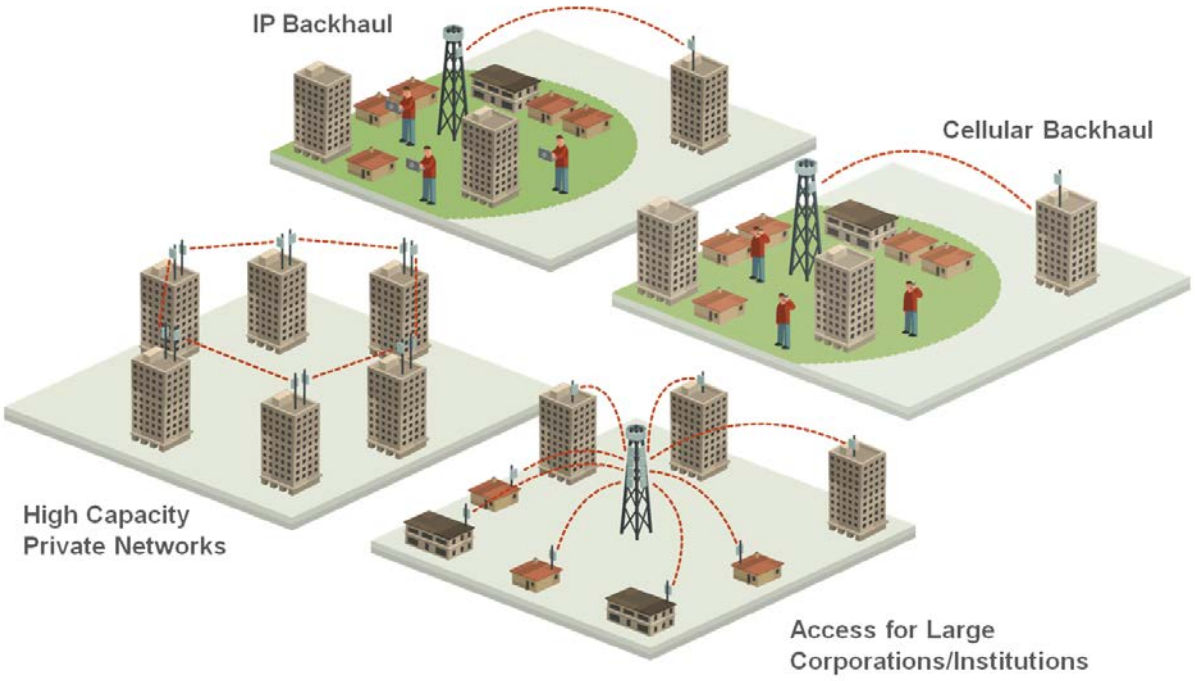
NetStream

IDU – NetStream RM



IDU-NetStream RM

IDU-NetStream RM Package Contents

The IDU-NetStream RM package contains:

- IDU-NetStream RM - see Figure 1 below.
- 19” rack mounting kit - see Figure 2 below
- Two DC power plugs for power cables - see Figure 3 below

Figure 1: IDU-NetStream RM Package contents - the IDU-NetStream RM, Ethernet only

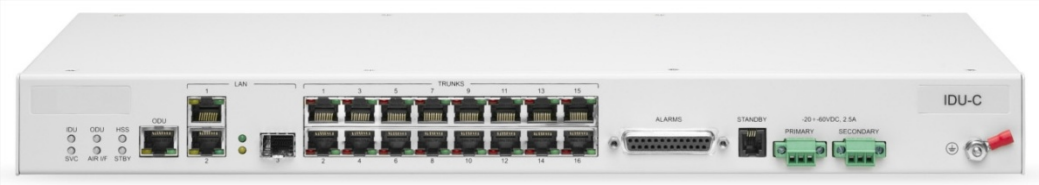


Figure 2:IDU-NetStream RM Package contents - the IDU-NetStream RM, 16 E1/T1 ports

Figure 3: IDU-NetStream RM Package contents - the mounting kit and DC power plugs

Mounting the IDU-NetStream RM

Figure 4: IDU-NetStream RM Package contents - the IDU-NetStream RM, 16 E1/T1 ports

IDU-NetStream RMs are all rack mountable, as shown in **Figure 5**. A front panel keyed schematic of a rack mounted IDU-NetStream RM is shown in the figure below.

