

CT

Controller

Technical Manual

This document will explain about the CT Controller, and is meant to be a technical manual for people that need to install and service the machine.

Although the CT Controller is a standard PC running standard Windows XP, it is important to follow the guide about how to set up your system correctly, as incorrect settings will influence your performance.

For information about how to customize INKdraw, please see INKdraw manual.



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Hardware Installation

When you receive your CT Controller, it will come packed in a cardboard box with foam inserts. The keyboard has been removed and placed on top for shipping.

Unpacking

Carefully cut open the box that your CT Controller came in and check that the screen is intact. Also check that there is a Windows XP sticker located on the inside of the unit. Reinstall the keyboard and tray with its supplied mounting screws. Keyboard, mouse and monitor connections may have to be reconnected.

Mechanical installation

The CT Controller can be mounted using the mounting plates located on the back top and bottom of the controller. These predrilled holes line up with the channel of the 80/20 stand that is normally supplied. These mounting holes can also be used to mount the controller to a wall. The CT comes supplied with M6 bolts and t-nuts for the 80/20 stand.

Electrical installation

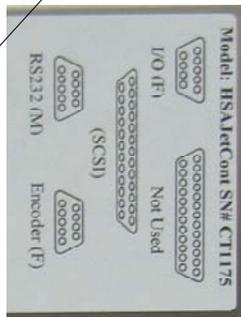
The CT Controller is a standard PC with all the standard connections. In addition to these standard connections, the CT Controller has connectors that are used for printer connections and I/O related to that.

Below is a schematic overview of where you should connect cables to the CT Controller. Pinouts for the I/O connectors are found in the back of this guide. The CT controller can be configured different ways depending on the configuration that you would need. Below is an example of a couple ways this can be done. Please follow the connection template located at the bottom of the controller. This connection template would have been made to match the configuration layout specific to the needs of your system.

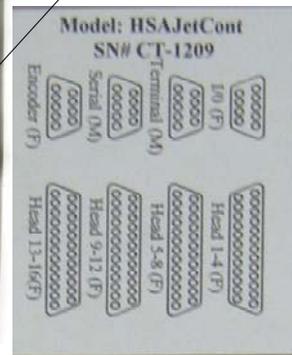
Pictures of the CT controller.



Typical HP 3-pen and 4-pen configuration



Typical HP 1-pen, 2-pen and Xaar configuration





Capability of the CT Controller

On the CT Controller you can have up to two CB cards (with additional external power supplies three CB cards can be installed). Each CB card allows you to connect the following equipment:

HP printers

Up to 4 pens per CB card. For each CB card This can be as one of the following configurations:

On SUB-D Connectors

- 1 .. 4 single pens
- 2 + 2 pens

On SCSI connector

- 1 x 3 pens
- 1 x 4 pens

XaarJet 128 printers

Up to 16 XJ128 print engines per CB card. This can be single engine printers that are daisy-chained, or multiple-engine printers that are on different connectors.

Each connector will accept up to 4 XJ128 engines.

XaarJet 500 printers

Up to 4 XJ500 printers per CB card

| |
|---|
| <p>Notice that you must order the correct CB card with your CT Controller you wish to use. It is possible to have different CB cards in the same CT controller at one time.</p> |
|---|

System Installation

First time you start your CT Controller

The CT CONTROLLER is supplied with Windows XP pre-installed. Please check that there is an intact sticker on the inside of your machine containing the XP license.

First time you start your machine, you may be prompted to enter the license key. This will have a format of 25 characters, in groups of 5 (like A4FKG-C839V-...).



HSAUSA supplies an OEM version of Windows XP. This means that Windows has been pre-installed for you, and you do not get a CD or manual from Microsoft.



For performance reasons, the firewall and automatic updates have been disabled on the CT.

It is not recommended that you have direct internet access on a CT Controller that is used in a production environment. The settings below are for PRINTING need in a factory, NOT for Internet access on a public terminal. Likewise, there are NOT set up any restrictions for the default user account.

If you need direct internet access, please consult a guide on how to secure Windows XP and download Windows update.



HSAUSA has configured Windows as follows:

- There is an account “USER” which is loaded by default, and starts INKdraw
- The installation is multi-language-enabled. This means that you freely can choose the language you wish to see in Windows. There is also support for non-western scripts like Japanese, Thai, Hebrew and Arab.
- The hard drive will, for efficiency reasons, be split up in 2 partitions:
 - C: Main Windows partition and storage
 - D: Swap drive for temporary storage
- INKdraw has been setup with default directories search path
 - INK files: C:\Program Files\OBJINKdraw\Files
 - Graphics/Logos C:\Program Files\OBJINKdraw\Logo
 - Database C:\Program Files\OBJinkdraw\Database
- For the CT Touch there is installed a freeware application “Click-N-Type” that allows you to activate an on-screen keyboard. Although Microsoft does have this function already, the alternative keyboard can be re-designed to your own specifications.

