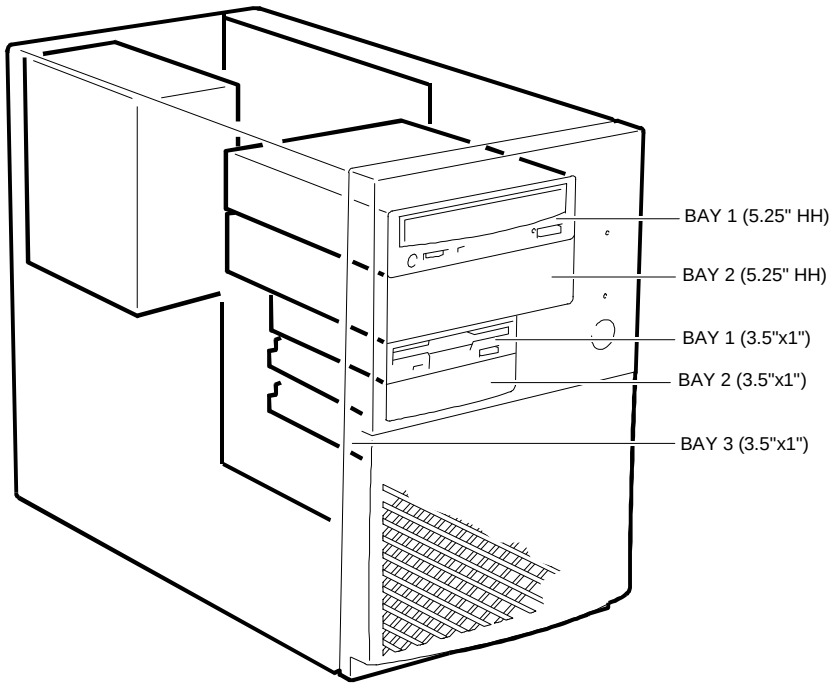
CONFIGURATION OF CED BOX PERIPHERALS

CONFIGURATIONS OF PERIPHERALS ON SNX 140/S 160/S

PERIPHERALS THAT CAN BE INSTALLED IN THE BASIC MODULE



K

BAY	PERIFERICHE INSTALLABILI	NOTES
BAY 1 (3.5"x1")	1.44 MB (3.5"x1") FDU	The 3.5"x1" bay is always used to host the first 3.5" 1.44 MB HDU
BAY 2 (3.5"x1")	HDU (3.5"x1")	The 3.5"x1" bay 2 is always used to host the system first SCSI HDU on which the operating system is installed.
BAY 1 (5.25")	CD-ROM (5.25" HH)	The 5.25" HH bay 1 is always used to host a CD-ROM drive
BAY 3 (3.5"x1")	HDU (3.5"x1")	The 3.5"x1" bay 3 can host the second HDU.
BAY 2 (5,25")	STU (5.25" HH) or DAT with 5.25" adapter or HDU (3.5"x1") with 5.25" adapter MEC 8000	5.25" HH bay 2 usually hosts a second removable SCSI peripheral (DAT, STU) but can also be used to host the third SCSI HDU. A second 5.25" FDU cannot be installed.

SCSI CHANNEL CONFIGURATION

Depending on the system, the onboard SCSI controller provides a single 8-bit Narrow or 16-bit Wide SCSI channel to which removable peripherals and HDUs can be connected.

Besides the onboard SCSI controller, optional PCI SCSI controllers can be added and connected to the onboard PCI bus. Up to two PCI Narrow (Dagger) SCSI controllers or up to two PCI Wide (Lance) SCSI controllers that can be used for the connection of internal (usually for duplexing) or external SCSI peripherals, PEM excluded, can be added.

It is also possible to add one Wide/Ultra Wide PCI RAID DPT SCSI controller (mono-, tri-channel), exclusively dedicated to the connection to the external PEM Wide. In this case the system adopts a resilience configuration since the mechanical structure of the PEM in combination with the RAID controller, allows the replacement of the HDUs inside the PEM without needing to power off the system and therefore interrupt the activities underway (hot swapping).

The rules for configuring the SCSI channel are that all the devices connected (max. 8 for Narrow, 16 for Wide, controller included) must have a different identifier (SCSI ID) and that the bus must be only terminated at its ends (on the first and last device on the bus) and the terminator removed from all the peripherals in between. In all the configurations where peripherals are connected to the SCSI bus, the maximum length of 6 meters allowed for the SCSI channel must be respected.

