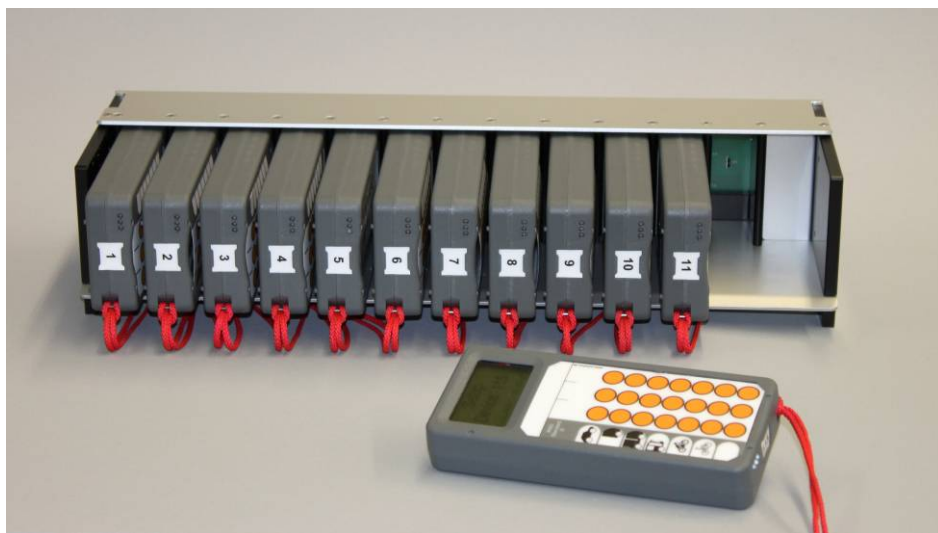# hc8/36

for device generation hc8® with 36 keys

hc8® is a registered trademark of Schuh & Co. GmbH

This system description is an introduction to the hc8® system and contains:

Hardware overview:
- hc8 description
- hc8 fields of application
- Using the docking station DS12 / Dongle

Information concerning the Software:
- hc8-KNO for programming and data retrieval from hc8
- KNO-WIN for the analysis of traffic surveys

Additional information concerning other hc8-developments:
- 1987 – 2010
- from 2011 onwards

1   Introduction

The hc8/36 data logger is part of the hc8 system that was brought on the market in 1987 and exists in several versions of soft and hard ware ever since.

In general, the hc8-system is used for the manual acquisition of traffic data for various purposes and the efficient and fast processing of acquired and analysed traffic data and indicators.

Improved hc8/36

- the 3rd generation hc8 incorporates 20 years of experience
- power saving electronics let you operate the device for months on one battery charge
- flash memory, therefore no loss of data due to empty batteries
- 36 freely programmable keys
- internal storing of each key press event accurately to the second
- big, 8-line display
- configurable switching on and off of display lighting
- communication with optical IrDA-interface, which means no connector problems
- device-Ids can be set by the customer himself
- firmware updates can be easily done by the customer himself
- robust, splash-proof casing
- stackable casings
- device weighs only 225 g
- inexpensive printed key pad foils
- own foils can be printed with a laser printer

Improved Docking-Station DS12

- compact and lightweight, takes up to 12 hc8/36
- connection to PC via USB-interface
- devices can be easily inserted, no alignment of connectors necessary
- can be cascaded so that several docking stations can be accessed at the same time with one USB-connection
- docking stations can be stacked and connected

Improvements due to the new USB-Stick (Dongle)
- hc8/36 can be programmed and read directly at your desk, no extra space needed and independent of the DS12 docking station
- no power supply needed, also for mobile use with a laptop
- 20 to 30 devices can be processed simultaneously

2   Scope of Delivery

Depending on the scope of your order, the delivery includes the following components:

- hc8-data loggers of version hc8/36
- String to hang hc8-data logger around the neck
- exchangeable foils

- Docking-Station DS12 (for programming, data retrieval, loading, storing)
- Docking-Station DS12 power supply unit
- Docking-Station DS12 USB data cable
- DS12 to DS12 connection cable (RJ45 patch cable)

- Dongle (infrared interface for programming and data retrieval)
- Extension cable USB – Dongle

- driver software for USB-interface
- Software hc8-KNO for hc8/36 programming and data retrieval

- Installation Guide for Hard- and Software
- User manual hc8-KNO

3 Installation of Hard- and Software

The notes for installation will be provided with the individual products. These notes have to be followed exactly to ensure the correct working of the system.

