



KiloStream

NETWORK TERMINATING UNIT 16
KiloStream N Private Circuits

Operating guide

To report a fault with your KiloStream private circuit, please ring your BT Service Centre on this number:

Please quote:

your circuit type

your circuit number(s)

your end address

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1 About this guide

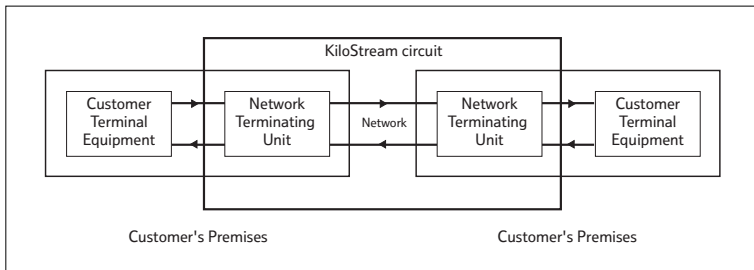
This Operating Guide gives you information on KiloStream N Private Circuits including:

- Connecting your equipment to the Network Terminating Unit
- What the display means.
- How to test your circuit.

2 About KiloStream N

KiloStream N is a dedicated digital private circuit service, offering either data or voice transmission.

The KiloStream circuit



3 The equipment you will see

BT's digital private circuits terminate at your premises on a network terminating unit (NTU) which is provided within the rental price.

Any on-site wiring and equipment beyond the NTU is your responsibility and maintained by the relevant contractor. This may be BT or an independent supplier.

One of our engineers will connect the NTU to the BT network using the port on the NTU labelled as **Local Line**. If you alter this line connection in any way, you will set off remote alarms within the BT network and your service will be affected

Single NTU 16A

If you have ordered a single KiloStream N (320, 384, 448, 512, 576 or 640 kbit/s) circuit, the unit is contained in a grey rectangular box. The lamps on the front of the unit show the operating state of the circuit. The unit can be wall mounted, using appropriate fixing screws, or laid flat.



NTU16A front view



NTU16A rear view

Multiple NTUs 16B

If you have ordered a number of lines or a network of services at a single site you may need shelf mounted NTUs. This installation normally consists of a series of NTUs in “card” form. Each “card” will be shelf mounted in a ‘stacking system’.

4 Connections from the NTU

NTU16 Power Requirements

The NTU16A (single unit) is normally powered from the line.

In exceptions where this is not possible you will be supplied with a fused plug top adapter for connection to a 13amp ac mains supply. If the unit is locally powered then the procedure should be as follows:-

- Connect the plug top power supply into the NTU16A.
- Connect the line cord to the network.
- Turn on the mains power supply

Note the plug top power supply does not rely on a mains earth pin for safety purposes.

To change from line power to local power the plug top power supply is simply inserted into the NTU16A, and the power applied.

To change from local power to line power:-

1. Turn off the mains power.
2. Remove the power supply from the NTU16A.
3. Disconnect the line connection.
4. Reconnect the line connection.

Note the disconnection of the line is necessary to allow BT's network equipment to distinguish between a power fail event and a switch from local to line power.

The NTU16B (multiple unit) will be locally powered from within the shelf supplied with the installation.

Connecting your equipment to the NTU16

You must connect your terminal equipment to the appropriate connector (X.21 = 15-way D type, G.703 = BNC or RJ45) located on the rear of the NTU, for single units or on a mounting strip for shelf units, with the correct type of cable. Your equipment supplier will normally provide this cable.

Cabling distance

In order to achieve the best performance from your KiloStream N circuit, the cabling distance between the NTU and your terminal equipment should not be more than 10 meters. If you have to relocate the terminal equipment at any time, please don't exceed this distance

Configuration of Service

BT engineers will have configured your KiloStream N circuit to the service option and circuit capacity that you specified when placing your order. Please note that your terminal equipment must also be configured to the same specification, otherwise the service will not function properly.

5 Getting started

When the power is applied to the NTU it will run its self test procedure. If the unit fails self test one of the first 4 LEDs will remain lit RED. No further operation will be possible and the unit will need to be returned for repair.

If the self test passes the LEDs will flash in sequence (any faulty LEDs can be identified at this point).

The unit will then enter its local line system synchronisation scan mode. The unit will then cycle between THREE line rates at intervals of about 20 seconds. The front panel LED's will indicate 320K (N=5), 384K (N=6), or 448K (N=7).

