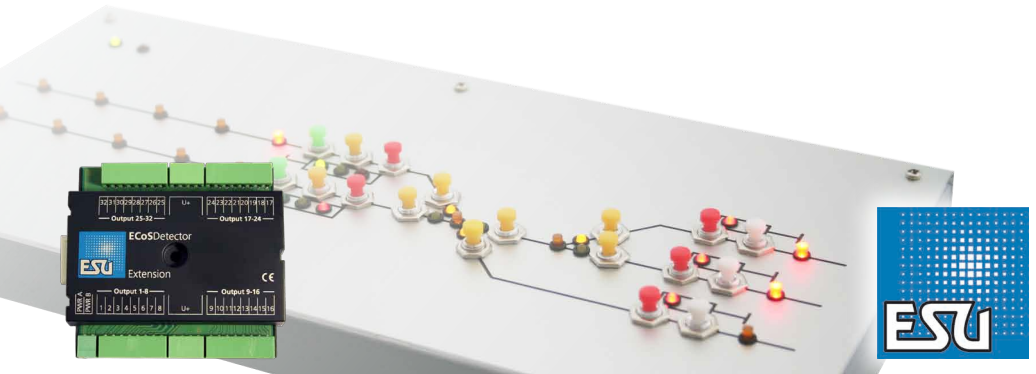


ECoSDetector Extension

Instruction manual

1. Edition, May 2012

50095 ECoSDetector Extension



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Important Notes

1. EG - Declaration of conformity

We, ESU electronic solutions ulm GmbH & Co. KG, Edisonallee 29, D-89231 Neu-Ulm, Germany, declare in sole responsibility that the product

Product description: ECoSDetector Extension

Part number: 50095

complies with all relevant regulations of the Directive for Electromagnetic Compatibility (2004/108/EG). The following harmonised standards have been applied:

EN 55014-1:2006 + A1:2009: Electromagnetic Compatibility - requirements for household appliances, electric tools, and similar apparatus - Part 1: Emission - Product

EN 55014-2:1997 + A1:2001 + A2:2008: Electromagnetic Compatibility - Requirements for household appliances, electric tools, and similar apparatus - Part 2: Immunity - Product family standard.

2. WEEE-Declaration

Disposal of obsolete electrical and electronic equipment (as practised in the European Union and other European countries with dedicated collection systems).



This mark on the product, the packaging or the relevant documentation indicates that this product must not be treated like household waste. Instead this product should be disposed of at a suitable collection point for recycling of electrical and electronic appliances. Thus you contribute to avoid negative impact on the environment and people's health that could be caused by inappropriate disposal. Recycling of materials contributes to preserve our natural resources. For more information regarding recycling of this product, please contact your local authority, your waste collection service or the dealer / shop where you purchased this product.

3. Important Notes – Please read first

We congratulate you on your purchase of an ESU ECoSDetector feedback module. This manual provides step by step information on the various options for use of this device. Therefore we have one request:

Please read this manual carefully prior to commissioning. Although the circuit board is quite robust incorrect wiring could lead to damage or destruction of the module. If in doubt, please refrain from any “expensive” experiments.



- The ECoSDetector Extension is solely intended for use on electric model train layouts. It may only be operated with the components described in this manual. Any other use as described in this manual is not permitted.
- All electrical work such as wiring the module may only be carried out when power is turned off.
- Avoid any impact load or pressure against the module.
- Keep away from wet conditions or humidity.
- The circuit board may not get into contact with any metal objects or electrical conductors. This is particularly true for the track signal.
- Never operate your layout unattended.

3.1. Scope of delivery

Please check if the following parts are in the packaging of your ECoSDetector Extension:

1x ECoSDetector Extension module

1x Accessory bag (with 4 nos. 8-way terminal blocks, 2 nos. 4-way terminal blocks, 1 nos. 2-way terminal blocks)

1x Manual (which you are reading right now)

General properties

4. General properties

The ECoSDetector Extension module is an optional supplementary module which can be used with the ECoSDetector (50094) or ECoSDetector Standard (50096), your 50000, ECoS 50200 as well as the Central Station 60212 „Reloaded“ with the ESU-Update.