3.1 Hardware
- Infrared interface in connection with DS12 Docking Station
    - Installation: see separate installation guide „hc8/36 HW / SW"
- Infrared interface as Dongle
    - Installation: see separate installation guide „hc8/36 HW / SW"
- DS12 Docking Station (programming, data retrieval, loading, storing)
    - start of operation: see description below
- hc8-data loggers of version hc8/36
    - start of operation: see description below

3.2 Software
- hc8-KNO
    - Installation: see separate installation guide „hc8/36 HW / SW"
    - operation: see separate user guide „hc8-KNO"
- KNO-WIN
    - Installation: see separate user guide „KNO-WIN"
    - Update: see separate instructions „Update Instructions KNO-WIN"
    - operation: see separate user guide „KNO-WIN"

3.3 Interface
There are two ways to program and read out the hc8/36 data loggers via the USB-interface:

- Docking-Station DS12 with integrated infrared interface
- Infrared-Dongle also called IrDA-Stick

To use the interface, first install the software as specified in installation guide „hc8/36 HW / SW" and then put the hardware into operation.
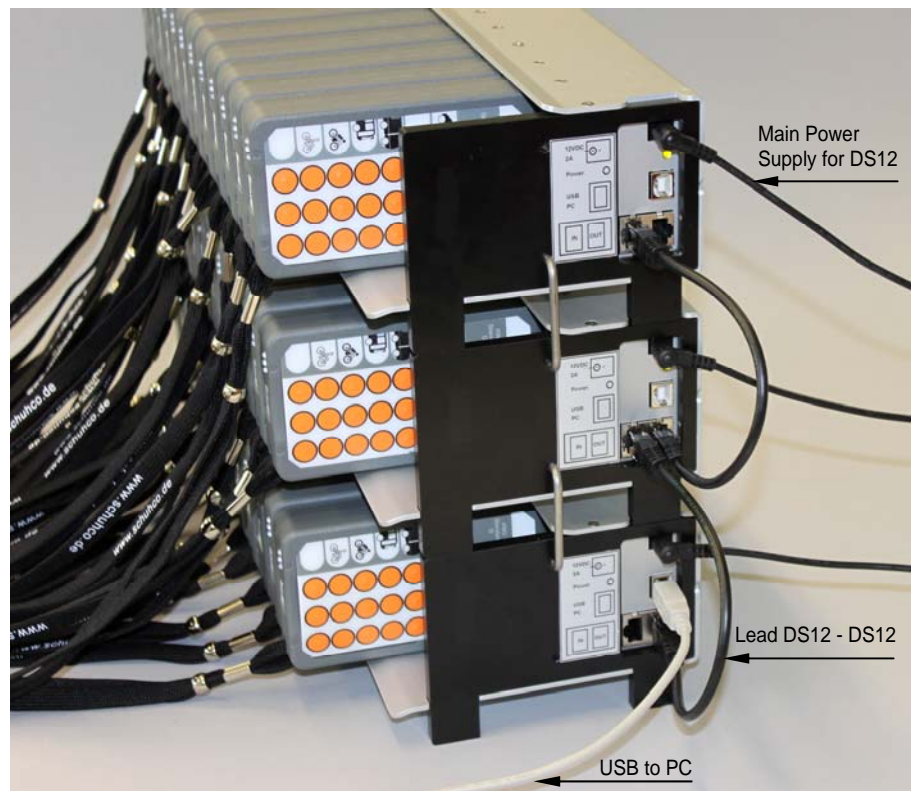
4 Docking-Station DS12

The Docking-Station DS12 has the following functions:

- Interface for programming hc8/36 data loggers
- ditto for data retrieval
- device storage outside traffic counts
- charging of batteries

