

# DLC- Digital Loop Carrier System



**Hitron**Technologies



The HTC-1100E is a new generation digital loop carrier system. With the state-of-the-art technologies in a compact, modular design, it can support flexible network topologies and system requirements via various transmission media. The system integrates analog and digital loops and provides a wide range of tele-communication services to subscribers. With the built-in optical connection, the system can be expanded rapidly to meet the demand in extended service areas.

The fundamental architecture of the HTC-1100E DLC system is to utilize the pulse code modulation (PCM) technology to digitize and multiplex incoming signals. These converted signals are then transported through the linking medium to another terminal, where the signals are de-multiplexed and converted back to their original forms. Based on this, Hitron further employs several state-of-the-art technologies, such as Time Slot Assignment & Interchange (TSA/TSI), VLSI, and Cross Connect, to make the HTC-1100E a superb advanced transmission system.

## System Features

- Full compliance with ETSI standards for transmission and voice interface.
- Dynamic concentration rate
- Direct fiber connection with built-in optical termination and multiplexing
- Modular expansion from 6 to 960 local loops.
- 672 lines non-blocking voice services (fiber transport)
- 64 km fiber-span between two terminals
- Menu-driven, on line network supervisory system accessible from any terminal, or via a modem
- Plug-and-play design
- Redundant CPU and transport module with manual and automatic protection switching. Redundant power supply for loading share and backup
- Automatic alarm reporting with visual and audio alert
- Advanced self diagnostics

## Advantages

The HTC-1100E DLC is an advanced and cost-effective system for telecommunication operators to provide new services rapidly and inexpensively.

HTC-1100E DLC system has the following advantages:

- The system delivers both analog and digital services.
- System operations are fully digitized, which generates high quality transmission in all services.
- The system is equipped with dynamic 1: N concentration to maximize equipment utilization.
- HTC-1100E system can be flexibly configured into complex topologies to meet various deployment requirements.
- There are options of fiber, high speed copper or microwave as the linking media between terminals, eliminating the need for expensive and time-consuming outside plant facilities construction.
- The modular and low overhead design afford the telecom operator with the advantage of low startup costs and the strategy of "Pay As You Grow."

# Configuration & Applications

HTC-1100E system is composed of a local exchange terminal (LET) connecting to one or more remote subscriber terminal(s) (RST).

LET is usually located within a central office, while an RST is located in customer areas to originate services. Both analog and digital services can be delivered from any RST, as follows:

- Analog services: POTS, Payphone, E&M
- Digital services: 0.6-38.4Kbps asynchronous data, 48-64 Kbps synchronous data, G.703 Co-directional 64Kbps data, High speed E1 lease line, ISDN("U" interface)

## Point -to-Point Configuration

A group of concentrated subscribers may be served by HTC-1100E in the basic topology. Application examples includes:

- To relocate excessive switching capacity to another area as an interim solution.
- To function as a central office serving extended areas at lower costs.
- To install a large capacity to high-density subscribers, such as business buildings.

