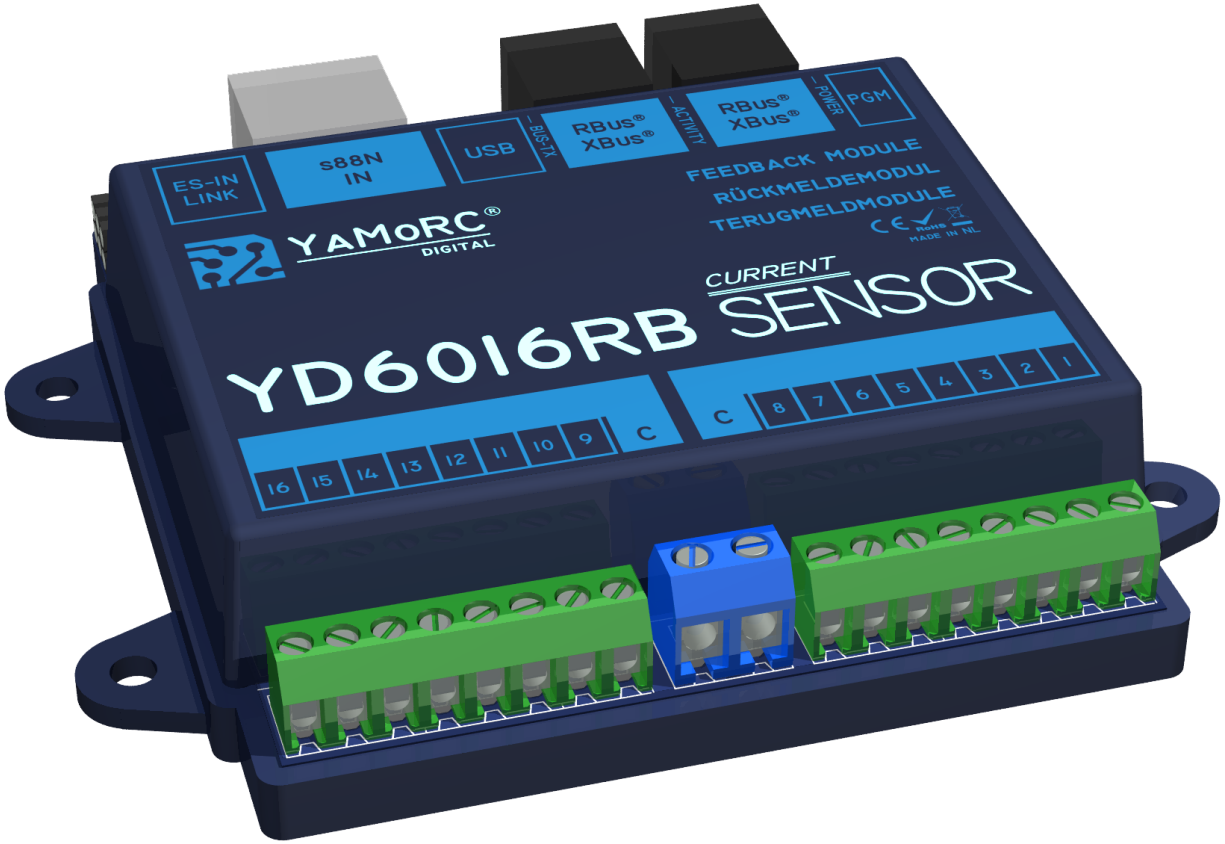
YAMORC® DIGITAL

YD6016RB current Sensor

16-fold feedback module

Quick star

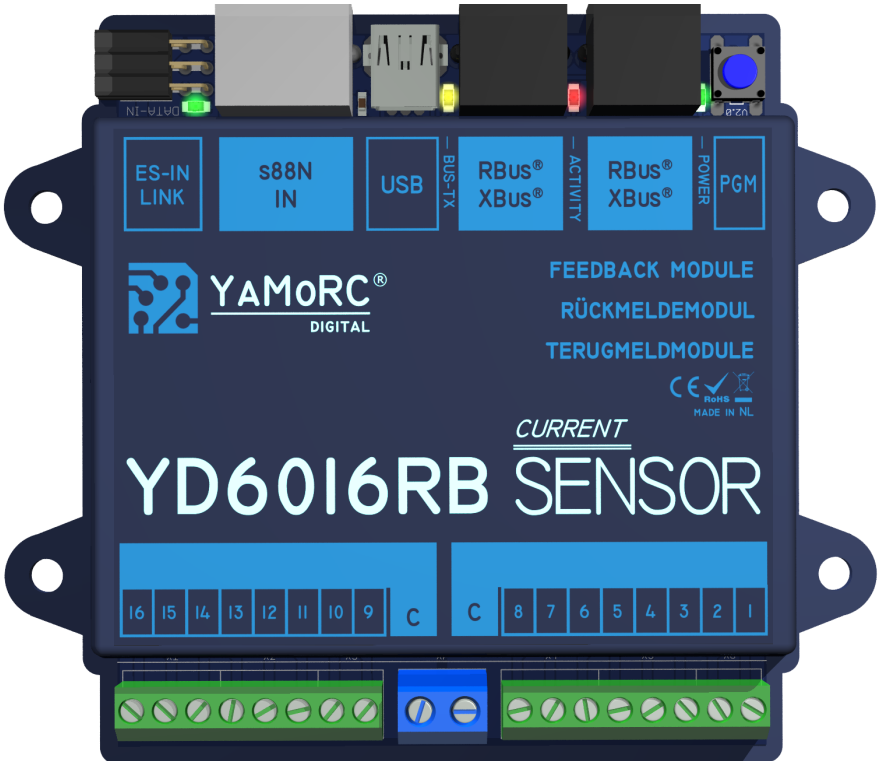
(2025-04-10)



