

Configuration app and Bluetooth interface

Note, this manual is continuously updated. Check

www.mollehem.se/doc/instruktion/instruktion_programmering_en.pdf for the latest version.

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1 BLUETOOTH INTERFACE

The interface is connected to LocoNet and requires no other external power.

On the box there are three LEDs. From the top in the picture: a blue, a red and a green.

The green LED is lit when the interface is connected to LocoNet and get enough power.

The Red LED is LocoNet and is normally off.

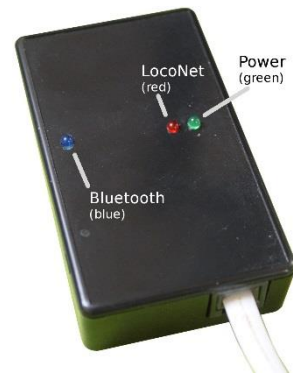
If it is constantly lit, that means that there is no LocoNet signal available.

When messages are transmitted on LocoNet the red LED will flash.

The blue LED is for the Bluetooth connection.

It will flash quickly when the BT interface is free and available for a new connection.

When the interface is connected with a phone, the LED will flash slowly.



1.1 CONNECT INTERFACE WITH A PHONE

To use the interface it has to be paired with the phone to be used. This is done once for each phone.

Connect the interface to LocoNet and check that the blue LED is flashing rapidly (several flashes per second).

On the phone, go to “Settings” and “Bluetooth”.

Tell the phone to “Search for devices” and after a few seconds the phone should find a new device with a name like “LOCOBRIDGE_n” (where “n” is a number).

Select “LOCOBRIDGE_n” and the phone will ask for a PIN code. This code is 1234.

From now on the phone will recognize the interface.

Open the app and select (“LOCOBRIDGE_n”) among the choices that are presented at the start.

1.2 SYSTEM VARIABLES – SV, FOR THE BLUETOOTH INTERFACE

The Bluetooth interface has some configuration parameters, SV, that can be used to customize the interface.

Note that parameters that affect the Bluetooth communication will not take affect directly.

To enable changes the SV 13, “Update at next startup”, should be set and then the interface should be restarted (disconnect from LocoNet and then reconnect).

The PIN code is set to 1234 default. This code is commonly used by all Bluetooth units and is known to many.

If the interface is used in public places it might be wise to change the code to prevent others to connect to the interface.

“Bluetooth name” is the name of the unit as it is seen from the phone. Default name is “LOCOBRIDGE” and the serial number. This name can be changed.

The characters in the name are restricted to “simple international characters”, i.e. no national characters like å,ä,ö.

SV number	Name	Description	Decoder version
12	Compatible with LocoBuffer	Use a message format compatible with LocoBuffer	2
13	Update BT at next startup	0 – No 1 – Yes	2
14	Pin code	4 digits	2

21	Address	LocoNet address to this interface. Used with SV configuration.	2
30-41	Bluetooth name	The name of the Bluetooth-device as seen from the phone. Max 12 characters. No ããö or other "national characters".	2

2 PROGRAMMING APP

The programming app is available for Android devices and is installed from Google Play. Go to Google play and search for “MGP LocoNet Decoder Programmer” (or just “LocoNet”).

Before the app is used the first time, the BT interface and the phone must be “paired”, see previous chapter about the BT interface.

The first time the app is opened, it will ask for an interface to use.

If the BT interface is paired with the phone, the interface will be present in the list shown, and it has a default name like “LOCOBRIDGE...”.

The first screen in the app will show a list of all devices that are connected to LocoNet – the device list.

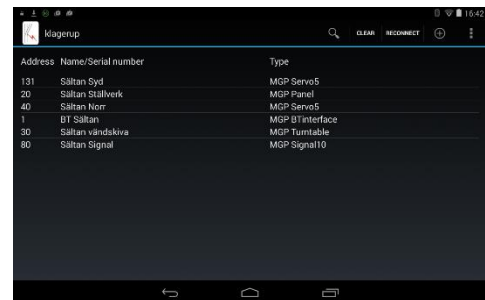
The device list can be refreshed with a click on search (the magnifying glass). When the “magnifying glass” is touched, the app will ask all devices on LocoNet to present themselves and it will add all new devices to the device list.

In the “preferences menu” the app can be configured to automatically search for all devices at startup.

Available devices are presented in the device list with their LocoNet address, their serial number or name, and the type of device.

The name of a device is set in the app.

The type of the device is a description of the type, or if the device is unknown to the app, it is the developer code instead.



Up to the right in the picture there are some menus visible. Those that are visible in the picture are: “Search” (the magnifying glass), Clear, Reconnect, “Add” (“+”) and a menu that contains more functions.

- “Search” the app asks all devices on LocoNet to present themselves and will update the device list.
- “Clear” empties the device list
- “Reconnect” disconnects from the phone and then reconnects. Usable when the interface and phone has lost its connection.
- “+” add. Normally devices are found on the LocoNet and then configured with the app. But with “add” it is possible to start creating a configuration without the real device.
- The top right menu contains even more functions. Depending in the width of the screen more or less functions is shown directly or hidden in the top right menu.

