SMARTSCAN | ICUBE
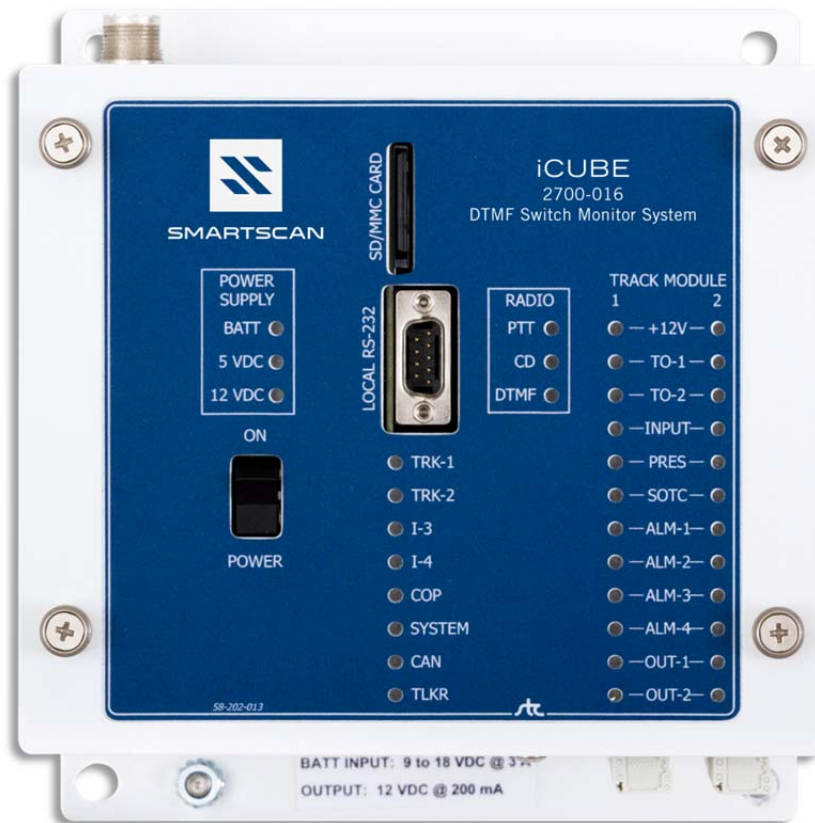
MODEL 2700 iCUBE | PRODUCT PROFILE

Product Overview

The iCUBE is an extremely versatile and flexible solution for wayside condition monitoring and reporting applications. With expanded networking capabilities, the software configurable iCUBE excels in broadcasting alarms from a large selection of detectors to prevent railway incidents.

The Next Generation iCUBE features:

- Advanced IP Networking
- VHF Voice Radio
- Multilingual Support
- Remote Monitoring
- DTMF Switch Controller
- DTMF Prompted Rebroadcasts
- Weather Reporting

MODEL 2700 iCUBE | PRODUCT PROFILE

Main Assembly

The iCUBE has, as part of its standard equipment, all electronics required to provide comprehensive defect monitoring for a double track DED / Hi-Wide detector installation. Any alarm conditions that are detected can be broadcast over the internal radio and also transmitted to a remote location via an IP network connection. The new comprehensive user interface allows for entry of all required location information, selection of radio channels and adjustment of the transmit audio FM deviation level. The standard iCUBE software supports programming features found in the Ritron DTX-160 VHF transceiver, such as separate Tx/Rx frequencies and carrier-detect sensitivity as measured in -dBm.

Modular Design

The modular design of the iCUBE Wayside Monitor allows the user to tailor the system to specific locations and applications. The distributed processor architecture, combined with the modular hardware, allows for maximum flexibility in specifying and developing new applications.

A standard iCUBE system provides up to ten opto-isolated digital inputs that are configurable in the iCUBE operating software. Standard configurations allow a single iCUBE to function as a double track High/Wide or DED system. Many other standard combinations are available from the system setup parameters menu.

Remote Reporting

The iCUBE distinguishes itself from its predecessors by also offering advanced networking capabilities. Provide it with an IP network connection and the iCUBE becomes an efficient remote reporting location for many additional wayside conditions that need to be communicated before a train approaches a hazardous area, such as:

- ■ High Water Detection
- ■ Bridge Out
- ■ Wind Speed Alarms
- ■ Rail or Ballast Temperature Alarms
- ■ Ambient Temperature Alarms

With the addition of the Model 2100-596 Dual Wheel Detector Assembly, the system can monitor and report conditions related to Over Speed Alarms and Train Length Alarms.