Designed by Karst Drenth
Made in Germany
Assembled in NL

Contents

Description..... 3
Technical data..... 4
Mounting, dimensional drawing 4
Important notes (including Health & Safety)..... 5
Must read before using Y6016RB
Product/Hardware overview 6
Connection example of the feedback unit at the 2-wire track and on the R-bus®..... 7
Connection example of the YD6016RB-CS feedback unit on 2-wire track, Z21®, z21®, z21® Start via Roco® R-Bus..... 8
Connection of the YD6016RB-CS to the control centre via R-Bus® and Extension options via "ES-IN Link" and "s88N"..... 9
Connection of the YD6016RB-CS to the z21®,Z21® via R-Bus® and Extension options via "ES-IN Link" and "s88N"..... 10
Basic information on the R-Bus®..... 11
Configuring the module addresses and the total number of Feedbacks of the YD6016RB-CS with a YD7xxx control panel..... 11
Configuring the module address of the YD6016RB-CS (z21®, Z21®)..... 12
Configuring the total number of modules of the YD6016RB-CS..... 12
Use the YD6016LN-CS to configure the switching decoder of the YD8xxx series..... 13
Connection of the switching decoders of the YD8xxx series via the "ES-Link to the YD6016LN-CS and what to consider..... 13
Firmware update of the switching decoders of the YD8xxx series via "ES-Link" with the YD6016RB-CS..... 14
Warranty 15



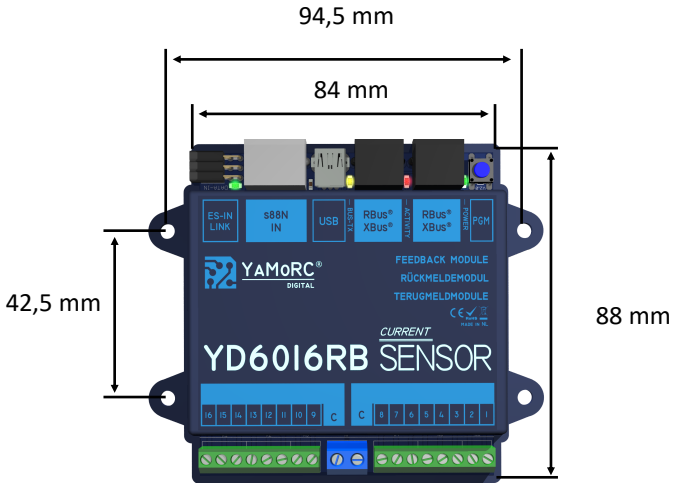
Description

- The **YD6016RB-CS** has sixteen feedback inputs. These are divided into two groups with eight inputs. The feedback inputs of the YD6016RB-CS operate according to the current sensor principle and thus detect a load. The sensitivity of the feedback inputs is 1 mA current consumption.
- The **YD6016RB-CS** has a capacitive input filter at each feedback input. This filter suppresses noise (antenna effect) in the case of long long line distances and sections. This effectively suppresses false alarms.
- The configuration of the feedback addresses is easily done by pressing the programming button or via our configuration tool and the USB connection.
- When delivered, the YD6016RB-CS is preset with the R-Bus® feedback addresses module 1 (addresses 1-8) and module 2 (addresses 1-8).
- The firmware of the **YD6016LN-CS** can be updated at any time via the USB port. In addition, it is possible to adjust various settings with the configuration tool.
  An individual switch-on and switch-off delay and an action can be assigned to each feedback input. By entering a switch-on or switch-off delay, the flickering of the feedback is effectively prevented.
- The connection to the **R-Bus®** is made at the R-Bus or X-Bus connection of the control panel.
  Attention! R-Bus® or X-Bus® must never be connected to LocoNet® T or B of the control center.
- Via the "**s88N-IN**" connection, the YD6016RB-CS can be extended by a further four s88N modules with 16 feedback inputs. This creates a single R-Bus® or X-Bus® module with a maximum of 80 feedback inputs. Attention! Simultaneous use of "s88N" and "ES-IN Link" is not permitted.
- Via the "**ES-IN Link**" connection, it is possible to expand the YD6016RB-CS by another four YD6016ES modules. This creates a single R-Bus® or X-Bus® module with a maximum of 80 detectors. **Attention!** Simultaneous use of "s88N" and "ES-IN Link" is not permitted.
- The "ES-IN Link" connector allows to configure all other modules equipped with an "ES-PGM Link" connector.

