
Hsajet **CB**

Installation and connection manual

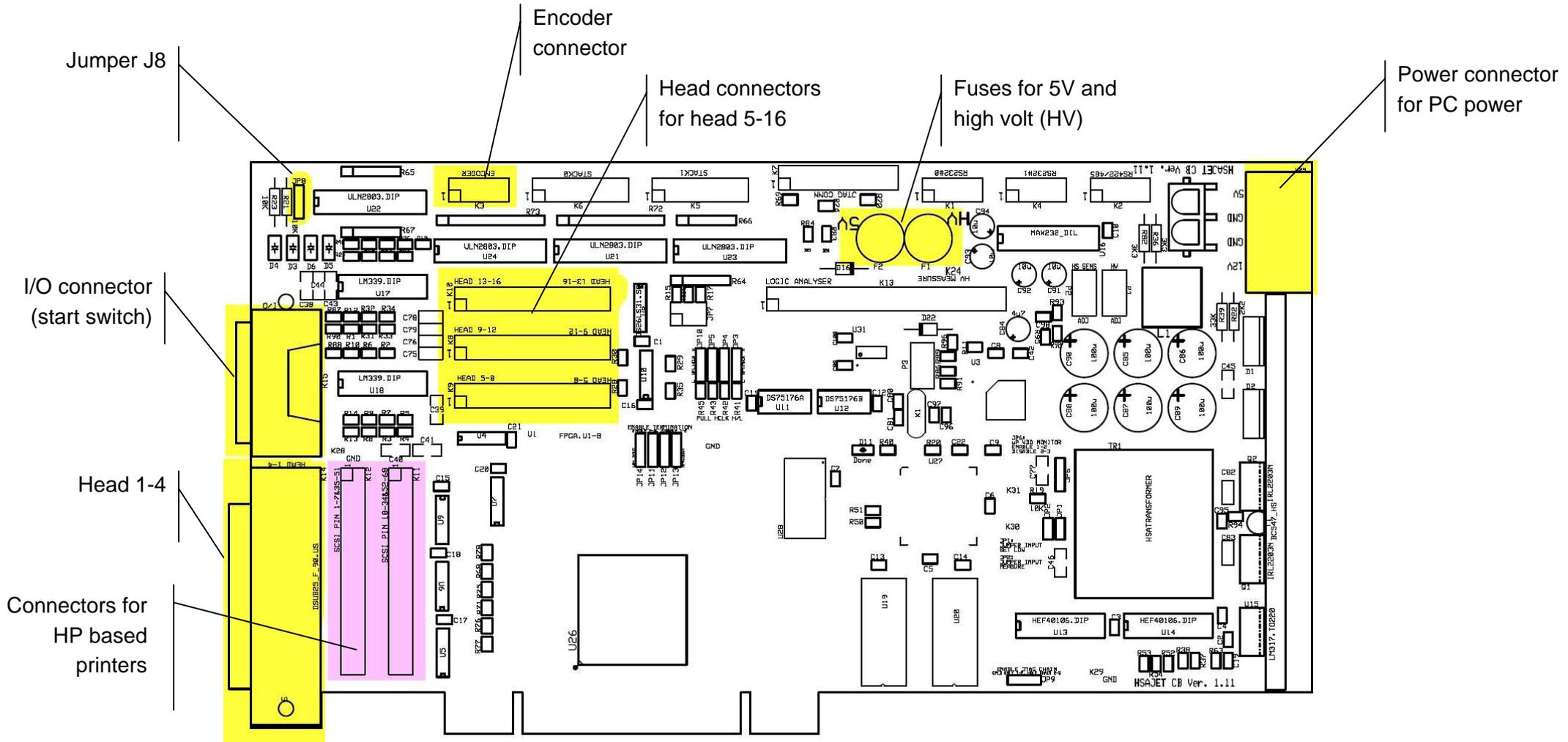
This document tells you how to install and connect the *HSAjet CB* controller board for Xaar® and HP® printing technology. It will also tell you how to install drivers and the software required to drive the controller board / printers.

Version 0,6

Last edit 01-07-04 10:07 Torben Dam Jensen

Overview of the HSAjet CB

Below is an overview of the connectors for the CB board. As there are a number of connections for measurement and configuration on the board, the parts you need to focus on have been highlighted in yellow. Each will be explained in detail below.



Differences from other previous controller boards

HSAjet CB is in many ways different from previous controller boards. The main differences are:

- PCI-based. Will fit in standard motherboards on common PCs
- No "fixed" eprom – it is possible to update the board itself through software
- More accurate identification of hardware, accessible through OBJ INKdraw.

