in puncture resistance force testing

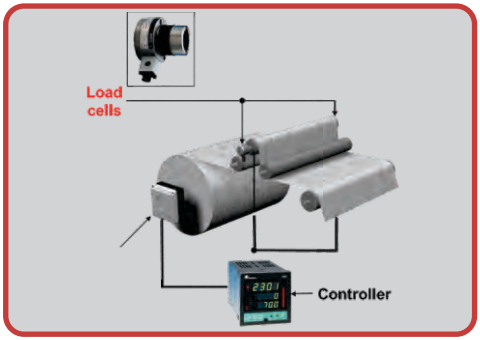
Force Sensor



S-type load cell is used to measure the tensile load acting on the door latch

Actuator load measurement in the oil seal tear machine

Co-efficient of friction testing

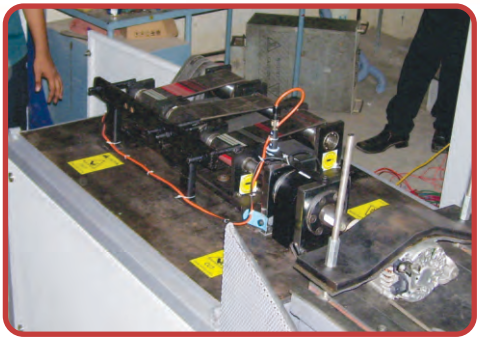


Radial type load cell for web tension monitoring in textile and paper industries monitoring

Hydraulic jack lift force feedback monitoring using load cell in avionic applications

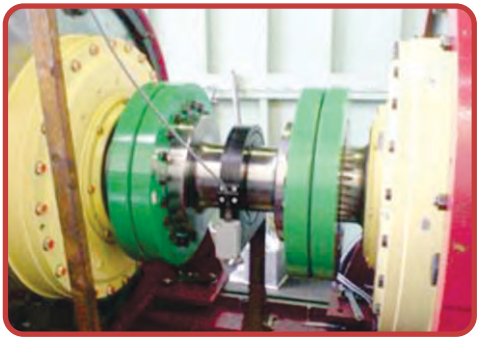
Pin type load cell in asphalt dispensing hopper weighing

Torque Sensor

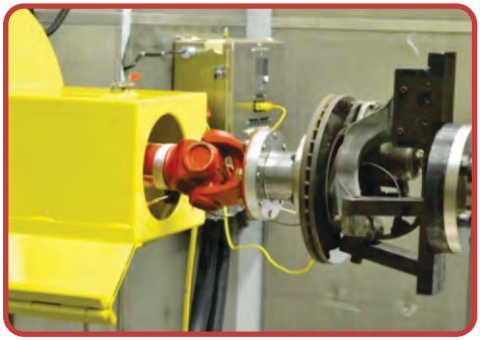


High speed Alternator torque performance testing using non contact torque transducer

Bottle cap torque testing using customized reactive torque transducer

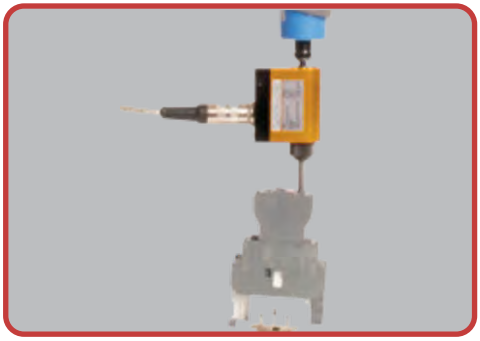


Reactive torque transducer in brake drum testing dynamometer



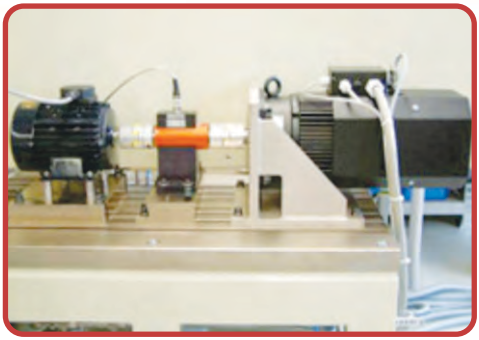
Brake caliper frictional torque testing using reactive torque transducer

Rotary torque transducer in automotive pump testing



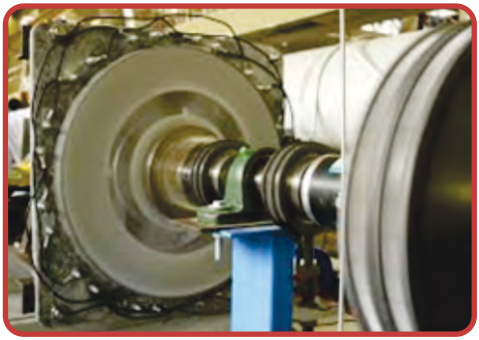
Miniature nut runner torque transducer with male & female square adoptions, adoptable for electrical & pneumatic nut runners

Torque Sensor



Rotary torque transducer coupled inline with eddy dynamometer in motor performance test rig

Rotary torque transducer with RPM output in seat regulation DC motors test rig



Non-contact rotary torque transducer in wind mill generator torque testing

To measure the torque acting on the brake chamber in the double end fatigue rig

Rotary torque transducer kept inline with steering column simulator in steering rack and pinion assembly test rig

Rotary torque transducer kept inline in sun visor assembly to ensure assembly torque quality

SOLUTIONS

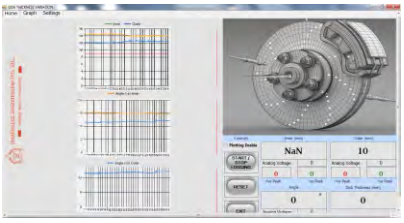
DISC THICKNESS VARIATION - DTV

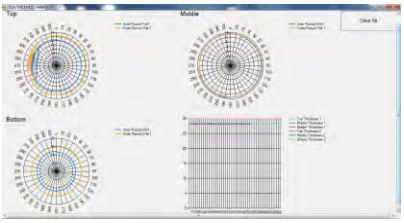
Disc Thickness Variation is uneven wear of brake disc on the brake rotor. The deformation of brake discs is measured using non-contact laser sensor in the idling state with the vehicle on the ramp / lifted on hydraulic jacks.

FEATURES

- Flexible physical adjustment of sensor in X and Y co-ordinates.
- Two high speed and high precision laser sensor for disc measurement
- Rotary potentiometer for angle measurement
- Measure run out for every 1°
- PC Suite software for plotting and logging
- Peak and valley points identified
- Real time polar graph of run - out
- Individual sensor calibration menu
- Comparison and overlapping with previous run-out data
- Password protection for setting
- Database filtering based on file name, radius and date of test
- Plot graph from database and flexible comparison option
- Simple file name and file setting
- Export data in csv and graph in png format
- Generate report in pdf
- Battery backup for unit

SCREEN SHOTS





TECHNICAL SPECIFICATION

❑ Mechanical Setup	
Adaptive rotor diameter (mm)	200 to 400
Disc Thickness	12~30mm (other size consult Factory)
Weight	4 kg Inclusive of Fixtures & Carry case

❑ Sensor Details	
Laser sensor excitation (Vdc)	12
Measurement Range (µm)	5000
Accuracy (µm)	±1
Angle sensor excitation (Vdc)	10
Angle Resolution	1°

❑ Electronic Unit	
Power Supply (V DC)	12-19
Sensor excitation (V DC)	Powered from DTV unit
Power	On/Off Switch
Power indication	Green Led
Connection type	Socket Connectors
Connection locking	Bayonet
Communication	USB for PC interface
Ingress Protection	IP50
Operating temperature °C	0-50
Storage temperature °C	0-100
Dimension (mm)	220 x 169 x 55
Weight (Kg)	0.6

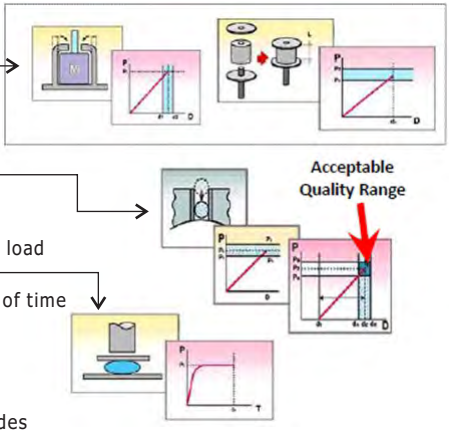
Specifications are subject to change without notice

AUTO PRESS

Electro Press is an ideal solution in Precision applications as against hydraulic and pneumatic presses. Our dedicated "Auto-Press" device offers precision logging and closed loop control for most Electric Press combinations. This system is compatible to Load cells and displacement systems (potentiometric, digital TTL sensors or any such sensors) The system is pre-loaded with various Press modes. Under closed loop feedback control, Precision in position, Speed and working force can be attained easily. The log, decision and control requirement is easy-set as per user requirements. The system is compatible most open-ended devices and gives a clear cost benefit advantage.

Major pressing functions

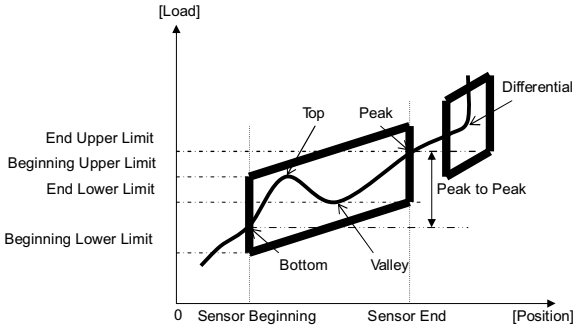
Constant Speed, Set Stop position
... Stops when it reaches a present position
Constant Speed, Set Stop Load
... Stops after detecting a designated load
Constant Speed, Set Distance
... Stops at a designated distance
Constant Speed, Set Differential
... Stops after detecting a rapid displacement load
Constant Load, Timed Pressure
... Presses at a constant load for a set length of time

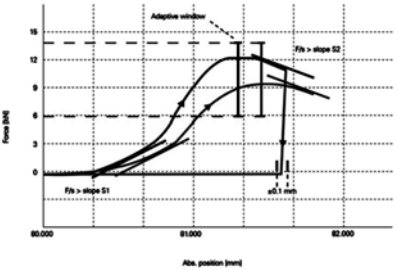


Multi-pressing functions

- Two Section PL (Pos. Stop/Load. Stop)
- Two Section LD (Load . Stop/ Distance. Stop)

* You can also create your own multi-pressing modes



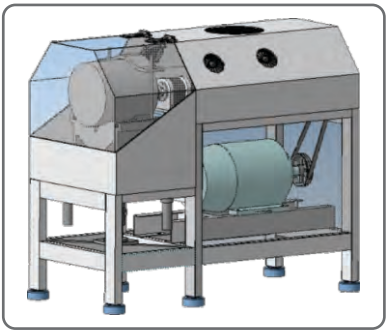


Specifications are subject to change without notice

ALTERNATOR EFFICIENCY TEST RIG

FEATURES

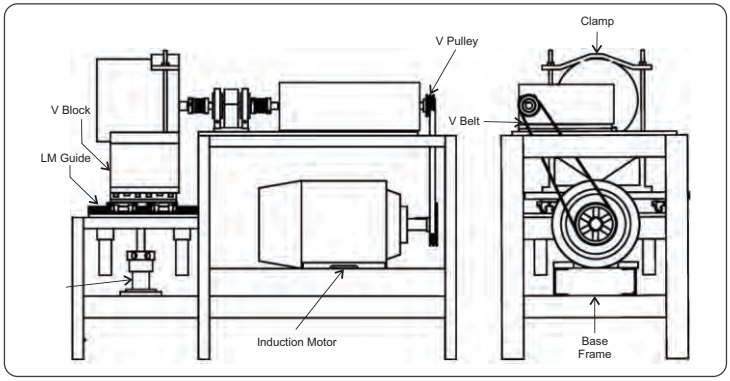
- Wide range of alternator can be seated (dia-10 to 300mm and length-100 to 300mm).
- Non contact torque transducer
- PLC/HMI based system to indicate power, torque, speed and efficiency.
- Flexible control through variable frequency drive (vfd).
- Max RPM at 10,000, minimum resolution 24 RPM.
- Three directional alignment to locate alternator inline with torque sensor.



SIMILAR TESTING MACHINES

- Bearing performance test at higher RPM at various Temperatures
- Pump efficiency test rig
- Gearbox efficiency test rig
- High speed deformation test for various rotating parts.

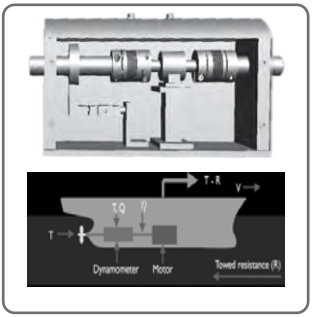
GENERAL ARRANGEMENT DRAWING



PROPELLER DYNAMOMETER

The Marine Propeller Dynamometer is meant to qualify the performance of the propeller systems under test / actual conditions. The dynamometer is placed in-between the driving mechanism and propeller systems. These dynamometers are compact in size and weight so it is suitable to use with small models. It can be customized as per testing requirements. Our propeller dynamometer range permits experiments over a wide range of speeds, thrusts, and torques.

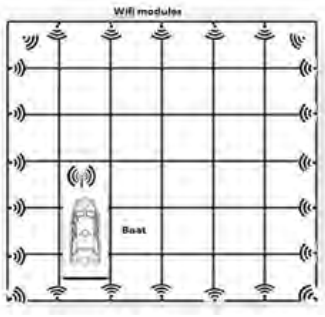
The dynamometer enables measurement of the torque and the trust force acting inline on the shaft of the propeller system. The Marine Propeller Dynamometer constitutes Strain Gauge based torque measuring and thrust measuring system, where precise measurement is accomplished.

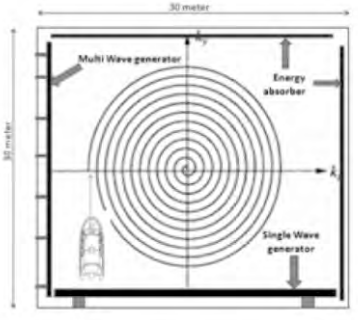


TRAJECTORY MOTION OF A BOAT IN WATER - BASIN

A wireless transceiver placed on the boat receives varying signal strength from the grid sensor. This determines the position of the boat.

The wireless transceiver on the observation room receives the boat position information continuous and the position is plotted on the PC screen dynamically.



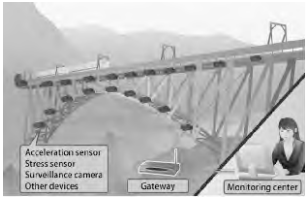


Speed of the boat may not be the limiting factor for the position determination. The system can work on slow and very high speeds. (kindly specify the max speed of the boat)

The boat position can be represented as a coordinates or a down sized mimic of the trajectory path of the boat in the water basin.

STRUCTURAL HEALTH MONITORING

Structural monitoring involves the process of implementing a damage detection and characterization strategy for engineering structures.



Structural health parameters such as corrosion, cracking, strength, tension, location of rebar / delaminations are measured with physical parameters measuring sensors.

Smart sensors with inbuilt power supply, primary sensors and transmitters enable wireless sensor network which helps in remote structural health monitoring.

Structural Health Parameters	Physical Parameters	Sensor Used
Corrosion	Acceleration	Accelerometers
Cracking	Strain	Strain gauge
	Climatic Conditions	ECO sensors
Strength	Curvature	LVDTs & Inclinometer
Tension	Displacements	Non Contact Laser displacement sensor
	Load	Load cell
Location of rebar / Delaminations	Tilt / Slope	Inclinometer

STATIC TORQUE / TEST DEVICE

(0.2N-m ~ 1000N-m)

Torque Calibration / Testing on the

Useful for all kind of torque wrenches –

Hand-held, Electrical or pneumatically operated

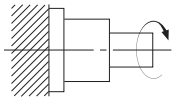
A static torque sensor for measurement of torque of stationary objects or within a certain angle rotation. Suitable for torque measurement of pneumatic and electric screwdriver etc for various automobile and engineering parts.

Standard sockets available as

accessories to be added to cost

Stable calibration or test system

with traceability certificate



Specifications are subject to change without notice

Bridging Gaps in Technology

PRODUC

CTS

FORCE COLUMN LOADCELL - FCL

COLUMN TYPE LOAD CELLS

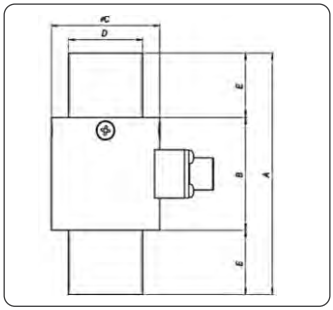
FEATURES

- Model FCL load cells have Male thread mounting and measure both tension & compression load force.
- Applications include Performance testers for Automotive industry, Assembly press

TECHNICAL SPECIFICATION

Model	FCL
Rated capacity(R.C.)	100kgf, 200kgf, 500kgf, 1tf, 2tf, 3tf, 5tf, 10tf
Rated output(R.O.)	1mV/V
Nonlinearity	0.15% of R.O.
Hysteresis	0.15% of R.O.
Repeatability	0.1% of R.O.
Creep	0.05% of R.O.
Zero balance	±1% of R.O.
Excitation recommended	10V (max. excitation 15V)
Terminal resistance input , output	350Ω±1%
Insulation resistance bridge	2000MΩ
Temperature range, compensated	-10~60°C
Temperature range, safe	-20~80°C
Temp. effect on rated output	±0.01% of LOAD/10°C
Temp. effect, on zero balance	±0.02% of R.O./10°C
Safe overload	120% R.C..
Cable length	Ø5mm 4core, 3m

DIMENSION DETAILS



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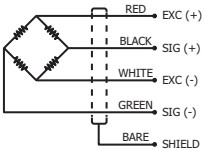


DIMENSION TABLE

Unit : mm

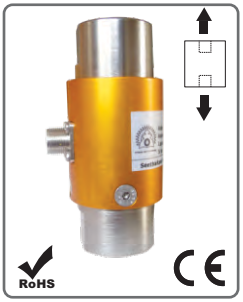
Capacity	A	B	ØC	D	E	Weight(kg)
100, 200, 500 Kgf	75	35	28	M16x1.5	20	0.5
1, 2, 3tf	75	35	28	M20x1.5	20	
5tf	75	35	35	M24x2	20	
10tf	170	100	60	M39x2	35	0.7

Specifications are subject to change without notice

FORCE COLUMN INTERNAL TREAD - FCIT

CANISTER TENSION LOAD CELLS

The FCIT series load cell is ideal for measuring both tensile and compressive forces. The standard metric threads at each end of the load cell are designed to accept standard spherical seating rod-end Bearing.



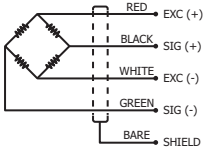
FEATURES

- Model FCIT load cells have Female thread mounting and measure both tension & compression load force
- High Alloy Tool Steel construction for resistance against shock and overload.
- Customization to fit your dimensional needs.

