

MULTI CHANNEL DATA ACQUISITION SYSTEM FOR TEMPERATURE SENSORS



**CENTRE OF EXCELLENCE (CoE) IN INTELLIGENT INTERNET OF
THINGS (IIoT) SENSORS**

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CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY

Over view of the Technology :

India has a very fast growing sensor market. The estimated Indian sensor market share in 2020 was about 145 billion US dollars. The growing trend of automation, increasing number of smart devices, portable healthcare systems, electric vehicles, data centres, and the introduction of smart city mission by government have led to an exponential growth in the IoT sensor market in India. Majority of the IoT sensors are being imported in India and hence have a huge impact on our economic system in terms of foreign exchange outflow. In this context, aligning with the national policy of AtmaNirbhar Bharat, it is essential to develop a manufacturing ecosystem for IoT sensors in India with design and technology capabilities for the sustainable growth of Indian Industries.

Centre for Materials for Electronics Technology (C-MET), is a national laboratory dedicated for research and development of electronic materials, components and devices and “Sensors and Actuators” is one of its thrust areas of research. Under CoE, the R&D teams from C-MET Thrissur, and IITM-K Trivandrum, will be collaboratively developing varieties of products. C-MET has developed "**Multi channel data acquisition system for temperature sensors" under Centre of Excellence (CoE) in Intelligent Internet of Things (IIoT) Sensors.** The data acquisition system can measure the temperature of 48 sensors at a time. The DAQ has wireless technology via blue communication.

Features and Technical Specifications

Input sensor	:	NTC Thermistor 10K Ω @ 25 °C
Input resistance range	:	Approx. 3 K Ω to 20 K Ω
Measurement Range	:	20 to 50 °C
Accuracy	:	± 0.05 °C
Resolution	:	0.0001 °C
No. of channels	:	48
Scanning rate	:	1.5 sec/channel (maximum upto 3 min for 48 channels including processing time)
Communication Interface	:	BLE 5.0
Power Source	:	1000 mAh LiPo Rechargeable Battery
Data transfer	:	Raw data (In the android app you have to generate .txt file using this raw data)
Display	:	1.3" OLED (Will show basic information regarding Wifi connection, Percentage of completion etc.)
Additional Feature	:	Provision to change the probe co-efficients by user (through USB serial communication)



The level of technology readiness at CoE in IIoT Sensors/ C-MET

The technology readiness level is 5

Period of training under the agreement

C-MET, Thrissur will give one month training at the premises of C-MET. Fabrication of 3 numbers of Multi channel data acquisition system for temperature sensors will be demonstrated.

The ToT package contains the following

1. Document containing raw material/component details
2. Processing details
3. Product specification
4. Test plan and procedure
5. Training.