

ITC-220™ Locomotive Transceiver

High Performance Wireless Links for Railroad Applications

Cal/Amp®



Experience The Advantage

- AAR Standard S-5702
- ANSI/TIA-603-G-2004
- MIL-STD-810E
- American Recovery and Reinvestment Act-Buy American Provision

Remote Radios for Locomotive In-Cab

CalAmp's line of ITC-220™ radios for locomotive, base station and wayside applications are manufactured specifically for use by North American Railroads for Positive Train Control (PTC) applications. PTC is a technology solution that prevents train-to-train collisions, over-speed derailments, movement of a train through a switch left in the wrong position, and incursion of trains into maintenance of way work limits.

Operating between 217.6 and 222.0 MHz, these multi-channel software defined radios meet railroad requirements for Inter-operable Train Control (ITC).

These radios are designed to meet relevant railroad specifications for operation in the harshest environments. With high power capacity, CalAmp's ITC-220™ radios provide wireless packet data transport between Locomotives, Base Stations, and Wayside locations.

Locomotive transceivers are remote radios installed in the cab of locomotives and are the mobile element of the ITC-220™ network. A locomotive radio communicates with the Back Office through a Base Station over a 220 MHz RF link. To establish this link, a Locomotive radio registers with a Base radio. As long as the Base is the best link available, the locomotive will continue to communicate with the Back Office through that Base.

ITC-220™ Specifications

General

Frequency Range	217.6 - 222.0 MHz
Channel Spacing	25 KHz
DC Input Voltage Range	45-100 VDC; Damage limit 120 VDC Transmit:
DC Current Drain	4A (peak) max into 50 ohm load; 1.8A typical; Receive: 0.5A max while receiving
DC Power Connector	MS 3102 A18-4P or equivalent
Antenna Connector	(2) Type N female: 1-TX/RX, 1-RX2 Diversity
External Interface	(2) Ethernet: 1-Data Network Port M12-8 Female; 1 Maintenance Port M12-8 female

Configuration Interface

Module	SD Card
Display	Activity/Diagnostic LED's on front panel
Regulatory	Complies with FCC Parts 2, 15, and 90 Industry Canada SRSP-512

Environmental

Temperature Range	-40° to +70° C (Operating) -55° to +85° C (Storage)
Operating Humidity	0-95% non-condensing
Frequency Stability	± 0.1 ppm over operating temperature range

Physical

Dimensions	LSI Rack compatible 5xMCU max
Weight	22 lbs (10 kg)

Transmitter

RF Output Power	50W PEP; Adjustable 15-50W PEP
Output Impedance	Operating VSWR < 3.1
Modulation Waveforms	16 kbps pi/4QPSK (linear); 32 kbps pi/4QPSK (linear)
Occupied Bandwidth	Meets 47 CFR90.210(f)
Modulation Designers	16 kbps: 8K90DXW; 32 kbps: 17K8DXW
Conducted Spurious Emissions	-25 dBm max

Max Duty Cycle Rating	30%
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Receiver

Max Usable Sensitivity	16 kbps -111 dBm; 32 kbps -108 dBm
Static BER	<10 ⁻⁴
Adjacent Channel Selectivity	70 db@25 kHz
Spurious Response Rejection	70 dB
Intermodulation Response Rejection	65 dB
High Input Level (-7 dBm)	BER < 10 ⁻⁴
Blocking (1 MHz Offset)	80 dB

Number of Simultaneous Received Channels	16: paired as 8 diversity; Seven 16 kbps; One auto 16 kbps/32 kbps
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About CalAmp

CalAmp (NASDAQ: CAMP) is a telematics pioneer leading transformation in a global connected economy. We help reinvent businesses and improve lives around the globe with technology solutions that streamline complex IoT deployments and bring intelligence to the edge. Our software applications, scalable cloud services, and intelligent devices collect and assess business-critical data from mobile assets, cargo, companies, cities and people. We call this The New How, powering autonomous IoT interaction, facilitating efficient decision making, optimizing resource utilization, and improving road safety. CalAmp is headquartered in Irvine, California and has been publicly traded since 1983. Lojack is a wholly owned subsidiary of CalAmp. For more information, visit calamp.com, or LinkedIn, Twitter, YouTube or CalAmp Blog.