# Appendix

# Instruction Manual
# PW-DXC-16 Tributary Board

PACIFIC WAVE

# Contents

# 1. System Introduction

## 1.1. Summary:

DXC-16 Digit-cross connection equipment is featured with high density, easy operation, perfect management and maintenance function, realizing effective management of transmission network. It provides flexible exchange network and supports 64K signal channel's non-blocking cross connection of any E1.This equipment possesses processing capacity of channel associated signaling.
User can deploy capacity of equipment flexibly, eight E1 or sixteen E1 are available. Synchronous clock can be extracted through circuit or by the equipment.
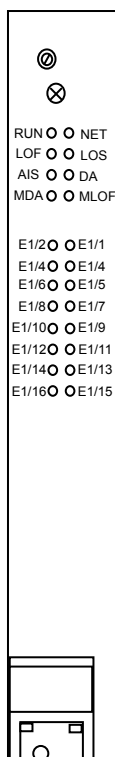
## 1.2. Functions and features

The minimum resolution of cross-connection is 64Kbit/s;
Provides 16 basic group interface which confirms to the suggestion of ITU-T G.703;
The impedance is 120Ω or 75Ω;
Provides local monitoring interface(RS232, RS485);
Provides internal channel, realizing remote operation and control;
Arbitrary broadcasting capacity of internal time slots;
Cross-connection of channel associated signaling;
DC-48V or AC 220V is optional;
With processing capacity of digit signal process, signaling process, and so on.

## 1.3. Technology Parameter:

Interface Signaling Rate Level: E1（2048Kbps）
Working Temperature: 0℃～40℃
Relative Humidity: less than 85％（+25℃），with no condensation
Power Supply: DC-48V or AC220V
Power: ＜20W
Ventilation Condition: natural ventilation
Cross BAR: 512 bidirectional
Signal transmission time skew: < 600us
CAS signal delay: < 7ms
Basic group interface number:16
Interface impedance: 75Ω/120Ω
Physical electrical property: confirms to G.730 standard
Framing structure: Confirms to G.704 and G.706 standard
Precision of internal clock: ±50ppm

## 2. Front view of DXC-16 tributary board

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        ◎
        ⊗

 RUN O  O NET
 LOF O  O LOS
 AIS O  O DA
 MDA O  O MLOF


 E1/2 O  O E1/1
 E1/4 O  O E1/3
 E1/6 O  O E1/5
 E1/8 O  O E1/7
 E1/10 O O E1/9
 E1/12 O O E1/11
 E1/14 O O E1/13
 E1/16 O O E1/15
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## 3. Meaning of LED signal light on panel of DXC-16

Each tributary board is designed with perfect alarm and indication function. Refer to the following chart for its function and indication meaning.

| LED title | Meaning of signal light | Color | Remarks |
|-----------|------------------------|-------|---------|
| RUN | Power is normal: twinkling | Green | |
| NET | Invalid | Green | |
| LOF | When receiving signal is out of step: lighted | Red | Detailed alarm indication: ( detailed alarm of a E1 is set through 1 to 6 of SW1 and SW2.For example, if the 3rd seat of SW1 is ON, then the detailed information comes from E1/3 ) |
| LOS | When inputting signal is lost: lighted | Red | |
| AIS | When receiving signal are all "1": lighted | Yellow | |
| DA | When remote device alarms: lighted | Yellow | |
| MDA | When opposite device framing alarming: lighted | Yellow | |
| MLOF | When occurs Multi-frame out-of-sync: lighted | Red | |
| E1/1-E1/16 | When channel is occupied: it is lighted and then goes out. | Red | Indication when sub-channel is occupied. |

