MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB

NDBU-95C 64008366D

OPTICAL BRANCHING UNIT

Used with the applicable NDBU-95 DDCS configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

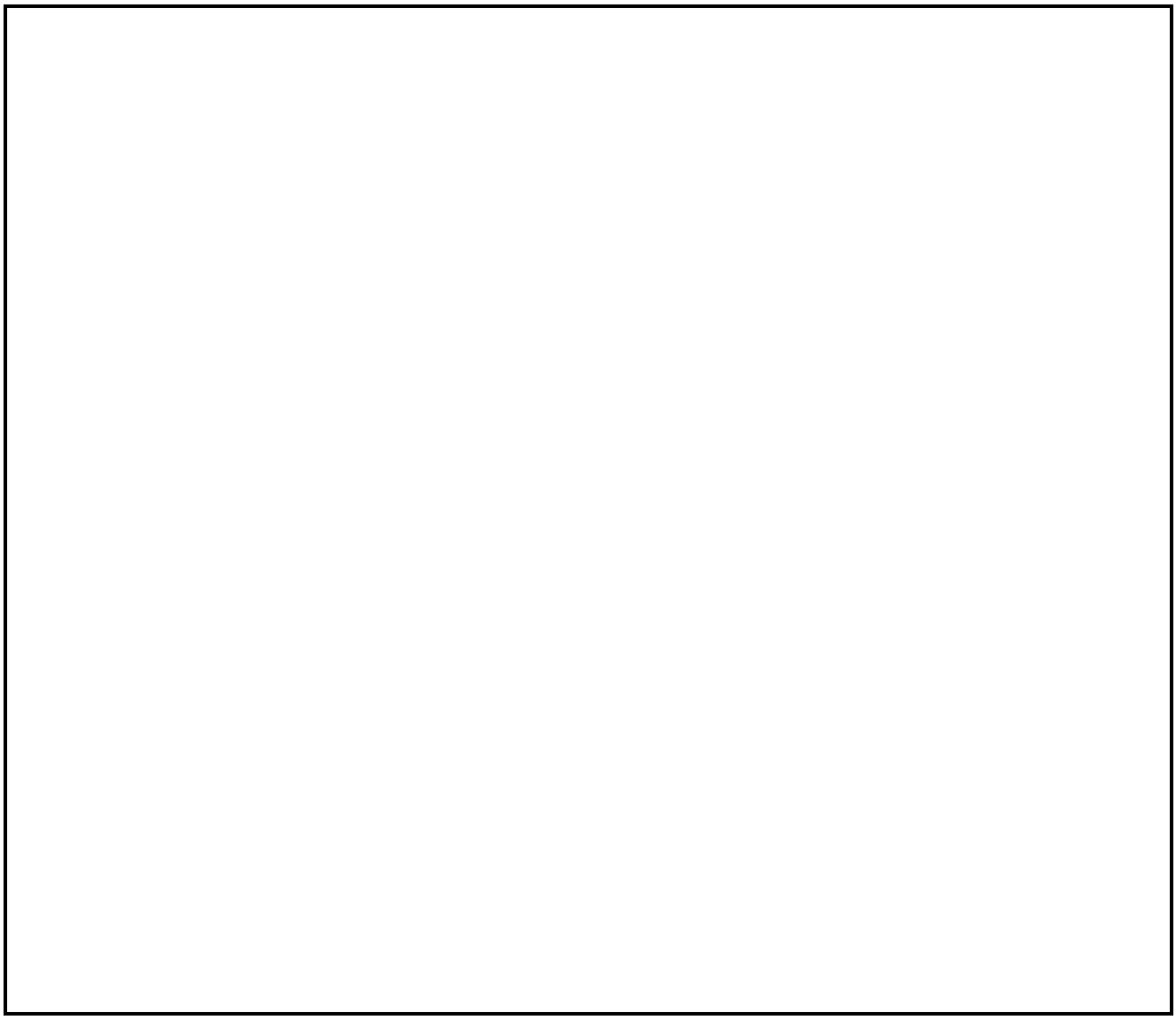
Source: ABB NDBU-95C 64008366D

DCS Thyristor Power Converters

for DC Drive Systems
25 to 5150 A

Configuration Instructions

Branching Units
NDBU-85/95
for Drive*Window*



ABB

Branching Units

Type
NDBU-85/95

for Drive*Window*

CONFIGURATION INSTRUCTIONS

Code: 3ADW 000 100 R0201 Rev B

IND/AMW: NDBU8595.DOC

EFFECTIVE: Jan. 12th, 1999
SUPERSEDES: —

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Safety Instructions

Reference to Safety Instructions

The corresponding ***Operating Instructions*** contain a chapter about safety instructions which must be complied with during installation, operation and maintenance of the power converters series **DCS 600 MultiDrive and all its components**. If these instructions are not complied with, this may result in injuries (perhaps even with fatal) or in damage to the power converter, the motor and the driven machine. Before starting with any work whatsoever at or with this unit, you must read the information given in this chapter.

