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Preface

Version Description

The Manual Version: V1.0

Copyright Statement

Disclaimer

This manual is written under current knowledge and may be improved or changed in future without further notice. The best work had been done to ensure the manaual is accurate and reliable, thus our Company does not responsible for any loss or damage caused by contents missing, inaccuracy or errors.

Abstract

This manual describes installation and use of the DXC devices. Please be sure to read all the information carefully and follow the manual instruction to install the product before you first use our device. It may avoid any damages occurred by mis-operation. Thanks for choosing our products.

Environmental Protection

This product meets the design requirements on environmental protection. Any use, storage and disposal of the product shall be conducted under relevant national laws and regulations.

You are most welcome to put forward advices and suggestions for our work and it well be viewed as the greatest support for our company.

Chapter 1 Introduction

1.1 Overview

DXC1032/16 is a high-capacity of E1 timeslot digital cross-connection devices. 64Kb/s timeslot cross capacity is 1024×1024(512×512). It achieves any of 64kb / s timeslot programmable non-blocking cross-connection. It maximum can provide 32/16 E1 interfaces. The device can be widely used in China Telecom, China Mobile, China Unicom, power, military communications; It support Web or telnet-based remote network management and local Console port management, very easy to manage and maintain.

1.2 Product Features

- ✧ High-density single board design, provide a standard 1U, 19 inch physical structure design, low power design, increase system reliability;
- ✧ Flexible configuration of system clock, local clock, or follow any E1 line clock, easy to synchronize the entire network;
- ✧ Provide E1 interface to analog loopback, remote analog loop back function, It is easy for debug, fault location;
- ✧ Owns the functions of two-way connection between any timeslot, radio timeslot connection and a one-way timeslot connectivity;
- ✧ Each E1 interface owns CRC-4 checksum function(settable);
- ✧ Provide E1 LOS, LOF,AIS and CRC-4, CAS alarm functions;
- ✧ Provide E1 interface remote alarm and CAS remote alarm functions;
- ✧ Support Web-based or telnet remote network management and local Console port management;

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✧ Two DXC equipment connected by E1, Through local
device's E1 time slots 0 to do remote management
of DXC equipment;

✧ Provide TFTP online upgrade system firmware and
software;

✧ AC220V, DC-48V dual power supply;

Chapter 2 Device Description

2.1 Front Panel

(1) Power&E1 interface LED (2) Eight DIP switches
(3) Reset (4) 10/100M SNMP Interface (5) Console port
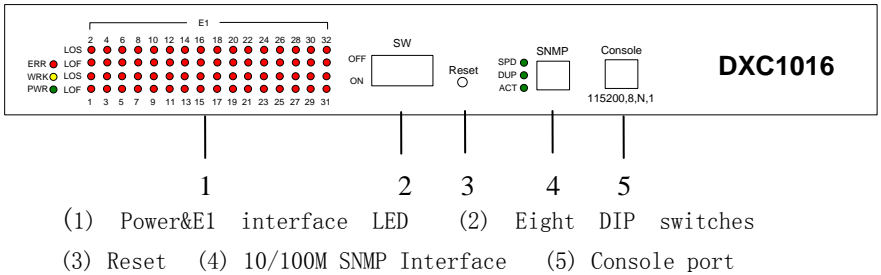
Figure 2-1 Front Panel

Table 2-1 Front Panel Description

Indicator	Description
PWR	Power indicator
WRK	System operating LED, Flash to operate
ERR	System Error LED, Light to system failure.
LOS1~32	E1 interface LED, Light on means related port LOS. Light off means NO LOS. Flash indicate PATT test. DXC1016 disable the 17~32 indicator.
LOF1~32	E1 port LOF DXC1016 disable the 17~32 indicator.
SPD	SNMP port speed rate LED, 100M is light on, 10M light off.
DUP	SNMP interface duplex indicator, Full duplex is light on, half-dup is lighting off
ACT	SNMP active LED, light when connected, Flash when transmitting data.

