HSA SYSTEMS
A UNIQUE IMPRINT

MiniKey
User Manual
ENGLISH

Updated for MiniKey firmware version 1.91 (January 2014)

Congratulations on your purchase. MiniKey is one of the most advanced, compact and user-friendly inkjet controllers available.

This manual covers the usage of the controller. Before using the product, please read the manual carefully.

Please also refer to:

Manual	Content
Installation Manual	Technician's guide to installation of this product.
Quick Guide	Technician's guide to setting up this product.
Remote Communication for the Mini series	Commands for ethernet and RS232 connections.
MiniDraw for HSAJET MINIKEY/MiniKey	Optional software for creating and uploading print jobs.

This manual covers MiniKey with firmware 1.91

Safety Instructions

- The MINIKEY is a controller unit for inkjet printing. Only use this device for the intended use.
- Do not subject the controller to strong shocks or vibrations.
- Install the MINIKEY in the recommended installation environment only.
- Connect power supply to input voltage 100-240 VAC
- Follow the wiring instructions in the installation manual carefully. Wrong wiring could destroy the controller unit.
- Shut down MINIKEY properly before turning off the power supply. Power loss during normal operation may result in memory card write failure and data loss.
- Do not clean controller with strong solvents.
- Do not let liquids get in touch with any electrical parts.
- The MINIKEY is only to be repaired by trained personnel.
- Do not forget your administrator password, or delete the administrator account.

Table of Content

Introduction

Features and performance

Features

- Text, barcode and graphical objects
- Simple inclusion of stamps by a list
- Multilingual Keyboard
- Prompts
- Real time printing
- 2 configurable hardware outputs
- 2 configurable hardware inputs
- Print of databases

Performance

- Number of pens: Up to 4 pens. (max 2 physical heads)
- Printing speed: depending on resolution, 35 m/min at 600 dpi.
- Resolution: Variable in print direction, in 18 steps from 75 to 2400 dpi
- Manual row select
- Print length: up to 2700 mm.

Interface

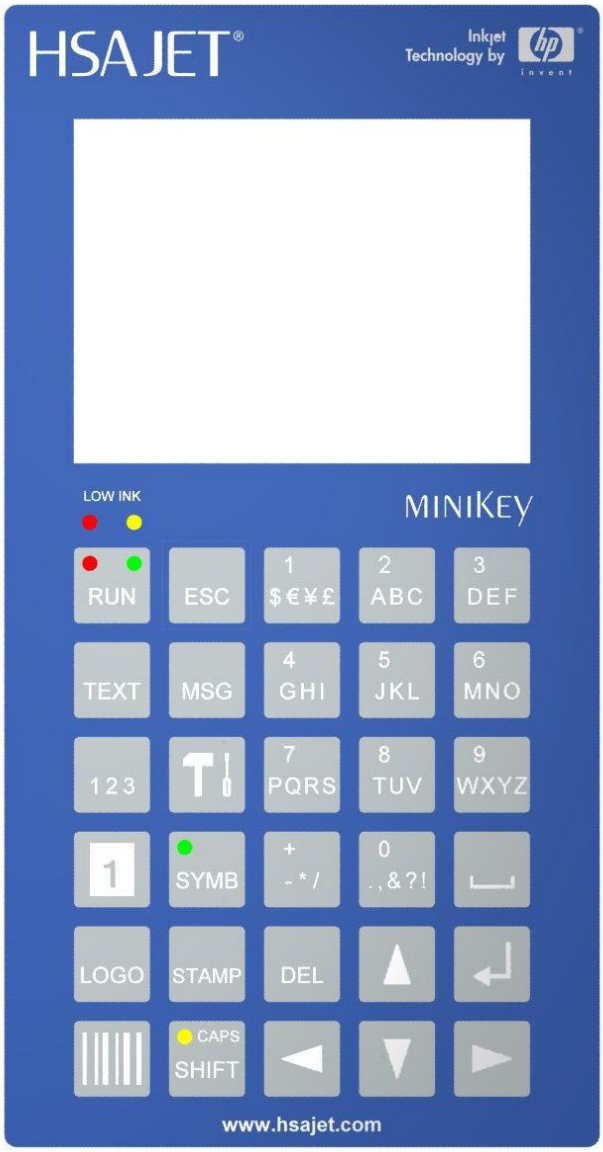
- Integrated Keyboard
- Documented protocol for remote operation (Ethernet and RS232)
- External PC software **"MINIDRAW"** for creation of print jobs. This software is supplied on the CD that follows the controller.

Hardware

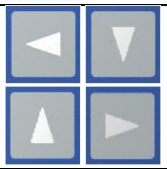
- Quadrature encoder supported
- Power supply 100-240VAC included
- Built-in sensor in print heads

Navigation

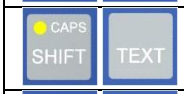
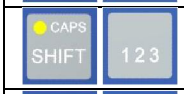
The MINIKEY has a flat menu with direct access from Keys. At any time you can switch to a new function by Keypress (notice: you need to exit menus by green checkmark to save changes you have made)



Function of Keys

KEY	FUNCTION
	Start / stop print mode
	Work with TEXT content
	Work with COUNTER content
	Work with DATE content
	Work with GRAPHICS content
	Work with BARCODE content
	Work with STAMP content
	Load / Save files
	Change settings
	Go back to main menu/ previous menu. Does NOT cancel addition of an object.
	Changes between "symbol" Keyboard and normal Keyboard. Symbol Keyboard contains characters in other encodings (ex:Cyrillic, Greek, ...), depending on font selected.
	Next character should be upper case. Press twice to activate CAPS LOCK.
	Insert a SPACE character. Also used to toggle menu items and icons at bottom
	ENTER: Change values in selected menu item, select icon, accept value in inputbox
	Arrow Keys navigate between menu items, icons and letters in the edit line

Shortcuts

SHORTCUT	FUNCTION
	Toggle between menu lines and icons at the bottom
1..9	Direct access to icons in icon-based menus (counting icons from top-left), or direct access to lines in text-based menus.
	Accept changes in the menu (same as space + arrow Keys to green checkmark)
	Create a new text object, and edit it instantly Same can be applied to to counter, date, graphics and barcode
	Shuts down controller
	Create a new stamp, directly selected from list of stamps (visually)
	Create a new text object and directly edit it
	Create a new counter object and directly edit it
	Create a new date/time object and directly edit it
	Create a new logo object and directly edit it

Common navigation icons

At the bottom of each screen, a menu with navigation shortcuts can be found.

	Save changes and proceed.
	Delete object (cancel add) and go back.
	Do not save changes. Go back to previous menu.
	BACK to previous menu.

Editing values – using the keypad

In the MiniKey, you can enter values in different ways, depending on what the value / parameter is used for.

Text lines

Text lines are values that can accept zero or more characters. Example: name of objects, text variables, counter values.

Press ENTER to edit the value.

You will see a screen showing what you enter, the current value indicated in RED, and a keyboard below, corresponding to the keys [0]..[9] and [+]. If a key is used when text is red, it will be replaced. If arrow keys are used first, it will remain and be edited.

Now you have the following options:

ENTER will accept the value

ESC will cancel editing

ARROW KEYS move left /right or start/ end of text string

SYMB will change between ENGLISH and SYMBOL keyboard. Which symbol keyboard that displays depends on the language choice.

Number keys will toggle between printed values. Numbers are last. Example: 5 key will toggle j,k,l,5. A long press will always give a number.

DEL will delete a character to the left

SPACE will insert a blank

SHIFT will change to upper case for one keypress. Press again to lock. Press again to unlock.

Values (measured distance)

Any value that can be measured is entered using a similar display, but only with a numeric keypad shown.

By default, the value is indicated in RED. Type any number to overwrite, or use arrow keys to edit.

SYMBOL will change unit of measure.

Internally all units are stored in pixel, which may cause rounding in other values. 1 inch = 600 pixel = 25,4 mm.
Example: 10,0 mm ➔ 9.99 mm.

Toggles

Toggles are options with few defined values. A separate editing screen will not be shown. Instead, a new value will appear at each press on ENTER.

The list of values is circular and will revert to first option at the end.

Other options may appear at certain selected values, where this will make sense.

Lists

For options that are determined by a list of values, but not known in advance, a list is shown. Example: list of objects, fonts and files.

Move to selection with arrow keys and press ENTER.

