RWZ21
Magneto-Optical Disk Unit
Maintenance Guide

EK–RWZ21–MG.001

Contents
1. Error Code
   • Sense Key
   • Additional Sense Code
2. Parts List
August 1992

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<table>
<thead>
<tr>
<th>DEC</th>
<th>VAXBI</th>
<th>VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECUS</td>
<td>VAXduster</td>
<td>UTRIX</td>
</tr>
<tr>
<td>PDP</td>
<td>VAXELN</td>
<td>VAXstation</td>
</tr>
<tr>
<td>VAX</td>
<td>VMS</td>
<td>DECstation</td>
</tr>
</tbody>
</table>

DIGITAL™
1.1 Sense Key

The Sense Key in the Extended Sense Data reports the detected error or the drive condition. The following Sense Keys are implemented in the RWZ21.

<table>
<thead>
<tr>
<th>Sense Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0H NO SENCE</td>
<td>Indicates that there is no specific sense key information to be reported for the designated logical unit. This sense key is returned when the command is completed successfully.</td>
</tr>
<tr>
<td>1H RECOVERED ERROR</td>
<td>Indicates that the last command was completed successfully with some recovery action performed by the SMO-C301.</td>
</tr>
<tr>
<td>2H NOT READY</td>
<td>Indicates that the logical unit cannot be accessed.</td>
</tr>
<tr>
<td>3H MEDIUM ERROR</td>
<td>Indicates that the command terminated with an unrecovered error condition that was caused by the medium defect.</td>
</tr>
<tr>
<td>4H HARDWARE ERROR</td>
<td>Indicates that the controller detected a hardware error.</td>
</tr>
<tr>
<td>5H ILLEGAL REQUEST</td>
<td>Indicates that there was an illegal parameter in the command descriptor block or in the additional parameters supplied as data for some commands.</td>
</tr>
<tr>
<td>6H UNIT ATTENTION</td>
<td>Indicates that the medium has been loaded, the unit has been reset, or the Mode Select parameters has been changed.</td>
</tr>
<tr>
<td>7H DATA PROTECT</td>
<td>Indicates that a command that writes the medium cannot be performed by the Write Protect condition of the medium cartridge switch.</td>
</tr>
<tr>
<td>8H COPY ABORTED</td>
<td>Indicates a COPY or COPY AND VERIFY command was aborted due to an error condition on the source device, the destination device, or both.</td>
</tr>
<tr>
<td>8H ABORTED COMMAND</td>
<td>Indicates that the SMO-C301 aborted the last command. The initiator may be able to recover by trying the command again.</td>
</tr>
</tbody>
</table>
1.2 Additional Sense Code

The Additional Sense Code indicates the detailed error information or the device condition. The followings are the implemented Additional Sense Codes and the related Sense Key.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>
| 00H  | **No Additional Sense Information** *(NO SENSE)*  
There is no error to repeat. |
| 02H  | **No SOID Command Complete** *(HARDWARE ERROR)*  
SOLID command complete was not returned from the drive unit. |
| 03H  | **Write Fault** *(HARDWARE ERROR)*  
Write command failed. The logical block address where the fault was detected may be returned in the Logical Block Address field or the Information Byte field of the sense data. |
| 04H  | **Drive Not Ready** *(NOT READY)*  
The READY signal of SODI was negated. (The medium in the drive unit is not spun up, the focus or slide servo was unlocked.) |
| 05H  | **Drive Not Selected** *(NOT READY)*  
The drive unit is not selected. |
| 07H  | **Multiple Drives Selected** *(HARDWARE ERROR)*  
Multiple drives responded for a same drive number. |
| 08H  | **Logical Unit Communication Failure** *(HARDWARE ERROR)*  
Error was detected during the communication between the drive unit and the controller unit(e.g. parity error). |
| 09H  | **Track Following Error** *(HARDWARE ERROR)*  
Still-jump failed and the optical head couldn’t stay in the same track. |
| 0AH  | **No Disk** *(NOT READY)*  
A medium is not inserted into the drive unit. |
| 0BH  | **Load/Unload Failure** *(HARDWARE ERROR)*  
A failure was detected during loading or unloading the cartridge. |
| 0CH  | **Spindle Failure** *(HARDWARE ERROR)*  
The spindle servo was not locked with the reference signal and the medium was not rotated correctly. |
| 0DH  | **Focus Failure** *(HARDWARE ERROR)*  
The focus servo was missed. Issue START/STOP UNIT command with its Start bit set to 1 to restart the drive. |
| 0EH  | **Tracking Failure** *(HARDWARE ERROR)*  
Tracking servo couldn’t be locked. |
| 0FH  | **Bias Magnet Failure** *(HARDWARE ERROR)*  
The bias magnet of the drive failed. |
| 10H  | **ID CRC Error** *(HARDWARE ERROR)*  
The controller detected the error of ID cyclic check code transferred from the drive unit. |
| 11H  | **Unrecovered Read Error of Data Blocks** *(MEDIUM ERROR)*  
The data errors couldn’t be corrected by the error correction code. The logical block address where the fault was detected may be returned in the Logical Block Address field or Information Byte field of the sense data. |
| 15H  | **Seek Positioning Error** *(HARDWARE ERROR)*  
Seeking to the specified track failed after a few retrials. |

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3 These codes are newly added or have a different meaning from that of CCS Rev 4B.