If the line card is set to 320K, 384K or 448K then the NTU should acquire sync while the rate LED is indicating this particular rate. Sync is indicated by the rate LED changing from RED to GREEN.

For the rates 512K (N=8), 576K (N=9), and 640K (N=10), the unit will acquire sync while initially indicating the 448K (N=7) rate. As sync is acquired the rate LED will change from 448K to the new rate, and change from RED to GREEN.

The interface LED will change to the selected interface as the unit acquires sync. This LED will now indicate the status of the interface.

The BT engineer will leave the unit in its agreed circuit configuration state.

6 Testing your KiloStream N circuit

The front of the NTUs have the following indicators and test facilities

Six data rate indicator LED's (bi-colour). One of these will be illuminated to indicate the user rate in use. This also doubles up as a power on indicator (as one of them will always be on). The colour of the LED indicates the local line status. If the LED illuminates green the line system is in sync, if the LED illuminates red, there is one of the following conditions:

- (1) Self-Test failure.
- (2) Loss of line sync.

Three interface indicator LED's (bi-colour). One of these will be illuminated to indicate the interface selected. The LED will normally illuminate green. For the G703 interface it can also illuminate red to indicate one of the following alarm conditions:

- (1) Loss Of Signal (LOS)
- (2) Loss Of Frame Alignment (LOFA)
- (3) High Bit Error Rate Alarm (HBER)
- (4) Alarm Indication Remote (AIR)

A "LOCAL LOOP" button.

Pressing this will apply a customer facing loop.

A "LOOPBACK" button.

Pressing this will apply a network facing loop.

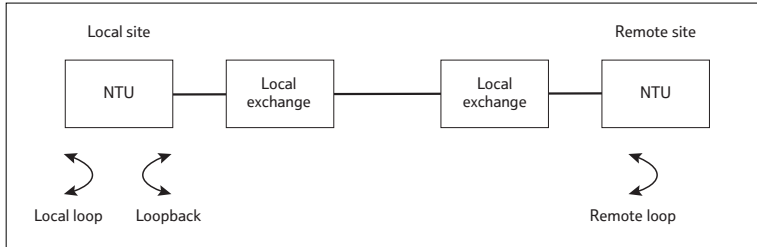
A "REMOTE LOOP" button.

Pressing this will apply a Loopback at the distant NTU.

A yellow LED, one for each loop, will illuminate to indicate the presence of the respective loop.

7 Looping your circuit

You can use the LOCAL LOOP, LOOPBACK and REMOTE LOOP buttons to help further with fault location.



- Activation of a “LOCAL LOOP” allows you to directly test the operation of your equipment.
- Activation of a “REMOTE LOOP” allows you to test the operation of your equipment across BT’s network by a Loopback at the distant NTU.
- Activation of a “LOOPBACK” helps BT engineers to test the connection from the network

8 Testing the operation of your Data Terminal Equipment (DTE)

To test the connection and operation of your terminal equipment you can either:-

- Test via the customer interface and a loop on the local NTU (LOCAL LOOP) towards your DTE.
- Test via the customer interface of the local NTU and a LOOPBACK, at the distant NTU, towards your DTE. i.e. REMOTE LOOP operation.

Local Loop Control

The LOCAL LOOP within the NTU16 can be controlled either by local user action at the local NTU16 or by control signals from your DTE.

LOCAL LOOP control by local user action at the NTU.

To activate the loop press the LOCAL LOOP button. This applies a LOCAL LOOP and the LOCAL LOOP LED is illuminated.

To remove the loop press the LOCAL LOOP button again.

LOCAL LOOP control from your DTE.

It may possible to activate the local NTU LOCAL LOOP by transmission of the appropriate signalling and data conditions from your own terminal equipment (DTE). This mode of operation is only available if you have the X.21 Control/Indicate signalling enabled across BT's network (i.e. This is a BT service option).

To activate a LOCAL LOOP the DTE must send the pattern 11110000 (ALT) on the transmit (T) circuit for a minimum of 16 bits. The control (C) must be in the OFF state during this phase. When the NTU applies the loop the DTE must set the C circuit to the ON state before sending data around the loop. The LOCAL LOOP LED will be illuminated at this point.

At the end of the test the loop can be deactivated by turning the C circuit back to the OFF state. The LOCAL LOOP LED should then be extinguished.

Note this loop should only be used when the NTU is in sync. If there is no local line sync the LOCAL LOOP should be applied from the NTU front panel.