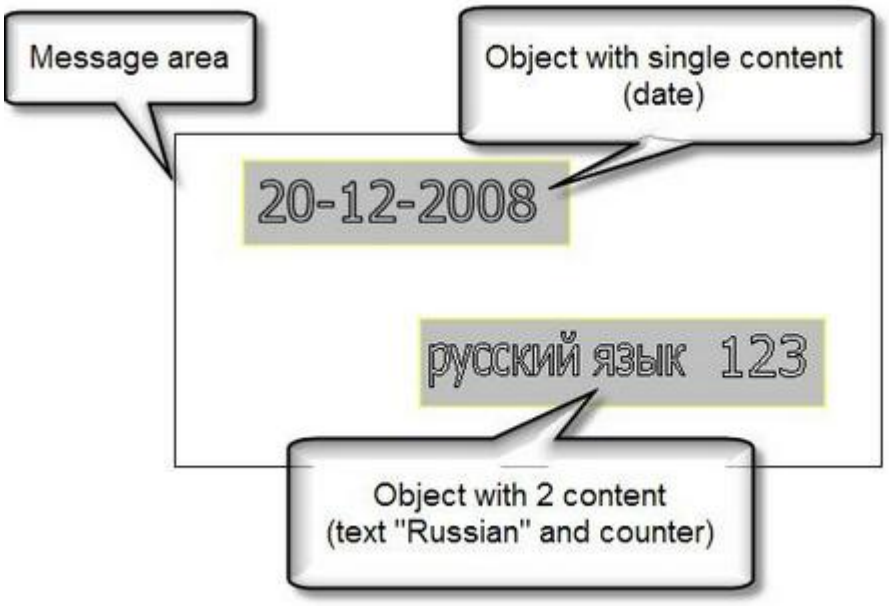
The first 9 values can be accessed directly using number keys.

What are layout, object & Content?

On the MINIKEY layouts, objects and content constitute your print job. It is important to understand the difference. The following will explain:

Your layout is like a white piece of paper where you place content. Objects are placeholders for content. They are like post it notes on your paper. On the post it note you write something. That is your content.

You can see the principle illustrated here:



When you create a layout, it is a blank piece of paper.

When you place an object on your layout, content will be created at the same time and the two will be linked together.

NOTICE: On MiniKey you cannot from the controller link multiple content to textual objects. This is ONLY possible for barcodes! Objects linked to multiple content from software will print but can't be edited.

There are 3 types of objects.

Text objects	Displays content as text or numbers.
Barcode objects	Displays content as barcode.
Graphical objects	display a logo, a line or a box. Not linked to a content

There are 4 types of content.

Content type	Meaning
Static text	A static text is content that is the same on every print.
Counter	Counters increment every time the start sensor is activated.
Date/time	Displays the date and/or time based on the system clock.
Shift Code	Displays content based on time/day
System Variable	Display content based on controller / layout properties
Indentifier	Application identifier for EAN 128 barcode.

Limits to the system

Property	Limit
Number of folders on internal memorycard	Unlimited. (up to 2 GB. Each layout is 16.349 bytes.)
Number of layouts	50 layouts in each folder on the internal memory card.
Number of objects in one layout	16 text objects. 10 barcode objects. 10 graphical objects
Number of contents in one layout	16 static texts. 10 counters. 10 date/time. 10 identifiers.
Number of fonts in one layout	10 fonts. (Max. 50 fonts altogether on controller).
Number of locales in one layout Language files	5 locales (Max 50 locales altogether). 50 language files altogether.
String length:	Object/content name: 15 characters. Content 127 characters.
Printing speed	Frequency of print head 15 kHz. Resolution is variable, so maximum speed depends on chosen resolution. Theoretical maximum speed in 75 x 300 dpi close to 600 m/min. 600x600 dpi Speed limit is 37 m/min 300x300 dpi Speed limit is 148 m/min 150x300 dpi Speed limit is 296 m/min 300x300 dpi (One row) Speed limit is 74 m/min
File transfer rate	USB 400KBit/second Ethernet 4000kBit/second RS232 115kbit/second
Length of prompt question	21 characters

Loading and printing

> This section will briefly introduce you to basic operations of the MiniKey controller, so the user is able to log in, load a layout and start print function.

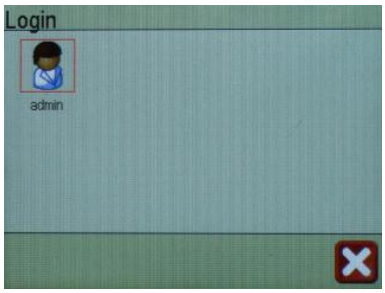
Login to the system

If MINIKEY is password protected a login screen will be shown when you start the controller.

Graphical login is default. When graphical login is enabled, all user accounts on the unit will be represented by an icon.

The default user account is admin. The default password is 1234.

It is recommended to change the default for security reasons.

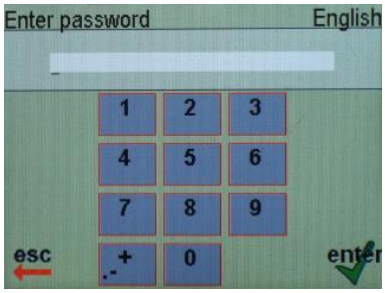


If more than 8 user accounts have been setup, a scroll bar will appear.

To login in, press an icon to select a user account.

Next type in the password. You cannot see password as you type it.

Passwords are limited to numbers on this controller.



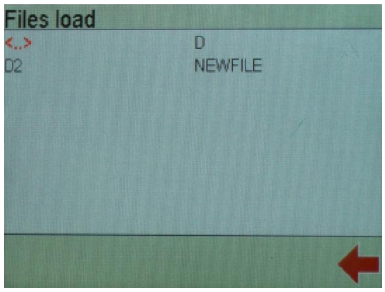
Press ENTER when done or ESC to cancel and go back to select another user account.

How to load and print a layout

Press the MSG button

Press ENTER on "Select job".

Select a layout from the list. You can create / use a subdirectory if you wish to organise the files.



The layout will load, and you will return to main menu. Press "RUN" Key to enter print mode.

Functions while in print mode

Screen display

While in print mode, the screen will display a print performance screen, along with the calculated ink level remaining.

From the top, the performance screen displays:

Speed

Measured (by encoder) or set speed, in m/min. Also displays the number of prints per hour.

Lot

Number of prints done since print mode was last activated

Total

Number of prints in total for this job

Timer

How long time the print mode has been active

If a database is active, the current record number and time remaining of database print is also displayed.

Cartridge maintenance

While in print mode, it is possible to perform certain cartridge functions.

Press [1] .. [4] to work with respective cartride. Notice only needed numbers are defined – so as example, if only 2 cartridges are defined, keys 3 and 4 will do nothing.

In “ink management”, you can perform

Reset of ink level

On level bar, the ink level can be reset

Disconnect cartridge power

The MK does not have a switch. It is recommended to switch off power before cartridge is taken out.

Purge

Hold ENTER to purge

Press ESC to return to print mode menu

Emergency cancel of remote control

During remote control, and while in print mode, it is normally not possible to use keyboard functions.

The remote control can be interrupted using SHIFT + ESC. Then login with user+password.

Manage your layout

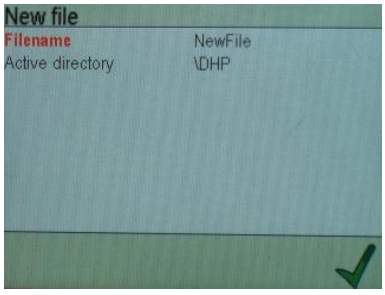
> This section will detail how to manage layout files and create new layout files

How to create a new layout

Press the MSG button.

To create a new layout, press "new". Shortcut “1”.

Press "filename" to enter a file name for the new file.

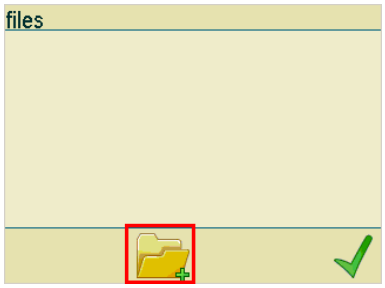


Enter a new filename in the text field. Press ENTER to finish. You can use maximum 7 characters for the file name.

To change active directory press "active directory". Active directory is where your file will be saved on the internal memory card. Each directory level can contain 50 entries,

where an entry is a layout or another directory. Effectively, you can have 2500 layouts with a 2 levels of subdirectories.

Next, press the "new directory" icon at the bottom of the screen.