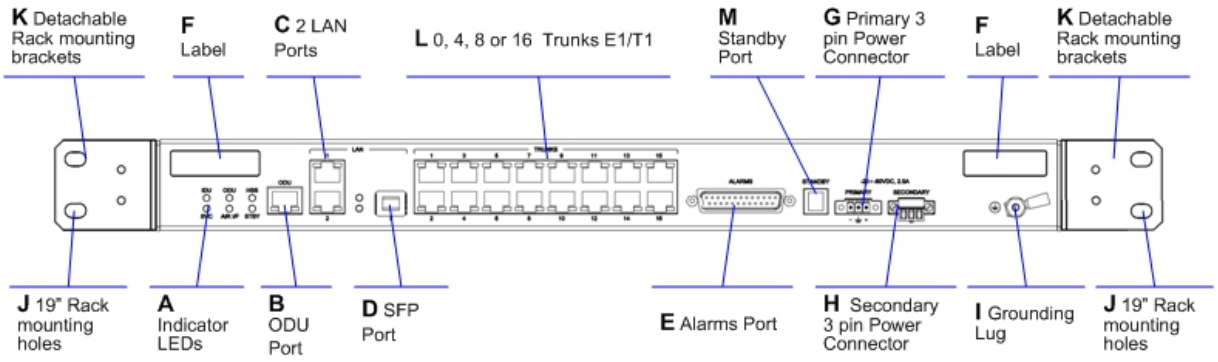


Figure 5: IDU-NetStream RM front panel

Further description of the keyed items in Figure 5 is shown in Table 1 below:

Table 1: Components of an IDU-NetStream RM front panel

Key	Label	Remarks
A	Indicator LEDs	See Figure 6.
B	ODU Port	RJ-45 connector, see Table 4.
C	LAN RJ45Ports	Ethernet, RJ-45 connector, see Table 5.
D	LAN SFP Port	See below.
E	Alarm Ports	Standard DB25 female connector, see Table 8.
F	Label indent	Place for adhesive identification labels.
G	Primary 3 pin Power Connector	Standard 3 pins in line power connector, see Table 9.
H	Secondary 3 pin Power Connector	
I	Grounding Lug	Use the lug supplied.

J	Rack mounting holes	
K	Detachable Rack mounting brackets	
L	0, 4, 8 or 16 E1/T1 Ports	See Table 6.
M	Standby Port	Hot Standby ready: HSB cable socket, see Table 7.

The Indicator LEDs (Item A in Table 1 above) are shown in more detail below:

Figure 6: IDU-NetStream RM Front Panel LEDs

The IDU-NetStream DT Front Panel LEDS look like this and are functionally the same as the IDU-NetStream RM LEDs.

Figure 7: IDU-NetStream DT Front Panel LEDs

The purpose of the LEDs is shown **in Table 2 below**:

Table 2: IDU-NetStream RM Front Panel LEDs

Name	Color	Function
IDU	Green Blinking Green Red Blinking Orange	IDU operational During power-up only Failure During power-up; continues if ODU fails to load IDU firmware. Also, when using an IDU-NetStream RM to replace a PoE device in which case all other LEDs off.
ODU	Green Red	ODU-to-IDU communication link is operating ODU-to-IDU communication link is disrupted
AIR I/F	Green Orange Red	Wireless link is synchronized During installation mode; also signals software mismatch on some identical ODUs Wireless link lost synchronization

SVC	Green Orange Blinking Orange Red Off	E1 or T1 line is synchronized Alarm detected at the opposite site interface; Normal or LOSS Local or remote loopback Alarm detected at this site interface Ethernet only IDU or E1/T1 not configured	
HSS	See supplementary Table 3 following.		
STBY		**Hot Standby Mode - for use with Trunks only**	**Link State**
	Green Blinking Green Red Orange Off	Primary Secondary Primary Secondary Off	Active Not active Not active Active HSM not activated
		Hot Standby Mode - For use with Ethernet only in a 1+1 Ring application)	**Link State**
	Green Blinking Green Red Orange Off	Hardware ready	

Table 3: IDU-NetStream RM and New Style IDU-NetStream DT Front Panel LEDs for HSS

Color	**Function**
Green	This ODU is HSS master, generating signal, and HSS Sync is OK
Blinking Green	This ODU is a HSS client and in Sync
Red	HSS not operational due to improper signal detection. This ODU is not transmitting
Orange	HSS is operational. One of the following conditions apply: • This ODU is a master that is generating signals and detecting signals • This ODU is a master that is generating signals but detected improper signals • This ODU is a client “Continue Tx” but is not detecting signals • This ODU is a client “Disable Tx” and is detecting signals from multiple sources All orange cases transmit.
Off	HSS is not activated Disconnection between ODU and IDU

➢ **To mount an IDU-NetStream RM (The keys refer to Figure 5):**

1. Attach the rack mounting brackets (K) to the IDU.
2. Bolt the IDU into an empty slot in the rack, ensuring that it sits securely.
3. Ground the IDU to the rack using grounding lug I. The IDU should be left permanently grounded.

