NOKIA

DX 200

BSC3i S10.5

# BSC3i Commissioning

## Site Documents

## BSC3018_P

## Contents

## List of tables

## Summary of changes

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made to previous issues.

### First issue

This is the first issue of the document.

# 1 BSC3i commissioning overview

These instructions are intended to be used in the commissioning of the system in the final location of the BSC3i. It can be used with ANSI or ETSI environment in BSC3i.

Prerequisites for the successful commissioning according to these instructions are:

- the BSC has passed the factory acceptance tests
- the installation has to be accepted
- at least the files associated with the configuration are ready on the Winchester disks of the BSC

All the software that belongs to the BSC must be ready on the Winchester disks of the system before starting the commissioning tests. If there is newer SW available than what is installed in the BSC disk, the BSC must be commissioned with the same SW that is installed in the disks. The newer SW is installed before the integration of the BSC.

In the final BSC site the tests which, according to the test logs delivered with the hardware, have already been performed at the test field of Nokia Corporation do not necessarily have to be performed.

The purpose of the commissioning tests is to ensure that the BSC will operate correctly in the GSM network. When the commissioning tests have been performed in an acceptable manner, the BSC can be taken into traffic.

It is important to have an overall view of the commissioning. Therefore, we recommend that the user reads the instructions carefully before starting.

### Commissioning test arrangements

The commissioning testing of the BSC3i can be started when the installation has been checked. Any detected faults are reported with the Nokia problem report which is sent to the Customer Service Centre.

### Measurement devices and tools

The following is a summary of all the tools required in the testing of a DX 200 BSC3i:

1. Two terminals
2. Hex calculator
3. BSC Commissioning tool set, 1 set
4. Jumper links
5. Release documentation in PC
6. New software
7. All delivered Change Deliveries
8. Customer Specific Disk including PRFILE, FIFILE
9. Empty rewritable magneto-optical disk

**BSC3i commissioning procedure**

1. Inspecting BSC3i hardware functioning
2. Monitoring BSC3i start-up
3. Opening the first MML session in the BSC3i
4. Verifying the BSC3i's SW versions
5. Inspecting the BSC3i's I/O system
6. Monitoring start-up of MBIF in BSC3i
7. Inspecting the BSC3i's maintenance system
8. Checking the clock equipment in BSC3i
9. Checking the BSC3i's hardware configuration
10. Copying additional software and setting the time zone in the BSC3i

Test logs are filled in during the testing. The filled test logs are included as a separate entity in the *Installation Documents*.

Troubleshooting information can be found here: BSC3i system start-up troubleshooting.

# 2 Inspecting BSC3i hardware functioning

This procedure enables you to inspect hardware functioning in the commissioning tests.

The following items are inspected in the BSC3i:

- internal cabling
- interchangeability codes
- EPROM versions
- jumpers
- DIP switches
- FLASH versions
- power supply
- peripheral equipment (visual display units and printers)

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Check internal cabling

   Compare the internal cabling to the interconnection cables list in the site-specific document to make sure that the cables are connected to the right position and that the connections are made properly.

2. Check interchangeability codes

   Compare the interchangeability codes of cartridges and plug-in units to the hardware type list in the site-specific document to make sure that they are correct.

3. Check the EPROM versions

Compare the EPROM versions of the plug-in units to the version list (in Release Documentation).

4. Check the FLASH versions

   Compare the FLASH versions of the plug in units to the version list (in Release Documentation).

5. Check the jumper settings and set the base address of plug-in-units and cartridges

   Jumper settings and the base address of plug-in units and cartridges can be found in *BSC3i, Jumper Setting Instructions of the Plug-in Units*.

6. Check the settings of the DIP switches

   The settings of the DIP switches can be found in *BSC3i, Jumper Setting Instructions of the Plug-in Units*.

7. Test the power supply of the BSC3i

   The voltage requirements are as follows:

Table 1. Voltage requirements in BSC3i

| Voltage | Nominal | Tolerance |
|---|---|---|
| Feed voltage to DC/DC converters | -48V to -60V | -40,5V to -72V |

# 2.1 Peripheral units in BSC3i

The purpose of the test is to inspect the strappings and settings made in the factory. Other required parameters are set.

Perform internal tests in those units which are equipped with test functions.

Send faulty units to service.


**Steps**

1. Set the visual display units (VDU)

When the power is switched on, the selectable parameters are automatically given their default values. The settings in the VDU should be as follows:

Table 2. VDU settings in BSC3i

| | |
|---|---|
| Baud rate | 9600 |
| Data bits | 7 |
| Stop bits | 2 |
| Parity | Even |
| Page length | 23 |
| Line length | 80 |

Connect the female connector to the VDU and join the free pins on the male connector with strapping wire. Type some text on the keyboard. The terminal is OK if the typed text is echoed to the screen. If no text is displayed, the VDU is faulty.

For you to be able to scroll the screen, set Lines per Page as 75.

2. Check the printer settings

The settings should be as follows:

Table 3. Printer settings in BSC3i

| | |
|---|---|
| Baud rate | 9600 |
| Data bits | 7 |
| Stop bits | 2 |
| Parity | even |
| Page length | 65 |
| Line length | 80 |

Correct any incorrect settings.

Perform the internal tests on those printers that are equipped with test functions.

If there are problems with connections, check the interface cable by measuring the resistance with a multimeter. At least the connections indicated in the *Installation Manual* must be included in the cable.

### Further information

For more information on commissioning, go to BSC3i commissioning overview.

# 3 Monitoring BSC3i start-up

This section describes the monitoring of system start-up and enables the solving of possible disturbances.

The start-up of the whole system depends on the start-up priorities of the system's units. A unit with higher priority is given loading permission before a unit with lower priority.

Within the system, the units are started up according to their respective priorities. For example, all the Base Station Controller Signalling Units (BCSU) are given permission to load simultaneously as they all have the same priority. In the case of doubled units, the working units are given loading permission before the spare units.

The start-up order of the whole system is as follows:

1. Operation and Maintenance Unit (OMU)
2. Marker and Cellular Management Unit (MCMU)
3. Other units

For further information on system start-up, see:

- Monitoring the starting of the exchange
- Loading the files
- Monitoring the starting of the computer
- Monitoring the starting of the exchange

In fault conditions, see:

- BSC3i system start-up troubleshooting

For more information on commissioning, go to BSC3i commissioning overview.

# 3.1 Monitoring start-up of OMU in BSC3i

Monitor the start-up of the Operation and Maintenance Unit (OMU). A failure in the OMU start up may lead to a similar failure in all other units.

When the start-up of the OMU has reached the stage where the service terminal software is started up, the Recovery Service Terminal (RCBUGG) extension is taken into use.

RCBUGG is an extension of the service terminal software which enables the monitoring of unit states. It is started up with a service terminal software command.

The RCBUGG contains commands that correspond with those of the RCVHAN MML. Even if the start-up of the MMI system fails, the working states of the units can be controlled with the RCBUGG extension. A prerequisite for the successful running of the RCBUGG is that the recovery system itself has been started up.

For further information on monitoring start-up, refer to Monitoring start-up of MCMU in BSC3i and Monitoring start-up of BCSU in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.

For further information on how to use the service terminal, see the following command references:

- User's Manual of the Service Terminal
- RCBUGG User's Manual

**Before you start**

Check that the working state of the OMU is WO-EX during the start-up of the system.

If the state of OMU is TE or SE, the maintenance programs will be started up in the Marker and Cellular Management Unit (MCMU) and the start-up is monitored in the MCMU.


**Steps**

1. Connect the MML terminal
2. Connect the alarm printer
3. Connect the service terminal

Connect the service terminal to the J7 connector of the central processing unit (CP710-A).

4. Monitor the start-up

   Monitor the start-up of units with the RCBUGG extension

   a)Take the RCBUGG into use:

   ```
   ZLE:U,RCBUGGGX
   ```

   b)Monitor the states of the computer units:

   ```
   ZUSIC:COMP
   ```

5. Reset the unit

   Reset the unit by pressing the reset button of the processor unit

6. Monitor the start-up of the OMU

   a)The first phase output indicates the start-up of the Boot Loader Program Block (BOLERO):

```
DMX SYSTEM START-UP TESTS
```

   b)Message Bus Interface (MBIF) green LEDs lit.

   c)RAM tests successful:

```
ZERO RAM OK
```

   d)Transmission of the RESET message successful.

```
RESET MESSAGE OK
```

   e)Choosing software package in the OMU successful:

```
CHOOSING PACKET
```

   f)Loading of the computer configuration table successful:

```
LOADING NET CONFIG...
```

   g)Loading of the load list successful:

```
LOADING LOAD LIST FROM <source>
```

   h)Loading of the load modules successful:

```
MODULE LOADING STARTS
LOADING MODULES FROM <source>
ALL MODULES LOADED
```

   i) Debugger software started up:

```
DEBUGGER READY
```

j)The type of the unit is clarified:

```
DEFINING UNIT TYPE
```

k)First 'PROCESSING FAMILIES' notice is output on the terminal:

```
PROCESSING FAMILIES
```

l)The FIZSLM is started up:

```
PROCESSING FAMILIES FIZ ...
```

m)Initialisation of work files:

```
INITIALIZING WORK FILES
```

n)Loading of the first load group:

```
LOADING STARTED 0003..
```

o)The FUZNLM start-up:

```
PROCESSING FAMILIES FUZ ...
```

p)The USAPRO is given permission to load

```
READY - PHASE 2
FILE LOADING ACTIVATED
```

q)Working state of unit is WO/SP/TE/SE.

r)Loading of a load group OK. All remaining load groups are loaded:

```
LOADING STARTED ...
```

s)The USAPRO is given permission to start the program blocks:

```
READY - PHASE 3
```

t) Start-up of program blocks:

```
PROCESSING FAMILIES...
```

u)Running SW package information:

```
RUNNING PACKAGE
```

v)Start-up of unit is terminated:

```
READY - WO
```

or

```
READY - TE
```

or

```
READY - SE
```

## 3.2 Monitoring start-up of MCMU in BSC3i

For further information on monitoring start-up, refer to Monitoring start-up of OMU in BSC3i and Monitoring start-up of BCSU in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Connect the service terminal

   Connect the service terminal to the J7 connector of the central processing unit.