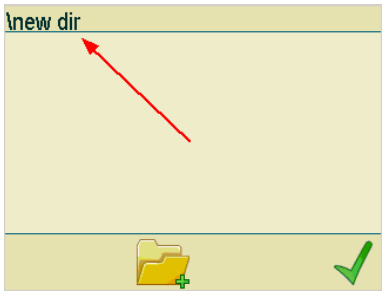


Enter new directory name .

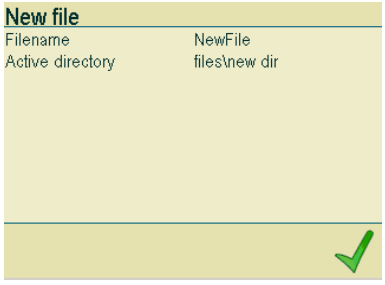
Press ENTER to continue

On the next screen you have changed location to the new directory. The new directory name will be shown at the top of the screen.

Press the green check mark to return to the previous screen.



Press ENTER to finish.



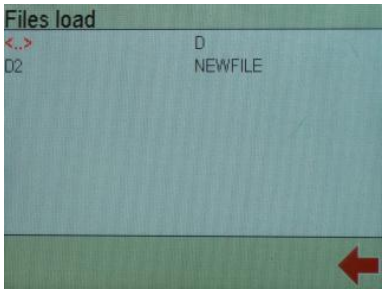
Now your file will be created and will be the active file. It will be empty (no objects), and will have parameters based on the machine parameters. You are now ready to create content.

Create a new layout, based on another

The option "New (based on)" will save a layout under a new name. This option is an advantage if you want to create a new layout using the settings from another layout.

Select "New (based on)". Shortcut “4”

Select source layout.



Enter name for the new layout. Press the green check mark to continue.

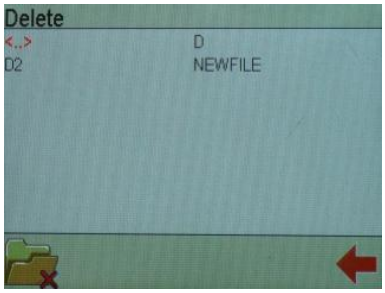
The MINIKEY will automatically save your new layout to the internal memory card

How to delete a layout

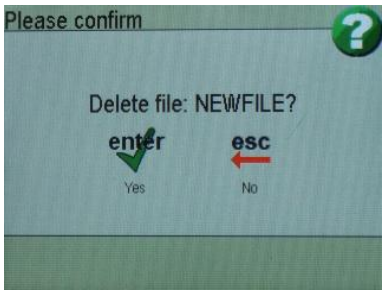
Press the MSG Key

To delete a layout, select "delete". Shortcut “5”

Select a layout to delete.



Press Yes to confirm.



Notice that if you delete the active (current) layout, it will still remain in memory and can actually be saved again.

Add content to your layout

> This section details how to add content to your layout.
>
> As detailed above, there are 3 types of objects: text, barcode and graphics. Text and barcode objects can contain one of the different content types.
>
> The procedure for adding objects with content is the same for text and barcode objects, and will only be described in detail for text objects.

Text objects

Text objects display the content inside as TEXT - letters and numbers. There is no limit on the type of content that can be added to a text object.

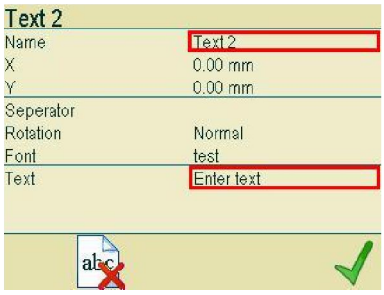
How to add objects

Press one of the text object Keys: TEXT, 123 or Calendar.

From here select “New” icon, or just press SHIFT-object Key to create directly

Navigate to the “New” icon using  followed by 

Doing so will display the properties for the object.



General properties for objects

Many of the properties are general for all objects regardless of content.

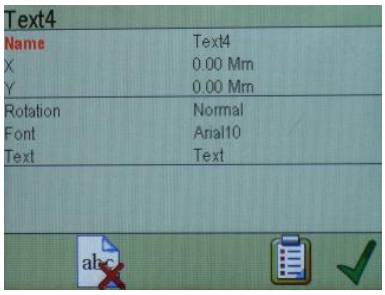
The following properties list will not be repeated for each content type.

Property	Description
Name	Descriptive name, must be unique to the layout, and cannot be empty.
X	Position in the print direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel) If the object is positioned outside the canvas the message "Warning object out of canvas" will be shown.
Rotation	Allows you to rotate the object in 90 degree steps. If the selected font cannot be rotated, [select font] will be shown in the font line. Please go to the font menu and select a different font that can be rotated.
Font	Select font. You can use MiniDraw to create new fonts. No more than 50 fonts can be stored on the MINIKEY . Up to 10 fonts can be used in one layout.

Text object with static content

Static text will not change automatically, and acts like a label in the message.

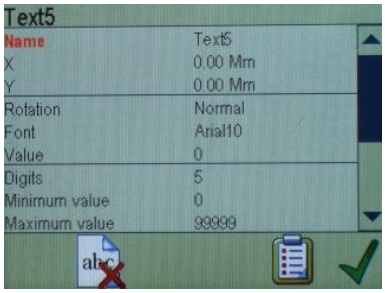
You can enter the text content at last line.



Property	Description
Text	String content - maximum 127 characters

Text object with counter

Enter parameters. Parameters are described below.



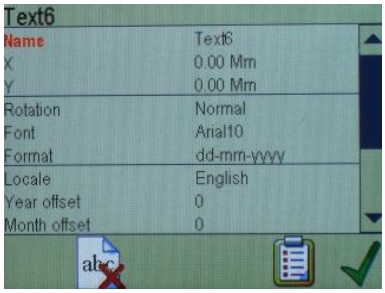
Press green check mark to finish.

Parameter list(text object with counter)

Property	Description
Value	Current value at print mode start
Digits	Number of digits shown. The maximum number of digits is 10.
Minimum value	The minimum value displayed in the counter. Minimum value is −2,147,483,648, after which it will display maximum value.
Maximum value	The maximum value displayed in the counter Maximum value is +2,147,483,647, after which it will display minimum value. If the maximum value exceeds the selected number of digits, only the last digits will be displayed. Example: Digits = 3. Max = 1000. Counter will display 998, 999, 000, 001.
Lead-in	What should be in front of current value. Select either: Zero (displays 000123) Space (displays 123) Nothing(displays123)
Step value	Counter increments. With a setting of 3, the counter will display 0,3,6,9,12.....
Step count	How many times the counter is repeating. This is independent from the message, repeat, set in the layout settings. If step count has been set to two, print will be 99,99,100,100,101,101. If layout repeat has been set to two and the counter repeat has been set to off, the print will be[99,100] [101,102] (Sensor signals enclosed in [ ])
Reset step on print start	Select this option to reset step count when you enter print mode.
Reset on print start	Continue counting at print mode start, or reset to a value
Reset value	The value to start from if “Reset on print start” is selected. May be equal to or different from minimum.

Text object with date/time

Enter parameters. Parameters are described below.



Press the green check mark to finish.

Parameter list(text object with date/time)

Property	Description
Format	Format determines how date and times is displayed. If you enter dd-mm-yyyy, the date will be displayed like 28-04-2009. Refer to the "date formats" in the reference sections for a full list of date codes. Anything entered that is not on the list, is interpreted literally (such as comma, full-stop, dash etc). Also strings that are in quotes are interpreted literally.
Locale	Determines long and short names for days and months. Press locale and select a locale file from the menu. The MINIKEY contains locales for different languages.
Offset	Select a different date and time than the one set by your system clock. You can make offset year, month, day, hour, minute and seconds, independently, and both forward and back. Use blue arrows to add/subtract one, or click the number to edit directly
Example	Not a setting, but the resulting (printing) date code, formatted with format pattern, locale and offset

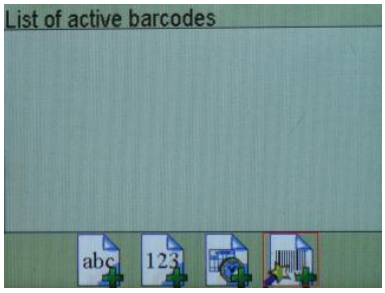
Barcode objects

Barcode objects display the content inside as a barcode. You can place any type of content inside a barcode object, but you are only allowed to add the object if the resulting string is valid for the barcode symbology chosen. If f.ex 12 characters, numbers only is expected, you are not allowed to add a string or a longer/shorter number.