This version disables the DIP switches and reset functions.

2.2 Rear Panel

(1) Ground   (2) Power Switch

(3) AC220V   (4) DC-48V

(5) 1~8 E1   (6) 9~16 E1

(7) 17~24 E1 (8) 25~32 E1

Figure 2-2 Rear Panel

Note:

220VAC or 48VDC optional

E1's physical DB37 signal order please see chapter 4.

DXC1016 disables 17~ 32 E1

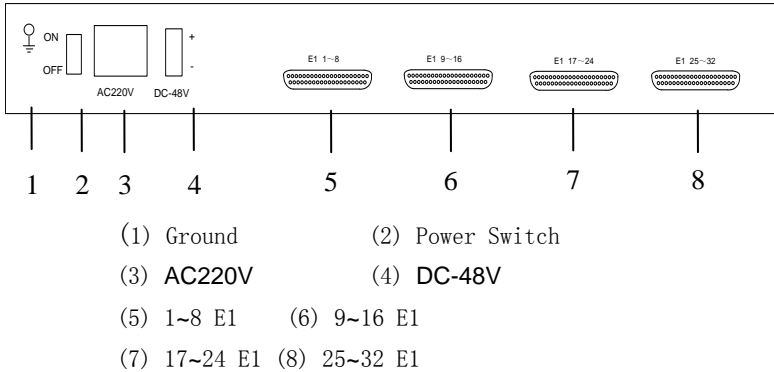Rear Panel provides a ground column, highly recommend customer connect the column to room grounded device to ensure device operating.

Chapter 3 Technical Parameters

Table 3-1 Technical Parameters

Operating Environment	
Input voltage	AC220V±10% or DC36～72V
Power consumption	<15W
Temperature	-10℃～50℃
Humidity	95％，Non-condensing.
Dimension	19 inch 1U rack（440 mm×193 mm×44mm ）
Console port	
Speed rate	115200bps
Model	8 bit data, no parity, 1 bit stop bit, no hardware flow control
Port	RJ45
SNMP interface	
Speed	10/100M self-adaptive
Duplex	Full/Half Duplex self-adaptive
Standard	Support IEEE802.3、IPV4
Port	RJ-45
E1 Interface	
Interface E1	HDB3
Nominal bit rate and tolerance	2048Kbps±50ppm
Interface impedance	75Ω unbalance (or 120Ω balanced)
Jitter	ITU G.742，G.823
Re-frame structure	ITU G.704，CAS(PCM30)/ CCS(PCM31)
Physical Port	DB37
Standard	ITU-T G.703 G.704 G.823
Clock	Local clock, E1 line clock

Chapter 4 Installation

4.1   Installation and Wiring

4.1.1   Device Installation

Please install the device on standard rack system:

First: Fix the L-bracket (box ears) with screws on both sides of the device.

Second: Fix the device on the Rack system through the L-bracket with screws.

4.1.2   E1 cable Sequence definition

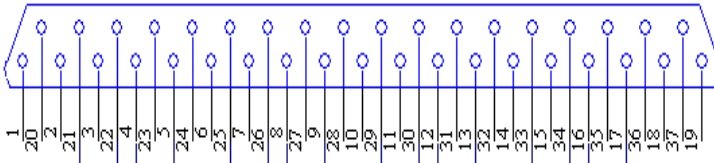E1 interface uses DB37 connectors, A DB37 used to provide 8 E1 interfaces.