Technical Data

Number of feedback inputs	16 inputs (arranged in two groups of 8)
Address area	Module 1-10 (R-Bus® counting method module 1 - 10 with 8 feedbacks each)
Load capacity of a feedback input	2 A
Total load capacity of all feedback inputs	8 A
Overload resistance of a feedback input	5 A for 100 ms
Feedback sensitivity	1 mA Current flow
Housing Dimensions	84 mm x 88 mm x 22 mm
Distance Between Holes	94,5 mm, 42,5 mm

Dimensional Drawing

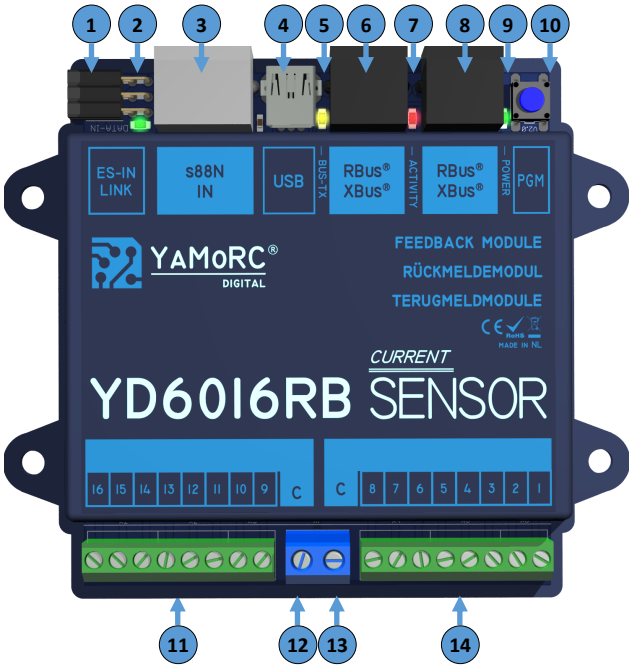


Mounting
The YD6016RB-CS is mounted via the four mounting holes on the side of the housing.

Important Notes (Including Health & Safety):

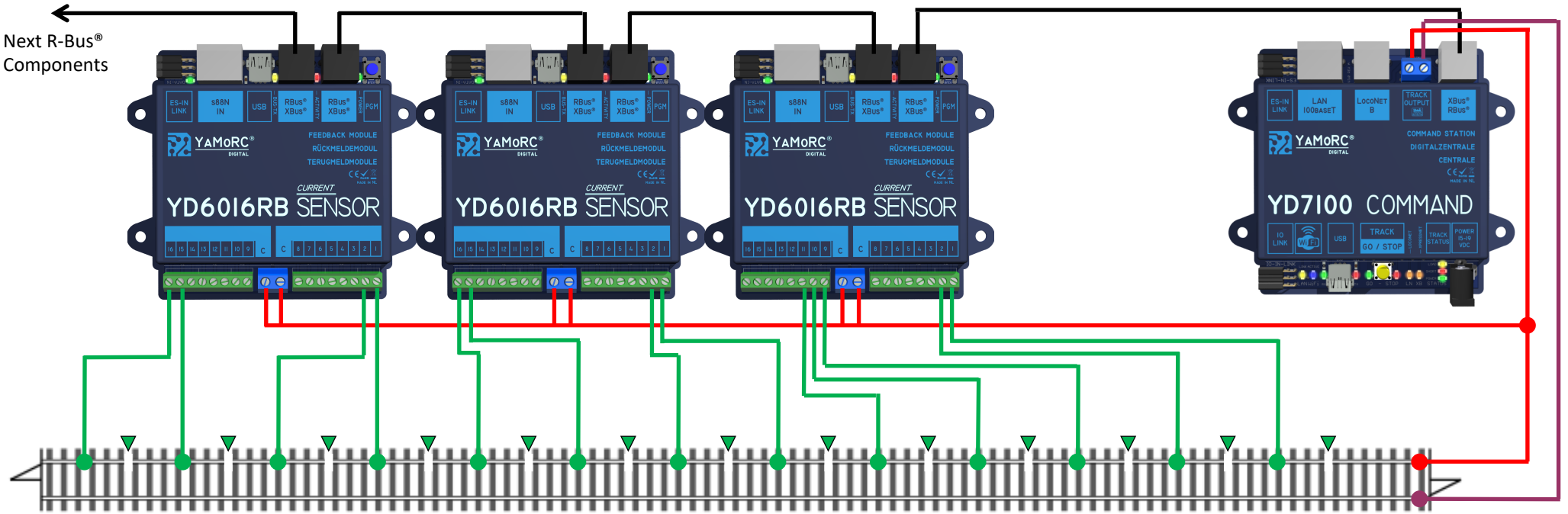
- The YD6016RB-CS is intended exclusively for operation on an electric model railway.
- The YD6016RB-CS is **not** a toy and is therefore **not** suitable for children under 14 years of age.
- **Never** leave the YD6016RB-CS operating without your presence. Please disconnect the product before leaving it unattended.
- Voltage sources (power supplies, transformers, etc.) **must comply** with the current VDE/EN and CE standards.
- The voltage sources used (power supplies, transformers) **must comply** with Protection Class 2. Failure to comply may result in serious damage to the YD6016RB-CS . The voltage sources must be marked with this symbol (illustrated below).
  Further information on the **P**rotection **C**lass 2 can be found here: https://www.xppower.com/resources/blog/iec-protection-classes-for-power-supplies
- Direct voltage sources **(DC)** must not exceed a maximum power of **60W**.
- AC voltage sources **(AC)** must not exceed a maximum output current of **3A**.
- Voltage sources must be fused in such a way that a cable fire cannot occur in the event of a fault.
- A USB isolator is to be used if digital voltage of a digital command station is applied to the Power AC/DC connector of the YD8xxx modules or if a command station is connected to USB or LocoNet®. The USB isolator prevents dangerous ground loops or equalizing voltages or currents between the components.
- A common earth connection of different voltage sources or circuits is **not** permitted. This will destroy the YD6016RB-xx.
- Auf einen ausreichenden Verdrahtungsquerschnitt der einzelnen Anschlüssen ist unbedingt zu achten.
- The connection terminals for "C" are designed for a cross-section of 0.75 mm².
  All other connection terminals are designed for a cross-section of 0.5 mm².
- Connection work must always be carried out in a de-energised state. Disconnect or switch off power AC/DC and signal input.
- The YD6016RB-CS must **never** be installed near sources of intense heat, such as radiators or places exposed to direct sunlight. Therefore, install the YD6016RB-CS in a place with sufficient ventilation to be able to dissipate the waste heat.
- The YD6016RB-CS is designed for dry indoor use only. Therefore, do **not** operate the YD6016RB-CS outdoors or in environments with extreme fluctuations in temperature and humidity.
- Do **not** attempt to open the YD6016RB-CS . Improperly performed actions can lead to the destruction of the YD6016RB-CS .
- If the YD6016RB-CS is used for configuring other YaMoRC modules, a connection to the R-Bus® or X-Bus® must always be disconnected.

