MX180000A-x01
Pre-Code
MX180000A-x02
De-Code
Operation Manual

Second Edition

- For safety and warning information, please read this manual before attempting to use the equipment.
- Additional safety and warning information is provided in the MP1800A Signal Quality Analyzer Installation Guide and the MT1810A 4 Slot Chassis Installation Guide. Please also refer to one of these documents before using the equipment.
- Keep this manual with the equipment.

ANRITSU CORPORATION

Document No.: M-W3176AE-2.0
Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

Symbols used in manual

**DANGER** 🔄 This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

**WARNING** 🔄 This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

**CAUTION** 🔄 This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

- This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.
- This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.
- This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.
- This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

MX180000A-x01 Pre-Code
MX180000A-x02 De-Code
Operation Manual

11 March 2009 (First Edition)
16 December 2011 (Second Edition)

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- During the warranty period, Anritsu Corporation will repair or exchange this software free-of-charge if it proves defective when used as described in the operation manual.
- The warranty period is 6 months from the purchase date.
- The warranty period after repair or exchange will remain 6 months from the original purchase date, or 30 days from the date of repair or exchange, depending on whichever is longer.
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      iv) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
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- Copying files and data
  Only files that have been provided directly from Anritsu or generated using Anritsu equipment should be copied to the instrument. All other required files should be transferred by means of USB or CompactFlash media after undergoing a thorough virus check.

- Adding software
  Do not download or install software that has not been specifically recommended or licensed by Anritsu.

- Network connections
  Ensure that the network has sufficient anti-virus security protection in place.
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Anritsu affixes the CE Conformity marking on the following product(s) in accordance with the Council Directive 93/68/EEC to indicate that they conform to the EMC and LVD directive of the European Union (EU).

CE marking

1. Product Model
   Software:  
   MX180000A-x01 Pre-Code
   MX180000A-x02 De-Code

2. Applied Directive and Standards
   When the MX180000A-x01 Pre-Code or MX180000A-x02 De-Code is installed in the MP1800A or MT1810A, the applied directive and standards of this software conform to those of the MP1800A or MT1810A main frame.

   PS: About main frame
   Please contact Anritsu for the latest information on the main frame types that MX180000A-x01/x02 can be used with.
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Anritsu affixes the C-tick marking on the following product(s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

C-tick marking

\[\text{N274}\]

1. Product Model
   Plug-in Units: MX180000A-x01 Pre-Code
   MX180000A-x02 De-Code

2. Applied Directive and Standards
   When the MX180000A-x01 Pre-Code or MX180000A-x02 De-Code is installed in the MP1800A or MT1810A, the applied directive and standards of this software conform to those of the MP1800A or MT1810A main frame.

PS: About main frame
   Please contact Anritsu for the latest information on the main frame types that MX180000A-x01/x02 can be used with.
About This Manual

A testing system combining the MP1800A Signal Quality Analyzer or MT1810A 4-Slot Chassis mainframe, module(s), and control software is called a Signal Quality Analyzer Series. The operation manuals of the Signal Quality Analyzer Series consist of separate documents for the installation guide, the mainframe, remote control operation, module(s), control software, and extended application as shown below.

- **Installation Guide**: Installation guide from module installation to the start of use. The Installation Guide varies depending on the mainframe used.
- **Mainframe Operation Manual**: Describes basic operations of the mainframe. The Mainframe Operation Manual varies depending on the mainframe used.
- **Remote Control Operation Manual**: Describes remote control using the GPIB interface and LAN interface.
- **Module Operation Manual**: Operation manual for the module. The Module Operation Manual varies depending on the module(s) used.
- **Control Software Operation Manual**: Operation manual of the software that controls the Signal Quality Analyzer Series.
- **MX180000A-x01 Pre-Code MX180000A-x02 De-Code Operation Manual**: Describes settings and operations of the MX180000A-x01/x02.
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  1.2 Configuration........................................................... 1-3
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Chapter 1  Overview

This chapter provides an overview of the MX180000A-x01 Pre-Code and the MX180000A-x02 De-Code (hereafter "this option").

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1.3 Operating Environment ........................................ 1-5
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1.5 Restrictions .................................................... 1-9
1.1 Features

This option is a software package for the MX180000A Control Software for the MP1800A Signal Quality Analyzer (hereafter, MP1810A) and MT1810A 4 Slot Chassis (hereafter, MT1810A).

It has the following features:

• Precoding functions for 40G DQPSK, DPSK, DB optical modulation methods (MX180000A-x01)
  Decoding functions for 40G DQPSK, DPSK, DB optical modulation methods (MX180000A-x02)
• Added to options by purchase of option license key
1.2 Configuration

1.2.1 Standard configuration

Table 1.2.1-1 shows the standard configuration of this option.

<table>
<thead>
<tr>
<th>Model Name/Symbol</th>
<th>Product Name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX180000A-x01</td>
<td>Pre-Code</td>
<td>1</td>
<td>Issues Option Key License Certificate</td>
</tr>
<tr>
<td>MX180000A-x02</td>
<td>De-Code</td>
<td>1</td>
<td>Issues Option Key License Certificate</td>
</tr>
<tr>
<td>Z0897A</td>
<td>MP1800A Manual CD</td>
<td>1</td>
<td>CD-ROM Supplied with purchased option</td>
</tr>
<tr>
<td>Z0918A</td>
<td>MX180000A Software CD</td>
<td>1</td>
<td>CD-ROM Supplied with purchased option</td>
</tr>
</tbody>
</table>

1.2.2 Peripheral device

Table 1.2.2-1 lists the peripheral devices of this option.