4 These codes are newly added or have a different meaning from that of CCS Rev 4B.
## Error Code

### 1.2 Additional Sense Code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>
| 18H  | **Recovered Read Data with ECC Procedure** *(RECOVERED ERROR)*  
There was an interleave which contains 7 or 8 bytes in error. Error correction succeeded. |
| 20H  | **Invalid Command Operation Code** *(ILLEGAL REQUEST)*  
The specified command operation code is not implemented or an invalid command is requested. |
| 21H  | **Illegal Logical Block Address** *(ILLEGAL REQUEST)*  
The specified logical block address was outside the valid area. |
| 23H  | **Illegal Function for Medium Type** *(ILLEGAL REQUEST)*  
The format parameter is invalid for the medium type. |
| 24H  | **Illegal Field in CDB** *(ILLEGAL REQUEST)*  
There was an error in the received Command Descriptor Block(CDB). This Additional Sense Code is returned in the following situations.  
- Reserved field in CDB is not zero.  
- Invalid combination of parameters (e.g. Both the eject bit and the start bit are set in the START/STOP UNIT command).  
- Illegal parameter at that state(e.g. A command using the relative address(ReAdr) bit is set to 1 is issued after the command that link bit is not set to 1 ). |
| 25H  | **Invalid LUN** *(ILLEGAL REQUEST)*  
LUN 2 through 7 is specified or the specified LUN(0 or 1) does not respond to the selection from the controller unit. |
| 26H  | **Invalid Field in Parameter List** *(ILLEGAL REQUEST)*  
There was an error in the received parameters. |
| 27H  | **Write Protected** *(DATA PROTECT)*  
Erasing or writing was aborted because the write protect switch of the cartridge is on. |
| 28H  | **Medium Changed** *(UNIT ATTENTION)*  
The medium was loaded. This Additional Sense Code is used to notify the initiator that the medium has been changed since the execution of the last command. This code implies Mode Select Parameters changed(2AH). |
| 29H  | **Power On or Reset or Bus Device Reset Occurred** *(UNIT ATTENTION)*  
This Additional Sense Code is used to notify the initiator that the RESET condition has happened since last command. This code implies Mode Select Parameters changed. |
| 2AH  | **Mode Select Parameters Changed** *(UNIT ATTENTION)*  
This Additional Sense Code is used to notify the initiator that the mode select parameters have been changed since the execution of the last command(2AH). |
| 30H  | **Incompatible Cartridge** *(MEDIUM ERROR)*  
ID hole of the cartridge is invalid. |
| 31H  | **Medium Format Corrupted** *(MEDIUM ERROR)*  
PEP, SFP, the format information sector in the CDA, or DDS is invalid. |
| 32H  | **No Defect Spare Location Available** *(MEDIUM ERROR)*  
The number of defect sectors listed in the PDL and SDL exceeded 1024, or the number of defect sectors listed in the SDL exceeded the specified value calculated by the number of groups and spare blocks per group. |

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6These codes are newly added or have a different meaning from that of CCS Rev 4B.
## 1.2 Additional Sense Code