Hardware overview



1	**ES-IN Link**	Connection for additional modules with "ES Link" functionality. This connector allows modules that have an "ES-PGM Link" connector to be easily configured. Alternatively, five YD6016ES feedback modules with 16 inputs each can be connected. **Attention:** If the "ES-IN Link" is used to connect feedback modules, the "S88N-IN" must not be used at the same time.
2	**Green LED**	Display Configuration process via "ES Link" is running or data is transferred via "ES Link".
3	**s88N–IN**	Another five "s88N" standard feedback modules with 16 inputs can be connected to this port. **Attention! If** the "s88N-IN" is used to connect feedback modules, the "ES-IN Link" must not be used at the same time.
4	**USB Connection**	
5	**Yellow LED**	Signals transmission via the R-Bus®/X-Bus®.
6	**R-Bus® Connection 2 X-Bus®**	
7	**Red LED**	Load indicator of the feedback module. The brighter the LED lights up, the higher the current detected by the feedback module.
8	**R-Bus® Connection 1 X-Bus®**	
9	**Green LED**	R-Bus® and voltage supply present or Display Configuration mode of the YD61016RB-xx active. *—*— Configuration mode Module address **—**— Configuration mode Number of modules
10	**Programming button**	
11	**9** : : : **16**	Connection feedback input no. 9 (2nd feedback group) Connection feedback input no. 16
12	**C**	Common connection 2nd feedback group
13	**C**	Common connection 1nd feedback group
14	**1** : : : **8**	Connection feedback input no. 1 (1st feedback group) Connection feedback input no. 8

