

STEERING EFFORT TESTING SYSTEM



SPECIFICATION SHEET
Steering Effort Testing System
WIRED MODEL: [ATS-P201](#)
WIRELESS MODEL: [ATS-P201W](#)

APPLICATION:

- Steering effort measuring system is suitable for measurement of steering Torque, Angle and Effort of the automotive four wheelers, car, tractor, buses, trucks and material handling equipment
- System can be used on the field, in the laboratory, or on the test track
- Useful for evaluation of steering systems, steering geometry, tyre interactions and safety factors
- Measurement as per **standard IS 11948** or any other international standards

IMPORTANCE:

Evaluation of steering effort, alignment, dynamics and self-centring efficiency are important for research and development, product development, vehicle testing and homologation applications as per national / international standards.

DESCRIPTION:

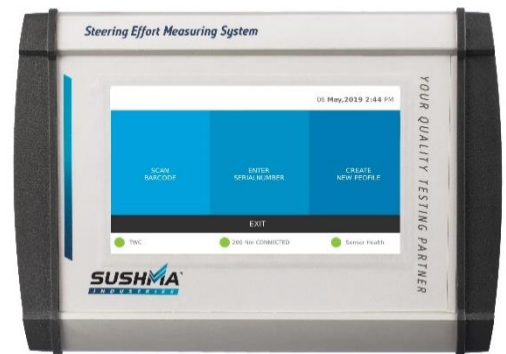
The Sushma™ Steering Effort System has two major parts of a **Steering Fixture** consisting of a **Rotary Torque Angle Sensor** and a **Display Unit**. The steering fixture with the sensor is fixed on top of the original steering wheel hence eliminating the need to be disturbed/removed, making it a high-precision instrument that measures steering torque and angle. Whether it is a passenger car, truck, construction machinery or any other vehicle you can select the suitable steering fixture size and fix the **same well within 1 minute**. The functionality of the original steering wheel is completely preserved, without having to dismantle or remove the airbag. The systems can be used on airbags and non airbags models.

HIGHLIGHTS:

- Simultaneous measurement of Torque and Angle with calculated Effort
- Suitable for mechanical as well as power assisted steering systems, with or without airbags
- Suitable for Steering Wheel of M1,N1, M2, N2 & M3, N3 categories of Vehicles
- Easy adoptability to any car & heavy duty (all class) vehicle steering wheel (based on the steering wheel size)
- Quick & Easy Fixing to existing steering with 3-point clamp assembly within 1 Minute
- No limitation on the Steering Wheel rotation
- Pre-programed testing sequence for ease of data capturing
- Vehicle profile can be selected for each test
- By feeding the original steering wheel diameter into the Display Unit, the effort is calculated
- The results can be viewed in various engineering units like Nm/kgfm/lbft
- Selectable data sampling rate up 1000samples/sec
- Normal and Peak operating modes
- Detailed reports saved on device & retrievable through USB cable & USB drive
- Timer for torque angle tests
- Various selectable steering diameters
- Mini Bluetooth Thermal Printer for quick prints during homologation tests
- Incremental Angle Encoder – Steering Angle 1° Suitable for measurement of steering Torque, Angle and Effort as per **standard IS:11948**

DISPLAY UNIT FEATURES: SDU-A207

- The 7inch touch Smart touch Display Unit
- Easy calibration and easy user interface
- Pre-program testing sequence for ease of data capturing
- High resolution touch LCD display to read angle in trace mode and torque or effort in Trace and Peak modes
- Suitable for clockwise & anti-clockwise operations
- Facility to enter vehicle identification no. & vehicle profile to keep track of your tests
- Facility for analogue outputs for both Torque and Angle for easy integrations with existing customer's data loggers or data acquisition systems
- Facility for built-in real-time clock
- Data storage facility up to 10,000 tests and USB output for PC integration
- Capable of data transfer to PC, through USB
- Facility to operate in trace, peak modes
- Facility to directly conduct Circular Test and store values
- Facility to directly conduct Figure of ∞ test and store values
- Overload Indication
- Data Logging option with easy retrieval on display and save to flash drive
- Mini Bluetooth Thermal Printer for quick prints during homologation tests
- Torque Vs Time Analysis as follows
 1. Average Torque
 2. Minimum Torque
 3. Maximum Torque
 4. Angle
- Online Diagnostics support with firmware upgradation over the internet
- PC based analysis software for angle and torque measurement (Optional)