DB37 order：

Figure 4-1 75ohm unbalanced E1 interface

。

Table 4-1   E1 cable sequence

| Num	Pin Functions	Num	Pin Functions
21	1st E1Channel receiver +	23	2nd E1 Channel receiver +
3	1st E1Channel receiver -	5	2nd E1Channel receiver -
22	1st E1Channel sender -	24	2nd E1Channel sender -
4	1st E1Channel sender +	6	2nd E1Channel sender +
25	3rd E1Channel receiver +	27	4th E1Channel receiver +
7	3rd E1Channel receiver -	9	4th E1Channel receiver -
26	3rd E1Channel sender -	28	4th E1Channel sender -
8	3rd E1Channel sender +	10	4th E1Channel sender +
29	5th E1Channel receiver +	31	6th E1Channel receiver +
11	5th E1Channel receiver -	13	6th E1Channel receiver -
30	5th E1Channel sender -	32	6th E1Channel sender -
12	5th E1Channel sender +	14	6th E1Channel sender +
33	7th E1Channel receiver +	35	8th E1Channel receiver +
15	7th E1Channel receiver -	17	8th E1Channel receiver -
34	7th E1Channel sender -	36	8th E1Channel sender -
16	7th E1Channel sender +	18	8th E1Channel sender +

4.1.3 Ground Power cable and device
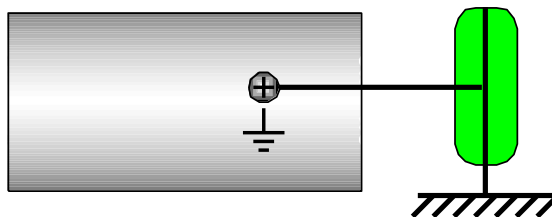
Figure 4-2　Ground Indication

Please Check the device ground:

First：　Check DXC Device ground to Rack system

Second: Check the Rack ground to environment.

4.1.4　First Power up

Before the device first Power up, please check:
- ✧　Check device's model of power supply is correct.
- ✧　DC/AC Input voltage whether is tolerated.
- ✧　Check device's bar code number, writing clear, no defect;
- ✧　mechanical parts are fixed properly;

Device adopts AC 220V or DC 48V power supply. When it power up, the front panel's LEDs are on, it indicate device is powered up successfully. If smell something is burned or device is over heated, please immediately turn off the power.

4.2　Device First Setting

4.2.1　DIP Switches Setting

DXC device uses DIP Switches to select E1 line clock. Default setting to Local Clock.

In 8 DIP switches, Bit1-Bit6 to select E1 port, Bit7 to select line clock or local clock.

4.2.2　Cross Setting.

Specific setting please see Chapter 5 and 6.

Chapter 5 Command-Line Control Specification

5.1 Command-Line Overview

DXC series device supports Console or Telnet to manage device with Command-Line (CLI).

System Default username: admin, password: admin

1. Console：Connect Computers serial port to Console port, operating" HyperTerminal", Serial mode: 115200-8-N-1.

2. Telnet：Connect computer Ethernet to DXC Ethernet port. Telnet Device IP (default: 192.168.0.168).

2. Telnet

Input "?" or Press "Tab" to get help when you typing CLI. For example, user input "sh" + "?"/Tab, all help data of "sh" command will be shown.

There are different system CLI models:

✦ Login Model

✦ Global Model

✦ Config Model

Table 5-1 CLI model and functions

Model	Figure	Command	Login	Logout
Login Model	System Login	UserName: Password:	Login after Telnet or Serial connection	Close Connection
Global Model	Check device's operating status	DXC#	Input right username and password under Login model	Exit or quit to Login Model
Config Model	Config Device relative parameters,	DXC(config)#	Input config under Global Model	Exit or quit to Global Model

