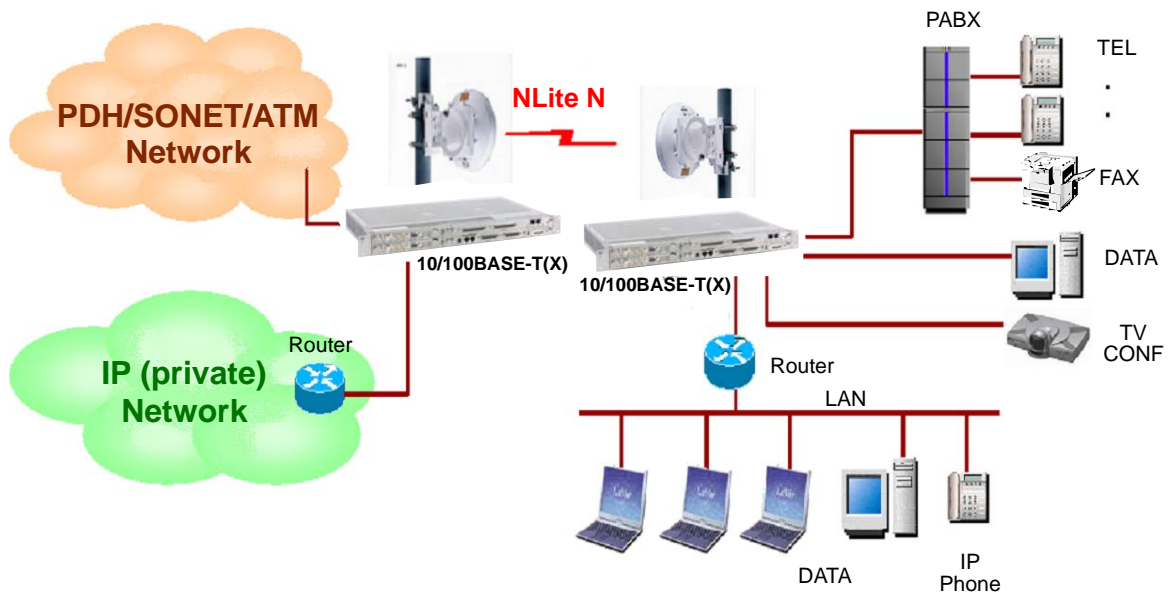

APPENDIX (NLite N) LAN INTERFACE (10/100BASE-T(x)) Application and Setting

1. OUTLINE	A-1
2. MODULE INFORMATION.....	A-2
3. APPLICATION EXAMPLE	A-3
4. SETUP OF THE MODULE	A-6
4.1 Setup of LAN Mode (LAN Port Usage).....	A-7
4.1.1 Multiplexing Signal	A-7
4.1.2 Multiplexing Mode.....	A-8
4.1.3 Setup of LAN Port Usage.....	A-9
4.2 Setup of LAN Signal Bandwidth (LAN Capacity).....	A-10
4.2.1 Setup of LAN Capacity	A-11
4.3 Setup of the Switching Mode (Switching Function)	A-14
4.4 Setup of 1.5M Framing.....	A-14
4.5 Setup of Used/Unused Port (Port Usage)	A-14
4.6 Setup of Port Speed & Duplex	A-15
4.6.1 Setup for External Connection	A-16
4.6.2 Setup of MDI / MDIX	A-16
4.7 Setup of Flow Control (Flow Control)	A-17
4.7.1 Flow Control.....	A-17
4.8 Setup of Collision Report	A-17
4.9 Port Link Loss Forwarding (LLF) / Link Down Control	A-18
4.9.1 LAN.....	A-18
5. ALARM/STATUS INDICATION AND REPORTING.....	A-19
5.1 LED Indication	A-20
5.2 Alarm/Status Report	A-21
5.3 Remote Network Monitoring (RMON).....	A-22
6. MAINTENANCE/CONTROL.....	A-23
6.1 Remote Reset (LAN Device Reset).....	A-23

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1. OUTLINE

On the NLite E, the LAN signal can be transported in Main signal domain and Auxiliary signal domain using adaptive LAN interface module.



2. MODULE INFORMATION

(1) NWA-036103-001 2P LAN INTFC

It provides two (2) ports 10BASE-T/100BASE-TX interface and up to 16 DS1 and one (1) WS channel (equivalent to DS1 bandwidth per channel). By easy setting, besides each port can be used independently separated, a signal domain can be shared with two (2) LAN ports. LAN through put maximum capacities can be set from 1.5 Mbps to 150 Mbps.