RULES FOR ASSIGNING THE SCSI ID

Besides assigning a different address to the peripherals connected to the bus, the SCSI ID determines priority. In an 8-bit SCSI Narrow system (SNX 140/S motherboard and GO2124), the device with ID=7 has highest priority while the one with ID=0 has the lowest. The ID is checked when, following simultaneous requestes for SCSI bus accesses, the device with the highest priority is served first.

In a 16-bit SCSI Wide system (SNX 160/S motherboard, GO2109 and GO2098/2173), the priority of the IDs follows this rule: 7, 6, 5, 4, 3, 2, 2, 0, 15, 14, 13, 12, 11, 10, 9, 8. Since IDs from 8 to 15 always have a lower priority with respect to an 8-bit device, this allows an 8-bit device that does not recognize IDs from 8 to 15 to coexist with a 16-bit device on the SCSI bus. If the SCSI Wide controller handles an 8-bit device, the controller cannot be assigned an ID from 8 to 15 since the device is unable to recognize the controller.

IDs from 8 to 15 are not used on these systems and therefore the rule to follow is that the system first HDU connected to the motherboard SCSI controller (HDU with the operating system and located in 3.5"x1" bay 2) must have a SCSI ID=0, and therefore with lowest priority, and the SCSI controller a SCSI ID=7, and therefore with highest priority.

Following the bay filling sequence, the successive SCSI peripherals are assigned SCSI IDs in increasing order starting from ID1 in the case of an HDU, in decreasing order starting from ID=6 in the case of removable peripherals with the exception of the first STU drive under SCO 3.2 in which case a SCSI ID=2 must be set.

The following table gives a typical example of the setting of the SCSI ID on the systems:

SCSI ID	0	1	2	3	4	5	6	7
Peripherals	1st HDU	2nd HDU	3rd HDU	2nd EXT. PER.	1st EXT. PER.	2nd REM PER.	1stREM PER (CDROM)	SCSI Contr.

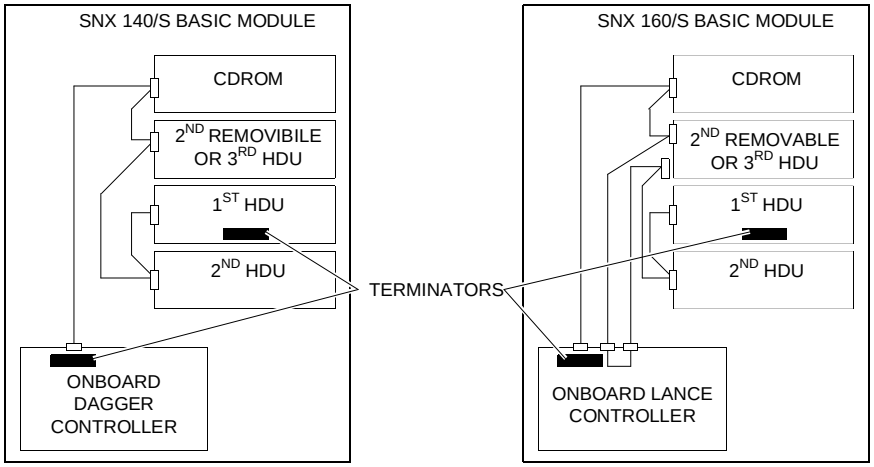
Note: *With the SCO3.2 operating system, the STU must be connected to the same channel as the HDUs and the STU ID must be set to 2.*

This condition applies to the onboard controllers and to the additional GO2124 and GO2109 controllers (in this case ID=0 does not necessarily need to be assigned to an HDU). As far as the RAID DPT SCSI controller is concerned, being exclusively dedicated to the HDUs inside the PEM the controller must always be assigned an ID=7 for all three channels, while the HDUs in the PEM are automatically set according to the position they occupy in the resilience structure of the PEM.

The SCSI ID of the system's internal peripherals is assigned by physically setting the jumpers or DIP-Switches on the drive. The SCSI firmware automatically recognizes the ID of the peripheral and therefore this value does not have to be assigned via software. The ID of the SCSI controllers on the motherboard, on the GO2124 and on the GO2109, can only be set via software by means of the ECU or by means of the DPT Configuration Utility for the RAID controller; the default value for all controllers is ID=7 which must not be changed.