APPLICATION

- Line tension measurement
- Hanging type of weighing (E.g. – silos, hopper etc...)
- Force measurement in hydraulic, pneumatic and servo systems
- Calibration of testing machine
- Extrusion process
- Industrial process control

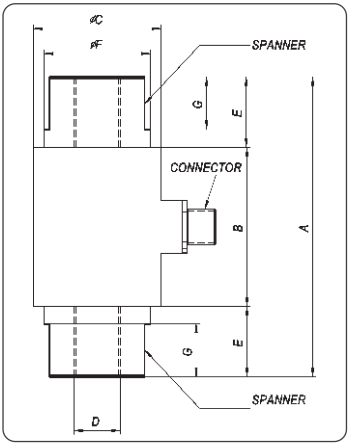
WIRING INFORMATION



TECHNICAL SPECIFICATION

Model	FCIT
Rated capacity(R.C.)	500kgf, 1, 2, 3, 5, 10tf
Rated output(R.O.)	1mV/V
Nonlinearity	0.15% of R.O.
Hysteresis	0.15% of R.O.
Repeatability	0.1% of R.O.
Creep	0.05% of R.O.
Zero balance	±1% of R.O.
Excitation recommended	10V (max. excitation 15V)
Terminal resistance input , output	350Ω±1%
Insulation resistance bridge	2000MΩ
Temperature range, compensated	-10~60°C
Temperature range, safe	-20~80°C
Temp. effect on rated output	±0.01% of LOAD/10°C
Temp. effect, on zero balance	±0.02% of R.O./10°C
Safe overload	120% R.C..
Cable length	Ø5mm 4core, 3m

DIMENSION DETAILS



DIMENSION TABLE

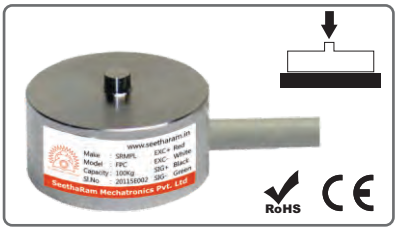
Unit : mm

Capacity	A	B	ØC	D	E	ØF
500 Kgf, 1, 2tf	85	45	36	M12x1.25	20	30
3, 5tf	85	48	45	M20x1.5	22	37.5
7.5, 10tf	108	52	55	M24x2	29	44

Specifications are subject to change without notice

FORCE PANCAKE - FPC (COMPRESSION)

PAN CAKE COMPRESSION LOAD CELLS



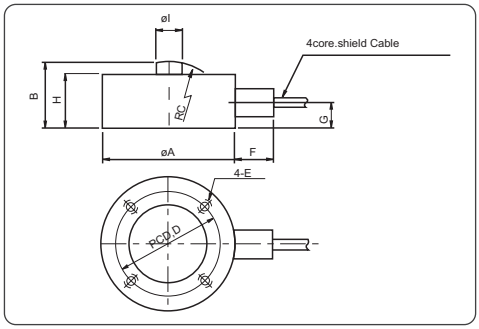
FEATURES

- Miniature compression type
- Simple installation
- These Load cells are extremely small and lightweight.

TECHNICAL SPECIFICATION

Model	FPC
Rated capacity(R.C.)	50, 100, 200, 500kgf, 1, 2, 3, 5, 10tf
Rated output(R.O.)	2mV/V±0.4%
Nonlinearity	0.15% of R.O.
Hysteresis	0.1% of R.O.
Repeatability	0.1% of R.O.
Zero balance	±2% of R.O.
Temperature effect, on rated output	0.1% of R.O./10°C
Temperature effect, on zero balance	0.05% of R.O./10°C
Temperature range, compensated	-10~70°C
Temperature range, safe	-20~80°C
Terminal resistance input	350±50Ω
Terminal resistance output	350±2Ω
Insulation resistance bridge/case	2000MΩ
Excitation recommended	10V (max. excitation 15V)
Safe overload	150% R.C.
Cable length	Ø5mm 4core, 3m

DIMENSION DETAILS



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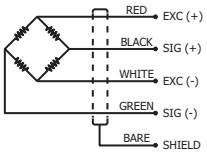


DIMENSION TABLE

Unit : mm

Capacity	ØA	B	C	D	E	F	G	H	ØI	Weight(kg)
50kgf-2tf	51	26	R50	42	M5x0.8DP6	15	10.5	22	10	0.4
3tf, 5tf	88	42	R150	72	M6x1DP10	23	17	37	18	2
10tf	88	47	R150	72	M6x1DP10	23	17	42	18	2

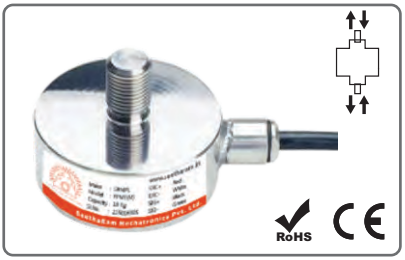
Specifications are subject to change without notice

FORCE PANCAKE MALE THREAD - FPMT

PAN CAKE TENSION LOAD CELLS

FEATURES

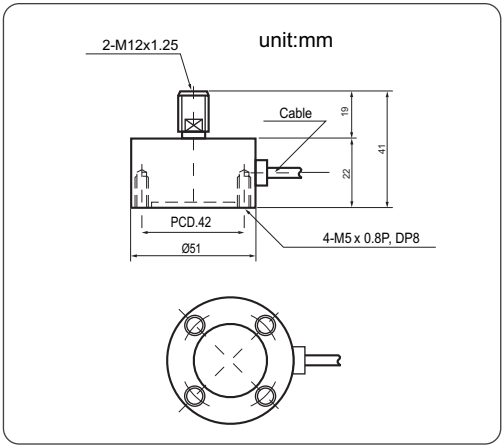
- Compression or Tension Load Cell.
- These load cells are extremely small and lightweight. Protection Class IP67.



TECHNICAL SPECIFICATION

Model	FPMT
Rated capacity(R.C.)	50, 100, 200, 500kgf, 1tf, 2tf
Rated output(R.O.)	2mV/V±0.4%
Nonlinearity	0.15% of R.C.
Hysteresis	0.1% of R.C.
Repeatability	0.05% of R.C.
Zero balance	±2% of R.O.
Temp. effect on rated output	±0.01% of LOAD/10°C
Temp. effect, on zero balance	0.05% of R.O./10°C
Temperature range, compensated	-10~70°C
Temperature range, safe	-10~80°C
Terminal resistance input	350Ω±30Ω
Terminal resistance output	350Ω±2Ω
Insulation resistance bridge/case	2000MΩ
Excitation recommended	10V (max. excitation 15V)
Safe overload	120% R.C..
Cable length	Ø5mm 4core, 3m

DIMENSION DETAILS



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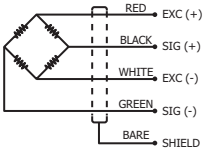


Specifications are subject to change without notice

Bridging Gaps in Technology

S TYPE LOAD CELLS

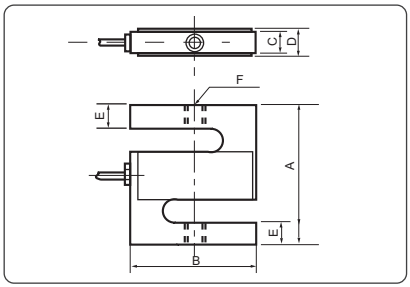
FEATURES

- Compact size.
- These are extremely accurate and compact Tension / Compression load cell.
- Protection Class IP65

TECHNICAL SPECIFICATION

Model	FS
Rated capacity(R.C.)	2, 5, 10, 20, 50, 100, 200, 500Kgf, 1, 2, 3, 5,10tf
Rated output(R.O.)	2.0mV/V±1%(2,5kgf: 1.5mV/V±1%)
Nonlinearity	0.03% of R.O.
Hysteresis	0.03% of R.O.
Repeatability	0.03% of R.O.
Zero balance	±2% of R.O.
Temperature effect, on rated output	0.05% of LOAD/10°C
Temperature effect, on zero balance	0.1% of R.O./10°C
Temperature range, compensated	-10~60°C
Temperature range, safe	-20~80°C
Terminal resistance input	350±50Ω
Terminal resistance output	350±2Ω
Insulation resistance bridge/case	2000MΩ
Excitation recommended	10V (max. excitation 15V)
Safe overload	150% R.C.
Cable length	Ø5mm 4core, 3m

DIMENSION DETAILS



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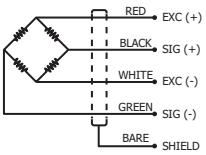


DIMENSION TABLE

Unit : mm

Capacity	ØA	B	C	D	E	F	Weight(kg)
2, 5 Kgf	60	50	13	16	10	M6x1	0.4
10, 20 Kgf	70	52	13	18	13	M6x1	
50, 100, 200 Kgf	70	52	18	24	13	M12x1.75	
500 Kgf, 1tf	70	62	22	25	15	M12x1.75	0.8
2tf	96	84	30	35	21	M20x1.5	2
3tf	120	96	35	41	30	M24x2	3
5tf	120	96	40	44	30	M24x2	
10tf	165	140	60	66	46	M39x2	8.5

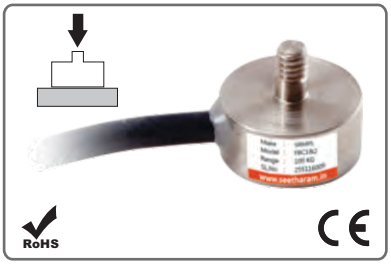
Specifications are subject to change without notice

FORCE BUTTON COMPRESSION - FBC1 & 2

MINIATURE COMPRESSION LOAD CELLS

FEATURES

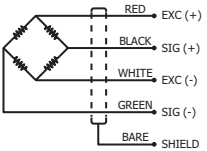
- Optimum suitability for weight distribution analysis.
- Super compact and light weight
- Competitive price. Stainless steel construction.



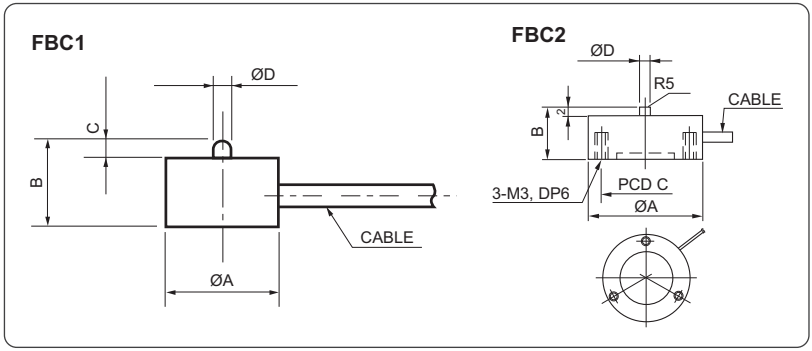
TECHNICAL SPECIFICATION

Model	FBC1 & 2
Rated capacity(R.C.)	1, 2, 5, 10, 20, 50, 100, 200, 500kgf, 1, 2, 3tf
Rated output(R.O.)	0.7mV/V to 1.2mV/V
Nonlinearity	1.0% R.O.
Hysteresis	1.0% R.O.
Repeatability	1.0% R.O.
Zero balance	±5% of R.O.
Terminal resistance input	350Ω ±10%
Terminal resistance output	350Ω ±5%
Temperature range, allowable	-20 to +70°C
Excitation recommended	5V DC (max. excitation 15V)
Safe overload	150% R.C.
Cable length	Ø3 4core cable, 3m

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

FBC1 **Unit : mm**

Capacity	A	B	C	ØD	Weight (kg)
1, 2, 5kgf	16	12	2	2.5	0.2
10, 20, 50, 100, 200kgf	20	11.5	2	2.5	
300, 500,kgf, 1, 2, 3tf	20	14	0.7	4	0.3

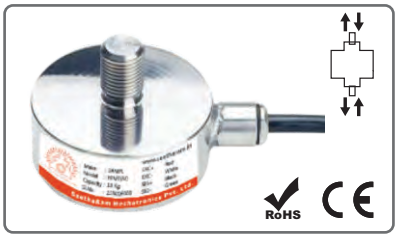
FBC2 **Unit : mm**

Capacity	A	B	C	ØD	Weight (kg)
1, 2, 5kgf	21	12	17	2.5	0.3
10, 20, 50, 100, 200kgf	26	12	21	2.5	
300, 500,kgf, 1, 2tf	26	14	21	4	
3tf	26	14	21	8	

Specifications are subject to change without notice

FORCE PANCAKE MALE THREAD MINIATURE - FPMT (M)

MINIATURE TENSION LOAD CELLS



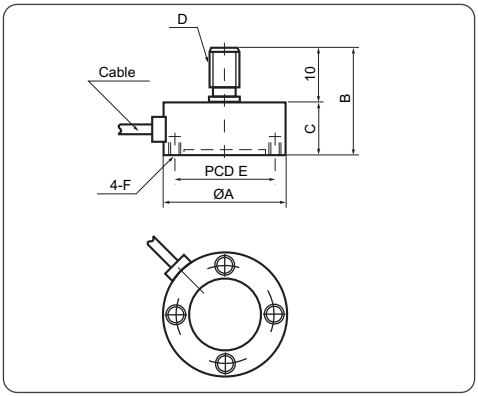
FEATURES

- Compression or Tension Load Cell.
- These load cells are extremely small and lightweight.
- Protection Class IP67.

TECHNICAL SPECIFICATION

Model	FPMT (M)
Rated capacity(R.C.)	1, 2, 5, 10, 20, 50, 100, 200kgf
Rated output(R.O.)	0.7~1.2mV/V
Nonlinearity	0.1% of R.O.
Hysteresis	0.1% of R.O.
Repeatability	0.1% of R.O.
Zero balance	±2% of R.O.
Temp. effect on rated output	0.1% of LOAD/10°C
Temp. effect, on zero balance	0.05% of R.O./10°C
Temperature range, compensated	-10~60°C
Temperature range, safe	-10~80°C
Terminal resistance input	350Ω±30Ω
Terminal resistance output	350Ω±2Ω
Insulation resistance bridge/case	2000MΩ
Excitation recommended	5V (max. excitation 15V)
Safe overload	120% R.C..
Cable length	Ø3.4core shield cable, 3m

DIMENSION DETAILS



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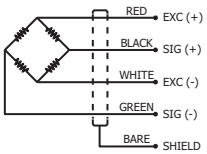


DIMENSION TABLE

Unit : mm

Capacity	ØA	B	C	D	E	F
1, 2, 5 Kgf	23	20	10	M3 x 0.5	18	M3DP5
10, 20, 50, 100, 200 Kgf	27	21	11	M6 x 1	22	M3DP5

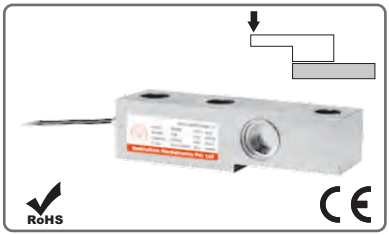
Specifications are subject to change without notice

FORCE SHEAR BEAM - FSB

SHEAR BEAM LOAD CELL

FEATURES

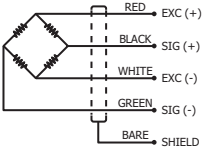
A compact and low cost, shear type compression load cell. Economic model shear type transducers with a high accuracy of 0.02% R.O. Platform and Tank scale weighing. Protection Class IP67



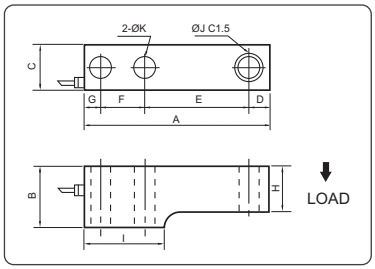
TECHNICAL SPECIFICATION

Model	FSB
Rated capacity(R.C.)	50,100,150,300,500kgf, 1,2,3,5,6,10,12tf
Rated output(R.O.)	2mV/V±0.1%
Nonlinearity	0.03% of R.O.
Hysteresis	0.02% of R.O.
Repeatability	0.02% of R.O.
Creep(20min)	0.03% of R.O.
Zero balance	±5% of R.O.
Temp. effect, on rated output	0.02% of LOAD/10°C
Temp. effect, on zero balance	0.05% of R.O./10°C
Temp. range, compensated	-10~50°C
Temp. range, safe	-20~80°C
Terminal resistance input	350±30Ω
Terminal resistance output	350±3Ω
Insulation resistance bridge	2000MΩ
Excitation recommended	10V (max. excitation 15V)
Safe overload	150% R.C.
Cable length	Ø5 ±0.3mm 4core, 3m

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

Unit : mm

Capacity	A	B	C	D	E	F	G	H	I	ØJ	ØK	Weight(kg)
50kg ~ 300kg	135	36	26	17	75	25	18	32	58	11.5	11.5	0.5
500kg ~ 2tf	135	38	30	17	75	25	18	34	58	13.5	13.5	1.1
3tf ~ 5tf	170	48	38	20	85	50	15	39	79	18.5	18.5	2.3
6tf	203	48	50	23	95	62	23	39	110	24.5	24.5	3.5
10tf ~ 12tf	263	60	60	30	118	90	25	52	143	26	26	9

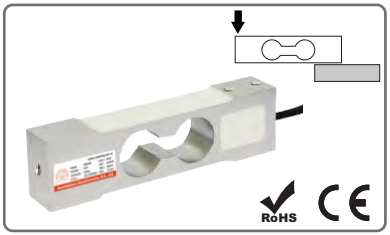
Specifications are subject to change without notice

FORCE SINGLE POINT - FSP

SINGLE POINT LOAD CELL

FEATURES

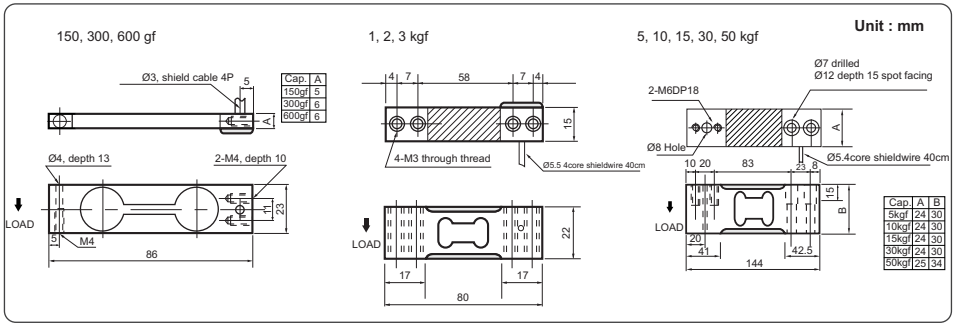
- This strain gage load cell has the characteristics of high accuracy and low price.
- Commercial & Engineering applications
- Protection Class IP65



TECHNICAL SPECIFICATION

Model	FSP		
Rated capacity(R.C.)	150, 300, 600 gf	1, 2, 3 kgf	5, 10, 15, 30, 50 kgf
Rated output(R.O.)	1.2mV/V±1%	1mV/V±1%	1.5mV/V±1%
Nonlinearity	0.02% of R.O.		
Hysteresis	0.02% of R.O.		
Repeatability	0.02% of R.O.		
Creep	0.03% of R.O./20min		0.02% of R.O./20min
Zero balance	±5% of R.O.		
Terminal resistance, input	420±30Ω		
Terminal resistance, output	350±2Ω		
Insulation resistance	2000MΩ		
Temp. range, compensated	0~+40°C	-10~+50°C	
Temp. range, safe	-10~+50°C		
Temp. effect, on zero balance	0.03% of R.O./10°C		
Temp. effect, on rated output	0.02% of LOAD/10°C		
Excitation recommended	10VDC (max. excitation 15V)		
Safe overload	150% R.C.		
Cable length	Ø3, core shield cable, 40cm		
Allow maximum platform size	Ø80	200 x 200mm	300 x 300mm
Weight	200g	300g	400g
Wiring information	Exc+:Red, Exc-:White, Sig+:Black, Sig-:Green		

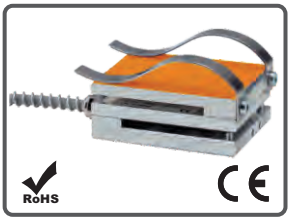
DIMENSION DETAILS



Specifications are subject to change without notice

PEDAL FORCE SENSOR - PFS

Our pedal force sensors are specially designed for the measurement of foot forces on brake pedals. The pedal force sensor is mounted directly on the brake pedal for the measurement. An overload safety device protects the pedal force sensor against mechanical destruction.



FEATURES

- Available ranges up to 1500 N
- Cast construction (IP 65 Protection)
- Option with hand-held display.

APPLICATIONS

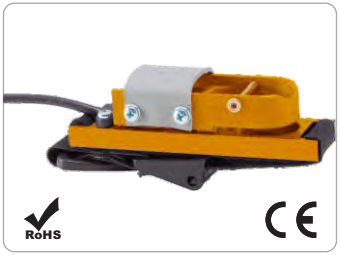
- Brake force measurement on vehicles

TECHNICAL SPECIFICATION

Model	Pedal Force Sensor
Nominal load Range	1000N / 1500N
Overload limit	1000N / 1800N
Accuracy	±0.5% F.S
Degree of protection	Ip65
Operating temperature range	-10°C to +50°C
Cable	4x0.14high -flexibility PVC, length 2.5m or spiral cable, length 0.5 to 4m

HAND BRAKE - HB

The hand brake sensor for two-wheelers is used for measurement of the forces on the handbrake lever of motor cycles and bicycles. The readings can be read off from strain indicator.



