Manual

2500E NRT Display Unit

Revision History

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1.0 INTRODUCTION

The NRT Display Unit displays NRT info and its Neon Server's corresponding parameters.

Availability of this information is very usefully, especially in the field, when initialising NRT or for troubleshooting and diagnostics purposes.

There are four operational buttons:

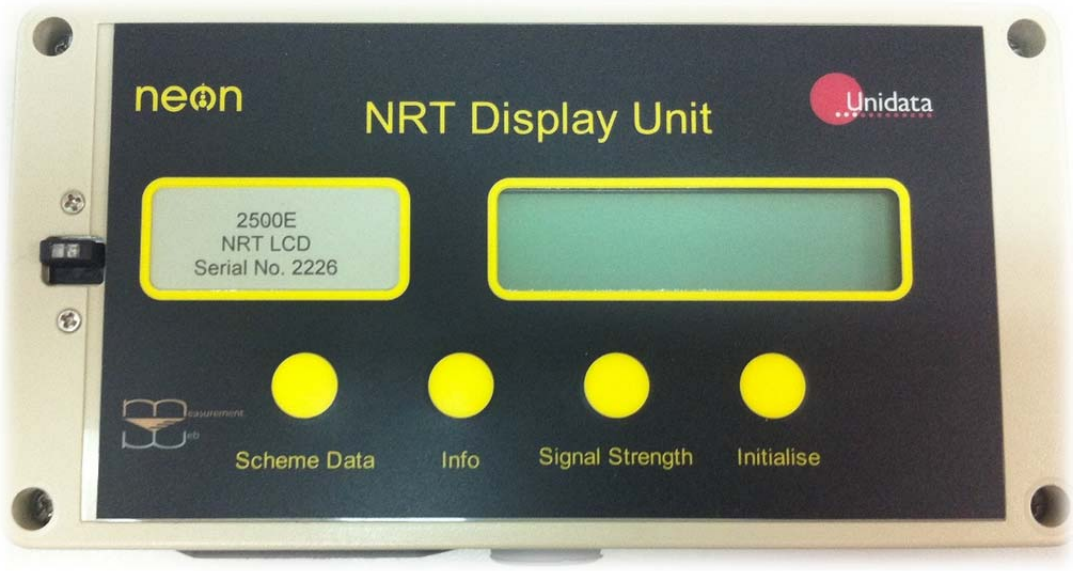
Scheme Data: Indicates general scheme information

Info: Allows the user to view the Neon Server parameters, NRT serial number and firmware version to make sure these have been entered correctly.

Signal Strength: Allows the user to view the reception strength parameters

Initialise: This button is used to initially start communications to the central server, i.e. to initialise the NRT.

Please also consult the NRT Operation Manual for general operation of all models of Neon Remote Terminals and Modules.



2.0 POWER ON

Connect the NDU (NRT Display unit) to the NRT

Turn NDU power switch on – red light indicates that unit is powered up.

Following message scrolls across the LCD from right to left:

```
Unidata's NRT Display Unit V1.15 for use with the neon system
Unit Ready
```

"`Unit Ready`" is displayed only for one second and then the screen goes blank.

The NDU is now ready for use.

3.0 NRT DISPLAY UNIT BUTTONS

3.1 Scheme Data

Pressing the Scheme Data button initiates the following display sequence on the NDU LCD.

```
Reading Scheme
Information
```

Resulting parameters are examples only; each NRT will have their own settings.

First the scheme name is displayed.

```
Scheme Name              or          Scheme Name
2016D                                No scheme loaded
```

Scan rate and Log rate (If NRT is programed with the scheme)

```
Scan Rate    5s
Log Rate   120s
```

Log record size in bytes (If NRT is programed with the scheme)

```
Log Size     8b
```

Internal and External Battery voltages (If NRT is programed with the scheme)

```
Int Batt 12256mV
Ext Batt 12256mV
```

RAW (without scheme scaling) Analog Input voltages.

```
A0 =   2500.00mV
A1 =   2500.00mV
A2 =   2500.00mV
A3 =   2500.00mV
```

Finally the Counter channel values.

```
C0 =           0
C1 =           0
C2 =           0
C3 =           0
```

The display goes blank upon completion.

3.2 Info

Pressing the INFO button initiates the following display sequence on the NDU LCD.