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
</table>
| 38H<sup>6</sup> | **Recovered with Automatic Reallocation** *(RECOVERED ERROR)*  
Automatic write reallocation is executed successfully. |
| 39H<sup>6</sup> | **Automatic Reallocation Failure** *(MEDIUM ERROR)*  
Automatic write reallocation failed after retrying three times. |
| 3AH<sup>6</sup> | **Defect List Update Failure** *(MEDIUM ERROR)*  
Updating of the defect table failed after the successful sparing of the data sector. |
| 3DH<sup>6</sup> | **Defect List Not Available** *(MEDIUM ERROR OR RECOVERED ERROR)*  
Specified defect list is not available. |
| 42H   | **Power On Diagnostic Failure** *(HARDWARE ERROR)*  
Power on diagnostic failed. |
| 43H   | **Message Reject Error** *(HARDWARE ERROR OR ABORTED COMMAND)*  
The command was aborted because the initiator rejected the message from the SMO-C301 by issuing MESSAGE REJECT message. |
| 44H   | **Internal Controller Error** *(HARDWARE ERROR OR ABORTED COMMAND)*  
The controller detected an error related to the controller hardware or firmware. |
| 47H   | **SCSI Interface Parity Error** *(HARDWARE ERROR OR ABORTED COMMAND)*  
The command was aborted due to parity error on the SCSI bus. |
| 48H   | **Initiator Detected Error** *(HARDWARE ERROR OR ABORTED COMMAND)*  
The command was aborted because the INITIATOR DETECTED ERROR message was sent from the initiator. |
| 49H   | **Inappropriate/Illegal Message** *(HARDWARE ERROR OR ABORTED COMMAND)*  
The command was aborted due to the inappropriate illegal message from the initiator. |
| 80H<sup>7</sup> | **Limited Laser Life** *(HARDWARE ERROR)*  
Over-current is detected in the laser diode or the laser power is below the lower limit. |
| 81H<sup>7</sup> | **Focus Coil Over-current Failure** *(HARDWARE ERROR)*  
Over-current is detected in the focus coil of the optical pick up. The coil is protected by a relay. |
| 82H<sup>7</sup> | **Tracking Coil Over-current Failure** *(HARDWARE ERROR)*  
Over-current is detected in the tracking coil of the optical pick up. The coil is protected by a relay. |
| 83H<sup>7</sup> | **Temperature Alarm** *(HARDWARE ERROR)*  
Internal temperature of the drive exceeds the limit(55 degree C). |

<sup>6</sup>These codes are newly added or have a different meaning from that of CCS Rev 4B.

<sup>7</sup>These codes are newly added or have a different meaning from that of CCS Rev 4B.

## 1.3 Notice

Test 75 in VAX ROM diagnostics is not for the RWZ21. Therefore the test may fail.
The tables in this chapter include a parts list for RWZ21, a SCSI cable list, and power cord list.

### Table 2–1 RWZ21 Parts List

<table>
<thead>
<tr>
<th>Part name</th>
<th>Order number</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magneto-Optical Disk Unit</td>
<td>RWZ21-AA</td>
<td>–</td>
</tr>
<tr>
<td>RWZ21 Magneto-Optical Disk Unit User’s Guide</td>
<td>EK-RWZ21-UG</td>
<td>–</td>
</tr>
<tr>
<td>Optical disk cartridge</td>
<td>RWX4K-01</td>
<td>○</td>
</tr>
<tr>
<td>MOA-L33 Lens cleaning cartridge kit</td>
<td>RWX2H-AA</td>
<td>○</td>
</tr>
<tr>
<td>MOA-F33 Air Filter</td>
<td>RWX2F-AA</td>
<td>○</td>
</tr>
<tr>
<td>MOA-D31 Manual disk cleaner for RWX4K-01</td>
<td>RWX2M-AA</td>
<td>○</td>
</tr>
<tr>
<td>SCSI Terminator</td>
<td>12-30552-01</td>
<td>○</td>
</tr>
</tbody>
</table>

*Source*

- Part of the basic RWZ21
- ○ Available as an option

### Table 2–2 SCSI Cable List

<table>
<thead>
<tr>
<th>Connection</th>
<th>Order number</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAXstation3100—RWZ21</td>
<td>BC56H-03 (3 feet)</td>
<td>○</td>
</tr>
<tr>
<td>DECstation3100—RWZ21</td>
<td>BC56H-03 (3 feet)</td>
<td>○</td>
</tr>
<tr>
<td>DECstation5000—RWZ21</td>
<td>BC09D-06 (6 feet)</td>
<td>⚫</td>
</tr>
<tr>
<td>PCTAZ for DECpc—RWZ21</td>
<td>BC19J -1E/06 (1.5/6 feet)</td>
<td>○</td>
</tr>
</tbody>
</table>

*Source*

- Part of the basic RWZ21
- ○ Available as an option
- ⚫ Provided with the DECstation 5000.
### Table 2–3  Power Cord List

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN19A-2E</td>
<td>UK/Ireland-240 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19C-2E</td>
<td>Central Europe-220 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19E-2E</td>
<td>Switzerland-220 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19H-2E</td>
<td>Australia/New Zealand-240/230 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19K-2E</td>
<td>Denmark-220 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19M-2E</td>
<td>Italy-220 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19S-2E</td>
<td>India,South Africa-220 Vac</td>
<td>○</td>
</tr>
<tr>
<td>BN19U-2E</td>
<td>Israel-240 Vac</td>
<td>○</td>
</tr>
</tbody>
</table>

Source

- Part of the basic RWZ21
- Available as an option