<table>
<thead>
<tr>
<th>Model Name/Symbol</th>
<th>Product Name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP1800A</td>
<td>SIGNAL QUALITY ANALYZER</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MT1810A</td>
<td>4 Slot Chassis</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU181020A</td>
<td>12.5 Gbit/s PPG</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU181020B</td>
<td>14 Gbit/s PPG</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU181040A</td>
<td>12.5 Gbit/s ED</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU181040B</td>
<td>14 Gbit/s ED</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU182020A</td>
<td>25 Gbit/s 1ch MUX</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU182021A</td>
<td>25 Gbit/s 2ch MUX</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU182040A</td>
<td>25 Gbit/s 1ch DEMUX</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MU182041A</td>
<td>25 Gbit/s 2ch DEMUX</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### 1.2.3 Applicable parts

Table 1.2.3-1 lists the applicable parts of this option.

<table>
<thead>
<tr>
<th>Model Name/Symbol</th>
<th>Product Name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>W3176AE</td>
<td>MX180000A-x01 Pre-Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MX180000A-x02 De-Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation Manual</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Printed version</td>
</tr>
</tbody>
</table>
1.3 Operating Environment

Use a PC with at least the performance shown below.

Table 1.3-1  Windows XP Operating System

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device type</td>
<td>IBM·PC or compatible PC</td>
</tr>
<tr>
<td>CPU</td>
<td>Pentium 4 processor, 1.6-GHz or faster</td>
</tr>
<tr>
<td>OS</td>
<td>Windows XP Version 2002 Service Pack 2</td>
</tr>
<tr>
<td>Memory</td>
<td>At least 512 MB</td>
</tr>
<tr>
<td>Monitor resolution</td>
<td>At least 800 × 600 dots</td>
</tr>
<tr>
<td>Display colors</td>
<td>At least 256 colors</td>
</tr>
<tr>
<td>CD-ROM drive</td>
<td>Required for installation</td>
</tr>
<tr>
<td>Hard disk</td>
<td>At least 200 MB disk space for full installation</td>
</tr>
<tr>
<td>Remote Interface</td>
<td>10 BASE·T or 100 BASE·TX</td>
</tr>
</tbody>
</table>

Table 1.3-2  Windows 7 Operating System

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device type</td>
<td>IBM·PC or compatible PC</td>
</tr>
<tr>
<td>CPU</td>
<td>1 GHz or faster 32· (x86) or 64·bit (x64) processor</td>
</tr>
<tr>
<td>OS</td>
<td>Windows 7</td>
</tr>
<tr>
<td>Memory</td>
<td>32-bit: At least 1 GB RAM</td>
</tr>
<tr>
<td></td>
<td>64-bit: At least 2 GB RAM</td>
</tr>
<tr>
<td>Monitor resolution</td>
<td>At least 800 × 600 dots</td>
</tr>
<tr>
<td>Display colors</td>
<td>At least 256 colors</td>
</tr>
<tr>
<td>CD-ROM drive</td>
<td>Required for installation</td>
</tr>
<tr>
<td>Hard disk</td>
<td>At least 200 MB disk space for full installation</td>
</tr>
<tr>
<td>Remote Interface</td>
<td>10 BASE·T or 100 BASE·TX</td>
</tr>
</tbody>
</table>
CAUTION

Operation failure may arise if any of the following occurs on the PC when the MX180000A is operating:

- Simultaneous execution with another application
- Closing the display (for laptop PCs)
- Screensaver activation
- Battery saving function activation (for laptop PCs)

Refer to the operation manual of the PC used for how to turn off each function.
1.4 Specifications

Table 1.4-1 and Table 1.4-2 show the specifications for this option.

### Table 1.4-1 Specifications for MX180000A-x01

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported peripherals</td>
<td>Refer to section 1.2.2</td>
</tr>
<tr>
<td>Installation</td>
<td>Must be installed in MP1800A or in PC controller in which Version 5.02.04 or later MX180000A Control Software installed. The MX180000A Ver.6.02.00 or later must be installed when the control PC is the Windows 7 operation system.</td>
</tr>
<tr>
<td>Operation bit rate</td>
<td>0.1 to 12.5 Gbit/s</td>
</tr>
<tr>
<td>Pre-Code Function</td>
<td>Sets Pre-Code function ON and OFF</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>Sets Pre-Code modulation method</td>
</tr>
<tr>
<td>Type</td>
<td>4ch Combination (Pre-Code): Choose DPSK or DB.</td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination (Pre-Code):DQPSK</td>
</tr>
<tr>
<td>Initial Data</td>
<td>Sets Pre-Code defaults</td>
</tr>
<tr>
<td></td>
<td>Choose 0 or 1.</td>
</tr>
</tbody>
</table>