## Star Configuration

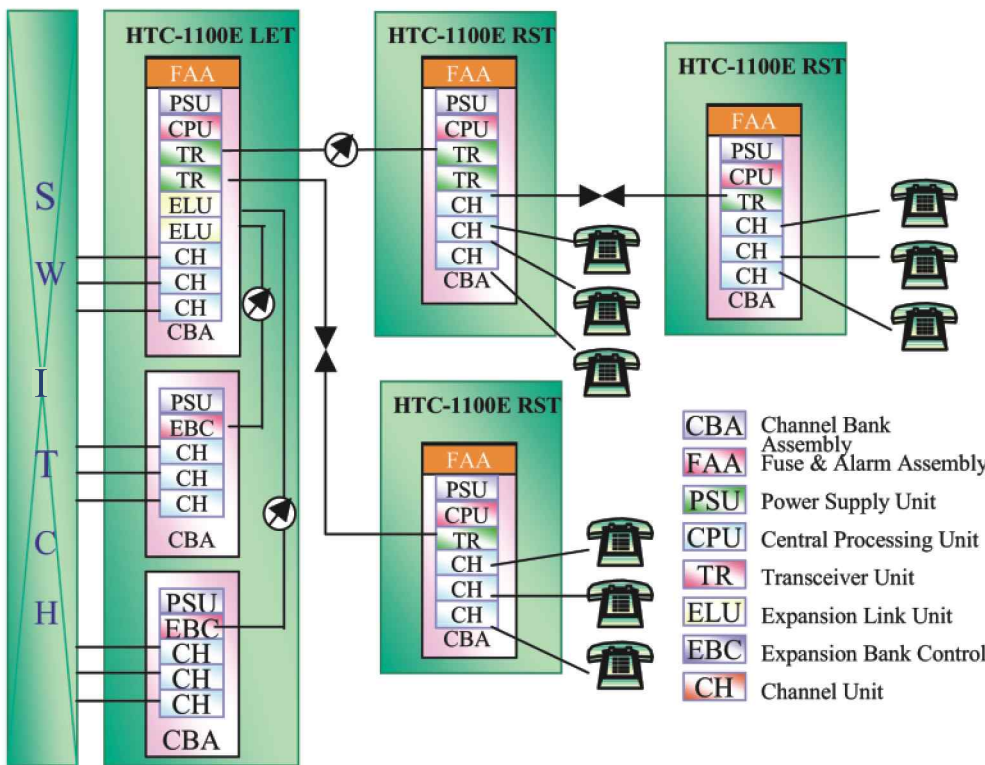
In a star configuration, up to five (5) RSTs may be linked directly to a LET or to another RST. A star configuration can be used to provide services to suburban communities of intermediate density.

## Drop & Insert Configuration

In a Drop & Insert configuration up to five (5) RSTs may be cascaded into a series, which can be used to serve remote rural areas.

## Tree & Branch Configuration

A mixture of Star with Drop & Insert topologies, Tree & Branch configuration provides the most flexibility in deploying HTC-1100E system for various applications. As many as 15 RSTs can be configured in this type of deployment to serve high-density business centers or low-density rural areas.



**Assemblies and Housing--** Include the housing shelves(CBA), provide fuse & alarm(FAA), and remote subscriber cabinets.

**Supervisory System-Craft Interface**  
The Craft Interface software provides the menu -driven operations for system provisioning, alarm reporting and history, traffic statistics and analysis, testing and diagnostic, and system administration and security.

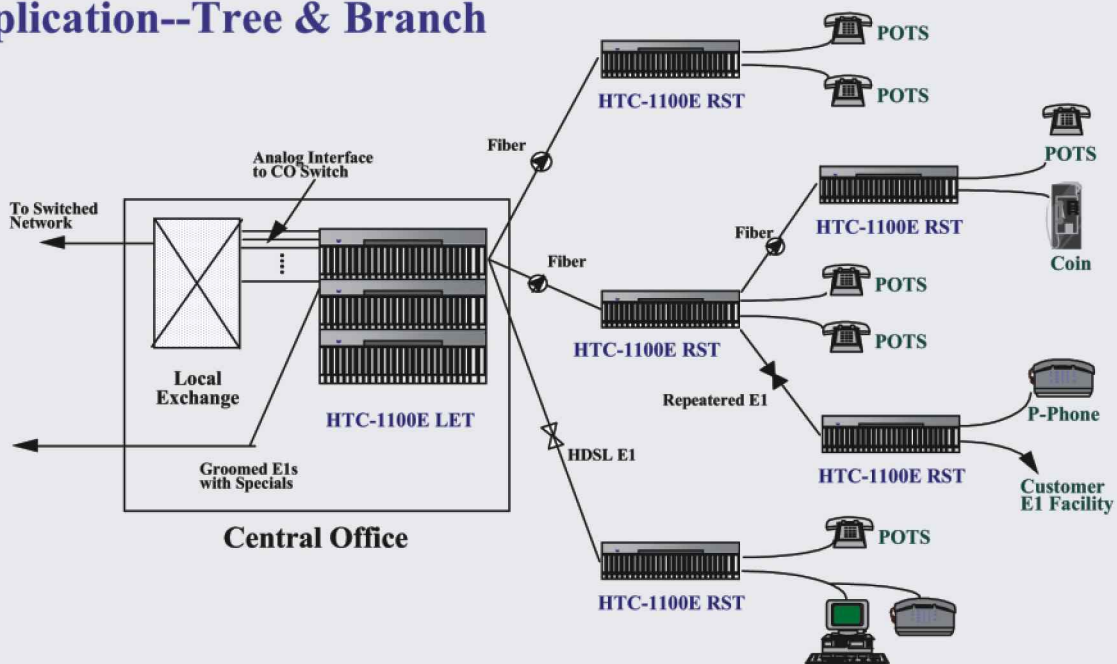
**Common Control Units-**Include CPU for system control, power supply unit, linking units between shelves(ELU/EBC),and testing &diagnostic card.

