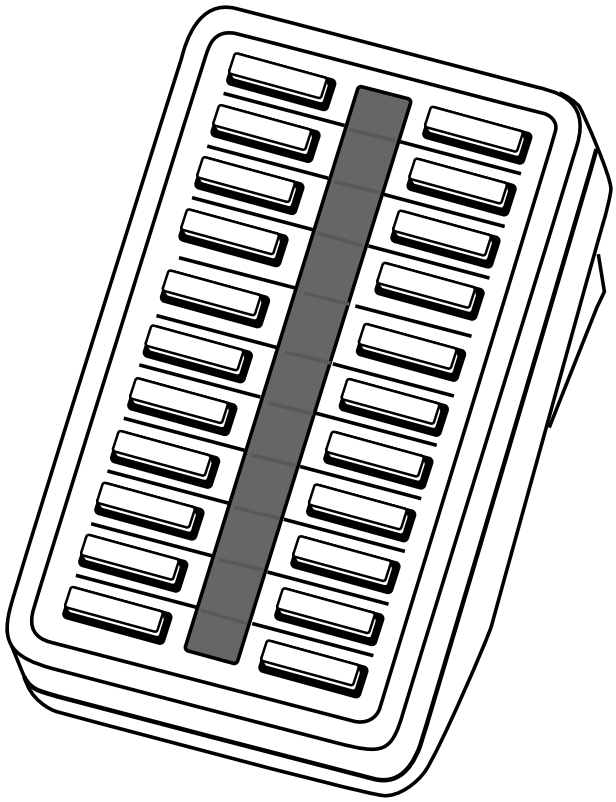
297-2011-208

DMS-100 Family

M522 Add-On Module

Description, Installation, Operation, and Maintenance Manual

Release 02.01 Standard February 1999



NORTEL NETWORKS™

DMS-100 Family

M522 Add-On Module

Description, Installation, Operation, and Maintenance Manual

NTP: 297-2011-208
Document status: Standard
Version: 02.01
Date: February 1999

Publication history

October 1996

Release 01.01. Standard version for NA004 and up.

February 1999

Release 02.01. Standard version changed from NA004 and up to CCM04 and up.

