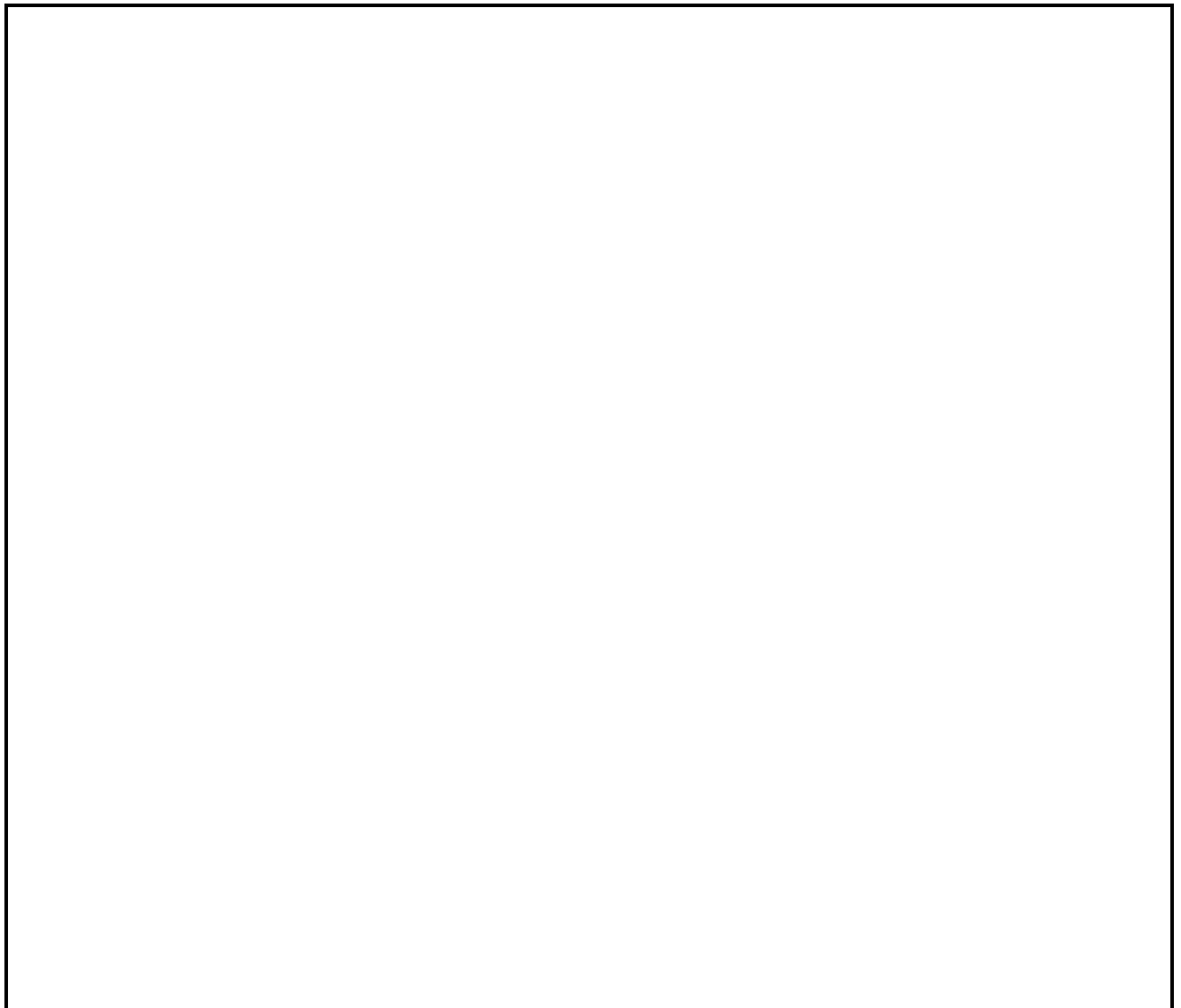


**DCS Thyristor Power Converters**  
for DC Drive Systems  
25 to 5150 A

**Configuration Instructions**

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



**Important information about this manual:**

These Configuration Instructions are based on the following application sheet (available on Lotus Notes database) which can be used for the branching units type NDBU-85/95 combined with AC drives of series ACS 600:

“Configuration Instruction  
branching units NDBU-85/95 for  
DriveWindow”  
ABB Industry Oy  
Document: BraConf  
Dep.: EIX200 - Jari Ruotsalainen  
Date: 08.06.1998 - Revision A

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: —



# Safety Instructions / Introduction

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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 DriveWindow 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.