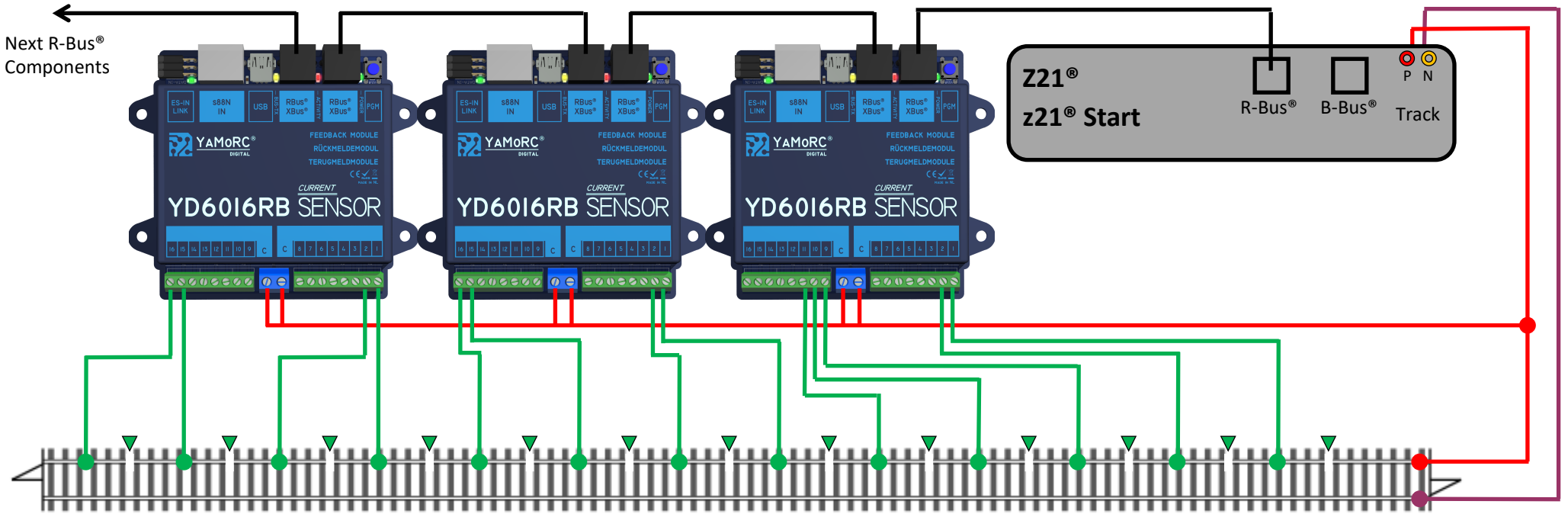
Connection example of the YD6016RB-CS feedback unit on 2-wire track and on the Roco® R-bus or X-bus



Maximum expansion on the R-Bus®: 160 feedback units (ten YD6016RB-xx) for technical reasons on the R-Bus®.

Attention!
All connection work on the YD6016RB-xx must always be carried out in a de-energised state. Disconnect the power supply from the mains and switched off!

Connection example of the YD6016RB-CS feedback unit on 2-wire track, Z21®, z21®, z21® Start via Roco® R-Bus



Maximum expansion on the R-Bus®: 160 feedback units (ten YD6016RB-xx) for technical reasons on the R-Bus®.

Attention!
All connection work on the YD6016RB-xx must always be carried out in a de-energised state. Disconnect the power supply from the mains and switched off!

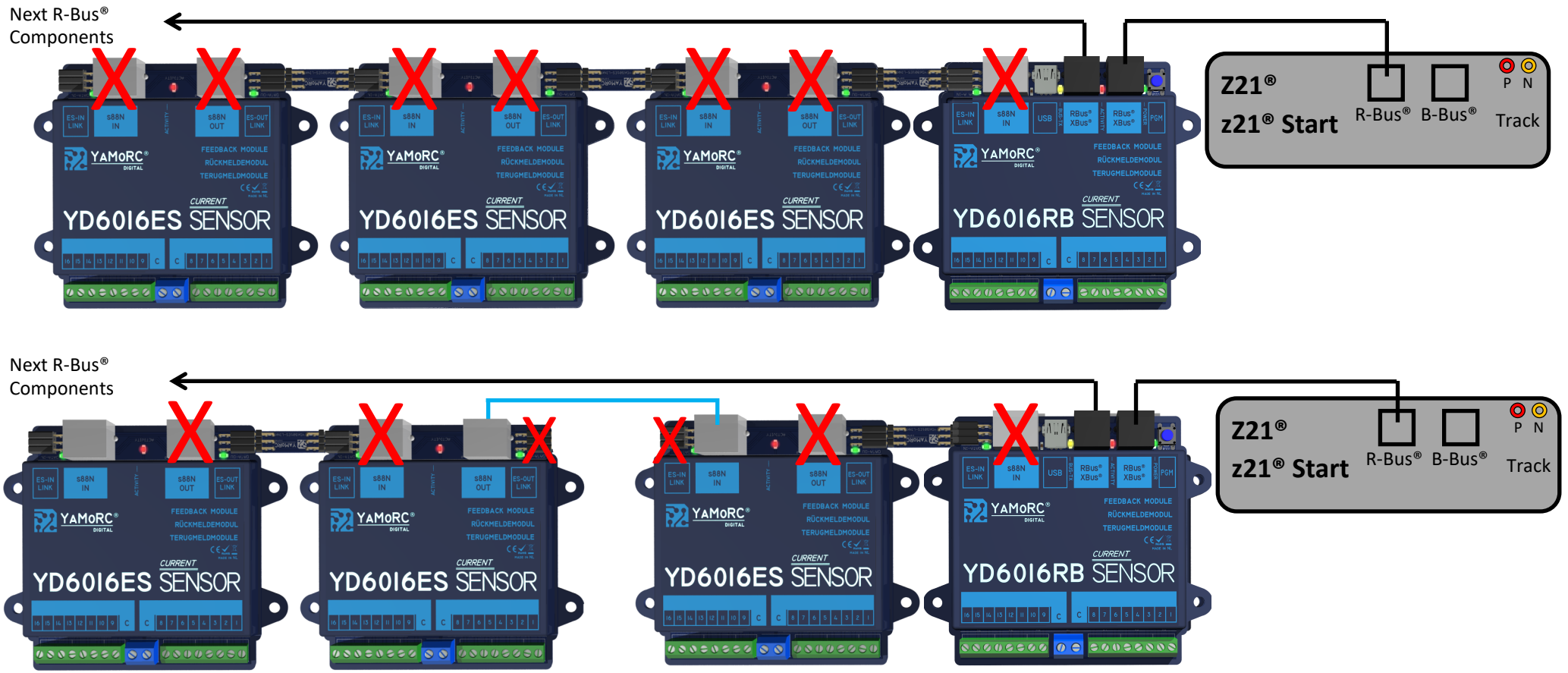
Connection of the YD6016RB-CS to the control center via R-Bus® and expansion options via "ES-IN Link" and "s88N