Note

Instead of using the rack mounting brackets, the IDU may be rail mounted using the four screw holes on each of its sides.

Technical Specifications

This section contains technical specifications of IDU-NetStream RM appearing in this User Manual. They are correct at the date of publication, but are intended for general background only. The latest authoritative and most up to date technical specifications are available as Data Sheets obtainable from Netronics Customer Service.

In any event, Netronics reserves the right to change these specifications without notice.

IDU-NetStream RM

TDM Interface

Number of ports	16, 8, 4 ports or no TDM ports.
Max ports usable by NetStream	16 (model dependent)
Type	E1/T1 configurable by Link Manager
Framing	Unframed (transparent)
Timing	Independent timing per port, Tx and Rx
Connector	RJ-45
Standards Compliance	ITU-T G.703, G.826
Line Code	E1: HDB3 @ 2.048 Mbps, T1: B8ZS/AMI @ 1.544 Mbps
Latency	Configurable 5-20 ms (default 8 ms)
Impedance	E1: 120Ω, balanced, T1: 100Ω, balanced
Jitter & Wander	According to ITU-T G.823, G.824
Jitter Buffer	Jitter Buffer configuration enabling a latency from 5ms to 16ms for interference immunity confront
Clock Recovery Resolution	0.05ppb
Clock stability	20ppm as clock master (crucial for wander requirements of cellular operators)
Monitored Hot Standby	Supported

Ethernet ports

Number of Ports	2
Type	10/100/1000BaseT with Auto-Negotiation (IEEE 802.3u). Framing/Coding IEEE 802.3
Connector	RJ-45
Line Impedance	100Ω
SFP Interface	1 port, Type: Fast Ethernet
VLAN Support	Transparent

Maximum Frame Size	2048 Bytes
Bridge	Layer 2, self-learning of up to 2047 MAC addresses (IEEE 802.1Q), hub/Bridge selectable mode
Latency	3 ms

Dry Contact Alarms

Dry Contact Alarms	4 Inputs + 4 Outputs; Configurable by the Link Manager

ODU Interface

Connector	RJ-45
Cable	Outdoor CAT-5e cable; Maximum cable length: 100 m

Mechanical

Style	1U 19" Rack mounted
Dimensions	43.6 cm (W) x 21 cm (D) x 4.4 cm (H)
Weight	1.5 kg/3.3 lbs

Power

Power Consumption	
With NetStream ODU	< 35 W
Alone	<10 W
Power Feeding Options	Dual feeding, -20 to -60 VDC, AC Power Adapters available

Environmental

Operating Temperatures	0°C - 50°C / 32°F - 122°F
Humidity	90% non-condensing
Storage	-20° to 70°C / --4°F to 158°F Humidity 95%

Safety

TUV	UL 60950-1, CAN/CSA C22.2 60950-1
EN/IEC	60950-1

EMC

FCC	CFR47 Class B, Part 15, Subpart B
ETSI	EN 300 386, EN 301 489-4, EN 301 489-1
CAN/CSA-CEI/IEC	CISPR 22 Class B
AS/NZS	CISPR 22:2006 Class B

Wiring Specifications

ODU-IDU Cable

The ODU-IDU cable is shielded/outdoor class CAT 5e, 4 twisted-pair 24 AWG terminated with RJ-45 connectors on both ends. A cable gland on the ODU side provides hermetic sealing.

The following table shows the connector pin out:

Table 4: ODU-IDU RJ-45 Connector Pin out

Function	Color	IDU	ODU
Ethernet (RxN)	White/Green	1	1
Ethernet (RxT)	Green	2	2
Ethernet (TxT)	White/Orange	3	3
Ethernet (TxN)	Orange	6	6
Power (+)	Blue	4	4
Power (+)	White/Blue	5	5
Power ( )	White/Brown	7	7
Power ( )	Brown	8	8

User Port Connectors

LAN Port

The LAN 10/100BaseT interface terminates in an 8-pin RJ-45 connector, wired in accordance to **Table 5**.