	system reboot, save, delete config			

5.2 CLI specification

5.2.1 help

【Command】

help

【Parameter】

None

【Command model】

Global model

【Default】

None

【Used for】

Display help information

【Example】

DXC#help

help

list

end

exit

quit

config

show running-config

show startup-config

show version

reboot

show e1-status

show dxc <1-32>

DXC#5.2.2 show version

【Command】

show version

【Parameter】

None

【Command model】

Global model

【**Default**】

None

【**Used for**】

Display version information

【**Example**】

DXC#show version

SoftWare Version : V1.07

FPGA Version : V1.7

Release Date : 21:34:04 , Nov   2 2010

5.2.3   show e1 status

【**Command**】

show e1 status

【**Parameter**】

None

【**Command model**】

Global model

【**Default**】

None

【**Used for**】

Display all E1 status

【**Example**】

DXC#show e1-status

E1 LOS/LOF/AIS/CRC4/CAS	LoopTest	Admin				LpDet	Loop
RmtALM/CAS		CRC4	CAS	PATT	PTOK		
01 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
02 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
03 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
04 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
05 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
06 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
07 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
08 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
09 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
10 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
11 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---
12 LOS/---/---/----/--- -----/---	OFF	UP/UP	OFF	OFF	ON	Fail	OFF ---

13 LOS/---/---/----/--- -----/--- OFF UP/UP OFF OFF ON Fail OFF ---

14 LOS/---/---/----/--- -----/--- OFF UP/UP OFF OFF ON Fail OFF ---

15 LOS/---/---/----/--- -----/--- OFF UP/UP OFF OFF ON Fail OFF ---

16 LOS/---/---/----/--- -----/--- OFF UP/UP OFF OFF ON Fail OFF --

--More--

5.2.4　show dxc

【Command】

　　show dxc <1-32>

【Parameter】

　　<1-32>: E1 number

【Command model】

　　Global model

【Default】

　　None

【Used for】

　　Display E1 cross config information.

【Example】

　　DXC#show dxc 3

1#E1 Source (Format : TS<--SourceE1:TS)

 0<----------　　　1<-- 2#E1:01　　2<-- 2#E1:02　　3<-- 2#E1:03

 4<-- 2#E1:04　　5<-- 2#E1:05　　6<-- 2#E1:06　　7<-- 2#E1:07

 8<-- 2#E1:08　　9<-- 2#E1:09　　10<-- 2#E1:10　11<-- 2#E1:11

12<-- 2#E1:12　13<-- 2#E1:13　14<-- 2#E1:14　15<-- 2#E1:15

16<-- 2#E1:16　17<-- 2#E1:17　18<-- 2#E1:18　19<-- 2#E1:19

20<-- 2#E1:20　21<-- 2#E1:21　22<-- 2#E1:22　23<-- 2#E1:23

24<-- 2#E1:24　25<-- 2#E1:25　26<-- 2#E1:26　27<-- 2#E1:27

28<-- 2#E1:28　29<-- 2#E1:29　30<-- 2#E1:30　31<-- 2#E1:31

5.2.5　show running-config

【Command】

　　show running-config

【Parameter】

　　None

【Command Model】

　　Global Model

【Default】

　　None

【Used for】

Display device running config information

【**Example**】

DXC#show running-config

!System running configuration

!Running Time : 0 hours,17 minutes,32 seconds

!Device Type DXC-32

ip-address 192.168.0.168 255.255.0.0

gateway 192.168.0.1

hostname DXC

password admin

snmp community 1 public ro

snmp community 2 private rw

clock source local

patt-mode fixed

loop-detect action auto-recover

e1 1-32 loop-detect off

e1 1-32 admin up

e1 1-32 loop-test off

e1 1-32 patt on

e1 1-32 crc-4 on

e1 1-32 cas on

5.2.6　show startup-config

【**Command**】

show startup-config

【**Parameter**】

None

【**Command Model**】

Global Model

【**Default**】

None

【**Used for**】

Display information of saved config file.

【**Example**】

DXC#show startup-config

ip-address 192.168.0.168 255.255.0.0

gateway 192.168.0.1

hostname DXC

14

password admin

snmp community 1 public ro

snmp community 2 private rw

0003:0000,000C:0000,000D:0000,000E:0000

5.2.7 config

【**Command**】

config

【**Parameter**】

None

【**Command Model**】

Global Model

【**Default**】

None

【**Used for**】

Enter config model from global model

【**Example**】

DXC#config

DXC(config)#

5.2.8 reboot

【**Command**】

config

【**Parameter**】

None

【**Command Model**】

Config Model

【**Default**】

None

【**Used for**】

System reboot

【**Example**】

DXC(config)#reboot

System Rebooting,Please wait...