Contents

Figures

Tables

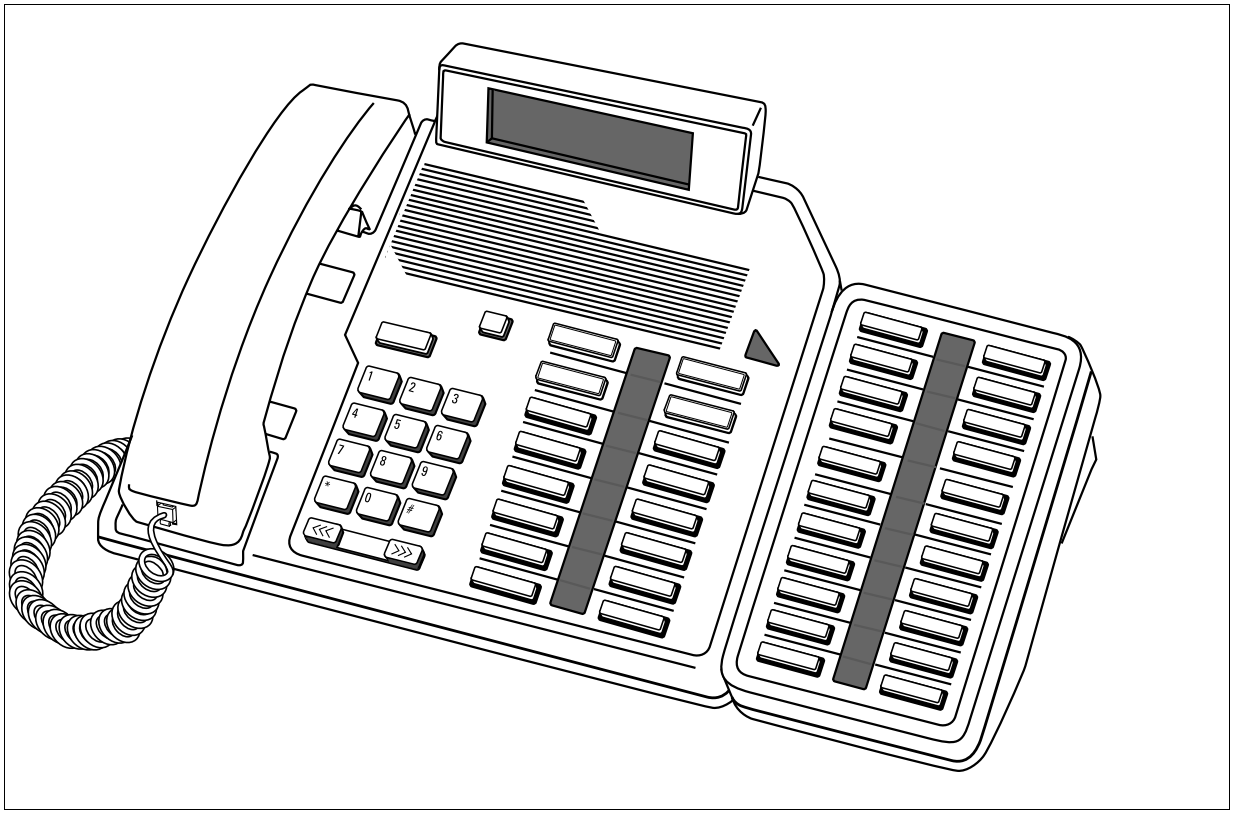
Chapter 1
Introduction

General description

The M522 add-on module can be attached to the M5216 or M5316 Meridian Business Set to provide extra feature/line keys (see Figure 1-1). When one M522 is connected, 22 additional feature/line keys are available to the Meridian Business Set. If required, you can also connect one additional M522 add-on module to increase the number of additional feature/line keys to 44.

The M5216/M5316 Meridian Business Set is designed for direct connection (through a non-loaded subscriber loop pair) to the Northern Telecom DMS–10, DMS–100, DMS–250, or Meridian SL–100 Digital Switching systems. For more information regarding the M5216 or M5316, refer to the publications cited in the section “Other documentation”.

Figure 1-1
M522 attached to M5316



Peripheral equipment

The M522 connects to the M5216 or M5316 Meridian Business Set. The M5216/M5316 interfaces with the business set (6X21AC) line card in the Line Concentrating Module (LCM) of the DMS–10/DMS–100/Meridian SL-100 Central Office (CO) equipment. The 6X21AC supports one business set per line card.

Physical characteristics

The add-on module comes in three different colours which match the M5216/M5316 colours:

- Chameleon-grey (Engineering code NT4X43AA)
- BTS light-grey (Engineering code NT4X43BA)
- Black (Engineering code NT4X43CA)

The Mean Time Between Failure (MTBF) for the M522 is at least 100 years.

Other documentation

Other information pertaining to Meridian Business Sets can be found in the following documents:

297–2001–100	Integrated Business Network (IBN) —Description
297–1001–114	Operational Measurements (OM)
297–1001–250	Testing and Acceptance for Initial Installation
297–1001–310	Table Editors User Guide
297–1001–518	Operational Measurements—Man-Machine Interface
297–2011–180	DMS-100 Business Set—Line Engineering Rules
P0749053	M522 Installation Instructions (English/French/Spanish)
P0749052	M5216 MBS User Guide (English/French)
P0800730	M5216 MBS User Guide (Spanish)
P0749051	M5316 MBS User Guide (English/French)
P0800729	M5316 MBS User Guide (Spanish)

Chapter 2
Specifications

The following specifications govern the performance of the M522 add-on module and the environmental conditions under which this performance is achieved.

Environmental and safety considerations

The M522 meets the Canadian and U.S. mandatory interconnect requirements for Telephone Equipment.

Temperature

In the *Operating State*, the M522 temperature range is 0°C to 50°C (32°F to 122°F).

In the *Non-Operating State*, the M522 temperature range is -20°C to 70°C (-6°F to 158°F).

Relative Humidity

20% to 95% (non-condensing). At temperatures above 34°C (93°F), relative humidity is limited to 52mbar of water vapour pressure.

Electromagnetic Interference

The radiated and conducted electromagnetic interference meets the requirements of Subpart J of Part 15 of the FCC rules for class B computing devices.

Atmospheric pollution

The M522 is designed to withstand normal atmospheric conditions throughout its life and during shipment and storage as defined in the International Electromechanical Commission (IEC) document 50 (salt, mist, atmospheric dust, sulfur dioxide, and hydrogen sulfide exposure).

Vibration

The M522 is designed to work to specifications after being subjected to the following vibrations in each of three orthogonal directions for 90 minutes:

- Vibration frequency of 5 Hz to 500 Hz
- Maximum half displacement 0.35mm (0.014 in)
- Maximum acceleration 15m/s/s.