The command station must have firmware version 3.5.0 or higher in order to be able to operate the ECoSDetector Extension modules! Otherwise the modules will not be recognised.

All ECoSDetector modules will be automatically recognised by the command station and integrated into the system. The connection sequence of the devices is arbitrary and can be suited to the layout's individual requirements. The ECoSDetector is fully updateable. The ECoS command station will automatically load new firmware files onto the feedback module, given that a new version is available.

ECoSDetector Extension is meant for building an external track diagram via the ECoSDetector module, which will be connected with the ECoS. This track diagram can be either completely self-built or you might use a commercially available system (e.g. by Erbert®).

The ECoS will appropriately switch the LEDs installed for illuminating track occupancy sections or to display turnouts / signal settings. Moreover, should you wish to switch your turnouts and signals directly, external pushbuttons can be arranged.

The input channels of the ECoSDetector module will read in the position of the buttons and forward the analysis to the ECoS. The ECoS will then carry out the respective commands.

Figure 1 shows a typical track diagram.

It consists of an aluminium front panel which schematically displays the track lines. Occupancy detections are respectively shown per block via a red LED. The signal and turnout positions are displayed via a further red or green LED. There are momentary pushbuttons to switch turnouts and magnetic accessories.

All of the momentary pushbuttons are lead to the inputs of the ECoSDetector module. For this purpose, there are 16 inputs per module available.

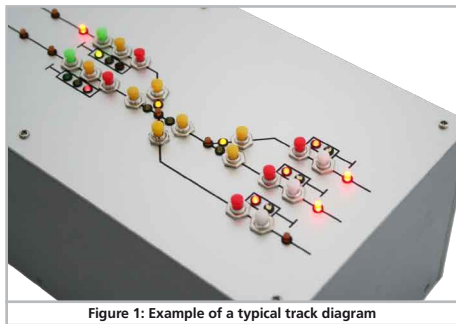


Figure 1: Example of a typical track diagram

All LEDs, respectively micro light bulbs are connected to outputs of the ECoSDetector Extension module, which has 32 transistor outputs available for this purpose. Each output can be loaded by up to 100mA. The outputs are overcurrent-protected and are connected to ground when switched.



Only LEDs (with a series resistor) or micro light bulbs must be operated on the outputs! Never connect inductive loads (such as e.g. electric motors, two-coil drives)! They will destroy the output!

The power supply for the module is done by an external power supply unit.

5. Wiring diagram

In this chapter we will explain the wiring of the ECoSDetector Extension module. The figures show the ECoSDetector Extension module connected with an ECoSDetector Standard module; the operation in connection with an ECoSDetector is, however, exactly the same.