Service

Take-apart guide and what's inside

Typically it is not necessary to open your CT Controller, as there are very few user-serviceable parts inside.

If you need to, please consult HSAUSA before you open your unit.

The CT Controller should be opened by unlocking the door with the supplied key. Carefully open the unit, the hinged door swings out towards yourself. Take great care not to reach into the controller, there is cooling fans and exposed electronic circuits.



To remove the CB board you must remove the support mounting screw, power connection, ribbon cables and unlatch the yellow clamp.



Serviceable parts (fuses etc)

There are two fuses located in the main power switch.

There are 2 fuses located on the CB board itself. They are type TR5 (round with 2 pins facing down). You need 1A and 4A fuses (suggested 1A for HP CB boards for better protection), placed as illustrated below.



Main power ON/OFF
switch

Fuse Holder Qty 2
4 Amp fuses





Reference Section

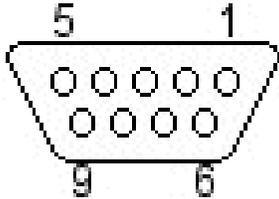
Default (working) BIOS settings

BIOS settings are the basic settings for the PC. The settings below are the default settings for a CT Controller, as supplied from HSAUSA. Normally you should not have to change these.

- Enter the BIOS editor: Turn on your CT by pressing the red button on the front of the cabinet. **Immediately** press the delete key on your keyboard, maybe multiple times.
- Wait until the BIOS editor is loaded.
- Reset the BIOS: Select the option: **LOAD DEFAULTS**
And press Y and enter to approve.
- From the factory, the BIOS have been configured to HSA values.
- If you need to change boot order, you can do that now.
- Close the BIOS editor Move the cursor to **SAVE AND EXIT SETUP** and press enter
Press Y and enter to save the new settings.

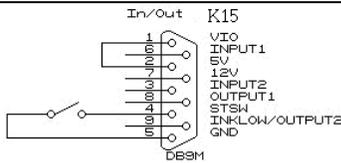
Start sensor connections

As a start sensor, you can use a simple switch, or a photo cell.

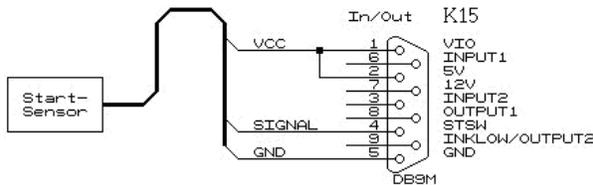


| PIN..... | DESCRIPTION |
|----------|-------------|
| 1..... | V I/O |
| 2..... | 5 V |
| 3..... | IN 2 |
| 4..... | START |
| 5..... | GND |
| 6..... | IN 1 |
| 7..... | 12 V |
| 8..... | OUT 1 |
| 9..... | OUT 2 |

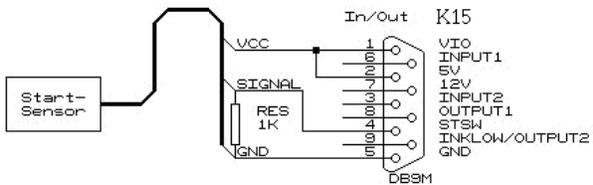
For both 5V and 12V:
 $I_{out} = 1A$
max



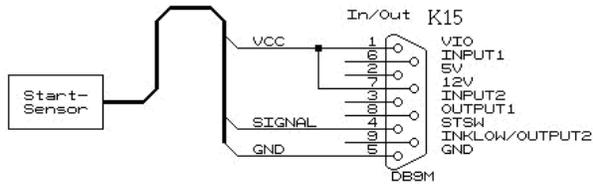
Using a **simple mechanical switch**.
Loop pins 1-2 and connect the switch between pins 4 and 5.



