

**PROGDEV.EXE V2.0**stage accompany Release date: 01-10-90

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## 9 PROGDEV.EXE V2.0

### 9.1 Introduction

The PPA 1200 amplifier, the PPE 2410 equaliser and the Blue Box are controlled by an internal microcontroller. In all devices the microcontroller is used to control operations, e.g. when the user touches a button. It's also used to watch and control the internal electronic circuits, e.g. check signals against limits, drive digital to analog converters and activate relays. And last but not least it serves the SAnet interface.

Each microcontroller requires software as guiding lines. This software defines, within limits, the nature of operations of the device. In other words the behaviour of the device. The microcontroller software is and will be regularly updated. This is due to ongoing software developments to get an improved device behaviour.

Most modifications are little but for the use of Stage Control V1.0 some modifications are significant. These modifications deal with the SAnet interface. New equipment will be provided with the latest microcontroller software version available. However devices which are purchased earlier could have previous software versions.

Updating is achieved by a download program. To be able to download microcontroller software to devices, Stage Accompany released the program PROGDEV.EXE.

### 9.2 When is Updating Required?

At the time this document was written the latest normal microcontroller software versions were as follows:

Blue Box	V5.2
PPA 1200	V2.8
PPE 2410	V1.6

Read the paragraph "Microcontroller Software Versions" to determine whether an update is worth while.

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The minimum normal versions which devices must have for using Stage Control V1.0 are as follows:

PPE 2410	V1.6
PPA 1200	V2.4
Blue Box	V4.7

If devices which are about to be controlled by Stage Control have a software version lower than the listed values, an update is required.

**Important:**

Note that for the PPA 1200, a software version update cannot always be achieved by downloading only. Sometimes a printed circuit board has to be exchanged in order to get another version. This is the case when crossover frequencies need to be changed or when a horn correction is required.

Stage Accompany already produced Blue Boxes before the R&D department decided to make microcontroller software downloadable using SAnet. Before that, equipment had to be disassembled to exchange ROMs (Read Only Memory) and then be assembled again. Therefore Blue Boxes with a software version lower than V5.0 cannot be downloaded using SAnet. Their ROMs must be exchanged. The device software version of a Blue Box can be retrieved by pressing the down button and switching the < POWER ON/OFF > switch on. The display shows the current version.

So Blue Boxes with a device software version lower than V4.7 require a hardware modification to be able to be controlled by Stage Control V1.0.

**9.3 Microcontroller Software Versions**

Per device, the changes regarding the newest version are described. Lower versions and specials are described in the corresponding user manuals. A lot of updates concern SAnet service routine changes or additions. This means that a software update is not always necessary unless you are a Stage Control user.

**Blue Box**

Blue Box versions equal to or higher than V5.0 regarding to versions V4.7 / V4.8: (see next page)

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- 1) Normally, these versions are only used with Blue Boxes which contain a reprogrammable Read Only Memory (Flash EPROM).
- 2) The power amp on delay is set using steps of 2 seconds in stead of 0.1 second.
- 3) The power amp on time (in hours) can be read out by pressing the <READOUT SELECT> key while turning the <POWER ON/OFF> switch on.
- 4) Various SAnet service routines have been changed or added.

**PPA-1200**

PPA-1200 versions Vx.6 regarding to versions Vx.4:

- 1) Selection of crossover presets can be done with channel 1 as well as channel 2 <MAXIMUM POWER> keys.
- 2) The power amp on time (in hours) can be read out per channel by pressing the corresponding <INPUT GROUND> key for at least one second while holding down the <READOUT SELECT> key. The highest time of the above mentioned two times can be read out by pressing the <SAnet GROUND> key for at least one second while holding down the <READOUT SELECT> key.
- 3) Various SAnet service routines have been changed or added.

PPA-1200 versions Vx.8 regarding to versions Vx.6:

- 1) Versions V12.8 and V13.8 contain new crossover presets for the Performer series:

V12.8 presets:	4528	4528	(2 x 15 inch subwoofer)
	PERF	1-26	(Performer series)
	PERF	2-26	(Performer series)

V13.8 presets:	PERF	1-26	(Performer series)
	PERF	2-26	(Performer series)

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The PPA 1200 displays will alternately flash between above text and LO, MI or HI to indicate which cabinets have to be connected to which amplifiers.