5.2.9 write file

【**Command**】

write file

【**Parameter**】

None

【**Command Model**】

Config Model

【**Default**】

None

【**Used for**】

Save config infor to file

【**Example**】

DXC(config)#write file

Saving the configuration!Please Wait...

5.2.10 erase startup-config

【**Command**】

erase startup-config

【**Parameter**】

None

【**Command Model**】

Config Model

【**Default**】

None

【**Used for**】

Restore to factory Config

【**Example**】

DXC(config)#erase startup-config

Erasing the configuration!Please Wait...

5.2.11 hostname <HOSTNAME>

【**Command**】

hostname <HOSTNAME>

【**Parameter**】

<HOSTNAME>： Host name

【**Command Model**】

Config Model

【**Default**】

Host name: DXC。

【**Used for**】

Alter Host name

【**Example**】

DXC(config)#hostname Test

Test(config)#

16

5.2.12　password <PASSWORD>

【**Command**】
　password <PASSWORD>

【**Parameter**】
　< PASSWORD >：　Password

【**Command Model**】
　Config Model

【**Default**】
　Default password: admin。

【**Used for**】
　Alter login password

【**Example**】
　DXC(config)# password　123
　DXC (config)#

5.2.13　ip-address <A.B.C.D> <A.B.C.D>

【**Command**】
　ip-address <A.B.C.D> <A.B.C.D>
　no ip-address

【**Parameter**】
　<A.B.C.D>：IP Address
　<A.B.C.D>：Subnet Mask

【**Command Model**】
　Config model

【**Default**】
　Default IP address: 192.168.0.168，Subnet Mask:
　255.255.0.0。

【**Used for**】
　Alter IP address and subnet mask.
　"no ip-address" to erase IP address

【**Example**】
　DXC(config)# ip-address 10.18.3.25 255.255.255.0
　DXC (config)#

5.2.14　gateway <A.B.C.D>

【**Command**】
　gateway <A.B.C.D>

【**Parameter**】
　<A.B.C.D>：Gateway

17

【**Command Model**】
　　Config model
【**Default**】
　　Default gateway address.192.168.0.1。
【**Used for**】
　　Alter Gateway address
【**Example**】
　　DXC(config)# gateway 10.18.3.1
　　DXC (config)#

5.2.15　snmp trap-server <1-2> <A.B.C.D>

【**Command**】
　　snmp trap-server <1-2> <A.B.C.D>
　　snmp trap-server <1-2> <A.B.C.D> <1-65535>
　　no snmp trap-server <1-2>
【**Parameter**】
　　<1-2>：trap server index
　　<A.B.C.D>：trap server address
　　<1-65535>：trap server port
【**Command Model**】
　　Config model
【**Default**】
　　None
【**Used for**】
　　Add Trap Host address and port, default port 162.
　　"no snmp trap-server" command to delete receiving host.
【**Example**】
　　DXC(config)# snmp trap-server 1 10.18.32.15
　　DXC (config)#

5.2.16　snmp community <1-2> <community> (ro/rw)

【**Command**】
　　snmp community <1-2> <community> (ro/rw)
　　no snmp community <1-2>
【**Parameter**】
　　<1-2>：community index
　　<community>：community String
　　(ro/rw)：Permissions are read-only or read-write。

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【**Command Model**】

Config model

【**Default**】

None

【**Used for**】

Increase SNMP community

"no snmp community" command to delete community。

【**Example**】

DXC(config)# snmp community 1 testc rw

DXC (config)#

5.2.17　dxc <1-32>/<1-> source <1-32>/<1-31>

【**Command**】

dxc <1-32>/<1-31> source <1-32>/<1-31>

dxc <1-32>/<1-31> source <1-32>/<1-31> bidirection

【**Parameter**】

<1-32>/<1-31>：Destination E1/timeslot number

<1-32>/<1-31>：source E1/timeslot number

bidirection

【**Command Model**】

Config model

【**Default**】

None

【**Used for**】

To Config timeslot cross-connection, and select any

destination timeslot to cross with relative source timeslot

【**Example**】

DXC(config)# dxc 3/2 source 4/2

DXC (config)#

5.2.18　e1 <PORTLIST> patt (on|off)