Introduction

Hereinafter are given details about the use of this manual, the contents of this manual, the associated publications, the incoming inspection as well as the storage and transport.

How to use this manual

The purpose of these configuration instructions is to provide detailed information on how to configure the branching units type **NDBU-85/95** for Drive*Window* if used together with thyristor power converters from the **DCS 600** series.

Note: If it is not mentioned explicitly all details given in these Configuration Instructions will be valid for the above mentioned combination!

Contents of this manual

Safety Instructions / Introduction

Chapter 1 - Settings on NDBU-85/95 boards
It describes how to set the communication speed as well as the optical power value and how to select the operation mode on the NDBU-85/95 boards.

Chapter 2 - Address hierarchy of branching units type NDBU-85/95
It describes how to set the addresses on the branching units type NDBU-85/95 according to a certain hierarchy.

Chapter 3 - DriveWindow optical link settings
It describes how to set the link rate and the beam intensity (optical power) according to the length of the optical fibre cable between PC and the first branching unit.

Associated publications

The following documentation includes information about the branching units type **NDBU-85/95**:

Technical Data DCS Thyristor Power Converters
These Configuration Instructions

Moreover the following **DCS 600** documentation is available:

- *System Descriptions DCS 600*
- *Technical Data DCS Thyristor Power Converters*
- *Software Description DCS 600*
- *Operating Instructions DCS 600*

Incoming inspection

After opening this package, you should check whether it contains all required items.
Check the consignment for any signs of damage. If you find any, please contact the insurance company or the supplier.
Check the particulars given on the unit's rating plate to make sure prior to installation and start-up that you have received the correct unit type and unit version.

If the consignment is incomplete or contains any incorrect items, please contact the supplier.

Storage and transport

If the unit had been in storage prior to installation or is transported to another location, care must be taken to ensure that the environmental conditions are complied with *(see "System Descriptions DCS 600").*

The technical data and specifications are valid as of going to press. ABB reserves the right to make subsequent alterations.

If you have any questions concerning your drive system, please contact your local ABB agent.

Chapter 1 - Settings on NDBU-85/95 boards

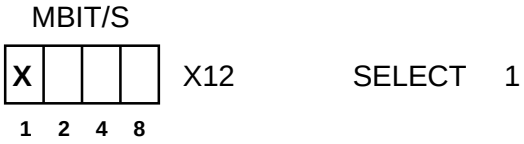
General notes

NOTE:

- **DC drives (e.g. DCS 600 products) use 10 MBd optical transmitters/receivers.**
- **ACS 600 products use 5 MBd as well as 10 MBd optical transmitters/receivers.**
- **Mechanically both types are identical i.e accept the same cable connectors.**
- **Mixing 5 MBd and 10 MBd is not possible.**
- **With 5 MBd optical components only plastic optical fibre cable (POF) can be used.**

Setting of communication speed

Drive*Window* default setting is 1 Mbit/s



Setting of optical power value

Table 1/1a: For 5 MBd optical components (NDBU 85 CH 1...CH 8), 1 Mbit/s [Can only be used for ACS 600 products!]

CABLE LENGTH			TRANSMITTER SETTING	
Description	**POF *) [m]**	**HCS **) [m]**	**Nominal [mA]**	**X2 - X11 MSTR; CH0 ... CH8**
Short	0.1 ... 5	—	10	SHORT
Medium	(2) 5 ... 10	—	20	MEDIUM
Long	(5) 10 ... 15	—	30	LONG
Channel not selected				**DIS**(ABLED)

***)** POF = Plactic Optical Fibre

(2), (5) = Possible minimum length of cable with this setting, however reduction of **Nominal** current is recommended.

NOTE: If the channel is not used, select DISABLED!

Setting of optical power value (continued)

Table 1/1b: For 5 MBd optical components (NDBU 85 CH 1...CH 8), 2 or 4 Mbit/s [Can only be used for ACS 600 products!]

CABLE LENGTH			TRANSMITTER SETTING	
Description	**POF *) [m]**	**HCS **) [m]**	**Nominal [mA]**	**X2 - X11 MSTR; CH0 ... CH8**
Short	0.1 ... 4	—	10	SHORT
Medium	(2) 4 ... 7	—	20	MEDIUM
Long	(5) 7 ... 10	—	30	LONG
Channel not selected				**DIS**(ABLED)

***)** POF = Plactic Optical Fibre

(2), (5) = Possible minimum length of cable with this setting, however reduction of **Nominal** current is recommended.

NOTE: If the channel is not used, select DISABLED!

Table 1/1c: For 10 MBd optical components (NDBU 95 + NDBU 85 MSTR and CH0), 50 mA max

CABLE LENGTH			TRANSMITTER SETTING	
Description	**POF *) [m]**	**HCS **) [m]**	**Nominal [mA]**	**X2 - X11 MSTR; CH0 ... CH8**
Short	0.1 ... 20	0.1 ... 50	30	SHORT
Medium	(0.1) 10 ... 25	(0.1) 50 ... 100	40	MEDIUM
Long	(0.1) 15 ... 30	(0.1) 100 ... 200	50	LONG
Channel not selected				**DIS**(ABLED)

***)** POF = Plactic Optical Fibre
****)** HCS = Hard Clad Silica

(0.1) **=** Possible minimum length of cable with this setting, however reduction of **Nominal** current is recommended.