### Table 1.4-2 Specifications for MX180000A-x02

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported peripherals</td>
<td>Refer to section 1.2.2</td>
</tr>
<tr>
<td>Installation</td>
<td>Must be installed in MP1800A or in PC controller in which Version 5.02.04 or later MX180000A Control Software installed. The MX180000A Ver.6.02.00 or later must be installed when the control PC is the Windows 7 operation system.</td>
</tr>
<tr>
<td>Operation bit rate</td>
<td>0.1 to 12.5 Gbit/s</td>
</tr>
<tr>
<td>De-Code Function</td>
<td>The De-Code ON setting is disabled when:</td>
</tr>
<tr>
<td></td>
<td>Sync control is Frame OFF</td>
</tr>
<tr>
<td></td>
<td>Sync control is Quick</td>
</tr>
<tr>
<td></td>
<td>Test Pattern is Data and Pattern length is less than 512 bits</td>
</tr>
<tr>
<td></td>
<td>Test Pattern is Zero Substitution and Pattern length is $2^7$, $2^7$–1, $2^9$–1</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>Sets De-Code function ON and OFF</td>
</tr>
<tr>
<td>Type</td>
<td>Sets De-Code modulation method</td>
</tr>
<tr>
<td></td>
<td>4ch Combination (De-Code):Choose DPSK or DB.</td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination (De-Code):DQPSK</td>
</tr>
<tr>
<td>Initial Data</td>
<td>Sets De-Code defaults</td>
</tr>
<tr>
<td></td>
<td>Choose 0 or 1.</td>
</tr>
<tr>
<td>Measurement Selection</td>
<td>Selects De-Code setting method</td>
</tr>
<tr>
<td></td>
<td>Manual Setting: Modulation data logic and sequence set manually</td>
</tr>
<tr>
<td></td>
<td>Search Setting: Modulation data logic and sequence set automatically</td>
</tr>
</tbody>
</table>
**Table 1.4-2  Specifications for MX180000A-x02 (Cont’d)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order Setting</td>
<td>Manual setting of modulation data logic and sequence</td>
</tr>
<tr>
<td></td>
<td>Enabled when Measurement Selection set to Manual Setting</td>
</tr>
<tr>
<td></td>
<td>Following modulation methods can be set:</td>
</tr>
<tr>
<td></td>
<td><strong>DQPSK</strong></td>
</tr>
<tr>
<td></td>
<td>Arm Setting: Sets I/Q data swap status. Select IQ or QI.</td>
</tr>
<tr>
<td></td>
<td>I-Logic: Sets I data logic. Select I or /I.</td>
</tr>
<tr>
<td></td>
<td>Q-Logic: Sets Q data logic. Select Q or /Q.</td>
</tr>
<tr>
<td></td>
<td><strong>DPSK/ODB</strong></td>
</tr>
<tr>
<td></td>
<td>Logic: Sets modulation data logic; select D or /D.</td>
</tr>
<tr>
<td>Search Start</td>
<td>Enabled when Measurement Selection set to Search Setting</td>
</tr>
<tr>
<td>Search Stop</td>
<td>Forcibly stops above Search</td>
</tr>
<tr>
<td>Search Result</td>
<td>Displays measurement results when Search completed according to set</td>
</tr>
<tr>
<td></td>
<td>modulation method as follows:</td>
</tr>
<tr>
<td></td>
<td><strong>DQPSK</strong></td>
</tr>
<tr>
<td></td>
<td>Order: I Q, /I Q, I /Q, /I /Q, Q I, /Q I, Q /I, /Q /I</td>
</tr>
<tr>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
<tr>
<td></td>
<td>Error rate: 0.0000E-16 to 1.0000E00</td>
</tr>
<tr>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
<tr>
<td></td>
<td><strong>DPSK/ODB</strong></td>
</tr>
<tr>
<td></td>
<td>Order: D, /D</td>
</tr>
<tr>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
<tr>
<td></td>
<td>Error rate: 0.0000E-16 to 1.0000E00</td>
</tr>
<tr>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
<tr>
<td>Logic</td>
<td>Logic setting (POS/NEG) disabled at De-Code ON (enabled at OFF)</td>
</tr>
<tr>
<td>Capture</td>
<td>Capture function is disabled when 4ch Combination (De-Code) or</td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination (De-Code) is selected.</td>
</tr>
<tr>
<td>Block Window</td>
<td>Block Window function is disabled when 4ch Combination (De-Code) or</td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination (De-Code) is selected.</td>
</tr>
</tbody>
</table>
1.5 Restrictions

This section explains the restrictions when using this option. This function is enabled by switching the operation of the target module at the [Combination Setting] screen as explained in Chapter 3 Operation Method.

Shared Restrictions
Operation up to 12.5 Gbit/s is assured whether or not Pre-Code/De-Code is ON or OFF when [4ch Combination] (Pre-Code/De-Code) or [25Gx2ch Combination] (Pre-Code/De-Code) is selected at [Combination Setting].

MX180000A-x02 De-Code Restrictions
The following functions are disabled when [4ch Combination] (De-Code), or [25Gx2ch Combination] (De-Code) is selected at [Combination Setting].

- Block Window
- Capture

The following functions are disabled when [4ch Combination] (De-Code), or [25Gx2ch Combination] (De-Code) is selected at [Combination Setting] and De-Code is ON.

- Frame OFF and Quick sync
- Pattern length less than 512 bits
- Pattern logic

If the Pattern length is set to less than 512 bits when De-Code is ON, De-Code is set automatically to OFF. The following message dialog is displayed in this case.

In addition, when the pattern length is set to less than 512 bits using a remote command, De-Code is set automatically to OFF. In this case, note that no message dialog is displayed.
Chapter 2  Adding Options

This chapter describes how to add options.