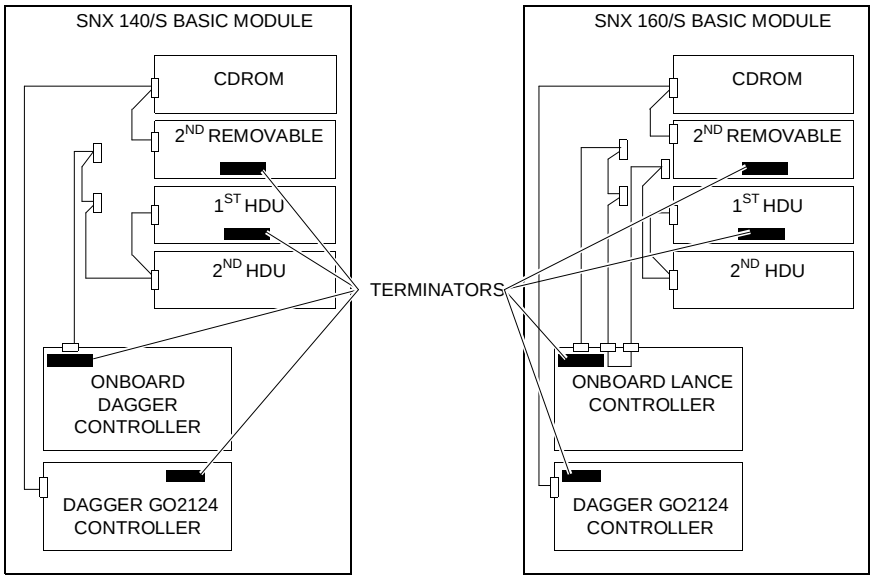
TERMINATION RULES

The SCSI channel must only be terminated at its ends (on the first and last device on the bus) and the terminator removed from all peripherals in between. Therefore if the system is only equipped with the onboard SCSI controller (Dagger or Lance) dedicated to HDUs and to the internal removable peripherals, and there is no external connection, only the primary HDU installed in 3.5"x1" bay 1 and the SCSI controller must be terminated.

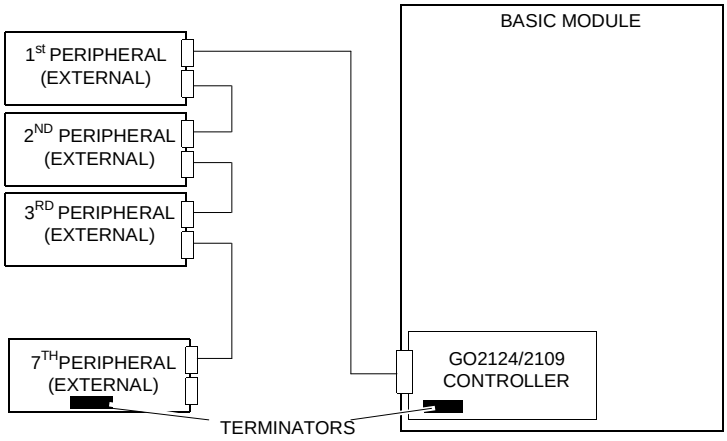


If there are two SCSI controllers in the system, one for HDUs and one for internal removable peripherals, and not external, the HDU channel is terminated on the first HDU and on the dedicated SCSI controller while the channel for removables is terminated on the second removable peripheral and on the dedicated SCSI controller.

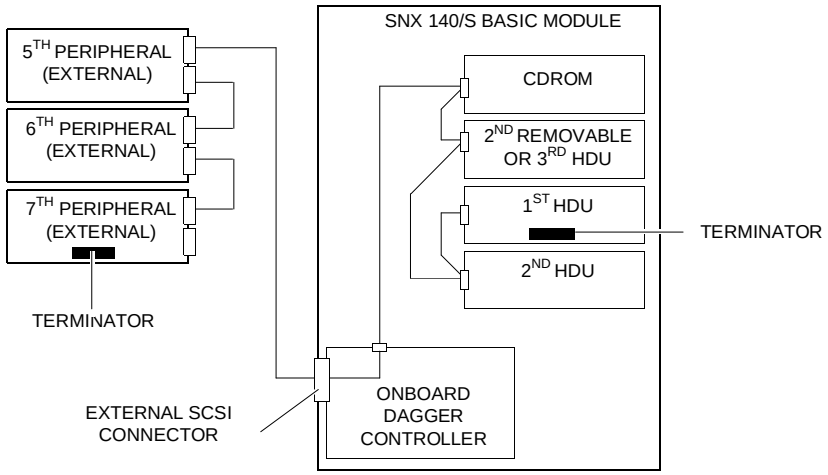
Note: *On the SNX 160/S, in order for the SCSI channel on the onboard controller to be correctly loopbacked, the SCSI Narrow cable for removable peripherals must remain connected to the two internal SCSI Narrow connectors on the motherboard.*