The IP network connection allows for the remote interrogation of an iCUBE via a Tel-Net session. Remote communications with the iCUBE system include the ability to upload operating software revisions as required, making it easy than ever to provide support in remote locations.

MODEL 2700 iCUBE | PRODUCT PROFILE

Expanded Applications

Remote Weather Alarm Monitor

The iCUBE is ideally suited to perform as a remotely located wind and temperature monitoring system. Because the iCUBE is a modular and scalable system, Talker configuration is an option to broadcasts wind and temperature alarms over the radio, or if an IP network connection is available, the system can send wind speed and temperature updates at regular intervals to a host server.

The weather monitoring system configuration does not require Track Modules. So, for instance, if the system is communicating solely over an IP network, you may choose to omit the Radio Module and the Track Modules as a cost savings option.

Highway Crossing Protection

The iCUBE CPU module utilizes an internal DTMF decoder. In areas around industrial tracks or on seldom used lines where the rails are subject to heavy rust accumulation, the iCUBE provides a reliable means for remotely activating grade crossing protection.

Wind Monitor

Other Applications

- DTMF Switch Controller
- Remote Battery and AC Monitor
- Switch Position Monitor
- Wheel Impact Load Detector (WILD) Annunciator

Expanded Feature Set

DTMF Support

The iCUBE includes an internal DTMF Decoder with software that supports several applications including the following:

- Rebroadcast of the last message from the Talker through the VHF radio
- Activation of internal relay drivers for triggering external devices, such as grade crossing protection and track switches
- Switch position monitor and announcement
- Remote activation of Slide Fence, High Water, or Bridge Out voice warnings on demand

MODEL 2700 iCUBE | PRODUCT PROFILE

General Specifications

Input Voltage - DC	9 to 18 VDC @ 0.85 Amps Standby — 2.70 Amps while transmitting over the radio
Input Voltage Protection	Reverse Polarity Diode, Self-Restoring Fuse
Internal Auxiliary Power Supply	12 VDC @ 0.5 Amp – 1600 volt isolation. Available for powering external equipment.
Internal Radio Power Supply	12 VDC @ 4 amps – 1500 volt isolation
Internal CPU Power Supply	15 VDC @ 3 amps – 1500 volt isolation
Processors	**Main CPU** — 32-bit Freescale ColdFire® processor running at 66MHz with 8MB SDRAM, 512KB Flash, and 64Kb SRAM **Communications CPU** — 32-bit Freescale ColdFire processor running at 147.5MHz with 8MB SDRAM and 2MB Flash **Track Module (each) —** 32-bit Freescale ColdFire processor running at 66MHz
Serial Communications Ports	One RS-232 Port, 115,200 Baud Max, D-Sub 9 Connector One RS-485 Serial Port, 115,200 Baud Max , Pluggable Screw Terminal Connector
User Accessible Input	Precision Temperature Probe
User Accessible I/O - Track Module 1	Inputs: 2 Wheel Transducer, 6 Opto-Isolated (Dry Contact) Software Configurable. Outputs: Two 12VDC @ 200mA maximum, Software Configurable, Self-Restoring Fuse Protected
User Accessible I/O - Track Module 2	Inputs: 2 Wheel Transducer, 6 Opto-Isolated (Dry Contact) Software Configurable. Outputs: Two 12VDC @ 200mA maximum, Software Configurable, Self-Restoring Fuse Protected
Data Storage	SD Card — up to 32GB
Network	One 10/100 Mbps Ethernet port with a standard RJ45 connector for networking and remote software update capabilities. A secondary Ethernet port is reserved for future expansion.
Voice Communications [Talker]	Internal VHF Radio Transceiver: Ritron DTX-160 – 8 channels, 6 watts, narrowband, 134MHz to 176MHz. (Software limited to the AAR band from 160.215 to 161.565MHz inclusive, but can be factory modified for non-railroad applications.)
Dual-tone Multi-frequency Decoder	DTMF decoder recognizes all standard digits — 0 through 9, #, *, A, B, C, D.
Operating Temperature	Operating Temperature
Size	7.25"W x 8.0"H x 5.7"D
Weight	5.7 LBS
Manufacturer	Southern Technologies Corporation, Chattanooga, Tennessee