Parts from overview drawing

Below follows a more detailed explanation of the parts from the drawing above. You will also find pinouts and jumper settings.

Warning! HS Automatic will not take responsibility for damages caused by unauthorized change of jumpers or any other hardware modification that is not specifically mentioned in this or other documentation.

Head 1-4

The main connector for signals to the printer(s). Is located in the back of the board, as a 25-pin female SUB-D – or alternatively as a 68-pin female SCSI (HP).

Through this connector you have signals for the first 70mm print height for the XaarJet engines.

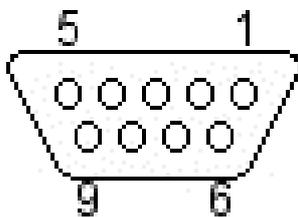
Connect a *straight* cable (1:1) 25-pin from this connector to the printer. If you have more than one printer, you can daisy-chain the printers, similarly with a straight (1:1) cable. Recommended max cable length is 5 meter.

I/O connector

Main function for this connector is to provide the start signal, to begin print. In the same connector is also an additional input as well as 2 output signals. It is located in the back of the board, as a 9-pin female SUB-D.

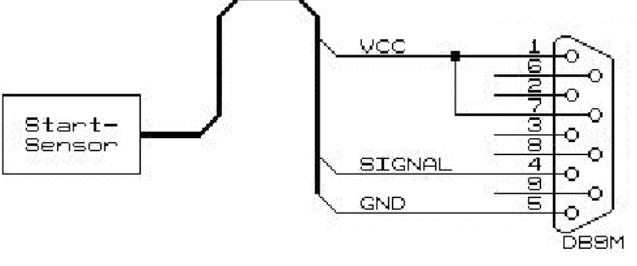
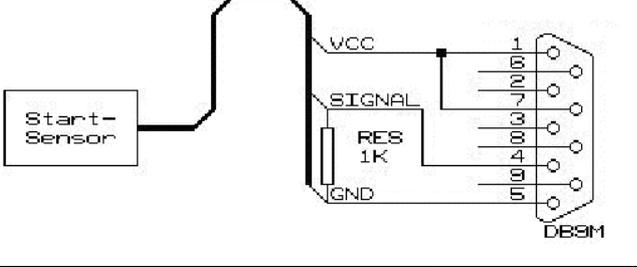
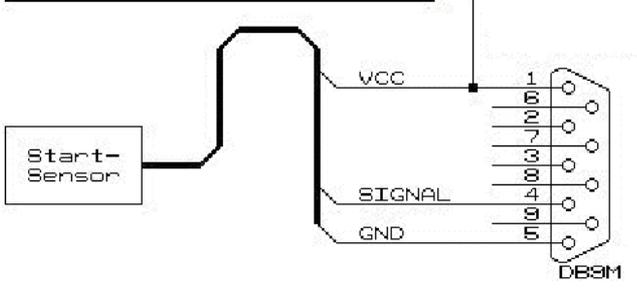
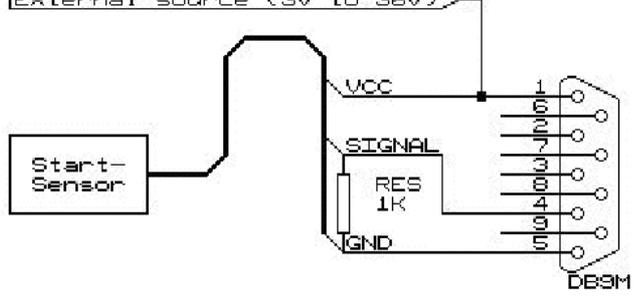
The wiring of the I/O connector is required for proper function of the print – you will not get a printout without a start signal.

You can use either a simple mechanical switch or a 5-12V photo cell for the start signal, please see wiring diagram below.



| PIN..... | MEANING |
|----------|-----------------|
| 1..... | V I/O |
| 2..... | 5 V |
| 3..... | IN 2 |
| 4..... | START |
| 5..... | GND |
| 6..... | IN 1 |
| 7..... | 12 V |
| 8..... | OUT 1 |
| 9..... | INK LOW / OUT 2 |

| | |
|--|--|
| | <p>Using a simple mechanical switch. Loop pins 1-2 and connect the switch between pins 4 and 5.</p> |
| | <p>5 Volt NPN / PUSH/PULL sensor. VCC to pins 1,2 Signal to pin 4 GND to pin 5</p> |
| | <p>5 Volt PNP sensor. VCC to pins 1,2 Signal to pin 4 GND to pin 5 1 K resistor between pin 4 and 5</p> |