2) Various SAnet service routines have been changed or added.

**PPE-2410**

PPE-2410 version V1.6 regarding to version V1.4:

1) The system on time (in hours) can be read out by pressing the <EQ IN/OUT> key of channel 2 while turning the <POWER ON/OFF> switch on.

2) The adjustment of the <OUTPUT LEVEL> does not interfere with an active leveller anymore. This means that you may change the <OUTPUT LEVEL> while the display is flashing without hearing irregularities.

3) The leveller now has its own lock function. While you're in leveller adjust mode, it works similar to the normal system lock.

4) Various SAnet service routines have been changed or added.

**9.4 How to start the program**

The software comes on a high density 5 1/4 inch diskette. It contains all the software you need. Now insert the disk in the diskette drive and type the following: A:PROGDEV <ENTER>. The drive will be engaged and the program starts. When your computer automatically starts Stage Control then you have to do the following: Start the computer as usual and wait for Stage Control to appear. Next exit from Stage Control and answer "n" to the shutdown program. Then you are at the DOS level and next type the following: A:PROGDEV <ENTER>.

The program will first test the SAnet board and detect the current software inside. It also displays the protocol type used. After a while a menu appears with the following entries: (see next page)

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Download Blue Box (PMS 5000)  
Download Amplifier (PPA 1200)  
Download Equaliser (PPE 2410)  
Download Network Board (SC 250A)  
Modify options  
Exit program

An item can be selected by moving the colored bar with the up and down arrow keys, the <ENTER> key confirms a selection. The following paragraphs describe the menu entries in detail.

After you selected "Exit program", PROGDEV quits and the DOS level appears again. To get into Stage Control again type SC <ENTER> or restart the computer after you removed the disk from the diskette drive.

### 9.5 Download Blue Box, PPA 1200 or PPE 2410

The download procedure is straightforward and strictly. Multiple devices of the same type can be downloaded simultaneously but only one microcontroller software file can be used at the time. Follow the instructions on the screen carefully and it will take a few minutes.

After the menu entry is selected, another window appears with a list of microcontroller software files. You can step through the list using the up and down arrow keys. The <ENTER> key selects the current file and starts the download process. With the Escape key the menu appears again. To determine which particular microcontroller software file you need is described in the paragraph "Microcontroller Software".

Once the download process is started the first instruction will be to connect all devices which must be downloaded to the SAnet interface. Or, if normally you're not making use of an existing network, connect a network to the devices you want to update. Next, all these devices must be switched on normally. Then hit a key and the computers starts searching for devices. (If you don't know how to connect a network see the paragraph "Physical Requirements".)

Now every device will be examined and its current internal microcontroller software version will be compared against the new one. Appropriate comments will be given in a

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dialogue. In this dialogue you are asked to decide to continue the update for that particular device or abort it. The selection is again made by means of the arrow keys and the <ENTER> key.

After all devices have shown their dialogue, the screen instructs to switch off all devices. Now the devices can be switched on again while pressing two particular buttons. For the Blue Box and PPA 1200 these buttons are <SYSTEM GROUND LIFT> and <SAnet GROUND LIFT>. For the PPE 2410 these are the <BAND SELECT> buttons of the center frequency ranges 20-600 Hz and 600-20000 Hz. This causes the devices to start up in <BOOT> mode (More about this in the paragraph named "Background Information". Boot mode is indicated by the text "boot" in the displays of the PPA 1200 and the PPE 2410, the Blue Box displays a "P" (Programmed) or an "E" (Empty). Besides, all devices show blinking indicators.

When the devices are all in <BOOT> mode you have to press a key on the computer keyboard. Now the current internal device software is erased. For some memory types this will take about 12 seconds. Then the download process is started. This is indicated by the running address values at the screen. Depending on the size of the software it takes about one to two minutes.

After the download process is completed the devices are automatically reset in normal mode and the program restores their original settings. This also takes a while. The correct downloaded devices will blink. E.g. all numerical displays of the devices are flashing.

The process is now completed, press any key to return to the menu. Eventually continue with next runs for other devices or other microcontroller software. In that case make sure to disconnect already downloaded devices in order to prevent downloading with wrong versions.