Type of NRT (Satellite, GPRS, WCDMA)

```
NRT Details
Satellite
```

Valid NRT types include:

```
GSM GPRS
Satellite
CDMA
3G
ETHERNET
ETHERNET M2M
ETHERNET WIFI
ETHERNET 3G
```

Node ID on Neon Server:

```
NRT ID
802
```

The IP of the Neon server the NRT sends data to:

```
Server IP Addres
202.72.184.28
```

The SIM card's APN (Access Point Name):

```
Access Pt Name
telstra.internet
```

The electronic serial number of the NRT:

```
NRT ESN
1234
```

NRT firmware version:

```
NRT Firmware Ver
21V2_43~4
```

NDU firmware version:

```
NRT Details
NRT_LCD Ver 1.15
```

The display goes blank upon completion.

If any key is pressed while the NRT ID is being displayed, the members of the Unidata NDU design team are quickly displayed in alphabetical order.

3.3 Signal Strength

Checking signal strength is very important. You may have a mobile/ cell phone at the same location, which shows good signal strength, but the signal strength shown on the Neon Display Unit is a more accurate measure of the actual signal strength doe data purposes. It is sometimes misleading to assume good data signal strength if a mobile / cell phone signal strength is good.

The NDU displays

```
Signal Strength
Please Wait  *
```

Cellular NRTs will continue to perform signal strength evaluations until either a key is pressed or a maximum of 60 signal strength checks have been performed.

```
Signal Strength
Good Signal  *23
```

The '*' will flash as each signal strength check is performed.

Possible values for Cellular NRTs are:

```
Very Low Signal
```

```
Low Signal
Good Signal
Very Good Signal
```

Note that satellite NRTs cannot report actual signal strength levels.

Satellite NRT actually reports a Connection State that can assume one of 5 values: 0, 1, 2, 3 or 4.

0 indicates no satellites are currently overhead.

An RSSI of 3 or 4 is required to establish a connection to a satellite.

Pressing any button while signal strength checks are being performed causes the NDU to exit signal strength mode. The display goes blank.

3.4 Initialise

3.4.1 Cellular / Mobile Phone NRTs

Hold Initialise button down for 5 seconds, Unit displays

```
Count down to
Initialise 5

Count down to
Initialise 4

Count down to
Initialise 3

Count down to
Initialise 2

Count down to
Initialise 1
```

The NDU then tries to connect to the NRT.

```
Connecting NRT
Please Wait
```

Once connected, the NRT starts an Initialisation attempt.

```
Initialising
```

```
Please Wait
```

As the NRT attempts to connect to the cell tower, a range of possible messages is displayed, to notify the user of the connection attempt progress.

```
Initialising
No SIM Card
Wait Registering
Registered OK
Attached
Activating
Starting IP Comm
```

3.4.2 Initialisation Messages

The result of the NRT Initialisation attempt is finally displayed.

```
Done PressAnyKey
Initialised OK
```

Possible results are listed below:

Initialisation Message	Failure Code
Initialised OK	// Good
Illegal Command	// 00001
Can't Open PPP	// 00002
Illegal Vector	// 00003
Bad Neon Config	// 00004
Server Read Fail	// 00005
ServerWrite Fail	// 00006
ServerAppendFail	// 00007
ServerCreateFail	// 00008
SerialComms Fail	// 00009
NRT Not Running	// 00010
Bad FPO SizeFail	// 00011

Pressing any key causes the display to go blank.

3.4.3 Common Failure Messages

```
Can't Open PPP        // 00002
Bad Neon Config       // 00004
SerialComms Fail      // 00009
```

```
00002 Can't Open PPP
```

1. Modem is not functioning

2. Unit is not within carrier range
   If necessary install a better aerial or change carriers.

3. Access data is incorrect
   (see Initial Setup, and confirm your access settings with your carrier).

4. No SIM installed (not applicable for satellite NRT)
   This is usually a SIM or poor signal strength (reception) issue.
   a. Check the SIM card is correctly inserted into the NRT.

   b. Check that the SIM card is unlocked. This can be done using a regular mobile phone. The SIM PIN setting is usually located under phone security settings

   c. SIM has not been correctly activated by carrier
   (often happens when establishing accounts with a new carrier – contact your carrier).