【**Command**】

e1 <PORTLIST> patt (on|off)

【**Parameter**】

<PORTLIST>：E1 Num， enable，-symbol

(on/off)

【**Command Model**】

Config model

【**Default**】

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None

【**Used for**】

Config E1 PATT test on or off.

【**Example**】

DXC(config)#e1 1,3,5-12 patt on

DXC (config)#

5.2.19   e1 <PORTLIST> loop (off|local|line)

【**Command**】

e1 <PORTLIST> loop (off|local|line)

【**Parameter**】

<PORTLIST>：E1 Num，enable，-symbol

(off/local/line)：open local loop line loop

【**Command Model**】

Config model

【**Default**】

None

【**Used for**】

Open E1 loop

【**Example**】

DXC(config)#e1 1,3,5-12 loop line

DXC (config)#

5.2.20   clock source

【**Command**】

clock source local

clock source e1 <1-64>

【**Parameter**】

<1-32>：E1 Num

【**Command Model**】

Config Model

【**Default**】

Local Internal Clock

【**Used for**】

Config sytem clock source, Local or selected from any E1

【**Example**】

DXC(config)#clock source e1 3

DXC (config)

Chapter 6 Web Management

It is flexible to Config and monitor DXC device with IE Explore.
Input 192.168.0.168 to login the device.

6.1 Web Login

Username: admin Password: admin.
Login page like figure 6-1.

Figure 6-1 Login page

6.2　System config

As shown on figure 6-2, the data can be checked is: MAC address, E1 num, software version, running time, Ethernet status.

Config-able data: IP address, subnet mask, gateway, clock source, system password, reset.

Figure 6-2　System config page

Clock Source Function

Config clock source

LOC：（Default）Local master clock

（1-32）#E1：　Config to extract clock from E1

LoopDetect Action Function

Set E1 Loop detection function

Auto-Recover：（Default）Close E1 Loop Detect Function.

The E1 port will not be closed when a loop is detected.

Shutdown：Open E1 loop detect function. Shutdown the E1port when a loop is detected