Module	Features
NWA-036103-001 2P LAN INTFC	<ul style="list-style-type: none"> • Maximum LAN through put capacities, 1.5 Mbps - 150 Mbps • 10BASE-T/100BASE-TX x 2 port • Auto Negotiation / Auto MDI/MDIX, effective • 1024 MAC Address Table, automatically learning and aging. • Maximum frame size 1548 bytes • Conformed to IEEE 802.3x, Pause Frame Flow Control, effective (Full Duplex) • Half Duplex Back Pressure, effective • Link Loss Forwarding (LLF) function • RMON function • CSU function

3. APPLICATION EXAMPLE

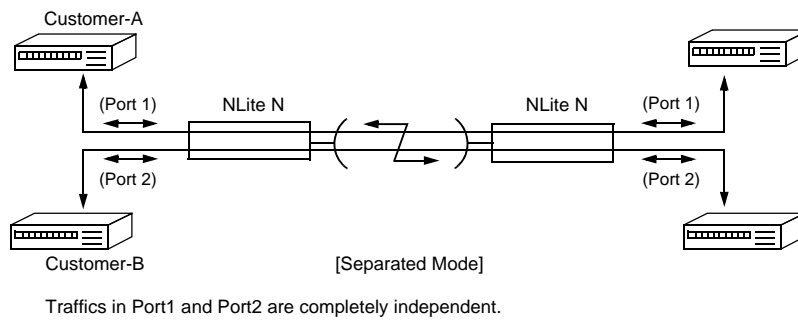
The LAN signal transmission mode in the radio section is described as follows. Applicable transmission mode is depending on the interface module type as listed in the following table.

Module	Mode				
	(1) Guaranteed Bandwidth	(2) Switching HUB	(3) Data Distribution	(4) Best Effort	(5) DS1 Network Connection
2P LAN INTFC	√	√	√	√	√

Note: √: Applicable —: Not Applicable

(1) Guaranteed Bandwidth Mode

Two (2) ports are completely separated and guaranteed maximum throughput for each port.

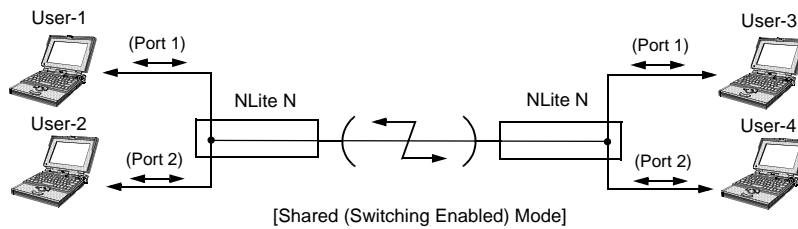


[Setup] (e.g. 2P LAN INTFC)

[Equipment Setup]→[LAN Port Usage]: $P1:P2 = 1:0$
 $P1:P2 = 1:1$
 Best Effort
 $P1 = \text{Fixed}/P2$
 P1 Only
 P1-2 Separated

(2) Switching HUB Mode

Between distant sites are connected with switching HUB configuration.



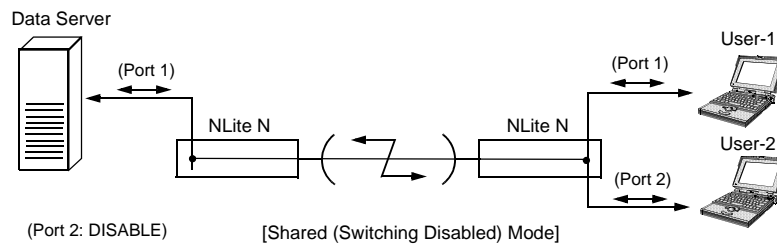
[Setup] (e.g. 2P LAN INTFC)

[Equipment Setup]→[LAN Port Usage]: P1-2 Shared / 1 Port Only (Main)

[Provisioning]→[LAN Port Setting]→[Switching Function]: Enabled

(3) DATA Distribution Mode

Make up 1 vs. 2 asymmetry network composition like below connecting data center and terminals.



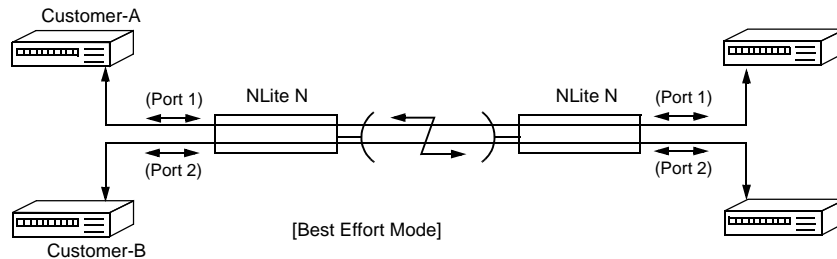
[Setup] (e.g. 2P LAN INTFC)

[Equipment Setup]→[LAN Port Usage]: P1-2 Shared / 1 Port Only (Main)

[Provisioning]→[LAN Port Setting]→[Switching Function]: Disabled

(4) Best Effort Mode

Two (2) ports are separated and the signal band is shared in accordance with the traffic quantity of each port.