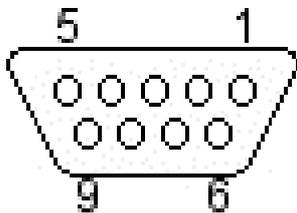
| | |
|--|--|
|  | <p>12 Volt NPN / PUSH/PULL VCC to pins 1,7 Signal to pin 4 GND to pin 5</p> |
|  | <p>12 Volt PNP sensor. VCC to pins 1,7 Signal to pin 4 GND to pin 5 1 K resistor between pin 4 and 5</p> |
| <p>External source (3V to 36V)</p>  | <p>External power source, using NPN / PUSH/PULL sensor VCC to pin 1 Signal to pin 4 GND to pin 5</p> |
| <p>External source (3V to 36V)</p>  | <p>External power source, using PNP sensor VCC to pin 1 Signal to pin 4 GND to pin 5 1K resistor between 4 and 5.</p> |

Encoder connector

This connector is where the signals for the encoder is coming in. It is located as a 10-pin connector towards the top left corner of the board. Notice that you need a cable from the 10-pin connector to a 9-pin SUB-D which connects to the encoder.

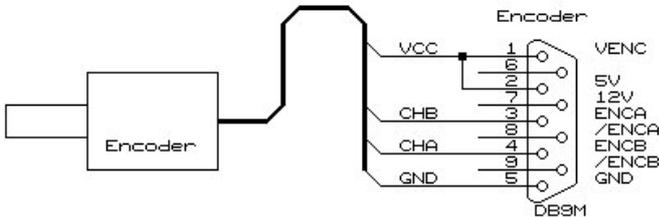
You will notice that there is a “normal” encoder input and an inverse input. Which one you use depends on your encoder. Active high use normal, active low use inverse.

Also notice that you have a low level ink signal here as well. This enables you to get this signal, even if you use OUT 2 on the I/O connector.



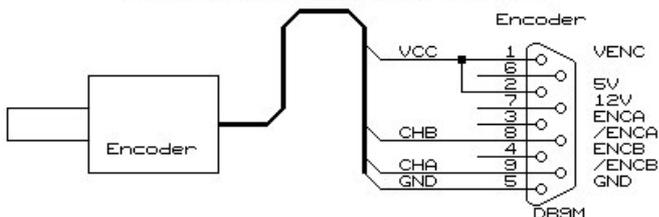
| PIN..... | MEANING |
|----------|--------------|
| 1..... | V ENC |
| 2..... | 5 V |
| 3..... | ENC A |
| 4..... | ENC B |
| 5..... | GND |
| 6..... | INK LEVEL |
| 7..... | 12 V |
| 8..... | ENC A (inv.) |
| 9..... | ENC B (inv.) |

USING DOUBLE CHANNEL NPN OR PUSH/PULL ENCODER



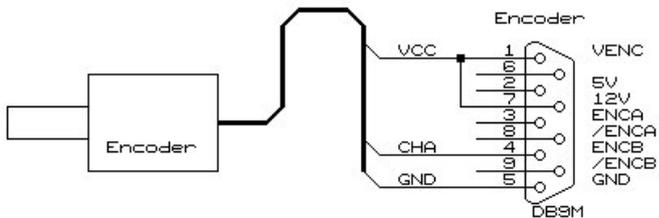
5 VOLT encoder double channel NPN / PUSH/PULL encoder

USING DOUBLE CHANNEL PNP ENCODER



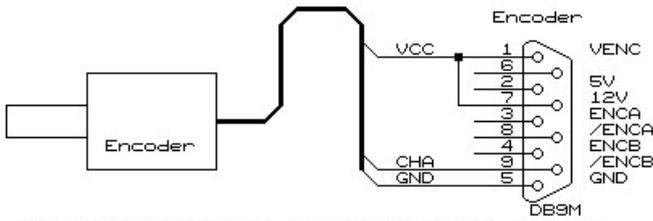
5 VOLT encoder double channel PNP encoder

USING SINGLE CHANNEL NPN OR PUSH/PULL ENCODER



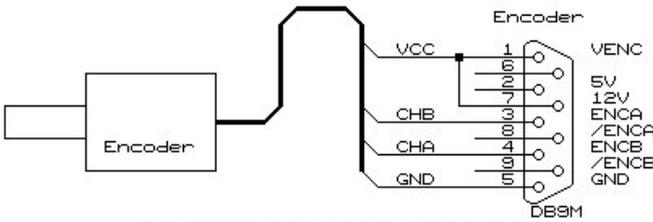
12 VOLT encoder single channel NPN/ PUSH/PULL encoder