NOTE: The SDCS-AMC-DC board (used in DCS 600) has a maximum current of 30 mA!
NOTE: If the channel is not used, select DISABLED!

Setting of optical power value (continued)

Table 1/1d: For 10 MBd optical components; Revision B (NDBU 95 + NDBU 85 MSTR and CH0), 50 mA max

CABLE LENGTH			TRANSMITTER SETTING	
Description	**POF *) [m]**	**HCS **) [m]**	**Nominal [mA]**	**X2 - X11 MSTR; CH0 ... CH8**
Short	0.1 ... 5	—	20	SHORT
Medium	(0.1) 5 ... 20	0.1 ... 50	30	MEDIUM
Long	(0.1) 15 ... 30	(0.1) 50 ... 200	50	LONG
Channel not selected				**DIS**(ABLED)

***)** POF = Plactic Optical Fibre
****)** HCS = Hard Clad Silica

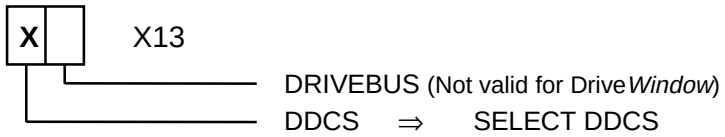
(0.1) **=** Possible minimum length of cable with this setting, however reduction of **Nominal** current is recommended.

NOTE: The SDCS-AMC-DC board (used in DCS 600) has a maximum current of 30 mA!
NOTE: If the channel is not used, select DISABLED!

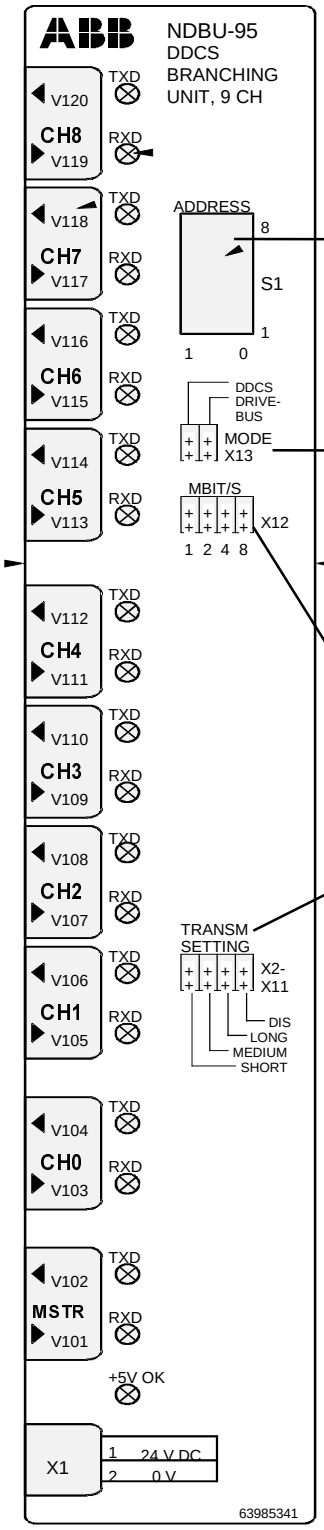
Operation mode selection

Drive*Window* uses DDCS-protocol

MODE



Layout of branching units type NDBU-95



Address settings:
See chapter 2.

Operation mode selection;
select DDCS:
See chapter 1, section “Operation mode selection”
[Only NDBU-95].

Setting of communication speed; select 1 i.e. 1 Mbit/s:
See chapter 1, section “Setting of communication speed“.

Setting of optical power value (for each channel):
See chapter 1, Table 1/1a, 1/1b and 1/1c.

Chapter 2 - Address Hierarchy of Branching Units Type NDBU-85/95

Address hierarchy

When a system is built up, the branching units addresses must be set according to a certain hierarchy. Principal is that the closest branching unit to PC must always have biggest address number. (The addresses are set by dip switch S1 located on the branching units type NDBU-85/95; see chapter 1, section “Layout of branching units type NDBU-95”).