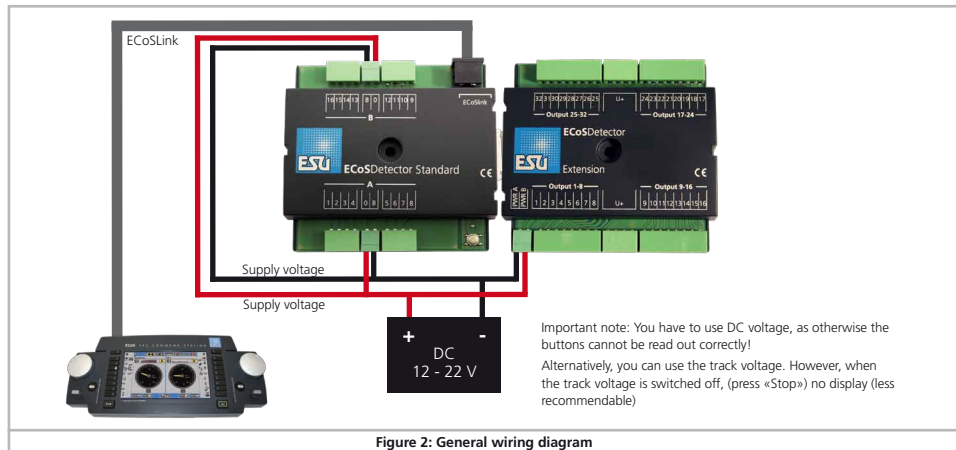


Figure 2: General wiring diagram

The ECoSDetector Extension module is connected sideways to the ECoSDetector. It receives all its commands by the ECoSDetector. The extension will not work without the ECoSDetector. The terminals mean the following:

- **PWR A, PWR B:** Power supply. You may use DC transformers or the direct digital track current. The maximum input voltage must not exceed 22V DC!

Wiring diagram

- **Output 1-8:** Group outputs 1-8 for consumers. If a short-circuit / overload is detected at one of the consumers, all other consumers of this group will be switched off, too.
- **Output 9-16:** Group outputs 9-16 for consumers.
- **Output 17-24:** Group outputs 17-24 for consumers.
- **Output 25-32:** Group outputs 25-32 for consumers

5.1. How to connect consumers

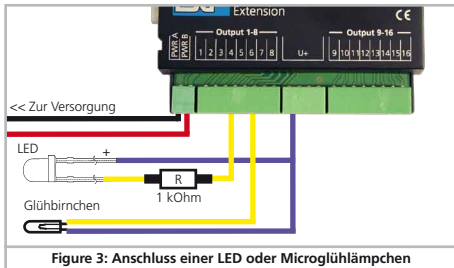


Figure 3: Anschluss einer LED oder Microglühlämpchen

16V Micro light bulbs can be directly connected to consumers. LEDs must be always operated with an appropriate series resistor (appr. 1kOhm, 0.25W)!



Do never operate LEDs without a series resistor!

5.2. How to connect extra keys

Figure 4 shows how an extra key is connected to the ECOSDetector Standard. This extra key can be used to switch magnetic accessories. The keys are expediently supplied by the current source of the LEDs so that only one single power supply is needed.

If you use an ECOSDetector module (instead of the "Standard" module), please consider chapter 6.1.5. of the ECOSDetector instruction manual. The jumpers must be set correctly!

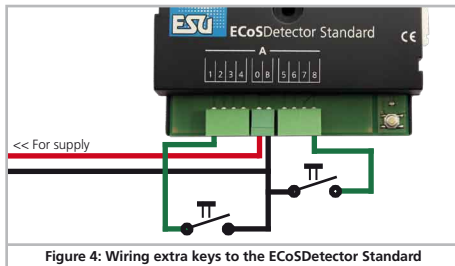


Figure 4: Wiring extra keys to the ECOSDetector Standard

5.3. Display of a three-aspect light signal

If you like to display a three-aspect light signal on your track diagram, you should wire the 3 LEDs required as shown in figure 5.

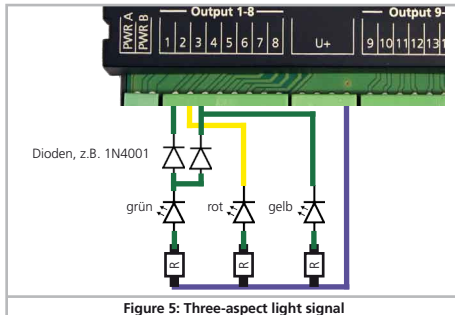
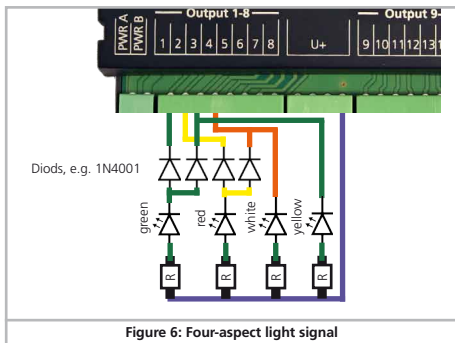


Figure 5: Three-aspect light signal

Configuration & Connecting to digital command

5.4. Display of a four-aspect light signal

Möchten Sie auf Ihrem Gleisbildstellpult ein vierbegriffiges Lichtsignal darstellen, sollten Sie die erforderlichen 4 LED wie in Abb. 6 gezeigt verdrahten.