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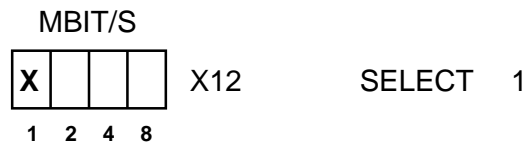
# Chapter 1 - Settings on NDBU-85/95 boards

## 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

DriveWindow 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				<b>DIS</b> (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				<b>DIS</b> (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				<b>DIS</b> (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				<b>DIS(ABLED)</b>

\*) POF = Plastic Optical Fibre

\*\*) HCS = Hard Clad Silica

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

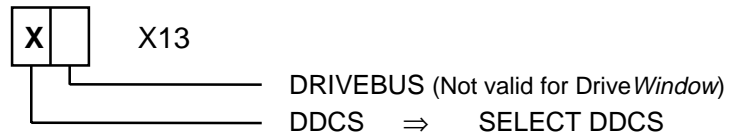
**NOTE:** The SDCS-AMC-DC board (used in DCS 600) has a maximum current of 30 mA!

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

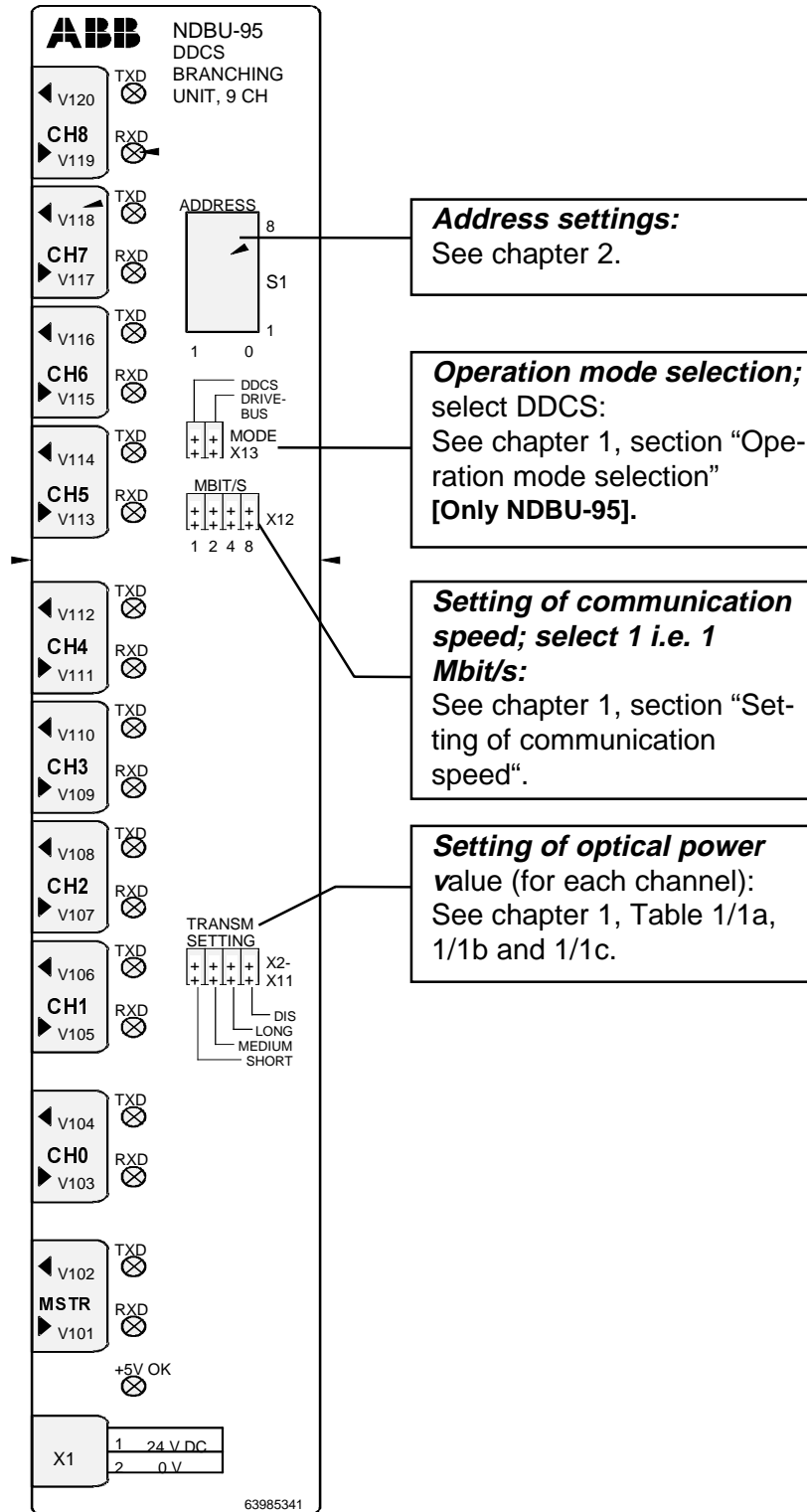
**Operation mode selection**

DriveWindow uses DDCS-protocol

**MODE**



**Layout of branching units type NDBU-95**



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

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### 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