2.1 Adding Options .......................................................... 2-2
Chapter 2  Adding Options

2.1 Adding Options

When this option is purchased at the same time as the MP1800A/MT1810A, an Option Key License Certificate is appended. When purchasing this option some time after purchasing the MP1800A/MT1810A, the Option Key License Certificate is sent after informing Anritsu of the MP1800A/MT1810A serial number.

Use the following procedure to add this option.

1. Select [Setup utility] at the Selector screen.

![Figure 2.1-1  Selector screen](image-url)
2. The Setup Utility login window is displayed. Select [Option] from the Login drop-down list to enable the Option Key input boxes. Enter the key code provided in the “Option Key License Certificate” into the Option Key input boxes. Next, click [OK] to display the option addition screen.
Chapter 2  Adding Options

3. A list of options that can be added by the entered key code is displayed. Select the checkbox corresponding to the option to be added, and then click [Apply]. The selected option is then added. To check if the option has been added, use the [Version] tab on the Setup Utility screen.

![Figure 2.1-4  Option Addition Screen](image)

**Figure 2.1-4  Option Addition Screen**

**Notes:**

1. When adding this option to the MP1800A, the option key can only be used for the main frame with the serial number shown in the Option Key License Certificate.

2. When multiple options are purchased at the same time or separately, only one Option Key License Certificate for one of the main frame with the serial number is issued.

3. The Option Key of the Option Key License Certificate includes data on the purchased options. When two options are purchased at the same time, although only one Option Key is issued, it includes data for the two purchased options.

4. When this option is purchased at the same time as the MP1800A, the option is installed in the MP1800A at shipment. Although the Option Key License Certificate is issued at the same time, the above procedure for adding options is needed.

5. Keep the Option Key License Certificate for future support.
Chapter 3  Operation Method

This chapter explains the option screens and functions.

3.1 Selecting Pre-Code/De-Code ...................................  3-2
3.2 Setting Pre-Code Function........................................  3-4
   3.2.1 Pre-Code setting............................................  3-5
3.3 Setting De-Code Function........................................  3-6
   3.3.1 De-Code setting............................................  3-7
   3.3.2 DQPSK setting .............................................  3-8
   3.3.3 DPSK/DB setting............................................  3-9
3.1 Selecting Pre-Code/De-Code

The Pre-Code/De-Code functions are selected at the [Combination Setting] screen.

![Combination Setting Dialog Box](image)

Table 3.1-1  Combination Setting Screen Operation Items

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
### Table 3.1-1 Combination Setting Screen Operation Items (Cont'd)

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2]</td>
<td>4ch Combination</td>
<td>4ch Combination(Pre-Code): The DPSK/DB Pre-Code function can be used when the [Pre-Code] tab is enabled. This can be set only when the MX180000A-x01 is installed and the installed PPG is set to [4ch Combination].</td>
</tr>
<tr>
<td></td>
<td>(Pre-Code)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4ch Combination</td>
<td>4ch Combination(De-Code): The DPSK/DB De-Code function can be used when the [De-Code] tab is enabled. This can be set only when the MX180000A-x02 is installed and the installed ED is set to [4ch Combination].</td>
</tr>
<tr>
<td></td>
<td>(De-Code)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination</td>
<td>25Gx2ch Combination(Pre-Code): The DQPSK Pre-Code function can be used when the [Pre-Code] tab is enabled. This can be set only when the MX180000A-x01 is installed and the installed PPG is set to [25Gx2ch Combination].</td>
</tr>
<tr>
<td></td>
<td>(Pre-Code)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25Gx2ch Combination</td>
<td>25Gx2ch Combination(De-Code): The DQPSK De-Code function can be used when the [De-Code] tab is enabled. This can be set only when the MX180000A-x02 is installed and the installed ED is set to [25Gx2ch Combination].</td>
</tr>
<tr>
<td></td>
<td>(De-Code)</td>
<td></td>
</tr>
</tbody>
</table>
3.2 Setting Pre-Code Function

To set the Pre-Code function, select the [Pre-Code] tab.

Since this function supports DQPSK, DPSK, and DB technologies, it can calculate and output Data as shown in the following Pre-Code logic diagram.
3.2.1 Pre-Code setting

![Pre-Code Setting dialog box]

Figure 3.2.1-1 Pre-Code Setting dialog box

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Pre-Code ON/OFF</td>
<td>Sets Pre-Code ON and OFF</td>
</tr>
<tr>
<td>[2]</td>
<td>Type</td>
<td>Sets Pre-Code modulation method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When 25Gx2ch Combination (Pre-Code) selected: DQPSK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When 4ch Combination(Pre-Code):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select from DPSK and DB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Default: DPSK)</td>
</tr>
<tr>
<td>[3]</td>
<td>Initialize Data</td>
<td>Sets Pre-Code to default values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Default: 1)</td>
</tr>
</tbody>
</table>
3.3 Setting De-Code Function

To set the De-Code function, select the [De-Code] tab.

This function decodes the precoded Rx data to measure DQPSK, DPSK, and DB data. The bit swap and logic status can be set either manually or automatically.