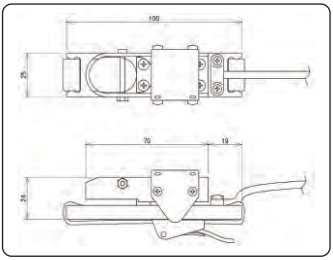
FEATURES

- Nominal load - Two-wheeler version - upto 500 N
- Shallow construction
- Mechanical overload protection
- Available with combined hand-held terminal

TECHNICAL SPECIFICATION

Model	HB
Nominal load	0 - 500 N
Accuracy class	0.5 % f.s.
Protection	I P 65
Dimensions	W 26 x L 100 x H 23 mm
Material	aluminium
Sensitivity	1mV/V
Sensor excitation	< + 10 V
Cable length	1.5m
Cable type	FDCY 4 x 0.14 mm²

DIMENSIONAL DETAILS



Specifications are subject to change without notice

Bridging Gaps in Technology

GEAR SHIFTING - GS 500N

GEAR SHIFTING LEVER LOAD CELL

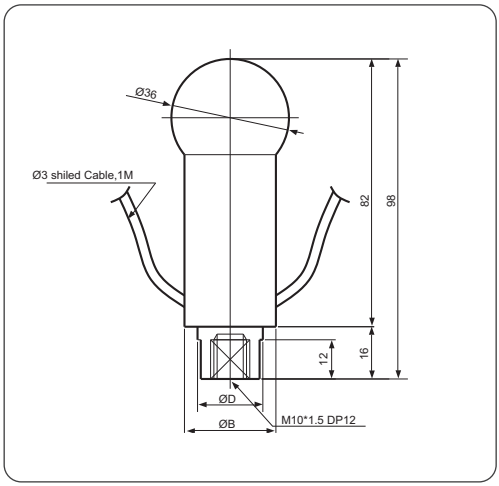
FEATURES

This can measure X and Y force of gear shifting lever. The gear shift load cell is a quality tool to measure effort to shift gears in automotive quality testing. An ergonomically designed gear knob senses the force from a human hand or a mechanical actuator. The gear shift load cell is supplied calibrated and ready to use.

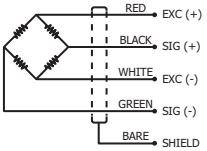
TECHNICAL SPECIFICATION

Model	GS 500N
Rated capacity(R.C.)	500N
Rated output(R.O.)	1mV/V±1%
Nonlinearity	1% R.O.
Hysteresis	1% R.O.
Resistance	350 Ohm±1%
safe overload	120% R.C.
Maximum Excitation	Max. excitation 15V

DIMENSION DETAILS



WIRING INFORMATION



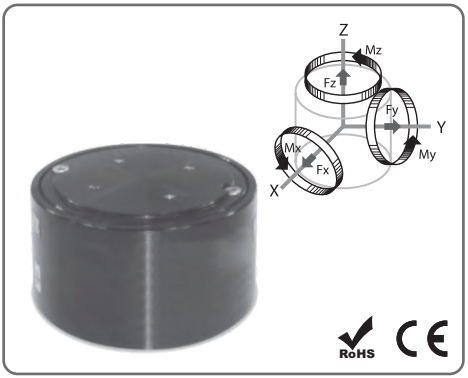
Specifications are subject to change without notice

MULTI COMPONENTS LOAD CELL

MULTI COMPONENTS LOAD CELL

FEATURES

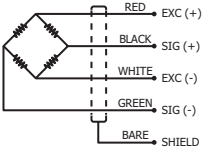
This is load cell of simple construction for torque and axial force detection. Provided with a flange for easy installation. Most suitable for use in materials testing machines.



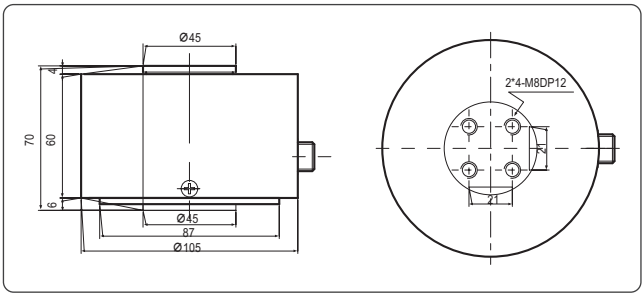
TECHNICAL SPECIFICATION

Model	FMA6
Rated output(R.O.)	0.5mV/V±1%
Nonlinearity	0.5% R.O.
Hysteresis	0.5% R.O.
Repeatability	0.3% R.O.
Excitation recommended	10V (max. excitation 15V)
Terminal resistance	350 Ohm±3.5
Insulation resistance bridge	2000 M
Temp. effect on rated output	±0.03% R.O./°C
Temp. effect, on zero balance	±0.03%/°C
Safe overload	120% R.C
Cable length	Ø7mm x 16C x 3m
Degree of interference	±3% R.O.

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

F - Force : N
M - Moment : Nm

MODEL		Rated Capacity					
		FX	FY	FZ	MX	MY	MZ
FMA6	20	20	20	20	2	2	2
	50	50	50	50	5	5	5
	100	100	100	100	10	10	10
	200	200	200	200	20	20	20
	500	500	500	500	50	50	50

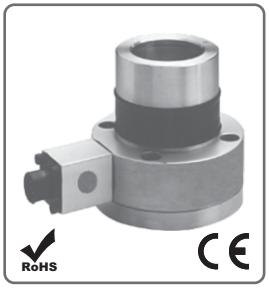
Specifications are subject to change without notice

WEB TENSION - WT

FORCE TRANSDUCERS FOR MEASURING THE WEB / SPINDLE TENSION

FEATURES

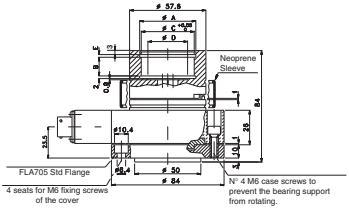
- Range of measurement: from 100 N to 2kN
- Accuracy class: 0.5%
- Corrosion resistant
- Internally generated calibration signal
- Orientation of the axis of maximum sensitivity for 35° indepenadently from the position of the fixing holes
- Grade of protection: IP65 (DIN 40050)
- Integrated protection against overloads

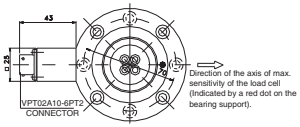


TECHNICAL SPECIFICATION

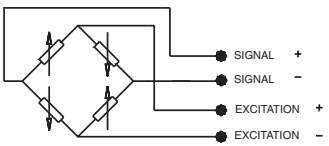
Model		WT
Accuracy		0,50%
Nominal full scale load (Ln)		100N...2kN
Nominal output at FSO		2mV/V
Output tolerance at Ln		<± 1% FSO
Combined errors: Non linearity		
Histeresis, Repeatibility		< ± 0.5% FSO
Creep (after 30 min. at Ln)		< ± 0.06% FSO
Zero load out of balance signal		< ± 1% FSO
Thermal drift in	Sensitivity	< ± 0.005% FSO°C
compensated	Zero	< ± 0.01% FSO°C
range	Calibration	-
Nominal bridge resistance		350 Ohm
Isolation resistance		> 10 GOhm
Nominal supply voltage		10V
Maximum supply voltage		15 V
Compensated temperature range		-10...+50°C
Maximum temperature range		-20...+60°C
Storage temperature range		-30...+80°C
Permitted static load		100% Ln
Maximum applicable load		300% Ln
Rupture load		> 500% Ln [6 kN max.]
Maximum static lateral load		150% Ln
Maximum elastic deformation at Ln		< 0,5 mm
Grade of protection (DIN40050)		Ip65
Electrical Connections		Connector
Elastic element material		Aluminium (100...1kN)
		Stainless steel (1.5kN - 2 kN)
Case material		Anodised aluminium (Flange
		and bearing in AISI 303)

DIMENSION DETAILS



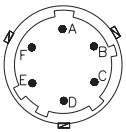


WIRING INFORMATION



	CABLE OUTPUT	CABLE CONNECTION
	A	Red
	B	Yellow or Black
	C	White
	D	Green

If the transducer is supplied complete with prewired connection cable, the colour code is that indicated in the table.



CONNECTOR

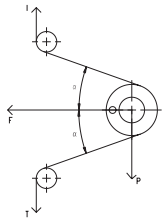
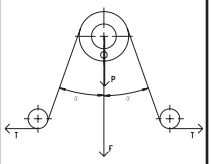
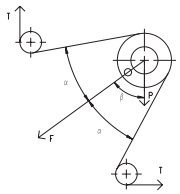
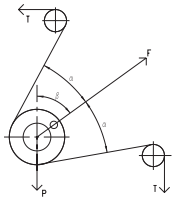
Specifications are subject to change without notice

FORCE TRANSDUCERS FOR MEASURING THE WEB / SPINDLE TENSION

CALCULATION OF RESULTANT APPLIED TO CELL

F = Resultant **T** = Tension in laminate **P** = Roll weight

The red point on the bearing support identifies the axis of maximum cell sensitivity and therefore the direction that F has to take with respect to the transducer.

HORIZONTAL RESULTANT	VERTICAL RESULTANT	DOWNWARD RESULTANT	UPWARD RESULTANT
			
$F = \frac{T}{2} \bullet 2 \bullet \cos\alpha$	$F = \frac{T}{2} \bullet 2 \bullet \cos\alpha + \frac{P}{2}$	$F = \frac{T}{2} \bullet 2 \bullet \cos\alpha + \frac{P}{2} \bullet \cos\beta$	$F = \frac{T}{2} \bullet 2 \bullet \cos\alpha - \frac{P}{2} \bullet \cos\beta$
This configuration gives the best performance because it does not consider roll weight. It is advised for low tension, to prevent roll weight from representing an excessive fraction of the resultant, with consequent reduction of the usable field. This is the only configuration in which, in the absence of tension T, there is a zero signal of approximately 0 mV/V.	In this configuration, roll weight is completely in the direction of maximum sensitivity of the cell that generates a signal in mV/V positive. This signal should be considered as tare: it will be considered during calibration of the instrument connected to the cell.	In this configuration, roll weight is completely in the direction of maximum sensitivity of the cell that generates a signal in mV/V positive. This signal should be considered as tare: it will be considered during calibration of the instrument connected to the cell.	In this configuration, roll weight is completely in the direction of maximum sensitivity of the cell that generates a signal in mV/V negative. This signal should be considered as tare: it will be considered during calibration of the instrument connected to the cell.

ORDERING CODE

Force transducer **WT** ☐☐☐☐

MEASUREMENT RANGE (N)	
0 - 100	**N1C**
0 - 200	**N2C**
0 - 350	**N3.5C**
0 - 500	**N5C**
0 - 750	**N7.5C**
0 - 1000	**N1M**
0 - 1500	**N15C**
0 - 2000	**N20C**

EXTERNAL DIAMETER	
35 mm bearing	**C35**
40 mm bearing	**C40**
30 mm shaft spindle	**P30**

If request, it is possible to supply models with non-standard mechanical and/or electrical features.

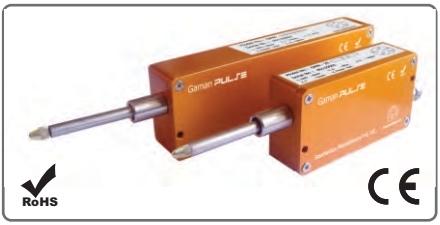
FLANGE	
1	FLA 705 (standard)
2	FLA711
3	FLA715

Specifications are subject to change without notice

The **GAMAN** series linear displacement pulsed probe is a spring loaded plunger type precision linear measurement sensor. Standard stroke length ranges are 25 and 50mm. It is a machined aluminum enclosure with smooth linear bearings for repeatable measurements.

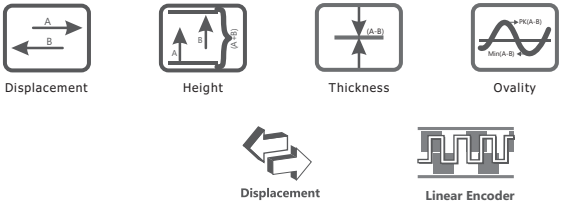
They have a wide range of applications in Production, Metrology, Multipoint Inspection Stations, Thickness / Stroke measuring equipment devices. The in-built electronics support interface with low cost PLCs, thus making precision measurement a low cost solution.

Stand-alone indicators are also available as display for this sensor.



FEATURES

- Standard 10mm diameter mounting stem
- Compact design
- Linear ranges from 25mm to 50mm
- 12µm resolution (option 3 & 5µm)
- 5 Pin circular locking connector
- RS485 communication output

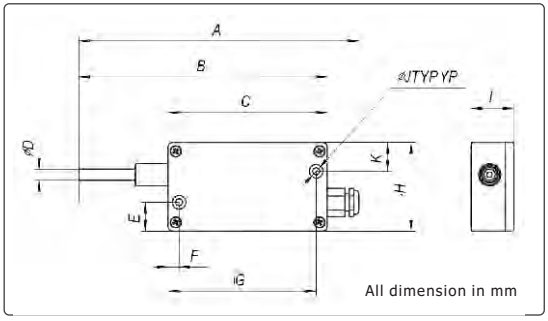


MECHANICAL DATA	
Accuracy	12/6/3µm
Radial Force	1.66N
Fastening	Plane Surface
Operating Temperature	0-50°C
Protection	IP60
Weight without cable	350g
Mounting Screw	2-M3 x 0.5

ELECTRICAL DATA	
Power Supply	5VDC for TTL, 24VDC for MODBUS
Output	Default RS485 (MODBUS) Optional 5V TTL
Measuring Velocity	upto 15m/min
Electrical Connection	Cable 1.5m with free end wire Circular 5 Pin connector
Cable Length	1m

DIMENSION DETAILS

25/50



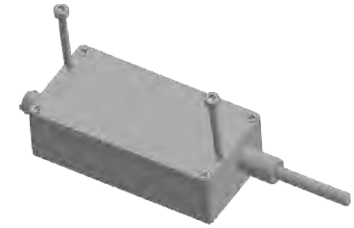
PIN CONFIGURATION

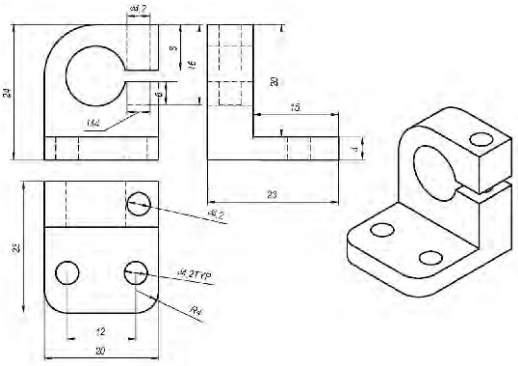
Free End Cable Wire	TTL Output	MODBUS Output
Brown	Power Supply +ve 5VDC	Power Supply +ve 24VDC
White	Power Supply -ve 0VDC	Power Supply -ve 0VDC
Green	A Signal	RS485 +ve
Yellow	B Signal	RS485 -ve
Grey	Index	GND

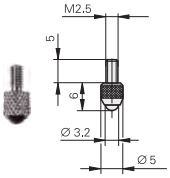
STROKE	A	B	C	ØD	E	F	G	H	I	ØJ	K
25	126.70	112.30	72.00	5.00	13.00	5.00	67.00	40.00	19.50	3.15	13.00
50	199.00	184.60	119.00	5.00	13.00	5.00	114.00	40.00	19.50	3.15	13.00

Specifications are subject to change without notice

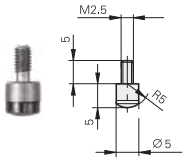
MOUNTING CLAMP







01



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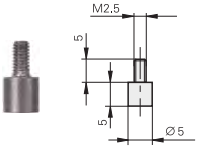
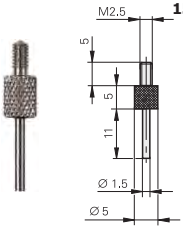


03



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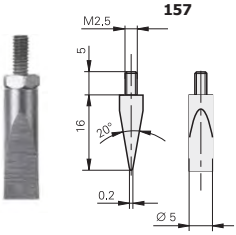

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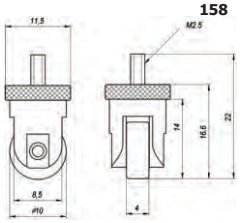

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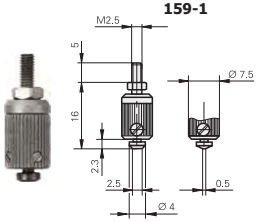


07

OPTIONAL ACCESSORIES	Ball Contact	Domed Contact	Flat Contact	Pin-Type Contact	Knife Edge Contact	Roller Contact	Adjustable Contact	Mounting Screws	Mounting Clamp
G.P 25/50	01	02	03	04	05	06	07	08	09

ORDERING NUMBER

GPT – Gaman Pulse TTL Output

GPM - Gaman Pulse MODBUS Output

GPT – □ – □ – □ – □

STROKE
25 = 25mm
50 = 50mm

ACCURACY
3 = 3µm
6 = 6µm
12 = 12µm

TERMINATION
F = CABLE
C = CONNECTOR

ACCESSORIES
BC = Ball Contact
DC = Domed Contact
FC = Flat Contact
PT = Pin-Type Contact
KE = Knife Edge Contact
RC = Roller Contact
AC = Adjustable Contact
MS = Mounting Screws
MC = Mounting Clamp

3 AXIS INCLINOMETER

The 3-axis inclinometer is a high resolution (13-bit) device . The angle measured is transmitted in a high speed at a rate of 30 samples/sec.The data transfer is done through wireless communication.A 4-20 mA analog output port is also available.

FEATURES

- ABS UL-94HB housing
- Wireless serial communication
- 4-20 mA current output signal
- Temperature compensated
- Fast response time of 10 mS
- Standalone time 15 hours
- Easy to handle
- Optional external GLCD display and PC application
- Rechargable battery

TECHNICAL SPECIFICATION

Conditions	Min	Max
Measurement range °	-260	260
Resolution °	1	
Output signal mA	4-20 mA	
Power supply VDC	5	
Current consumption mA	80	100
Operation temperature range°C	-40	100
Storage temperature range °C	-40	100
Weight g		165
Communication distance m	15	On Request
Dimension mm	125 x 70 x 38	

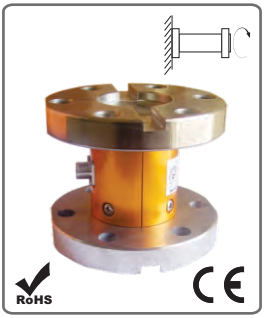
APPLICATIONS

- Alignment and level control
- Mobile and stationary cranes
- Elevators & Lifts
- Forklift truck
- Ship building
- Harvester
- Vehicle applications

STATIC TORQUE DUAL FLANGE - STDF (SPL) (10kgf.cm ~ 2000kgf.cm)

FLANGED TYPE REATION TORQUE TRANSDUCER

STDF reaction torque transducer is flange mount type designed for industrial and research applications. Both end flanges makes it very compact and easy to install into the applications. It is suitable for clock wise and anti clock wise directions



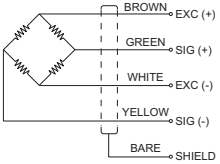
FEATURES

- Very compact and rugged for heavy duty applications.
- Compensated for axial and bending moments for good accuracy.
- Can be supplied as per customers required size and capacity.
- Both end shaft or one end shaft and other end flange type also can be supplied

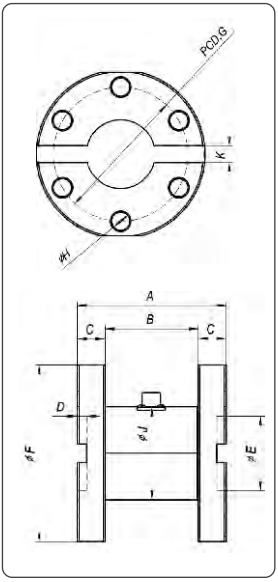
APPLICATION

- Actuator/valve/electrical tool testing
- Axle/shaft torsion test
- Bearing friction measuring
- Testing of starters/slip rings/brushes/clutches/brakes
- Electric/hydraulic/pneumatic motors testing
- Alternators/pumps/gas, diesel, turbine engines testing
- Automobile testing of drive shaft and crank shaft torque
- Defence, Aerospace, R&D Establishments, Offshore test rigs, Automotive, machine tools, electrical and engineering industries.