2. Reset the unit

   Reset the unit by pressing the reset button of the processor unit

3. Monitor the start-up of the MCMU

   a)The first phase output indicates the start-up of the Boot Loader Program Block (BOLERO):

```
DMX SYSTEM START-UP TESTS
```

   b)The green LED in the Message Bus Interface (MBIF) is lit.

   c)RAM tests successful:

```
ZERO RAM OK
```

   d)Transmission of the RESET message successful:

```
RESET MESSAGE OK
```

   e)Loading of the computer configuration table successful:

```
LOADING NET CONFIG...
```

   f)Loading of the load list successful:

```
LOADING LOAD LIST FROM <source>
```

   g)Loading of the load modules successful:

```
MODULE LOADING STARTS
LOADING MODULES FROM <source>
ALL MODULES LOADED
```

h)Debugger software started up:

```
DEBUGGER READY
```

i) The type of the unit is clarified:

```
DEFINING UNIT TYPE
```

j) The FIZSLM is started up:

```
PROCESSING FAMILIES FIZ ...
```

k)Initialisation of work files:

```
INITIALIZING WORK FILES
```

l)The FUZNLM start-up:

```
PROCESSING FAMILIES FUZ ...
```

m)The USAPRO is given permission to load

```
READY - PHASE 2
FILE LOADING ACTIVATED
```

n)Working state of unit is WO/SP/TE/SE.

o)Loading of first loading group:

```
LOADING STARTED 0008...
```

p)Start-up of program blocks:

```
PROCESSING FAMILIES...
```

q)Loading of a loading group:

```
LOADING STARTED...
```

All remaining loading groups are loaded.

r)The USAPRO is given permission to start up program blocks:

```
READY - PHASE 3
```

s)Start-up of program blocks:

```
PROCESSING FAMILIES...
```

All remaining program blocks are created and started up.

t) Running SW package information:

```
RUNNING PACKAGE
```

u)Start-up of unit is terminated:

```
READY - WO
```

or

```
READY - SP
```

or

```
READY - TE
```

or

```
READY - SE
```

## 3.3 Monitoring start-up of BCSU in BSC3i

For further information on monitoring start-up, refer to Monitoring start-up of OMU in BSC3i and Monitoring start-up of MCMU in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Connect the service terminal

   Connect the service terminal to the J7 connector of the central processing unit.

2. Reset the unit

   Reset the unit by pressing the reset button of the processor unit

3. Monitor the start-up of the BCSU

   a)The first phase output indicates the start-up of the Boot Loader Program Block (BOLERO):

```
DMX SYSTEM START-UP TESTS
```

   b)The green LED in the Message Bus Interface (MBIF) is lit.

   c)RAM tests successful:

```
ZERO RAM OK
```

d)Transmission of the RESET message successful.

```
RESET MESSAGE OK
```

e)Loading of the computer configuration table successful:

```
LOADING NET CONFIG...
```

f) Loading of the load list successful:

```
LOADING LOAD LIST FROM <source>
```

g)Loading of the load modules successful:

```
MODULE LOADING STARTS
LOADING MODULES FROM <source>
ALL MODULES LOADED
```

h) Debugger software started up:

```
DEBUGGER READY
```

i) The type of the unit is clarified:

```
DEFINING UNIT TYPE
```

j)The FIZSLM is started up:

```
PROCESSING FAMILIES FIZ ...
```

k)Initialisation of work files:

```
INITIALIZING WORK FILES
```

l) The USAPRO is given permission to load:

```
READY - PHASE 2
FILE LOADING ACTIVATED
```

m)Working state of unit is WO/SP/TE/SE.

n)The FUZNLM start-up:

```
PROCESSING FAMILIES FUZ ...
```

o)Loading of first loading group:

```
LOADING STARTED 0009...
```

p) Start-up of program blocks:

```
PROCESSING FAMILIES...
```

q)Loading of a loading group:

```
LOADING STARTED...
```

All remaining loading groups are loaded.

r)The USAPRO is given permission to start up program blocks:

```
READY - PHASE 3
```

s) Start-up of program blocks:

```
PROCESSING FAMILIES...
```

All remaining program blocks are created and started.

t) Running SW package information:

```
RUNNING PACKAGE
```

u)Start-up of unit is terminated:

```
READY - WO
```

or

```
READY - SP
```

or

```
READY - TE
```

or

```
READY - SE
```

# 4 Opening the first MML session in BSC3i

When a system is delivered from Nokia, the user identifier of the system has been defined as <SYSTEM> and the password as <SYSTEM>.

These user identifier and password definitions are of a general nature and they are intended to be used only in factory acceptance testing. The main user of the system or some other corresponding person makes the actual authority definitions for the terminals and users with MML commands.

The procedure for setting up the first session and for defining and testing the user identifier and password is presented here. Examples are also provided.

For more information on commissioning, go to BSC3i commissioning overview.

**Before you start**

Check that the display unit is connected to the system as an MML terminal and that the printer has been connected to the printer port LPT of the system.

## Steps

1. Connect power to the display terminal and printer and press a key

   The following text is displayed on the screen:

```
ENTER USERNAME <
```

2. Enter the user identifier SYSTEM and press <CR>

   The following text is displayed:

```
ENTER PASSWORD <
```

3. Enter the password SYSTEM and press <CR>

   If the setting up of the session is successful, the following is displayed:

```
WELCOME TO THE DX 200 SERIES DIALOGUE
MAIN LEVEL COMMAND <___>
<
```

Possible error messages:

/*** PASSWORD TOO SHORT ***/

The password is too short. Minimum length is six characters.

/*** USER AUTHORISATION FAILURE ***/

The user identifier entered has not been programmed into the system or the password has been given incorrectly. Enter the password again.

Other possible error messages are explained in *Start-up fault conditions*.

4. Check that the printer interface is in order

   Print out, for example, the states of the I/O devices:

   ```
   ZISI:::,LPT0;
   ```

   If the printing is not successful, proceed as described in Inspecting the BSC3i's I/O System.

# 5 Verifying the BSC3i's SW version

The purpose of this inspection is to verify the SW versions, comparing them with the Delivery Catalogue, and making sure that the data in the modules is not corrupted.

For more information on commissioning, go to BSC3i commissioning overview.

## Steps

1. Start an MML session
2. Print out all SW packages

   Print out all SW packages installed on disks (WQO)
3. Perform a verification

   Perform a verification for each SW package (WQB)

   The display will print out on the printer during the execution of the command

   ```
   WQB
   ```
4. Check if any faults have been detected

   Compare the printout with the Delivery Catalogue.

### Expected outcome

The SW verification should be faultless and the versions should be same as those listed in the Delivery Catalogue.

### Unexpected outcome

If some faulty modules are found, replace them with new ones.

# 6 Inspecting the BSC3i's I/O system

This procedure specifies how the I/O system of the BSC3i should be inspected in the commissioning tests and how the functioning of the I/O system and devices is checked.

The procedure is used for inspecting the number and states of I/O equipment and the output controls (that is, correspondence with the source data).

---

Note

The printouts included provide examples only, therefore the actual printouts may differ from the ones presented here.

---

For more information on commissioning, go to BSC3i commissioning overview.

**Before you start**

Check that the correct number of I/O devices has been packaged for the system. Check their states and state transitions.