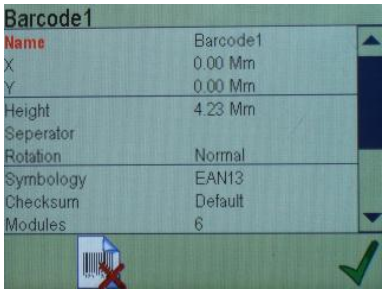
Properties

Press BARCODE button.

Select content to add in barcode. As an example, static text content is selected here.



Enter parameters. Parameters are described below.



Press green check mark to continue.

Properties for the barcodes

Property	Description
Name	Descriptive name, must be unique to the layout, and can not be empty.
X	Position in the print direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel).
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel) If the object is positioned outside the canvas the message "Warning object out of canvas" will be shown.
Height	Enter barcode height.
Separator	Optional, 1 character that is used to separate content. Example: you wish to concatenate Batch number and a counter. Put both in the same text object, and use e.g. space as separator. You will get an output like XCBVJF 3345.
Symbology	The barcode type. Select one of the options shown below. EAN8 EAN 13 UPC-A Interleaved 2 of 5 Code 3 of 9 Code 128 EAN 128 DataMatrix DataMatrix with GS1/EAN128 structure
Checksum	Change calculation of the check sum for the chosen barcode type.
Modules	Multiplication of barcode size. 1 is the smallest possible size barcode. Module size cannot be smaller than font size, otherwise the human readable font will not be readable. Recommended module size is 6 or above.
Ink Spacing	Add extra space between the black bars to compensate for ink bleeding into the printed material.
Extra Lines	This will add extra width to the black lines.
Human readable	Turns human readable part of barcode on or off.
Human Readable Font	Font type for the human readable part of the barcode. You can create new fonts with MiniDraw . No more than 50 fonts can be stored on the MINIKEY . Up to 10 fonts can be used in one layout.

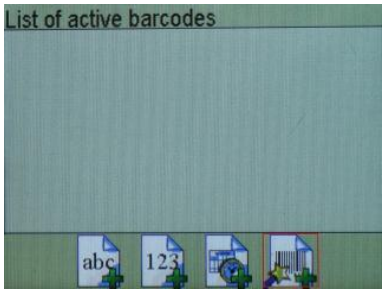
EAN 128 barcodes

Use the the barcode wizard to create EAN 128 structured barcodes. These contain data identifiers that tell what the following data is (semantic meaning), in order to differ between f.ex item number from weight and size.

Identifiers and data must ALWAYS be in the order [identifier][data][identifier][data] etc

An example on how to create a EAN 128 barcode is shown below.

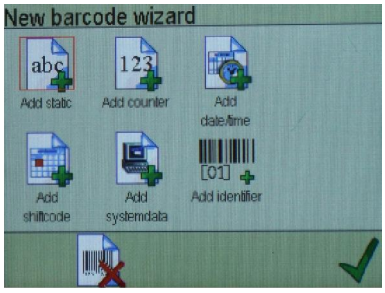
Select "New text wizard" from the barcodes menu.



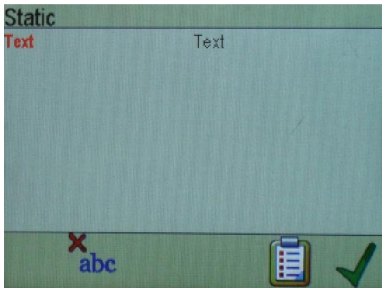
Select "add identifier".

Set "ID code" to 1.

Select "Add static".

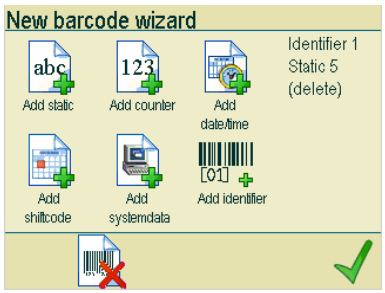


Select "Enter text".



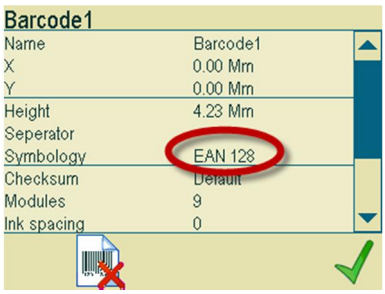
Enter 13 numbers. (since ID 01 is defined as n02+13+1 check digit)

Select ok to enter barcode setup menu.



"Symbology" must be set to EAN 128 or DataMatrix (GS1).

Press green check mark to finish.

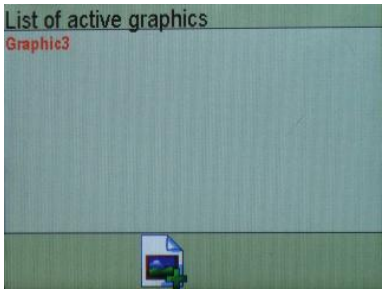


Graphical objects

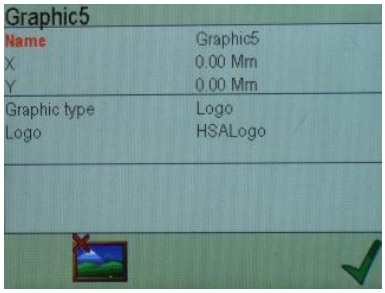
Logos

Press the LOGO button.

In the graphics menu, press the "New logo" button.



Enter parameters. Parameters are described below.



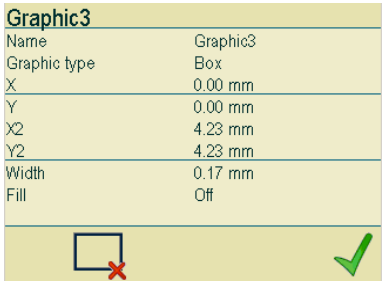
Press green check mark to continue.

Parameter list(logos)

Property	Description
Name	Descriptive name, must be unique to the layout, and can not be empty.
Graphic Type	Chose between logo, line, or box. Depending on choice you will get additional menu items.
X	Position in the horizontal direction, starting from upper left corner.The distance is set in current units (mm/inch/pixel)
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Logo	Press logo, to select a logo currently stored on the MINIKEY Logo files must be 2 colors maximum for best result. To upload new logos to the MINIKEY please install the MiniDraw software.

The MINIKEY has a maximum capacity of 10 graphical objects(logos, lines, boxes) in one layout (MAX 50 altogether).

Boxes



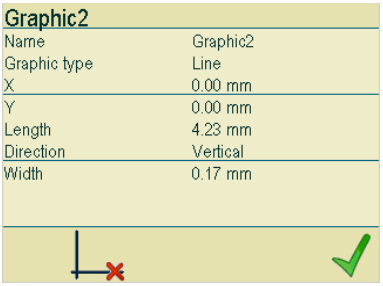
Press green check mark to continue.

Parameter list(Boxes)

Property	Description
Name	Descriptive name, must be unique to the layout, and can not be empty.
Graphic Type	Chose between logo, line, or box.
X	Position in the horizontal direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
X2	When graphic type is box, x2 is the x coordinate of the lower right corner.
Y2	When graphic type is box, Y2 is the Y coordinate of the lower right corner.
Width	Select the line width. Available for both lines and rectangles.
Fill	Fill the rectangle or not. Available only for rectangles.

The MINIKEY has a maximum capacity of 10 graphical objects(logos, lines, boxes) in one layout (MAX 50 altogether).

Lines



Parameter list (lines)

Property	Description
Name	Descriptive name, must be unique to the layout, and can not be empty.
Graphic Type	Chose between logo, line, or box.
X	Position in the horisontal direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Length	The length of the line. Available only when line is selected as graphic type.
Direction	Select either vertical and horizontal lines.Available only when line is selected as graphic type.

Property	Description
Width	Select the line width. Available for both lines and boxes.

The MINIKEY has a maximum capacity of 10 graphical objects(logos, lines, boxes) in one layout (MAX 50 altogether).

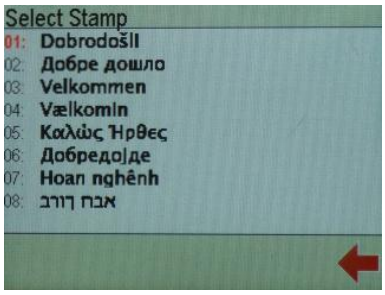
Stamps

Although having their own button for quick access, STAMPS content actually is a logo.