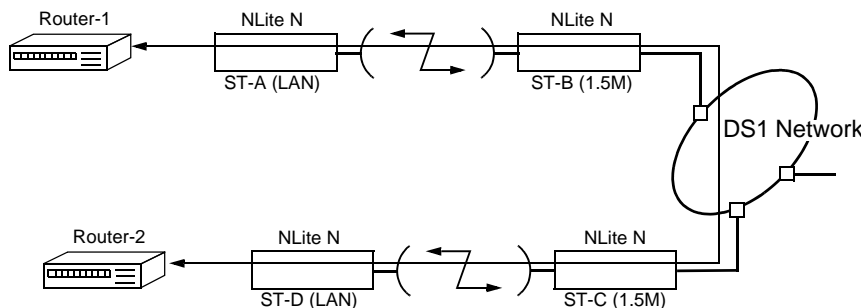
It applies total transmission capacities for LAN in the radio section. It does not guaranteed for each port.

[Setup] (e.g. 2P LAN INTFC)

[Equipment Setup]→[LAN Port Usage]: Best Effort

(5) DS1 Network Connection Mode

Make up LAN network via DS1 network.



[Setup] (e.g. 2P LAN INTFC)

Notes: 1. Set to LAN Enabled at the ST-A and ST-D stations, set to 1.5M at the ST-B and ST-C stations.

2. LAN → DS1 (1.5 Mbps) and DS1 (1.5 Mbps) → LAN conversion must be performed through the NLite N.

At ST-A / ST-D

[Equipment Setup]→[LAN Port Usage]: P1 = Fixed/P2

[Equipment Setup]→[LAN Capacity2]: P2: 1.5 Mbps

At ST-B / ST-C

[Equipment Setup]→[LAN Port Usage]: P1:P2 = 1:0

4. SETUP OF THE MODULE

Setup of the LAN INTFC is performed with the LCT. The menu items on the LCT are as follows.

Main Menu	(Description)
— Equipment Setup	
— LAN Port Usage	4.1
— LAN Capacity	4.2
— Provisioning	
— LAN Port Setting	
— Switching Function	4.3
— 1.5M Framing	4.4
— Port Usage	4.5
— Speed & Duplex	4.6
— Flow Control	4.7
— Collision Report	4.8
— Link Loss Forwarding	4.9

4.1 Setup of LAN Mode (LAN Port Usage)

It sets Performing the setup of signal domain where LAN signal is multiplexed and multiplex mode of it. The LAN signal can be multiplexed into the DS1 channel domain or SC/WS channels domain.

4.1.1 Multiplexing Signal

(1) 2P LAN INTFC

a. Main Signal

The transmission bandwidth is selected from 1.5 Mbps to 150 Mbps. The setup of the transmission bandwidth of the LAN signal is depending on the selection of the LAN Port Usage.

b. Wayside Signal (WS)

The transmission bandwidth is 1.5 Mbps. Depending on the selection of LAN signal capacity, WS (DS1) channels can not be of use.

c. Service Channel Signal (SC)

The transmission bandwidth is selected from 64 kbps, 128 kbps and 256 kbps. Depending on the LAN transmission bandwidth selection, use of the V.11/RS-232C interface via SC1/SC2/SC3/SC4 is not available.

Note: When the LAN signal is used 64 kbps bandwidth, it is assigned to domain of SC1, when the LAN signal is used 128 kbps bandwidth, it is assigned to domains of SC1 and SC2 or when the LAN signal is used 256 kbps bandwidth, it is assigned to domains of SC1 to SC4.

4.1.2 Multiplexing Mode

There are two modes of LAN Port usage; plural ports share signal domain in a radio section (Shared Mode) and independently separated domain is secured for each port (Separated Mode).

Local Equipment Setting		Opposite Equipment Setting	
		Terminal	
		Separated	Shared
<i>Terminal</i>	<i>Separated</i>	√	—
	<i>Shared</i>	—	√

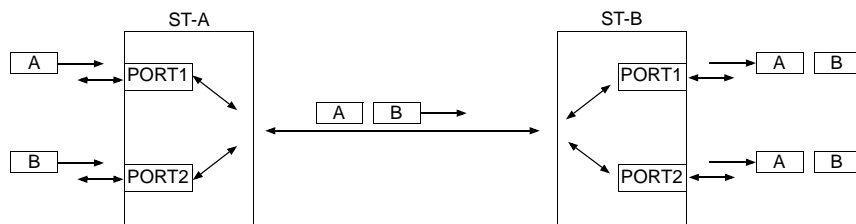
√: Available, —: Unavailable

Note: Shared/switching mode is included in the Shared setting.