WIRING INFORMATION



DIMENSION DETAILS



TECHNICAL SPECIFICATION

Model	STDF - (SPL)
Rated capacity (R.C.)	10Nm~2000Nm
Rated output (R.O.)	1mV/V ±1%
Non-linearity	0.3% (0.1kgf-m under 0.5% R.O.)
Hysteresis	0.3% (0.1kgf-m under 0.5% R.O.)
Repeatability	0.02% of R.O.
Terminal resistance, input	350Ω±1%
Terminal resistance, output	350Ω±1%
Insulation resistance	2000MΩ
Temp. effect on zero balance	±0.1%R.O./10℃
Temp. effect on rated output	±0.1%Load/10℃
Excitation recommended	10V DC
Safe overload	120% R.C.
Cable length	Ø5.5 4core cable, 3m

DIMENSION TABLE

Unit : mm

Capacity	A	B	C	D	ØE	ØF	G	ØH	ØJ	K
100, 200 Nm	80	50	15	5	40	95	78	10.5	50	10

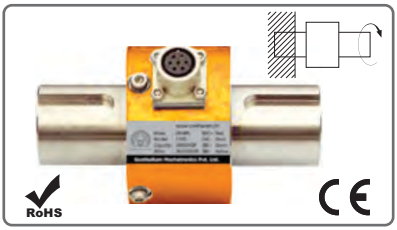
Specifications are subject to change without notice

STATIC TORQUE DUAL SHAFT - STDS (2kgf.cm ~ 100kgf.m)

NON - ROTARY TORQUE TRANSDUCER

FEATURES

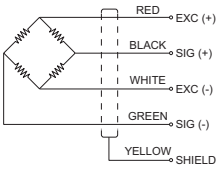
A static torque sensor for measurement of torque of stationery objects or within a certain angle of rotation. Suitable for torque measurement of various automobile parts, pneumatic and electric screwdriver etc.



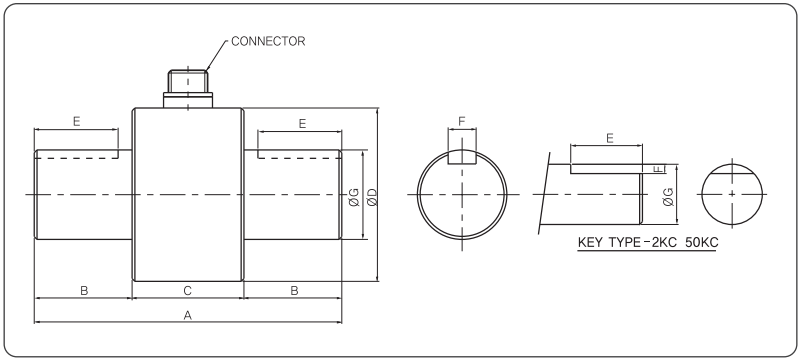
TECHNICAL SPECIFICATION

Model	STDS
Rated Capacity (R.C)	2kgf-cm ~ 100kgf-m
Rated output (R.O)	1mV/V ± 1%
Non-linearity	0.3% of R.O.
Hysteresis	0.2% of R.O.
Repeatability	0.1% of R.O.
Excitation recommandad	10VDC
Temp. range, compensated	0.3% R.O./10°C
Temp. range, safe	0.2% Load/10°C
Safe overload	120% R.C.

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

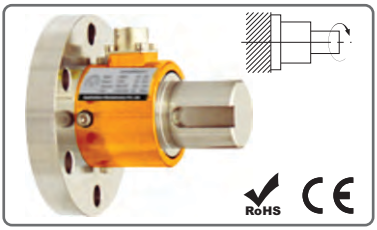
Unit : mm

Capacity	A	B	C	ØD	E	F	G
2, 5, 10, 20 kgf.cm	75	20	35	34	15	1	8
30, 50 kgf.cm	75	20	35	34	15	1	12
1, 2 kgf.m	82	21	40	40	16	5x5	18
3, 5 kgf.m	82	21	40	43	16	5x5	18
10, 20 kgf.m	110	35	40	62	30	10x8	32
50, 100 kgf.m	155	55	45	84	50	12x8	47

Specifications are subject to change without notice

STATIC TORQUE FLANG & SHAFT - STFS (2kgf.cm ~ 100kgf.m)

NON - ROTARY TORQUE TRANSDUCER



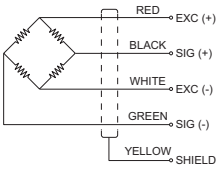
FEATURES

A static torque sensor for measurement of torque of stationery objects or within a certain angle rotation. Suitable for torque measurement of various automobile parts. pneumatic and electric screwdriver etc.

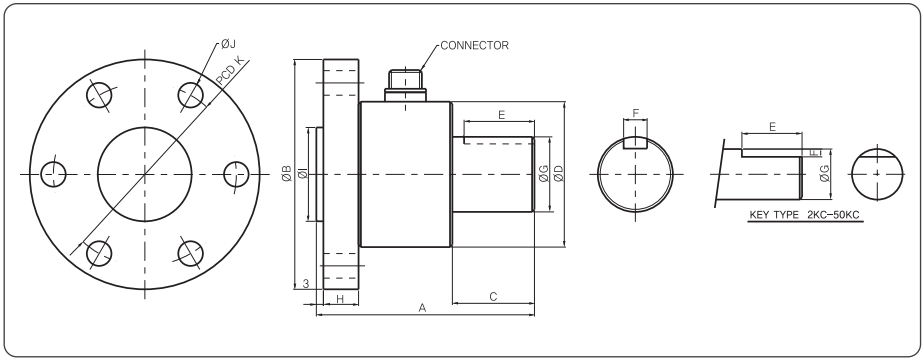
TECHNICAL SPECIFICATION

Model	STFS
Rated Capacity (R.C)	2kgf-cm ~ 100kgf-m
Rated output (R.O)	1mV/V ± 1%
Non-linearity	0.3% of R.O.
Hysteresis	0.2% of R.O.
Repeatability	0.1% of R.O.
Excitation recommandad	10VDC
Temp. range, compensated	0.3% R.O./10°C
Temp. range, safe	0.2% Load/10°C
Safe overload	120% R.C.

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

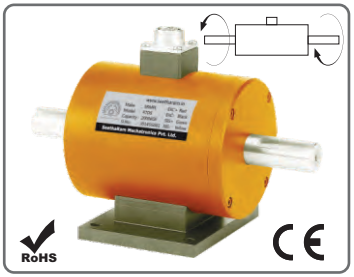
Unit : mm

Capacity	A	B	C	D	E	F	G	H	I	J	K
2, 5, 10, 20 kgf.cm	63	58	20	34	15	1	8	5	20	4-Ø4.5	46
30, 50 kgf.cm	68	80	20	34	15	1	12	10	40	4-Ø6.5	66
1, 2, 3, 5 kgf.m	74	80	21	43	16	5x5	18	10	40	4-Ø6.5	66
10, 20 kgf.m	93	98	35	50	30	10x8	32	15	40	6-Ø10.5	78
50, 100 kgf.m	123	146	55	84	50	12x8	47	20	60	6-Ø13	115

Specifications are subject to change without notice

ROTARY TORQUE DUAL SHAFT - RTDS (2kgf.cm ~ 2000kgf.m)

SHAFT TYPE ROTARY TORQUE TRANSDUCER



FEATURES

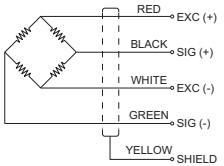
Model RTDS torque sensor measures the torque of continuous rotating object. Platinum coated connector provides long term signal stability and high accuracy. These models are most appropriate for industrial measurement. Applications include the performance testers for automotive components such as clutch, transmissions, motors and pumps.

Option: Foot mount.

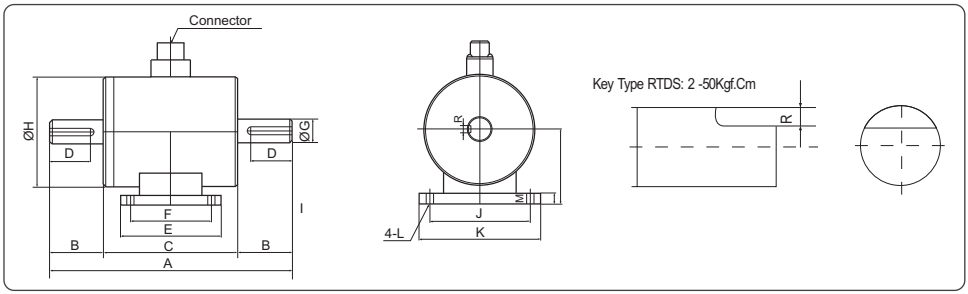
TECHNICAL SPECIFICATION

Model	RTDS
Rated Capacity (R.C)	2, 5, 10, 20, 30, 50 kgf-cm 1,2,3,5,10,20,50,100,500,1000,2000kgf-m
Rated output (R.O)	1.5mV/V ± 1% (2kgf-cm ~ 5kgf-m:1mV/V)
Non-linearity	0.3% R.O
Hysteresis	0.3% R.O
Repeatability	0.2% R.O
Excitation recommandad	10V
Terminal resistance	350Ω ± 5%
Insulation resistance bridge	200MΩ
Temp. effect on rated output	0.3% R.O./10°C
Temp. effect on zero balance	0.2% Load/10°C
Safe overload	120% R.C.
Cable length	Ø7.4 core cable 3m

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

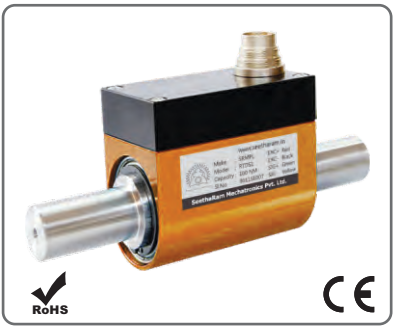
Unit : mm

Capacity	A	B	C	D	E	F	ØG	ØH	I	J	K	ØL	M	R	R.P.M
2, 5, 10, 20 kgf-cm	84	16	52	12	42	32	8	60	34	65	76	5.5	8	1	3000
30, 50 kgf-cm	84	16	52	12	42	32	12	60	34	65	76	5.5	8	1.5	3000
1, 2, 3 kgf-m	90	16	58	12	46	32	18	72	41	80	94	6.5	8.5	5x5	5000
5, 10 kgf-m	180	42.5	95	35	64	50	18	80	46	80	100	7	12	5x5	5000
20, 50 kgf-m	220	55	110	45	100	84	32	100	63	98	115	7	12	10x8	4000
100, 200 kgf-m	280	80	120	69	120	98	47	100	66	124	148	8.5	15	12x8	4000
500, 1000 kgf-m	390	130	130	100	126	100	90	172	101	154	180	11	20	25x14	2000
2000 kgf-m	440	150	140	120	148	110	115	210	130	190	228	13	23	32x18	2000

Specifications are subject to change without notice

ROTARY TORQUE DUAL SHAFT - RTDS1 (0.1Nm....20000Nm)

Contactless Torque Sensor, Rotating



FEATURES

- Nominal torque from 0.1N.m .... 20000 N.m
- Accuracy class optional 0.05%
- Active output ±5 V
- Contactless data transmission
- Very short axial length
- Feather key groove on option.

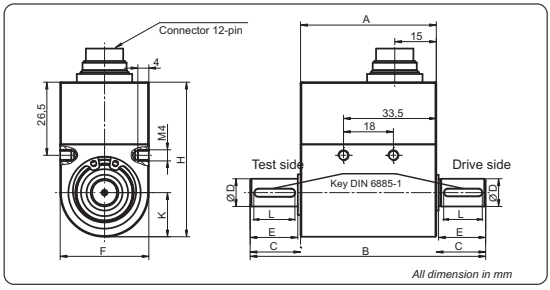
TECHNICAL SPECIFICATION

Model	RTDS1
Accuracy Class	0.1% F.S
Repeatability	±0.02%
Excitation voltage	12...28V DC
Current consumption	max. 60 mA
Output signal	±5V
Output current max.	5 mA short circuit resist
Control signal excitation	L<2,0; H>3,5V
Sample rate	10 kSample
Reference temperature	23°C
Nominal temperature range	5...45°C
Service temperature range	0...60°C
Storage temperature range	-10...70°C
Temp. coeff. of sensitivity	±0.01% F.S.
Temp. coeff. of zero signal	±0.02% F.S.
Service torque (static)	150% F.S.
Limit torque (static)	200% F.S.
Ultimate torque (static)	>300% F.S.
band width	70 (peak - peak)
Level of protection	IP50
Electrical connection	12 Pin series 581

ELECTRICAL CONNECTION

12-PIN	RTDS1
Pin A	NC
Pin B	Opt. angle B
Pin C	Signal (+)
Pin D	Signal (GND)
Pin E	Supply (GND)
Pin F	Supply (+)
Pin G	Opt. angle A
Pin H	NC
Pin J	NC
Pin K	Control signal
Pin L	NC
Pin M	Shield

DIMENSION DETAILS



DIMENSION TABLE

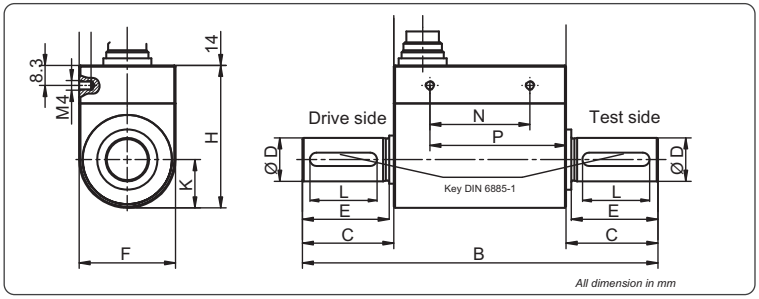
Unit : mm

Measuring Range N.m	A	B	C	ØD	E	F	H	K	L	Key way
0.1, 0.2, 0.5, 1, 2, 5	49	85	18	8 g6	17	32	56	16	14	2 x 2 x 14
10	49	85	18	10 g6	17	32	56	16	14	3 x 3 x 14

Specifications are subject to change without notice

ROTARY TORQUE TRANSDUCER

DIMENSION DETAILS

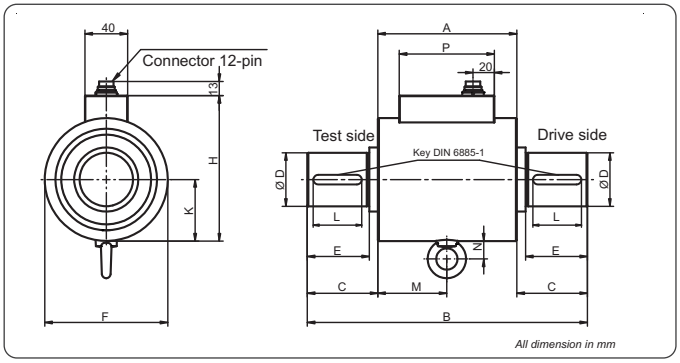


DIMENSION TABLE

Unit : mm

Measuring Range N.m	A	B	C	ØD	E	F	H	K	M	N	P	Q	L	Key way
20, 30	71.5	111.5	20	18 g6	18	40	59	20	5	41.5	56.5	12	14	6 x 6 x 14
50, 100	71.5	147.5	38	18 g6	36	40	59	20	5	41.5	56.5	12	30	6 x 6 x 30
200, 500	72.5	159.5	43.5	32 g6	38	58	76	29	6	29.5	51.5	15	36	10 x 8 x 36

DIMENSION DETAILS



DIMENSION TABLE

Unit : mm

Measuring Range N.m	A	B	C	ØD	E	F	H	K	M	N	P	L	Key way
1000	130	262	66	50 g6	58	115	136	57.5	65.5	18	89	50	14 x 9 x 60
2000, 5000	135	377	121	70 g6	110	139	161	69.5	67.5	18	89	100	20 x 12 x 100
10000, 20000	190	470	140	110 g6	120	210	233	109	95	18	89	160	28 x 16 x 160

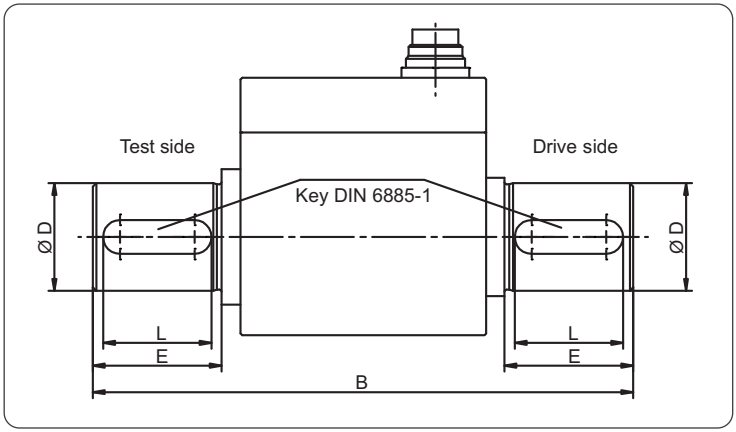
ROTARY TORQUE TRANSDUCER

OPTION CALIBRATIONS

Description	Steps	Norm
Linearity diagram	25%	Factory standard
Linearity diagram	10%	
Proprietary calibration	3	VDI/VDE 2646
Proprietary calibration	5	
Proprietary calibration	8	
DKD - Calibration		on request

OPTION / ACCESSORIES

Description
Accuracy class 0.05% F.S.
Output signal ±10 V
Speed/angle measurement, 2 x 360 impulses, 90° displaced, 5 V TTL
Speed measurement, 1 x 60 impulses, 5 V TTL
Female cable connector 12-pin series 581
Female angled connector 12-pin series 682
Connection cable, 3 m, 12-pin series 581, free soldered ends
Connection cable angled, 3 m, 12-pin series 682, free soldered ends
Feather key groove according DIN 6885 - on request

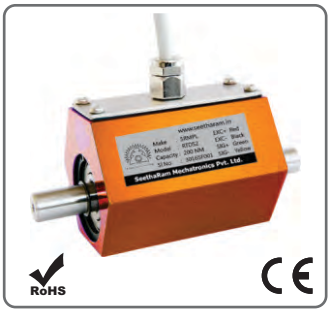


DIMENSION TABLE

Measuring Range N.m	B	ØD	E	L	Key Way
0.1, 0.2, 0.5, 1, 2, 5	85	8 g6	17	14	2 x 2 x 14
10	85	10 g6	17	14	3 x 3 x 14
20, 30	111.5	18 g6	18	14	6 x 6 x 14
50, 100	147.5	18 g6	36	30	6 x 6 x 30
200, 500	159.5	32 g6	38	36	10 x 8 x 36
1000	262	50 g6	58	50	14 x 9 x 50
2000, 5000	377	70 g6	110	100	20 x 12 x 100
10000, 20000	570	110 g6	170	160	28 x 16 x 160

ROTARY TORQUE DUAL SHAFT - RTDS2 (0.2Nm....200Nm)

ROTARY TORQUE TRANSDUCER



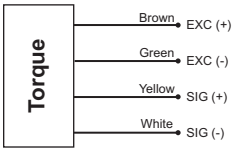
FEATURES

- Contactless signal transmission
- Maintanence free
- Cut off frequency: 1kHz
- Active output signal ±5V, (Option ±10V)
- Dual Shaft without key

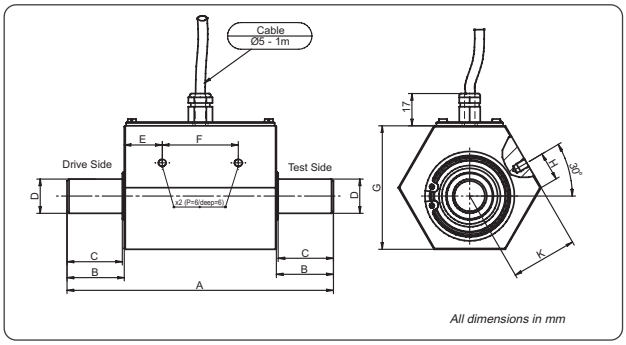
TECHNICAL SPECIFICATION

Model	RTDS2
Accuaracy Class	0.25% F.S.
Repeatability	±0.05% F.S.
Cut off frequency	1 Khz (-3 dB)
Supply Voltage	12...28 VDC
Output Signal	±5V, (Option ±10V)
Current Consumption	max 50mA
Service torque	150% F.S.
Limit Torque	180% F.S.
Ultimate torque	>250% F.S.
Nominal temperature range	+5...+45 ºC
Service temperature range	0...+60ºC
Temperature coeficient of sensitivity	±0.02% F.S/ºC
Temperature coeficient of zero signal	±0.04% F.S/ºC
Level of protection (DIN 40 050)	IP50