The following functions are disabled when [4ch Combination] (De-Code), or [25Gx2ch Combination] (De-Code) is selected.
- Block Window at [Pattern] tab
- Capture function at [Capture] tab

When De-Code Setting is ON, the following settings are disabled.
- Frame OFF and Quick sync at [Measurement] tab
- POS/NEG setting at [Pattern] tab

Note:
When De-Code Setting is On, it takes some time for synchronization if the PRB mark rate of the Test Pattern Length is 1/4, 1/8, 3/4, or 7/8.
3.3 Setting De-Code Function

3.3.1 De-Code setting

![De-Code Setting dialog box]

**Figure 3.3.1-1  De-Code Setting dialog box**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>De-Code ON/OFF</td>
<td>Sets De-Code ON and OFF</td>
</tr>
<tr>
<td>[2]</td>
<td>Type</td>
<td>Sets De-Code modulation method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When 25Gx2ch Combination(De-Code): DQPSK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When 4ch Combination(De-Code):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select from DPSK and DB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Default: DPSK)</td>
</tr>
<tr>
<td>[3]</td>
<td>Initialize Data</td>
<td>Sets De-Code to default values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Default: 1)</td>
</tr>
</tbody>
</table>

**Note:**

When disabling the De-Code ON/OFF setting [1], check the following:

- The Length setting at the [Pattern] tab must be 512 bits or more.
- The Block Window at the [Pattern] tab must be OFF.
- The Sync Control setting at the [Measurement] tab must be Frame ON (except when the Test Pattern setting at [Pattern] tab is PRBS).
3.3.2 DQPSK setting

Figure 3.3.2-1 DQPSK Setting dialog box

Table 3.3.2-1 DQPSK Setting item

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selection</td>
<td>Manual Setting: Sets De-Code settings manually</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Search Setting: Sets best De-Code settings automatically</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the [Start] button in item [3] below is pressed, the items in [2]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order Setting are set automatically. The error rate at the best</td>
</tr>
<tr>
<td></td>
<td></td>
<td>setting (smallest error rate) is displayed in [Search Result] of item [5].</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arm: Select IQ or QI.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I-Logic: Select I or /I.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Q-Logic: Select Q or /Q.</td>
</tr>
<tr>
<td>[3]</td>
<td>Start</td>
<td>Starts Search</td>
</tr>
<tr>
<td>[4]</td>
<td>Stop</td>
<td>Stops Search</td>
</tr>
<tr>
<td>[5]</td>
<td>Search Result</td>
<td>Displays automatically detected results (Order setting and Error rate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order: I, I/Q, I/Q, I/Q, I/Q, I, I/Q, I/Q, I/Q, I/Q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>......(Defaults or at Alarm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Error rate: 0.0000E-16 to 1.0000E00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>......(Defaults or at Alarm)</td>
</tr>
</tbody>
</table>

Note:

Search cannot be executed when Clock Loss or CR Unlock occur.
### 3.3 Setting De-Code Function

#### 3.3.3 DPSK/DB setting

![DPSK/DB Setting dialog box](image)

**Figure 3.3.3-1** DPSK/DB Setting dialog box

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Manual Setting:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sets De-Code settings manually</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Search Setting:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sets best De-Code settings automatically</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the [Start] button in item [3] below is pressed, the items in [2]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order Setting are set automatically. The error rate at the best setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(smallest error rate) is displayed in [Search Result] of item [5].</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Logic: Select D or /D.</td>
</tr>
<tr>
<td>[3]</td>
<td>Start</td>
<td>Starts Search</td>
</tr>
<tr>
<td>[4]</td>
<td>Stop</td>
<td>Stops Search</td>
</tr>
<tr>
<td>[5]</td>
<td>Search Result</td>
<td>Displays automatically detected results (Order setting and Error rate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order: D,/D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Error rate: 0.0000E-16 to 1.0000E00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>------(Defaults or at Alarm)</td>
</tr>
</tbody>
</table>

**Note:**

Search cannot be executed when Clock Loss or CR Unlock occur.
Chapter 4  Remote Command

This chapter explains remote commands added by this option. Refer to this chapter for the new remote commands and existing commands that have changed. Refer to the MX180000A Remote Control Instruction Manual for any other commands.

4.1  Common Commands .................................................  4-3
4.2  Pre-Code Function Commands .................................  4-6
4.3  De-Code Function Commands ..................................  4-9
Table 4-1 lists the new commands added by this option as well as changed existing commands. "New command" means a command added by this option.

"Parameter changed" means the function is the same as the function of existing command but the setting parameter or response is changed. In addition, this table explains the changed contents of each command.

<table>
<thead>
<tr>
<th>Modules</th>
<th>Command</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Commands</td>
<td>:COMBination:OPERation:SETTing</td>
<td>Parameter changed</td>
</tr>
<tr>
<td></td>
<td>:COMBination:OPERation:SETTing?</td>
<td>Parameter changed</td>
</tr>
<tr>
<td></td>
<td>:COMBination:OPERation:ABILITY:COMBination?</td>
<td>Parameter changed</td>
</tr>
<tr>
<td>PPG Commands</td>
<td>:SOURce:PRECode:SET</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SOURce:PRECode:SET?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SOURce:PRECode:TYPE</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SOURce:PRECode:TYPE?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SOURce:PRECode:INITialize</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SOURce:PRECode:INITialize?</td>
<td></td>
</tr>
<tr>
<td>ED Commands</td>
<td>:SENSe:DECode:SET</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:SET?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:TYPE</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:TYPE?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:INITialize</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:INITialize?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MEASure:SELection</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MEASure:SELection?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:ARM</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:ARM?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:LOGic</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:LOGic?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:QLOGic</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:MANual:QLOGic?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:SEARch:START</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:SEARch:STOP</td>
<td>New command</td>
</tr>
<tr>
<td></td>
<td>:SENSe:DECode:SEARch:STATE</td>
<td>New command</td>
</tr>
</tbody>
</table>
4.1 Common Commands

This section explains commands related to common settings and common functions.