## 4. Structure of DXC-16 Tributary board
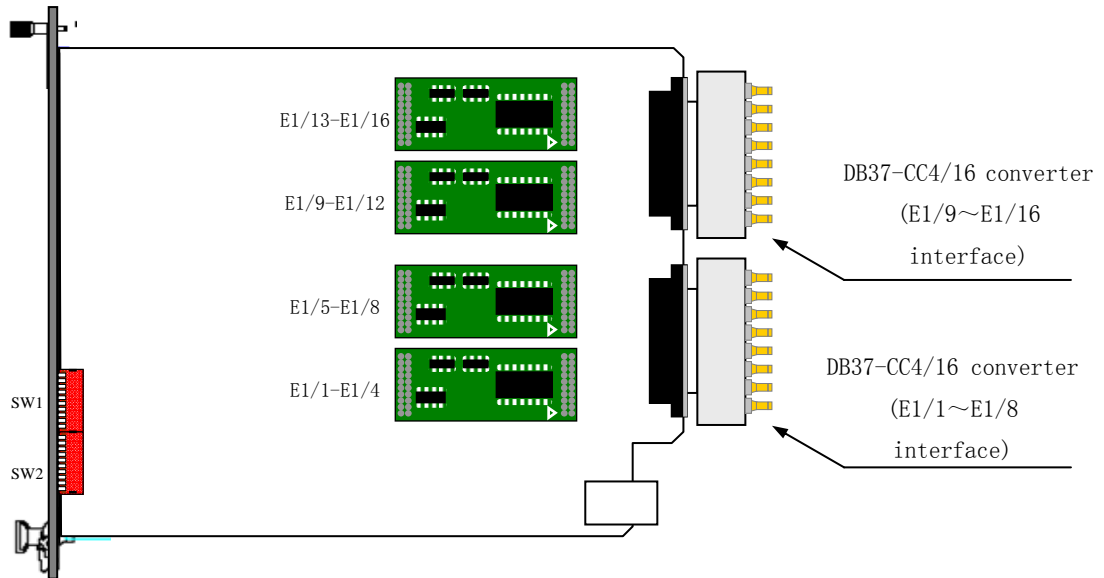


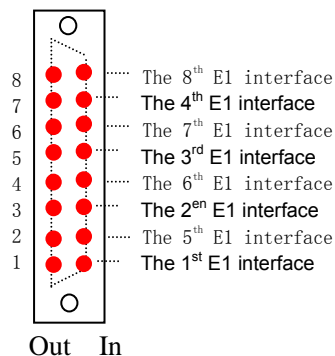## 5. E1 interface line outgoing chart (unbalanced 75Ω)

1）With DB37-CC4-16 converter,　ports of E1/9～E1/16 are as the following diagram:
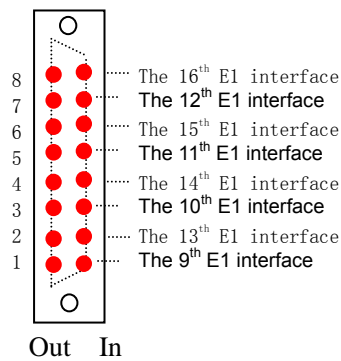


2）With DB37-CC4-16 converter, ports of　E1/1～E1/8 are as the following diagram:

## 6. E1 interface outgoing line chart:（balanced 120Ω）

| E1 interface | Definition | DB37 needle number | | Remarks |
|---|---|---|---|---|
| E1-1 | Receive | 3 | 21 | 3：RRING    21：RTIP |
| | transmit | 22 | 4 | 22：TRING    4：TTIP |
| E1-2 | Receive | 7 | 25 | 7：RRING    25：RTIP |
| | transmit | 26 | 8 | 26：TRING    8：TTIP |
| E1-3 | Receive | 11 | 29 | 11：RRING    29：RTIP |
| | transmit | 30 | 12 | 30：TRING    12：TTIP |
| E1-4 | Receive | 15 | 33 | 15：RRING    33：RTIP |
| | transmit | 34 | 16 | 34：TRING    16：TTIP |
| E1-5 | Receive | 5 | 23 | 5：RRING    23：RTIP |
| | transmit | 24 | 6 | 24：TRING    6：TTIP |
| E1-6 | Receive | 9 | 27 | 9：RRING    27：RTIP |
| | transmit | 28 | 10 | 28：TRING    10：TTIP |
| E1-7 | Receive | 13 | 31 | 13：RRING    31：RTIP |
| | transmit | 32 | 14 | 32：TRING    14：TTIP |
| E1-8 | Receive | 17 | 35 | 17：RRING    35：RTIP |
| | transmit | 36 | 18 | 36：TRING    18：TTIP |

PIN37    PIN19    DB37-F Connecter

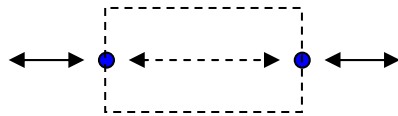PIN20    PIN1
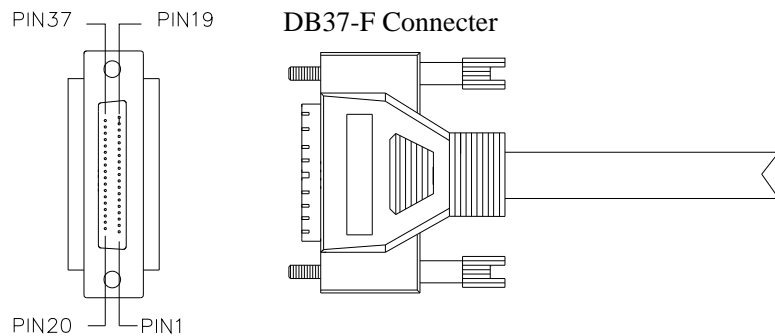
# 7. Cross-connection function