Table 5: Fast Ethernet Connector Pinout

Function	Signal	Pin
Transmit Data (positive)	TD (+)	**1**
Transmit Data (negative)	TD (–)	**2**
Receive Data (positive)	RD (+)	**3**
Receive Data (negative)	RD (–)	**6**

Trunk Ports - E1/T1 RJ45 Connector

The E1/T1 interfaces terminate in 8-pin RJ-45 connectors, as shown in **Table 6** below:

Table 6: Trunk Ports - E1/T1 RJ45Pinout

Function	Signal	Pin
Transmit Data Tip	TxTip	**1**
Transmit Data Ring	TxRing	**2**
Receive Data Tip	RxTip	**4**
Receive Data Ring	RxRing	**5**

Hot Standby Port RJ-11

Table 7: Hot Standby RJ-11 Port Pinout

Signal	Pin Side A	Pin Side B
HSB out	**1**	**2**
HSB in	**2**	**1**
Ground	**3**	**3**
Ground	**4**	**4**

IDU (all models) Alarm Connector

The IDU Alarm interface is a 25 pin D type female connector. Its pin out is listed in Table 8.

Table 8: IDU Alarm Connector (Dry Contact)

I/O	Description	Pin
Input 1	Positive	14
Input 1	Negative	15
Input 2	Positive	16
Input 2	Negative	17
Input 3	Positive	18
Input 3	Negative	19
Input 4	Positive	20
Input 4	Negative	21
Output 1	Normally Open	1
Output 1	Common	2
Output 1	Normally Closed	3
Output 2	Normally Open	4
Output 2	Common	5

Output 2	Normally Closed	6
Output 3	Normally Open	7
Output 3	Common	8
Output 3	Normally Closed	9
Output 4	Normally Open	10
Output 4	Common	11
Output 4	Normally Closed	12

The figure below, shows how to connect external input and output alarms.

Note

- Use an external current limit resistor to limit the current at the output relays to 1 Amp. Such resistor is not required if the equipment connected to the IDU supports current limiting to 1 Amp.
- The voltage of the input alarm must be within the range of -10 to -50 VDC..