(1) Shared Mode

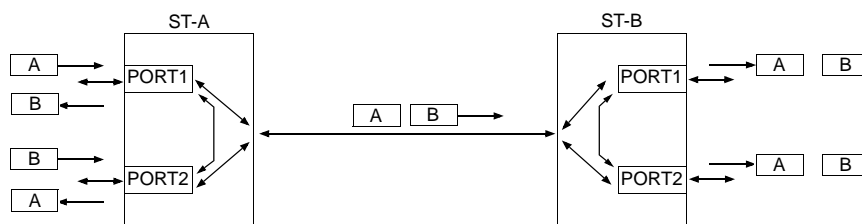
Plural ports share signal domain in a radio section.

- P1-2 Shared



(2) Switching Mode

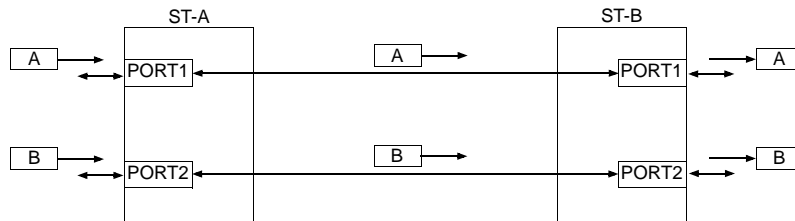
It is permitted that the signals pass through between local ports. When the shared mode is setup, it is recommended that using switching mode together.



(3) Separated Mode

It is secured signal domain for each independent port.

- **P1:P2 = 1:0, P1:P2 = 1:1, Best Effort, P1 = Fixed/P2, P1 Only, P1-2 Separated**



4.1.3 Setup of LAN Port Usage

[LAN Port Usage Setup]

[Equipment Setup]→[LAN Port Usage]

(1) 2P LAN INTFC

No.	Setup	Description
1	P1:P2 = 1:0	Bandwidth ratio between Port1 and Port2 is 1:0.
2	P1:P2 = 1:1	Bandwidth ratio between Port1 and Port2 is 1:1.
3	Best Effort	Bandwidth ratio between Port1 and Port2 is best effort.
4	P1 = Fixed/P2	Port 1 (P1) is fixed bandwidth; P2 is valuable bandwidth.
5	P1-2 Shared/1Port Only (Main)	Selecting when only one (1) port is used or bandwidth is shared in port1 and port2. The LAN signal is transmitted in the Main signal domain.
6	P1 Only (Main)	Selecting when only port1 is used. The LAN signal is transmitted in the Main signal domain.
7	P1-2 Separated (Main)	Selecting when each port is used independently separated. The LAN signal is transmitted in the Main signal domain.
8	P1-2 Separated (Main + WS)	Selecting when each port is used independently separated. The LAN signal is transmitted in the Main and WS signal domain.
9	P1-2 Separated (Main + SC)	Selecting when each port is used independently separated. The LAN signal is transmitted in the Main and SC signal domain.
10	Not Used	The LAN transmission is not applied.

4.2 Setup of LAN Signal Bandwidth (LAN Capacity)

Setting of bandwidth for the LAN signal transmission.

Settable bandwidth varies depending on the Transmission Capacity selection and LAN Port Usage setup.

Selectable bandwidth and shared signal domain of the LAN signal are given in following tables. The codes are used for System Configuration and Channel Assignment in the table, refer in following Table a. and Table b.

a. System Configuration Setup Code

Code	LAN Port Usage
[A-1]	P1-2 Shared/1Port Only (Main)
[A-2]	P1:P2 = 1:0
	P1:P2 = 1:1
	Best Effort
	P1 = Fixed/P2
	P1 Only (Main)
	P1-2 Separated (Main)
[A-3]	P1-2 Separated (Main + WS)
[A-4]	P1-2 Separated (Main + SC)

b. Channel Assignment Code

Code	Description
DS1	1.544 Mbps (DS1) Data
L1	LAN Port1
L2	LAN Port2
<i>L*</i>	LAN (P1:P2 = 1:0, P1:P2 = 1:1, Best Effort)
L	LAN (Shared)
S	V.11/RS-232C Data
-	Not Assignable

Note: "L", "L1" and "L2", italic and bold characters in Setup of LAN Capacity tables, can select 1.5M Framing function.