USING SINGLE CHANNEL PNP ENCODER



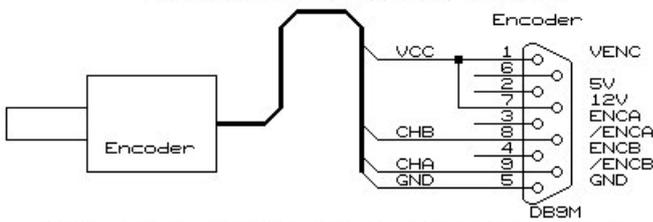
12 VOLT encoder single channel PNP encoder

USING DOUBLE CHANNEL NPN OR PUSH/PULL ENCODER



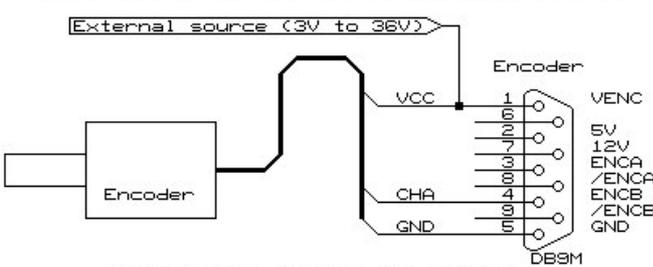
12 VOLT encoder double channel NPN / PUSH/PULL encoder

USING DOUBLE CHANNEL PNP ENCODER



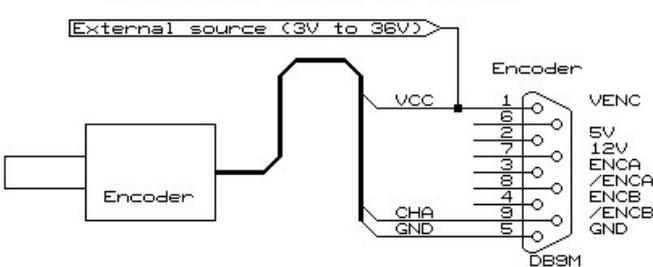
12 VOLT encoder double channel PNP encoder

USING SINGLE CHANNEL NPN OR PUSH/PULL ENCODER



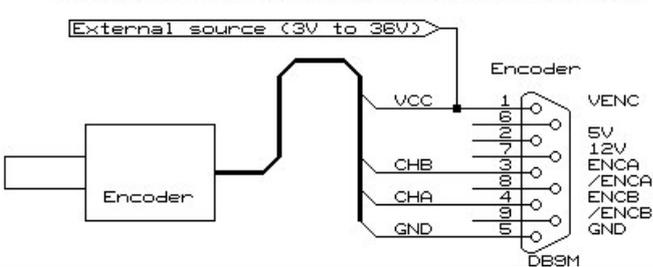
External power source encoder single channel NPN/ PUSH/PULL encoder

USING SINGLE CHANNEL PNP ENCODER



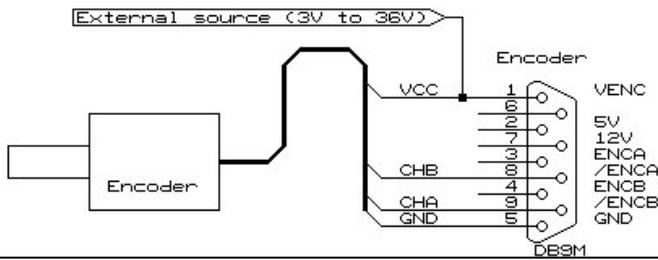
External power source encoder single channel PNP encoder

USING DOUBLE CHANNEL NPN OR PUSH/PULL ENCODER



External power source encoder double channel NPN / PUSH/PULL encoder

USING DOUBLE CHANNEL PNP ENCODER



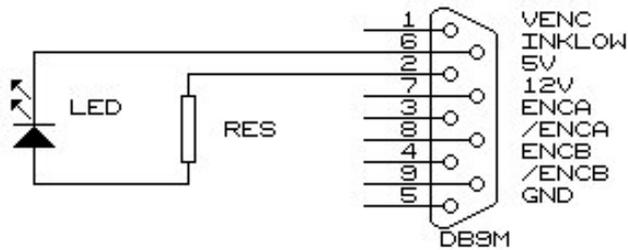
External power source encoder double channel PNP encoder

Using encoder connections for low ink level warning

As previously mentioned, you can use the encoder connector for the low ink level warning signal. Use these connections :

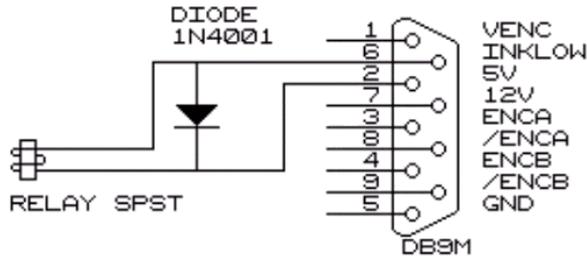
Encoder CONN K6

LED connection schematic



Encoder CONN K6

RELAY connection



Head connectors 5-16

If you are using more than 70mm total print height, you need to connect extra outputs. On the board you have access to 3 additional head connectors, as 26-pin board connectors.