## Steps

1. Connect the MML terminal to the VDU connector
2. Display the I/O devices

   Display the I/O devices of all the units of the system (ISI)

   ```
   ZISI:;
   ```

3. Compare the number of the devices with the source data
4. Compare the states of the devices with the source data

**Expected outcome**

Example of an output following the command

Example 1.

```
ISI:;

I/O DEVICE WORKING STATE AND SPARE DEVICE
SYSTEM = PALLAS UNIT = OMU
DEVICE STATE SPARE DEVICE            DEVICE STATE      TAPE STATE     TAPE TYPE

FDU-00 WO-BU    -                      -
WDU-00 WO-BU    -                      -
WDU-01 WO-BU    -                      -
LPT-00 WO-ID PALLAS OMU LPT-01         -
LPT-01 BL-SY PALLAS OMU LPT-00         -
LPT-02 BL-SY    -                      -
LPT-03 BL-SY    -                      -
VDU-00 WO-ID    -                      -
VDU-01 BL-SY    -                      -
VDU-02 BL-SY    -                      -
VDU-03 BL-SY    -                      -
VDU-04 BL-SY    -                      -
VDU-05 BL-SY    -                      -
VDU-06 BL-SY    -                      -
VDU-07 BL-SY    -                      -
VTP-00 BL-SY    -                      -
VTP-01 BL-SY    -                      -
VTP-02 BL-SY    -                      -
VTP-03 BL-SY    -                      -
VTP-04 BL-SY    -                      -
VTP-05 BL-SY    -                      -
VTP-06 BL-SY    -                      -
VTP-07 BL-SY    -                      -
VTP-08 BL-SY    -                      -
VTP-09 BL-SY    -                      -
VTP-10 BL-SY    -                      -
VTP-11 BL-SY    -                      -
VTP-12 BL-SY    -                      -
VTP-13 BL-SY    -                      -
VTP-14 BL-SY    -                      -
VTP-15 BL-SY    -                      -
VTP-16 BL-SY    -                      -
VTP-17 BL-SY    -                      -
VTP-18 BL-SY    -                      -
VTP-19 BL-SY    -                      -
VTP-20 BL-SY    -                      -
VTP-21 BL-SY    -                      -
VTP-22 BL-SY    -                      -
VTP-23 BL-SY    -                      -
VTP-24 BL-SY    -                      -
VTP-25 BL-SY    -                      -
VTP-26 BL-SY    -                      -
VTP-27 BL-SY    -                      -
VTP-28 BL-SY    -                      -
VTP-29 BL-SY    -                      -
VTP-30 BL-SY    -                      -
VTP-31 BL-SY    -                      -
VTP-32 BL-SY    -                      -
VTP-33 BL-SY    -                      -
VTP-34 BL-SY    -                      -
VTP-35 BL-SY    -                      -
VTP-36 BL-SY    -                      -
```

```
VTP-37 BL-SY    -                       -
VTP-38 BL-SY    -                       -
VTP-39 BL-SY    -                       -
VTP-40 BL-SY    -                       -
VTP-41 BL-SY    -                       -
VTP-42 BL-SY    -                       -
VTP-43 BL-SY    -                       -
VTP-44 BL-SY    -                       -
VPP-00 BL-SY    -                       -
VPP-01 BL-SY    -                       -
VPP-02 BL-SY    -                       -
VPP-03 BL-SY    -                       -
VPP-04 BL-SY    -                       -
VPP-05 BL-SY    -                       -
VPP-06 BL-SY    -                       -
VPP-07 BL-SY    -                       -
VPP-08 BL-SY    -                       -
VPP-09 BL-SY    -                       -
VPP-10 BL-SY    -                       -
VPP-11 BL-SY    -                       -
VPP-12 BL-SY    -                       -
VPP-13 BL-SY    -                       -
VPP-14 BL-SY    -                       -
VDS-00 WO-BU    -                       -
VDS-01 WO-BU    -                       -
VDS-02 WO-BU    -                       -
VDS-03 WO-BU    -                       -
VDS-04 WO-BU    -                       -
VDS-05 WO-BU    -                       -
VDS-06 WO-BU    -                       -
VDS-07 WO-BU    -                       -
VDS-08 WO-BU    -                       -
VDS-09 WO-BU    -                       -
VDS-10 WO-BU    -                       -
VDS-11 WO-BU    -                       -
VDS-12 WO-BU    -                       -
VDS-13 WO-BU    -                       -
VDS-14 WO-BU    -                       -
VDS-15 WO-BU    -                       -

COMMAND EXECUTED
```

where

FDU = Magneto-opto disk unit

LPT = Line printer

VDU = Display unit

WDU = Winchester disk unit

CTU = Cartridge Tape Unit

VTP = Virtual Terminal

VPP = Virtual Printer Protocol

VDS = Virtual Data Storing device

The disk drives should enter the state WO-BU and remain in it. The VDU and LPT units will be in WO-ID or BL-SY state, depending on whether the terminal equipment is connected or not. The printer remains in the state WO-BU only for the period during which it is printing.

The state of the units can be changed with the `ISC`command.

**Unexpected outcome**

If some peripheral devices cannot be brought into the state WO-BU, check the operation and cabling of the peripheral devices. The disk drives have diagnostics of their own. The printers and display units have been tested in connection with preparatory measures.

# 7 Monitoring start-up of MBIF in BSC3i

The purpose of the inspection of the message bus connections is to verify the condition and correct installation of the message bus cables and the condition of the message bus interface (MBIF) plug-in units.

The inspection is performed by testing all the MBIF plug-in units, by making random tests (for example by cartridges) or one end-to-end test.

The condition of the MBIF units can be verified only by testing them unit by unit.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Connect one VDU

   Connect one VDU to the CP710-A J7 service terminal interface of the OMU

2. Set the state of a message bus

   Set the state of the message bus to SE-NH (USC)

3. Disconnect the MBIF units

   Disconnect the MBIF units of the other message bus of all processor units.

   All processor units must have MBIF units of the same message bus.

4. Connect another VDU

   Connect another VDU to the J7 service terminal interface of one processor unit (not the OMU).

5. Check the receiving unit

   The receiving unit should be created and at least in test state (USI).

6. Test the MBIF

Test the MBIF by sending a message from the OMU's service terminal

a) First send a message to the service terminal process of the processor unit to which the other VDU is connected.

The message is directed to the bus being tested according to the first number of the 16-bit-long message bus address. Number 2 is used to identify the message bus 0 and number 3 identifies message bus 1. For example the address of the MCMU-0 using bus 1 is 3004H and the address of the MCMU-1 using bus 0 is 2005H. Use the debugger program to send the message:

```
ZOS:*,X0YY,C0,,,,,,,,AA,BB
```

where

X defines the message bus to be used as mentioned above

YY is the message bus address

AA,BB are the data bytes to be sent

b) Check the message contents from the receiving computer (ZOT)

c) Send the message to the other direction (to OMU).

Table 4. The message bus addresses in the BSC3i

| UNIT | MB-ADDRESS |
|---|---|
| OMU | 00 |
| MCMU0 | 04 |
| MCMU1 | 05 |
| BCSU0 | 30 |
| BCSU1 | 31 |
| BCSU2 | 32 |
| BCSU3 | 33 |
| BCSU4 | 34 |
| BCSU5 | 35 |
| BCSU6 | 36 |

7. Disconnect the other VDU and move it to the next processor unit

Perform the same tasks for the processor unit as in Step 6. Continue in this way until messages have been sent to/from all the processor units.

8. Connect the disconnected MBIF plug-in units

9. Set the state of the MB to WO-EX (USC)

10. Set the state of another MB to SE-NH (USC)

11. Disconnect the MBIF plug-in units of the other MB

12. Test the MBIF by sending a message

    Wait for the response from all processor units according to step 6.

    The received format of the messages has to be without errors.

13. Connect the disconnected MBIF plug-in units

14. Set the state of the MB to SP-EX (USC)

# 8 Inspecting the BSC3i's maintenance system

The maintenance system is inspected to ensure that the supervision, alarm, and recovery functions of the system are in order. The supervision functions are mainly system-internal and they are tested in connection with the inspection of the alarm system.

Note

The outputs presented here are examples only, thus the actual outputs may in some cases differ from them.

**Before you start**

A prerequisite for the inspection of the BSC3i maintenance system is that the inspections connected with the system start-up have been successfully performed.

For more information on commissioning, go to BSC3i commissioning overview.

## 8.1 Testing the alarm system of BSC3i

The inspection of the alarm system covers the testing of the wired alarms and the external alarms. Software alarms are monitored during the testing.

For further information on testing, refer to Inspecting the BSC3i's maintenance system.

For more information on commissioning, go to BSC3i commissioning overview.

### 8.1.1 Testing wired alarms

The purpose of the test is to ensure that the alarm files have been correctly packaged and that the wired alarms have been correctly cabled and defined in the database.

The following wired alarms are tested:

- Cartridge power alarms

  (2757 CARTRIDGE NON REDUNDANT POWER SUPPLY FAILURE)

- PDFU (power distribution and fuse unit) panel alarms

  (2758 POWER SUPPLY ADAPTER FAILURE)

- PDFU (power distribution and fuse unit) panel alarms

  (2759 POWER SUPPLY FUSE FAILURE)

- FAN units alarms

  (3146 FAN UNIT FAILURE)

For further information on testing the alarm system, refer to Testing external alarms and Testing alarm outputs.

For more information on commissioning, go to BSC3i commissioning overview.

**Before you start**

Before the test, check that the Operation and Maintenance Unit (OMU) is in the state WO-EX.

## Steps

1. Output the alarms

   Output the alarms with the command WAE. The command also tests all created alarm groups. Compare data in the lists with the configuration.