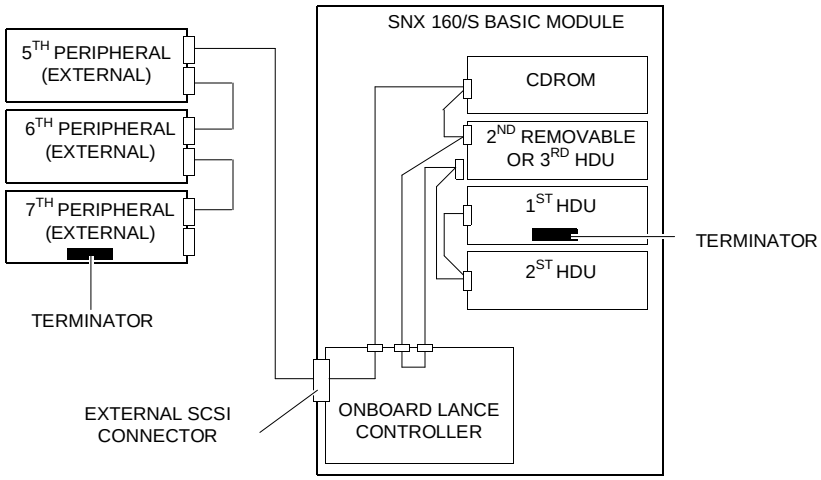


In the case of connection to external SCSI peripherals, excluding the PEM, to a GO2124 or dedicated GO2109, the terminator must be present on the controller and on the last external peripheral connected to the system.

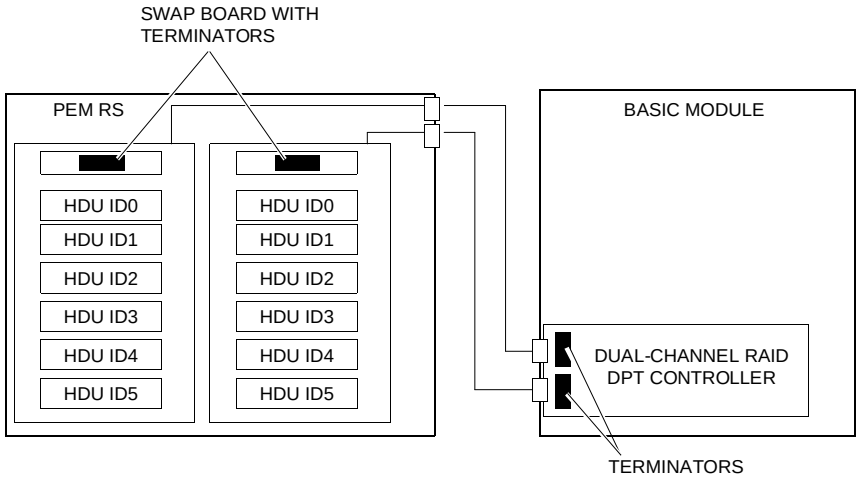


In the case of connection to external SCSI peripherals, excluding the PEM, to the onboard SCSI controller that handles the internal peripherals, the terminator must be disabled from the controller and be present on the last external peripheral connected to the system and on the primary HDU. This type of connection reduces the transfer rate on the SCSI channel from 10 to 5 MB/sec.