Available addresses

Table 2/1: Available addresses

Address	Usage	Address Switch S1 ***)							
		8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
255	RESERVED	1	1	1	1	1	1	1	1
254	RESERVED	1	1	1	1	1	1	1	0
. . .	. . . . . “								
126	RESERVED	0	1	1	1	1	1	1	0
124 (125) ******)**	NDBU 1	0	1	1	1	1	1	0	0
122 (123)	NDBU 2	0	1	1	1	1	0	1	0
120 (121)	NDBU 3	0	1	1	1	1	0	0	0
118 (119)	NDBU 4	0	1	1	1	0	1	1	0
116 (117)	NDBU 5	0	1	1	1	0	1	0	0
. . .	. . . . . “								
76 (77)	NDBU 25	0	1	0	0	1	1	0	0
75	RESERVED	0	1	0	0	1	0	1	1
. . .	. . . . . “								
2	RESERVED	0	0	0	0	0	0	1	0
1	RESERVED	0	0	0	0	0	0	0	1
0	RESERVED	0	0	0	0	0	0	0	0

NOTE: **Addresses 124...76 (shaded in grey) are allowed branching unit addresses!**

NOTE: **Do not use addresses (125) ... (77) for drive addresses!**

*****)** Switch positions: 0 = OFF and 1 = ON

******)** Default address

Example: Address 76 $\Rightarrow$ Make settings with Switch **S1/8 ... S1/1**

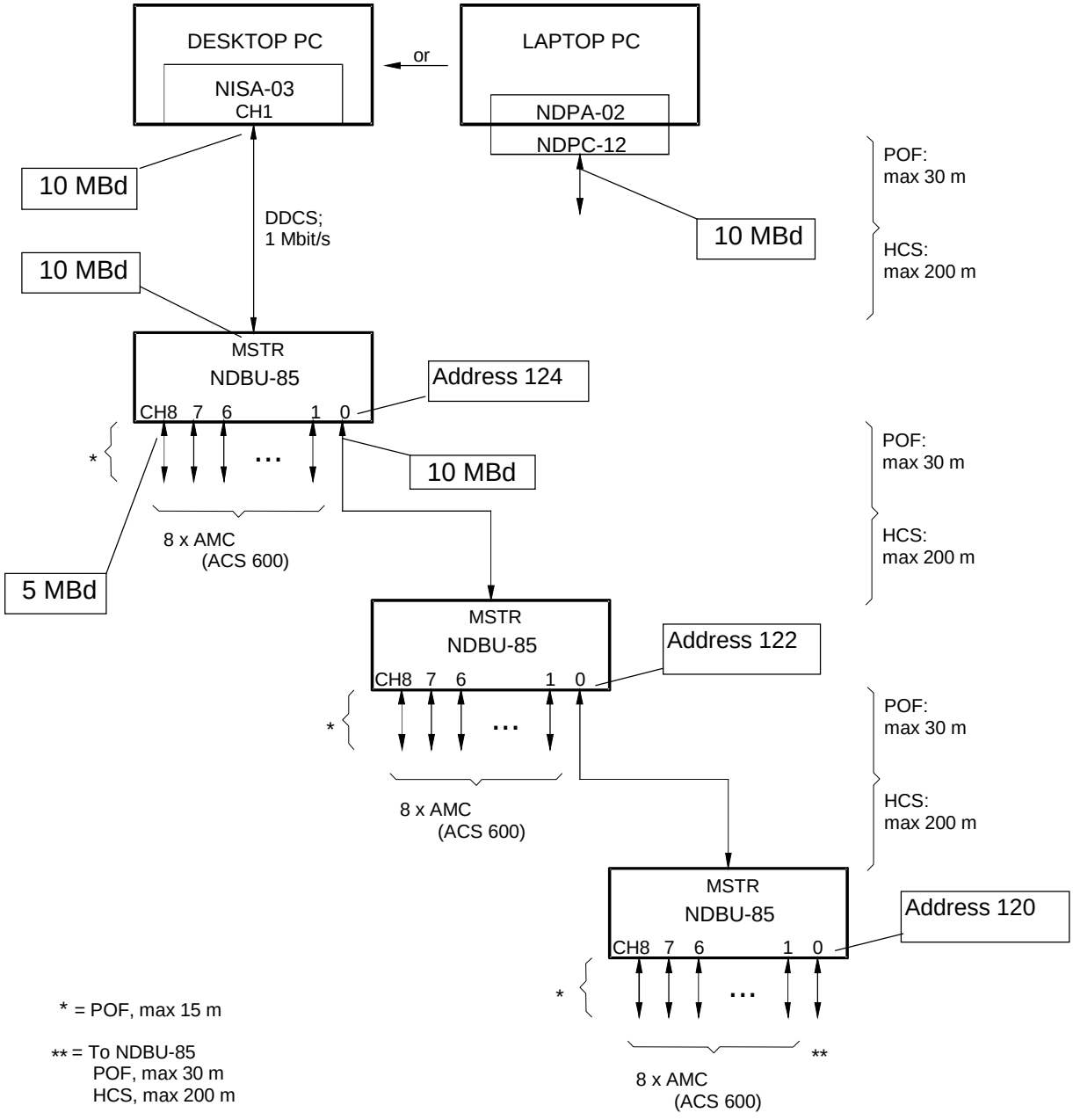
$\Rightarrow$ $\underline{0} \times 2^7 + \underline{1} \times 2^6 + \underline{0} \times 2^5 \ldots \underline{0} \times 2^0 = 76$