4.2.1 Setup of LAN Capacity

[LAN Capacity Setup]

[Equipment Setup] → [LAN Capacity]

(1) 2P LAN INTFC

- 28 × DS1/64 QAM (Transmission Capacity : 42 Mbps)

System Configuration	LAN Capacity [bps]		Channel Assignment																																
	Port1	Port2	Main Traffic																										WS		SC				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	
Not Used	-	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	/	/	/	/	/	/	/	/	/	/	/	/	DS1	S	S	S	S
A-1 [Shared Main]	18M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	19.5M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	21M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	22.5M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	24M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	25.5M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	27M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	28.5M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	30M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	31.5M		DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	33M		DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	34.5M		DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	36M		DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
	37.5M		DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S	
39M		DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S		
40.5M		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S		
42M		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S		
A-2 [Main+Main]	18M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	DS1	S	S	S	S		
	42M	-	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	DS1	S	S	S	S		
	9M	9M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L2	L2	L2	L2	L2	L2	L2	L1	L1	L1	L1	L1	DS1	S	S	S	S		
	21M	21M	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	DS1	S	S	S	S		
A-3 [Main+WS]	18M	1.5M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S		
	42M	1.5M	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S		
A-4 [Main+SC]	18M	64K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S		
	18M	128K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	S	S	S		
	18M	256K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	S		
	42M	64K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S		
	42M	128K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	S	S	S		
42M	256K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	S			

Note: "L2": Highlighted in a box: can select 1.5M Framing function.

• 32 × DS1/QPSK (Transmission Capacity : 48 Mbps)

System Configuration	LAN Capacity [bps]		Channel Assignment																																WS		SC																		
	Port1	Port2	Main Traffic																																1	1	2	3	4																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																					
Not Used	-	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	DS1	S	S	S	S														
A-1 [Shared Main]	24M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S												
	25.5M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S										
	27M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S									
	28.5M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S								
	30M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S							
	31.5M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S							
	33M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S						
	34.5M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S					
	36M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S					
	37.5M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S				
	39M	-	DS1	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S				
	40.5M	-	DS1	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S				
	42M	-	DS1	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S				
	43.5M	-	DS1	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S				
45M	-	DS1	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S					
46.5M	-	DS1	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S					
48M	-	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	DS1	S	S	S	S					
A-2 [Main+Main]	24M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	DS1	S	S	S	S					
	48M	-	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	DS1	S	S	S	S				
	12M	12M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	DS1	S	S	S	S				
	24M	24M	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	DS1	S	S	S	S			
A-3 [Main+WS]	24M	1.5M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S				
	48M	1.5M	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S					
A-4 [Main+SC]	24M	64K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	S	S	S	S					
	24M	128K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	S	S	S					
	24M	256K	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	S	S				
	48M	64K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	S	S	S	S
	48M	128K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	S	S	S			
	48M	256K	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	S	S			

Note: "L2": Highlighted in a box: can select 1.5M Framing function.

- 1 × OC-3/16 QAM, 1 × OC-3/64 QAM, 1 × OC-3/128 QAM (Transmission Capacity : 150 Mbps)

System Configuration	LAN Capacity [bps]		Channel Assignment																						
	Port1	Port2	Main Traffic																	WS	SC				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	26M	100M	1	1	2	3	4
Not Used	-	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	/	/	DS1	S	S	S	S
A-2 [Main+Main]	100M	-	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	/	L*	DS1	S	S	S	S
	63M	63M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L*	L*	DS1	S	S	S	S	
	75M	75M	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	DS1	S	S	S	S
		150M	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	DS1	S	S	S	S
	100M	1.5M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L2	/	L1	DS1	S	S	S	S
	100M	26M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	L2	L1	DS1	S	S	S	S	
	100M	50M	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L1	DS1	S	S	S	S	
A-3 [Main+WS]	100M	1.5M	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	DS1	/	L1	L2	S	S	S	S	

Note: "L2": Highlighted in a box: can select 1.5M Framing function.

4.3 Setup of the Switching Mode (Switching Function)

This is switching mode setup between local ports which share domain, that is available only on the shared mode.

[Switching Function Setup]

[Provisioning] → [LAN Port Setup] → [Switching Function]

No.	Setup	Descriptions
1	<i>Enabled</i>	Enables data communication between local ports which share domain.
2	<i>Disabled (Default)</i>	Disables data communication between local ports which share domain.

4.4 Setup of 1.5M Framing

When the LAN bandwidth is set to 1.5 Mbps, DS1 framing corresponded to ANSI T1.403 is available in the transmission data in the radio link.

No.	Setup	Descriptions
1	<i>UF (Unframed)</i>	Framing is not effected. All 1.5 Mbps are used for LAN signal bandwidth.
2	<i>SF (ANSI T1.107)</i>	Framing is effected for Superframe frame.
3	<i>ESF (ANSI T1.107)</i>	Framing is effected for Extended Superframe frame.

4.5 Setup of Used/Unused Port (Port Usage)

This is the setup of the used or unused LAN port.

[Port Usage Setup]

[Provisioning] → [LAN Port Setup] → [Port Usage]

No.	Setup	Descriptions
1	<i>Used</i>	Port is used.
2	<i>Not Used (Default)</i>	Port is not used.

Note: When Not Used is selected, link of port is compulsorily released.

4.6 Setup of Port Speed & Duplex

This is the setup of the operation mode of LAN port.