The batteries of the hc8/36 – even in the case of frequent use – only need to be charged once of month e.g. for 12 hours.
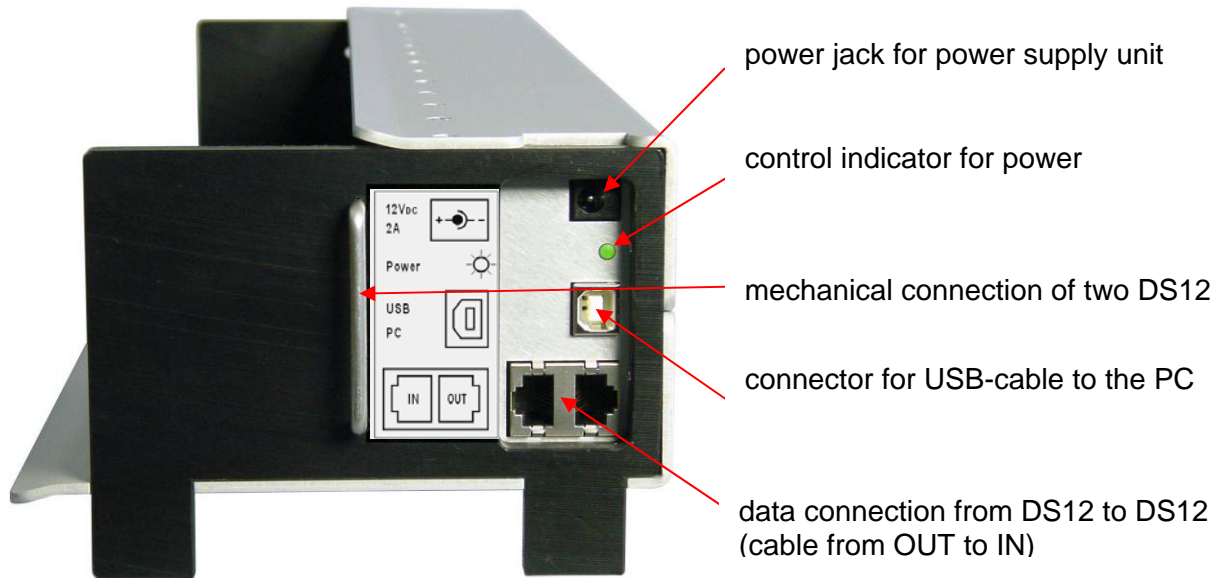
4.1 Line up

Place the DS12 near to the PC on which the program hc8-KNO is installed, respectively near the PC on which the USB-connection is configured.

Several DS12 can be placed on top of each other and can be joined together with connection cables to constitute one logical device. Each DS12 needs its own power supply.

4.2 Connections

On the right side of the DS12 there is a patch bay with the following components:

power jack for power supply unit

control indicator for power

mechanical connection of two DS12

connector for USB-cable to the PC

data connection from DS12 to DS12
(cable from OUT to IN)

To extend the data connection from one docking station to the next, connect the „OUT" of the docking station connected to the system to the „IN" of the next docking station and so on with the data connection cable. In case of a mix-up, the connection will not work, but otherwise there will be no damage.

For the programming and reading of the data loggers, the USB-interface has to be installed and configured according to the installation procedure. Furthermore the DS12 has to be connected to the PC with the USB data cable.

WARNING: Please pay attention to the installation guide before using the interface.

The control lamp of the DS12 indicates whether the power supply is working or not.

DS12 docking stations are stackable. To ensure that they sit firmly on top of each other, a metal handle, which is part of the delivery, is put into the fixing holes.

4.3 LED

When the power supply is connected and switched on, the LED lights on the hc8/36 are working:

LED- lights

1. LED: GREEN		Device is being charged
2. LED: BLUE		no function yet
3. LED: RED	switched off:	no counts programmed. Data has been retrieved
	static on:	device is programmed. This is the state the device is in before, during and in between counting blocks.
	blinking:	after counting, the programmed times are over. The data of the counts are in the device but have not been retrieved yet.

4.4 Technical Data

Supply Voltage DS12:	12 V_{DC} / max. 1,8 A
Input jack for power:	barrel connector 5,0 / 2,1 / Plus pole inside
Dimensions without cables:	463 x 105 x 153 mm (B x H x T)
Weight DS12:	1,8 Kg

Power supply for power supply unit:	100 - 230 V_{AC}, 50-60Hz
Weight power supply unit:	120 g

5   Infrared-Dongle (IrDA-Dongle)

As an alternative to the DS12 docking station, the hc8/36 can also be programmed and read with the IrDA-Dongle.

5.1   Connections

Connect the Dongle to the USB-port of the PC using an extension cable between USB-port and dongle.

WARNING: Please pay attention to the installation guide before using the USB-interface.