Shock

When *packaged*, the M522 is designed to withstand normal handling during shipment.

When *unpacked*, the M522 is designed to withstand accidental dropping during normal use, without sustaining damage, when dropped on any face or corner from a height not exceeding .75m (30 in).

Power

The M522 is powered through its connection to the M5216/M5316. The M5216/M5316 is partially loop powered by a balanced 440 Ohm battery feed from the switching equipment. The switch battery voltage supplied to the loop is nominally 52 VDC with a minimum of 42.75 VDC and a maximum of 56 VDC. Under normal conditions the polarity must be negative on the Ring lead with respect to the Tip lead.

The current drawn from the loop is 16 ± 1mA when the set is active. The current drawn from the loop is 10 ± 1mA when the set is inactive.

The M5216/M5316 also requires a 16 V AC external power supply rated at 375 mA. During a power failure, the Handsfree and RT clock functions are not available.

Chapter 3
Operations and features

Basic operations

The M5216/M5316 Meridian Business Set can be used to make voice calls and operate selected DMS–10, DMS–100, or Meridian SL–100 features. Each installed M522 expands the number of keys available for feature/line installation by 22. All supported features can be accessed using keys provided on the M5216/M5316 and the M522. For further details about software requirements, refer to NTP 297–2011–100 and NTP 297–1001–310 respectively.

Before attempting to operate features installed on the M522, please refer to the *M5216 Meridian Business Set User Guide* or the *M5316 Meridian Business Set User Guide*. This document is shipped with the set and contains instructions for making calls and how to use various features.

Features operation

The M522 add-on module has 22 keys which can be installed with lines or features. Once installed with features and/or lines, the keys and LCD indicators function as those found on the M5216/M5316.

There are 22 LCD indicator segments (half diamonds) on the M522. When there is activity on keys located on the left side of the M522, a left half diamond lights on the LCD. When there is activity on keys located on the right side of the M522, a right half diamond lights on the LCD. A summary of M522 keys and indicators is provided in Table 3-1.

Table 3-1
Summary of M522 keys and indicators

Key or indicator	Description
22 Feature/ Line keys	Acts as line key or as a feature key depending upon how the set is programmed.
LCD Indicators	Indicates the status of the feature/line keys:
No half diamond (Off)	Feature or line is not active.
Steady Left or Right half diamond (On)	Feature or line is active.
Slow flashing Left or Right half diamond (60 IPM)	Line is ringing or feature is being programmed.
Fast Flashing Left or Right half diamond (120 IPM)	Line is on hold .

Available features

The feature keys can be assigned a subset of a number of features. Examples of some of the available features are given as follows:

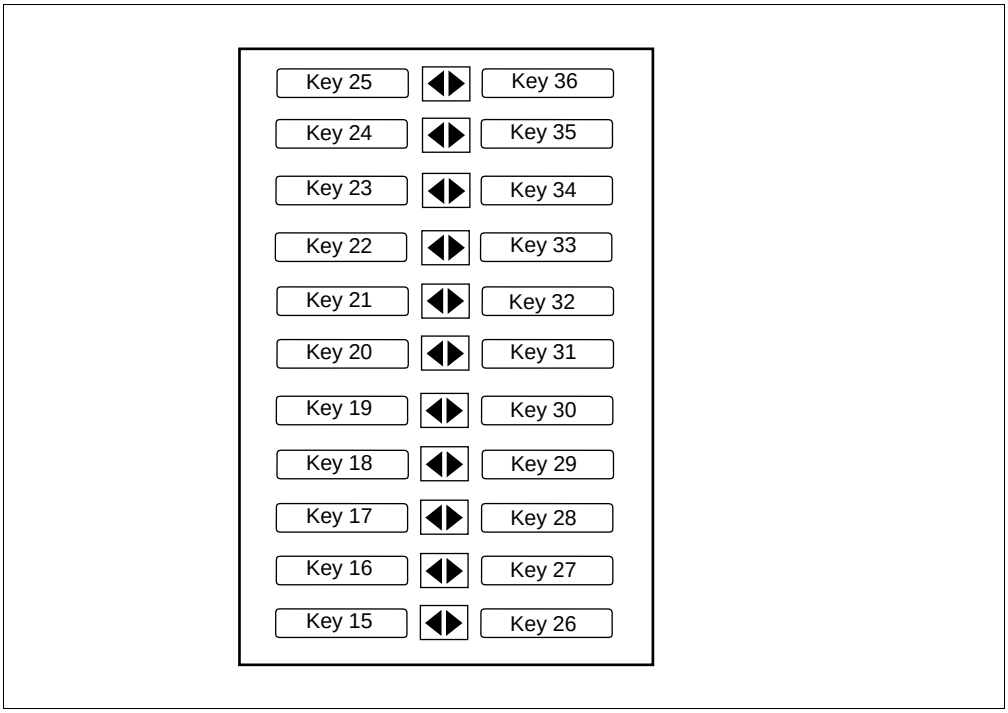
- Automatic Dial (AUD)
- Automatic Line (AUL)
- Busy Override (EBO)
- Call Forward (CF)
- Call Park (PARK)
- Call Pickup (CPU)
- Call Waiting (CWT)
- Directed Call Park (DCP)
- Directory Numbers (DN)
- Group Intercom (GIC)
- Individual Business Line
- Intercom (ICM)
- Make Set Busy (MSB)
- Malicious Call Hold (MCH)
- Message Waiting (MWT)
- Multiple Appearance Directory Numbers (MADN)
- Privacy Release
- Ring Again (RAG)
- Set Busy Indicator (SBI)
- Speed Calling (SCS, SCL, or SCI)
- 3-way Calling/Call Transfer (TWC/CXR)
- 6-port Conference (CONF 6)