   ```
   ZWAE:1A;
   ```

```
LOADING PROGRAM VERSION 4.6-0

     DX 200    PALLAS                    2002-09-19  08:03:11

     CONNECTION PLUG-IN UNIT: HWAT
     MASTER UNIT:             OMU          1A002-06

     ALARM  CARTRIDGE    CARTRIDGE    INPUTS OF ALARM GROUP          INFO
     GROUP  TYPE         COORDINATES  0       1       2       3
     ------------------------------------------------------------------------
     1      PDFUD & PSFP  1A          2759    -       2758    -
     2      CC4C_A        1A002-00     2757    2755    -       -
     3      CC4C_A        1A002-03     2757    2755    -       -
     4      CC3C_A        1A001-08     2757    2755    -       -
     5      CC3C_A        1A003-00     2757    2755    -       -
     6      CC3C_A        1A003-04     2757    2755    -       -
     7      CC3C_A        1A003-08     2757    2755    -       -
```

```
8       CC3C_A        1A004-00     2757    2755    -       -
9       CC3C_A        1A004-04     2757    2755    -       -
10      CC3C_A        1A004-08     2757    2755    -       -
11      CM2C_A        1A002-06     2757    2755    -       -
12      ET4C_B        1A005-00     -       2755    -       -
13      NOT CONFIG                 -       -       -       -
14      FTRB          1A021-00     3146    3146    3146    3146
15      NOT CONFIG                 -       -       -       -

USED ALARMS:
        2755 CARTRIDGE CLOCK FAILURE
        2757 CARTRIDGE NON-REDUNDANT POWER SUPPLY FAILURE
        2758 POWER SUPPLY ADAPTER FAILURE
        2759 POWER SUPPLY FUSE FAILURE
        3146 FAN UNIT FAILURE

IN FAULT CONDITIONS THE PRINT-OUT CONTAINS INFORMATION AFTER THE
ALARM NUMBER WHETHER THE WIRED ALARM INPUT IS PERMANENTLY "0" OR "1".


COMMAND EXECUTED
```

2. Test the alarms

   The alarms are tested as follows:

   Alarm 2757

   1. Switch off the power from the computer unit cartridge PSC6_A and verify the alarm from the alarm printer.
   2. Turn the power back on and verify the cancelling of the alarm.
   3. Wait until all recovery functions have been completed.
   4. Check the results of diagnostics from the printer.
   5. Repeat the same procedure for every cartridge (except OMU).

   Alarm 2758

   1. Switch off one switch from the PDFU and verify the alarm from the alarm printer.
   2. Turn the switch on and verify the cancelling of the alarm.
   3. Repeat the same procedure one by one for every switch in all PDFUs.

   Alarms 2759 and 3146

   1. Remove one fuse from the PDFU panel and verify the alarm 2759 from the alarm printer.
   2. When the fan unit's fuse is removed, the alarm 3146 is set and the other fan units start to run faster.
   3. Put the fuse back and verify the cancelling of the alarm.

4. Wait until all recovery functions have been completed.

5. Repeat the same procedure for every fuse one by one (except OMUs).

### 8.1.2 Testing external alarms

For further information on testing the alarm system, refer to Testing wired alarms and Testing alarm outputs.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Output wired alarms (WAP)

2. Check external alarms

   Check that the external alarms specified in the source data have been printed out (WAA).

   If there are no external alarms specified, you have to create one for testing all external alarm inputs (WAA):

   ```
   ZWAA:4000:EX:"TEST";
   ```

3. Connect alarm inputs

   Connect the alarm inputs one by one to the test alarm (WAI)

   ```
   ZWAI:HWAT:OMU:ZWAI:HWAT:OMU:
   ```

   where

   alarm input: the input to be tested (0-23)

4. Cause the alarm

   Cause the alarm by wiring the alarm input to the ground.

   The figure below shows the position of external alarm pins on the connector panel of the female D25 connector (number 29):

Table 5. External alarm pins on the connector panel of the female D25 connector

| Pin | Alarm no |
|---|---|
| 1 | AEI00 |
| 2 | AEI01 |
| 3 | AEI02 |
| 4 | AEI03 |
| 5 | AEI04 |
| 6 | AEI05 |
| 7 | AEI06 |
| 8 | AEI07 |
| 9 | AEI08 |
| 10 | AEI09 |
| 11 | AEI10 |
| 12 | AEI11 |
| 13 | AEI12 |
| 14 | AEI13 |
| 15 | AEI14 |
| 16 | AEI15 |
| 17 | AEI16 |
| 18 | AEI17 |
| 19 | AEI18 |
| 20 | AEI19 |
| 21 | AEI20 |
| 22 | AEI21 |
| 23 | AEI22 |
| 24 | AEI23 |
| 25 | |

When you wire all the alarm inputs (AEI00-AEI23) one by one, you should receive an alarm printout concerning each alarm and the cancelling of the alarm. In this example, the alarm number 4000 and text TEST should appear on the alarm printer.

The polarity of the alarm input can be changed with the WAX command:

```
ZWAX:HWAT:OMU:ZWAX:HWAT:OMU:
```

5. Delete the alarms

   After testing, delete the alarms you created:

   1. Close alarm input:

      ```
      ZWAD:HWAT:OMU:ZWAD:HWAT:OMU:
      ```

   2. Remove external alarm:

      ```
      ZWAR:4000;
      ```

### 8.1.3 Testing alarm outputs

For further information on testing the alarm system, refer to Testing wired alarms and Testing external alarms.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

- Set an alarm output to ON or OFF state (ALU, ALS)

  ```
  ZALU:UPD;
  ```

  ```
  ZALS:ZALS:
  ```

  The easiest way to test the alarm outputs is to use the lamp panel, provided that teh lamp panel is installed.

  Another way to test the alarm outputs is to measure the pin AEO00-AEO15 from the connector panel (see Testing external alarms). The change of the state should appear as a change of voltage from 0V to 5V.

  The figure below illustrates the position of alarm output pins on the connector panel of the female D25 connector (number 22).

Table 6. Alarm output pins on the connector panel ofthe female D25 connector

| Pin | Alarm.output no |
|---|---|
| 1 | AEO00 |
| 2 | AEO01 |
| 3 | AEO02 |
| 4 | AEO03 |
| 5 | AEO04 |
| 6 | AEO05 |
| 7 | AEO06 |
| 8 | AEO07 |
| 9 | AEO08 |
| 10 | AEO09 |
| 11 | AEO10 |
| 12 | AEO11 |
| 13 | AEO12 |
| 14 | AEO13 |
| 15 | AEO14 |
| 16 | AEO15 |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | |
| 24 | |
| 25 | |

# 8.2 Testing the recovery from power breaks in BSC3i

The purpose of the tests is to test the recovery of the system from different power breaks. The system should automatically separate from use those units which are without power after a power break and start the units in their correct working state after the power is on again.

---

Note

It is recommended that the external synchronisation is connected to the BSC3i before the power break tests or that the ET used for synchronisation is looped during this test. Remember to disconnect the loop immediately after the test.

If the loop is not disconnected, the oscillators of the CLSs will drift to the end of their control range. If the BSC3i is not getting any synchronisation, alarms 1010 and 1598 are issued. They are cancelled automatically after the recovery actions which take approximately 10 minutes.

---

For further information on testing, refer to Inspecting the BSC3i's maintenance system.

For more information on commissioning, go to BSC3i commissioning overview.

## 8.2.1 Testing the recovery from complete power break in the system

For further information on testing the recovery, refer to Testing power break in PDFU and Testing fuse fault in supply cable.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Connect alarm printer and MML terminal to the BSC
2. Check that all units are in states WO-EX or SP-EX (USI, ISI)

   If a unit is not in the appropriate state, change the state with the `USC` command.

   ETs may be in SE-NH states.
3. Disconnect power from the system
4. Connect power to the system

The system is started and it begins loading from the disks.

5. Wait until OMU starts in state WO-EX

   Monitor the alarm printer. All the starting computer units should cause a notice:

```
0691 AUTOMATIC RECOVERY ACTION WO-RE TO WO-EX
```

   or

```
0691 AUTOMATIC RECOVERY ACTION SP-RE TO SP-UP
```

   or

```
0691 AUTOMATIC RECOVERY ACTION SP-UP TO SP-EX
```

   Doubled pre-processor units (for example, the synchronisation unit CLS) independently determine which unit is active and which is passive.

   The following notice is displayed:

```
MMI SYSTEM READY
```

6. Start a session from an MML terminal

   During the start-up of the OMU, the recovery system analyses the condition of the BSC and starts the control of the system start-up.

   The following text is printed on the alarm printer:

```
0689 SYSTEM RESTARTED.
```

7. Output the working states of the units from the MML terminal

8. Monitor the unit states

   Check that every unit starts in the state it had before the power break (USI)

```
ZUSI;
```

9. Monitor the alarm printer

   All the starting units should cause a notice (one of the following):

```
0691 AUTOMATIC RECOVERY ACTION WO-RE TO WO-EX
0691 AUTOMATIC RECOVERY ACTION SP-RE TO SP-UP
0691 AUTOMATIC RECOVERY ACTION SP-UP TO SP-EX
```

10. Print out the states

    Print out the states of all the units and check that they are in the correct working state (USI, USL). Use the following commands to output the working states of the units:

```
ZUSI:ALL;
```

or alternatively,

```
ZUSL:,INCO;,
```

which outputs all those units whose state is incorrect.

11. Update the date and time (DCS)

```
ZDCS:<date>,<time>:ST=OFF/ON;
```

12. Check the states of WDU devices

If the states are not WO, change them (ISI).

### 8.2.2 Testing power break in PDFU

For further information on testing recovery, refer to Testing the recovery from complete power break in the system and Testing fuse fault in supply cable.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Connect the alarm printer and MML terminal to the BSC
2. Check that the units are in states WO-EX and SP-EX

   To output the units which are in an incorrect state:

   ```
   ZUSL:,INCO;
   ```

   Change the state with the `USC` command, if necessary.

   Change the I/O unit's state with the `ISC` command, if necessary.

   ETs may be in SE-NH states.
3. Connect the service terminal

   Connect the service terminal to the MCMU to monitor the recovery functions.