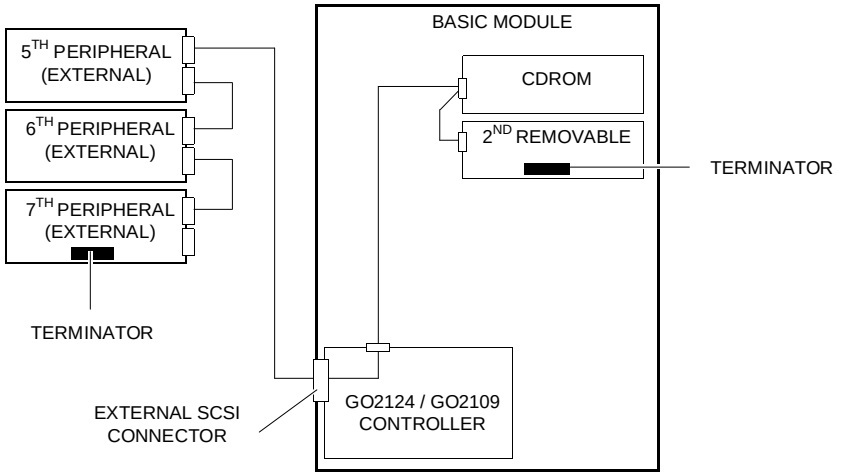




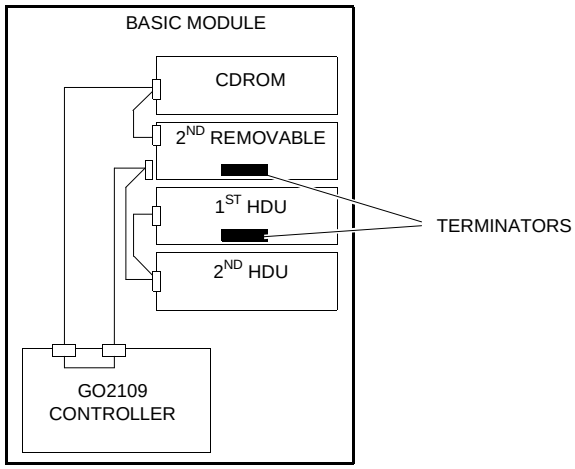
The optional Wide/Ultra Wide RAID DPT SCSI controller is required in the case of an external connection to the PEM RS Wide. The terminator must be present, for each channel, on the controller and on the PEM swap board.



In case external SCSI peripherals, excluding the PEM, are connected to the optional GO2124 or GO2109 SCSI controller that also handles the internal removable peripherals, the terminator must be disabled from the controller and be present on the last external peripheral connected to the system and on the last internal removable peripheral. This type of connection reduces the transfer rate on the SCSI channel from 10 to 5 MB/sec.



In case internal Wide HDUs are connected to the optional GO2109 SCSI controller that also handles the internal removable peripherals, the terminator must be disabled from the controller and must be present on the system first HDU and on the last internal removable peripheral.



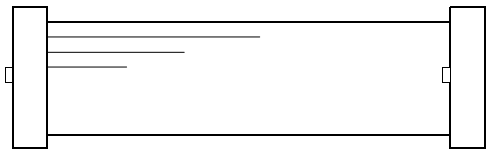
The SCSI devices are terminated in the following way:

- On the Dagger controller of the SNX 140/S motherboard, the terminators are present on the board, are active and always enabled but can be automatically disabled in case the internal SCSI and external connectors are used simultaneously.
- On the SNX 160/S motherboard Lance controller, the terminators are present on the board, are active and always enabled but can be automatically disabled in case the internal SCSI connectors and the external connector are used simultaneously.
- On the GO2124, the terminators are present on the board, are active and always enabled but can be automatically disabled in case the internal SCSI and external connectors are used simultaneously.

- On the GO2109, the terminators are present on the board, are active and always enabled but can be automatically disabled when two of the three connectors available are used (the two internal or the internal and external). All three connectors cannot be used simultaneously.
- On the GO2098/2173, the terminators are present on the board, are active and are either enabled or disabled by means of the DPT Configuration Utility, for each of the channels on the controller. The default value is "SCSI Termination Enabled" for all channels and must not be changed since connection to internal peripherals and to the PEM cannot be made on the same channel.
- The system first HDU is always terminated internally (at the factory) by means of a resistor pack.
- All other SCSI HDUs and removable peripherals that are internally connected to the same channel of the first HDU are never terminated. During installation check that all the internal terminators present on the drives are removed.
- For any internal SCSI peripherals that are not connected to the same channel of the first HDU, termination must be made on the last peripheral of the SCSI channel and internally on the drive.
- On the SCSI peripherals that are externally connected to the system, excluding the PEM, termination must be made internally and directly on the peripheral (see the documentation provided with the peripheral for the location of this termination).
- On the external PEM, termination is always made on the two swap boards of the two channels and cannot be removed.

CABLING OF PERIPHERALS

The onboard floppy controller allows the management of up to two floppy interface peripherals. Only the 3.5" 1.44 MB FDU is installed on these systems, and is always present. The interface cable consists of a dual-connector flat cable, one end of which is connected to the onboard connector J11 and the other end to the 1.44 MB FDU.