1) 10/100BASE-TX Supported port

[Speed & Duplex Setup]

[Provisioning] → [LAN Port Setup] → [Speed & Duplex]

No.	Mode	Descriptions
1	AUTONEG (AUTO-MDI/MDIX) <i>Auto-Negotiation (Auto-MDI/MDIX)</i> <i>(Default)</i>	Depending on the connecting NE, the setting of 10M / 100M, Half / Full and STRAIGHT / CROSSED are plugged in auto-sensing.
2	10M - HALF (MDI) <i>10BASE-T HALF Duplex (MDI)</i>	For 10M Half-Duplex (MDI), set to fixed mode.
3	10M - FULL (MDI) <i>10BASE-T FULL Duplex (MDI)</i>	For 10M Full-Duplex (MDI), set to fixed mode.
4	100M - HALF (MDI) <i>100BASE-TX HALF Duplex (MDI)</i>	For 100M Half-Duplex (MDI), set to fixed mode.
5	100M - FULL (MDI) <i>100BASE-TX FULL Duplex (MDI)</i>	For 100M Full-Duplex (MDI), set to fixed mode.
6	10M - HALF (MDIX) <i>10BASE-T HALF Duplex (MDIX)</i>	For 10M Half-Duplex (MDIX), set to fixed mode.
7	10M - FULL (MDIX) <i>10BASE-T FULL Duplex (MDIX)</i>	For 10M Full-Duplex (MDIX), set to fixed mode.
8	100M - HALF (MDIX) <i>100BASE-TX HALF Duplex (MDIX)</i>	For 100M Half-Duplex (MDIX), set to fixed mode.
9	100M - FULL (MDIX) <i>100BASE-TX FULL Duplex (MDIX)</i>	For 100M Full-Duplex (MDIX), set to fixed mode.

4.6.1 Setup for External Connection

According to the setting mode of the connected equipment port, the LAN port setup is performed. Acceptable port settings are as follows

		External Equipment				
		Auto Negotiation	10BASE-T/ Half Duplex	10BASE-T/ Full-Duplex	100BASE-TX/ Half-Duplex	100BASE-TX / Full-Duplex
Port Setting	Auto Negotiation (Auto MDI/MDIX)	√	√	—	√	—
	10BASE-T/ Half Duplex	√	√	—	—	—
	10BASE-T/ Full-Duplex	—	—	√	—	—
	100BASE-TX/ Half-Duplex	√	—	—	√	—
	100BASE-TX / Full-Duplex	—	—	—	—	√

Note: The connection of different setting mode, it may be caused inferior performance or link loss.

4.6.2 Setup of MDI / MDIX

When the Auto Negotiation is applied, it is operated with Auto MDI or MDIX. It can be selected MDI or MDIX by manual setting mode.

MDI : Straight Port Setting

Select MDI when the crossed cable is connected to the straight port of the external equipment or straight cable is connected to the crossed port of the external equipment.

MDIX : Crossed Port Setting

Select MDIX in other conditions than above MDI.

Auto MDI/MDIX

Straight or Crossed is auto-sensing to correspond to the connected equipment.

4.7 Setup of Flow Control (Flow Control)

This is the setup of ON/OFF for the flow control function to each port.

[Flow Control]

[Provisioning] → [LAN Port Setup] → [Flow Control]

No.	Setup	Descriptions
1	<i>On (Default)</i>	Flow control is operated.
2	<i>Off</i>	Flow control is not operated.

4.7.1 Flow Control

In accordance with the Half/Full-Duplex mode, following two (2) flow control modes provide in the INTFC module.

No.	Mode	Description of Flow Control System
1	<i>Half-Duplex</i>	Back Pressure: To prevent frame inflow, it is caused pseudo-collision by sending jam signals.
2	<i>Full-Duplex</i>	PAUSE frame Flow Control: By sending PAUSE frame (conformed to IEEE 802.3x), request the opposite equipment that the frame sending to be stopped/started. It is required that the opposite equipment also has this function.

4.8 Setup of Collision Report

In HALF-Duplex mode, it is selected that is reported or not reported about collision conditions at each port.

[Collision Report]

[Provisioning] → [LAN Port Setup] → [Collision Report]

No.	Setup	Descriptions
1	<i>Reported</i>	Collision condition is reported.
2	<i>Not Reported (Default)</i>	Collision condition is not reported.

Note: When the flow control is applied in HALF-Duplex mode, a collision condition may be occurred while the Back Pressure control, therefore, use of "Not Reported" mode is recommended.

4.9 Port Link Loss Forwarding (LLF) / Link Down Control

4.9.1 LAN

The function is provided for compulsorily release the local link by detecting opposite link failure. It can be set the control that it is enabled/disabled the function for each port.