When the power is disconnected from the OMU, the MML terminal and the alarm printer do not function. The system, however, recovers also in this condition as the recovery functions of the system are then handled in the active MCMU. In this case you can monitor the recovery functions with the service terminal from the active MCMU as follows:

1. Connect the service terminal to the active MCMU.
2. Take into use the debugger software used for testing the recovery system

   ```
   ZLE:U,RCBUGGGX
   ```

3. Output the states of the units in a normal way as from an MML terminal (USI or USIC)

   ```
   ZUSI:COMP
   ```

   or

   ```
   ZUSIC:COMP
   ```

4. Connect the power to the PDFU.

4. Disconnect the power in all PDFUs

   This should be done one by one so that both switches of the PDFU are switched off at the same time.

   If the PDFUs are disconnected too long (more than 5 seconds), the test does not pass the computers and the PDFUs are found to be faulty (SE-OU). Depending on the power break time, it is possible that the unit is not ready for diagnostics. If so, it does not answer the diagnostics message the first time. On the second time, the recovery brings the unit up and the diagnostics succeeds.

5. Wait until all the recovery functions have been completed
6. Repeat the same test for the next PDFU
7. Check the states of WDU devices

   If the states are not WO, change them (ISI).

**Expected outcome**

1. When the alarm is repeated, the unit without power is separated and the backup unit is taken into use, provided that the unit type in question has a backup unit. The units without backup stay in the state WO-EX FAULTY.

   If a faulty unit remains in use, the following alarm is printed out:

   2693 WO-EX UNIT FAULTY

   If a unit is in TE-ID or in SE-OU, the following alarm is printed out:

   2692 INCORRECT WORKING STATE

2. When the unit enters the TE state, the testing of the unit is started. If the test proves that the unit is in order, the state of the unit is automatically changed into WO-EX or SP-EX.

3. Check that there are appropriate notifications on state changes.

4. Check that there are diagnosics reports which indicate that the unit is in working order:

   ```
   3999 TOTAL DIAGNOSIS EXECUTED - UNIT OK
   ```

   After execution of every partial diagnosis the following text is displayed:

   ```
   3996 PARTIAL DIAGNOSIS EXECUTED
   ```

In fault conditions, see *Reference, Alarms*.

## 8.2.3 Testing fuse fault in supply cable

For further information on testing recovery, refer to Testing the recovery from complete power break in the system and Testing power break in PDFU.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Connect the alarm printer and MML terminal to the BSC

2. Check that the units are in states WO-EX and SP-EX (USI)

3. Remove the fuse of the supply cable

4. Connect the fuse

5. Wait until the recovery measures have been completed

6. Perform Steps 1 - 4 for all the supply fuses

**Expected outcome**

1. If there is only one supply in the system, the system is restarted.
2. If there are several supplies in the system, the operation of the system must not totally cease during the power break.
3. If the power supply of the system has been secured with a battery and an emergency power supply, nothing will happen. If the power disappears from the system, the functioning of the battery and emergency power supply must be checked.

## 8.3 Testing state transitions and unit diagnostics in BSC3i

For further information on testing, refer to Inspecting the BSC3i's maintenance system.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Connect the alarm printer and MML terminal to the BSC
2. Change the state of computers units from SP to TE to SE to TE one by one (USC)

Example 2.

```
ZUSC:BCSU,1:TE;

ZUSC:BCSU,1:SE;

ZUSC:BCSU,1:SE;

ZUSC:BCSU,1:SE;

ZUSC:BCSU,1:TE;
```

3. Run the diagnostics on the unit (UDU)

```
ZUDU:BCSU,1;
```

The diagnostics reports indicate that the unit is in working order:

```
3999 TOTAL DIAGNOSIS EXECUTED - UNIT OK
```

4. Change the state of unit to SP or WO (USC)

```
ZUSC:BCSU,1:SP/WO;
```

5. Repeat the test for every BCSU (steps 2 and 3)

6. Run the BCSU diagnostics with the other MCMU

   BCSU's diagnostics must be run twice: when the MCMU-0 is the active unit and when the MCMU-1 is the active unit.

7. Connect the ETs (WUC)

   ETs have to be connected (`WUC` command) before testing. See Connecting a functional unit to an ET or BSS Integration for details.

8. Change the state of the ETs from SE to TE to SE to TE to WO one by one (USC)

Example 3.

```
ZUSC:ET,33:TE;

ZUSC:ET,33:SE;

ZUSC:ET,33:SE;

ZUSC:ET,33:SE;

ZUSC:ET,33:TE;
```

9. Run the diagnostics on the unit (UDU, UDQ)

```
ZUDU:ET,33;
```

   With the `UDQ` command you monitor the diagnostics being run.

   The diagnostics reports indicate that the unit is in working order:

```
3999 TOTAL DIAGNOSIS EXECUTED - UNIT OK
```

10. Change the state of unit to WO (USC)

```
ZUSC:ET,33:WO;
```

Note

The ET's diagnostics must be run twice: when the MCMU-0 is the active unit and when the MCMU-1 is the active unit.

11. Run the ET's diagnostics with the other MCMU

    If a unit fails during the diagnostics test, check the strappings of the faulty unit. If a plug-in unit is broken, change it.

## 8.4 Testing the spare units of BSC3i

For further information on testing, refer to Inspecting the BSC3i's maintenance system.

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Equip the BSC with spare plug-in units and perform diagnostics

   Follow the instructions in Testing state transitions and unit diagnostics.

2. Write a problem report if faulty plug-in units are found

3. Change the faulty plug-in units

# 9 Checking the clock equipment in BSC3i

The purpose of the test is to verify that the switchover of the Clock Synchronisation Unit and Clock works, and that the Clock Synchronisation Units (CL3TG) provide the required clock signals.

For more information on commissioning, go to BSC3i commissioning overview.

## 9.1 Checking the switchover of the clock synchronisation unit and the clock and alarm buffer in BSC3i

For further information on checking clock equipment, refer to Inspecting the synchronisation unit in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Check the alarm indicator

   Make sure that the red alarm indicator light is not lit on either of the CL3TG plug-in units.

   If the alarm light is on, the fault lies in the CL3TGs or in the CLOC cartridge.

2. Check the active unit indicator

   Make sure that the active unit indicator LED of the active CL3TG unit is on.

   The CL3TG consists of two duplicated units which supervise each other: when one detects any serious alarm condition in the other unit, it can activate itself as the master.

3. Test the switchover control

   Test the switchover control of the duplicated CL3TG.

   Test the control first with the front panel switch (FCTRL) and then by removing the power cable from the unit. Do this first to the active and then to the passive unit.

   In either case no MBIF alarms should occur, for example the clock alarm lights of the MBIFs should not be on.

# 9.2 Inspecting the synchronisation unit in BSC3i

The purpose of this inspection is to check the functionality of the connection between the clock synchronisation units and the Operation and Maintenance Unit (OMU). One should also make sure that both clock synchronisation units automatically perform switchover of synchronisation signals if errors occur.

For further information on checking synchronisation, refer to Checking the switchover of the clock synchronisation unit and the clock and alarm buffer in BSC3i .

For more information on commissioning, go to BSC3i commissioning overview.

**Before you start**

The connection between the OMU and the clock synchronisation units must operate. Check the connection with the DRI command. The command should not cause any error messages. For the connection to operate, the OMU must be ready for use.

If there are no synchronisation connections to a higher-level exchange, the unit should be in PLESIOCHRONOUS MODE (DRI command).

## 9.2.1 Simulating the synchronisation inputs

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Make a loop-back

   ET2/ETSI:

Make a loop-back in the front plate of the three synchronisation input ETs. The default values are 32, 96, 160, and 224. Make the loop-back with GSWB, default cabling, with the following connection to the 120-ohm ETs:

Table 7. Loop-back connection to the 120–ohm ET

| Even ET | Odd ET |
|---|---|
| b14–>b11 | b6–>b3 |
| b13–>b10 | b5–>b2 |

In 75-ohm ETs, connect the receiver and transmitter to each other.

ET2/ANSI:

Make a loop-back in the front plate of the four synchronisation input ETs using the RJ45 connector. The default values are 32, 96, 160, and 224. Make the loop-back with GSWB and with the following connection:

-1 => 4

-2 => 5

This enables the synchronisation tests to be executed with the simulated synchronisation inputs.

2. Connect the loop-backs to the ETs

3. Set all synchronisation inputs to the state CONNECTED

4. Open new synchronisation input

   Open the new synchronisation input with the DRC command, for example

   ```
   ZDRC:2M2;
   ```

5. Delete the synchronisation inputs

   Delete the superfluous synchronisation inputs with the command DRD, for example

   ```
   ZDRD:2M2;
   ```

   Synchronisation input 2M1 should be in the state CONNECTED and in use (USED INPUT). Check this with the DRI command. The other synchronisation inputs should also be in the CONNECTED state.

### 9.2.2 Inspecting the synchronisation unit with changeover

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Check the indicator lamp

   Check that on both CL3TG plug-in units the indicator lamp 1 is lit.

2. Make a changeover to backup connection

   Disconnect the first loop-back at the front connector of the ET2E/ET2A.

   The clock synchronisation unit will change over to the clock input of the next priority within the fault toleration time (TP). TP can be modified with the DRS command. The default value of the time is 5 minutes. The LEDs on the CL3TG plug-in units will indicate the new synchronisation input.

   The 2M1 synchronisation input is in the state FAULTY and the next input in the state CONNECTED and in use (this can be checked with the DRI command).