Remote Loop Control

A LOOPBACK at the distant NTU can be controlled either by local user action at the local NTU16 or by control signals from your DTE.

REMOTE LOOP Control from the local NTU16.

To activate the loop press the REMOTE LOOP button. This applies a LOOPBACK on the distant NTU and a REMOTE LOOP LED is illuminated.

To remove the loop press the REMOTE LOOP button again

Note this loop can only be used when the NTU is in sync and with a circuit operational with a remote NTU (e.g. NTU16) that supports V.54 Remote Loop signalling.

REMOTE LOOP Control from your DTE.

It may possible to activate a LOOPBACK at the distant NTU by transmission of the appropriate signalling and data conditions from your own terminal equipment (DTE). This mode of operation is only available if you have the X.21 Control/Indicate signalling enabled across BT's network (i.e. This is a BT service option).

To activate a REMOTE LOOP the DTE must send the pattern 11001100 (ART) on the transmit (T) circuit for a minimum of 16 bits. The control (C) must be in the OFF state during this phase. When the distant NTU applies the loop the DTE must set the C circuit to the ON state before sending data around the loop. The REMOTE LOOP LED will be illuminated at this point and the distant end NTU will have its LOOPBACK LED illuminated.

At the end of the test the loop can be deactivated by turning the C circuit back to the OFF state. The REMOTE LOOP LED should then be extinguished.

Note this loop can only be used when the NTU is in sync and with a circuit operational with a remote NTU (e.g. NTU16) that supports V.54 Remote Loop signalling.

9 Testing the network connection

To test the connection and operation from the network through the local end and the NTU, BT engineers may ask you to apply a LOOPBACK to help them locate the fault. To do this:-

- Press the LOOP BACK button.
This applies a LOOPBACK and the LOOPBACK light is illuminated.

To remove the loop

- Press the LOOPBACK button

10 If you have a problem

If you think there is a problem with your Private Circuit you may try the checks below to solve the problem.

RED lamp illuminated on front of NTU indicates a fault on the BT equipment and should be reported via your normal BT contact.

By applying loops using the buttons on the front of the NTU it may be possible to identify if the problem is with your own terminal equipment or with the circuit. If the problem proves to be the circuit then the fault should be reported via your normal BT contact.

If a fault proves to be in your terminal equipment or on-site wiring, rather than in the Private Circuit, BT reserves the right to charge for time spent on a visit to your premises: Its in your interest to carry out these checks first.

An explanation of NTU Self Test detected conditions are as follows:-

Conditions Detected after Power Up. [i.e. Self Test routine]	Diagnosis	Operation Possible
320K RED	Internal EPROM Fault	No
384K RED	Internal RAM Fault	No
448K RED	Internal Framer Fault	No
512K RED (then normal flashing)	Internal EEPROM Fault	Yes
Some LEDs flash in sequence	LED Fault	Yes
All LEDs flash in sequence	TEST PASS	Yes

11 How to report a fault

BT has established Service Centres to deal exclusively with maintaining KiloStream, KiloStream N and MegaStream digital private circuits.

Before you contact a service centre you may wish to:

- Ensure that the fault is in the private circuit or NTU and isn't due to your own wiring or terminal equipment.
- Ensure that all plugs are properly connected and that there is power to the equipment (where required).
- Ensure that any non- BT maintained equipment is working.
- Carry out the tests described in the section **Testing your KiloStream N Circuit**.

If the fault is with the private circuit or the NTU, please telephone the nominated service centre, as shown on the inside cover of this guide.

When you ring you will need to give the following information:

- The circuit reference number which you will find on the cover of your NTU
- The name and telephone number of the person whom we can contact while the fault is being traced: when the line is clear, we will inform the same person.
- A description of the fault.

The BT Service centres are manned by specialist staff who have access to computer-aided facilities to speed the handling of any problem with your Private Circuit; these facilities include access to alarm information.

The Service Centre staff will keep you informed of progress made towards restoring your service, and will report back to you when service has been restored.

You can report a problem outside normal office hours (0900 to 1700, Monday to Friday). You will need to state if access to your premises is available outside normal office hours.

Note: Service Centre staff do not have test access to equipment beyond your NTU, nor can they provide diagnostic information about equipment beyond your NTU.



Offices worldwide

The telecommunications services described in this publication are subject to availability and may be modified from time to time. Services and equipment are provided subject to British Telecommunications plc's respective standard conditions of contract. Nothing in this publication forms any part of any contract.

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