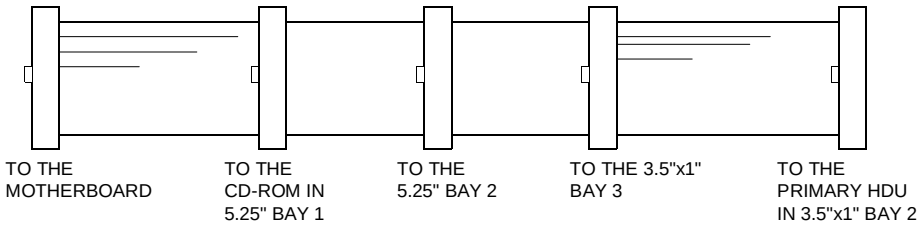


As far as the connection to SCSI peripherals is concerned, the SCSI cables differ depending on the system.

Internal SCSI Cable for the SNX 140/S Systema

On the SNX 140/S, the onboard SCSI controller provides an 8-bit single-ended Narrow channel that allows the connection of SCSI Narrow peripherals only. A SCSI Narrow cable with five 50-pin connectors is used and is present in every configuration. This cable can therefore connect up to four internal SCSI peripherals (maximum configuration).

One end of the SCSI cable is connected to onboard connector J9 while the last connector, the one at the end of the cable, must be connected to the first HDU installed in 3.5"x1" bay 2 and already terminated at the factory, the second connector from the motherboard is connected to the CD-ROM drive which is always present, while the two ramaining connectors are used to connect any peripheral installed in the two free bays remaining.

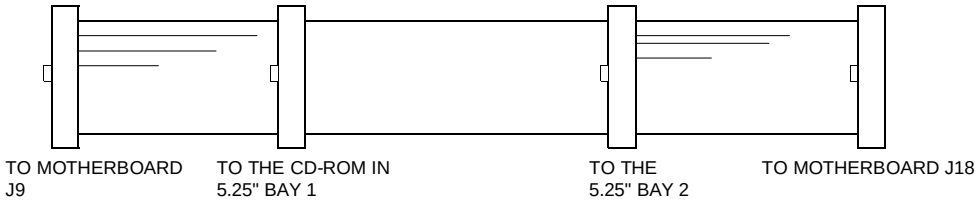


Internal SCSI Cables for the SNX 160/S Systema

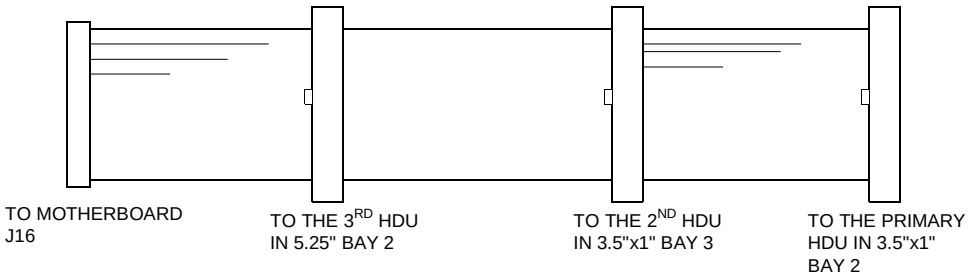
On the SNX 160/S, the onboard SCSI controller provides a 16-bit single-ended Wide SCSI channel that allows the connection of SCSI Wide HDUs and SCSI Narrow removable peripherals. Two SCSI cables, present in every configuration, are therefore used:

- One SCSI Narrow cable with four 50-pin connectors that allows the connection of up to two internal removable SCSI peripherals (maximum configuration). One end of this cable is connected to output connector J9 on the motherboard while the last connector, the one at the end of the cable, is the return connector which must always be connected to input connector J18 on the motherboard; the two connectors in between are used to connect the removable peripherals installed in the two 5.25" bays.

Warning: *The SCSI Narrow cable must always be connected to J9 and J18 on the motherboard even if there are no removable peripherals installed. This is to ensure the continuity of the SCSI channel.*



- One SCSI Wide cable with four 68-pin connectors that allows the connection of up to three internal SCSI Wide HDUs (maximum configuration). One end of this cable has a high density connector that is attached to connector J16 on the motherboard, while the last connector, the one at the end of the cable, must be connected to the first HDU installed in 3.5"x1" bay 2 and already terminated at the factory; the two connectors in between are used to connect any SCSI Wide HDUs installed in 5.25" bay 2 and in 3.5"x1" bay 3.