At the end, be sure to store the diskette and the manual in a safe place in case you might need it in the future.

**Note:**

There are some rare situations which could appear during the download process. However they cannot be described here in detail. In these situations the computer will

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display the instructions to perform. Follow these instructions and the rare situation should be cleared. If not, contact your nearest dealer. If such situations occur the download process should be repeated.

A number one rule to avoid these situations is to not interrupt the download process until it is fully completed and to follow the instructions precisely.

### **9.6 Download SAnet Network Board (SC 250A)**

SAnet operates from the SAnet network board (SC250 A). This extension board for PCs does also have a microcontroller like the devices. It also requires software to be able to drive the network. This software and the control software inside the PC (e.g. Stage Control) communicate using a protocol in order to have contact with the devices. This communication protocol exists in two versions, called the standard and the extended protocol. Further PC software developments will be using the extended protocol.

To be able to use both protocols, PROGDEV has a provision to download software to the SAnet board. However, the current available software still uses the standard protocol software. It therefore makes no sense to download the extended protocol already. When new PC software is released also new SAnet network board software will come along.

Stage Control 1.0 uses the standard protocol software and Progdev V2.0 also uses the standard protocol software to download software to devices.

The selection procedure for microcontroller software is exactly the same for the network board as it is for devices.

### **9.7 Modify Options**

In the options menu the maximum serial number (or ID code) can be set for the three different devices. The actual value is the highest serial number which will be searched for during SAnet searches. However, the higher the number, the longer the search will take.

Note that the number only reflects to the four last digits of the serial numbers at the rear of the devices. The six first digits specify the production date.

The last option tells whether to look for PPA 1200s with a serial number less than or equal to 210. These amplifiers have problems with the SAnet search algorithm when they are in

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<BOOT> mode. When setting the option to "YES", the search is bypassed for that range. Another, much slower, method is used to find the devices. Normally, this option is necessary when there is no valid microcontroller software inside the device: "E" in display. However, this is almost never the case.

## 9.8 Configuration File STAGE.CFG

The software makes use of a configuration file. This file describes a few settings which are essential for the program. The file is editable with an ordinary ASCII editor. The next four settings are the default values for the modifications screen:

startpms	=	5000
startppa	=	5000
startppe	=	5000
nsppa	=	No

The settings startpms, startppa and startppe define the maximum serial number that is searched for, for respectively the Blue Box, the PPA 1200 and the PPE 2410. The values may vary from 100 to 65000. The nsppa setting can have the values "Yes" and "No". For this last setting see the paragraph "Modify Options".

Another setting is the directory specification for microcontroller software files:

```
dpfdir = a:\dpf
```

The current setting is the diskette in drive "A:" in subdirectory "\dpf".

There are also some text color definitions, these are convenient for selecting color or monochrome computer screens. They are also useable to set your own preferred colors. How to change these is explained in the STAGE.CFG file. An example for monochrome screen is included in the file too.

## 9.9 Background Information

To be flexible, the Stage Accompany R&D department made device software downloadable by means of SAnet. So without opening devices the device software can be put inside. When a device is switched on while pressing two specific buttons the boot software, which is fixed in ROM (Read Only Memory), starts up. This boot software is



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capable to program the application memory. This application memory holds the microcontroller device software and is non-volatile.

Once the application memory is filled with microcontroller software the boot software instructs the microcontroller to switch to this new software. There is no way the microcontroller software can switch back to the boot software. This is to avoid unwanted erasure of the software in unstable power situations.

When operation errors occur, the messages may refer to "bootmode" and "applmode". Here is meant boot mode software and the microcontroller software.

With the PROGDEV program, device software comes along. Device software is the actual code which is downloaded. So for every device (e.g. PPE 2410, PPA 1200 and Blue Box) device software is available. For some, (multiple) special versions are available.

### 9.10 Physical Requirements

It requires an ordinary IBM compatible computer (AT compatible), a SAnet board inside this computer and a SAnet cable to connect the device(s) to the computer.