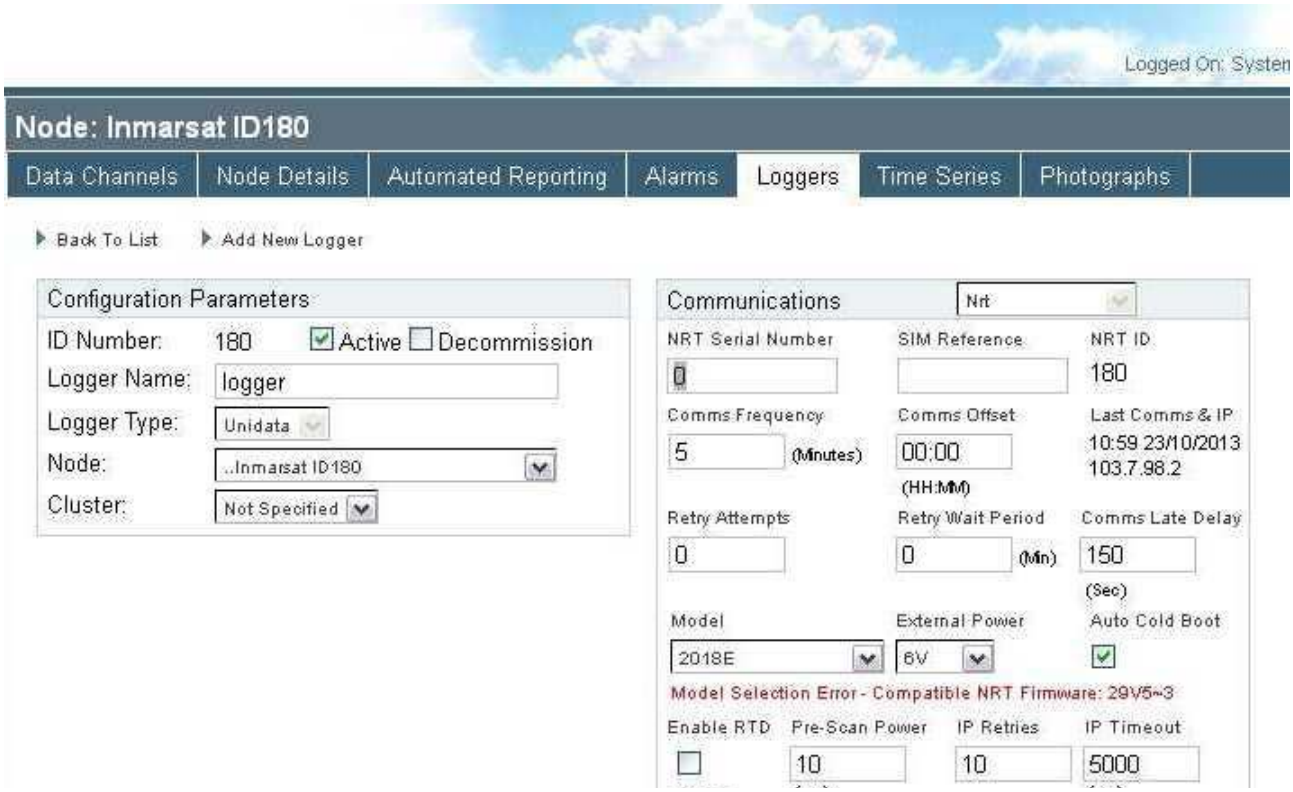
`00004 Bad Neon Config`

1. NRT is not set up correctly in Neon database
   a. If you are managing your NRT subscriptions, check that the NRT number you have assigned to the unit exists in the database, that its devices have been assigned to clusters, and that those clusters have schemes loaded against them.

   b. If Neon Support is managing your subscription, please contact your account manager.

