

T1 Service Verifier

GUIDE TO OPERATION



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Features

The D630 T-Spanner was created to greatly simplify the work of Telco installers and ISPs, as well as corporate network and telecom administrators who support T1 circuits. The 630 is affordable, easy-to-use, and its unique set of features makes it a valuable addition to everyone's telecom tool kit.

The D630 emulates a CSU and supports connectivity and configuration testing to the telephone network. With the touch of a single button, the 630 will show the user if a T1 carrier is present, display the signal strength, identify the framing and line coding if present, and detect whether payload data is present. Finally, the unit will indicate standard network alarm conditions, and when framing is present, display cumulative counts of line code and path code violations. The 630 also responds to loop-up and loop-down requests from the Telco.

Operation

All of the T-Spanner's functions are automatic. Simply press the ON/OFF button on the front panel to activate the 630 and begin testing. If you see a BATTERY IS LOW message at any time, then simply replace the 9-volt battery in the rear of the housing.

You should be connecting to the telephone network using a "straight through" cable, but you can also use the 630 to verify the operation of a CSU/DSU by using a "crossover" cable. The 630 will let you know if your cable appears to be properly connected to a T1 port, as well as warn you if the connection appears to be open or shorted.

Once connected, the T-Spanner begins by looking for the T1 carrier, which is based on a 1.544 MHz clock source. Next, assuming no alarm conditions are present, it will display the received signal strength and proceed to identify the framing and the line coding. Then, the display will show you the elapsed time since the connection was made, along with error counts for any line code or path code violations.

When connected to the telco network, you will normally see the following two screens, in an alternating fashion. Obviously, the framing, line coding, signal strength, error count and elapsed time will vary depending on your application.

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ESF & B8ZS  
-2.5 to -5 dB
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TIME   LCV   PCV  
013:07 0000 0000
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Line Code Violations (LCV) are either bipolar violations or excessive zero violations.

Path Code Violations (PCV) are either frame bit errors in the case of SF (D4) framing or CRC errors in the case of ESF framing.

The led indicators above the LCD are there to show you the status of the T1 circuit at a glance, while the display is used to provide more detailed information. The exact meaning of a particular led being lit can be summarized as follows:

Carrier Detect means that a T1 clock has been detected on the receive pair.

Framing means that the received T1 carrier is framed (either SF or ESF).

Data Detect means that the data within the received frames is neither all ones nor all zeros. In other words, it indicates the presence of payload data inside the framed carrier.

Alarm means that one of the following conditions exists.

- LOS (loss of signal) simply means that the D630 is not receiving any T1 carrier. This is one of the conditions referred to as a Red Alarm.

- AIS (Blue Alarm) means that unframed ones are being received. In general, this means that the upstream device is looped up or is off line.

- RAI (Yellow Alarm) will be received by the D630 if the telco does not see the T1 carrier sent from the D630. It's not unusual to see this when you first connect.

Looped Up means that the D630 received (and responded to) a CSU loop-up code from the telco and will remain looped until (a) it receives the loop-down code or (b) an LOS condition occurs or (c) an AIS alarm is received.

Error simply means that the LCV count and / or the PCV count is non-zero. These counters are cleared each time the D630 goes out of frame or is unplugged.

NOTE: The T-Spanner automatically determines the line coding by detecting the B8ZS code words in the received data. If insufficient consecutive zeros are present to cause a B8ZS code word substitution, then the line coding cannot be determined. In this case, the T-Spanner will assume AMI line coding for SF (D4) framing and B8ZS line coding for ESF framing.

NOTE: The D630's audible alert uses the following scheme to call your attention to any alarm or fault condition, a status change or a new LCD message.

1 beep = mode change or new LCD message is up

2 beeps = any power related event

3 beeps = T1 fault or error message

4 beeps = D630 fault or error, such as a POST failure

NOTE: If the D630 is turned on but is not connected, it will go into a "low power" mode and will eventually shut itself off, in order to conserve battery life. When the 630 is connected to a network, then it will stay on and continue testing indefinitely until it is manually switched off or until it is disconnected.

Specifications

Compliance	ANSI T1.403, T1.231, T1.408 AT&T TR54016, TR62411
Verifies	T1 carrier (1.544 Mbit/sec) SF (D4) and ESF framing, AMI and B8ZS line coding, Data detection, Signal level (0 to -37.5 dB)
Error Detection	LOS (red alarm), AIS (blue alarm), RAI (yellow alarm), Line code violations (bipolar violations, excessive zeros), Path code violations (D4 frame bit errors, ESF CRC errors)
CSU Emulation	Sends RAI (yellow alarm) upon LOS, OOF or AIS, Responds to CSU loop-up and loop-down codes
Power Requirement	9-volt lithium (recommended) or 9-volt alkaline battery
Dimensions	3.6 X 5.75 X 1.3 inches 9.1 X 14.6 X 3.3 centimeters
Shipping Weight	1 lb or 0.45 kg
Operating Temperature	0 to 45 degrees centigrade Non-condensing
User Interface	Single pushbutton Autotest! 2 X 16 LCD display Six status leds & audio beeper
Media Access	Single RJ48C connector Transient & over-current protection by Teccor

Assistance

Customer support is obtained through the distributor from which you purchased your tester. If you encounter problems or cannot locate your distributor, you may reach us via fax at (765) 497-3337 or via our website at:

www.darkstarttechnologies.com

Warranty

Darkstar Technologies warrants its products against defects in materials or workmanship for a period of one year from the date of purchase. Any product that is returned shipping prepaid will be inspected and tested, and items meeting warranty conditions will be repaired or replaced free of charge. Please contact your distributor if repair or replacement is required.