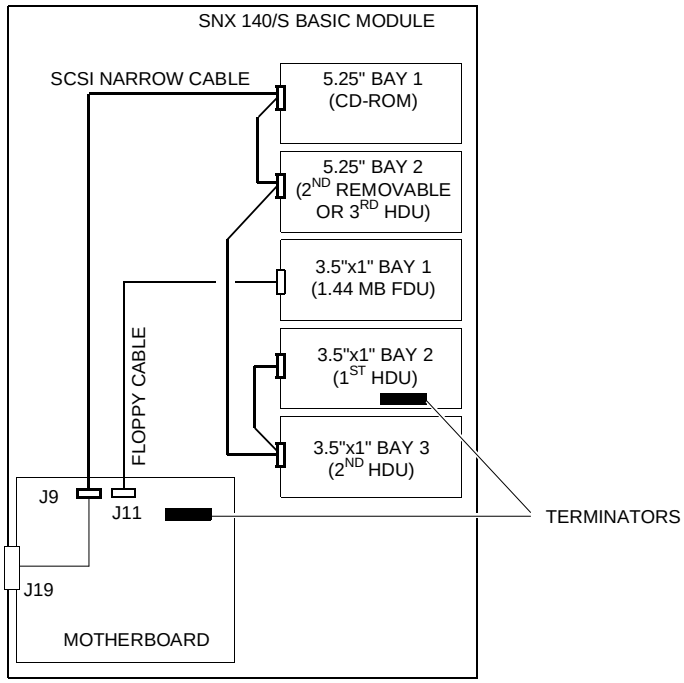
As far as the cabling of the power supply cables for internal peripherals are concerned, refer to Appendix A.

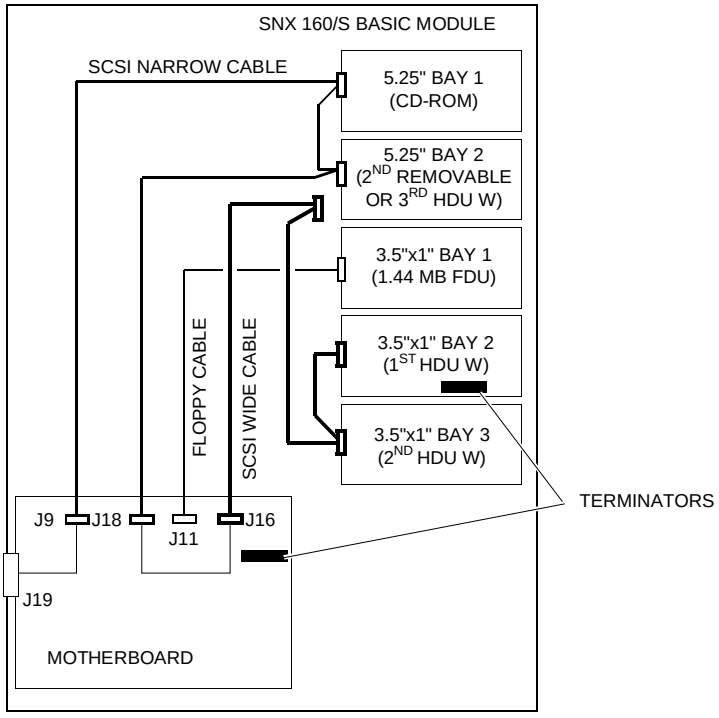
If the additional Narrow GO2124 SCSI controller is used for the connection of internal peripherals, three-connector internal SCSI Narrow cable CBLI SNX-2 must be ordered in order to be able to connect up to two SCSI Narrow peripherals.
If the additional Wide GO2109 SCSI controller is used for the connection of internal SCSI Wide HDUs, four-connector internal SCSI Wide cable CBLI SNX-W3 must be ordered so as to be able to connect up to three SCSI Narrow HDUs. If the GO2109 controller is used for connecting internal removable peripherals, internal SCSI Narrow cable CBLI SNX-2 must be ordered.
Any external SCSI peripheral, PEM excluded, is connected to the external high density SCSI-2 Narrow connector of the onboard SCSI controller or additional GO2124, GO2109, on the rear of the system, by means of SCSI cable CBL 5365. The additional peripherals are daisy-chained; the maximum length of six meters for the SCSI channel must be respected.
The PEM connects to the external high density SCSI Wide connector of the optional Wide/Ultra Wide RAID DPT controller, on the rear of the system, by means of the SCSI Wide cable CBL 5350W.