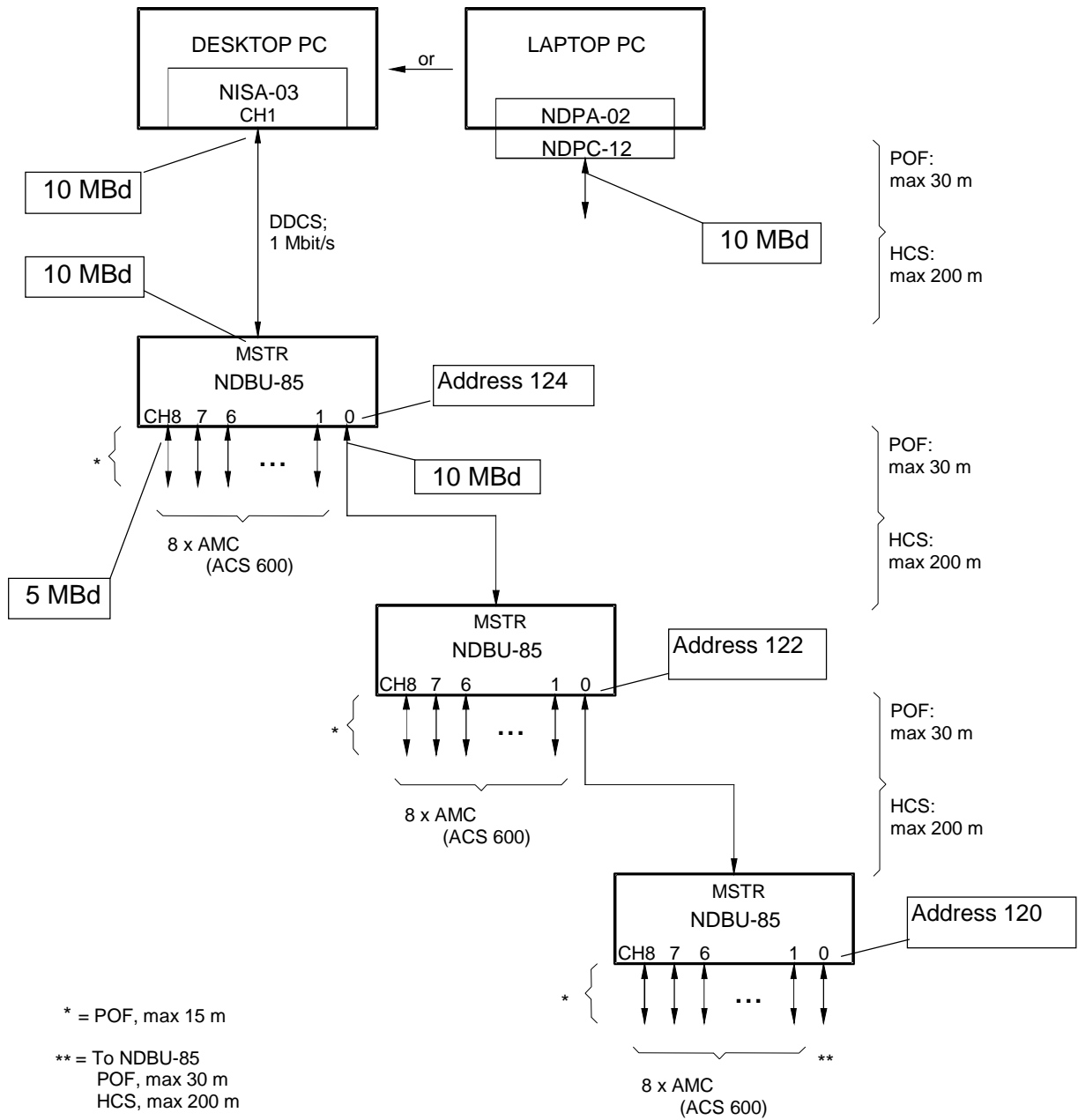
\*\*\*\*) Default address

Example: Address 76 ⇒ Make settings with Switch S1/8 ... S1/1  
 ⇒  $0 \times 2^7 + 1 \times 2^6 + 0 \times 2^5 \dots 0 \times 2^0 = 76$