When you create a stamp by stamp menu=>NEW you are presented with selection of the stamp and properties.

If you press SHIFT+STAMP you are instead presented with a visual list of the stamps currently installed.

Select by cursor up/down or left/right and ENTER to select – or just type a 2 digit number if you know it already.



Then you are presented with options for the stamp chosen.

Property	Description
Name	Descriptive name, must be unique to the layout, and can not be empty.
X	Position in the horisontal direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Y	Position in the vertical direction, starting from upper left corner. The distance is set in current units (mm/inch/pixel)
Size	Either half (150 pixel high / ½ pen) or 300 pixel high / 1 pen. Size is scaled correctly according to content.
Stamp	A visual representation of the stamp selected. Press enter here to select another stamp

A collection of stamps may be up to 50 different stamps. It is possible to create these via MiniDraw. You can also upload your own images if you prefer instead. As long as the size is adequate from the beginning (300 pixel in height per print engine)

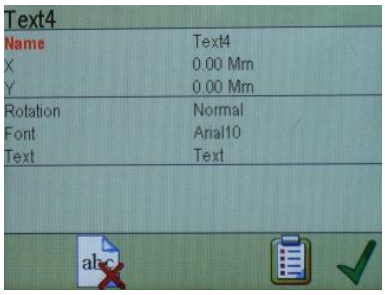
See instruction in MiniDraw how to do this.

Prompts

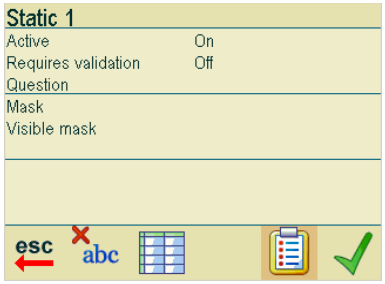
Prompts is not content by itself, but a way to force the user to input data at print start. Typically used where the designer does not know the content of this data in advance - or where it changes regularly.

Setup prompts

Press the prompt icon at the bottom of the screen. Navigate to the icon using space and arrow keys.



Edit prompt parameters. Parameters are described below.



Press green check mark to continue.

Prompt parameters:

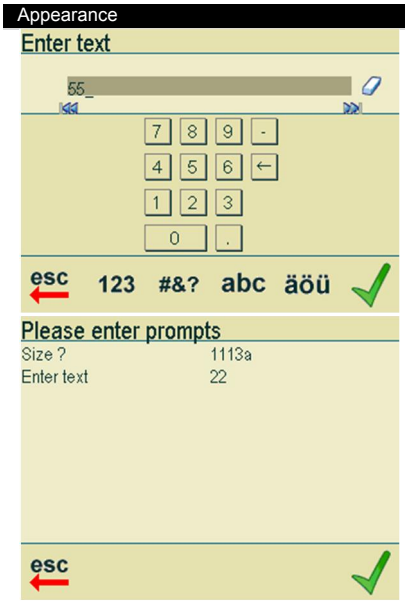
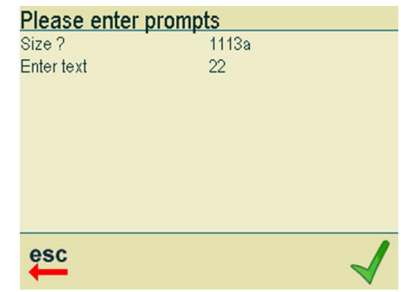
Property	Description
Active	To activate the prompt, select on.
Requires validation	When this option is set to on, the prompt cannot be accepted before a user with "validator" status has entered his password. Please refer to the chapter on user accounts.
Question	Enter a question to display, for instance "Enter batch no ?"
Mask	If you enter N, only numbers will be accepted as input. If you enter X, only characters will be accepted.

Property	Description
	If you have a mask on the prompt, the Keyboard will change automatically during input, and you are locked to that Keyboard. Example: NNNN will display the numeric Keypad for entry of 4 characters. Notice: SPACE will allow you to use literals that you jump over.
Visible mask	Default value shown in input box. If you have chosen SPACE in mask above, the visible mask will be printed literally at that position and jumped over in input. Example Mask = NN[S]NN[S]NN Visible = 00-00-00 Input = 123456 Result = 12-34-56

Use prompts at print start

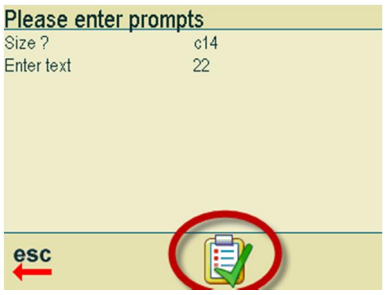
Prompts are used when you start print mode. You will be asked to enter the values for each of the content where you have activated prompts.

Depending on the prompt view mode selected in Settings->Screen->Prompt display, you may see the prompts as one of the following:

Appearance	Mode selected
	Single view Prompts are shown one by one, always in edit mode At the end you are presented with a list of values entered. You can click any of them again to edit, or accept all.
	List view Prompts are shown directly as a list of current values, click to edit one or accept all.

Validation

If one or more prompts have Validation=ON, the final list of prompts will look different. Instead of a green checkmark, it will have a checkmark over a prompt icon.



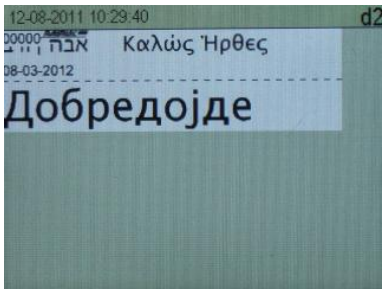
When you select this icon, you are taken to the login screen. Select here a user that has the role VALIDATOR activated. Enter password for that user. If login is succesful, the checkmark is again the green accept icon. Press it, and print starts - now with prompts validated.

Notice that if the user that starts print mode is ALSO a validator, the prompts will automatically be validated by that user, and no validation screen will appear.

How to preview your layout

The preview is always shown when a menu is not active.

You can choose in the settings->Screen->Preview zoom setting how to fit the layout to the screen.



Edit the message

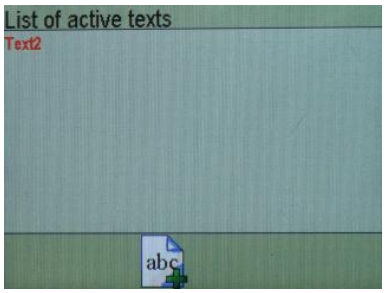
> This section details how to edit your layout (objects and content) to change properties in an existing message.

Edit object properties

Use this method to edit existing content based on a list of object names. An alternative and perhaps simpler method is to select the object from the preview screen (red border) then select object properties icon.

Press the TEXT button

Select a text from the list of active text objects.



Make the required changes. Parameters are described above.

Change print settings

> Print settings is where all parameters for the printout is stored. Settings these right are crucial in order to get a good looking printout.
>
> Please also refer to installation manual

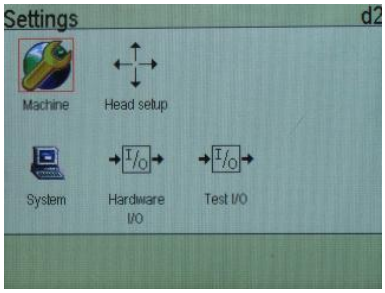
Enter setup

To enter setup press the SETUP Key.

How to edit Machine parameters

Machine parameters are where the setup related to printout is stored. Please refer to installation manual for a detailed explanation of parameters.

To edit machine parameters, select "machine".



Length

The total length of your layout.

Vertical resolution

In vertical resolution it's possible to select between the following:
300 dpi (row A)
300 dpi (row B)
600 dpi
300 dpi (alternating row A+B)

Horizontal Resolution

In horizontal resolution you can choose from 75 to 2400 dpi in 18 different steps. This allows you to choose very fast and cost-saving print (with a little lower quality), or very high resolution print (compromising speed and cost), or a setting in-between.
Use the arrows to select lower / higher DPI. The list will wrap, so the lower part of 75 dpi will be 2400 dpi.

Print direction

Print direction is the travel direction of your media. Select either Right->left, Left-> Right.

Print mode units of measure (3 options)

Select either Velocity, Position Encoder or Modular Encoder. If you select the position option, encoder pulses will be used to calculate the speed. If modular is selected, firing of the nozzles is synchronized with the encoder pulses.

Velocity
This value must be set, if print mode is set to velocity. Please make sure the velocity equals the speed of your media and that your media moves with a constant speed during printing. Speed is entered in meters/minute.