Maximum expansion on one YD6016RB-xx: **80 feedback modules**, consisting of one YD6016RB-xx feedback module and four YD6016ES-xx feedback modules with 16 inputs each in the entire "ES-Link" line. For technical reasons, a maximum of 160 feedback modules are possible on the entire R-Bus®.

Attention! A common use of "ES-OUT Link" and "s88N-OUT" or "ES-IN Link" and "s88N-IN" at the same module is not allowed.

Attention!
All connection work on the YD6016RB-xx must always be carried out in a de-energised state. Disconnect the power supply from the mains and switched off!

Connection of the YD6016RB-CS to the z21®,Z21® via R-Bus® and expansion options via "ES-IN Link" and "s88N".



Maximum expansion on one YD6016RB-xx: **80 feedback modules**, consisting of one YD6016RB-xx feedback module and four YD6016ES-xx feedback modules with 16 inputs each in the entire "ES-Link" line. For technical reasons, a maximum of 160 feedback modules are possible on the entire R-Bus®.

Attention! A common use of "ES-OUT Link" and "s88N-OUT" or "ES-IN Link" and "s88N-IN" at the same module is not allowed.

Attention!
All connection work on the YD6016RB-xx must always be carried out in a de-energised state. Disconnect the power supply from the mains and switched off!

Basic information about the R-bus®:

- As a **maximum** expansion on the R-Bus®, 160 individual feedback devices are possible.
- The R-Bus® does not count the feedbacks consecutively from 1 to 160 like Loconet®, but in **module addresses** (modules 1-10).
- The R-Bus® requires that a module consists of 8 **feedbacks**.
- The YD6016RB-xx has **sixteen feedbacks**, therefore each YD6016RB-xx always occupies two module addresses.
- Due to the system, the feedback addresses are always assigned from 1 to 8 per module (e.g. module 1 (feedback address 1-8), module 2 (feedback address 1-8), etc.).
- The R-Bus® is always divided into two **strings**. The first string starts with module address 1 and the second string with module address 11.

Configuring the module addresses and the total number of feedback devices of the YD6016RB-CS with a YD7xxx control panel

If a YaMoRC central unit is used for the connection to the YD6016RB-xx, the configuration of the module addresses and the total number of feedbacks of the YD6016RB-xx is done with the more comfortable configuration wizard of the YaMoRC central station.

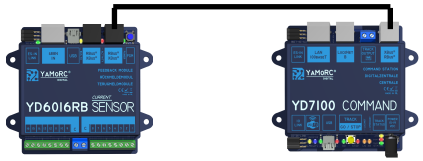
- You will find the wizard under the button R-Bus®/X-Bus®. (1)
- The tab must then be clicked here. (2)
- Next, select the desired module and follow the wizard instructions. (3)

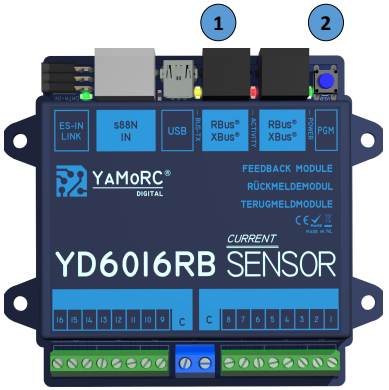
Configuring the module address of the YD6016RB-CS (z21®, Z21®)

YaMoRC has chosen to make the programming of the YD6016RB-CS as simple as possible. The YD6016RB-CS is preset "out of the box" with the R-Bus® module addresses 1 (feedback address 1-8) and module address 2 (feedback address 1-8). The module addresses can be adjusted at any time via the Roco® Maintenance Tool of the z21®, the z21Start® or the Z21®.
If you have any questions, please contact our service department. We will certainly find a solution for you.