<table>
<thead>
<tr>
<th>Setting Items</th>
<th>Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination Setting</td>
<td>:COMBination:OPERation:SETTing</td>
</tr>
<tr>
<td></td>
<td>:COMBination:OPERation:SETTing?</td>
</tr>
<tr>
<td></td>
<td>:COMBination:OPERation:ABILity:COMBination?</td>
</tr>
</tbody>
</table>

**:COMBination:OPERation:SETTing <configuration>[,<unit>]**

- **Parameter**
  - `<configuration>` = `<NR1 NUMERIC PROGRAM DATA>`
  - 0: Independent
  - 21: 2 Ch PPG Combination
  - 22: 2 Ch ED Combination
  - 23: 2 Ch PPG/ED Combination
  - 41: 4 Ch PPG Combination
  - 42: 4 Ch ED Combination
  - 71: 25G x 2 Ch PPG Combination
  - 72: 25G x 2 Ch ED Combination
  - 81: 4 Ch PPG Combination (Pre-Code)
  - 82: 4 Ch ED Combination (De-Code)
  - 83: 25G x 2 Ch PPG Combination (Pre-Code)
  - 84: 25G x 2 Ch ED Combination (De-Code)

- `<unit>` = `<DECIMAL NUMERIC PROGRAM DATA>`
  - 1 to 4: Mainframe Nos. 1 to 4

When using two or more MT1810A units in serial connection, specify the mainframe number.

Can be omitted. Mainframe No. 1 is specified when omitted.

- **Function**
  - Sets the combination setting for the specified unit, from Combination or Independent.

- **Example**
  - To set the combination setting of Unit 3 to 4-ch PPG combination:
    - `> :COMBination:OPERation:SETTing 41,3`

- **Changed Contents**
  - Added parameter
Chapter 4  Remote Command

:COMBination:OPERation:SETTing? <slot>[,<unit>]

Parameter

<slot>=<CHARACTER PROGRAM DATA>
SLOT1 to SLOT6  Slot No.1 to 6
ALL          All modules (units)
When using the MP1800A: 1 to 6, when using the MT1810A: 1 to 4
[unit]=<DECIMAL NUMERIC PROGRAM DATA>
1 to 4        Mainframe Nos. 1 to 4
When using two or more MT1810A units in serial connection, specify the
mainframe number.
Can be omitted. Mainframe No. 1 is specified when omitted.

Response  

<numeric>=<NR1 NUMERIC RESPONSE DATA>

0  Independent
1  Channel Synchronization
21  2 Ch PPG Combination
22  2 Ch ED Combination
23  2 Ch PPG/ED Combination
41  4 Ch PPG Combination
42  4 Ch ED Combination
71  25G x 2 Ch PPG Combination
72  25G x 2 Ch ED Combination
81  4 Ch PPG Combination (Pre-Code)
82  4 Ch ED Combination (De-Code)
83  25G x 2 Ch PPG Combination (Pre-Code)
84  25G x 2 Ch ED Combination (De-Code)

Function   

Queries the combination setting of the specified slot.

Example   

To query the combination setting of Unit 1:
> :COMBination:OPERation:SETTing? ALL
< 0

To query the combination setting of Slot 3 in Unit 2:
> :COMBination:OPERation:SETTing? SLOT3,2
< 41

To query the combination setting of Unit 3:
> :COMBination:OPERation:SETTing? ALL,3
< 0

Changed Contents  

Added response
4.1 Common Commands

:COMBination:OPERation:ABILity:COMBination? [<unit>]

Parameter

- `<unit>` = DECIMAL NUMERIC PROGRAM DATA
- 1 to 4 Mainframe Nos. 1 to 4
- When using two or more MT1810A units in serial connection, specify the mainframe number.
- Can be omitted. Mainframe No. 1 is specified when omitted.

Response

- `<numeric>` = NR1 NUMERIC RESPONSE DATA
- 0 Independent
- 21 2 Ch PPG Combination
- 22 2 Ch ED Combination
- 23 2 Ch PPG/ED Combination
- 41 4 Ch PPG Combination
- 42 4 Ch ED Combination
- 71 25G x 2 Ch PPG Combination
- 72 25G x 2 Ch ED Combination
- 81 4 Ch PPG Combination (Pre-Code)
- 82 4 Ch ED Combination (De-Code)
- 83 25G x 2 Ch PPG Combination (Pre-Code)
- 84 25G x 2 Ch ED Combination (De-Code)

Function

Queries the available combination configuration.

Example

To query the combination configuration available for Unit 1:

```
> :COMBination:OPERation:ABILity:COMBination?
< 41
```

Changed Contents

Added response
4.2 Pre-Code Function Commands

Installing the MX180000A-x01 Pre-Code option adds the Pre-Code tab shown in Fig. 4.2-1 to the MU181020A/B PPG. Table 4.2-1 explains the details of the commands for setting the items shown in Figure 4.2-1.