PATT Mode Function

Set Pseudo-random code

Fix-code：（Default）　set Pseudo-random code to fix code

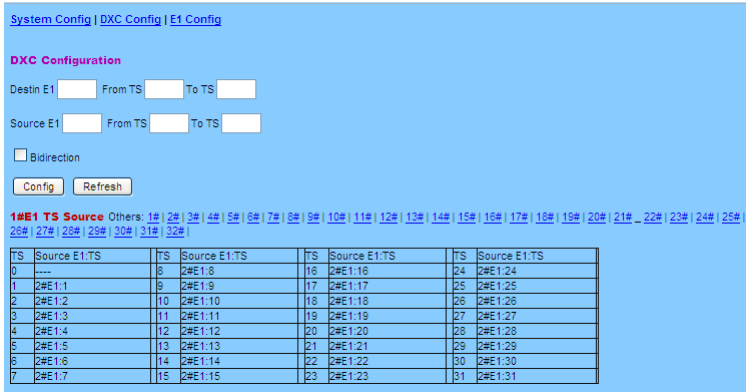PseudoRandom：set random code

6.3 Time slot Cross config

Figure 6-3 Timeslot Cross config page

For example: cross 1#E1 1~31 to 2#E1 1~31
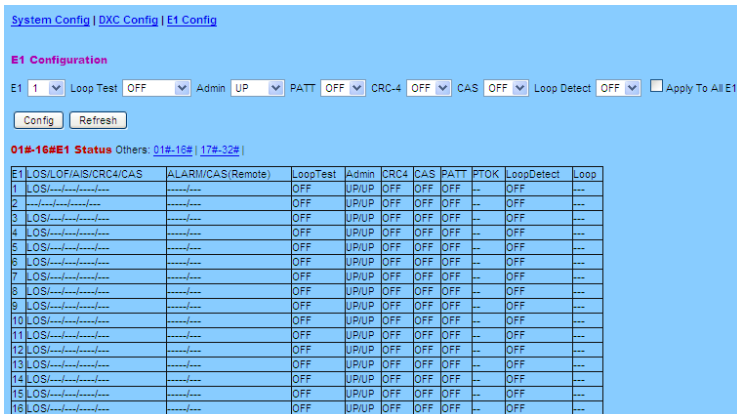

6.4 E1 Interface

Figure 6-4 E1 Interface config

如图 6-4 所示，在此可以配置 E1 的环回检测、CRS 校验和查看 E1 的告警情况等。

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As shown on figure 6-4, it can config E1 loop detect, CRS check and E1 alarming status.

Admin：

UP：E1 port on.

DOWN：E1 port down, none data transmitting.

Loop Test：E1 loop test

OFF：Close loop test

LocLoop：Device Local loop，FPGA internal Loop

LineLoop：Loop from FPGA to E1 port

PATT：Line test，can be used with "Loop Test".

OFF：PATT off

ON：Testing

LoopDetect：Loop detect. "YES" for the port is looping.

CRC4(OFF/ON)，CAS(OFF/ON)，

Select "Apply To All E1" to save current config to all E1.

【Note】

Default setting the Admin of E1 is Down which means it cannot transmitting data. To enable the function, please set E1 Admin to UP

DXC1016 device only enable setting of 1-16 E1.

Chapter 7 Appendix

7.1 Common Problems and Troubleshooting

1. Power LED not on when Power up
   Possible failures:

   （1）　　　　Power connection error

   （2）　　　　Power Supply abnormal

   Solutions:

   （1）Check the Power Line connection

   （2）Check the voltage of Power supply

2. E1 Port LED off
   Possible failures:

   （1）E1 cable is not connected properly

   （2）Bad quality of E1 cable

   Solution:

   Check the E1 cable.

3. E1 port loss package
   Possible failures:

   （1）Device Clock setting

   （2）E1 Cable is not connected properly

   Solution:

   Check the E1 cable or alter Clock setting.

7.2 Warranty Card

The Company guarantees:

1、 Warranty

（1） In free warranty period (12 months from the date of purchase), upon Company recognized normal use circumstances, the Company will responsible for replace or repair any component that was damaged under free of charge.

（2） In charged warranty(out of 12 months free warranty and beyond or less than 36 months), under recognized normal use circumstances, the Company will charge for the replacement component, but shall keep the maintenance services free.

2、 The Warranty does not cover the follows, and the maintenance ices will be charged:

（1） Over 36 months from the date of purchase.

（2） User fails to provide certificate of purchase date and the product＇s serial number indicates the date of manufacture is more than 39 months.

（3） Including but not limited to damages caused by severe impact, extrusion, drops, liquid immersion and other abnormal conditions.

（4） The frangibility label is damaged.

（5） Unauthorized disassembling product behavior.

（6） Force majeure results in product damage, such as earthquakes, floods, lightning, etc.

3、 After product been repaired, the new replacement parts will enjoy 12 months free warranty start from the date of replacement.

4、 If there is any failure of the product, user may choose to

send the product back to the Company or mail the product to service agencies of the Company throughout the country.

5、 For any damage caused due to improper operations, the company does not assume any responsibility. If indeed the product itself causes damages, the company only assumes responsibilities within the product price range and does not including but not limited to all direct or indirect losses caused by data loss

Product Maintenance Records

DXC TimeSlots Cross Device	Device Num:
Date:	Service Num
1	
2	
3	
4	
5	