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

Unit : mm

Torque (Nm)	A	B	C	ØD	E	F	G	H	K	Threaded holes
0.2, 0.5, 1, 2	100	18	17	8 g6	14.5	35	46	8	26	M4
5, 10, 15*	100	18	17	10 g6	14.5	35	46	8	26	M4
20*, 50	140	30	29	18 g6	20	40	65	15	34.8	M5
100, 200	160	40	39	22 g6	20	40	65	15	34.8	M5

*Its not a regular model on request for extra price

Specifications are subject to change without notice

ROTARY TORQUE DUAL SHAFT - RTDS3 (0.1Nm....20000Nm)

ROTARY TORQUE TRANSDUCER

FEATURES

- Active output ±5V
- Sample rate 10 ksample
- Nominal torque from 0.1 N·m ... 20000 N·m
- Speed up to 15000 min-1
- Very short axial length
- High torsional stiffness

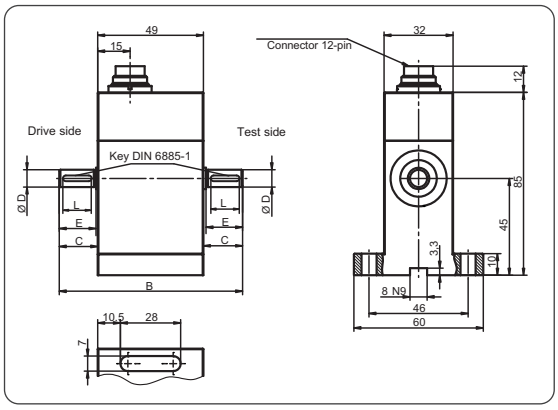
TECHNICAL SPECIFICATION

Model	RTDS3
Accuracy Class	0.2 (0.1)% F.S
Repeatability	±0.02(±0.04)%
Excitation voltage	12...28V DC
Current consumption	<60 mA
Output signal	0...±5V
Output current max.	5 mA short circuit resist
Calibration control	L<2,0; H>3,5V
Sample rate	10 kSample
Reference temperature	+23°C
Nominal temperature range	+5...+45°C
Service temperature range	0...+60°C
Storage temperature range	-10...+70°C
Temp. coeff. of sensitivity	±0.01(±0.015)% F.S.
Temp. coeff. of zero signal	±0.02(±0.03)% F.S.
Service torque (static)	150% F.S.
Limit torque (static)	200% F.S.
Ultimate torque (static)	>300% F.S.
Band width	70 (peak - peak)
Level of protection	IP50
Electrical connection	12 Pin series
Speed control (Option)	6 Impulses
Output signal (Options)	0...±10V

ELECTRICAL CONNECTION

8-PIN	RTDS3
Pin A	NC
Pin B	Opt. angle B
Pin C	Signal (+)
Pin D	Signal (GND)
Pin E	Excitation (GND)
Pin F	Excitation (+)
Pin G	Opt. angle A
Pin H	NC
Pin J	NC
Pin K	Calibration Control
Pin L	NC
Pin M	Shield

DIMENSION DETAILS



Specifications are subject to change without notice

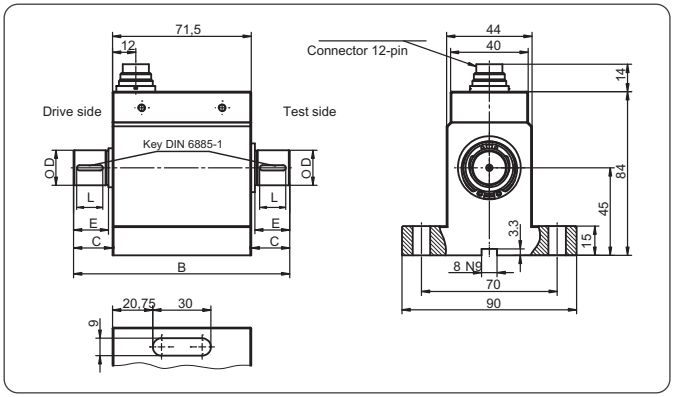
ROTARY TORQUE TRANSDUCER

DIMENSION TABLE

Dimensions : mm

Measuring Range	B	C	D	E	L	Key Way
0.1, 0.2, 0.5, 1	85	18	8g6	17	14	2 x 2 x 14

DIMENSION DETAILS

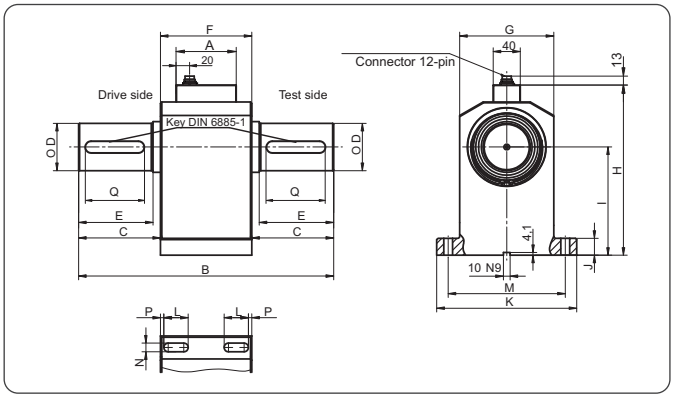


DIMENSION TABLE

Dimensions : mm

Measuring Range	B	C	D	E	L	Key Way
2, 5	107.5	18	8g6	17	14	2 x 2 x 14
10	107.5	18	10g6	17	14	3 x 3 x 14
20, 30	111.5	20	18h6	18	14	6 x 6 x 14
50, 100	147.5	38	18g6	36	30	6 x 6 x 30

DIMENSION DETAILS



Specifications are subject to change without notice

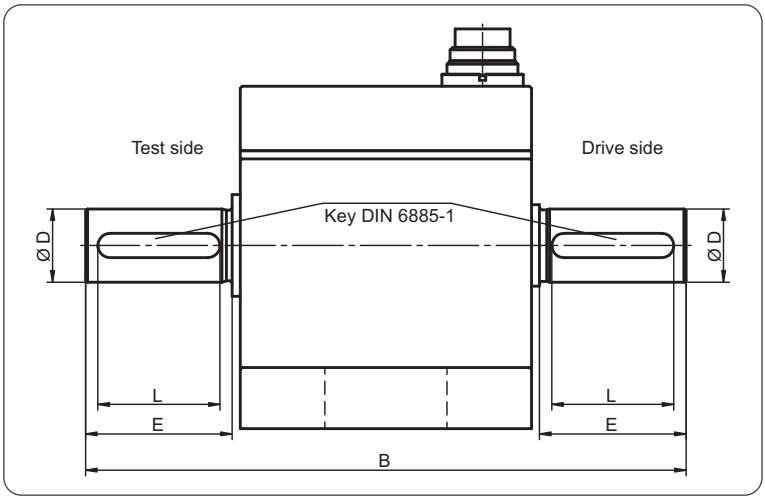
Bridging Gaps in Technology

ROTARY TORQUE TRANSDUCER

DIMENSION TABLE

Dimensions : mm

Measuring Range	A	B	C	ØD	E	F	G	H	I	J	K	L	M	N	P	Q	Key Way
200, 500	89	217	43.5	32 g6	38	130	115	190.4	112	20	175	30	145	11	5	36	10 x 8 x 36
1000	89	262	66	50 g6	58	130	115	190.4	112	20	175	30	145	11	5	50	14 x 9 x 50
2000*, 5000*	89	377	121	70 g6	110	135	139	251.5	160	25	207	36	173	13	5	100	20 x 12 x 100
10000*, 20000*	89	470	140	110 g6	120	190	210	343	215	40	300	45	260	17	15	160	28 x 16 x 160

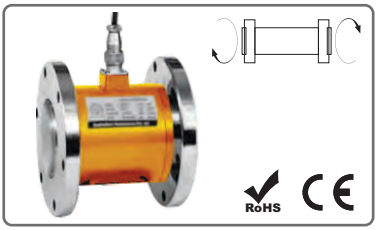


DIMENSION DETAILS

Measuring Range N.m	B	ØD	E	L	Key Way
0.1, 0.2, 0.5,	85	8 g6	17	14	2 x 2 x 14
1, 2, 5	107.5	8 g6	17	14	2 x 2 x 14
10	107.5	10 g6	17	14	3 x 3 x 14
20, 30	111.5	18 g6	18	14	6 x 6 x 14
50, 100	147.5	18 g6	36	30	6 x 6 x 30
200, 500	217	32 g6	38	36	10 x 8 x 36
1000	262	50 g6	58	50	14 x 9 x 50
2000, 5000	377	70 g6	110	100	20 x 12 x 100
10000, 20000	570	110 g6	170	160	28 x 16 x 160

ROTARY TORQUE DUAL FLANGE - RTDF (20kgf.m ~ 500kgf.m)

ROTARY TORQUE TRANSDUCER



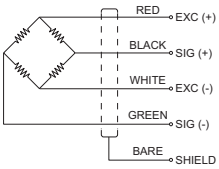
FEATURES

Model RTDF slipring rotating torque transducers have flange drives at both ends. This model is designed for the application with minmal space and high capacity requirement.

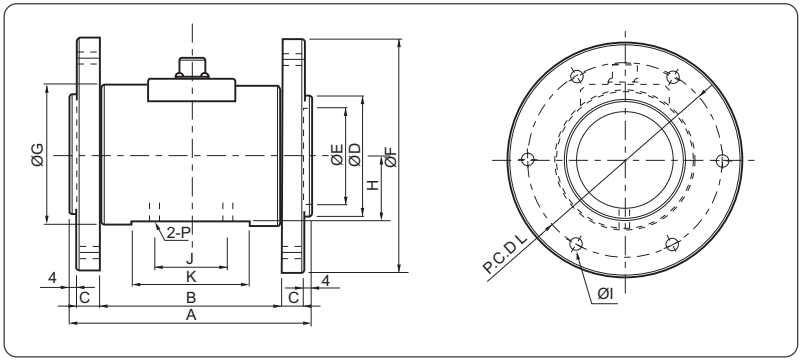
TECHNICAL SPECIFICATION

Model	RTDF
Rated Capacity (R.C)	20kgf-m ~ 500kgf-m
Rated output (R.O)	1.5mV/V ± 1%
Non-linearity	0.3% of R.O.
Hysteresis	0.3% of R.O.
Repeatability	0.3% of R.O.
Terminal resistance, input	350Ω ± 5Ω
Terminal resistance, output	350Ω ± 3Ω
Insulation resistance	300MΩ
Temp. range, compensated	-10°C ~ 60°C
Temp. range, safe	-20°C ~ 70°C
Temp. effect, on zero balance	0.08% R.O./10°C
Temp. effect, on rated output	0.08% Load/10°C
Excitation recommended	10VDC
Safe overload	150% R.C.
Cable	Ø7 Shield 3m

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

Unit : mm

Capacity	A	B	C	ØD	ØE	ØF	ØG	H	I	J	K	L	P	R.P.M
20kgf-m	130	98	12	65	52	127	81	38	6-Ø6.5	50	64	105	M6 DP.8	5,000
50kgf-m	134	102	12	76	62	136	88	41.5	6-Ø8.5	40	64	114	M6 DP.8	4,000
100kgf-m	134	102	12	86	68	156	100	48	8-Ø10.5	48	64	130	M8 DP.8	4,000
200, 300kgf-m	148	108	16	102	75	172	116	56	8-Ø10.5	50	68	146	M8 DP.8	3,000
500kgf-m	150	102	16	107	81	184	128	62	8-Ø10.5	56	74	158	M8 DP.8	3,000

Specifications are subject to change without notice

Bridging Gaps in Technology

ROTARY TORQUE SOCKET WRENCH - RTSW (2kgf.cm ~ 3000kgf.cm)

SOCKET WRENCH TYPE ROTARY TORQUE TRANSDUCER

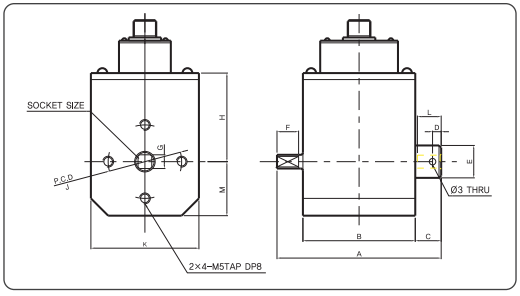
FEATURES

- Model RTSW socket wrench torque sensors are used for fast, accurate measurement of bolt or nut wrenching torques.
- This model operates in both directions so tightening and break-away torques can be measured.
- It can also be used to check the calibration of mechanical torque wrenches.

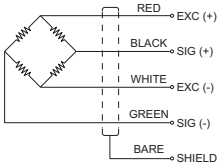
TECHNICAL SPECIFICATION

Model	RTSW
Rated capacity (R.C)	2kgf.cm ~ 3000kgf.cm
Rated output (R.O)	1.3mV/V ±1%
Non-linearity	0.3% R.O.
Hysteresis	0.3% R.O.
Repeatability	0.3% R.O.
Terminal resistance, input	350 ± 3.5Ω
Terminal resistance, output	350 ± 3.5Ω
Insulation resistance	300MΩ
Temp. range, compensated	-10°C~60°C
Temp. range, safe	-20°C~70°C
Safe overload	150% R.C.
Temp. effect on zero balance	0.05% R.O/10°C
Temp. effect on rated output	0.1% Load/10°C
Excitation recommended	10V DC
Safe overload	150% R.C.
Cable	Ø4 shield 3m

DIMENSION DETAILS



WIRING INFORMATION



DIMENSION TABLE

Unit : mm

Capacity	Socket Size	A	B	C	D	ØE	F	G	M	K	L	J	H
2, 5, 10 kgf.cm	1/4"	76	52	12	4	15	10	6.35	25	50	11	34	41
20, 50 kgf.cm	3/8"	82	56	12	4	15	12.5	9.53	25	50	13	34	41
100, 300 kgf.cm	1/2"	96	58.5	19.5	7	20	16	12.7	31	62	17	44	42
500, 1000 kgf.cm	3/4"	106	58	24	10	30	22	19.1	34	68	22	52	53
2000, 3000 kgf.cm	1"	123	58	33	14	40	29.2	25.4	39	78	28	62	54

Specifications are subject to change without notice

ROTARY TORQUE SOCKET WRENCH - RTSW (M) (1Nm .... 5000 Nm)

SOCKET WRENCH TYPE ROTARY TORQUE TRANSDUCER

FEATURES

- Nominal torque from 1 N·m ... 5000 N·m
- High accuracy 0.1% f. scale
- Drive-square socket
- Output-square drive
- Very short axial length
- High torsional stiffness
- Reliable and durable
- Simple handling and assembly
- Special versions on request

TECHNICAL SPECIFICATION

Model	RTSW (M)
Accuaracy Class	0.1% F.S
Repeatability	±0.05% F.S
Excitation Voltage	12 VDC(max 15VDC)
Bridge resistance	350Ω
Sensitivity	1mV/V(1N.m;0.5mV/V)±0,1%
Reference temperature	23°C
Nominal temp. range	5 .... 50°C
Service temp. range	-10 .... 60°C
Temperature coeff. of zero signal	±0.04% F.S./K
Temperature coeff. of sensitivity	±0.02% F.S./K
Service torque	150% F.S.
Limit torque	200% F.S.
Ultimate torque	>300% F.S.
Durability of brushes	$5x10^7$ Rev
Band width	70% F.S (Peak to Peak)
Level of protection	IP50
Electrical Protection	6Pin

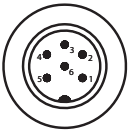
ELECTRICAL CONNECTION

6 Pin Connector

Pin 1 - Exc(-) Pin 4 - Sig(+)

Pin 2 - Exc(+) Pin 5 - Sig(-)

Pin 3 - Shied Pin 6 - Control Signal



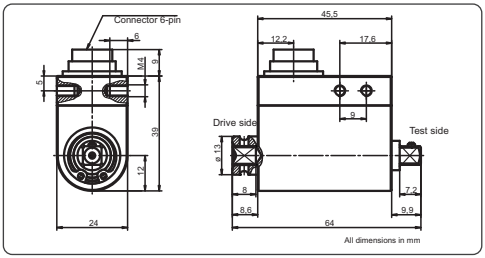
Top View

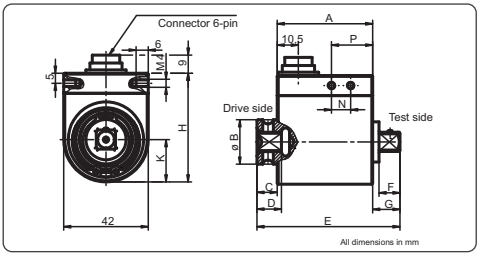
OPTION

- Control signal 100% F.S

DIMENSION DETAILS

Torque Range: 1, 2, 5, 12 Nm
Square : 1/4"





Specifications are subject to change without notice

Bridging Gaps in Technology

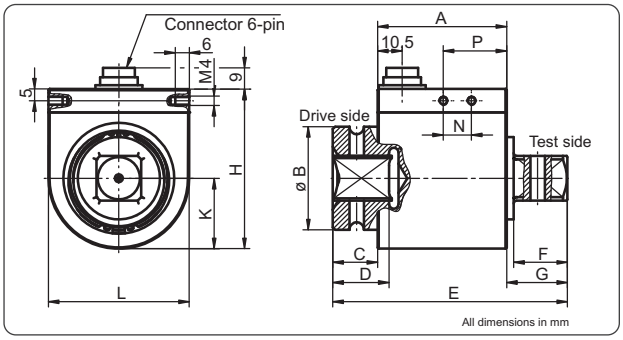
SOCKET WRENCH TYPE ROTARY TORQUE TRANSDUCER

DIMENSION TABLE

Unit : mm

Torque (Nm)	Square	A	ØB	C	D	E	F	G	H	K	L	N	P
25/63	3/8"	47.4	22	10.1	12.2	71	10.4	13.5	54	21	42	9.5	20.5
100/160/120	1/2"	47.4	29.8	10.7	15	76	15.1	17.9	54	21	42	9.5	20.5

DIMENSION DETAILS



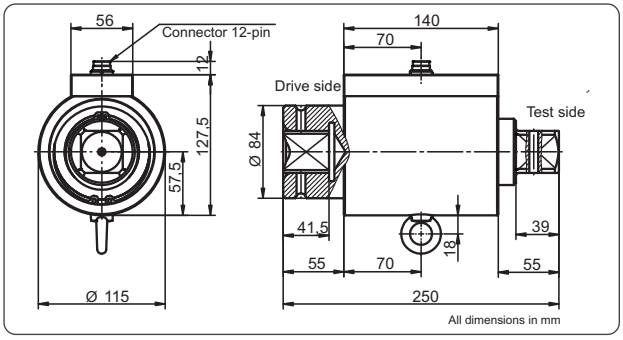
DIMENSION TABLE

Unit : mm

Torque (Nm)	Square	A	ØB	C	D	E	F	G	H	K	L	N	P
500	3/4"	55	44	19	24	100	22.9	26	68	30	60	12	27
1000	1"	55	54	33	27	132	27.4	44	68	30	60	12	27

DIMENSION DETAILS

Torque Range: 2000, 5000 Nm
Square : 1 1/2"



Specifications are subject to change without notice

SLIPRING TYPE ROTARY - RTDS (M) (1Nm .... 500 Nm)

SLIPRING TYPE ROTARY TORQUE TRANSDUCER

FEATURES

- High accuracy 0.1% F.S.
- Both shaft ends with keys
- Very short axial length
- High torsional stiffness
- Reliable and durable
- Simple handling and assembly

TECHNICAL SPECIFICATION

Model	RTDS (M)
Accuaracy Class	0.1% F.S
Repeatability	±0.05% F.S.
Excitation Voltage	2...12 Vcc
Sensitivity	1mV/V for (1NM:0.5)±0.1%
Bridge resistance	350Ω
Reference Temperature	23ºC
Nominal temp. range	+5 .... +50ºC
Service temp. range	-10 ... +60ºC
Temperature coeff. of sensitivity	±0.02% /ºC
Temperature coeff. of zero	±0.04% /ºC
Service torque	150% F.S.
Limit torque	200% F.S.
Ultimate torque	300% F.S.
Durability of brushes	$5x10^7$, tr/min
Level of protection	IP 50
Connector	6 Pin