RECOMMENDED RELATED PRODUCTS:

- Ask for integration with Racelogic V-BOX through Analog outputs or CAN Output
- Gear Effort Testing System (ATS-P204)
- Pedal Force Testing System (ATS-P203)
- Over 24 different automobile testing applications

TORQUE SENSORS OPTIONS:

MODEL NO	CAPACITY IN Nm	DISPLAY RESOLUTION in Nm	ORDERING CODE
TS-106G	50	0.01	TS-106G-50Nm
TS-106G	100	0.01	TS-106G-100Nm
TS-106G	250	0.1	TS-106G-250Nm
TS-106GW	50	0.01	TS-106GW-50Nm
TS-106GW	100	0.01	TS-106GW-100Nm
TS-106GW	250	0.1	TS-106GW-250Nm

Note: Data transmission Through RF transmitter and receiver for wireless model

STEERING WHEEL DIAMETER OPTIONS:

STEERING WHEEL Size	RECOMMENDED VEHICLES	VEHICLE CATEGORY *
For dia 300 – 400 mm	Small Cars	M1, N1
For dia 350 – 450 mm	Medium Cars & Medium Vehicles	M2, N2
For dia 400 – 550 mm	Heavy Trucks & Bigger Vehicles	M3, N3

*Indicative only

Note: Custom Steering Wheel Sizes can be designed as per your needs

STANDARD SCOPE OF SUPPLY:

ITEM DESCRIPTION	PART NO.
Test fixture	---
Smart Display unit	SDU-A207
Vacuum Gripper + Sensor Holding Fixture	---
Power Adapter	PW-12V-001
Selected Sensors	TS-106G / TS-106GW (Wireless)
USB Thumb Drive	USB-16GB-001
USB Cable	USB-B-1M
Ethernet Cross cable	ETC-2M-001
Allen Key tool kit	AKT-S-001
Carry case	---
Calibration Certificate	CC-ATS-P201/P201W
User Manual	UM- ATS-P201/P201W
Warranty Certificate	WC- ATS-P201/P201W

SPECIFICATION:**ACCURACY:**

Overall Accuracy	: ± 0. 5% of the reading from 20% to 100% (Overall accuracy includes error & overall uncertainty)
Non linearity	: ±0.5 % of FSD
Hysteresis	: ± 0.2 % FSD
Angle range	: 0 to 7200°
Angle resolution	: 1°
Accuracy	: ± 1°
Display of effort	: With a resolution of 0.1 N

**ENVIRONMENTAL**

Operating Temperature	: +10 °C to +55°C
Storage Temperature	: +10°C to +60°C

**ATMOSPHERE**

Designed for use under normal laboratory and road conditions. Protective measures is suggested if excessive dust, corrosive fumes, electromagnetic field or hazardous conditions are encountered.