   The following messages will be displayed on the alarm printer:

   2641 FAILURE IN SYNCHRONISATION SIGNAL

   0630 SYNCHRONISATION SIGNAL CHANGED

3. Disconnect the second loop-back

   The procedure and results are the same as in Step 2.

4. Make a changeover to internal oscillator

   Disconnect the loop-back of the last synchronisation input.

   The clock synchronisation unit should switch to plesiochronous operation within the time TP. All the synchronisation input indicators on the active CL3TG unit will be extinguished and all indicators on the passive CL3TG unit will be lit.

   The DRI command will give the following result:

   SYNCHRONISATION UNIT WORKING MODE.....
   PLESIOCHRONOUS MODE

5. Make a synchronisation with external clock

Return the loop-backs one by one, starting from the lowest priority.

**Expected outcome**

CL3TGs have four synchronisation inputs. The clock synchronisation unit will switch over to use the input 2M4 first, then 2M3, 2M2, and 2M1 respectively, within the time TR. The default value of the time is 10 minutes. To modify the time TR, use the DRS command.

On both CL3TG plug-in units the indicator lamp for the synchronisation input in question will be lit.

Verify with the DRI command that the input is in the state CONNECTED and in use (USED INPUT).

Faults can be corrected with MML commands.

A CL3TG in state PLESIOCHRONOUS will search for the incoming signal from the entire adjustment range by forcibly selecting the desired input into use with the DRS command, for example

```
ZDRS:U=2M1
```

When the clock synchronisation unit has been synchronised to this input, the forced control can be removed with the DRS command, for example

```
ZDRS:U=OFF
```

# 10 Checking the BSC3i's hardware configuration

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

- Print the hardware configuration (WTI)

  Compare the hardware configuration to the *Hardware List* in Site Specific Documentation

# 11 Copying additional software and time zone setting in BSC3i

For more information on commissioning, go to BSC3i commissioning overview.

**Steps**

1. Insert Customer Specific disk to BSC magneto-optical drive

   The diskette contains the definitions of all the optional features which are included in the software build (software package).

2. Copy the diskette (IWY, IBC)

   ```
   ZIWY:S:SYSTEM=<BSC_name>,UNIT=OMU,PATH=/,DRIVE=FDU-N0;
   ZIWY:D:SYSTEM=<BSC_name>,UNIT=OMU,PATH=/<path>/LFILES,
   DRIVE=WDU-SB; ZIBC;
   ```

   where

   path: the path name of the new package.

3. Install Change Deliveries

   Check that the general Change Deliveries (CD) are installed.

   Check the CD level of the software build (WNH) and install the CDs that have not been installed. See further instructions in the CD document.

4. Set the time zone (DCE)

   ```
   ZDCE:<direction>:<difference>;
   ```

Example 4.

Setting the time zone for GMT +1h

```
ZDCE:PLUS:01-00;
```

In the next phase the BSC is restarted, and after that the time zone setting is in use.

Time zone information is stored in a BSC file. The information needs to be set when commissioning a new BSC. This is particularly useful in such a network where different BSCs may belong to different time zones.

5. Change the clock to summer time/standard time (DCT)

6. Restart the system (USS)

```
ZUSS:SYM:C=DSK;
```

7. Check that the correct features are installed (WOS)

# 12 BSC3i system start-up troubleshooting

The following can be used as supporting material when the system start-up of BSC3i is monitored. More information on possible error situations can be found in *Start-up fault conditions*.

For more information on commissioning, go to BSC3i commissioning overview.

## 12.1 MBIF failure in BSC3i

Observations:

- green LED on the MBIF plug-in unit is not lit
- "RESET MESSAGE FAIL" notice is displayed on service terminal
- BOLERO is continuously outputting MB error status
- exchange of messages is blocked in at least one direction.

For further information on troubleshooting, refer to Automatic restart of computer in BSC3i and Computer in incorrect state in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Check MBIF plug-in units

   Check the condition of the MBIF plug-in units in the unit that is suspected to be faulty and in the OMU.

2. Check that MBIF plug-in unit is in the correct slot
3. Check that CPU plug-in unit is in the correct slot
4. Check the Message Bus cabling

5. Run the diagnosis

   If the unit starts in the TE-EX state, run diagnosis on the unit.

6. Check that MBIF equipment is uniform

   If the MB-0 is in use, the corresponding MBIF plug-in units should be equipped in every unit.

7. Check Message Bus states

   ```
   ZUSI:MB;
   ```

8. Try to send a message in the minidebugger mode

   Press the DEBUG switch continuously and restart the unit with the RESET button.

   If the MB-0 is in the state WO-EX, the MBIF-0 must be on the bus in all units that are in states WO, SP, and TE.

## 12.2 Automatic restart of computer in BSC3i

Observations:

- the unit is restarted automatically but not by the RCXPRO. If the restart was caused by the recovery, the additional information RESTART ON COMMAND is indicated with the `USI` command.
- extra UNIT RESTARTED alarms are displayed to the user. The following alarms may also occur and indicate why the unit is restarted:
  - PROGRAM BLOCK RESTARTED alarms are displayed to the user
  - PROGRAMBLOCK START UP FAILURE alarms are displayed to the user
  - EXCESSIVE DISTURBANCES IN SUPERVISION alarms are displayed to the user
  - EXCESSIVE DISTURBANCES IN FILE LOADING alarm is displayed and the unit is restarted
- the unit is constantly or repeatedly in state WO-RE, BL-RE, or SP-RE.

For further information on troubleshooting, refer to MBIF failure in BSC3i and Computer in incorrect state in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.

## Steps

1. Check the configuration

   Check whether you have made any changes recently, for example activated some specific function that could cause the restarts. Deactivate the function to see whether the problem disappears.

2. Check the alarms for program block information

   Check whether a critical program block has been restarted. Check all the unit's alarms which have been restarted. If RESTARTED PROGRAM BLOCK blames a critical program block, it is probably faulty.

3. Monitor the unit

   Monitor the unit using the service terminal. If it is not possible to use a service terminal or if the unit is overloaded, a program block with high priority may be in a loop. Alarms that support the interpretation that a program block is in a loop are as follows:

   - "extra" alarms indicating program block start-up
   - EXCESSIVE DISTURBANCES IN SUPERVISION
   - PROCESSOR TIME SHORTAGE
   - PROCESSOR LOAD RATE ALARM LIMIT EXCEEDED.

4. Check the black box for memory protection errors

   Check the black box to see whether USAPRO block has made a memory protection error which has caused the restart. Check the version and checksum of the USAPRO.

   It is possible that you cannot check the black box, for example if the operating system data has been corrupted.

5. Check the reservation state of buffers

   Check the black box to see the reservation state of the buffers. If there are no free buffers, this may indicate that the memory is running out. Store the black box.

## 12.3 Computer in incorrect state in BSC3i

Observations:

- the unit is in working state TE-EX or SE-OU
- the unit state is WO-EX FAULTY. The active unit is faulty and no spare unit is available.
- the unit is constantly or repeatedly in state WO-RE, SP-RE, SP-UP, or BL-RE
- the unit is in state RE. The state RE (RESTART, 5FH) means that the unit start-up is in a phase where the state has not yet been defined. The RE state is only visible in a unit which is being started. It cannot be seen with the command `USI`, for example.
- UNIT RESTART FAILURE alarms are displayed.
- the LEDs on the central processing unit indicating the state of the unit are not lit or they show a state other than WO or SP.

Regarding the system's performance and redundancy, the units whose working state is TE (test) or SE (separated) are in an incorrect working state. In the system, the only correct working states are WO-EX and SP-EX.

For further information on troubleshooting, refer to MBIF failure in BSC3i and Automatic restart of computer in BSC3i.

For more information on commissioning, go to BSC3i commissioning overview.


**Steps**

1. Check the alarms and diagnostic printouts

   Check all the alarms and diagnosis printouts which indicate that a unit is faulty. Change the unit state to the correct one, if needed.

2. Check the UNIT RESTART FAILURE alarms

   Check the UNIT RESTART FAILURE alarms and monitor the start-up of the unit which the alarm indicates to be faulty.

   Restart the unit if necessary.

3. Start-up of the unit does not proceed

If the start-up of the unit does not proceed (for example, the RCXPRO does not give permission to continue the start-up), it can be suspected that the start-up of the RCXPRO or the loading of its files in the OMU has failed, or that the RCXPRO is constantly reserved. See Recovery program block (RCXPRO) start-up failure.

Restart the OMU, if necessary.

4. Unit does not belong to configuration

   If the unit does not belong to the configuration, that is, it cannot be seen by giving the `USI` command, the start-up of the unit fails. The RCXPRO does not handle continued start-up impulses coming from the unit, thus the unit does not get its state from the SCDFLE file. The unit must be entirely removed from the bus, otherwise it can cause disturbances to the system. Another alternative is to add the unit in question to the system (the WU command group commands) and then to start it.

5. Unit is in the TE state and its start-up fails

   If the unit is in the TE state and its start-up fails before phase 3 (program block starting phase), the testing of the unit with the UD command group commands does not help. In other words, it is possible that the start-up of the diagnostic program blocks has failed. If the unit is being tested for a long time (the USI command shows "in test" as the status), this kind of a failure can be suspected. In that case, try to find out why the start-up has failed.

6. Unit is continuously restarted

   If the unit is continuously restarted, refer to Automatic restart of computer in BSC3i.

# 13 BSC3i commissioning logs

Record confirmation of the test execution and possible comments in the test logs along with your signature and date.

Part of the logs can be used as a checklist while testing.