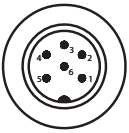
ELECTRICAL CONNECTION

6 Pin Connector

Pin 1 - Exc(-) Pin 4 - Sig(+)

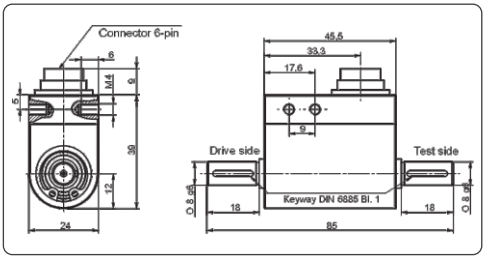
Pin 2 - Exc(+) Pin 5 - Sig(-)

Pin 3 - Shied Pin 6 - Control Signal

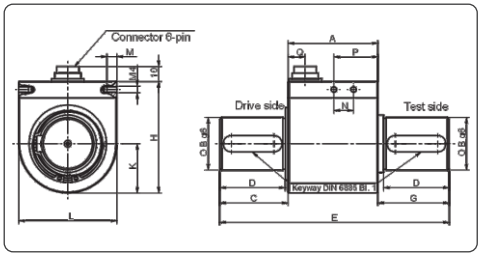


DIMENSION DETAILS

Torque Range: 1, 2, 5, 10 Nm



Torque Range: 20, 50, 100, 200, 500Nm



DIMENSION TABLE

Unit : mm

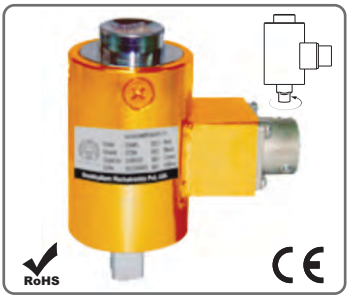
Torque (Nm)	A	B	C	D	E	G	H	K	L	M	N	P	Q
20, 50	47.4	15	21.1	20	90	21.5	54	21	42	6	9.5	11	10.5
100	47.4	18	24	22	95	23.6	54	21	42	6	9.5	11	10.5
200, 500	55	32	41.6	40	140	43.4	68	30	60	6	27	12	10.5

Specifications are subject to change without notice

Bridging Gaps in Technology

STATIC TORQUE SOCKET WRENCH - STSW (2kgf.cm ~ 1000kgf.cm)

NON - ROTARY TORQUE TRANSDUCER



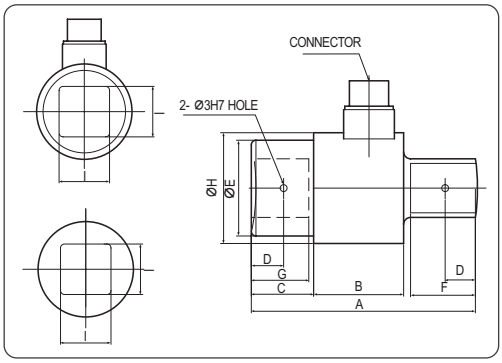
FEATURES

- Adaptable for portable usage
- No special adapter tools required
- Precision repeatable torque measurements
- Calibration reference for 'hard usage' mechanical torque wrenches

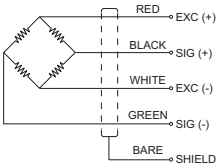
TECHNICAL SPECIFICATION

Model	STSW
Rated Capacity (R.C)	2,5,10,20,50,100,200,500,100kgf-cm
Rated output (R.O)	1mV/V ± 1%
Non-linearity	0.3% of R.O.
Hysteresis	0.3% of R.O.
Repeatability	0.2% of R.O.
Excitation recommended	10VDC
Terminal resistance, input	350Ω ± 30Ω
Terminal resistance, output	350Ω ± 2Ω
Insulation resistance bridge	2000MΩ
Temp. range, compensated	-10°C ~ 60°C
Temp. range, safe	-10°C ~ 80°C
Safe overload	120% R.C.
Cable length	Ø5, 4core 5m

DIMENSION DETAILS



WIRING INFORMATION



DIMENSION TABLE

Unit : mm

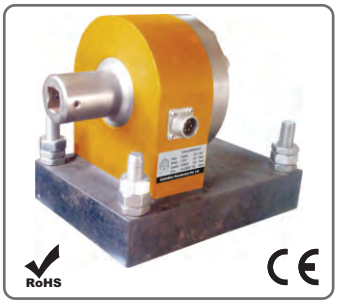
Capacity	A	B	C	D	ØE	F	G	ØH	I
2 kgf-cm	58	33	12	4	14	11	11	28	6.35
5, 10kgf-cm	60	33	13	5.5	16.5	12.5	12	28	9.53
20, 50kgf-cm	60	33	13	5.5	16.5	12.5	13	28	9.53
100, 200 kgf-cm	71	37	16	7	22	16	17	28	16
500, 1000kgf-cm	98	39	27	14	41.5	29	27	48	25.4

Specifications are subject to change without notice

REACTIVE TORQUE TRANSDUCER

FEATURES

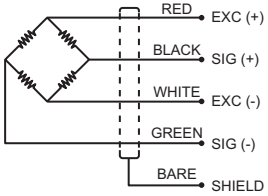
- Active output signal ±5V
- Sample rate 5 ksample per channel



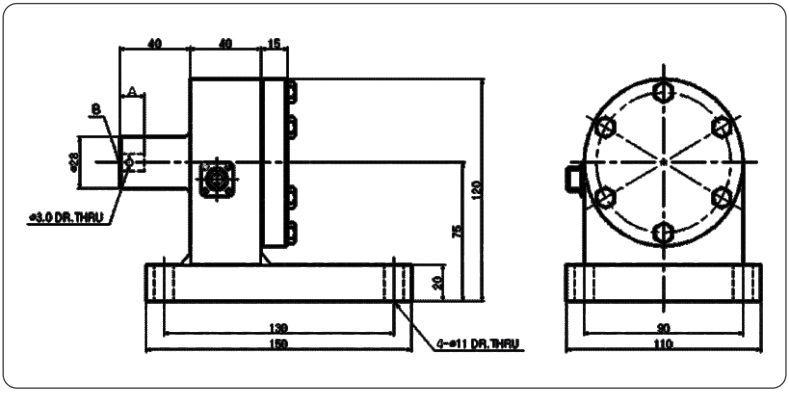
TECHNICAL SPECIFICATION

Model	STWC
Rated capacity (R.C)	1000, 2000kgf.cm
Rate output (R.O)	1.5mV/V
Non-linearity	≤ 0.3% R.O
Hysteresis	≤ 0.3% R.O
Non-repeatability	≤ 0.3% R.O
Terminal resistance, input	350Ω ± 1%
Terminal resistance, output	350Ω ± 1%
Insulation resistance	2000MΩ
Temp. effect on rated output	≤ 0.05% LOAD/10°C
Temp. effect on zero balance	≤ 0.05% R.O./10°C
Excitation Voltage	10V DC
Safe overload	150% R.C.
Cable	φ7 shield 5m

WIRING INFORMATION



DIMENSION DETAILS



DIMENSION TABLE

Dimensions : mm

Capacity	Socket size	A	B
1000 kgf.cm	3/8″	14	9.53
2000 kgf.cm	1/2″	17	12.7

Specifications are subject to change without notice

UNI-POT

SIGNAL CONDITIONER FOR POTENTIOMETRIC TRANSDUCER

The UNI-POT signal conditioners have been designed to enable the user to adapt the output impendence of linear or rotative displacement transducers Potentiometric with acquisition systems or PLC, in a way that does not alter the linearity of the transducer itself.

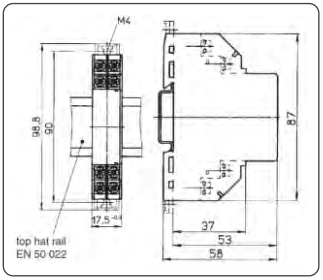
FEATURES

- High impendence input >80Mohm
- Voltage output 0...10V
- Linearity error <0.03% full scale output
- Low thermal drift 0.01% full scale /°C
- Suitable for DIN rail mounting En50022

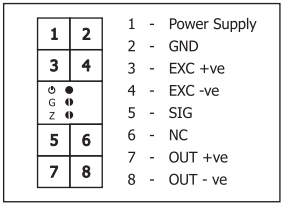
TECHNICAL SPECIFICATION

Model	UNI-POT
Linearity error	< 0.03% FSO
Transducer resistance	1...20kΩ
Input Impendence of cond.	> 80MΩ
Output load resistance	> 10kΩ
Supply voltage	20...32Vdc
Current drain	<60mA
Supply voltage to transducer	10Vdc
Zero signal accuracy	±0.1% FSO
Full scale output	10Vdc
Full scale output accuracy	±0.1% FSO
Inverse polarity protection	Yes
Response time (10...90% FSO)	<6ms
Typical thermal drift of zero	±0.01% FSO/°C
Typical thermal drift of span	±0.01% FSO/°C
Case material	Polyamide
IP Protection Class	IP40
Weight (g)	55

DIMENSION DETAILS



ELECTRICAL CONNECTION



OTHER PRODUCTS

POWER CARD

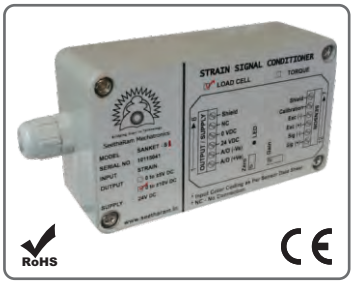
POTENTIOMETER

DUPOT

Specifications are subject to change without notice

SANKET - S, S1, S4, S5 SERIES

STRAIN GAUGE SIGNAL CONDITIONER



Conditioning electronics SANKET - S Series can be connected to strain gauge transducers (load cells, pressure transducers, torque meters and Wheatstone bridges with strain gauges).

SANKET - S Series are to be externally fed power supply, they feed power supply to connected transducer and condition its analog signal by giving an easy to calibrate amplified output.

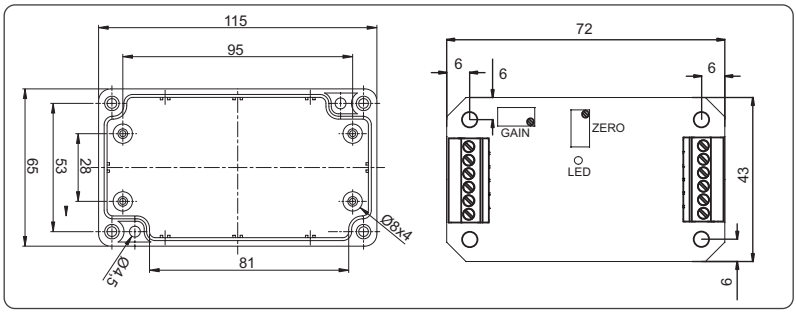
FEATURES

- SANKET feeds power supply to connected transducer and amplifies its signal.
- Many types of outputs: voltage and current.
- Easy to calibrate: by means of zero and gain trimmers.
- Compact: small dimensions allow many applications.
- Easy connections: by means of extractable screw terminal boards.

TECHNICAL SPECIFICATION

MODEL	SANKET S1	SANKET S4	SANKET S5
Output	0 to ±10Vdc	4-20mA 2 wires	0 to ±5Vdc
Input Signal	±80mVdcdifferential		
Card Power Supply	18-28Vdc filt. stab	12-40Vdc filt. stab	10.5-28Vdc filt. stab
Transd. Power Supply	15Vdc	1Vdc	8Vdc
Zero	±100% F.S		
Gain	0 to 1000		
Temperature	–40 up to +85°C		

DIMENSION DETAILS



CALIBRATION:

Zero and gain trimmers are used for calibration and a LED is signaling when SANKET - S Series is powered.

PROTECTION AGAINST ELECTROMAGNETIC NOISE:

SANKET - S Series allow to amplify analog low amplitude signals from connected transducers and to transmit them far away even in electrically noised environment and to recover the drop of voltage on connection cables.

LOAD RESISTANCE:

SANKET - S4(4-20mA 2 wires) needs an external load resistance (not included) to be applied in series to one of the two power supply conductors (typically RL=250 Ohm with 24Vdc power supply).

SANKET - S DIN-RAIL SERIES UNIVERSAL

Universal signal conditioners amplify and condition all varieties of strain gage based sensors, delivering highly accurate signal outputs. Sensors may be connected in 4-, & 6-wire configurations. The modules offer adjustable excitation to energize load cells. Current limiting provides extra protection.

FEATURES

- Accepts signals from strain gages, load cells, torque Transducers and pressure transducers.
- 120 to 1000Ω bridge resistance
- User selectable sensor excitation 5V, 10V
- Zero and span adjustment by trim pot
- User selectable output options 0-5 V, 0-10 V and 4-20 mA

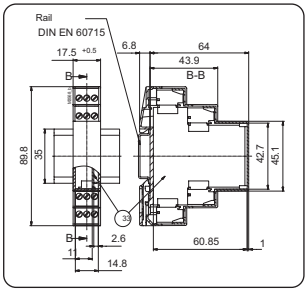
TECHNICAL SPECIFICATION

Model	UC211
Input signal	±80 mV
Output load resistance	350 ohm±20 ohm
Supply voltage	15...30VDC
Current drain with sensor connected	60mA
Supply voltage to transducer	5VDC or 10 vdc
Output signal at zero	0 VDC or 4mA
Zero signal accuracy (FSO)	<±1%
Zero adjustment (FSO)	>±15%
Full scale output	±10 VDC, ±5 VDC, 4-20mA
F.S. output accuracy	<±0.1%
Span adjustment	>±15%
Inverse polarity protection	YES
Shortcircuit protection	YES
Temp. range: (%FSO) compensated	0-60°C
Working	-10 ~ 80°C
Storage	-50 ~ 100°C
Case material	PC - GF, light grey RAL 7035
	Base plate: dark black RAL 9005
Grade of protection	IP40

ELECTRICAL CONNECTION

1 -	Supply +ve	7 -	Sig +ve
2 -	Supply -ve	8 -	NC
3 -	NC	9 -	Sig -ve
4 -	Voltage O/P	10 -	10V Exc
5 -	Current O/P	11 -	GND
6 -	GND	12 -	5V Exc

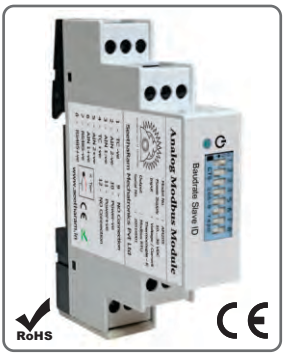
DIMENSIONAL DETAILS



Specifications are subject to change without notice

ANALOG TO MODBUS RTU MODULE

The analog to MODBUS Modules convert analog inputs signals to digital data and transmit via RS-485 using the MODBUS RTU protocol for communication. The Module can take 2 channels voltage / current and 1 channel Thermocouple. This module can communicate with PLC/PC applications to be used for machine automation, data logging and process control applications.



FEATURES

- 24 bit measurement resolution.
- 3 Channel Input - Two current / voltage, one Thermocouple input - User configurable
- Converts Analog sensor values to RS-485 protocol digital output
- Transient suppression on RS-485 communications lines, Built-in TVS/ESD Protection
- Dip-switch selection for Baud Rate and Slave ID selection

UNIQUE SELLING POINT

- Replace high cost Analog input module or Thermocouple module on PLC.
- Plug & Play - Get numeric value of analog value of sensor in directly on MODBUS
- High resolution (24 bit), in spite of any PLC configuration
- Compatible with low end PLC as well.
- Do away with expensive high end PLCs

APPLICATIONS

- Small machine automation - Interface to PLC
- Process monitoring and control
- Remote data logging to any host computer
- Product testing

ORDERING CODE

Current / Voltage selection is user configurable by jumper selection. However, if factory set selection required, use the following code.

Standard

Model	Channel 1	Channel 2	Channel 3
AM205	**Voltage**	**Voltage**	**Thermocouple K**
AM206	Voltage	Current	Thermocouple K
AM207	Current	Voltage	Thermocouple K
AM208	Current	Current	Thermocouple K

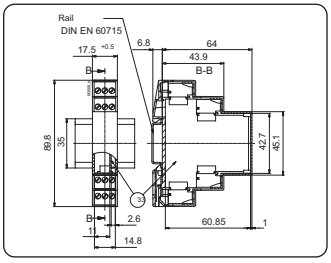
TECHNICAL SPECIFICATION

Model	AM205
Power supply	12 to 30VDC
Watchdog timer	System & Communication
Supported protocols	Modbus RTU
Channels	3
Input impedance	1MΩ for Voltage
Input type	V, mA & TC-K (mV)
Input range	0-10VDC,0-20mA & -200 to 1350°C
Accuracy	Voltage mode: ±0.1% or better than
	Current mode: ±0.2% or better than
	Temperature: ±1°C or better than
A/D Resolution	24bit
Communication	RS485
Sampling Rate	30 Sample/Sec/Channel for Voltage / Current
	10 Sample/sec for TC
Baud rate	9600 - 115200kbps (User selectable through dip switch)
Slave Id	1 - 15 (user selectable through dip switch)
Overvoltage Protection	YES
Built-in TVS/ESD Protection	YES
Operating Temperature (°C)	0-60
Storage Temperature (°C)	- 10 to 85
Protection class	IP40 (Enclosure), IP30 (Base plate), IP20 (Connecter cutout)
Mounting	Rail-DIN EN 60715
Dimension (mm)	17.5 x 90 x 71
Weight (gm)	65

ELECTRICAL CONNECTION

1 -	AIN 1-ve	7 -	RS485-ve
2 -	AIN 2-ve	8 -	RS485+ve
3 -	TC -ve	9 -	NO Connection
4 -	AIN 1+ve	10 -	Power-ve
5 -	AIN 2+	11 -	Power+ve
6 -	TC +ve	12 -	NO Connection

DIMENSIONAL DETAILS



Specifications are subject to change without notice

Bridging Gaps in Technology

WIRELESS MODBUS MODULE

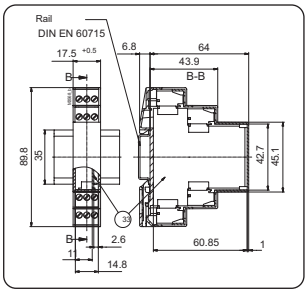
FEATURES

- 868MHz Low Power long range RF
- Provides RS-485 and USB Interfaces.
- Multiple power input design
- Extended network range and coverage.
- Easy maintenance and field installation.

TECHNICAL SPECIFICATION

Model	WM-TX
Power Consumption	<1W
Power Input	10-30V
Protocol	Modbus RTU
Connectors	Screw Terminal
Wireless Communication	
ISM Band	868 MHZ
Modulation Type	GFSK
Frequency Band	863-870 MHZ
ƒ RF Data Rate	Serial Data Rate: Up to 115.2 Kbps
Transmit Power	27 dBm
Receiver Sensitivity	-117 dBm
Topology	Star/Point to Point
Outdoor Range	>1 Km with line of sight
Network Capacity	16 nodes
ƒ Storage Temperature	-40°C~ 85°C (-40°F ~ 184°F)
ƒ Operating Humidity	20~95% RH
Storage Humidity	0~95% RH

DIMENSIONAL DETAILS

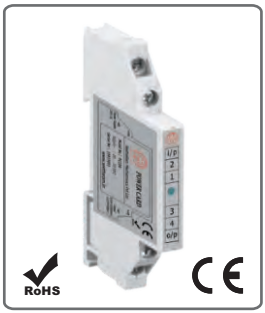


Specifications are subject to change without notice

POWER CARD

FEATURES

- Din rail mounting.
- Compact size - 8.8mm width



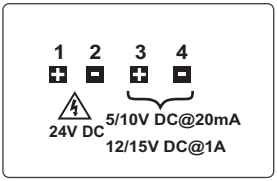
APPLICATIONS

Power supply for
1. Strain based sensor (Load cell, Torque, Pressure)
2. Potentiometeric sensors
3. Photo sensors
4. Drives and Actuators

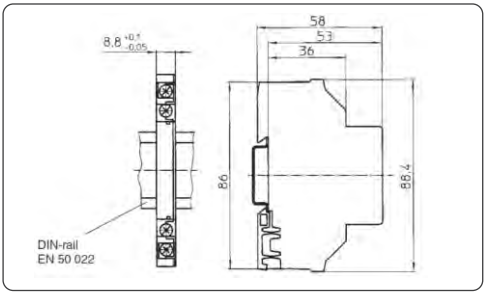
TECHNICAL SPECIFICATION

Model	Power Card	
Power Supply	20....32V DC	
Constant Output Voltage	5V DC@20mA	10V DC@20mA
	12V DC @1A	15V DC @1A
Auto cut off protection for input over voltage	Upto 32V DC	
Input Reverse Polarity Protection	Yes	
Output Short Circuit	Yes	
Case material	Polyamide	
IP Protection Class	Ip40	
Weight (g)	35	

ELECTRICAL CONNECTION



DIMENSION DETAILS



ORDERING DETAILS

PC 108 - 01	5V DC@20mA
PC 108 - 02	10V DC@20mA
PC 108 - 03	12V DC@1A
PC 108 - 04	15V DC@1A

OTHER PRODUCTS

LOAD CELLS

TORQUE TRANSDUCERS

DISPLACEMENT SENSORS

Specifications are subject to change without notice

Bridging Gaps in Technology

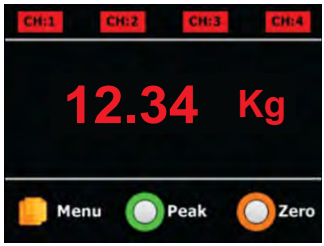
KOAL TOUCH

INDICATOR CONTROLLER

KOAL Touch series is designed specifically to work with strain sensors / Analog input / Encoders / LVDT. The setup sequence is simple and quick. It supports fast and high resolution measurements. The 2.8 inch resistive touch screen display is an impressive and user friendly interface for navigating the settings and menus. KOAL Touch can be used as Indicator Controllers for Industrial Press, Testing Machine, and SPMs etc.