Any two ports of DXC-16 are available for time slot cross-connection, including point-to-point one way connection and point-to-point two-way connection and point-to-points one way connection. As the following diagram:
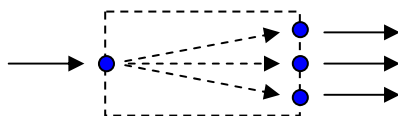
1）point-to-point one way connection:

2）point-to-points two-way connection:

3）

4）point-to-points one way connection

## 8. Switchgear setting

1）Settings of switchgear（0 is ON，1 is OFF）

| SW. | Number | ON | OFF | Priority rating | Default setting |
|---|---|---|---|---|---|
| SW1 | 1 | Display detailed alarm information of E1/1 | Not display detailed alarm information of E1/1 | Display detailed alarm information of E1/1 | OFF |
| | 2 | Display detailed alarm information of E1/2 | Not display detailed alarm information of E1/2 | Display detailed alarm information of E1/2 | OFF |
| | 3 | Display detailed alarm information of E1/3 | Not display detailed alarm information of E1/3 | Display detailed alarm information of E1/3 | OFF |
| | 4 | Display detailed alarm information of E1/4 | Not display detailed alarm information of E1/4 | Display detailed alarm information of E1/4 | OFF |
| | 5 | Display detailed alarm information of E1/5 | Not display detailed alarm information of E1/5 | Display detailed alarm information of E1/5 | OFF |
| | 6 | Display detailed alarm information of E1/6 | Not display detailed alarm information of E1/6 | Display detailed alarm information of E1/6 | OFF |
| | 7 | Display detailed alarm information of E1/7 | Not display detailed alarm information of E1/7 | Display detailed alarm information of E1/7 | OFF |
| | 8 | Display detailed alarm information of E1/8 | Not display detailed alarm information of E1/8 | Display detailed alarm information of E1/8 | OFF |
| | 9 | Display detailed alarm information of E1/9 | Not display detailed alarm information of E1/9 | Display detailed alarm information of E1/9 | OFF |
| | 10 | Display detailed alarm information of E1/10 | Not display detailed alarm information of E1/10 | Display detailed alarm information of E1/10 | OFF |
| SW2 | 1 | Display detailed alarm information of E1/11 | Not display detailed alarm information of E1/11 | Display detailed alarm information of E1/11 | OFF |
| | 2 | Display detailed alarm information of E1/12 | Not display detailed alarm information of E1/12 | Display detailed alarm information of E1/12 | OFF |
| | 3 | Display detailed alarm information of E1/13 | Not display detailed alarm information of E1/13 | Display detailed alarm information of E1/13 | OFF |
| | 4 | Display detailed alarm information of E1/14 | Not display detailed alarm information of E1/14 | Display detailed alarm information of E1/14 | OFF |
| | 5 | Display detailed alarm information of E1/15 | Not display detailed alarm information of E1/15 | Display detailed alarm information of E1/15 | OFF |
| | 6 | Display detailed alarm information of E1/16 | Not display detailed alarm information of E1/16 | Display detailed alarm information of E1/16 | OFF |
| | 7 | System uses internal clock of equipment | System clock is selected by software | | OFF |
| | 8 | Framing mode of device is PCM31 | Framing mode is selected by software | | OFF |
| | 9 | Invalid | | | OFF |
| | 10 | Invalid | | | OFF |

Any detailed alarm information of E1/1～E1/16 can be displayed through switchgear SW1 AND SW2. Each time display one E1 alarm information; If there are many E1 require to display, E1 with higher level prevails.

## 9. Clock setting

The equipment is furnished with internal clock or link clock. When choosing internal clock, the precision is ±50PPM. When choosing link clock, DXC-16 can be synchronous with any E1 clock of E1 interface from 1 to 16.

1)   Set the 7th seat of SW2 to ON, the system uses the internal clock provided by equipment;

2)   Set the 7th seat of SW2 to OFF, the system clock is determined by software, any E1 clock of E1 interface from 1 to 16.