For more information on commissioning, refer to BSC3i commissioning overview.

Table 8. BSS specifications

| |
|---|
| Customer: |
| BSC number: |
| BCS Software release (xx.yy.-zz): |
| Checked by: |
| Date: |
| Approved by: |
| Date: |

Table 9. Preparation of commissioning. See Measurement devices and tools

| Commissioning phase | Completed |
|---|---|
| Check that the necessary measurement devices and tools are available | |

OK = Everything is in order

NOK = Something is wrong

Table 10. Inspecting BSC3i internal cabling

| Commissioning phase | Completed |
|---|---|
| Compare the internal cabling with Interconnection Cables List in the Site Specific Documents. | |

OK =Everything is in order

NOK = Something is wrong

Table 11. Inspecting BSC3i hardware functioning

| Commissioning phase | Completed |
|---|---|
| Compare the interchangeability codes of the plug-in units and cartridges with BSC and TCSM Hardware Revision List in the Site Specific Documents. | |
| Check the jumpers and EPROM versions of plug-in units and cartridges by comparing them to the version list. Tick the box in the following tables when ready. Connect ET cables after checking the units. | |

OK = Everything is in order

NOK = Something is wrong

Table 12. Inspecting strappings, DIP switches, memory, and EPROMs of OMU

| Unit | CPU jumpers | CPU DIP switches | CPU FLASH | CPU memory | MBIF DIP switches | AS7 jumpers |
|---|---|---|---|---|---|---|
| OMU | | | | | | |
| Unit | AS7 DIP switches | AC25 jumpers | AC25 EPROM | HWAT jumpers | SERO jumpers | OPDU jumpers |
| OMU | | | | | | |
| Unit | OPDU DIP switches | | | | | |
| OMU | | | | | | |

OK = Everything is in order

NOK = Something is wrong

NIU = Not in use

VER xx.xx = FLASH or EPROM version

xxx MB = Amount of CPU memory

Table 13. Inspecting strappings, DIP switches, memory, and EPROMs of MCMUs

| Unit | CPU jumpers | CPU DIP switches | CPU FLASH | CPU memory | MBIF DIP switches | ESB jumpers |
|---|---|---|---|---|---|---|
| MCMU0 | | | | | | |
| MCMU1 | | | | | | |
| Unit | ESB EPROM | ESB DIP switches | SWCOP jumpers | SWCOP EPROM | | |
| MCMU0 | | | | | | |
| MCMU1 | | | | | | |

OK =Everything is in order

NOK = Something is wrong

NIU = Not in use

VER xx.xx = FLASH or EPROM version

xxx MB = Amount of CPU memory

Table 14. Inspecting strappings of GSWP

| Unit | SW64B jumpers | Cartridge jumpers |
|---|---|---|
| GSWB0 | | |
| GSWB1 | | |

OK = Everything is in order

NOK = Something is wrong

NIU = Not in use

Table 15. Inspecting strappings, DIP switches, memory, and EPROMs of BCSUs

| Unit | CPU jumpers | CPU DIP switches | CPU FLASH | CPU memory | MBIF DIP switches | AS7 jumpers |
|---|---|---|---|---|---|---|
| BCSU0 | | | | | | |
| BCSU1 | | | | | | |
| BCSU2 | | | | | | |
| BCSU3 | | | | | | |
| BCSU4 | | | | | | |
| BCSU5 | | | | | | |
| BCSU6 | | | | | | |
| Unit | AS7 DIP switches | PCU jumpers | PCU DIP switches | PCU FLASH | | |
| BCSU0 | | | | | | |
| BCSU1 | | | | | | |
| BCSU2 | | | | | | |
| BCSU3 | | | | | | |
| BCSU4 | | | | | | |
| BCSU5 | | | | | | |
| BCSU6 | | | | | | |

OK = Everything are on order

NOK = Something is wrong

NIU = Not in use

VER xx.xx = FLASH or EPROM version

xxx MB = Amount of CPU memory

Table 16. Inspecting strappings and EPROMs of ETs

| Unit | ET4C-0 | ET4C-1 | Unit | ET4C-0 | ET4C-1 |
|---|---|---|---|---|---|
| ET 0 jumpers | | | ET 16 jumpers | | |
| ET 0 EPROM | | | ET 16 EPROM | | |

Table 16. Inspecting strappings and EPROMs of ETs (Continued)

| | | | | | |
|---|---|---|---|---|---|
| ET 1 jumpers | | | ET 17 jumpers | | |
| ET 1 EPROM | | | ET 17 EPROM | | |
| ET 2 jumpers | | | ET 18 jumpers | | |
| ET 2 EPROM | | | ET 18 EPROM | | |
| ET 3 jumpers | | | ET 19 jumpers | | |
| ET 3 EPROM | | | ET 19 EPROM | | |
| ET 4 jumpers | | | ET 20 jumpers | | |
| ET 4 EPROM | | | ET 20 EPROM | | |
| ET 5 jumpers | | | ET 21 jumpers | | |
| ET 5 EPROM | | | ET 21 EPROM | | |
| ET 6 jumpers | | | ET 22 jumpers | | |
| ET 6 EPROM | | | ET 22 EPROM | | |
| ET 7 jumpers | | | ET 23 jumpers | | |
| ET 7 EPROM | | | ET 23 EPROM | | |
| ET 8 jumpers | | | ET 24 jumpers | | |
| ET 8 EPROM | | | ET 24 EPROM | | |
| ET 9 jumpers | | | ET 25 jumpers | | |
| ET 9 EPROM | | | ET 25 EPROM | | |
| ET 10 jumpers | | | ET 26 jumpers | | |
| ET 10 EPROM | | | ET 26 EPROM | | |
| ET 11 jumpers | | | ET 27 jumpers | | |
| ET 11 EPROM | | | ET 27 EPROM | | |
| ET 12 jumpers | | | ET 28 jumpers | | |
| ET 12 EPROM | | | ET 28 EPROM | | |
| ET 13 jumpers | | | ET 29 jumpers | | |
| ET 13 EPROM | | | ET 29 EPROM | | |
| ET 14 jumpers | | | ET 30 jumpers | | |
| ET 14 EPROM | | | ET 30 EPROM | | |
| ET 15 jumpers | | | ET 31 jumpers | | |
| ET 15 EPROM | | | ET 31 EPROM | | |
| | | | cartridge jumpers | | |

OK = Everything is in order

NOK = Something is wrong

NIU = Not in use

VER xx.xx = EPROM version

Table 17. Inspecting strappings and EPROMs of clock equipment

| Unit | CLOC jumpers | CLOC EPROM | TON FIA EPROM | Cartridge jumpers |
|---|---|---|---|---|
| CL3TG 0 | | | | |
| CL3TG 1 | | | | |

OK = Everything is in order

NOK = Something is wrong

NIU = Not in use

VER xx.xx = EPROM version

Table 18. Testing power supply

| **Commissioning phase** | **Completed** |
|---|---|
| Measure the supply voltage from the PDE power supply lines: | |
| Nominal voltage: -48V to -60V | |
| Tolerance: -40.5V to -72V | |

OK =Everything is in order

NOK = Something is wrong

Table 19. Testing peripheral units

| **Commissioning phase** | **Completed** |
|---|---|
| Check that the settings of VDU are as follows: | |
| Baud Rate: 9600 | |
| Data Bits: 7 | |

Table 19. Testing peripheral units (Continued)

| Commissioning phase | Completed |
|---|---|
| Stop Bits: 2 | |
| Parity: Even | |
| Page Length: 23 | |
| Line Length: 80 | |
| Check that the settings of the printer are as follows: | |
| Baud Rate: 9600 | |
| Data Bits: 7 | |
| Stop Bits: 2 | |
| Parity: Even | |
| Page Length: 65 | |
| Line Length: 80 | |

OK = Everything is in order

NOK = Something is wrong

Table 20. Monitoring start-up of units

| Commissioning phase | Completed |
|---|---|
| Loading of OMU | |
| Loading of MCMUs | |
| Loading of BCSUs | |

OK = Everything is in order

NOK = Something is wrong

Table 21. Opening the first MML session in the BSC

| Commissioning phase | Completed |
|---|---|
| USERNAME <SYSTEM> | |
| PASSWORD <SYSTEM> | |

OK =Everything is in order

NOK = Something is wrong

Table 22. Verifying the BSC's SW version

| Commissioning phase | Completed |
|---|---|
| Print out all SW builds installed in the disk | |
| Perform verification for each build and compare the printout with the Delivery Catalogue. | |

OK = Everything is in order

NOK = Something is wrong

Table 23. Inspecting the BSC's I/O system

| Commissioning phase | Completed |
|---|---|
| Display all I/O devices | |

OK = Everything is in order

NOK = Something is wrong

Table 24. Testing the BSC's message bus connections

| Commissioning phase | | Completed |
|---|---|---|
| **Unit** | **MB address (Hex)** | |
| OMU | 00 | |
| MCMU 0 | 04 | |
| MCMU 1 | 05 | |
| BCSU 0 | 30 | |
| BCSU 1 | 31 | |
| BCSU 2 | 32 | |
| BCSU 3 | 33 | |
| BCSU 4 | 34 | |
| BCSU 5 | 35 | |
| BCSU 6 | 36 | |