6. Connecting to the digital command station

The ECoSDetector Extension module can be connected to your digital command station via the ECoSDetector, as shown in the ECoSDetector instruction manual, chapter 7.

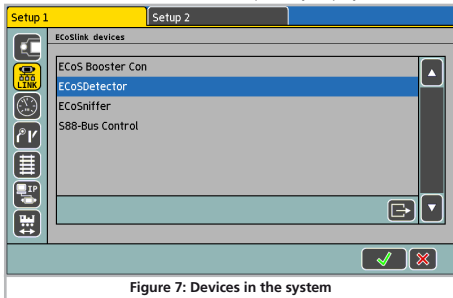
7. Configuration on the command station

After connecting the ECoSDetector and the ECoSDetector Extension to the command station the module is automatically detected and linked to the system.

Please make sure that your ECoS has firmware 3.5.0 or higher. Otherwise the ECoSDetector Extension is not recognised.

The configuration takes place on the set-up menu of the command station. Each ECoSDetector is displayed with its name in a list called "ECoSlink devices".

The Extension module will not be separately displayed.



In figure 7 the "ECoSDetector" is displayed by its name. This is the factory default value and should be changed by you as soon as you have more than one ECoSDetector module.

7.1. How to manage the ECoSDetector Extension outputs

You are able to determine via the ECoS what each of the 32 outputs ought to display.

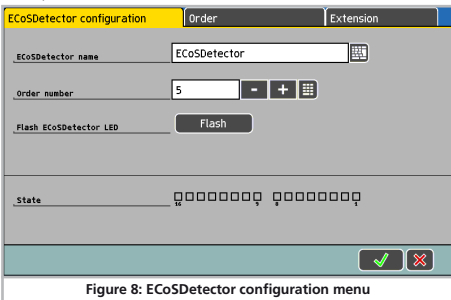
Feedback module: You can allocate a track occupancy detection. The output will show the section's state (free / occupied).

Configuration on the command station

Switch accessory: You are able to display the state of a magnetic accessory. For each state (e.g. red signal, green signal) you will need one of the module's outputs each. A four-aspect signal will need up to 4 outputs.

The function is allocated as follows: As shown in figure 7, select the ECoSDetector (Standard) on which the ECoSDetector Extension is docked on from the list and press "Edit".

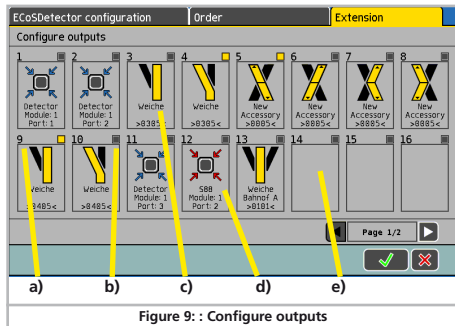
The configuration menu of the respective ECoSDetector module will open.



You will configure the outputs of the ECoSDetector Extension module by pressing tab "Extension" in the upper border.

The window "Configure outputs" will open.

There is a box provided for each of the 32 outputs showing the present utilisation.



- a) Number of the output
- b) State: Output is currently active or switched off
- c) Magnetic accessory: The output shows the state of the magnetic accessory.
- d) Feedback contact: The outputs shows the state of a feedback contact
- e) Switched off: The outputs is not used

To display output 17-32 it is possible to browse to the second page.