Put the dongle level on the table. The side of the dongle opposite to its connector has to point in the direction of the hc8/36, so that the infrared light impulse can reach the hc8. When suitably arranged in blocks, about 5x5 hc8/36 (placed on top or next to each other) can be programmed by the dongle at a distance of about 50 cm.
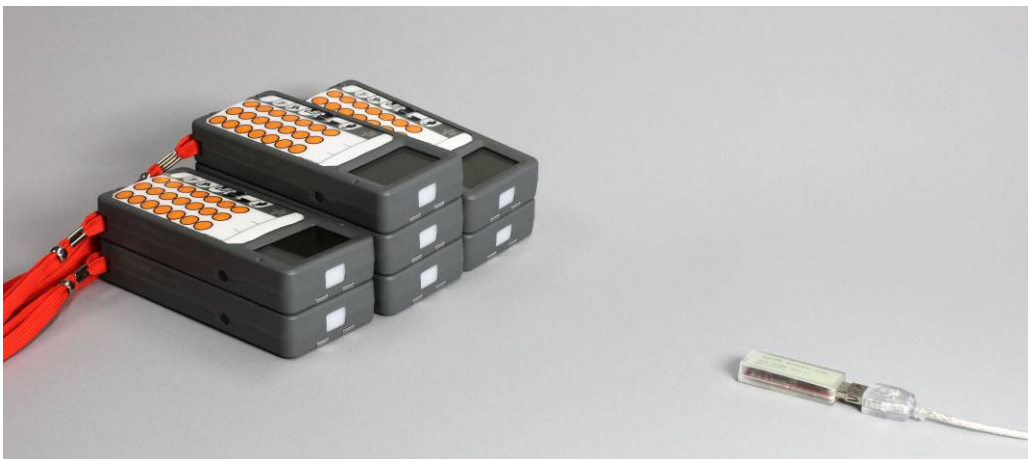
During programming of the hc8, the status display is deactivated (no LED-lights). Only the blinking of the dongle indicates data traffic. Charging of the hc8/36 batteries via the dongle is not possible.

5.2   Technical Data

Supply Voltage: 5 V$_{DC}$ from USB-port
Dimensions without cable: 70 x 21 x 12 mm (L x B x H)
Weight: 10g

6   hc8/36

6.1   Properties

The hc8/36 is distinguished by its power saving electronics which provides for several months of operation time on a single battery charge. It has 36 keys that can be enabled for a specific purpose with the hc8-KNO program and visualized on a keypad foil.

Each pressing of a key (key stroke), will be stored in the device with date and time and combined into intervals at the time of data retrieval. The key stroke data are available in the device beyond the time of data retrieval, so that they can be read even after further surveys have been made. The device memory is filled in a rolling manner, that means that the oldest data is overwritten only when the memory is completely full.

???

The display has 8 lines, so that status messages such as date and time can also be displayed. Before a count, the start time / start date of the 1st counting block is displayed. A the day of the count, there is a countdown in hours:minutes up to the start of the count. As a rule the device switches itself off when passive (outside counting times), but can be switched on at any time by pressing a key. With a programmable time parameter, the device can be activated some time before the start of the count (for instance 5 minutes before). During a count, the display stays active.
To program and read the data loggers with hc6/36 KNO, the display must be on and has to be activated, if necessary, by pressing a key.

The hc8/36 is splash-proof, because all openings of the casing are sealed. The device is charged via 2 contact strips, data is exchanged via an optical infrared interface and the keys are protected by a silicon foil.

To exchange the foil, proceed as shown below:

First slide the foil in underneath three points

then lightly bend to slide it under the other side

To remove, lift the foil at the bottom edge

6.2   Control Elements / Test functions on the device

During a survey only the counting functions on the programmed keys are enabled.

Provided the display light has been enabled when the device was programmed with the hc8-KNO program, it can be switched on with a pushbutton integrated on the right side of the device. The display light switch goes off again 3 seconds after the last pressing of key.

Outside of a survey, when the data logger is in reset state (not END), a special menu can be activated by pressing all corner keys of the 4x9 keypad simultaneously for at least 3 seconds. The special menu has these function keys:

1. Column / 1. Row: Installed hard- and software version
1. Column / 2. Row: Keypad test
1. Column / 3. Row: Battery status
1. Column / 4. Row: Log book

To exit the special menu, press the pushbutton for the display light.