**Type of optical components**      **Table 2/2: Type of optical components**

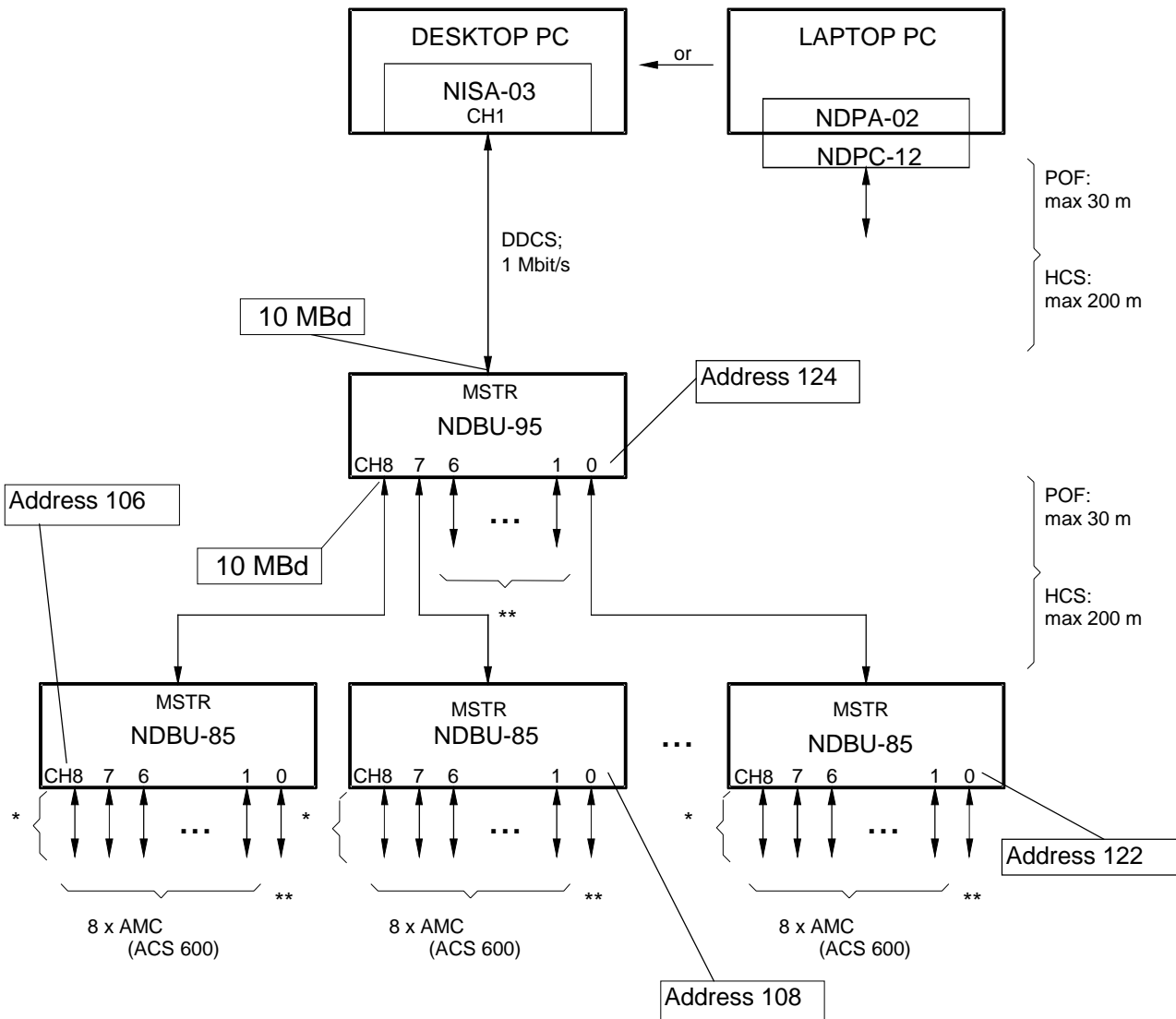
UNIT	NAME	CHANNEL	5 MBd	10 MBd
NISA-03	DDCS/ISA Bus Interface	CH 0	X	
		CH 1		X
NDPC-02	DDCS/PC card cable, 5 MBd		X	
NDPC-12	DDCS/PC card cable, 10 MBd			X
NDBU-85	DDCS Branching Unit, 8+1 Ch	MSTR, CH 0		X
		CH 1...CH 8	X	
NDBU-95	DDCS Branching Unit, 9 Ch	MSTR, CH 0...CH 8		X

