

T1 Intelligent CSU



The T-SMART® CSU provides in-service monitoring of both ESF and SF (D4) networks for early detection of developing problems.

Both network and terminal sides are monitored. The performance results of the last 24 hours, stored in 15-minute intervals, can be accessed with an ASCII terminal. The T-SMART can automatically dial up, via modem, your network management center to report alarm conditions. Problems can be further isolated and diagnosed using user-selectable loopback tests and a built-in test signal generator.

Network and terminal sides can be independently configured for ESF or SF and B8ZS or AMI. The T-SMART CSU will then automatically convert signals as necessary. The T-SMART CSU is fully compatible with AT&T TRs 54016 and 62411, ANSI T1.403 ESF standards and FCC Parts 68 and 15.

The Group Controller Unit (GCU) and Shelf Interface Unit (SIU) provide control access to large numbers of T-SMART CSUs in shelf applications.

Features

- **Intelligent local management of T1 circuits**
- **In-service performance monitoring**
- **Alarm reporting and diagnostics**
- **Built-in diagnostics**
- **Flexible conversion to meet multiple standards**
- **NRTL listed to UL 1950 54016 and ANSI T1.403**
- **ESF compatible**
- **SF to ESF Conversion**
- **ANI to B8ZS Conversion**
- **Extended temperature range and FDL passthrough models available**
- **Available in stand-alone or plug-in shelf versions**
- **5-year warranty**

Applications

Basic voice network

As T1 circuits become more competitive, more companies are taking advantage of the lower cost and high reliability of T1 service to meet their communication requirements. A common application uses a T1 circuit to connect a PBX to a carrier switch.

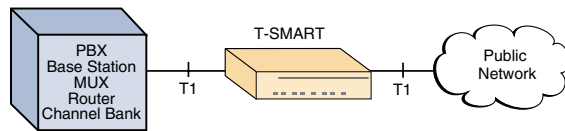


Figure 1: The T-SMART monitors both network and terminal sides.

Cellular networking

Circuit performance is a critical component of cellular reliability and profitability. The T-SMART's ability to monitor performance and detect signal degradation before circuit failure allows proactive management of your T1 network.

FDL passthrough

Using the FDL capabilities of the T-SMART, you can configure and interrogate the status of a remote T-SMART CSU. Testing can also be accomplished from the remote CSU, and it can be configured to automatically transmit alarms over the T1 to the local CSU, virtually eliminating the requirement for an external modem. The remote CSU can also be set to remotely communicate with external devices connected to its control port.

Hicap networking

Many companies are using T1 circuits to provide high volume service to remote locations. A point-to-point T1 circuit may connect two PBXs, MUXs, switches, DCSs or any two devices within a T1 interface. See Figure 2 below.



Figure 2: Point-to-point data network application.

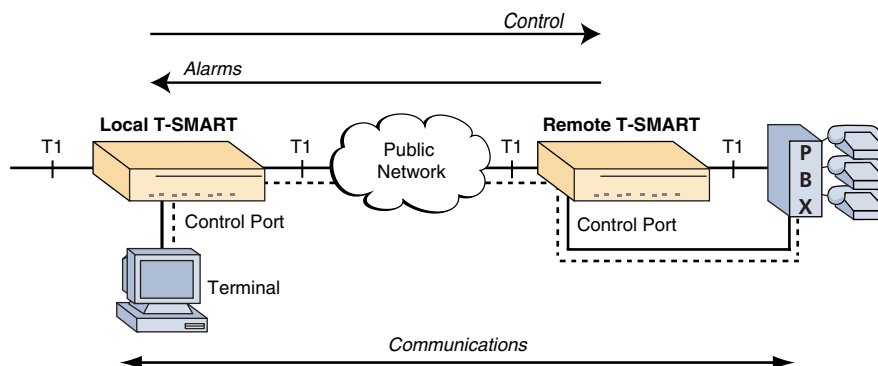


Figure 3: FDL passthrough application.

Specifications

NETWORK INTERFACE

Line Rate	T1 (1.544 Mbps)
Framing	SF/ESF (selectable)
Line Code	AMI/B8ZS (selectable)
Input Signal	DSX-1 to -27 dB, typical
Output Signal	DSX-1 with LBO 0, -7.5, -15, or 22.5 dB (selectable)
Signal Monitor:	Low Pulse Density and Keep Alive

TERMINAL INTERFACE

Line Rate	T1 (1.544 Mbps)
Framing	SF/ESF (selectable)
Line Code	AMI/B8ZS (selectable)
Input Signal	DSX-1 to 6 dB
Output Signal	DSX-1 to 655 ft. equalized

DIAGNOSTICS

Loopbacks	Line loopback (network interface) Test loopback (network payload) Local loopback (terminal loop)
Loop Codes	Generate and detect eight in-band codes Five ESF facility data link commands
Test Codes	Generate and detect QRS, 1-in-8
Activation	Local front panel and control port remote in-band and ESF data link codes

ALARM RELAY

Contacts	Normally Open
Activation	LOS, OOF AIS, YEL, Keep Alive, Excessive Error Rate (selectable)
ACO (Alarm Cut Off)	Front panel or control port