[Link loss Forwarding]

[Provisioning] → [LAN Port Setup] → [Link loss Forwarding]

No.	Setup	Descriptions
1	Enabled	Enables the function to compulsorily release the local link by information from the opposite link.
2	Disabled (Default)	Disables the function to compulsorily release the local link by information from the opposite link.

Notes: 1. When LOF/High BER alarm occurs in a radio section, regardless of above setup, link is compulsorily released.

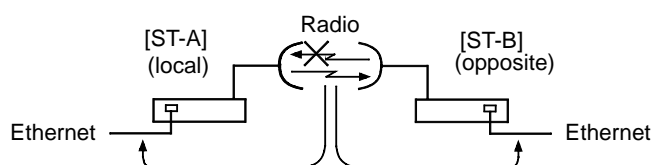
2. When the Port Switching is set to Enabled, this function is not operated.

4.9.1.1 Control of Releasing Link

The function provides the control to release the link at both terminals when the radio section failure or LAN port link failure occurs.

a. Control of Compulsorily Released Link by Radio Channel Failure

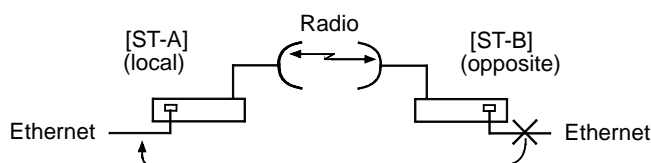
When radio section failure occurs, port link is compulsorily released for both end terminals. This function operates regardless of setting of the Loss Forwarding function.



Note: The control is performed in accordance with the setting conditions of the AIS Activation Condition. (Default: LOF + High BER Alarm)

b. Control of Compulsorily Released Link by the Opposite Link Failure

When the Link Loss Forwarding function is set to Enabled, the local link is compulsorily released by detecting the link failure of the opposite station.



5. ALARM/STATUS INDICATION AND REPORTING

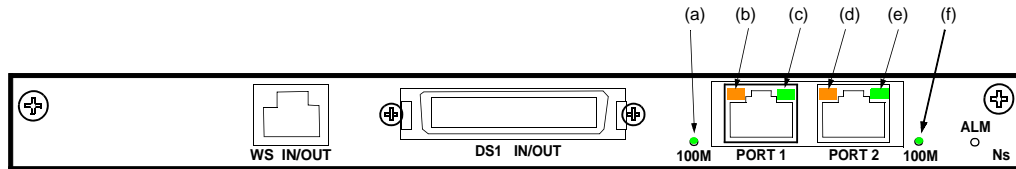
The alarm/status of the LAN interface can be observed using LCT. Link status is also observable with LED indicators on the module front. The menu structure of LCT is as follows.

+ Alarm/Status	Chapter 5.2
	+ LAN Link	
	+ LAN Collision	
	+ Link Loss Forwarding (LLF)	
	+ Link Down Control	
	+ LLF (Any port)	
	+ LLF (ALL port)	
	+ Speed & Duplex	
+ RMON (History)	Chapter 5.3
	+ RMON(Line)(24H/15min)	
	+ RMON(Line)(7days/day)	
	+ RMON(DMR)(24H/15min)	
	+ RMON(DMR)(7days/day)	

5.1 LED Indication

The following visual indications with LEDs are provided on the module front.

(2) 2P LAN INTFC



	Name of LED	Color	Indication	Descriptions
(a)	Port1 100M	green	lighting	When Port 1 is linked in 100M mode.
(b)	Port1 Collision / Full Duplex	amber	lighting	When Port 1 is linked in Full-Duplex mode.
			blinking	When Port 1 is linked in Half-Duplex mode and collision condition occurs.
(c)	Port1 LINK / TX/RX Activity	green	lighting	When Port 1 is linked.
			blinking	When Port 1 is linked and data is sending and receiving.
(d)	Port2 Collision / Full Duplex	amber	lighting	When Port 2 is linked in Full-Duplex mode.
			blinking	When Port 2 is linked in Half-Duplex mode and collision condition occurs.
(e)	Port2 LINK / TX/RX Activity	green	lighting	When Port 2 is linked.
			blinking	When Port 2 is linked and data is sending and receiving.
(f)	Port2 100M	green	lighting	When Port 2 is linked in 100M mode.

5.2 Alarm/Status Report

The following alarm/status are reported to the equipment.