OK = Everything is in order

NOK = Something is wrong

Table 25. Testing the wired alarms

| Unit | Alarm no 2757 | Alarm no 2758 | Alarm no 2759 | Alarm no 3146 |
|---|---|---|---|---|
| MCMU 0 | | ——— | | ——— |
| MCMU 1 | | ——— | | ---------- |
| BCSU 0 | | ---------- | | ---------- |
| BCSU 1 | | ---------- | | ---------- |
| BCSU 2 | | ---------- | | ---------- |
| BCSU 3 | | ---------- | | ---------- |
| BCSU 4 | | ---------- | | ---------- |
| BCSU 5 | | ---------- | | ---------- |
| BCSU 6 | | ---------- | | ---------- |
| PDFU 0 | ---------- | | ---------- | ---------- |
| PDFU 1 | ---------- | | ---------- | ---------- |
| PDFU 2 | ---------- | | ---------- | ---------- |
| PDFU 3 | ---------- | | ---------- | ---------- |
| FTRB 0 | ---------- | ---------- | | |
| FTRB 1 | ---------- | ---------- | | |
| FTRB 2 | ---------- | ---------- | | |
| FTRB 3 | ---------- | ---------- | | |
| GSWB 0 | ---------- | ---------- | | ---------- |
| GSWB 1 | ---------- | ---------- | | ---------- |
| CLOC 0 | ---------- | ---------- | | ---------- |
| CLOC 1 | ---------- | ---------- | | ---------- |
| ET4C 0 | ---------- | ---------- | | ---------- |
| ET4C 1 | ---------- | ---------- | | ---------- |

OK = Everything is in order

NOK = Something is wrong

Test the external alarms by creating one external alarm and connecting alarm inputs one by one to this alarm. Test the alarm inputs by wiring them one by one.

Table 26. Testing the external alarms

| Alarm | Completed | Alarm | Completed |
|---|---|---|---|
| AEI00 | | AEI01 | |
| AEI02 | | AEI03 | |
| AEI04 | | AEI05 | |
| AEI06 | | AEI07 | |
| AEI08 | | AEI09 | |
| AEI10 | | AEI11 | |
| AEI12 | | AEI13 | |
| AEI14 | | AEI15 | |
| AEI16 | | AEI17 | |
| AEI18 | | AEI19 | |
| AEI20 | | AEI21 | |
| AEI22 | | AEI23 | |

OK = Everything is in order

NOK = Something is wrong

Table 27. Testing alarm outputs

| Alarm | Completed | Alarm | Completed |
|---|---|---|---|
| AEO00 | | AEO01 | |
| AEO02 | | AEO03 | |
| AEO04 | | AEO05 | |
| AEO06 | | AEO07 | |
| AEO08 | | AEO09 | |
| AEO10 | | AEO11 | |
| AEO12 | | AEO13 | |
| AEO14 | | AEO15 | |

OK = Everything is in order

NOK = Something is wrong

Table 28. Testing the recovery from complete power break in the system

| Commissioning phase | Completed |
|---|---|
| Disconnect the power from the system | |
| Connect the power to the system | |

OK = Everything is in order

NOK = Something is wrong

Table 29. Testing power break in the PDFU

| Commissioning phase | Completed |
|---|---|
| Remove the fuse. Wait until the recovery measures have been completed and connect the fuse. Repeat for all fuses. | |

OK =Everything is in order

NOK = Something is wrong

Table 30. Testing fuse fault in the power cable

| Commissioning phase | Completed |
|---|---|
| Disconnect the power from each of the PDFU one by one | |

OK = Everything is in order

NOK = Something is wrong

Table 31. Testing the state transition and unit diagnostics of the BSC's units

| Commissioning phase | Completed |
|---|---|
| Testing the state transition and diagnostics of all units. Tick the box in the following tables when ready. | |

OK = Everything is in order

NOK = Something is wrong

Table 32. Testing the state transition and unit diagnostics of computer units

| Unit | MCMU 0 WO state | MCMU 1 WO state |
|---|---|---|
| OMU | | |
| MCMU 0 | ---------- | |
| MCMU 1 | | ---------- |
| MCMU 1 | | |
| BCSU 0 | | |
| BCSU 1 | | |
| BCSU 2 | | |
| BCSU 3 | | |
| BCSU 4 | | |
| BCSU 5 | | |
| BCSU 6 | | |
| CLS 0 | | |
| CLS 1 | | |
| MB 0 | | |
| MB 1 | | |

OK = Everything is in order

NOK = Something is wrong

Table 33. Testing the state transition and unit diagnostics of ETs, part 1.

| ET4C 0 | MCMU0 WO state | MCMU1 WO state | ET4C 0 | MCMU0 WO state | MCMU1 WO state |
|---|---|---|---|---|---|
| ET 32 | | | ET 96 | | |
| ET 33 | | | ET 97 | | |
| ET 34 | | | ET 98 | | |
| ET 35 | | | ET 99 | | |
| ET 36 | | | ET 100 | | |
| ET 37 | | | ET 101 | | |
| ET 38 | | | ET 102 | | |
| ET 39 | | | ET 103 | | |
| ET 40 | | | ET 104 | | |
| ET 41 | | | ET 105 | | |
| ET 42 | | | ET 106 | | |
| ET 43 | | | ET 107 | | |
| ET 44 | | | ET 108 | | |
| ET 45 | | | ET 109 | | |
| ET 46 | | | ET 110 | | |
| ET 47 | | | ET 111 | | |
| ET 48 | | | ET 112 | | |
| ET 49 | | | ET 113 | | |
| ET 50 | | | ET 114 | | |
| ET 51 | | | ET 115 | | |
| ET 52 | | | ET 116 | | |
| ET 53 | | | ET 117 | | |
| ET 54 | | | ET 118 | | |
| ET 55 | | | ET 119 | | |
| ET 56 | | | ET 120 | | |
| ET 57 | | | ET 121 | | |
| ET 58 | | | ET 122 | | |
| ET 59 | | | ET 123 | | |

Table 33. Testing the state transition and unit diagnostics of ETs, part 1.

| ET4C 0 | MCMU0 WO state | MCMU1 WO state | ET4C 0 | MCMU0 WO state | MCMU1 WO state |
|---|---|---|---|---|---|
| ET 60 | | | ET 124 | | |
| ET 61 | | | ET 125 | | |
| ET 62 | | | ET 126 | | |
| ET 63 | | | ET 127 | | |

Table 34. Testing the state transition and unit diagnostics of ETs, part 2.

| ET4C 1 | MCMU0WO state | MCMU1WO state | ET4C 1 | MCMU0 WO state | MCMU1WO state |
|---|---|---|---|---|---|
| ET 160 | | | ET 224 | | |
| ET 161 | | | ET 225 | | |
| ET 162 | | | ET 226 | | |
| ET 163 | | | ET 227 | | |
| ET 164 | | | ET 228 | | |
| ET 165 | | | ET 229 | | |
| ET 166 | | | ET 230 | | |
| ET 167 | | | ET 231 | | |
| ET 168 | | | ET 232 | | |
| ET 169 | | | ET 233 | | |
| ET 170 | | | ET 234 | | |
| ET 171 | | | ET 235 | | |
| ET 172 | | | ET 236 | | |
| ET 173 | | | ET 237 | | |
| ET 174 | | | ET 238 | | |
| ET 175 | | | ET 239 | | |
| ET 176 | | | ET 240 | | |
| ET 177 | | | ET 241 | | |
| ET 178 | | | ET 242 | | |
| ET 179 | | | ET 243 | | |
| ET 180 | | | ET 244 | | |

Table 34. Testing the state transition and unit diagnostics of ETs, part 2.

| ET4C 1 | MCMU0WO state | MCMU1WO state | ET4C 1 | MCMU0 WO state | MCMU1WO state |
|---|---|---|---|---|---|
| ET 181 | | | ET 245 | | |
| ET 182 | | | ET 246 | | |
| ET 183 | | | ET 247 | | |
| ET 184 | | | ET 248 | | |
| ET 185 | | | ET 249 | | |
| ET 186 | | | ET 250 | | |
| ET 187 | | | ET 251 | | |
| ET 188 | | | | | |
| ET 189 | | | | | |
| ET 190 | | | | | |
| ET 191 | | | | | |

OK = Everything is in order

NOK = Something is wrong

Table 35. Checking the switchover and the alarms from the clock synchronisation unit

| Commissioning phase | Completed |
|---|---|
| Check the alarms from the clock units | |
| Test the switchover of the clock units with MML | |
| Test the switchover of the clock units with the front panel switch | |

OK = Everything is in order

NOK = Something is wrong

Table 36. Checking the clock synchronisation unit

| Commissioning phase | Completed |
|---|---|
| Open two new synchronisation inputs. Make a loop-back in the front plate of four synchronisation input ET's. | |
| Test a changeover to backup connection. | |
| Test a changeover to internal oscillator. | |
| Test synchronisation with external clock. | |

OK = Everything is in order

NOK = Something is wrong

Table 37. Checking the BSC's hardware configuration

| Commissioning phase | Completed |
|---|---|
| Print the hardware configuration and compare it to the Hardware List in Site Specific Documentation. | |

OK = Everything is in order

NOK = Something is wrong

Table 38. Copying additional software

| Commissioning phase | Completed |
|---|---|
| Install the customer specific diskette | |
| Install Change Deliveries | |
| Set the time zone | |
| Restart the system | |

OK = Everything is in order

NOK = Something is wrong

| **BSC Commissioned by** |
| --- |
| Signature: |
| Name in block letters: |
| Date: |