Position

This value must be set, if print mode is set to position. The value entered here is the encoder resolution. Resolution is calculated by dividing the circumference of the measuring wheel by the number of pulses per revolution generated from the encoder. Encoder position mode is entered in mm/pulse

Modular

This options must be set if print mode has been set to modular. If you enter 1, the nozzles will fire each time an encoder signal is received. If you enter 4, the nozzle rows will fire ones for every 4 encoder signals received. Modular parameter is entered in pulses/fire

Quadrature

Select quadrature to measure on the back edge of the encoder signal in addition to the front edge. This will effectively double your pulses (single-channel encoder) or quadruple your pulses (double channel encoder). Divide distance per pulse accordingly.

Sensor edge

Set the sensor settings to positive or negative, depending on the type of sensor you are using.

Start distance

An important part of setting up your system is to measure the distance between the start sensor and the head. This is to ensure the product is printed at the right spot. Remember the value must correspond to the physical setup.

Repeat Count

How many times the controller will print every time the sensor is activated. Notice that counters have their own repeat setting, meaning that if you want to print same counter values, you should also adjust counter repeat.

Repeat Distance

Distance between two repeats, from end of one to the start of next. There will always be a minimal gap of 4 mm for all DPI modes except 300x300 dpi (One row).

Endless

If endless is selected, the controller will continue printing as long as the photo cell input is active.

Buffer mode

The buffer is a location in the controller memory that holds data waiting to be printed when printing of other data is in progress.
You can choose between the following settings:

Unlimited buffer
The controller will keep as many messages in buffer as possible. Choose this option for best performance.

Normal buffer
The controller will always keep 4 images in the buffer, ready for next print. Choose this option for best performance and high speed print of f.ex dates or fixed text. The controller will never be “behind” in this setting.

No buffer
The image is always generated only when the start sensor is released. This will guarantee that you always print up to date information – typically you will use this mode if printing the accurate time / date is important.

User-managed buffer
The controller will not keep any message in buffer, image is generated for print only on user interaction (on network protocol).

Alert on blank print

In user-managed buffer mode, give warning on screen/network / both / none, if a sensor signal is seen when no images are stored in buffer.

Stop on blank print

In user-managed buffer mode, stop print if a sensor signal is seen when no images are stored in buffer.

Start block distance and end block distance

The purpose of block distance is to prevent the sensor from being triggered twice. For instance if the media is an envelope with a window, the sensor will "believe" the front edge of the window to be the back edge of the media. Thus the back edge of the window will trigger the sensor again.

If you are printing on medias of equal length, you can enter the media length as your start block distance and set the end block distance to 0. However this is not possible if you are printing on medias of various size. If that is the case, your start block distance should be a little longer than your start distance. Set the end block distance to 1cm or less.

Job Size

The number of prints to make for this job.

Job Count

The number of prints done of job size

Job printed count

Total sum of prints for the job

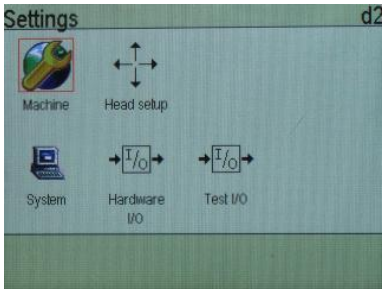
Line name

What you enter here will be displayed when you create an object with systemdata content and select linename as your data.

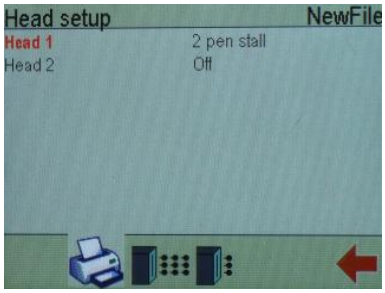
How to setup your print head(s)

Print Head parameters and type are selected in the stitching menu. It is very important that these settings are accurate. The settings here must very accurately match your physical hardware configuration.

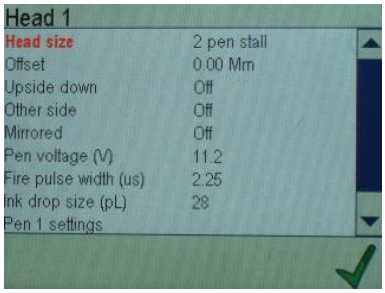
Choose "Head Setup" in the settings menu. Shortcut “2”



The MiniKey can use one or two physical heads, head 1 connected to the side, head 2 to the back, which each may be off, 1pen or 2pen. Inside head setup, choose the physical head to edit properties.



Print head options



Head size

The type of the physical head. This can be a 1 pen stall, 2 pen stall or Disabled.

Offset

Head offset is only relevant if you have more than one head on your system. If this is head one, offset must be set to zero.
If this is head two, offset is the distance from the the first nozzle row of the first pen in the first head to the first nozzle row of the first pen in the second head.

Upside Down

This option will mirror the image horizontally. Select this option if you are printing "up" instead of down.
Typically you will want to ENABLE this on web printing, if the latch is facing the operator.

Other side

This option will mirror the image vertically. Select this option if the head is printing from the other side of the conveyor.

Mirrored

This option will make the head print in reverse (mirror). Use this option if the print media is transparent, like f.ex a web or clear plastic.

Pen Voltage and Fire pulse width

These settings can greatly influence the quality of your printout. Please refer to settings in the Quick start manual.

Ink drop size (pL)

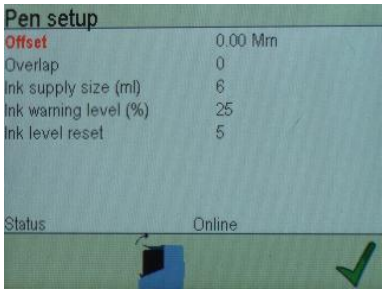
For calculation of low ink level, enter drop size for ink selected.

Pulse Warming

Use warming program for the ink, if required. Can greatly increase the performance of certain inks. See ink instructions.

Setting up the pen

Select a pen to enter the pen setup menu. The number of pens displayed depends on the head size. It will be from 1 or 2. The settings may be different for each pen.



Make the required changes. Press the green check mark to continue.

Offset

Offset for this pen in the current head. Offset for the first pen will be zero. offset for the second pen will be the distance from the first nozzle row in the first pen to the first nozzle row in the second pen. This is typically a distance off 600 pixels.

Overlap

The number of nozzles that are turned off. Will compensate for a small overlap of nozzles.

Ink supply Size (ml)

How much ink at 100% (full) is available to this pen

Ink warning level

Change this setting if you want the MINIKEY to display a warning when the ink level(measured in %) is low.

Ink level reset

Reset level of ink to supply size (100%)

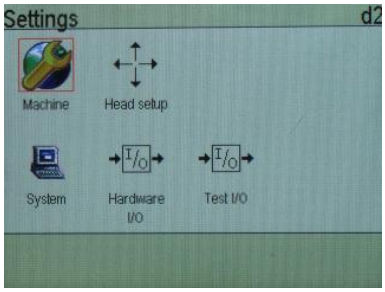
Offline

Turn off power on the cartridge

How to setup input and output

The MINIKEY has 2 output and 2 input channels.

Select hardware i/o in the settings menu. Shortcut “4”



For each output, select one of the following:

Property	Description
Off	No output
Print Mode	ON when the unit is in print mode.
Printing	ON when the unit is actively printing a message.
Low Ink	ON when one of the pens has low ink warning.
Error	ON when controller is overheating.
Print buffer empty	Set when the sensor is activated in user-managed buffer mode, without any messages in queue.
Pen status warning	The pen power is off

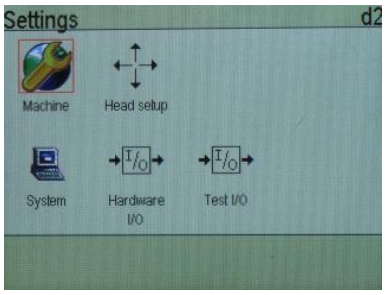
For each input, select one of the following:

Property	Description
Off	Input is ignored.
Purge	A signal will cause the printer to purge.
Start/stop print	A signal will initiate printing. The printer will stop printing if printing is in progress.
Spit enable(active low)	Activate remote spit when signal goes low.
Spit enable(active high)	Activate remote spit when signal goes high.
Acknowledge Error	Reset alarm condition. Use this to allow acknowledge by push-button
Queue Print	In user-managed buffer mode, queue a single print

How to test your equipment

When the MINIKEY is being installed, you can check that all hardware connected to the controller is working as expected.