Battery status „BAT": The battery charge displayed should always be above 3.5 Volt (Maximum 4.1 Volt). The state of charge is visualized with at bar or rather a moving arrow. When the arrow is in the left (black) area, the display light no longer be switched on, but otherwise the device will operate normally.

Reset state: in program hc8-KNO -> Service-functions -> Several hc8 together -> Reset survey state

6.3   LED
The 3 LED on hc8/36 indicate the following:

LED: GREEN   Device is being charged

LED: BLUE   currently no function assigned yet

LED: RED   switched off: no counts programmed. Data has been retrieved

              static on: device is programmed. This is the state the device is in before, during and in between counting blocks.

              blinking: after counting, the programmed times are over. The data of the counts are in the device but have not been retrieved yet.

6.4   Technical Data

Dimensions: 173 x 75 x 29 mm
Weight: 230 g
Interface: optical Infrared interface
Charging Voltage: 9 - 24 VAC/DC
Temperature Range: -10 to +50 Grad Celsius

7 Foils

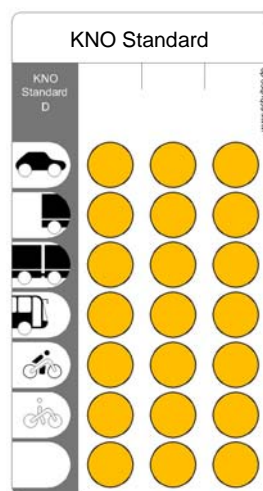Foils are available in different versions.

You can write on the foils with waterproof pens and mark them according to your needs (node id, name of lane, direction arrows). When the foil is no longer needed in this layout, it can be cleaned with methylated spirit (do not use benzene or similar).
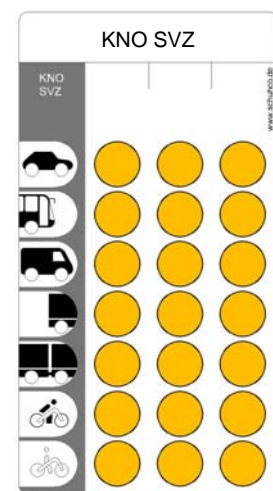
7.1 Standard Foils

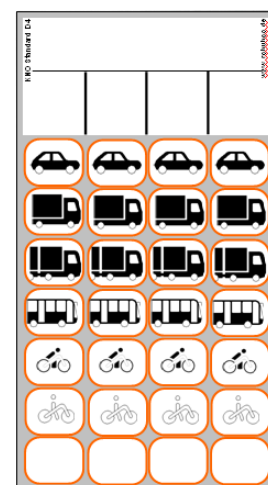The following ready-to-use foils are available from us:
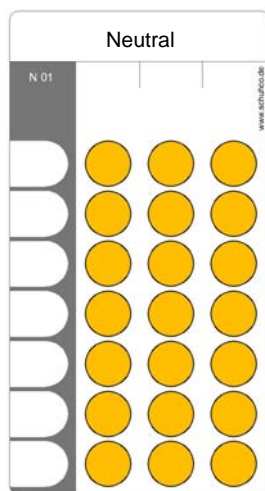
hc264

hc261

hc262

More foils are available on request

7.2 Design-yourself foils

You can design your own foils using the PowerPoint files provided. Cover the printout for protection with the transparent pre-cut foil.

Here an example of an individually designed foil:

8 General Remarks

Please avoid static charge, which may cause malfunctions or failure.

The hc8/36 is splash water protected; nevertheless it should not be directly exposed to continuous rain. Also, extremely hot or cold conditions can do damage to the device.

The hc8/36 is impact resistant, which means, it should survive falling from 1 m height.

Please take care when travelling in the car, because devices transported loosely can turn into dangerous flying objects which could be harmful to the passengers and to the device as well.

Damages to the outside casing should be repaired immediately to avoid moisture to penetrate. Please return the device to Schuh & Co. GmbH in Germering (Germany) for professional device inspection and repair.

9 More hc8-System Products

9.1 Hardware

hc8/25 (remainders)

hc8/45 (remainders)

9.2 Software

- Device control

KNO-Programmer for hc8/25 and hc8/45

FLU-Programmer for hc8/25 and hc8/45

FLU-PRO

hc8-PAS Programming Software

- Analysis Software

KNO-WIN

FLU-WIN

PAS only as DOS-Program

9.3 Planned Developments

Extension of hc8/36-program for FLU

Extension of hc8/36-program for PAS