Configuration of the module address

1. Establish connection via the R-Bus® of the z21®/Z21®. (1)





2. Switch on the power supply to the control panel.
3. Press the **programming button** once to set the YD6016RB-CS to configuration mode for the module address. The green LED confirms that the YD6016RB-CS is in the configuration mode for the module address with the flashing sequence Flash, LED off, Flash, LED off (*-*-), and so on. (2)
4. Call up R-Bus® programming in the **Maintenance Tool** under the menu item R-Bus®.
5. Enter the desired module address in the Module address input field of the Maintenance Tool and send it to the YD6016RB-CS by clicking the "Program..." button. Always confirm the programming dialog of the Z21® to the end with OK.
6. The YD6016RB-CS automatically exits the programming mode.

If no further feedback modules are used at the YD6016RB-CS ("ES-Link", "s88N"), the configuration of the module address is completed.

Configuring the total number of modules of the YD6016RB-CS

After the assignment of the first module address has been completed and feedback modules are still connected via "ES-Link" or "S88", the total number of modules must still be assigned to the YD6016RB-CS. The total number of modules is calculated from the internal feedback modules (2 modules) of the YD6016RB-CS and the number of modules connected via the "ES-IN Link" or via "s88N".
Example: If two YD6016ES feedback modules are connected to the YD6016RB-CS via "ES-IN Link", the number of modules must be added. (2+2+2=6 modules). Each of our feedback modules consists of two modules according to Roco® counting method. The total number (6) must be communicated to the YD6016RB-CS as described here.

7. Press the **programming button** twice in quick succession to put the YD6016RB-CS into configuration mode for the number of modules. The green LED confirms that the YD6016RB-CS is in the configuration mode for the number of modules with the flashing sequence Flash, Flash, LED off, Flash, Flash, LED off (**-**-), and so on.
8. Enter the calculated number of modules (e.g. six as in the example above) in the Module address input field of the Maintenance Tool and send it to the YD6016RB-CS by pressing the "Program..." button. Always confirm the programming dialog of the Z21® to the end with OK.
9. The YD6016RB-CS automatically exits the programming mode.

Use the YD6016RB-CS to configure the switching decoders of the YD8xxx series.

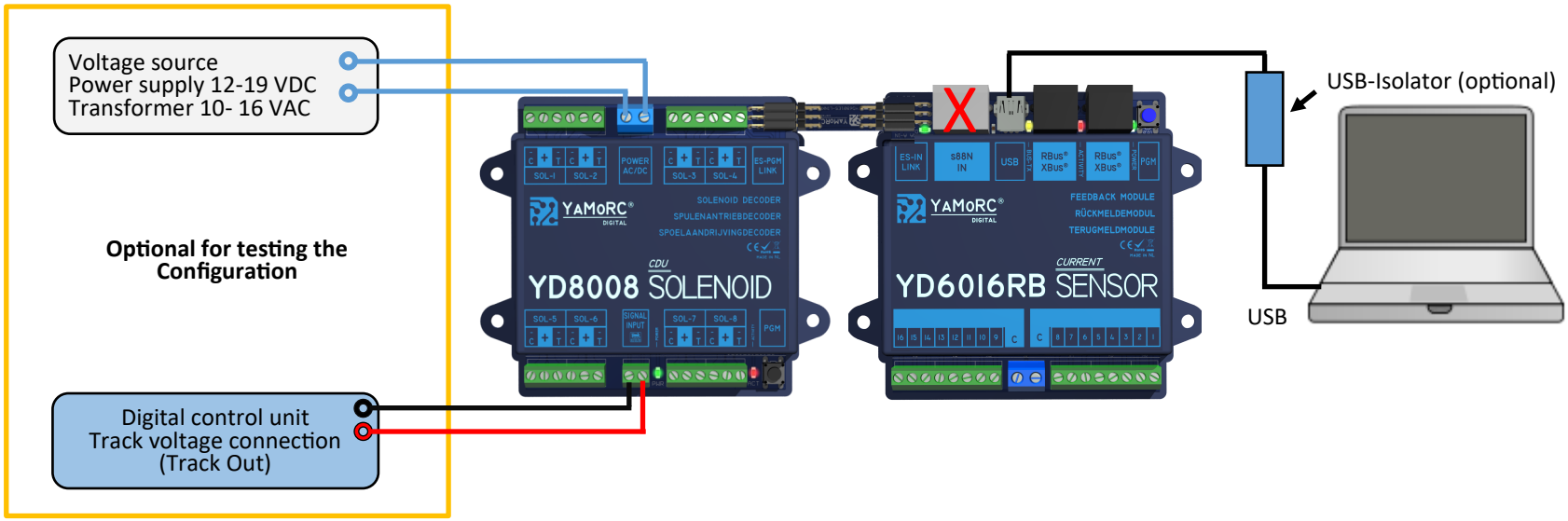
The YD6016RB-CS can be used to configure the YD8008, YD8044 and YD8116 switching decoders. The configuration tool of the YD6016RB-CS can be used to adjust the settings of the switching decoders.