5 Volt NPN / PUSH/PULL sensor.
VCC to pins 1,2
Signal to pin 4
GND to pin 5

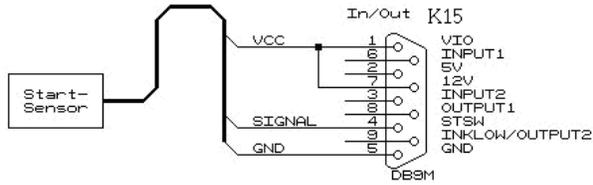


5 Volt PNP sensor.
VCC to pins 1,2
Signal to pin 4
GND to pin 5
1 K resistor between pin 4 and 5



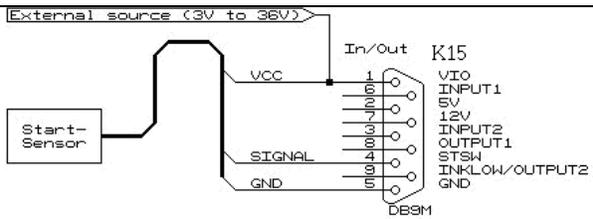
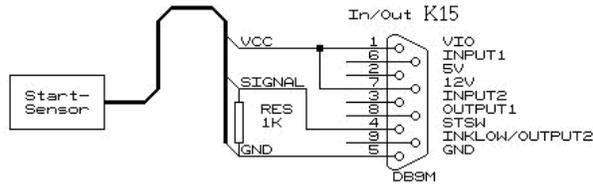
12 Volt NPN / PUSH/PULL

VCC to pins 1,7
Signal to pin 4
GND to pin 5



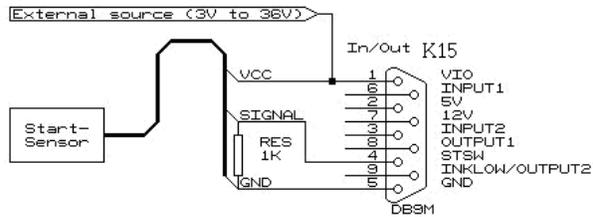
12 Volt PNP sensor.

VCC to pins 1,7
Signal to pin 4
GND to pin 5
1 K resistor between pin 4 and 5



External power source, +3-36V, using NPN / PUSH/PULL sensor

VCC to pin 1
Signal to pin 4
GND to pin 5



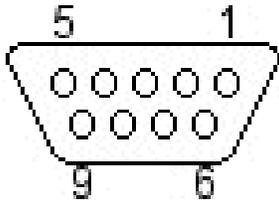
External power source, +3-36V, using PNP sensor

VCC to pin 1
Signal to pin 4
GND to pin 5
1K resistor between 4 and 5.

Encoder connections

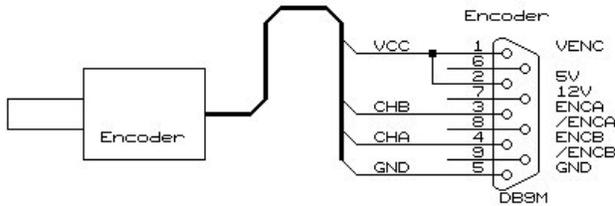
For the encoder, you can use either a single or double channel. If you have both channels connected, you need to activate “Quadrature” in the software, and divide distance / pulses by 4.

For both 5V and 12V:
 $I_{out\ max} = 1A$



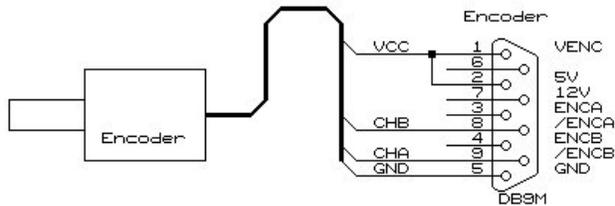
| PIN..... | DESCRIPTION |
|----------|----------------------|
| 1..... | V ENC |
| 2..... | 5 V |
| 3..... | ENC A |
| 4..... | ENC B |
| 5..... | GND |
| 6..... | INK LEVEL (not used) |
| 7..... | 12 V |
| 8..... | ENC A (inv.) |
| 9..... | ENC B (inv.) |

USING DOUBLE CHANNEL NPN OR PUSH/PULL ENCODER



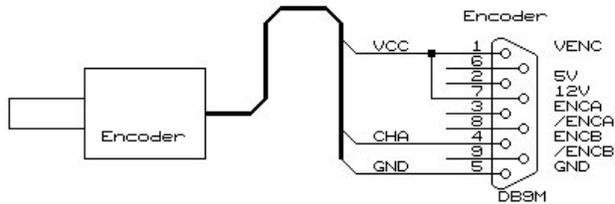
5 VOLT encoder double channel
NPN / PUSH/PULL encoder