Select Test I/O in the settings menu. Shortcut “5”



On this screen you will find the start switch, the encoder plus the input and output channels.

When a signal is ON, the light bulb will light up.

Example:

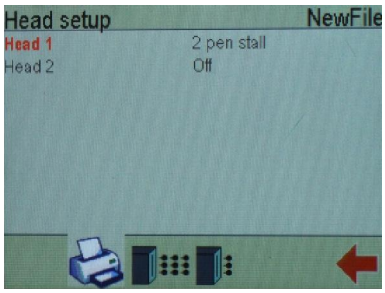
Activate your start switch. If the controller receives a signal from the start switch, the light bulb will light up. Start your conveyor. If the controller receives a signal the lightbulbs "encoder a" and "encoder b" will start flashing.

Press “1” or “2” to toggle the output signals

How to purge the pens

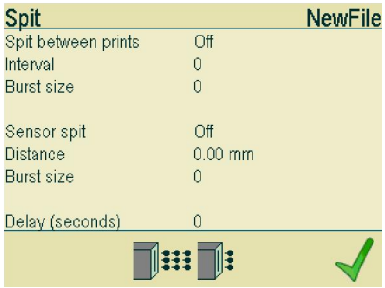
Purge and spit are used as maintenance tools to keep the ink from clogging the nozzle rows. Spit is firing of all channels, controlled by a timer. Purge is a constant firing of all channels for as long as function is activated.

Select purge/spit in the head setup menu.



In the purge menu, you can purge each head in your head(s).

At the bottom of the screen, you can enter the spit settings menu. Spit is short firing of all channels, typically few drops per channel very fixed period of time.



Select spit between prints to fire a few nozzles between each print.

Property	Description
Interval	Number of seconds between each spit.
Burst size	Number of times each nozzle fires.

Select sensor spit to spit every time the photocell is triggered.

Property	Description
Distance	How far from the photocell you want the spit.
Burst size	Number of times each nozzle fires.

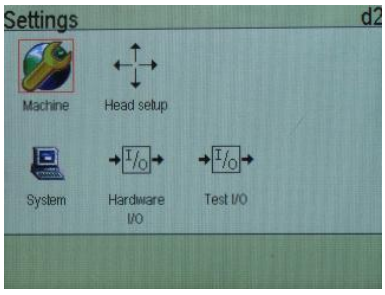
The delay is the number of seconds from one spit to the next. If the sensor is triggered more frequently, the nozzles will not fire. For instance, with a 2 second delay, the system will never spit with less than two seconds between prints.

How to change system settings

> System settings have influence on the “look and feel” of the controller, but not directly on the printout.
>
> This is where users are edited, the menu language is changed, and clock and network settings are changed.

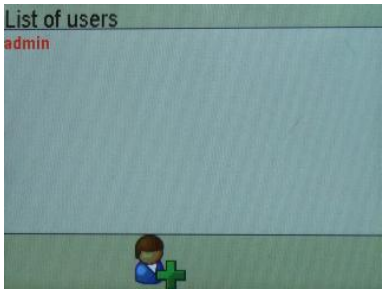
Edit user accounts

In the settings menu, select "system". Shortcut “3”



Select "users" in the system menu. Shortcut “6”

A list of active user accounts will be displayed. Select a user account to edit.



You now have the following options:

Property	Description
Username	Select a name for the user account.
Password	Enter a password for the user account. Limited to 4 digits.
Validator	The user can "sign" prompts where validation is required.
Admin	The user can change any parameter and access all menus.
File access	The user can load files, saves file and add new files.
Object access	The user can edit objects and content
Parameter access	The user can change parameters in the settings menu.
Load access	The user can only load and print layouts.
Icon	Select an icon to display when graphical login has been selected.

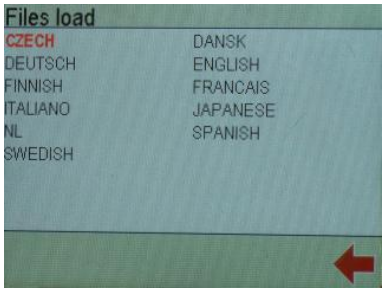
If you want to create a new user account, select the "new user" icon at the bottom of the screen.

WARNING! DO NOT DELETE YOUR ADMIN ACCOUNT OR FORGET THE PASSWORD. The machine will have to be sent back for factory reset.

Change the language

Select "language" in the system menu. Shortcut “2”

In the language menu, select which language to use for the MINIKEY interface. Press a language name to switch to that language. You will return to the main menu with the new language in effect.



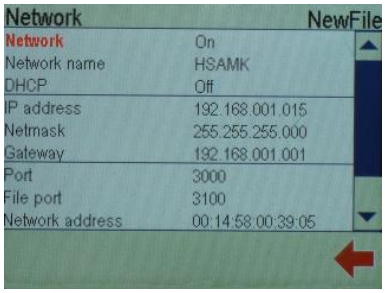
If your language is not on the list, you can make your own. HSA SYSTEMS provides the tools necessary to upload a new language.

The language is tied to a locale, which determines the characters available in the symbol type keyboard.

Change network settings

Select "network" in the system menu. Shortcut “3”

Network settings allows you to configure your MINIKEY for communication with the local area network.



Parameter list

Property	Description
Network	Enable or disable network option.
Network name	Used to identify the unit, when connected to the Communicator software.
DHCP	If this option is set to on, theMINIKEY will search the network for a DHCP server, to automatically obtain an IP address, netmask and gateway. To add an IP address manually select "off".
IP address	Standard settings for IP access. Works just like with a PC network. Typical settings are: IP = 192.168.1.10 Netmask = 255.255.255.0 Gateway = 192.168.1.1
Netmask	
Gateway	
Port	This port is used when the MINIKEY is operated by remote control.
File port	Port for sending files to the machine
Network address	A unique address that cannot be changed. Mac addresses allow network administrators to allow or disallow the MINIKEY access to a network, or to assign a specific IP address to a certain machine.

Change screen settings

Select the "screen" in the system menu. Shortcut “4”

The screen menu has the following options.

Property	Description
Confirmations	If this option is selected, you will be asked to confirm, for instance if you delete a file.
Info Screens	This option will display info screens when a command has been carried out.
Screensaver	The time that elapses before the screen saver starts.
Screensaver Password	If screensaver password is set to on, the user must enter the password to regain access to the MINIKEY
Login	Select graphical login (user accounts shown as icons), Text Login (enter username and password) or No Login.
Brightness	Select screen brightness. (0..100)
Log Level	What data is saved to the internal log file. Choose between none, minimum, normal or maximum log level. A detailed list is in the reference section
Unit	Measurement units. Choose between mm, inch or pixel.
Item Selection	"Click to change" will allow you to edit the parameters and activate menus immediately. "Click to select" will highlight the parameter and menu first. Select again to activate.
Prompt display	When entering print mode, prompts can be listed or shown one by one.
Autosave	When to save messages. Choose between print stop, print start, both or none.
Preview zoom fit	In main screen of MK, choose how to fit message. Height, width or Standard (as close to normal zoom as possible)

Set system clock

Select "Clock" in the system menu. Shortcut “5”

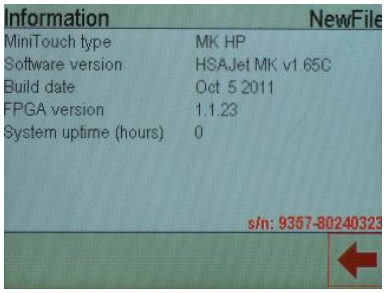
The available options are:

Property	Description
Current date	Current date. This is entered in your local format, which will depend on menu language chosen.
Current time	Current time in your area. (hh:mm:ss)
Use DST	If set to on, the controller compensate for Daylight Saving Time.
DST on	The date when Daylight Saving time starts.
DST off	The date when Daylight Saving time ends.

Objects with date/time content are synchronized with the system clock therefore it is important that the settings are correct.

Display system info

Select "info" in the system menu. Shortcut “1”



Use the USB feature

How to upload Layout and resources from USB

You can create a print job with the software MiniDraw and upload it to the MINIKEY from USB. To load print jobs from a USB Key, insert the Key into the USB slot. You must be logged in to do this. The MINIKEY will search for available scripts in the root of the flash drive, and display them on the screen.