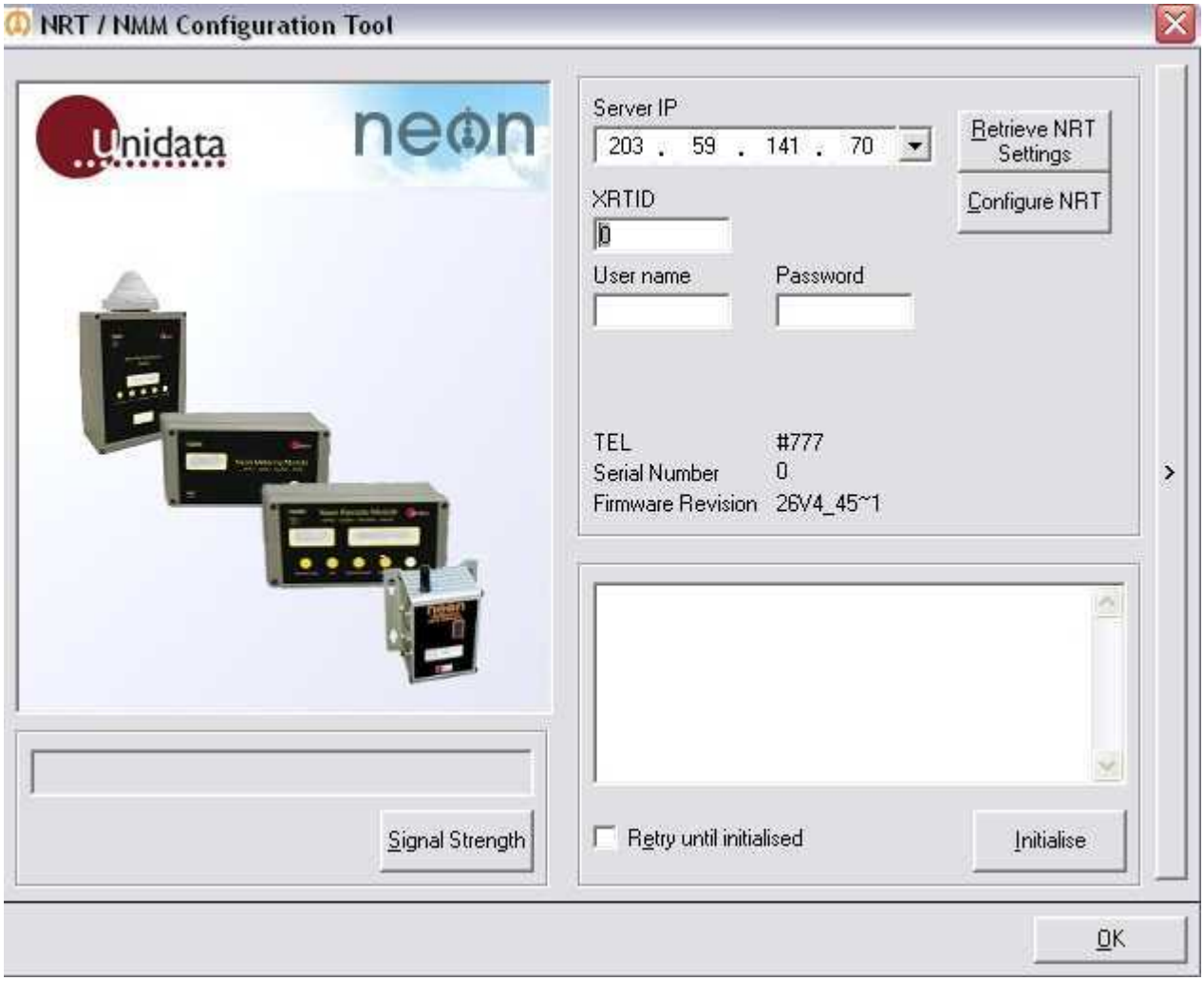
2. NRT and Neon Server configuration mismatch

   a. Usually the logger's serial number on the server has been setup incorrectly
   Check that NRT Serial Number field displays correct NRT serial number



b. Sometimes the NRT ID has been incorrectly programmed into the NRT.
Double check server and NRT setup:

Use NRT/NRM configuration tool to upload NRT ID correctly.
Select Retrieve NRT Setting. If incorrect, type NRT ID (from Neon Communications window) in XRTID field.
Select Configure NRT



To re-establish connection between NDU and NRT hold initialise button on NDU For 5sec.

If this same error occurs again then Unidata support should be contacted.

```
00000 SerialComms Fail
```

No Comm with NRT.

Check that the cable from the NRT to the NRT display unit has not come loose.

Other failure messages should be referred to Unidata for analysis.

4.0 ETHERNET NRTS/ INMARSAT SATELLITE NRTS

Ethernet NRTs identify themselves on the INFO display as one of the following.

```
ETHERNET
ETHERNET M2M
ETHERNET WIFI
ETHERNET 3G
```

The Initialisation sequence for Ethernet NRTs essentially follows that of Cellular NRTs with some minor differences.