If the computer is not used to run Stage Control then make sure the computer has a SAnet board inside and a SAnet network driver SANET.BIN has been installed. This can be checked in the CONFIG.SYS system configuration file. One line of the CONFIG.SYS file must read:

```
DEVICE= SANET.BIN
```

The SANET.BIN driver must be in the root directory of the harddisk. A SAnet network driver and an example CONFIG.SYS are also on the disk.

When the PC is used to run Stage Control then the configuration file is already correct and the floppy disk will work directly. In that case just follow the instructions in the paragraph "How to Start the Program".

SAnet cables exist of 2-wire coax shielded cable (twinax) and 4-pins XLR connectors. SAnet is a bidirectional multipoint communication link. Input and output indications are

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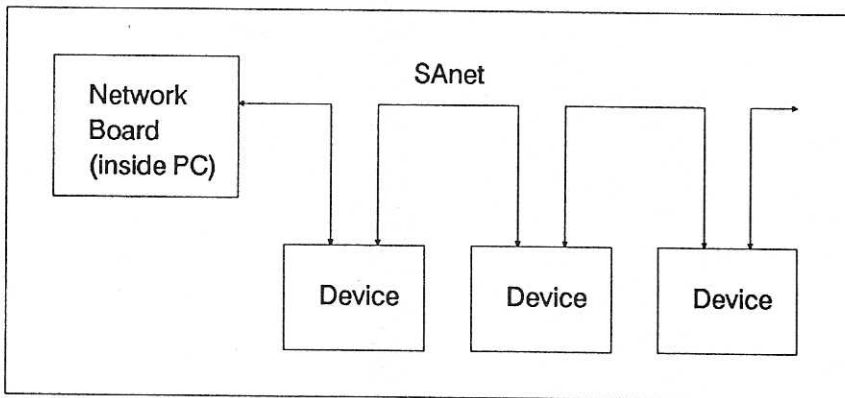
therefore more for user convenience than a real electrical requirement. The pin functions of the XLR connectors are as follows:

- pin 1 = SAnet ground (cable shield).
- pin 2 = reserved (do not connect).
- pin 3 = non-inverting SAnet connection (+).
- pin 4 = inverting SAnet connection (-).

The SAnet network board is equipped with a 9 pins sub-D connector. The pin functions of this connector are as follows:

- pin 1 = SAnet ground (cable shield).
- pin 4 = non-inverting SAnet connection (+).
- pin 5 = inverting SAnet connection (-).

When multiple devices are updated, one cable with a 9 pins sub-D connector and a male XLR connector is required and multiple cables with a male XLR and a female XLR connector are required. The network should be terminated with a termination plug, e.g. an XLR connector with a resistor of 75 Ohms between pin 3 and pin 4. How connections are made is shown in the following figure.



When no SAnet network board or cables are available contact your nearest local Stage Accompany dealer.



## Problem Report

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# 10 Problem Report

Use the two pages of this chapter to report software or hardware problems, documentation errors or suggest enhancements. Mail to:

Stage Accompany BV  
Attn. Stage Control Project Manager  
Anodeweg 4  
1627 LJ HOORN  
The Netherlands

### Problem Report

Product Error                       Documentation                       Enhancement

Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Date: \_\_\_\_\_

### Product being used

Product Name and Version: \_\_\_\_\_  
Software Key Number: \_\_\_\_\_

### Computer being used

In case of a Stage Accompany computer:  
Serial Number: \_\_\_\_\_

Other Type:  
Computer Model: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Amount of Memory: \_\_\_\_\_  
Operating System: \_\_\_\_\_ Version: \_\_\_\_\_

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## 11 Problem Report

Use the two pages of this chapter to report software or hardware problems, documentation errors or suggest enhancements. Mail to:

Stage Accompany BV  
Attn. Stage Control Project Manager  
Anodeweg 4  
1627 LJ HOORN  
The Netherlands

**Problem Report** Product Error Documentation Enhancement

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Date: \_\_\_\_\_

**Product being used**

Product Name and Version: \_\_\_\_\_

Software Key Number: \_\_\_\_\_

**Computer being used**

In case of a Stage Accompany computer:

Serial Number: \_\_\_\_\_

Other Type:

Computer Model: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Amount of Memory: \_\_\_\_\_

Operating System: \_\_\_\_\_ Version: \_\_\_\_\_

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