Type of optical components

Table 2/2: Type of optical components

UNIT	NAME	CHANNEL	5 MBd	10 MBd
NISA-03	DDCS/ISA Bus Interface	CH 0	**X**	
		CH 1		**X**
NDPC-02	DDCS/PC card cable, 5 MBd		**X**	
NDPC-12	DDCS/PC card cable, 10 MBd			**X**
NDBU-85	DDCS Branching Unit, 8+1 Ch	MSTR, CH 0		**X**
		CH 1...CH 8	**X**	
NDBU-95	DDCS Branching Unit, 9 Ch	MSTR, CH 0...CH 8		**X**

Example 2/1: Structure using a tree configuration (with NDBU-85)

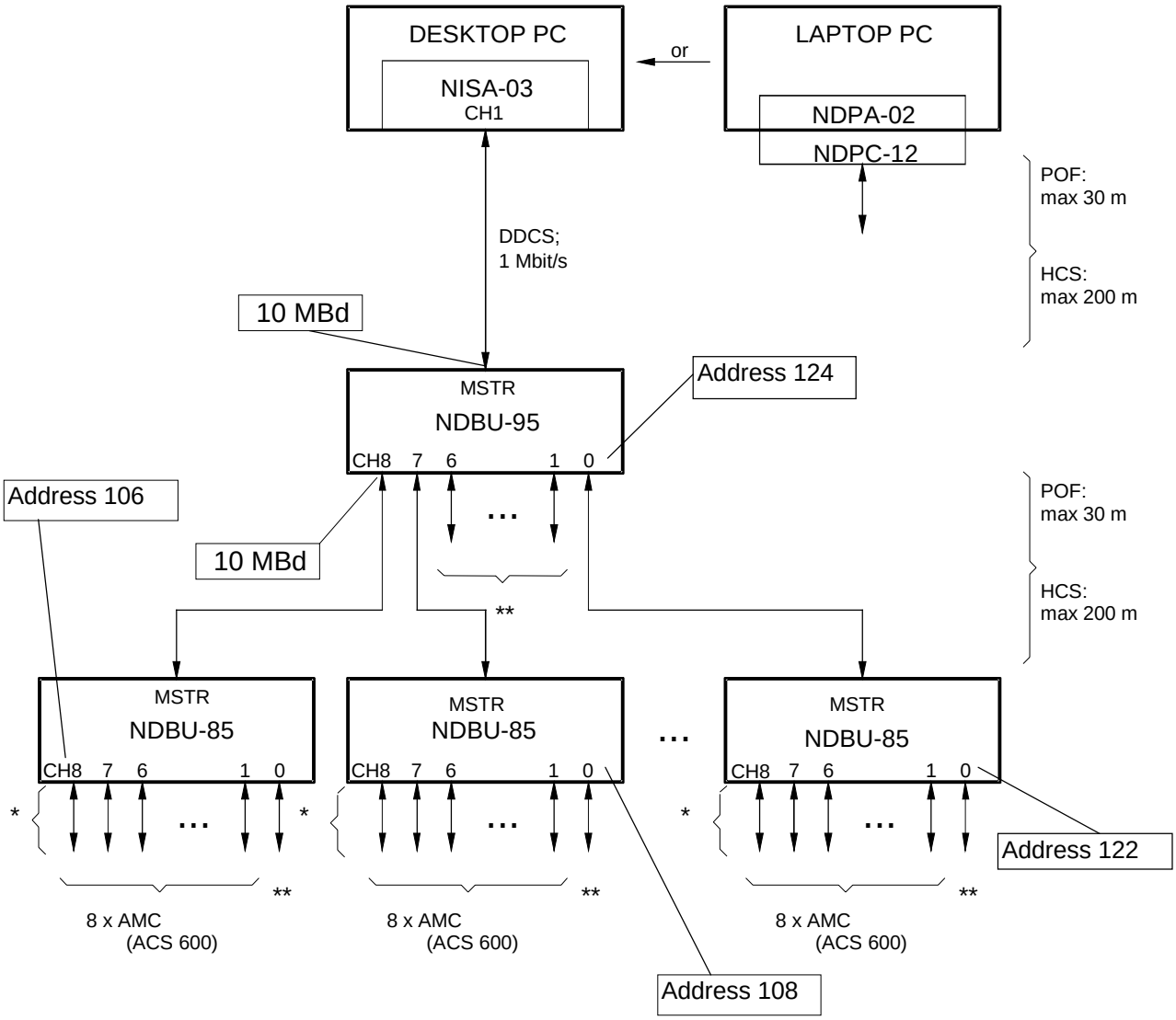


* = POF, max 15 m

** = To NDBU-85
POF, max 30 m
HCS, max 200 m

AMC	= NAMC-03 / -04 (AMC Classic) or NAMC 11 + NDCO-03 (AMC 1)
NDBU-85	= DDCS Branching Unit, 8+1 Ch
NDPA-02	= DDCS / PC Card Adapter
NDPC-12	= DDCS / PC Card Cable
NISA-03	= DDCS Interface for ISA Bus
HCS	= Hard Clad Silica Fibre
POF	= Plastic Optical Fibre