Programmable key numbers and the datafill

The 22 feature keys available on the M522 add-on module are assigned key numbers to enable the switch to identify individual key functions. The numbering scheme used for key assignments is shown in Figure 3-1.

The presence of the M522 is transparent to the process of data filling the M5216/M5316 set.

Figure 3-1
M522 add-on module key numbering



If a second M522 is installed, key numbering follows the same pattern by ranging from Key 37–Key 58.

Chapter 4
Installation

Installing the M522

Before installing the M522 check the package contents as described below. To install the M522 follow Procedure 4-1.

Unpacking or packing

Use proper care while unpacking the M522. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If a telephone or add-on module must be returned to the factory, make sure it is packed in its original container to avoid damage during transit. Remember to include all loose parts in the shipment (e.g. cords, AC transformer, and handset).

Before you begin the installation

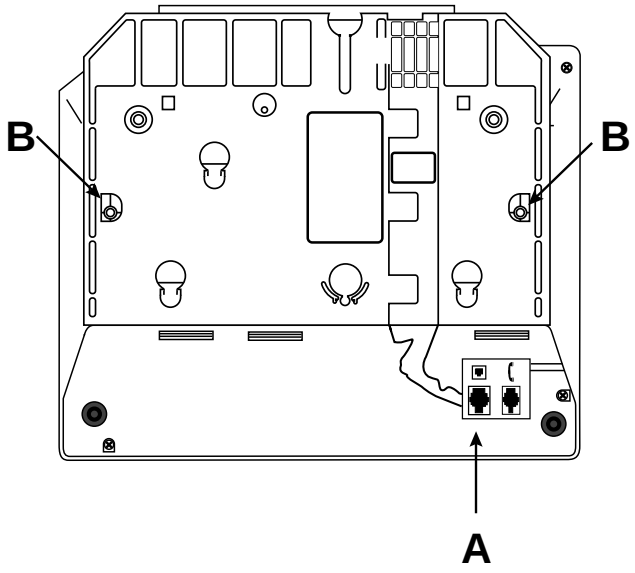
Ensure that you have the following items before you start the M522 installation:

- one M522 add-on module (two if connecting two M522 modules)
- an extended wedge-shaped base to join the M5216/M5316 to the M522 (use the single extended base to join one M522 module to the M5216/M5316; use the double extended base to join two M522 modules—see Chapter 6 “Replacement parts” for ordering information).
- one long (320mm) ribbon cable
- one short (178mm) ribbon cable (only required for connecting two M522 modules)
- one screw (pozi-drive)
- key labels
- plastic key caps

Procedure 4-1
How to install the M522

Step	Action
1	Turn the M5216/M5316 set upside down on a soft surface, as shown in Figure 4-1. If the line cord is plugged into the line receptacle (A), disconnect it from the telephone set and set it aside.