The most important menu, that is not visible in the picture, is “Settings”. In “Settings” it is possible to change the behavior of the app and e.g. change which Bluetooth interface should be used.

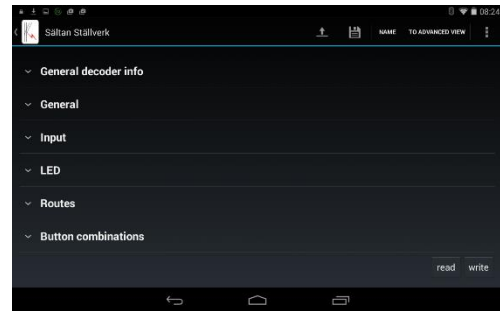
2.1 CHANGE SV

If one of the devices in the device list is selected, a new screen is opened which shows the available SVs for that device.

Note that the view can be changed between “Basic view” and “Advanced view”.

“Basic view” shows SV that is of interest in the normal configuration.

“Advanced view” adds SVs that are only needed for very specific configurations.



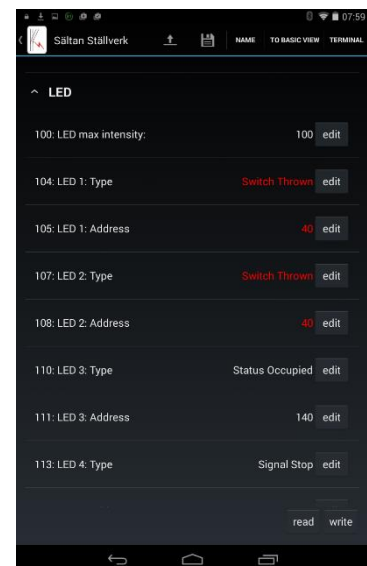
The list of SVs is sorted in groups based on their function. Click on a group name and the SVs of that group is shown.

The value for each SV can be read from the device. By default all values are read from the device at the moment the device is opened, but if not, the “read” button at the bottom can be pressed.

Press “edit” to change a SV.

When a SV has been changed, the value is marked in red color. To send the changed value over to the device, press the “write” button at the bottom.

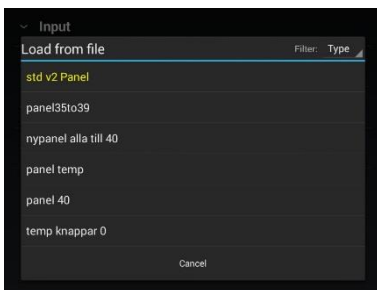
Some SV are read only and they has the edit button disabled and in grey color. An example of this is the program version.



2.2 SAVE A BACKUP

All read values can be saved in a file as a backup or for future use.

Press the “floppy” button and give the backup a name.



A saved file can be opened with a click on the “arrow” button. When values from the file has been read, they can be sent over to the device with a click on the “write” button.

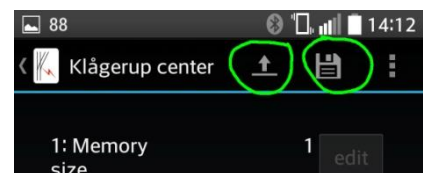
In the list some of the available “backups” are in yellow letters and some in white.

The yellow ones are standard configuration prepared by MGP. They can be default values or examples and specific applications.

If there is a need to set a device back to its default values, then load the “yellow file” with a name starting with “std...” and then send it over to the device with a click on “write”.

In the list over saved backup files, only files suitable for the opened device are shown.

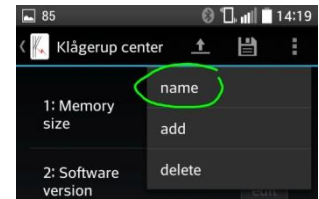
In the top right of the screen there is a menu showing “Type” which means that files are shown that is of the correct type for the device. This can be changed to “All” which will show all available files. But take care – it is normally not a good idea to load a file into the wrong type of device!



2.3 GIVE THE DEVICE A NEW NAME

In the list of devices, a device is presented with its serial number. To make the list more readable it can be good to give the device a name, e.g. after where and to what the device is used for.

When a device is opened there will be a function “name” among the menus. Press “name” and give the device a proper name.

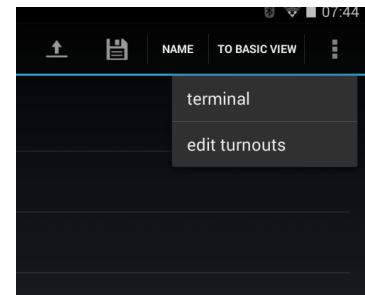


Note that the name is used within the app and is not stored in the decoder!

2.4 SUPPORT FOR BASIC CONFIGURATION OF TURNOUT SERVOS

The app has direct support for the configuration of the basic parameters for servos in decoder “Servo5”.

In the app – start by opening the decoder that should be configured. Among the menus up to the right there is “edit turnouts” – select this.