Example 2/2: Structure using a parallel configuration (with NDBU-85)

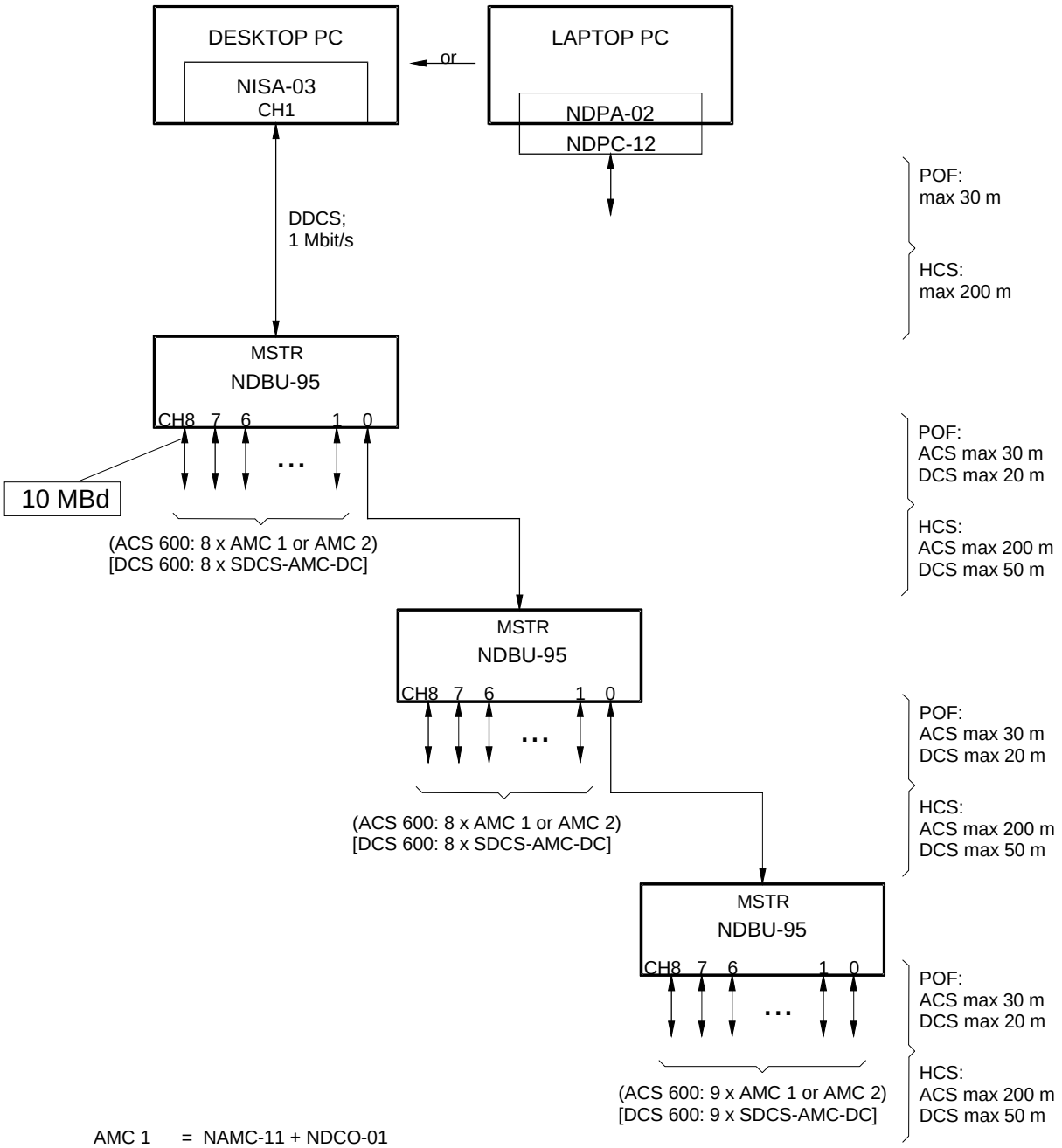


* = POF, max 15 m

** = To NDBU-85 / 95
POF, max 30 m
HCS, max 200 m

AMC = NAMC-03 / -04 (AMC Classic)
or NAMC 11 + NDCO-03 (AMC 1)
NDBU-95 = DDCS Branching Unit, 9 Ch
NDBU-85 = DDCS Branching Unit, 8+1 Ch
NDPA-02 = DDCS / PC Card Adapter
NDPC-12 = DDCS / PC Card Cable
NISA-03 = DDCS Interface for ISA Bus
HCS = Hard Clad Silica Fibre
POF = Plastic Optical Fibre