**MECHANICAL:**

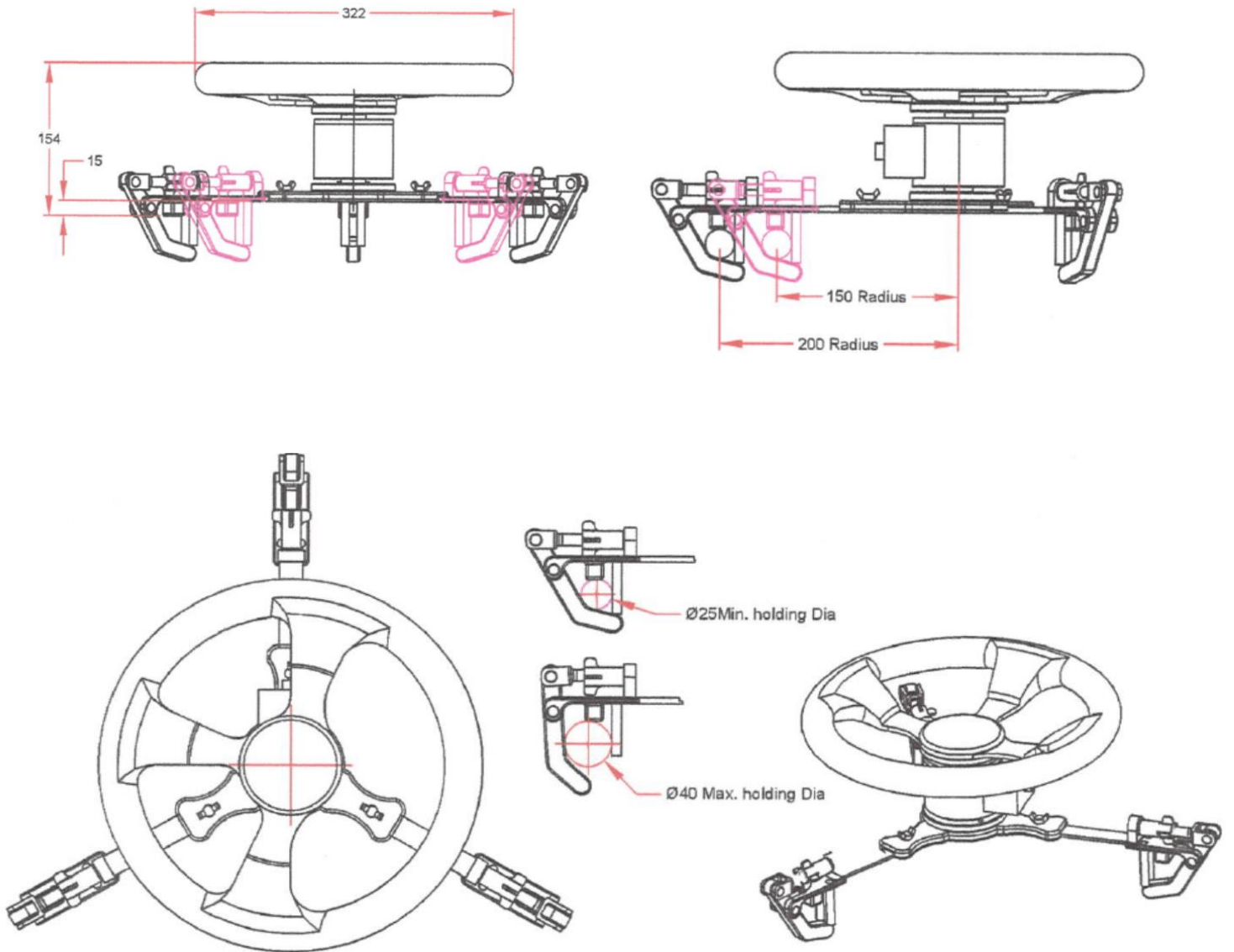
Safe Overload	: 150% of rated output
Deflection	: 0.2 mm at rated capacity or lesser
Material, Finish & construction	: Aluminum, Alloy steel & Electroless plated
Environmental Protection	: IP 50
Diameter of built-in steering wheel	: 325 mm (Approximate)
Maximum Overload	: 120% of rated capacity