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



- 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)**



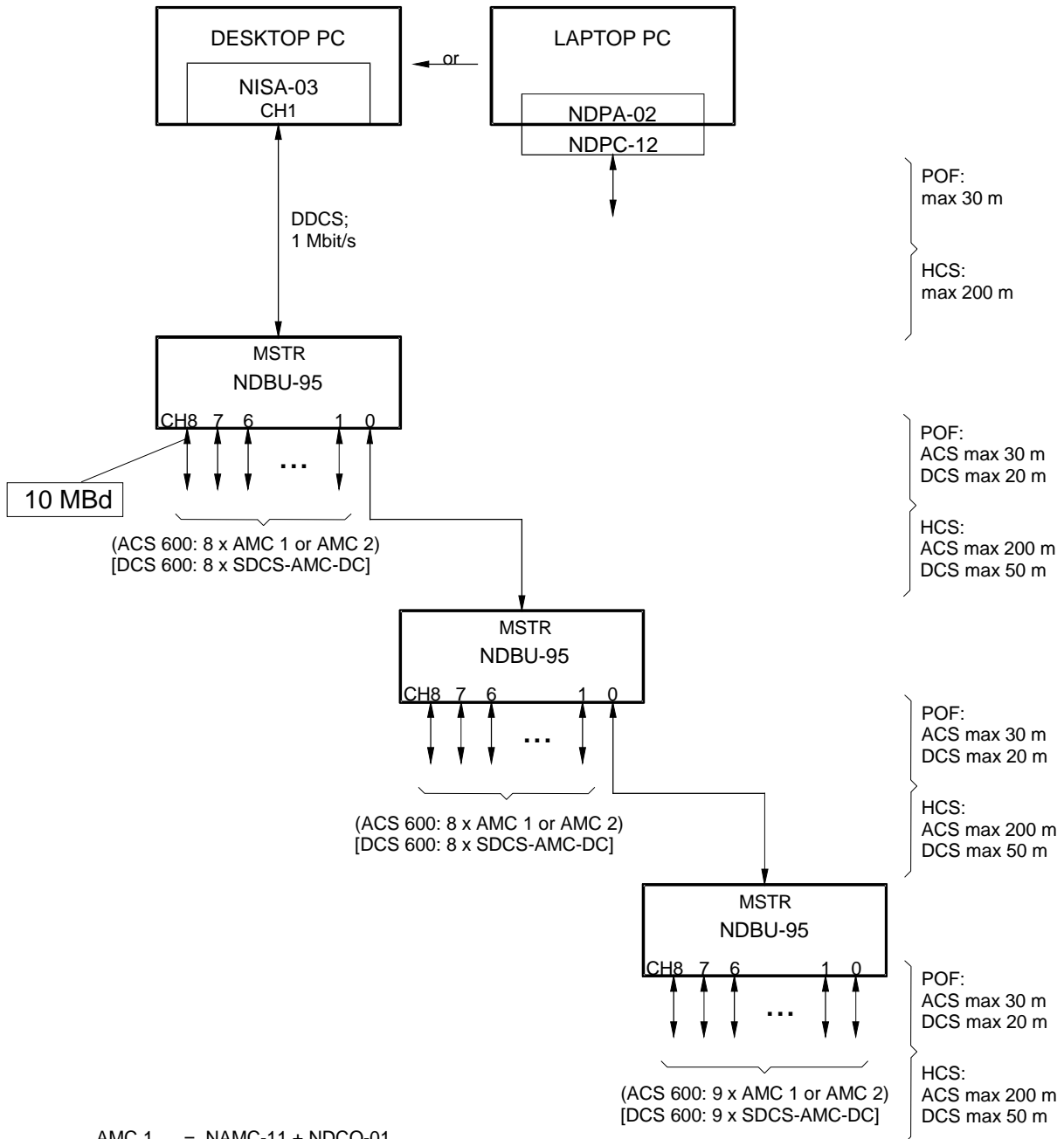
\* = POF, max 15 m