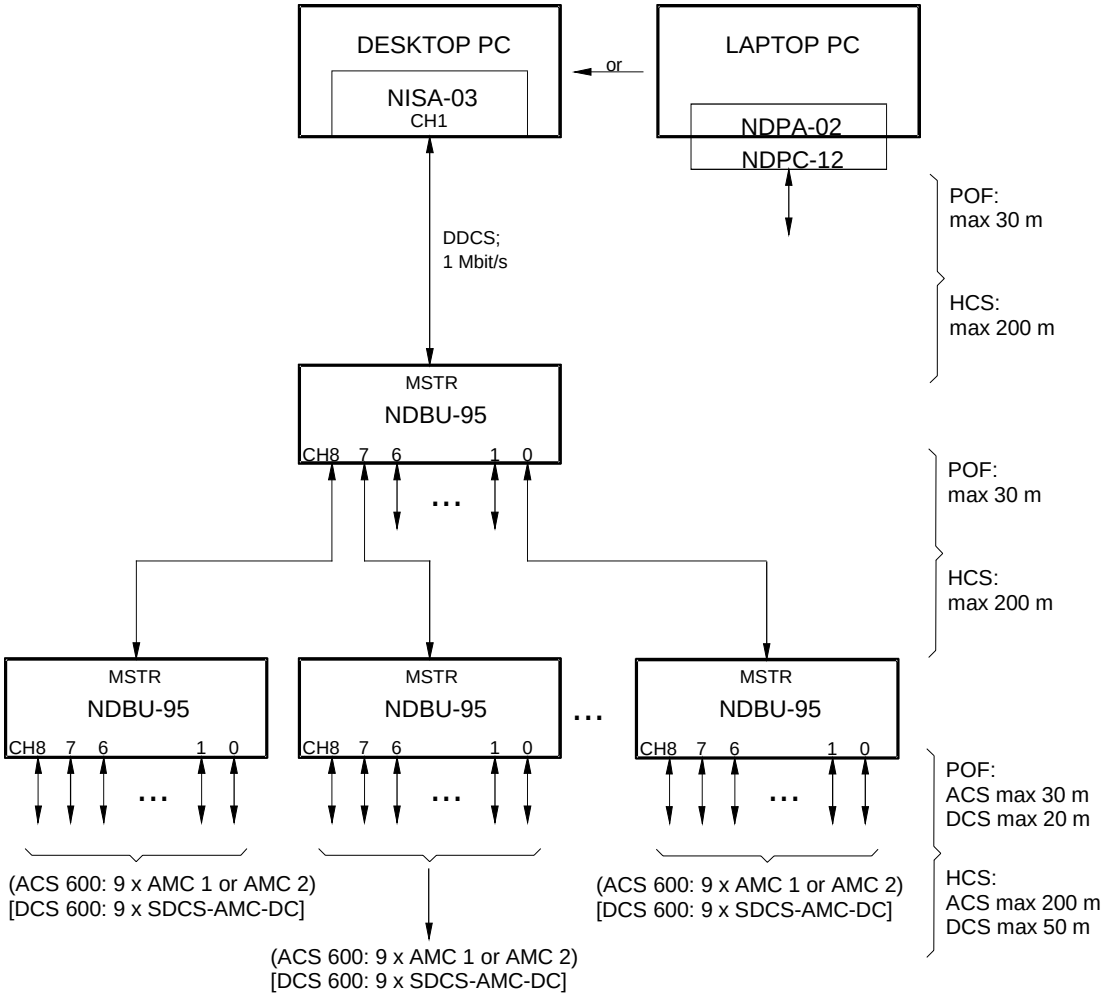
Example 2/3: Structure using a tree configuration (with NDBU-95)



AMC 1 = NAMC-11 + NDCO-01
AMC 2 = NAMC-21
NDBU-95 = DDCS Branching Unit, 9 Ch
NDPA-02 = DDCS / PC Card Adapter
NDPC-12 = DDCS / PC Card Cable
NISA-03 = DDCS Interface for ISA Bus
HCS = Hard Clad Silica Fibre
POF = Plastic Optical Fibre