FEATURES

- TFT 320 X 240 (2.8") Resistive touch screen multi-colour display.
- Easy to understand; User friendly special icons; Password protection for settings,
- User configurable input sampling and display update speed
- Nonvolatile memory retains all programmable parameters and display values.
- RS232 and RS 485 communication port for PC interface.
- Remote Peak & Tare option; Engineering unit selections.
- Soft Calibration by sensor rated value or actual / field load.



TECHNICAL SPECIFICATION

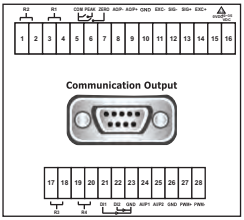
❑ INPUT CHARACTERISTICS	
Power Supply	12 ~ 35V DC
Excitation for sensor	+5VDC @ 50mA ±1%, +10VDC @ 50mA ±1%, +24VDC
Input signal	**KT - S** Up to 8mV/V (Strain Gauge Sensors)
	KT - A 0-10VDC & 0-20mA (Potentiometer, Pressure & other Amplified Output Sensors)
	KT - G Digital & **KT - E** 5V TTL
Decimal point	1~3 Points user selectable (X.X, X.XX, XX.XX & X.XXX)
Input sampling	1 ~ 32 Samples Per Sec User configurable
	(ADC > 1000 Samples Per Sec)
A/D Converter	24 bit resolution
Option	Additional Analog Input - Voltage or Current
	(Launching Soon) 24V TTL (Consult Factory)

❑ DISPLAY CHARACTERISTICS	
Display	2.8 inch TFT, Touch Screen, Color
Display update speed	1 ~ 32 Samples Per Sec User Configurable

❑ OUTPUT CHARACTERISTICS	
Relay output	2 Relay (5A/230VAC) Standard
Analog signal	0-±10VDC, 0-±5VDC, 4-20mA, 0-20mA User selectable
Communication interface	RS-232, RS-485, USB (Optional)
Option	PWM output, 4 Relay output,
	PC Suite Software for Data Logging

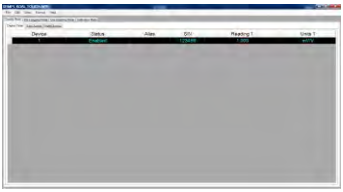
❑ GEOMETRICAL CHARACTERISTICS	
Termination	PCB terminal block
Wire Strip Length	9mm
Wire Gauge Capacity	24 to 14 AWG (0.2 to 2.08 mm2)
Torque	0.4-0.5 N-m
Ingress Protection	IP40 Enclosure rating
Operating temperature (°C)	0 - 50
Storage temperature (°C)	-10 - 60
Case dimension (mm)	96*96*85
Weight (g)	500

Pin Configuration



Pin 1	NA
Pin 2	RS232 TX
Pin 3	RS 232 RX
Pin 4	NA
Pin 5	RS232 GND
Pin 6	NA
Pin 7	RS485 A
Pin 8	RS485 B
Pin 9	NA

PC Suite (Optional)



COMING SOON!

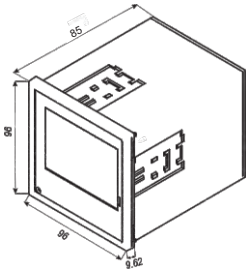
KT - L

(for LVDT)

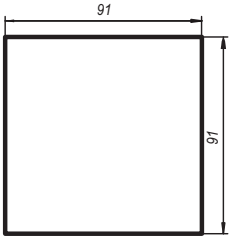
Specifications are subject to change without notice

INDICATOR CONTROLLER

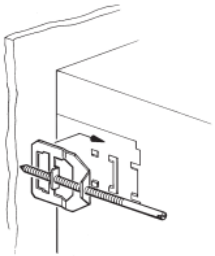
DIMENSIONAL DETAILS



PANEL CUTOUT



MOUNTING ACCESSORIES



ORDERING NUMBER

KT - ☐ - ☐ - ☐

PC - PC Suite Software

S - STANDARD
Relay Output - 2 Relay (5A/230VAC)
Output Signal - 0-±10VDC / 0-±5VDC,
4-20mA / 0-20mA User selectable
Communication - RS-232 / RS-485 (Optional)
Option
1 - Additional 2 Relay (5A/230VAC)
2 - 1 PWM output
3 - Analog Input - Voltage / Current (Launching Soon)

S - Strain
A - Analog
G - Gaman
E - Encoder
L - LVDT (Launching soon)

Example:

KT-A-1 : Analog measurement, Additional 2 relay (inclusive of standard output).

KT-S-S-PC : Strain measurement, Standard outputs and PC Suite Software.

MEYA ICL

HANDHELD INDICATOR CONTROLLER LOGGER

Designed specifically to work with strain sensor and Analog inputs. The setup sequence is simple and quick. It supports fast and high resolution measurements. The 2.8 inch resistive touch screen display is an impressive and user friendly interface for navigating the settings and menus.

FEATURES

- Single input indicator, controller, logger.
- Stand-alone or PC Comparitable logger.
- Password protection for settings.
- User configurable input sampling and display update speed
- Nonvolatile memory retains all programmable parameters and display values.
- RS 485 communication port for PC interface.
- TFT 320X240 display.
- Engineering unit selections.
- Calibration by sensor value and actual load.

TECHNICAL SPECIFICATION

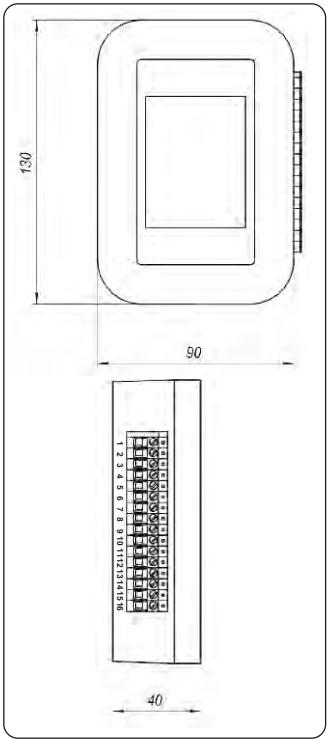
❑ INPUT CHARACTERISTICS	
Power Supply	12 ~ 35V DC
Excitation for sensor	+5VDC @ 50mA ±1%, +10VDC @ 50mA ±1%
Input signal	±80mV/V, 0-10VDC / 0~4-20mA
Decimal point	1~3 Points user selectable (X.X, X.XX, X.XXX)
A/D Converter	24 bit resolution

❑ DISPLAY CHARACTERISTICS	
Display	2.8 inch TFT, Touch Screen, Color
Display update Speed	1 ~ 32 Sec User Configurable

❑ OUTPUT CHARACTERISTICS	
Relay output	1 Relay (5A/230VAC)
Analog signal	0-±10VDC, 0-±5VDC, 4-20mA, 0-20mA User selectable
Communication Interface	RS-485 PC Suite Software

❑ GEOMETRICAL CHARACTERISTICS	
Termination	PCB terminal block
Wire Strip Length	9mm
Wire Gauge Capacity	24 to 14 AWG (0.2 to 2.08 mm2)
Torque	0.4 - 0.5 N-m
Ingress Protection	IP40 Enclosure rating
Operating temperature (°C)	0-50
Storage temperature (°C)	-10 ~ 60
Case dimension (mm)	130 x 90 x 40
Weight (g)	500

DIMENSIONAL DETAILS

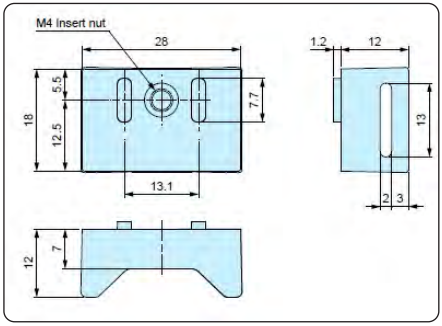


Specifications are subject to change without notice

MOUNTING ACCESSORIES
EASY WALL MOUNTING

- Easy mounting onto the wall or bracket by opening the blind lids.
- Blind lids cover wall-mounting screws and make neat looks.

POLE MOUNTING BRACKETS



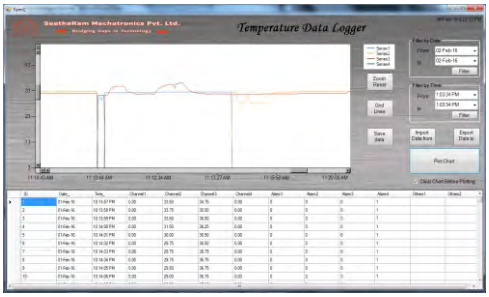
MEYA TEMPERATURE

The Meya temperature is a four-channel touch screen data logger that accepts four thermocouple inputs. Each channel has individually configurable HI/LO alarms. The intuitive touch screen interface allows each channel to be configured separately for alarm. Three types of logging available – scheduled, Alarm and manual log. All four channels can be displayed and logged simultaneously or individually.

FEATURES

- Four K-type Thermocouple Inputs.
- Handheld logger
- Display and Log All 4 Channels Simultaneously or Individually
- Scheduled, Alarm and Manual Logging.
- 4 GB SD Card Stores Up to 1 Year of Data
- Battery or Mains Powered (With Adaptor)
- Touch Screen with Backlight
- Alarm Indication for Each Channel
- PC suite software for plotting graphs

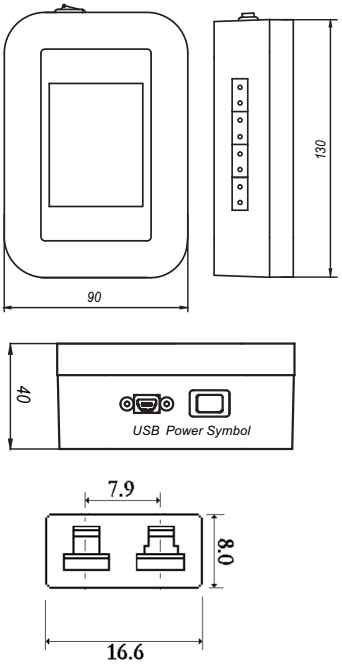
PC SUITE



TECHNICAL SPECIFICATION

Model	Meya
Power supply	5vdc
Current consumption	250 mA (Approx.)
Input	Thermocouple K-type (Default)
	Thermocouple J-type (On request)
Channel	4
Temperature units	°C
Accuracy	±0.1%
Temperature resolution	0.01° for temperatures below 100°C
	0.1° for temperatures below 1000°C
	1° for temperatures above 1000°C
Display	72 mm (2.83") TFT, 320 x 240 touch screen
Display response time	1 Second
Data logging interval	1 Sample/Sec/Ch
Internal memory	4 GB
Variables logged	Measured temperature & Alarm events
Configurable parameters	Alarms, Date and time, Data logging
Alarm configuration	8 x Alarms (2 per channel) with adjustable
	level individually configurable as HI or LO
Software specification	Graph plot, save values in excel and graph in
	png & comparison of all graphs
Operating temperature	0 to 50°C (32 to 122°F)
Dimension	130 x 90 x 40 mm (Approx.)
Weight	300g

DIMENSION DETAILS



Specifications are subject to change without notice

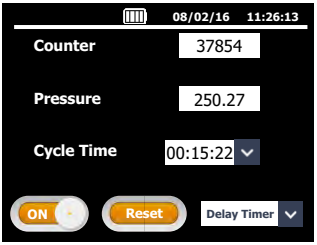
MEYA ENDURANCE

Endurance indicator controller is a smart replacement of conventional endurance man machine interfaces.

This smart touch screen interface indicates the status of the critical parameter of endurance test rig. Such as machine ON/OFF status, cycle counts, cycle timer and one critical process value indication.

This process indicator is capable of storing the previous count data even in the case of any unexpected power failures.

Touch screen based Reset and timer setting option makes the user interface easier.



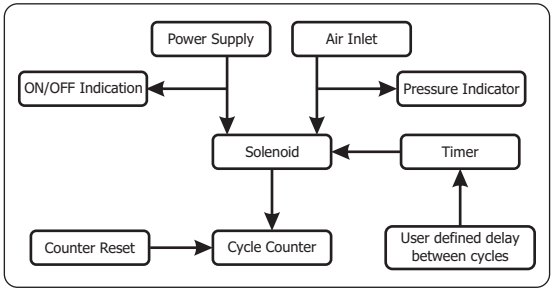
FEATURES

- Compact size with touch screen interface.
- Inbuilt user definable counter.
- Previous cycle count and setting parameter memory to avoid loss of configuration and cycle count due to unexpected power failure.
- User definable delay option for timer rest to synchronous with equipment functionality.

APPLICATIONS

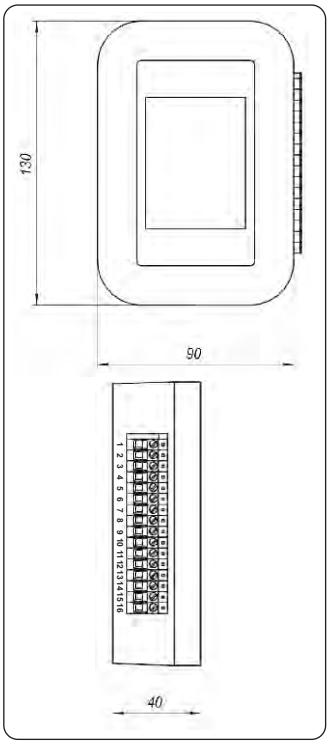
- Valves testing
- Brakes testing
- Clutches testing
- Other all automotive actuators

FLOW CHART OF TYPICAL ENDURANCE TEST RIG



MOUNTING

DIMENSIONAL DETAILS



Specifications are subject to change without notice

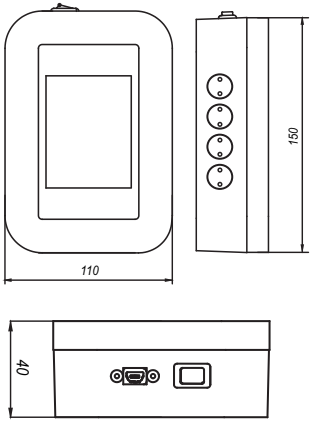
MEYA PRO

The four-channel touch screen mini data logger that accepts four sensor analog inputs. Each channel has individually configurable HI/LO alarms. The intuitive touch screen interface allows each channel to be configured separately for input type, alarm, logging and display options. All four channels can be displayed and logged simultaneously or individually.

FEATURES

- Four analog inputs – voltage or current (user selectable)
- Display and Log All 4 Channels Simultaneously or Individually
- Scheduled and Manual Logging Start/Stop
- 4 GB internal memory
- Display Maximum, Minimum, Average and Standard Deviation
- Battery or Mains Powered (With Adaptor)
- Touch Screen with Backlight
- Alarm Indication for Each Channel
- PC suite software for plotting graphs and store data in excel.

DIMENSION DETAILS



TECHNICAL SPECIFICATION

Model	Meya Pro
Power supply (VDC)	5
Current consumption (mA)	250 approx.
Analog Input / Resolution	0-10 VDC, 0-5 VDC, 0-20mA & 4-20mA / 24bit
Sensor excitation (VDC)	12
Channel	4
Units	M, mm, Kg, N, bar & psi
Display	72 mm (2.83") TFT, 320 x 240 touch screen
Decimal	1~3 Points user selectable (X.XXX)
Display response time	1 Second
Data Logging Interval per channel	20 Sample/second
Internal memory	4 Gb
Variables Logged	Measured inputs & alarm events
Configurable Parameters	Analog input units, Alarms,
	Date and time, Data logging & Power options.
Alarm Configuration	8 x alarms (2 per channel) with adjustable level
	individually configurable as HI or LO
Signal Processing	Average, minimum, maximum, standard deviation
Software specification	Graph plot, save values in excel and graph in png
	& Comparison of all graphs
Communication	USB
Option	Battery power bank for sensor excitation
Operating Temperature (°C)	0 - 50
Storage Temperature (°C)	0- 100
Dimension (mm)	150 x 110 x 40 (Approx.)
Weight (g)	300

Optional

Specifications are subject to change without notice

DATA LOGGER - 4 CHANNEL

'Sangrah' data logger allows simultaneous measurement, visualization and control of 4 channels of field parameters. 'Sangrah' is ideal for Datalog applications on small machines / equipment which require small & self sufficient intelligent device with in-built device for numeric and graphic display of field input values. 'Sangrah' augments the machine controllers with sequential log of data of interest with time stamp, identification of critical alarms / limits.

This equipment also suits mobile applications such as in-vehicle logging, on the run inspection / test log on machines, remote logging and similar applications.