Figure 4-1
M5216/M5316 bottom view



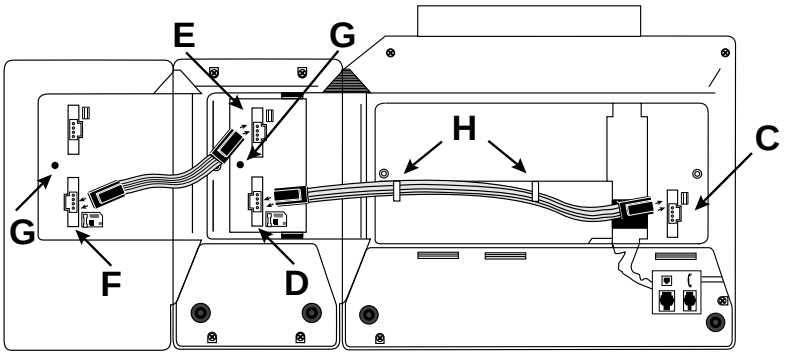
2	Locate the two screws (B) in the wedge-shaped base. Remove the screws from the base and set them aside.
3	Pull off the base from the telephone set.

—continued—

Procedure 4-1
How to install the M522 (continued)

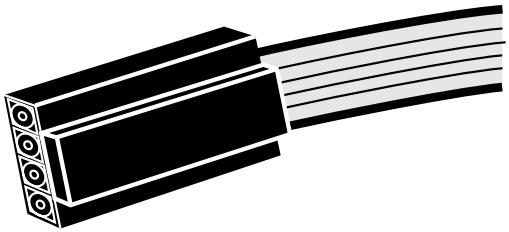
Step	Action
4	Place the M522 (1) upside down and to the left of the telephone set as shown in Figure 4-2 . If you are installing a second M522 (2), place it to the left of the first M522 (1).
5	Remove the screw from the screw mount post on the M522(s) as shown at location G in Figure 4-2. Set the screw aside.

Figure 4-2
Connecting the ribbon cable(s)



—continued—

Procedure 4-1
How to install the M522 (continued)

Step	Action
6	Insert one end of the long ribbon cable (320mm) into receptacle C as shown in Figure 4-2. The cable connector is polarized (see Figure 4-3) to ensure the connector is properly seated in the receptacle. **Figure 4-3** **Polarized connection detail** 
7	Insert the other end of the long ribbon cable into receptacle D as shown in Figure 4-2. **Slide the ribbon cable underneath the restraining tabs H so that it is not twisted and so that the ribbon cable avoids the screw mount.** This placement ensures that the cable will not be pinched or squeezed by the screw once the extended base is attached.
8	If you are adding a second M522 (2) to the telephone set, use the short ribbon cable (172 mm) to connect it to the M522 already in place. On the M522 (1) already connected to the telephone set, insert one end of the short ribbon cable into receptacle E. On the second M522 (2), insert the other end of the ribbon cable into receptacle F. **Make sure the ribbon cable is not pinched or twisted.**

—continued—

Procedure 4-1
How to install the M522 (continued)

Step	Action
9	If you are connecting one M522 add-on module, position the wedge-shaped base as shown in Figure 4-4. If you are connecting two M522 add-on modules, position the base as shown in Figure 4-5. Align the plastic tabs in the base with the notches provided on the M522 and telephone set.

Figure 4-4
Attaching the base (for one M522 module)

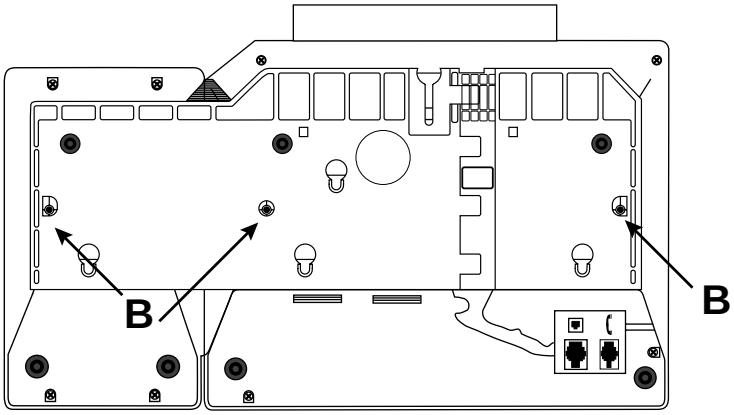
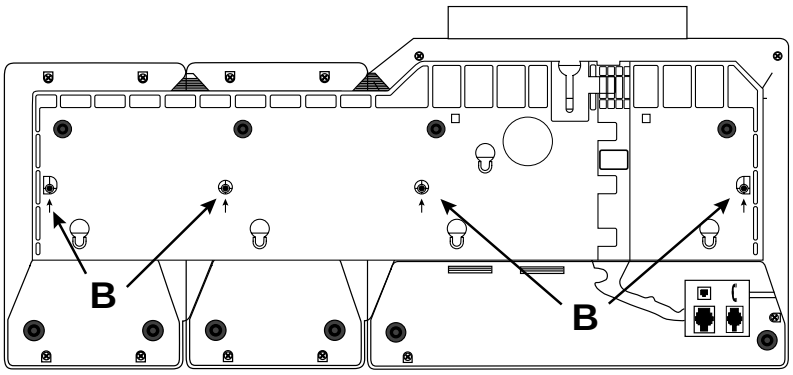