The following settings can be adjusted for the switching decoders of the YD8xxx series:

- Free assignment of the switching addresses
- Switching pulse duration for each output
- Address switching matrix and the inversion of the switching term
- Signal definitions can be selected and individually adjusted (YD8116)

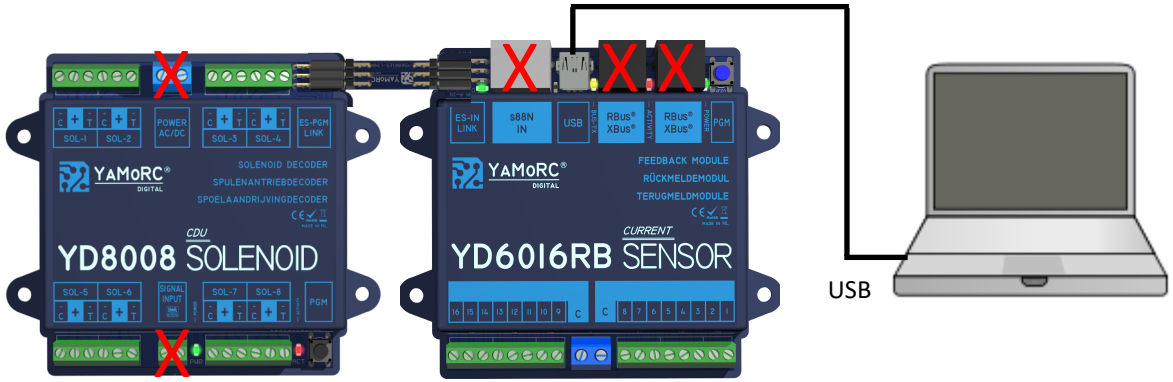
Connecting the switching decoders of the YD8xxx series via the "ES-Link" to the YD6016RB-CS and what to consider

- The power supply of the **YD8008**, **YD8044** and YD8116 (Power AC/DC) must **not** be **connected** to the Digital Central Unit and DCC (Track Out of the Central Unit).
- To test the settings, a separate voltage source AC or DC can be connected to "Power AC/DC" of the switching decoder.
- A connection via "S88N IN" must be disconnected.
- To prevent ground loops via USB, the YD6016RB-CS should always be connected to the PC or laptop via USB alone.
- The use of a USB isolator is recommended.
- The YD6016RB-CS is connected via "ES-IN Link" and the "ES-PGM Link" socket on the YD8xxx. The connection can be made either via the YD6901ES-LINK or the YD6902ES-EXT connection set.



Firmware update of the switching decoder of the YD8xxx series via "ES-Link" with the YD6016RB-CS

- The power supply to the **YD8008**, **YD8044** and **YD8116** via the "Power AC/DC" terminals and the "Signal Input" (Track Out of the control unit) must be **disconnected** before the firmware update.
- The R-Bus® or X-Bus® connection at both R-Bus® or X-Bus® sockets of the YD6016RB must also be disconnected.
- A connection via "S88N IN" must also be disconnected.
- To prevent ground loops via USB, the YD6016RB-CS should always be connected to the PC or laptop via USB alone.
- The YD6016RB-CS is connected via "ES-IN Link" and the "ES-PGM Link" socket on the YD8xxx. The connection can be made either via the YD6901ES-LINK or the YD6902ES-EXT connection set.



Warranty

24 months warranty from date of purchase

Dear Customer,

Congratulations on your purchase from YaMoRC. YaMoRC's high quality products have been manufactured using modern manufacturing processes and have been subjected to careful quality control and tests.

Therefore, when purchasing a YaMoRC product, the company YaMoRC grants you a manufacturer's warranty of 24 months from the date of purchase in addition to the national warranty rights to which you may be legally entitled to, from your YaMoRC specialist dealer as contractual partner.

Warranty conditions:

This warranty applies to all YaMoRC products purchased from a YaMoRC dealer. Warranty services are only provided if proof of purchase is presented. Proof of purchase is the purchase receipt from the YaMoRC specialist dealer. It is therefore recommended to keep your purchase receipt safe.

Content of the guarantee/exclusions:

The warranty includes, at YaMoRC's discretion, the free repair or free replacement of the defective part, which can be proven to be due to design, manufacturing, material or transport faults. For this purpose, you must send the decoder to us properly stamped. Further claims are excluded.

The warranty claims are void:

1. in the case of general wear and tear at expected locations (e.g. screw terminals).
2. in the case of modification of YaMoRC products with parts not approved by the manufacturer.
3. in the case of modification of parts, especially by opening the housing.
4. if the product is used for purposes other than those intended by the manufacturer.
5. if the instructions given by YaMoRC in the operating manual have not been thoroughly read by the user & risked mis-use of the product.

The warranty period is not extended by the repair or replacement delivery. Warranty claims can only be made to your dealer, enclosing any warranty certificate, proof of purchase and a description of the fault. Products sent directly to YaMoRC will neither be treated nor returned free of charge.

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