![Figure 4.2-1 Pre-Code tab window](image)

Table 4.2-1 Pre-Code setting commands

<table>
<thead>
<tr>
<th>No.</th>
<th>Setting Items</th>
<th>Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Pre-Code ON/OFF</td>
<td>:SOURce:PRECode:SET</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SOURce:PRECode:SET?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SOURce:PRECode:TYPE?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SOURce:PRECode:INITialize?</td>
</tr>
</tbody>
</table>
4.2 Pre-Code Function Commands

**:SOURce:PRECode:SET <boolean>**

Parameter  
<boolean>=<BOOLEAN PROGRAM DATA>
OFF or 0  Pre-Code OFF
ON or 1  Pre-Code ON

Function  
Sets Pre-Code Setting to ON or OFF

Example  
Set Pre-Code Setting to ON
> :SOURce:PRECode:SET ON

Changed Contents  
New command

**:SOURce:PRECode:SET?**

Response  
<numERIC>=<NR1 NUMERIC RESPONSE DATA>
0  Pre-Code OFF
1  Pre-Code ON

Function  
Queries whether Pre-Code Setting ON or OFF

Example  
> :SOURce:PRECode:SET?
< 1

Changed Contents  
New command

**:SOURce:PRECode:TYPE <type>**

Parameter  
?type=><CHARACTER PROGRAM DATA>
DQPSk    DQPSK
DPSK    DPSK
DB    DB

Function  
Sets Pre-Code Setting Type

Example  
Set Pre-Code Setting Type to DQPSK
> :SOURce:PRECode:TYPE DQPSk

Changed Contents  
New command

**:SOURce:PRECode:TYPE?**

Response  
?type=><CHARACTER RESPONSE DATA>
DQPS, DPSK, DB

Function  
Queries Pre-Code Setting Type

Example  
> :SOURce:PRECode:TYPE?
< DQPS

Changed Contents  
New command
**Chapter 4  Remote Command**

### :SOURce:PRECode:INITialize <numeric>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>&lt;numeric&gt; = &lt;DECIMAL NUMERIC PROGRAM DATA&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0, 1</td>
</tr>
</tbody>
</table>

**Function**
Sets Pre-Code Setting Initialize Data

**Example**
Set Pre-Code Setting Initialize Data to 1

> :SOURce:PRECode:INITialize 1

**Changed Contents**
New command

### :SOURce:PRECode:INITialize?  

<table>
<thead>
<tr>
<th>Response</th>
<th>&lt;numeric&gt; = &lt;NR1 NUMERIC RESPONSE DATA&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0, 1</td>
</tr>
</tbody>
</table>

**Function**
Queries Pre-Code Setting Initialize Data

**Example**
> :SOURce:PRECode:INITialize?  
< 1

**Changed Contents**
New command
4.3 De-Code Function Commands

Installing the MX180000A-x02 De-Code option adds the De-Code tab shown in Figure 4.3-1 to the MU181040A/B ED. Table 4.3-1 explains the details of the commands for setting the items shown in Figure 4.3-1 and Figure 4.3-2.

**Figure 4.3-1** De-Code tab window (at DQPSK setting)

**Figure 4.3-2** De-Code tab window (at DPSK/DB setting)
<table>
<thead>
<tr>
<th>No.</th>
<th>Setting Items</th>
<th>Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:SET?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:TYPE?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:INITialize?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:MEASure:SELection?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:MANual:ARM?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:MANual:ILOGic?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:MANual:QLOGic?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>:SENSe:DECode:MANual:LOGic?</td>
</tr>
</tbody>
</table>
### :SENSe:DECode:SET <boolean>
- **Parameter**
  - `<boolean> = <BOOLEAN PROGRAM DATA>`
  - OFF or 0: De-Code OFF
  - ON or 1: De-Code ON
- **Function**
  - Sets De-Code Setting to ON or OFF
- **Example**
  - Set De-Code Setting to ON
  - `>:SENSe:DECode:SET ON`
- **Changed Contents**
  - New command

### :SENSe:DECode:SET?
- **Response**
  - `<numeric> = <NR1 NUMERIC RESPONSE DATA>`
  - 0: De-Code OFF
  - 1: De-Code ON
- **Function**
  - Queries whether De-Code Setting ON or OFF
- **Example**
  - `>:SENSe:DECode:SET?`
  - `< 1`
- **Changed Contents**
  - New command

### :SENSe:DECode:TYPE <type>
- **Parameter**
  - `<type> = <CHARACTER PROGRAM DATA>`
  - DQPSk: DQPSK
  - DPSK: DPSK
  - DB: DB
- **Function**
  - Sets De-Code Setting Type
- **Example**
  - Set De-Code Setting Type to DQPSK
  - `>:SENSe:DECode:TYPE DQPSk`
- **Changed Contents**
  - New command

### :SENSe:DECode:TYPE?
- **Response**
  - `<type> = <CHARACTER RESPONSE DATA>`
  - DQPS, DPSK, DB
- **Function**
  - Queries De-Code Setting Type
- **Example**
  - `>:SENSe:DECode:TYPE?`
  - `< DQPS`
- **Changed Contents**
  - New command
Chapter 4  Remote Command

:SENSe:DECode:INIitialize <numeric>
Parameter <numeric>=<DECIMAL NUMERIC PROGRAM DATA>
  0, 1
Function Sets De-Code Setting Initialize Data
Example Set De-Code Setting Initialize Data to 1
  > :SENSe:DECode:INIitialize 1
Changed Contents New command