USING DOUBLE CHANNEL PNP ENCODER

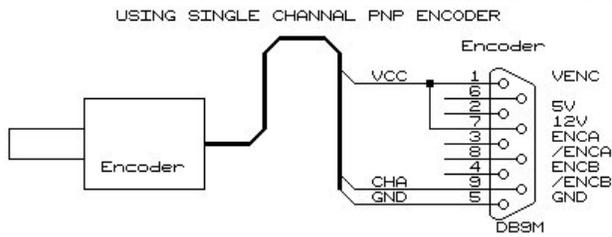


5 VOLT encoder double channel
PNP encoder

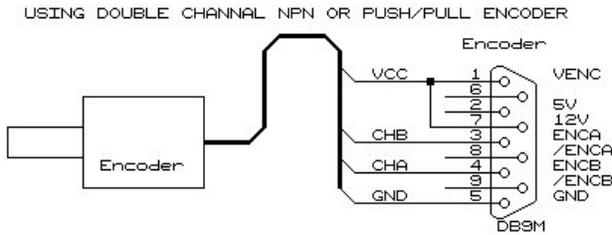
USING SINGLE CHANNEL NPN OR PUSH/PULL ENCODER



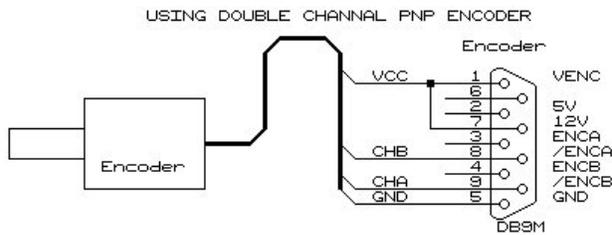
12 Volt encoder single channel
NPN/ PUSH/PULL encoder



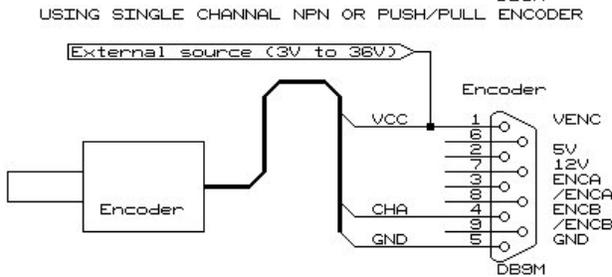
12 Volt encoder single channel PNP encoder



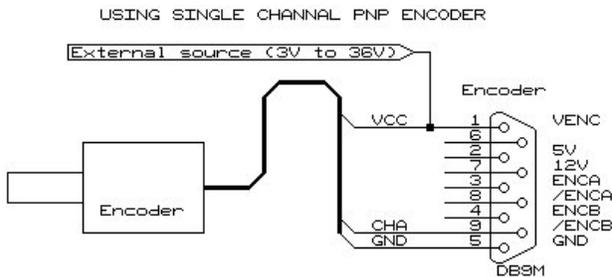
12 Volt encoder double channel NPN / PUSH/PULL encoder



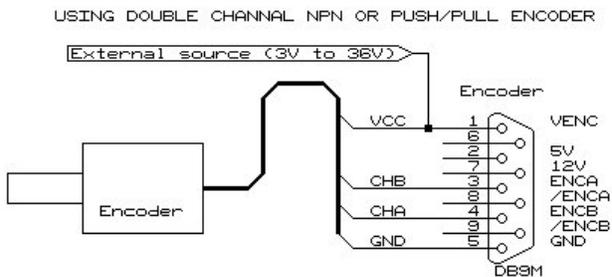
12 Volt encoder double channel PNP encoder



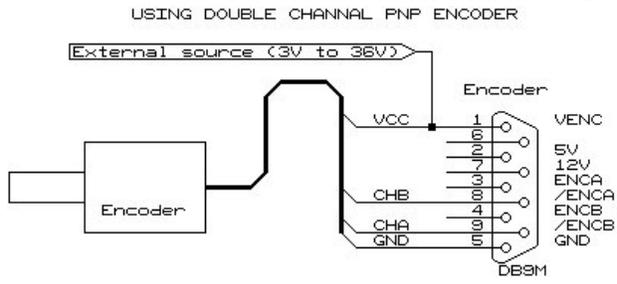
External power source, 3-36V, encoder single channel NPN/ PUSH/PULL encoder



External power source, 3-36V, encoder single channel PNP encoder



External power source, 3-36V, encoder double channel NPN / PUSH/PULL encoder



External power source, 3-36V, encoder double channel PNP encoder

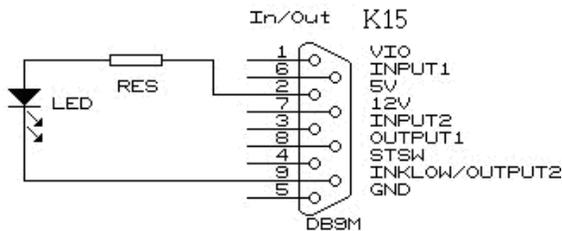
Output Connections

On the CT Controller there are 2 different outputs that can be used for detection of when a message has been printed, and to give an alarm for low ink.