No.	Alarm/Status	Condition	Message	Descriptions
1	Port() Link	Alarm	Link	Reporting about link condition in Port(). Surveillance object as alarm item of the MDP. <i>Note: It does not reported when Port Usage is set to Not Used.</i>
			Alarm	
2	Port() Collision	Status	Normal	Reporting about occurrence of collision in Port(). By setting of Port Collision Report, the selection of either Report/Not Report is applicable.
			Collision	
3	Port() Speed & Duplex	Status	10M - Half (MDI)	Reporting established link mode of Port(). <i>Notes: 1. If link failure occurs in Auto-Negotiation mode, it is sets as 10M-Half (MDIX) or 10M-Half (MDI).</i>
			100M - Half (MDI)	
			10M - Full (MDI)	
			100M - Full (MDI)	
			10M - Half (MDIX)	
			100M - Half (MDIX)	
			10M - Full (MDIX)	
			100M - Full (MDIX)	
4	Port() Link Loss Forwarding	Status	Normal	Reporting situation of the compulsive release of link in Port().* Supporting this when Radio +LLF (Any port/ ALL port) is selected at Link Down Control setting
			Under Execution	

*Note: *: Refer to Chapter 4.9 Link Loss Forwarding for compulsive release of link.*

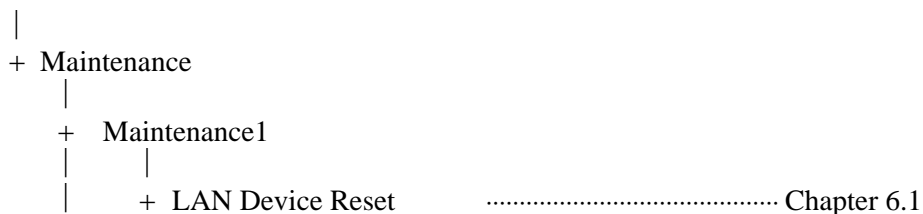
5.3 Remote Network Monitoring (RMON)

Observing passing LAN signal through each LAN port, it provides RMON functions to itemize statistics of total number of transmitting frames, receiving frames and error frames. The statistic informations are indicated per 15 minutes for 24 hours and per 1 day for 7 days.

No.	Statistics Item	Objective		Description
		Line	DMR	
1	<i>Rx Unicast</i>	√	√	Total number of received frame addressed to unicast.
2	<i>Rx Broadcast</i>	√	√	Total number of received frame addressed to broadcast.
3	<i>Rx Multicast</i>	√	√	Total number of received frame addressed to multicast.
4	<i>Rx Pause</i>	√	√	Total number of received frame of PAUSE.
5	<i>Rx CRC Error</i>	√	√	Total number of received frame of detected FCS error.
6	<i>Rx Alignment Error</i>	√	—	Total number of received frame of alignment error.
7	<i>Rx Symbol Error</i>	√	—	Total number of received frame of symbol error.
8	<i>Rx Undersize</i>	√	√	Total number of received frame excluded erred frame for less than 63 bytes frame length.
9	<i>Rx Fragments</i>	√	√	Total number of received frame included erred frame for less than 63 bytes frame length.
10	<i>Rx Pkets 64</i>	√	√	Total number of received frame of 63 bytes frame length.
11	<i>Rx Pkets 65 to 127</i>	√	√	Total number of received frame from 65 bytes to 127 bytes frame length.
12	<i>Rx Pkets 128 to 255</i>	√	√	Total number of received frame from 128 bytes to 255 bytes frame length.
13	<i>Rx Pkets 256 to 511</i>	√	√	Total number of received frame from 256 bytes to 511 bytes frame length.
14	<i>Rx Pkets 512 to 1023</i>	√	√	Total number of received frame from 512 bytes to 1023 bytes frame length.
15	<i>Rx Pkets 1024 to 1536</i>	√	√	Total number of received frame from 1024 bytes to 1536 bytes frame length.
16	<i>Rx Pkets 1537 to Max Size</i>	√	√	Total number of received frame excluded erred frame from 1537 bytes to 1916 bytes frame length.
17	<i>Rx Jabbers</i>	√	√	Total number of received frame included erred frame exceeding 1537 bytes frame length.
18	<i>Tx Unicast</i>	√	√	Total number of transmitted frame addressed to unicast.
19	<i>Tx Broadcast</i>	√	√	Total number of transmitted frame addressed to broadcast.
20	<i>Tx Multicast</i>	√	√	Total number of transmitted frame addressed to multicast.
21	<i>Tx Pause</i>	√	√	Total number of transmitted frame of PAUSE.
22	<i>Tx Total Collision</i>	√	—	Total number of occurred collision.

*Note: √; Objective Item, —; Out of Objective Item
 From No.1 to No.3 and No.5 to No.7 operate within 64 to 1536 bytes.
 From No.10 ~ No.15 include error frame as object.
 No.16 does not include error frame as object.
 From No.18 to No.20 the operate within 64 to 1916 bytes.*

6. MAINTENANCE/CONTROL



6.1 Remote Reset (LAN Device Reset)

It can be performed Reset control for LAN Port.

[LAN Device Reset Control]

[Maintenance]→[Maintenance1]

No.	Item	Descriptions
1	<i>INTFC(1) Port*</i>	Perform reset control for LAN Port.

*Note: *: Not performed when in normal operation.*

Link failure may be occurred when reset control is performed.

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