\*\* = 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



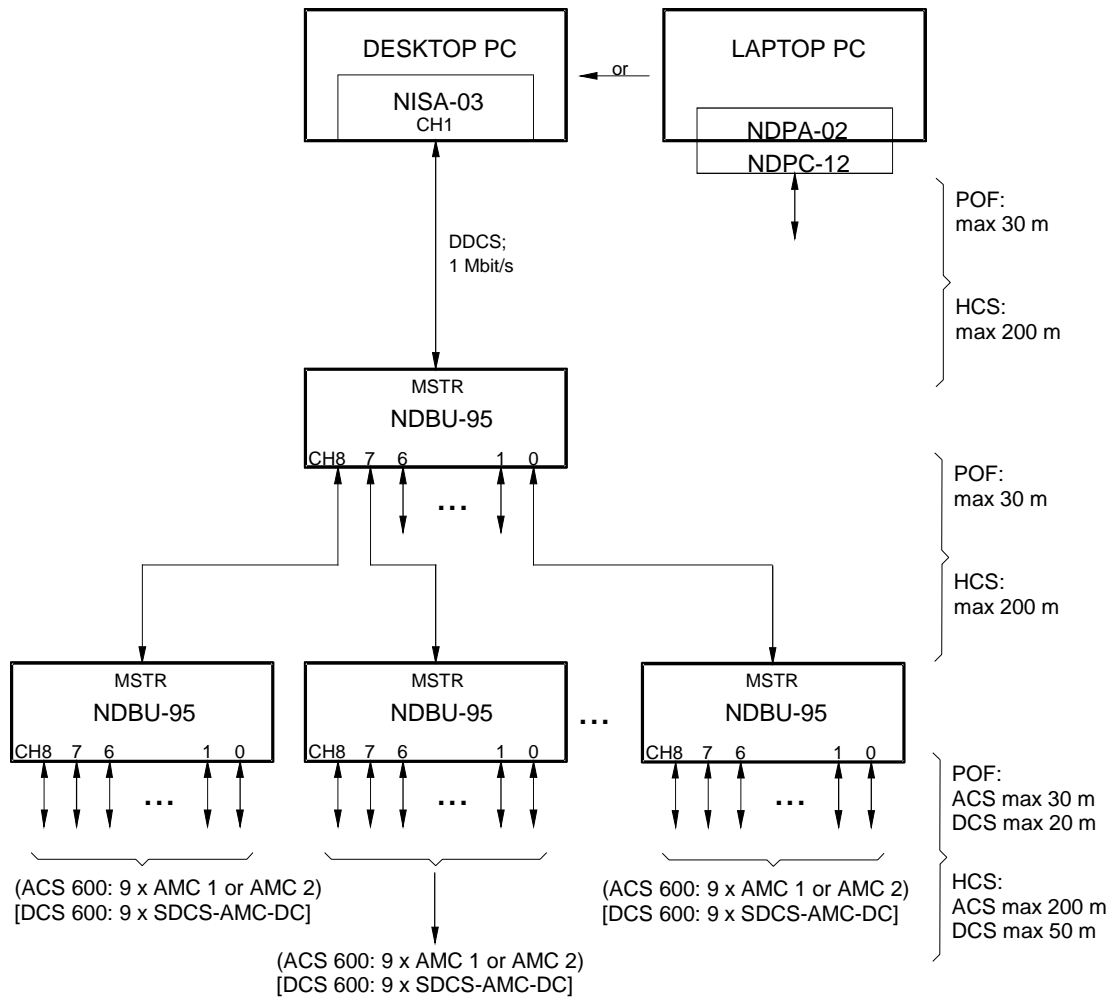
**Example 2/3: Structure using a tree configuration (with NDBU-95)**