**ELECTRICAL:**

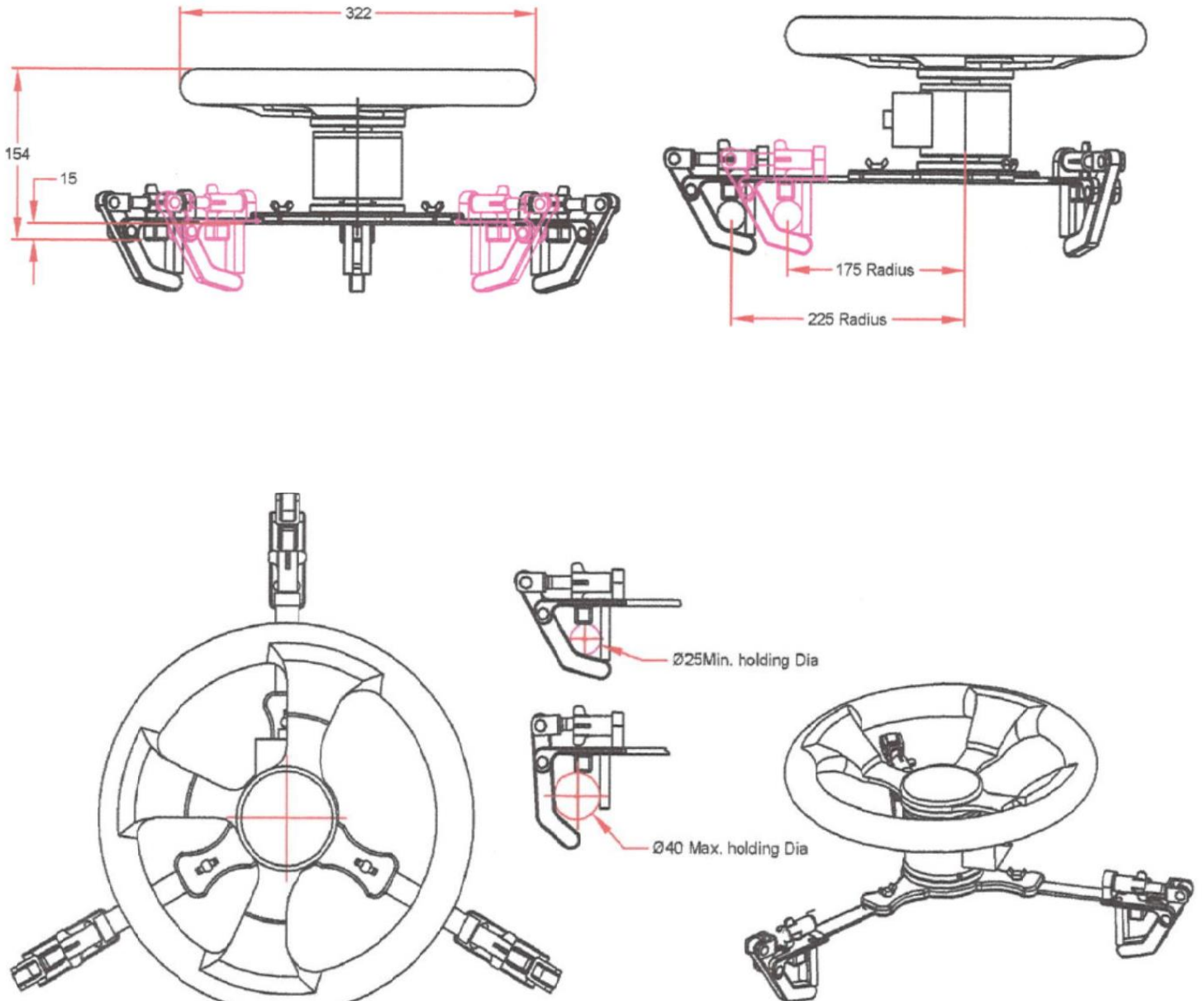
Excitation supply	: +5V DC supply
Linearity	: +/- 0.2% F.S.D.
Strain gauge Bridge resistance	: 350 Ohms nominal
Operates on	: 230 Volts, 50Hz +10% A.C. Mains or 12V DC battery supply

For wireless Sensors Power supply for bridge excitation and for transmitter assembly