If you wish to change an output's utilisation, just click on its symbol.

7.2. Output configuration

You have to determine for each output what it should display. To do so, select the main function desired from the list in the upper left.

Configuration on the command station

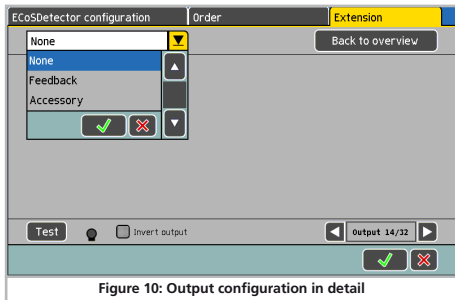


Figure 10: Output configuration in detail

7.2.1. Feedback module

If you wish to display the state of a feedback contact, now select the feedback module desired.

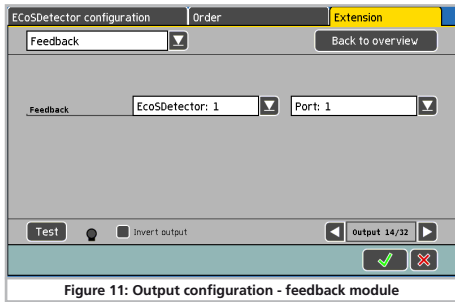


Figure 11: Output configuration - feedback module

You are furthermore able to determine if the output should be inverted. This is very useful, if a track occupancy detection shall lead to a switched off LED. Select "Invert output" to do so.

The current state of the output will be steadily displayed by a small lamp. The "Test" button might be helpful to test your wiring. It switches the output On or Off as desired, regardless from its actual state.

The button "Back to main menu" will bring you back to the previous mask.

7.2.2. Switching accessories

The state of a magnetic accessory is often wanted to be displayed (e.g. turnout, signal).

- In order to do so, first select "Switching accessory" from the list in the upper left.

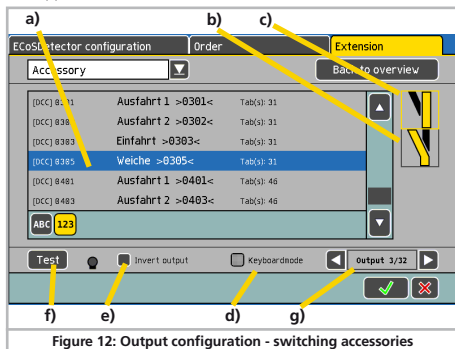


Figure 12: Output configuration - switching accessories

i If there have not been created any switching accessories yet on the ECoS, "Switching accessories" cannot be selected. If this is the

case, create the switching accessory desired, as described in the ECoS manual, chapter 12.

- a) List of all known magnetic accessories
 - b) Possible switching states of the magnetic accessory selected
 - c) Current selected state of the magnetic accessory, which is to be shown (yellow selection frame)
 - d) Activate keyboard mode
 - e) Invert output
 - f) Output test
 - g) Number of output that is configured
- Select the magnetic accessory desired.
 - Select the desired state the output should display.
 - If necessary, invert the display (for special use cases).
 - With the button "Back to main menu" you return to your selection.
 - Use the arrow keys g) to directly continue with the configuration of the next output

7.2.2.1. Keyboard mode

Usually there is 1 output switched during the switching mode for each switching state.



This is not appropriate for the four-aspect double cross turnout, as 2 outputs need to be switched for every state.