Figure 4-5
Attaching the base (for two M522 modules)



—continued—

Procedure 4-1
How to install the M522 (continued)

Step	Action
10	Press the base firmly into the bottom of the telephone set and the M522 until all plastic tabs have clicked into place. **Once again, make sure that the ribbon cables do not get pinched between the extended base and the screw mounts (B)**.
11	Insert screws in the screw mounts (B) as shown in Figures 4-4 and 4-5. Tighten the screws until the base is seated securely. Do not over tighten the screws as this may cause the plastic to crack.
12	Reinsert the line cord into the proper receptacle (A) as shown in Figure 4-1. Thread the cord through the channel provided in the extended base so that the cord emerges from the back of the telephone set. Turn the telephone set right side up and return it to its previous position.

—end—

Chapter 5
Replacement parts

The M522 add-on module has few field replaceable parts, as shown in the table below. If the M522 fails to function properly, or if mechanical breakage occurs, do not attempt to effect repairs in the field. Return the unit to the manufacturer using the original packing materials.

Table 5-1
Ordering information

Description	Ordering code	Engineering code
Meridian M522 add-on module, Chameleon-grey, made in Australia	B0240408	NT4X43AA
Meridian M522 add-on module, BTS light-grey, made in Australia	B0240409	NT4X43BA
Meridian M522 add-on module, Black, made in Australia	B0240410	NT4X43CA
Meridian M522 add-on module, Chameleon-grey, made in Canada (Brocktel)	B0246077	NT4X43KA
Meridian M522 add-on module, BTS light-grey, made in Canada (Brocktel)	B0246078	NT4X43LB
Meridian M522 add-on module, Black, made in Canada (Brocktel)	B0246079	NT4X43MC
Meridian M522 add-on module, Chameleon-grey, made in Australia (OZ OPTUS)	B0242913	NT4X43DA
Meridian M522 add-on module, BTS light-grey, made in Australia (OZ OPTUS)	B0242914	NT4X43EA
Meridian M522 add-on module, Black, made in Australia (OZ OPTUS)	B0242915	NT4X43FA
—continued—		

Table 5-1
Ordering information (continued)

Description	Ordering code	Engineering code
Meridian M522 add-on module, Chameleon-grey, made in Australia (OZ TELSTRA)	B0242928	NT4X43GA
Meridian M522 add-on module, BTS light-grey, made in Australia(OZ TELSTRA)	B0242929	NT4X43HA
Meridian M522 add-on module, Black, made in Australia (OZ TELSTRA)	B0242943	NT4X43JA
Card, Key Button Labels (English/French)	P0749551	P0749551
Card, Key Button Labels (Spanish)	P0744292	P0744292
M522 Documentation package	B0240552	NT4X4360
M522 add-on base, Chameleon Grey	P0786435	
M522 add-on base, BTS Light Grey	P0786493	
M522 add-on base, Black	P0786403	
M522 add-on cover, Chameleon Grey	P0777235	
M522 add-on cover, BTS Light Grey	P0777293	
M522 add-on cover Black	P0777203	
Extended base, Black, Single M522	P0780103	
Extended base, BTS Light Grey, Single M522	P0780193	
Extended base, Chameleon Grey, Single M522	P0780135	
Extended base, Black, Double M522	P0780203	
Extended base, BTS Light Grey, Double M522	P0780293	
Extended base, Chameleon Grey, Double M522	P0780235	
M522 Key cap set	B0240557	NT4X4361
Ribbon cable (172mm)	P0830327	
Ribbon cable (320mm)	P0830326	
—end—		

DMS-100 Family

M522 Add-On Module

Description, Installation, Operation, and Maintenance Manual

NTP: 297-2011-208
Document status: Standard
Version: 02.01
Date: February 1999
Printed in Canada

NORTEL NETWORKS™