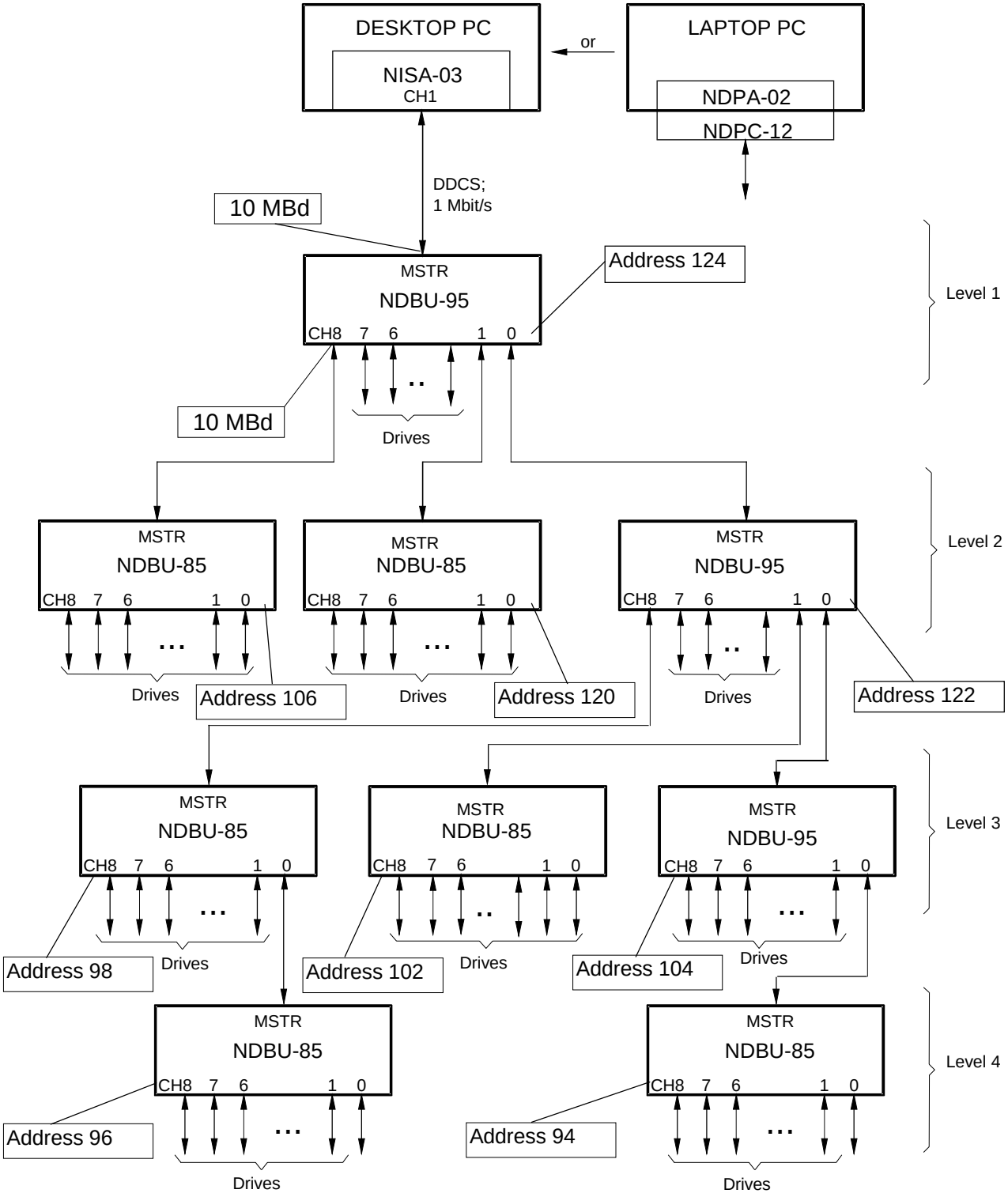
NOTE: Address numbering follows same principal as on examples 2/1 and 2/2!

Example 2/4: Structure using a parallel configuration (with NDBU-95)



AMC 1 = NAMC-11 + NDCO-01
AMC 2 = NAMC-21
NDBU-95 = DDCS Branching Unit, 9 Ch
NDPA-02 = DDCS / PC Card Adapter
NDPC-12 = DDCS / PC Card Cable
NISA-03 = DDCS Interface for ISA Bus
HCS = Hard Clad Silica Fibre
POF = Plastic Optical Fibre

Example 2/5: Structure using a mixed configuration (with NDBU-85 and NDBU-95)



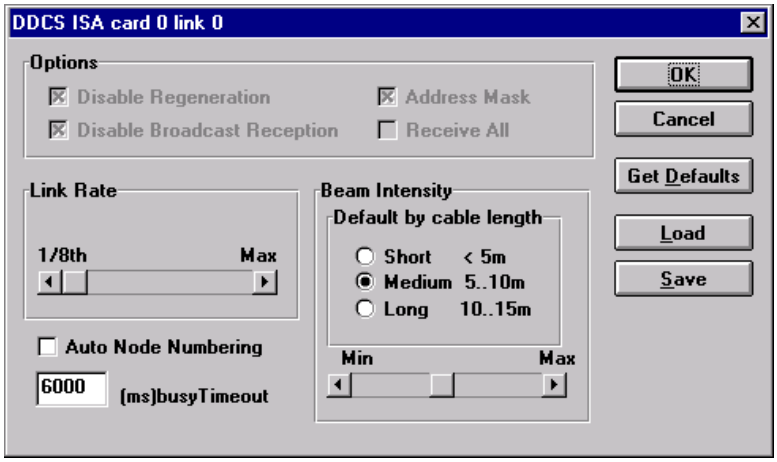
Link rate

The link rate 1/8 x 8 MBd =1 MBd is a constant value for DDCS.

Beam intensity

The beam intensity is a selectable value according to the length of the optical fibre cable and the first branching unit.

Window for optical link settings



NOTE: Default value MEDIUM is normally suitable for all cable lengths!