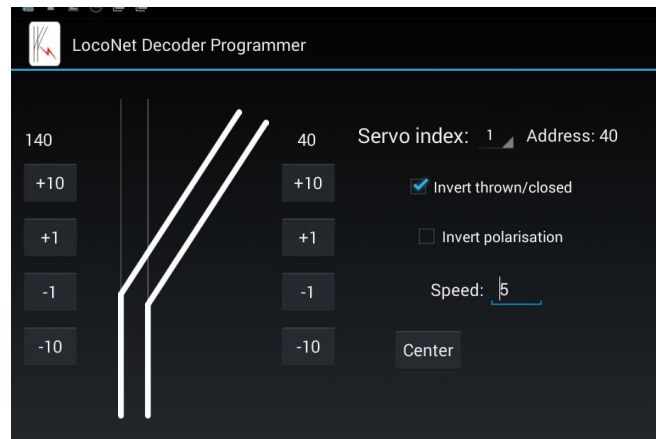
The page that appears contains all the important parameters that need to be configured when mounting a servo to a turnout.

A symbol of the turnout shows the state of the turnout “closed” (straight through) or “thrown” (to the side). In the picture to the right the turnout is in position “thrown”.

Note that the symbol is a button, so it can be “clicked” to change the position of the turnout.

To the right in the picture, “Servo index” shows which servo is controlled at the moment. Here any of the servos (1-5), can be selected.

The address of the selected servo is also shown. The servo address can not be changed here as it depends on the basic address of the decoder. Change the basic decoder address (Sv21) to change the servo addresses.



“Invert thrown/closed” is used to align the position of the symbol with the actual position of the turnout. It is important that the turnout and the symbol shows the same positions.

“Invert polarisation” is used when the polarization of the turnout is wrong, meaning that there is a shortage when a train tries to pass the turnout.

“Speed” is the speed of the movement when the turnout changes position.

On both sides of the turnout symbol, there is buttons to change the angle of the servo.

To the left is the angle when the turnout is in the closed position.

To the right is the angle in thrown position.

The buttons with + and – is used to change the value of the angle.

Down to the right there is a button, “Center”. This can be used to put the servo in center position, which should be done before mounting the servo to the turnout.

2.5 SEND SWITCH COMMANDS

The app contains a simple tool for sending switch commands. This tool is under development and will be more powerful in the future.

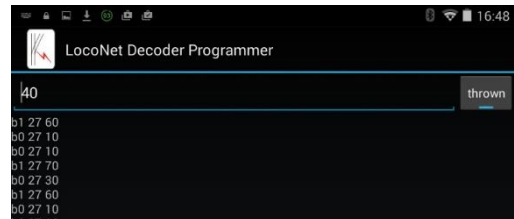
In the top menu there is a selection "Terminal".

At the moment the tool has two functions:

On the first line an address to a switch can be entered. This switch can then be switched by pressing the button to the right.

The button is labeled with the current state of that switch, "thrown" or "close".

Under the line for the switch command, all LocoNet messages that is sent on LocoNet is logged. At the moment those commands is in cryptic byte code.



To test a new switch installation, enter the address for the switch and press the button to the right. If all is well the switch will change, and when the switch report back its new position, the text on the button will show that state.

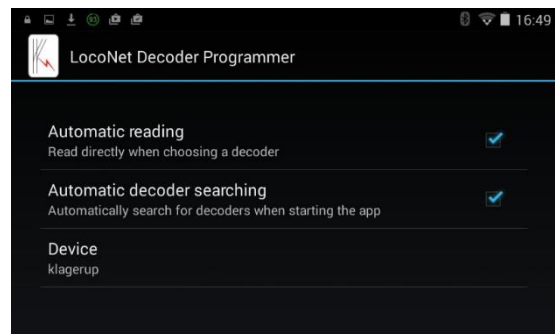
2.6 CONFIGURATION OF THE APP

In the menu "Settings" the standard behavior of the app is set.

"Automatic reading" controls if the app should read all values from the device, when the device is opened. If not, the values has to be read with a click on the "read button" after the device SV screen has been opened.

"Automatic decoder searching" control if the app should search LocoNet for connected devices, directly when the app is started. If not, the device list will be empty at the beginning and is filled when the user clicks the "search" button.

"Device" is used to select which BT interface that is used to communicate with LocoNet.



APPENDIX A, HARDWARE

The MGP decoders are compatible with the Arduino computer card family.

They can be reprogrammed with the Arduino IDE and in that case be treated as “Arduino Pro mini”.

The six unpopulated connector holes that sits at the border of each decoder, is the same interface that is found on a “Pro mini”. Looking from outside of the board, “GND” is the hole to the right.

To use them with LocoNet, the LocoNet libraries from “Model Railroading with Arduino” can be used. The first versions of the decoders used them, but due to available memory, the current versions use more compact and less generic code. To use this LocoNet library, use D8 as incoming and D9 as outgoing pins.

To update the decoders with new version of the firmware, the available images can be loaded into the decoder. But - these images are not suitable to load if the decoder has been used with other code before. If a decoder needs to be reloaded with the normal firmware – please contact MGP.