SCSI CABLES

PDG	VAR.	DESCRIPTION	LENGTH (m)
CBL 5365		External SCSI Narrow cable for adapting the 50-pin high density SCSI Narrow connectors to 50-pin low density SCSI Narrow connectors. This cable is used for connecting external SCSI Narrow peripherals to the system.	1.5
CBL 5350W	CAV 232	External SCSI Wide cable for connecting the system basic module to the first or second PEM Wide. This cable has two 68-pin high density SCSI Wide connectors.	1.1
	CAV 265	External SCSI Wide cable for connecting the system basic module to the third or fourth PEM Wide. This cable has two 68-pin high density SCSI Wide connectors. It is not used on these systems since connection can be made to only one PEM.	1.5
CBLI SNX-2		Internal SCSI Narrow connector for connecting up to two SCSI Narrow magnetic peripherals. This cable is only used for internal connections to the additional PCI GO2124 or GO2109 controllers.	
CBLI SNX-W3		Internal SCSI Wide cable for the connection of up to three SCSI Wide hard disks. This cable is only used in the case of internal connections with the additional PCI GO2109 SCSI controller.	

The following figures show the internal cabling of the magnetic peripherals on the SNX 140/S and SNX 160/S with only the SCSI controller integrated on the motherboard.

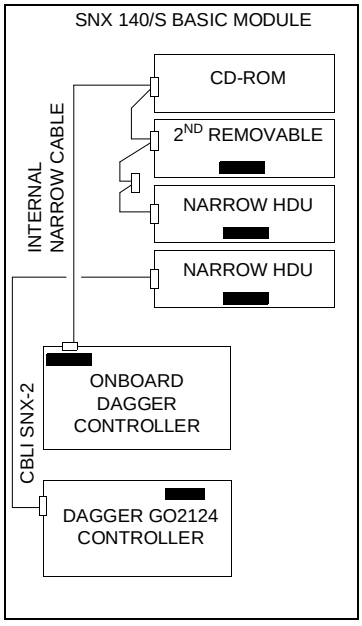

SNX 140/S BASIC MODULE
SCSI NARROW CABLE
5.25" BAY 1
(CD-ROM)
5.25" BAY 2
(2ND REMOVABLE
OR 3RD HDU)
3.5"x1" BAY 1
(1.44 MB FDU)
3.5"x1" BAY 2
(1ST HDU)
3.5"x1" BAY 3
(2ND HDU)
FLOPPY CABLE
J9
J11
TERMINATORS
J19
MOTHERBOARD

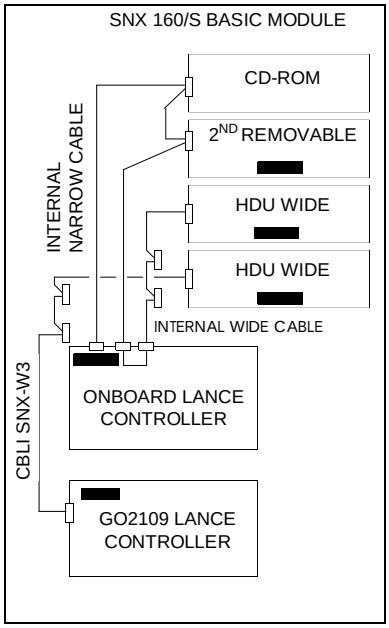

SNX 160/S BASIC MODULE
SCSI NARROW CABLE
5.25" BAY 1
(CD-ROM)
5.25" BAY 2
(2ND REMOVABLE
OR 3RD HDU W)
3.5"x1" BAY 1
(1.44 MB FDU)
3.5"x1" BAY 2
(1ST HDU W)
3.5"x1" BAY 3
(2ND HDU W)
FLOPPY CABLE
SCSI WIDE CABLE
TERMINATORS
J9
J18
J11
J16
J19
MOTHERBOARD

DISK DUPLEXING

Disk duplexing offers the possibility of connecting two separate SCSI controllers to two HDUs in order to create two mirrored HDU/controller channels.
Software support is provided by the operating system.
The necessary hardware consists of:

- Two different SCSI controllers, one of which could be the one on the motherboard. The SNX 140/S can use the onboard Dagger controller to which the Narrow HDU, removable peripherals and an additional GO2124 controller for the second Narrow HDU can be connected. The SNX 160/S can use the onboard Lance controller to which the Wide HDUs, removable peripherals and an additional GO2109 controller for the second HDU Wide canbe connected. The two SCSI controllers must be terminated and have a SCSI ID=7.
- Two SCSI hard disks (Narrow on the SNX 140/S and Wide on the SNX 160/S), each connected to its own controller and therefore to two different SCSI channels. The hard disks must be terminated and must preferably have a SCSI ID=0.
- An additional Narrow or Wide internal SCSI cable for the connection of the two SCSI channels relating to the internal peripherals. The cables are CBLI SNX-2 Narrow or CBLI SNX-W3 Wide.





K