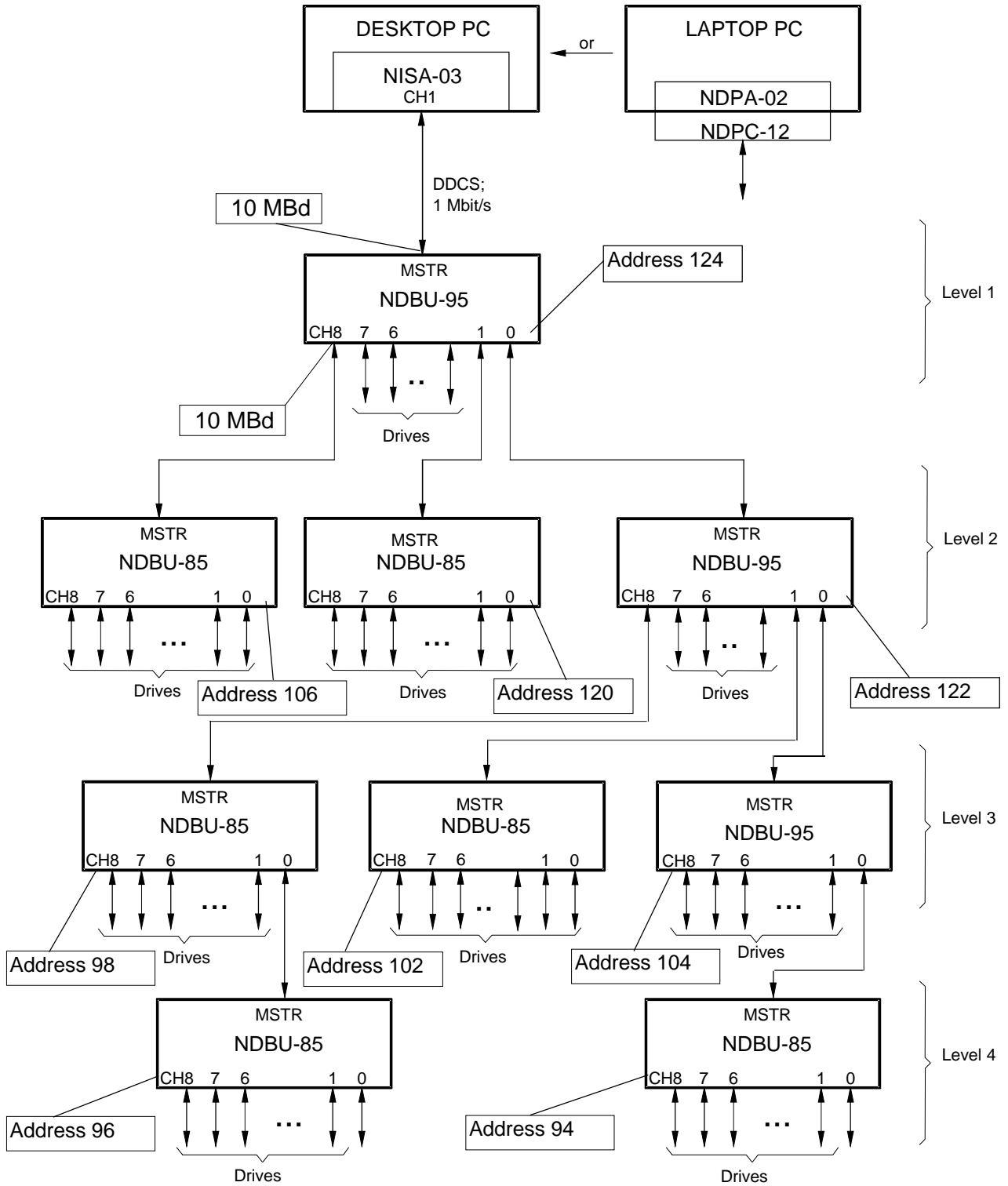
- AMC 1 = NAMC-11 + NDCO-01
- AMC 2 = NAMC-21
- NDBU-95 = DDCS Branching Unit, 9 Ch
- NDPA-02 = DDCS / PC Card Adapter
- NDPC-12 = DDCS / PC Card Cable
- NISA-03 = DDCS Interface for ISA Bus
- HCS = Hard Clad Silica Fibre
- POF = Plastic Optical Fibre

**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)**



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