:SENSe:DECode:INIitialize?
Response <numeric>=<NR1 NUMERIC RESPONSE DATA>
  0, 1
Function Queries De-Code Setting Initialize Data
Example > :SENSe:DECode:INIitialize?
  < 1
Changed Contents New command

:SENSe:DECode:MEASure:SELection <selection>
Parameter <selection>=<CHARACTER PROGRAM DATA>
  MANual       Manual Setting
  SEARrch      Search Setting
Function Sets De-Code Setting Measurement Selection
Example Set De-Code Setting Measurement Selection to Manual
  > :SENSe:DECode:MEASure:SELection MANual
Changed Contents New command

:SENSe:DECode:MEASure:SELection?
Response <selection>=<CHARACTER RESPONSE DATA>
  MAN, SEAR
Function Queries De-Code Setting Measurement Selection
Example > :SENSe:DECode:MEASure:SELection?
  < MAN
Changed Contents New command
4.3 De-Code Function Commands

:SENSe:DECode:MANual:ARM <arm>

Parameter
<arm>=<CHARACTER PROGRAM DATA>
IQ     I Q
QI     Q I

Function
Sets arm for Manual Setting when De-Code Setting is DQPSK

Example
Set arm for Manual Setting to IQ when Code Setting is DQPSK
> :SENSe:DECode:MANual:ARM IQ

Changed Contents
New command

:SENSe:DECode:MANual:ARM?

Response
<arm>=<CHARACTER RESPONSE DATA>
IQ, QI

Function
Queries arm setting for Manual Setting when De-Code Setting is DQPSK

Example
> :SENSe:DECode:MANual:ARM?
< IQ

Changed Contents
New command

:SENSe:DECode:MANual:ILOGic <ilog>

Parameter
<ilog>=<CHARACTER PROGRAM DATA>
I     I
/I    /I

Function
Sets I-Logic for Manual Setting when De-Code Setting is DQPSK

Example
Set I-Logic for Manual Setting to I when Code Setting is DQPSK
> :SENSe:DECode:MANual:ILOGic I

Changed Contents
New command

:SENSe:DECode:MANual:ILOGic?

Response
<ilog>=<CHARACTER RESPONSE DATA>
I, /I

Function
Queries I-Logic for Manual Setting when De-Code Setting is DQPSK

Example
> :SENSe:DECode:MANual:ILOGic?
< I

Changed Contents
New command
Chapter 4  Remote Command

:SENSe:DECode:MANual:QLOGic <ilog>
Parameter  <qlog>=<CHARACTER PROGRAM DATA>
           Q     Q
           /Q     /Q
Function   Sets Q-Logic for Manual Setting when De-Code Setting is DQPSK
Example    Set Q-Logic for Manual Setting to Q when De-Code Setting is DQPSK
           > :SENSe:DECode:MANual:QLOGic Q
Changed Contents   New command

:SENSe:DECode:MANual:QLOGic?
Response   <qlog>=<CHARACTER RESPONSE DATA>
           Q     ,     /Q
Function   Queries Q-Logic for Manual Setting when De-Code Setting is DQPSK
Example    > :SENSe:DECode:MANual:QLOGic?
           < Q
Changed Contents   New command

:SENSe:DECode:MANual:LOGic <log>
Parameter  <log>=<CHARACTER PROGRAM DATA>
           D     D
           /D     /D
Function   Sets Logic for Manual Setting when De-Code Setting is DPSK/DB
Example    Set Logic for Manual Setting to /D when De-Code Setting is DPSK/DB
           > :SENSe:DECode:MANual:LOGic /D
Changed Contents   New command

:SENSe:DECode:MANual:LOGic?
Response   <log>=<CHARACTER RESPONSE DATA>
           D     ,     /D
Function   Queries Logic for Manual Setting when De-Code Setting is DPSK/DB
Example    > :SENSe:DECode:MANual:LOGic?
           < /D
Changed Contents   New command

:SENSe:DECode:SEARch:STARt
Parameter  None
Function   Starts De-Code Setting Search
Example    > :SENSe:DECode:SEARch:STARt
Changed Contents   New command
4.3 De-Code Function Commands

:SENSe:DECode:SEARch:STOP
Parameter None
Function Stops De-Code Setting Search
Example > :SENSe:DECode:SEARch:STOP
Changed Contents New command

:SENSe:DECode:SEARch:STATe?
Response <state>=<CHARACTER RESPONSE DATA>
0 Search stopped
1 Searching
Function Queries De-Code Setting Search status
Example > :SENSe:DECode:SEARch:STATe?
Changed Contents New command

:SENSe:DECode:SEARch:RESult?
Response <order>=<STRING RESPONSE DATA>
"-----" Not executing or Alarm occurred
"I Q", "I Q", "I/Q", "I /Q", "Q I", "Q I", "Q /I", "Q /I", "D", "D"
<brate>=<STRING RESPONSE DATA>
"-----" Not executing or Alarm occurred
"X.XXXXE-XX" 0.0000E-16 ~ 1.0000E00
Function Captures De-Code Setting Search results
Example > :SENSe:DECode:SEARch:RESult?
< "-----", "-----" (Not executing or Alarm occurred)
< "I Q", "0.0000E-10"
Changed Contents New command