**Channel Units-**Provide digital or analog access interface between switches and subscribers.

**Transceiver Units-** Provide Link between terminals.

- Fiber optic transceiver (FO/ FOW-XCVR)
- E1/E3 transceiver (E1X/E3X-XCVR)
- HDSL E1 transceiver (HD-XCVR)

## Application--Tree & Branch





# DLC - Digital Loop Carrier System

## Dimensions

Channel Bank Assembly  
(Mild Steel, galvanized)

High 17.8cm(7 inch)  
Width 48.5cm(19 inch)  
Depth 25.4cm(10 inch)

## Dimensions

Local Exchange Terminal 0 °C~50 °C  
10%~80% Relative humidity

Remote Subscriber Terminal -40 °C~60 °C  
(Outdoor) 5%~95% Relative humidity  
(Non-condensing)

## Transmission Media Line

Rate & Code	E1	2.048 Mbps	±50 ppm	HDB3
	E3	36.368 Mbps	±20 ppm	HDB3
	Fiber	49.152Mbps	±50 ppm	Scrambled NRZI
Pulse Amplitude	E1	3.0Vpk		ITU-T G.703 Sec.6
	E3	1.0Vpk		ITU-T G.703 Sec.8
	Fiber	-7dBm(laser)		@1310nm/1550nm
Maximum Carrier	E1	-38dB		@1.024MHz
Minimum Sensitivity	Fiber	-34dB		@49.152Mbps
Compounding	A-255	8bits/Time slot		ITU-T G.711
Impedance	E1	75/120Ω		Unbalanced/Balanced
	E3	75 Ω		
Repeater Spacing	E1	Maximum		38dB

## Digital Interface

	Rate	Interface	Port No.
Synchronous Data Unit	48,56 or 64Kbps	V.11, V.35	1
Asynchronous Data Unit	0.6,1.2,2.4,4.8	V.28	2
	9.6,19.2,38.4Kbps	ITU-T G.703	
G.703 Co-directional 64Kbps	64Kbps	4-wire	3
E1 Digital Unit (E1A, E1X)	2.048 Mbps (HDB3)	120 Ω (E1A; balanced)	1
ISDN Channel Unit	160 Kbps	ISDN 'U'	2
	2B1Q		
N * 64Kbps Data Unit	N * 64 Kbps	V.35/V.36	1
	N=1.....6		

## Voice Interface

Impedance	600Ω
Insertion Loss (Remote)	2dB ±0.5dB
Return Loss	ITU-T G.122
2 Wire	RL>20dB 400~3 KHz
4 Wire	RL>28dB 300~3 KHz
Frequency Response	300Hz~3.4KHz(+0.5,-1.0dB)
Idle Channel Noise	≤-65dBmOp ITU-T G.712
Crosstalk (line to line)	≤-67dBmOp
Longitudinal Balance	ITU-T G.117 & G.121

## General

System Synchronization	2.048Mbps external±50ppm (ITU-T G.703)
Clock clock	64.0Kbps external ± 50ppm Composite
Alarms	Critical/Major/Minor with Alarm Cut-off Alarm thresholds software programmable
Power	
Channel Bank Assembly	-42 VDC~63 VDC @ 4 Amps max.
Outdoor Cabinet	220V/110V,50~60Hz



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