## Chapter 3 - DriveWindow Optical Link Settings

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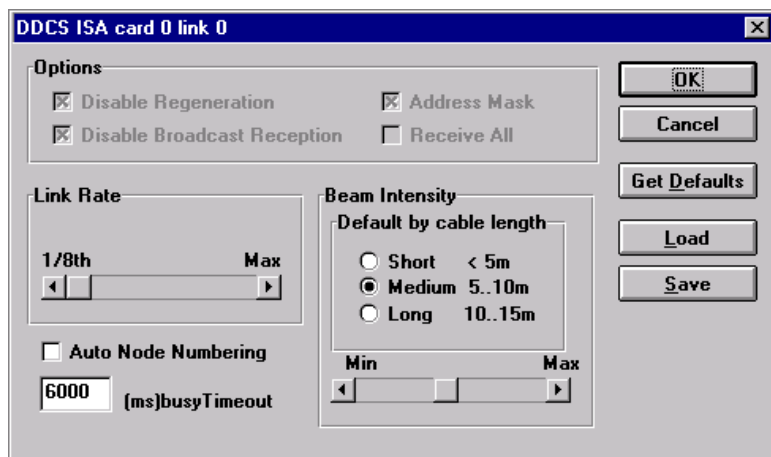
### **Link rate**

The link rate  $1/8 \times 8 \text{ MBd} = 1 \text{ MBd}$  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!







Ident. Nr.: 3ADW 000 100 R0201 REV B  
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