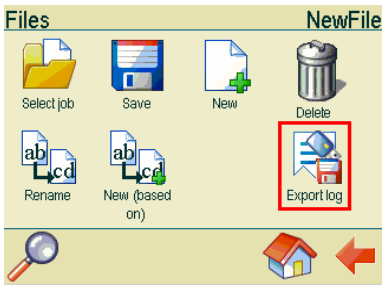
Click on the script to execute and confirm when prompted

For instructions on how to create print jobs and save them to USB, please refer to the MiniDraw Manual.

How to export log files to USB

Two log files are stored on the internal memory card. The content of the data log is stored in one logfile. The log file format is defined from MiniDraw.

There are 3 different log levels. Please refer to the section "Screen settings". You will find a list of systems events in the reference section. The logfiles can be extracted and saved to a USB Key. Insert a USB Key in the USB slot on the MINIKEY . Select "Export log". This will start the extraction process.



The extraction process is completed when the "busy symbol" is gone.

The log files will be saved on the USB drive as

LOGFILE.LOG for system events

PRINTER.LOG for print data log

How to update firmware

To update from a USB Key, please complete the following steps.

- Obtain the update files from your supplier. You typically get this as a zip file.
- Copy all files from “USB UPDATE” directory inside to the USB Key.
- Insert memory stick in MINIKEY.
- Wait for a list of files to display on the MINIKEY (you must be logged in as admin to see this)
- Load mkupdate.tsc script and confirm
- When asked, recycle power

You can also update firmware from your PC via an Ethernet connection. The procedure is described in MiniDraw manual

Next install the software MiniDraw and follow the instructions in the MiniDraw manual.

Using databases

> The MK offers simple, yet effective database printing support.
>
> It's simple to use, and can be made non-accessible for operators

Database limits and possibilities

Database printing on the MK should perhaps more correctly be considered "list printing". The controller can:

- Load a text file from USB drive
- Use up to 5 fields, separated by same single character
- Use up to 2,7 mio records
- Remember where print was stopped, and continue on next record, also after power-off
- Prevent operator from re-printing same data
- Use same content multiple places
- Print content in non-English languages (ANSI encoded)

Traditional database functions are not available though. You cannot search, select, evaluate, repeat or skip data. The idea is to allow the database function to be simple to use.

Database layout

As indicated above, a database for the MK should follow these rules **exactly**:

Parameter	Rule
Fields	Maximum 5, but can be less.
Delimiter	Fields delimited by single character. Fields cannot be quoted
Line-ending	CR LF (2 bytes, Windows format)

Encoding	ANSI encoding only. Single byte values. It is possible to use bytes above 127, to print non-English languages.
Length	No more than 2,7 mio records. In reality, the limit is less because of file size
Name	Database file MUST be called **DATABASE.CSV** on the USB disc.

Using database print

Two points should be considered for database printing.

Assign fields to content/ object

First a field should be assigned to the content (object). Do this by editing the field.

It is only possible to assign database content to STATIC content (marked “TEXT”). All other content is given automatically.

At the very bottom of the static text edit menu is listed “Database content”. Default is OFF. Press ENTER here to set to “ON”. (Shortcut: “7”).

This will make 2 more menu options appear: database field and database separator. Field is a toggle for 1..5. Separator a single character, which can be anything that is not used for content. Example: if ; (semi colon) is needed in content, choose another character, such as * or §.

It is possible to assign the same field to multiple content (objects).

If any object has a database field assigned, and no database has previously been used, an error is shown at print start “No database found”.

Upload database

The upload of a database is very simple, and involves just 2 steps:

- Place database on a USB stick. It MUST be called “DATABASE.CSV”.
- Insert USB when logged in. Database is loaded into the controller. Notice that this may take quite a long time if the database is large

Print database

Once database is loaded, start the print. An extra item is on the performance screen: database record.

For each print, a database record is used. It is not possible for the operator to change the current record. This is for security reasons.

When the database print is completed (all records used), the print mode will be stopped. You can NOT start print mode again with this layout, and the same database. Again, this is for security reasons.

Refresh data

To start printing again, re-insert USB and upload database. It is here assumed that the data is actually refreshed.

The controller cannot check if the data is actually the same, you are responsible for the security around handling of USB keys and the data file.

Reference Section

List of date formats

Variable	Explanation
y,yy,yyyy	Year with (1, 2 or 4 digits)
m	Month number (1 digit)
mM	Month number (1 digit, space leadin)
mm	Month number (2 digits)
mmm	Jan
mmmm	January
#w	Week number (1 digit)
#W	Week number (2 digits)
d	Day of month (1 digit)
dD	Day of month (1 digit, space leadin)
dd	Day of month (2 digit)
ddd	Short name for day (such as mon for Monday)
dddd	Full name for day (such as Monday)
#d	Number of weekday (start of week as per language file is number “1”)
#j	Day of year (1 digit)
#J	Day of year (3 digits)
h,hh,	Hour (1 or 2 digits)
n, nn	Minute (1 or 2 digits)
s, ss	Second (1 or 2 digits)

Notes:

1) Month names depend on the locale selected

2) Month / Day names are capitalized according to format string. Ex: mmm=>jan, MMM=>JAN

3) To put literals, quote the string. "ddd is " ddd produces ddd is Mon

4) In general, date calculation and formatting follows ISO-8601

List of system events

If loglevel has been set to minimum, the actions with minimum log level will be logged.

If loglevel has been set to normal, actions with minimum log level and normal log level will be logged.

If loglevel has been set to maximum, all actions will be logged.

Log level	Action	Log level	ACTION
Maximum	Entering prompts	Normal	Remote shutdown
Maximum	New value	Normal	Prompting
Maximum	Entered value	Normal	Stopping print
Maximum	Entering prompts for next job	Normal	Data edit (object)
Minimum	Logged on	Normal	Data edit (content)
Minimum	Failed login	Normal	Editing finished
Minimum	Shut down	Normal	Create object (wizard)
Minimum	Log out	Normal	Create object with content
Minimum	Remote log out	Normal	Edit object/content
Minimum	Starting print	Normal	Delete object/text
Minimum	New file	Normal	Edit shift content
Minimum	Load file	Normal	Delete shift content
Minimum	Load file to print queue	Normal	Change font
Minimum	Delete file	Normal	Change locale Date/time
Minimum	Load file template	Normal	Edit logo
Minimum	Renaming file	Normal	Save file
Minimum	New user added	Normal	Language changed
Minimum	User deleted	Normal	Calibration
Minimum	Edit user	Normal	Spit settings changed
Minimum	Screen settings changed	Normal	Printhead edit
Minimum	Switching job	Normal	Pen edit
Minimum	Data log file edit	Normal	Logs exported
Minimum	Pen auto switch on/off	Normal	Logs reset
Minimum	Firmware update initiated		
Minimum	FPGA update initiated		
Minimum	Logged on (remote)		
Minimum	Failed remote login		
Minimum	Log out(remote)		
Minimum	Load file (remote)		
Minimum	System reboot(remote)		

Overview of Connectors

Necessary equipment		CONNECTOR
1	Print head (1)	SUB-D 15 pin female
8	Power connector	100-240 VDC
Recommended equipment		
2	Print head (2)	SUB-D 15 pin female
3	External start sensor	SUB-D 9 pin female
4	Encoder	SUB-D 9 pin female
Optional equipment		
5	USB connection, for loading jobs	USB
6	Ethernet connection, for remote control and transfer	RJ45 female socket
7	RS232 connector	SUB-D 9 pin male

For wiring diagrams on connectors, please refer to installation manual.

Fuses

The MiniKey controller has 4 fuses, 2 on the outside and 2 on the inside.

On the outside are the mains fuses 5x20mm glass 2A T

The controller can supply external equipment with 5 and 12V DC from the internal power supply.

F1 is the 5V fuse and F2 is the 12V fuse both are 0,5A SMD Fast acting. The value of the fuses is related to the power available from the PCB. Use only 0,5A - if you need more power you must use an external power supply.

F1 and F2 are located on the inside of the MiniKey right behind the USB connector.

You can buy the fuses from HSA or locally, if you choose locally make sure you get the right fuses, warranty does not cover replacement of burned PCB's because of wrong fuses.

Part numbers		
HSA	FARNELL	MOUSER
 ACEL-Fuse-0,5A-SMD	9922156	576-0451.500MRL
 ACEL-Fuse-2A-5x20	1123244	504-BK/S506-2-R

Data Exchange

Please refer to "Remote Communication with MiniTouch/MiniKey"

Support

For product support, please contact HSA SYSTEMS Customer Service department

HSA SYSTEMS CUSTOMER SERVICE DEPARTMENT

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