Notice that $I_{out\ max} = 400mA$

OUTPUT1:

This is always print message signal. The LED or relay will be active every time the start sensor is activated, until the message has been printed.

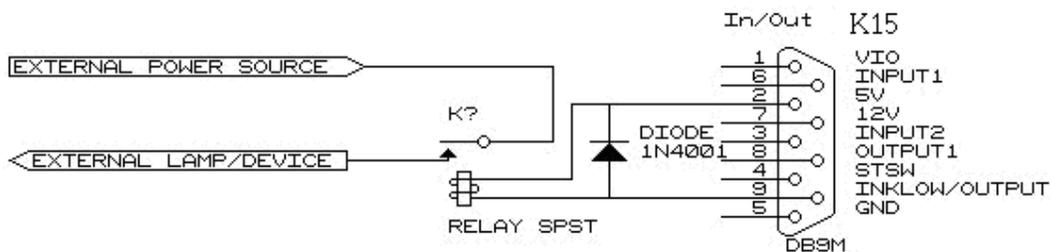


Connecting an LED

$$I_{led} = \frac{5V - LED\ voltage}{LED\ current}$$

Connecting a RELAY

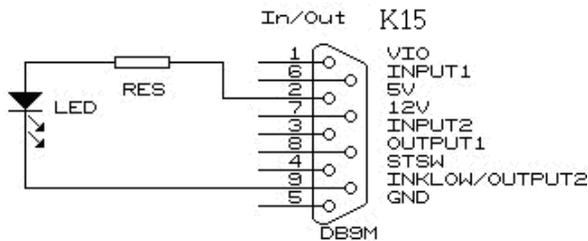
Schematic (for 5V relay), for Signal lamp/sound device:



OUTPUT2 :

This is used to get the low ink warning. On Xaar printers, you will see a signal on the printer as well, on HP printers you can see on the monitor which cartridge is empty.

Notice: Iout max = 400mA



Connecting an LED

$$I_{led} = \frac{5V - LED\text{voltage}}{LED\text{current}}$$

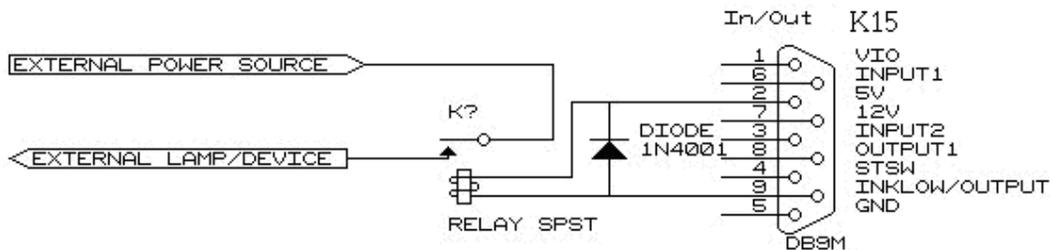
Depending on the LED used the LEDcurrent usually is:

- For small surface mount LEDs: 5-10mA.
- For most Leaded LEDs: 10-25mA.

Connecting a RELAY

Schematic (for 5V relay), for Signal lamp/sound device.

- For 5V relays: Between pin 2 and pin 9.
- For 12V relays: Between pin 7 and pin 9.





Exact Machine Reference

Motherboard

Model: MSI 945GM3-F SOCKET775 CORE 2
Supplier: MSI

Processor

INTEL CPU CORE 2 DUO E4500 2.2

Memory

AENEON 512 DDR2-667 P5300 -A98

Graphics

Acer monitor Model 1516
Integrated Intel GMA950 graphics controller.

Hard Drive

| | |
|------------|------------|
| Model | Seagate |
| Reference | ST380815AS |
| Capacity: | 80 GB |
| Interface: | SATA |
| Speed | 7200 RPM |

Drawings

CT Controller outside drawings, for mounting purposes. All sizes are in inches.