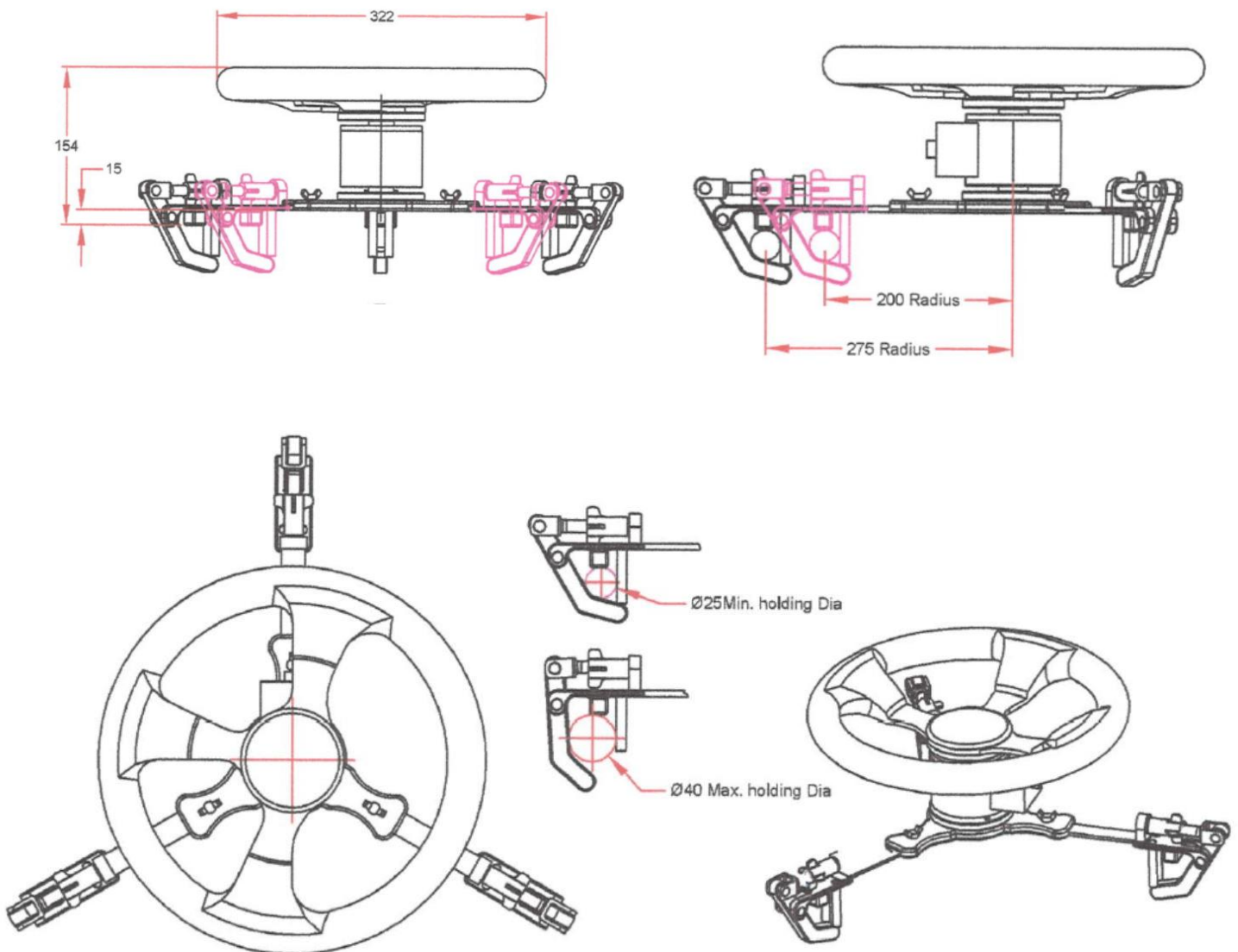
: Built-in 9 Volts rechargeable battery in the steering assembly

DIMENSIONS:**STEERING WHEEL SIZE -For Steering dia of 300mm - 400mm**

STEERING WHEEL SIZE – For Steering dia of 350mm – 450mm



STEERING WHEEL SIZE – For Steering dia of 400mm – 550mm



Release Note

- In view of continuous improvement in design and performance, specification is subject to change without notice.
- Correct mounting is essential to ensure optimum performance.
- Consult your application specialists or the factory for more technical information.