The connectors are wired to a 25-pin SUB-D through a flat cable, for mounting for external access. Like the main head connector, use a straight (1:1) 25-pin cable. Recommended max length is 5 meters.

Head connectors HP

If the controller is sold for HP, you will be using these connectors instead. They are located directly behind the main “head 1-4” connector on the board, in parallel.

Power connector for PC power

As the printers are supplied with power from the controller board, it is important that you connect this to give enough current. Although there is similar voltages in the PCI connector, the current is not enough.

You need to connect a PC power connector that is *not* in parallel to hard drives or other hardware. The PC power supply should provide *at least 15A in 12V (300Watt)*.

Warning: HSA takes no responsibility for damages caused by incorrect or missing connection of the power connector.

Fuses for 5V and HV

Should the fuses, for some reason, burn you can see this in the software status window (F9 from OBJ INKdraw). There are two fuses, each of type *TR5*. (T / slow)

Notice that the fuses are different. The fuse marked “5V” is 1A. The other, marked “HV” is 4A.

Jumper J8

Through jumper J8, located in the top left corner, you can choose between two different signals in the I/O connector. The “corner” in the illustrations below indicate the corner of the board.



Low ink level

You get the signal for low ink out from I/O connector



OUT 2

You get the signals from OUT 2 through the I/O connector

INSTALLATION

Follow guide below for installing the HSAjet CB board.

Requirements

HSAjet CB installs in a normal office PC.

- Microsoft Windows 2000 or XP (**Windows 98 will *not* work**)
- Pentium processor
- 128 MB Ram
- 20 MB free harddisk space
- Internet explorer 4.01
- One free PCI slot (For CB)
- 300W Power supply (@ 4 HP stalls). You need at least 15A in 12V
- You may also need more slot spaces for the connectors, depending on your configuration..

Physical installation

Warning! Be sure to unplug the AC power supply before adding or removing expansion cards, otherwise your motherboard and/or HSAJET CB might be seriously damaged. Always ground yourself when working with expansion cards.

- Install the external connectors (mount brackets etc)
- Make sure you have set jumpers etc as you need them to be
- Install the CB into an empty PCI slot on the motherboard.
- Firmly attach the CB to the PC chassis.
- Connect the ATX power supply directly into the CB.
Notice that the connector must not be shared with hard drives, CD-ROM etc.
- Connect flat cables from external connectors. Notice direction of the red wire

Installing Drivers

To operate HSAjet CB, you need to install drivers. This enables you to “talk” to the PCI card.

Important! The CB will only work in Windows 2000 / XP



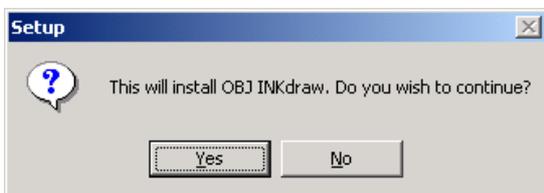
From the CD-rom supplied with the controller board, run the file

D:\driver\install.exe

Press install followed by close.

Installing software INKdraw CB

Once the driver is installed you need to install the OBJ INKdraw software to drive the printer and design the messages.



The installation file is located on the CD. Please run

D:\inkdraw\install.exe

Then press yes to install, and follow the installation program. Per default, OBJ INKdraw is installed in c:\Program Files\OBJ INKdraw. You are free to choose another directory for the installation if you wish.



When InkDraw is installed, this screen is showed.

You can run OBJ INKdraw from the shortcut that is created in the start menu

Version Checking

The HSAjet CB is regularly updated and improved. For version tracking, all boards are equipped with a version number showing the current hardware version. You can find this number on the solder side, next to the cooling plate.

FPGA, microprocessor etc

As the HSAjet CB has the possibility to change the program inside, you may also need to check the version of the software. This is done inside OBJ INKdraw.

To check version of FPGA, use the parameter menu (F9), and select the section Firmware”

You will see a screen similar to the one illustrated here.

The version numbers in the circles should follow the version number of OBJ INKdraw. The two are bundled in one “release”.

If you need to upload a new FPGA, HS Automatic will tell you how.