After displaying

```
Connecting NRT
Please Wait
```

The NDU starts a timer count down as the NRT waits for its internal router to power up.

```
Initialising
Modem On in  70s
```

Once the router has powered up, the message changes to:

```
Initialising
Please Wait
```

The result of the NRT Initialisation attempt is finally displayed.

```
Done PressAnyKey
Initialised OK
```

Possible results are listed below:

Initialisation Message	Failure Code
Initialised OK	// Good
Illegal Command	// 00001
Can't Open PPP	// 00002
Illegal Vector	// 00003
Bad Neon Config	// 00004
Server Read Fail	// 00005
ServerWrite Fail	// 00006
ServerAppendFail	// 00007
ServerCreateFail	// 00008
SerialComms Fail	// 00009
NRT Not Running	// 00010
Bad FPO SizeFail	// 00011

Pressing any key causes the display to go blank.

5.0 GLOBALSTAR SATELLITE NRTS

Globalstar Satellite NRTs identify themselves on the INFO display as follows.

```
NRT Details
Satellite
```

As per other NRT types, hold down the Initialise button for 5 seconds to start the initialisation process.

```
Count down to
Initialise 5 … 4 3 2 1
```

The NRT then tries to connect to the NRT.

```
Connecting NRT
Please Wait
```

Once connected, the NRT starts an Initialisation attempt.

First system will attempt to acquire a Satellite for the initialisation process. Depending on the time of day, the location and the field of view of the sky this process can take 15 to 30 minutes occasionally can be longer. With recently increased number of satellites in the sky, typical initialisation process should take less than 10 minutes.

5.1 Initialisation Hold Off Times

Globalstar Satellite NRTs will progress through an initialisation loop until successfully initialised or the initialisation sequence is aborted.

Each time through the loop, the time in minutes between initialisation attempts follows this sequence:

1,1,1,1,1,1,1,1,1,2,5,10,30,60,120,240,720 minutes

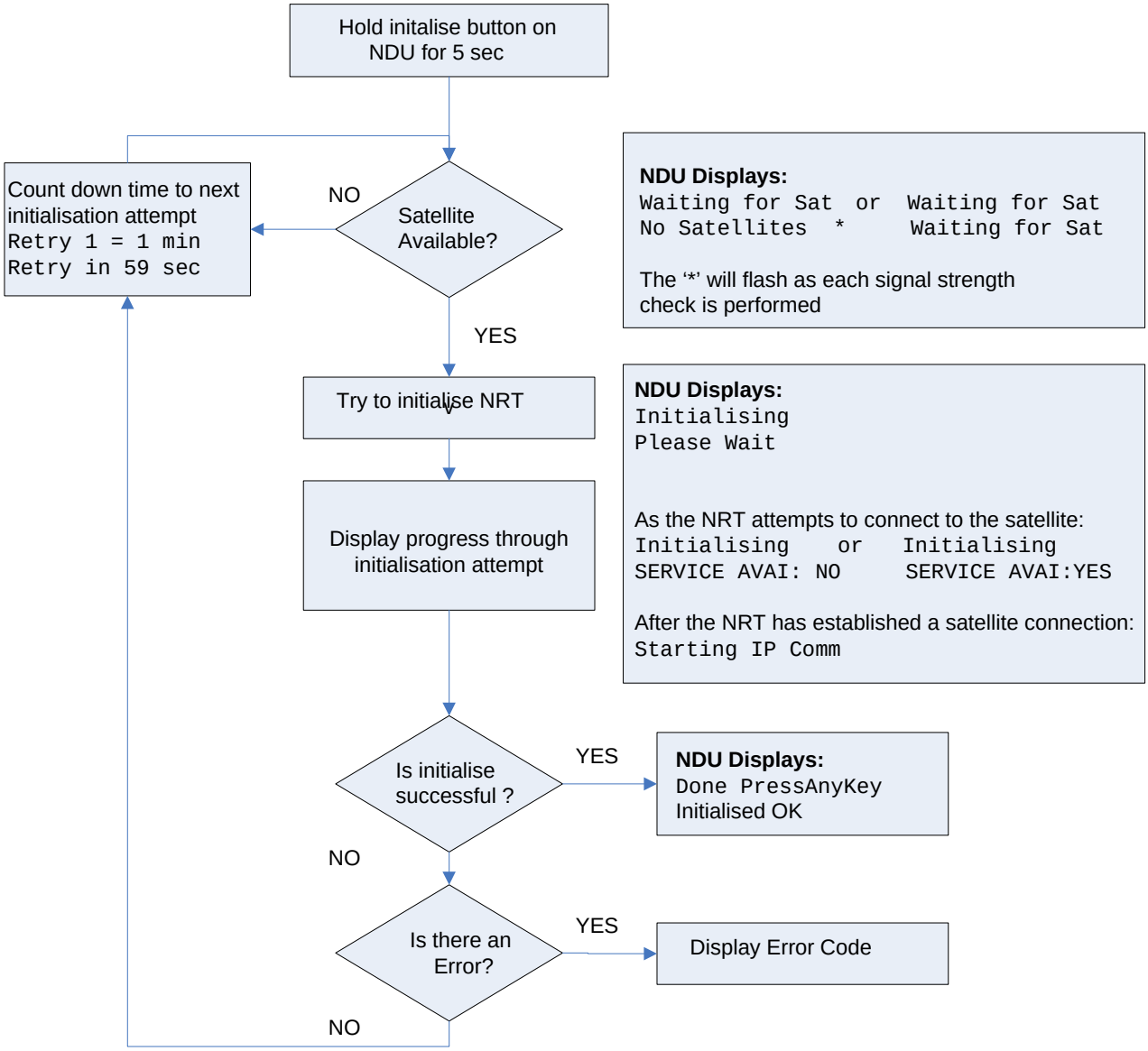
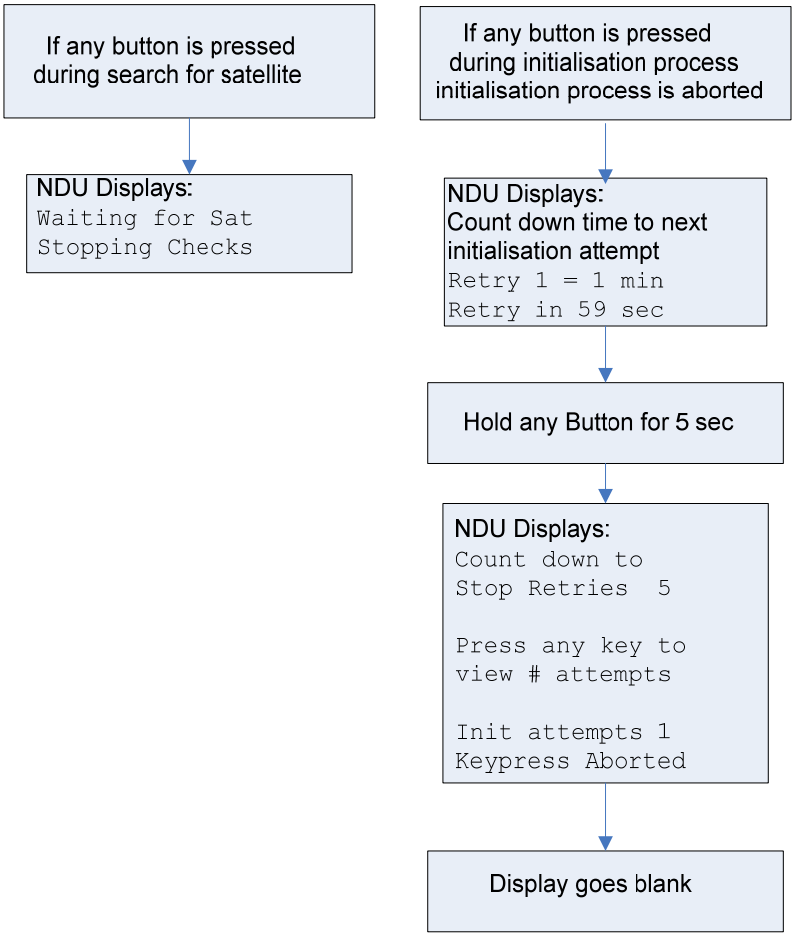
Initially ten attempts are made 1 minute apart.

If the Satellite NRT has still not successfully initialised, the time between each initialisation attempt is steadily increased in an effort to find a suitable satellite call window.

Once the time has increased to 720 minutes (12 hours or twice a day), each subsequent initialisation attempt will continue to be performed 720 minutes apart.

5.2 Initialisation Sequence and Messages

Each initialisation attempt follows a sequence



Pressing a key aborts the checks for satellite availability or initialisation attempt