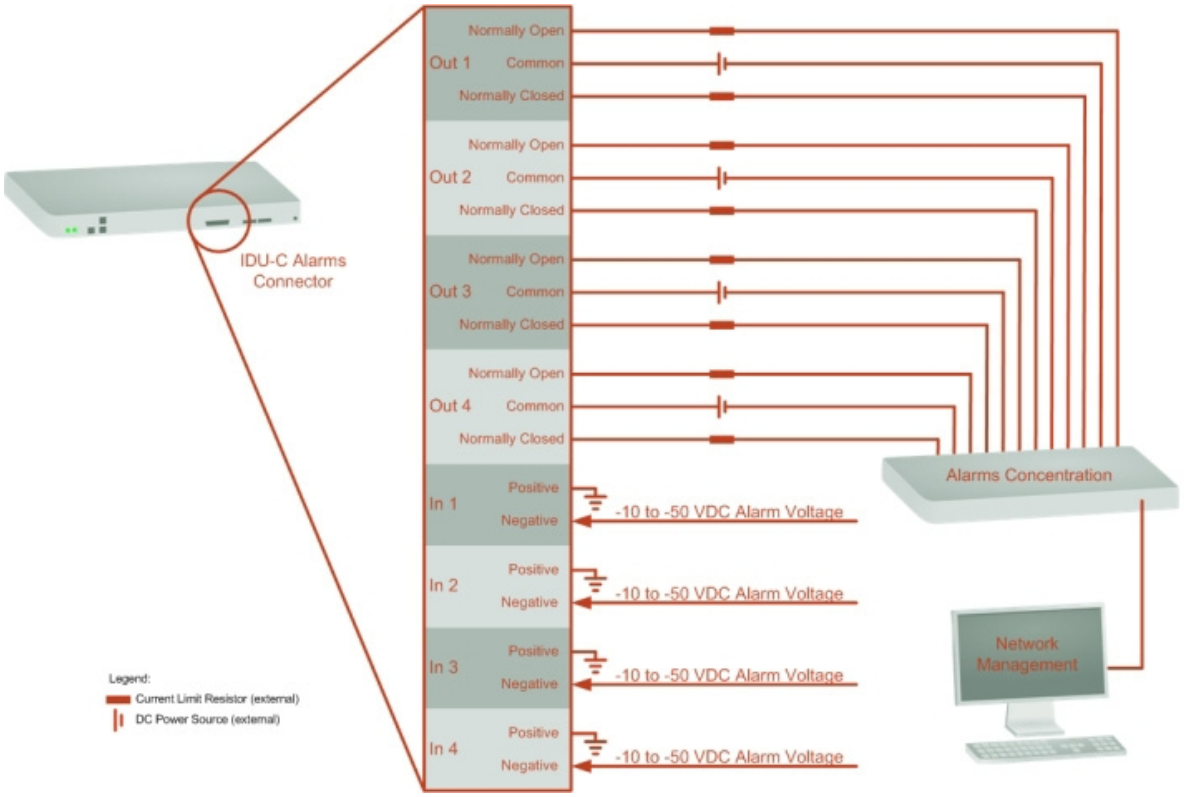


Figure 8: Example for connecting the alarm connector

DC Power Terminals

IDU-NetStream RM & IDU-NetStream DT

Table 9: Terminal Block 3-pin -48 VDC

Function	Pin
+	Right
Chassis	Center
–	Left

DC PoE

Table 10: Terminal Block 2-pin -48 VDC

Function	Pin
+	Right
–	Left

Unbalanced Mode for E1 Interface

You may configure the E1 interface to unbalanced mode (75 ohm) using the Link Manager.

Figure 9 shows an adapter cable for connecting devices with balanced E1 interface to the user equipment with unbalanced E1 interface. The Y splitter cable includes one RJ-45 balanced connector (left) and two unbalances BNC coaxial connectors (right).

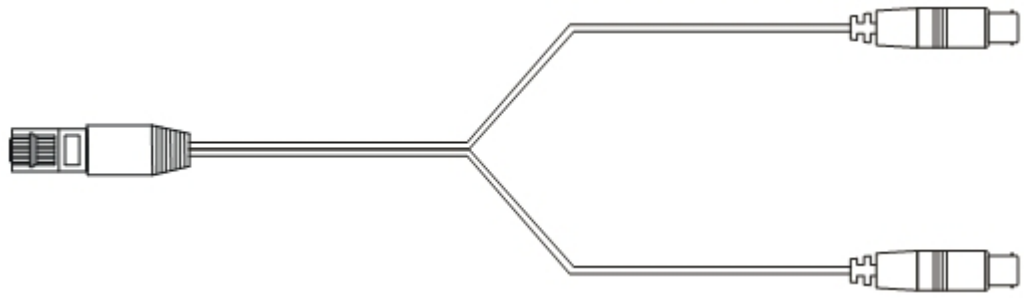


Figure 9: Unbalanced E1 adapter cable (Y Splitter)

Figure 10 provides a schematic:

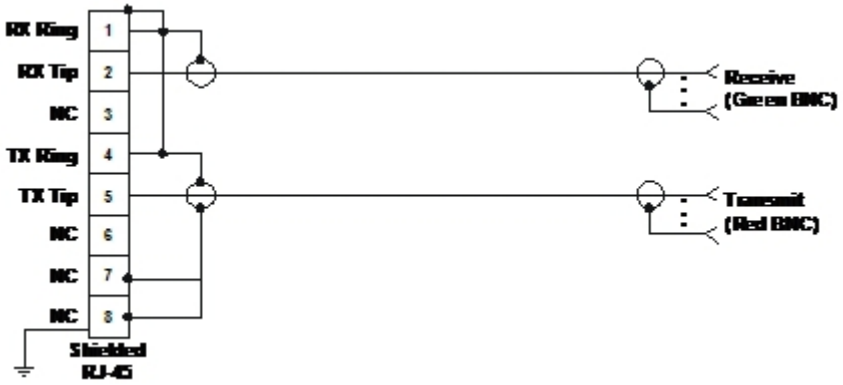


Figure 10: Unbalanced E1 adapter cable (Y Splitter) - schematic

Table 11: E1 Y Splitter Pin out for Unbalanced Mode

BNC Connector	Color Code	RJ-45 Connector Pin
2 (NGND)	Red	1, 4, 7, 8
1 (Center)		2
2 (NGND)	Green	1, 4, 7, 8
1 (Center)		5

Note

The Y-splitter cable cannot be used as a balanced to unbalanced converter. The cable merely provides a physical interface conversion without any impedance matching. Some devices automatically detect cable insertion and change the impedance internally.