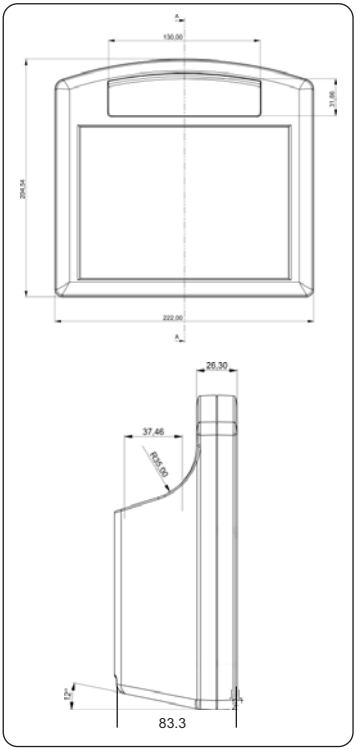
FEATURES

- 7 Inch LCD capacitive color Touch screen- 4 channel datalogger
- Optional RS-485, RS-232, Ethernet and USB interfaces
- Visualisation as Digits, Bargraphs, Graphs,
- Logging functions - Max. 100 samples/sec
- Save values in excel and graph in Pdf format.
- Overlapping past data
- Saving data
- Data View
- Data Export
- Swap channel

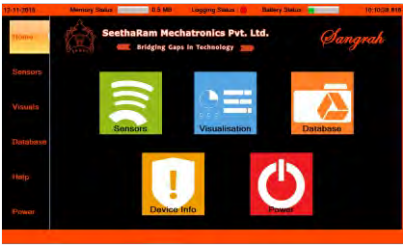
TECHNICAL SPECIFICATION

Model	Data Logger
Power supply	12V DC
Current consumption	2 Amps
Display	7 Inch 1280*800 pixels capacitive touch
No. of channel's	4
Measuring inputs(analog)	-10 to +10v
Digital I/O's	4 (5V TTL) optional 8
Counter I/O'S	1 (5V TTL)
Communication interface	RS-232, RS-485, USB
Samples/Sec/Channel	100
IP	IP 60
Data memory	5 GB
Operating temperature	0 to 55°C
Storage temperature	-40 to 60°C
Options	Battery backup, Pen drive & Connectivity
Max. Expandable storage	32 GB

DIMENSION DETAILS



HOME SCREEN



Specifications are subject to change without notice

Bridging Gaps in Technology

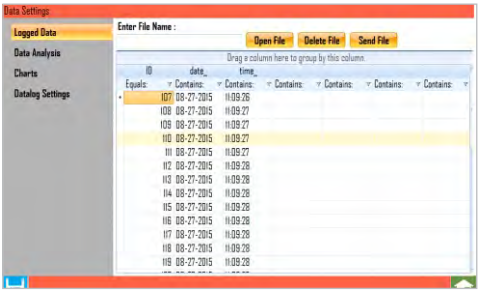
DATA LOGGER - 4 CHANNEL

Applications

- Energy Management system – monitor energy usage
- Industrial process – monitor and alert
- Metal Refining / Production
- Energy usage studies
- Process control tuning
- Outflow monitoring
- HVAC System troubleshooting
- Cooling tower efficiency studies
- Compressed Air Audit
- Laboratory bench test data collection
- Durability testing
- Lifetime quantification studies
- Offshore buoys for recording a variety of environmental conditions.
- Road traffic counting
- Process monitoring for maintenance and troubleshooting applications.
- Tank level monitoring
- Hydrographic recording (such as water level, water depth, water flow, water pH, water conductivity)
- Vehicle Testing (including crash testing)

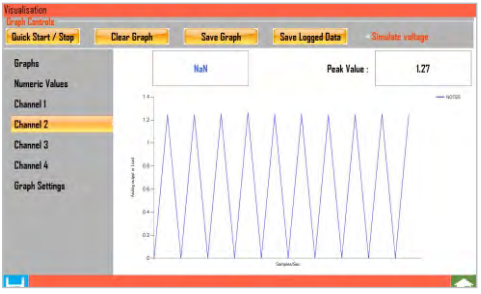
Power Options Screen

Data Settings Screen



Visualisation Screen - 1

Visualisation Screen - 2



Sensor Setting Screen

Digital I/O Setting Screen

Specifications are subject to change without notice

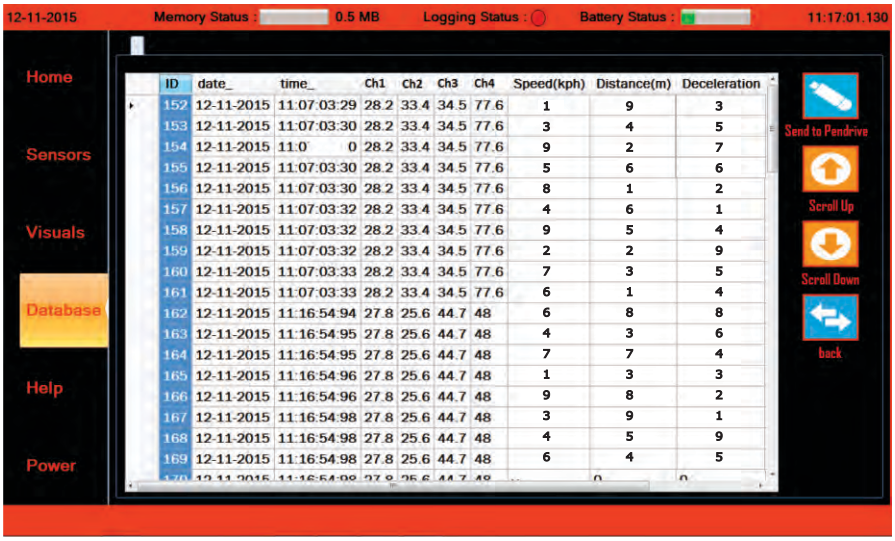
Home Screen

Brake test logger is used to analyze and evaluate performance of braking system.

The logger is compatible to inputs of sensors like linear travel sensor for pedal displacement, pedal force sensor, pressure sensor of brake lines after ABS Pump and speed sensors. Derived parameter such as distance, acceleration, deceleration, MFDD can also be derived and analyzed. It also supports temperature amplifier to measure temperature inputs.

Clutch logger helps to analyze and determine the performance of clutch release systems based on measurement and plotting of pedal force versus clutch displacement. Features are enable to make suitable tolerances for TAC **'Travel Adjusted Clutch'**, OCS **'Over Centre Spring '** calculations

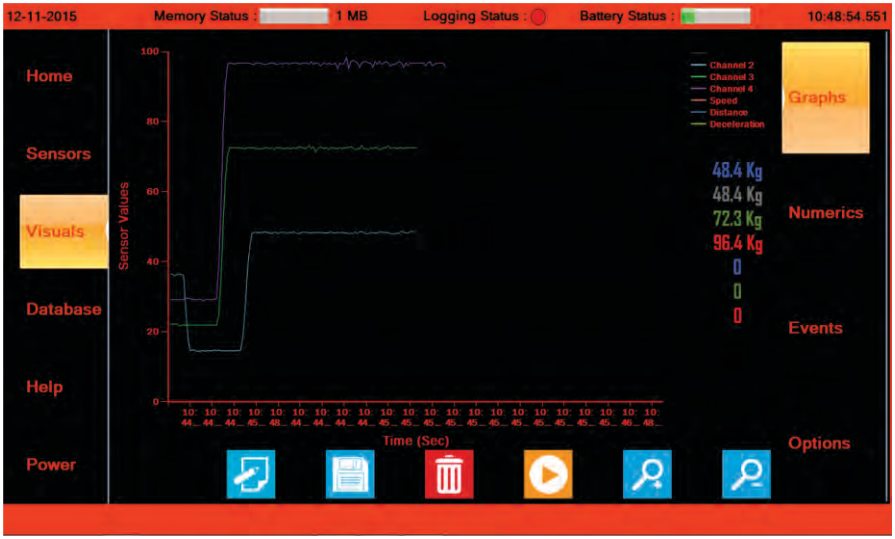
Data Base Screen



ID	date_	time_	Ch1	Ch2	Ch3	Ch4	Speed(kph)	Distance(m)	Deceleration
152	12-11-2015	11:07:03:29	28.2	33.4	34.5	77.6	1	9	3
153	12-11-2015	11:07:03:30	28.2	33.4	34.5	77.6	3	4	5
154	12-11-2015	11:0 0	28.2	33.4	34.5	77.6	9	2	7
155	12-11-2015	11:07:03:30	28.2	33.4	34.5	77.6	5	6	6
156	12-11-2015	11:07:03:30	28.2	33.4	34.5	77.6	8	1	2
157	12-11-2015	11:07:03:32	28.2	33.4	34.5	77.6	4	6	1
158	12-11-2015	11:07:03:32	28.2	33.4	34.5	77.6	9	5	4
159	12-11-2015	11:07:03:32	28.2	33.4	34.5	77.6	2	2	9
160	12-11-2015	11:07:03:33	28.2	33.4	34.5	77.6	7	3	5
161	12-11-2015	11:07:03:33	28.2	33.4	34.5	77.6	6	1	4
162	12-11-2015	11:16:54:94	27.8	25.6	44.7	48	6	8	8
163	12-11-2015	11:16:54:95	27.8	25.6	44.7	48	4	3	6
164	12-11-2015	11:16:54:95	27.8	25.6	44.7	48	7	7	4
165	12-11-2015	11:16:54:96	27.8	25.6	44.7	48	1	3	3
166	12-11-2015	11:16:54:96	27.8	25.6	44.7	48	9	8	2
167	12-11-2015	11:16:54:98	27.8	25.6	44.7	48	3	9	1
168	12-11-2015	11:16:54:98	27.8	25.6	44.7	48	4	5	9
169	12-11-2015	11:16:54:98	27.8	25.6	44.7	48	6	4	5

Master Database for Online & Post analysis

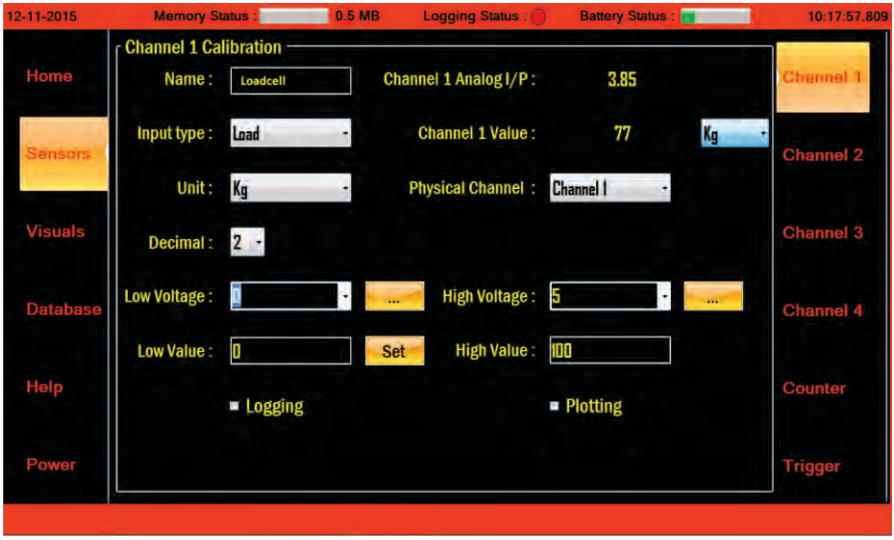
Graph Screen



Derived channels viz Speed, Distance, Deceleration MFDD

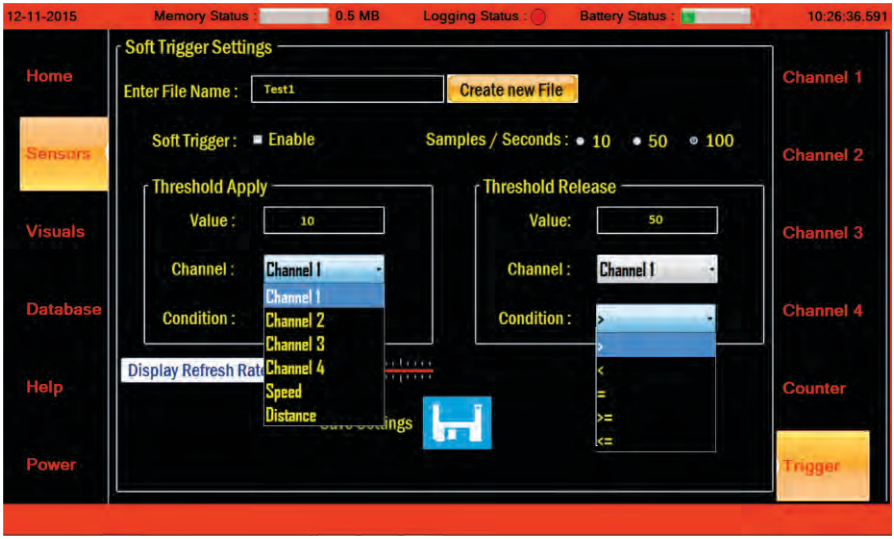
Specifications are subject to change without notice

Channel Setting Screen



Distinguished calibration setting

Soft Trigger Screen



Soft Trigger based logging and plotting

Home Screen

Spring testing systems are ideal for high volume production testing, quality control inspection, and design engineering. The force sensor (Load-cell) is fixed inline and displacement sensor in parallel to the actuation cylinder/ ram compressing the spring under test. The force vs displacement data gives the analysis of the subject spring. The spring performance analysis is a must for all critical assemblies in which the spring is an important constituent.

Real time value of 3 load cell and a displacement sensor with peak and zero option

Logging Setting Screen

Enable logging and alarm. Set condition for alarm

Calibration Setting Screen

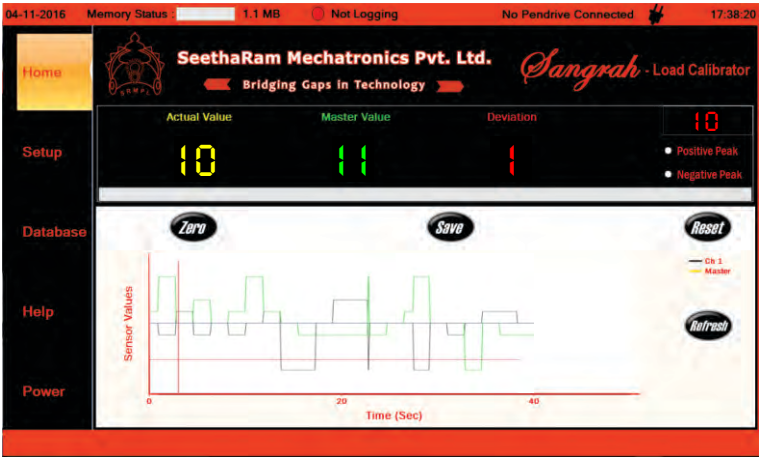
Individual Channel Calibration - Channel Name, Units & Scale Values user configurable

Spring Test Logger

Load Cell Calibrator

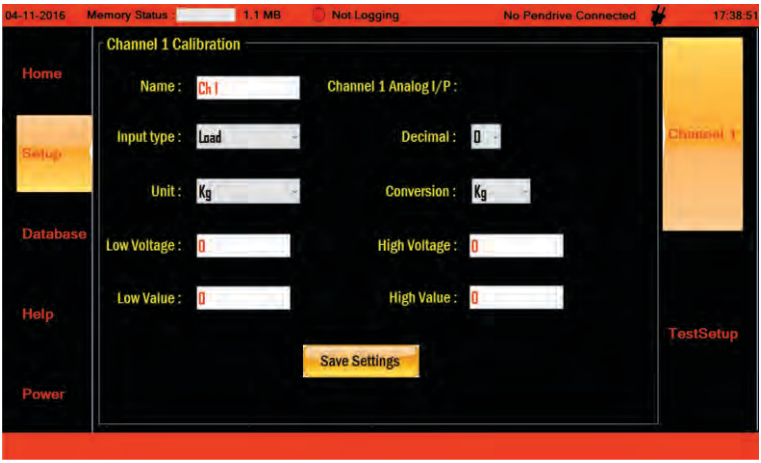
Home Screen

A versatile machine that facilitates both compression and tension calibrations. The design contributes to accurate calibrations by assuring axial loading while eliminating all friction and machine losses.



Display vales of master, actual and deviation value. Graphical representation of sensor vs time

Calibration Setting Screen



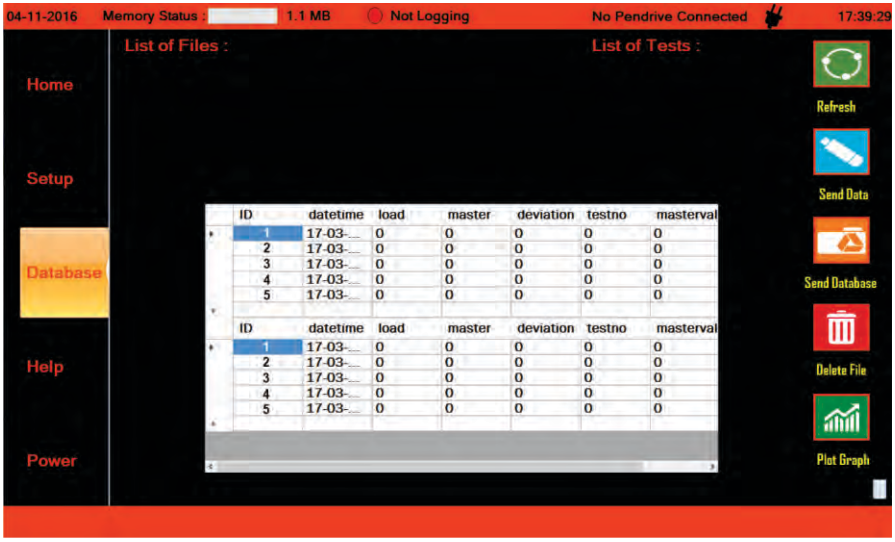
Calibration setting of load cell and its units conversion

Specifications are subject to change without notice

Setting Screen

User Friendly Customizable Test report management

Screen



Hassle free database management

Testing Machines

FORCE TESTING

- LOAD VS DISPLACEMENT
- LOAD VS TIME
- COMPRESSION, TENSILE TESTING MACHINE
- DESTRUCTIVE TESTING MACHINE

Force Testing Machine

Force testing machine designed for testing the component on load versus displacement and load versus time method. The capacity of this machine is 2.5ton and the displacement range is 200mm.

This method can be operated on two modes, (I)Quality testing and (II)Destructive testing. In quality testing mode the load and displacement can be predefined. If the test result is within the tolerance method the product is OK and the machine will indicate PASS. In case of the tolerance level exceeding or below the limit the machine will indicate FAIL. In destructive testing procedure peak will be enabled for both load and displacement. So, the peak of the load achieved for destruction and peak displacement for destruction will be captured and displayed.

Components to be tested: Spring, plastic, concrete, chair, belt, glass, rods, cables, ropes, wires, textiles, chains, fiber.

Application: Spring manufacturers, spring end users, chain manufacturers, clutch manufacturers, textile industries, polymer manufacturers, optical and lens manufacturers.

Torque Testing Machine

Torsion testing machine is mainly used for testing the torsion angle and torque of various torsion springs, coil springs, elastic components and other friction structures. This product is suitable for all types of tensional spring testing for CW & CCW directions.

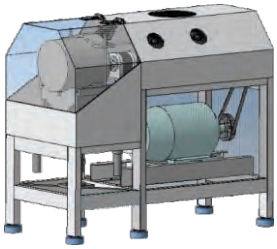
Sensing device: Torque transducer- for determining twist per turn Encoder – for measuring angle

Range : 2NM to 20NM

Components: Pump, alternator, motor, shaft, bearing, gearbox and rotary components.

TORQUE TESTING

- TORQUE VS ANGLE
- TORQUE VS RPM
- TORQUE VS TIME



DISPLACEMENT BASED TESTING EQUIPMENTS

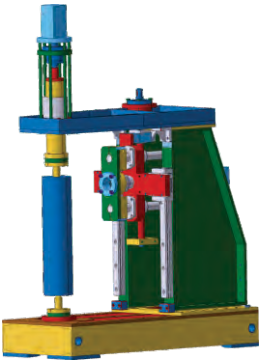
- PROFILE CHECKER

Profile Checker

Profile checker inspection system is an automated and highly accurate system for measurement and visual defect inspection of camshafts. The system can detect extremely minute visual defects and can measure diameters with an accuracy of up to 50 microns.

Range: 250X350mm

Components: Camshaft, gear, sprockets.



Handheld Equipments

Analog and serial (RS232) interfaces for connection to a pc

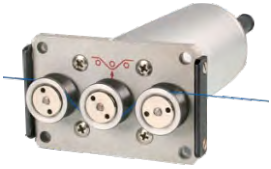
Display of AVG, MIN, MAX and PEAK values

Auto tare option, peak hold and sample hold

You need customized solution to your measuring problem, we will be glad to design a model for your special application.

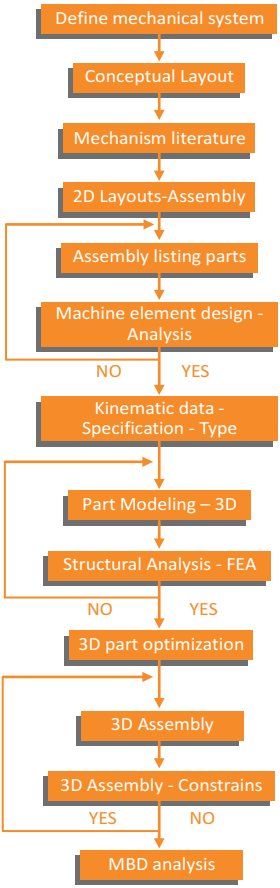
HANDHELD EQUIPMENT

- ID AND OD MEASURING.
- THREAD TENSION
- PUSH PULL
- THICKNESS MONITORING
- LOAD CALIBRATION



INVEHICLE TESTING EQUIPMENT

- PEDAL DISPLACEMNT
- STEERING TORQUE VS ANGLE
- GEAR FORCE VS DISPLACEMNT
- TORQUE FOR KEY AND SWITCHES



We have supplied:

Radio active capsule - Pebble tester, Research institute - Cone calibrator, Spring manufacturing unit - Spring testing machine

Wheels manufacturing unit

Automating the hydraulic press with respect to pressure and displacement. If pressure and displacement are within the set limit the component is pass if not it is fail.

Brakes research unit

Process Automation of endurance test rig of booster with respect to predefined set limit of pressure and vacuum.

Brakes pressure and its travel measuring system

To check the pressure generated inside brake chamber when the brake is applied and parallely calculate displacement of brake pedal

NOTES :

NOTES :

Bridging Gaps in Technology
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