PERFORMANCE MONITORING

Data Storage	24 hours in 15 minute increments Stored in non-volatile memory
Monitors	Monitors both network and terminal interface
Separate Registers	Separate registers for both carrier and user
Service Parameters	BPVs, CRCs, Errored Seconds, Bursty Seconds, Failed Seconds, Out of Frame Seconds, Alarm Condition, Error Rate
Reports	Detailed performance reports include time, date, service parameter counts, alarm states and current error rate

CONTROL PORT

Human Interface	Menu driven, easy to use
Electrical	EIA-232D
Mechanical	RS232C
Interface Device	Serial ASCII suitable for ASCII terminal SNMP Agent Terminal Server Cisco Router Aux Port

ALARM MESSAGE

Electrical Interface	See Control Port Interface
Reporting Options	Local or remote alarm reporting
Auto Dialing	Using standard AT command set
Telephone Number	20 characters
Message Contents	Alarm Set or Clear, Alarm Type, Date, Time, Address, Site Name

COMPATIBILITY

TR 54016
ANSI T1.403
TR 194

REGULATORY

FCC compliance	Part 68 Reg. #F814HV-19244-DE-N Part 15 Class A
UL Listed	UL 1459 Second Edition
DOC	CS-03
CSA	C22.2 No. 0.7
PUB 62411	T1 interface specifications

POWER

Power Option	LINE/LOCAL selection
Line Power	57 to 150 ma 32 V drop @60 ma
Local Power	20 to 56 VDC, 2 watts maximum

DENSITY MONITOR

Minimum Density	12.5% average pulse density
Maximum Zeros	Selectable 15, 47 or disable
Keep Alive Timing	80 consecutive zeros
Keep Alive Signal	Selectable framed/unframed, all-ones

PHYSICAL

Mounting	Desk, wall or equipment rack
Stand-alone Unit	6.75" W x 1.625" H x 10.5" D
4-slot Shelf	19" W x 3.5" H x 10.5" D
12-slot Shelf	19" W x 6.75" H x 10.5" D
Connector Stand-alone and 4-slot shelf	DA15 or RJ48C adapters available for NI, TI
Connector 12-slot Shelf	RJ48H 25-pair adapters available for NI, TI

JACK ACCESS

Toward Network	Bantam jacks In, Out and Monitor
Toward Equipment	Bantam jacks In, Out and Monitor

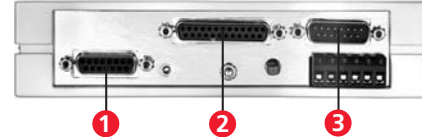
ENVIRONMENTAL

Operating Temperature	0 to 50° C
Relative Humidity	0 to 95% R.H., non-condensing

T-SMART®

Ordering Information

Description	Catalog Number
T-SMART Plug in card	77120
T-SMART Stand-alone unit	77961
T-SMART Stand-alone unit, extended temperature range	77962
Shelf Interface Unit (SIU)	77101
Shelf Interface Unit with craft port	77103
Group Controller Unit (GCU)	77102



Cables and Accessories

Ordering Information

Description	Catalog Number
1 To Terminal Equipment	
25-pair RJ48H Plug/Socket (12-slot shelf only)	930xx061
25-pair RJ48H Plug/Stub (12-slot shelf only)	930xx071
DA15P to DA15S	930xx091
DA15P to Stub	930xx101
DA15P to RJ48C Plug	930xx121
DA15P to DA15P	930xx131
DA15P to DA15P DCE to DCE	930xx132
DA15P to RJ48C Jack Adapter	77892
DA15P to Barrier Strip Adapter	77993003
RJ48H Plug to 12x DA 15S	77840001
2 To Control Terminal	
DB25P to DB25P	950xx021
DB25P to DB25S Null Modem Adapter	77893
3 To Network	
25-pair RJ48H Plug/Socket	930xx061
25-pair RJ48H Socket/Stub	930xx081
DA15S to DA15P	930xx091
DA15S to Stub	930xx111
DA15S to RJ48C Plug	930xx151
RJ48H Socket to 12x RJ48C Jack (12-slot shelf only)	77830
RJ48H Socket to 12x DA15P (12-slot shelf only)	77850
DA15S to RJ48C Jack Adapter	77891
DA15S to Barrier Strip Adapter	77993004
Power Supplies and Mounting Accessories	
24 VDC wall mount, 6W, up to 1 unit	77995
24 VDC wall mount, 12W, up to 3 units	77094
48 VDC, 30W, up to 8 units	77092
48 VDC, 100W, up to 2 shelves (24 units)	72073
48 VDC, 100W x 2 (4 shelves) or 100W redundant (2 shelves)	72075
48 VDC, 100W x 4 (8 shelves) or 100W redundant (4 shelves)	72079
CSU standard shelf, 12 slots	77020
CSU mini shelf, 4 slots	77030
Two unit 19" mounting bracket kit	77095
One unit 19" mounting bracket kit	77096
19" mounting tray for up to 2 units	77819
23" mounting tray for up to 2 units	77823
Blank Plug-in Panel	77070

Note: xx denotes length of cable; contact factory for available lengths. P = Plug; S = Socket



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