With the keyboard mode you are able to adjust the behaviour of the extension for the mentioned switching accessory: The outputs do now not longer represent the switching states, but the state of a single output of the switching accessory decoder:

- 1 Green: lower switching accessory address, green output
- 1 Red: lower switching accessory address, red output
- 2 Green: higher switching accessory address, green output
- 2 Red: higher switching accessory address, red output

8. Technical data

Technical data ECoSDetector Extension

Operating modes:	Direct bus connection to ECoSDetector or ECoSDetector Standard. Operation with ECoS or Central Station «Reloaded» possible from firmware version 3.5.0.
Outputs:	32 transistor outputs, separated into 4 groups with 8 outputs each. 100mA current per output. "Open collector" outputs, over-current protection.
Supply:	Output supply by external DC current source or track signal (digital command station) Minimum input voltage 12V Maximum input voltage 22V DC
Dimensions:	86mm x 86mm x 25mm
Scope of delivery:	ECoSDetector Extension module, terminals, detailed instruction manual

9. Support and Assistance

Your model train dealer or hobby shop is your competent partner for all questions regarding your LokPilot decoder. In fact he is your competent partner for all questions around model trains. But there are also many ways to get in touch with us. For enquiries please use preferably either email, fax (please always provide your fax-no. or email address) or go to www.esu.eu/en/forum.

USA & Canada (English support), please contact:

Phone: +1 (570) 649-5048
Tuesday & Thursday 9:00am - 3:00pm (CT)
Fax: +1 (866) 591-6440
Email: support@loksound.com
Mail: ESU LLC, 477 Knopp Drive, US-PA-17756 Muncy

Germany and all other countries, please contact:

Fax: +49 (0) 731 - 1 84 78 - 299
Email: www.esu.eu/en/forum
Mail: ESU GmbH & Co. KG, Edisonallee 29,
D-89231 Neu-Ulm, GERMANY
www.esu.eu

10. Warranty Certificate

24 Months warranty form date of purchase

Dear customer,

Congratulations on purchasing this ESU product. This quality product was manufactured applying the most advanced production methods and processes and was subject to stringent quality checks and tests. Therefore ESU electronic solutions ulm GmbH & Co. KG grants you a warranty for the purchase of ESU products that far exceeds the national warranty as governed by legislation in your country and beyond the warranty from your authorised ESU dealer. ESU grants

an extended manufacturer's warranty of 24 months from date of purchase.

Warranty conditions:

- This warranty is valid for all ESU products that have been purchased from an authorised ESU dealer.
- Any service, repair or replacement under this warranty requires proof of purchase. The filled in warranty certificate together with the receipt from your ESU dealer serves as proof of purchase. We recommend keeping the warranty certificate together with the receipt.
- In case of a claim please fill in the enclosed failure report card as detailed and precise as possible and return it with your faulty product.

Extent of warranty / exclusions:

This warranty covers the repair or replacement free of charge at the discretion of ESU electronic solutions ulm GmbH & Co. KG of any faulty parts that are caused by design faults or faults in production, material or transport. Any further claims are explicitly excluded.

The warranty expires:

1. In case of wear and tear due to normal use.
2. In case of conversions of ESU – products with parts not approved by the manufacturer.
3. In case of modification of parts.
4. In case of inappropriate use (different to the intended use as specified by the manufacturer).
5. If the instructions as laid down in the user manual by ESU electronic solutions ulm GmbH & Co. KG were not adhered to.

There is no extension of the warranty period due to any repairs carried out by ESU or re-placements.

You may submit your warranty claim either with your dealer or by shipping the product in question with the warranty certificate, the receipt of purchase and the fault description directly to ESU electronic solutions ulm GmbH & Co. KG at:

ESU GmbH & Co. KG
- Service department -
Edisonallee 29
D-89231 Neu-Ulm
GERMANY

Trouble shooting sheet

1. Customer data

(Please write in block letters)

Name: _____
Street: _____
ZIP/City: | | | | | _____
Country: _____
Email: _____
Phone: _____
Date: _____
Signature: _____

2. Error class

- Module not detected by the command station (LED flashes) Defect outputs
 No function (error cannot be exactly determined)

3. Error description (use extra page, if needed)

4. Receipt / Proof of purchase

Please enclose your receipt / invoice. Otherwise no warranty possible!

5. Additional information:

6. Your retailer:

Retailer's stamp or address

