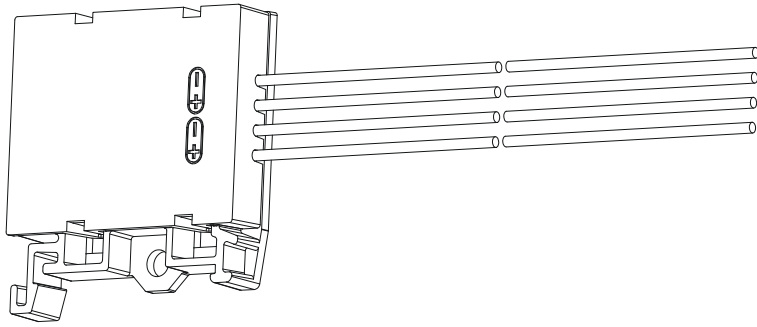


SIEMENS



FDCL221

Line separator

Technical manual

Technical specifications and availability subject to change without notice.

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1 About this document

Goal and purpose

This document contains all information on the line separator module FDCL221. Consistent compliance with the instructions guarantees correct and safe use.

Target groups

The information in this document is intended for the following target groups:

Target group	Activity	Qualification
Product Manager	<ul style="list-style-type: none"> Is responsible for information passing between the manufacturer and regional company. Coordinates the flow of information between the individual groups of people involved in a project. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for Product Managers.
Project Manager	<ul style="list-style-type: none"> Coordinates the deployment of all persons and resources involved in the project according to the schedule. Provides the information required to run the project. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for Project Managers.
Project Engineer	<ul style="list-style-type: none"> Parameterizes the product according to country-specific and customer-specific requirements. Checks operability and releases the product for commissioning at the place of installation. Searches for and corrects malfunctions. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for Project Engineers.
Installation personnel	<ul style="list-style-type: none"> Assembles and installs the product components at the place of installation. Carries out a performance check following installation. 	<ul style="list-style-type: none"> Has received specialist training in the area of building installation technology or electrical installations.
Maintenance personnel	<ul style="list-style-type: none"> Carries out all maintenance work. Checks that the products are in perfect working order. Searches for and corrects malfunctions. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products.

Document identification

Position	Information
Title page	<ul style="list-style-type: none"> ● Product type ● Product designation ● Document type
Last page, bottom left	<ul style="list-style-type: none"> ● Document ID ID_ModificationIndex_Language_COUNTRY ● Edition date
Last page, bottom right	<ul style="list-style-type: none"> ● Manual ● Register


Conventions for text marking

Markups

Special markups are shown in this document as follows:

▷	Requirement for a behavior instruction
⇒	Intermediate result of a behavior instruction
⇨	End result of a behavior instruction
'Text'	Quotation, reproduced identically
<Key>	Identification of keys

Supplementary information

The  symbol identifies supplementary information such as a tip for an easier way of working.



Supplementary information is labeled using the 'i' symbol.

Reference documents

Document ID	Title
008025	Installation of FDCL221 line separator
008331	'List of compatibility'
A6V10229261	'List of compatibility' (for 'Cerberus PRO' product line)

Technical terms

Term	Explanation
FDnet/C-NET	Addressed detector line
Collective detector line	Non-addressed detector line
LED	Light-emitting diode
Loop	Detector line loop line
PC	Polycarbonate (plastic)
Sub-stub	Detector line on a FDnet/C-NET loop only connected on one side

History of changes

Document ID	Edition date	Brief description
007063_e_en_--	06.2009	Editorial revision of entire document
007063_d_en_--	09.2007	Technical data: New line separator parameters Changed air humidity Standard EN 54-17 Approval LPCB 126ae/01
007063_c_en_--	09.2006	Zug address; Technical data revised Connections with 2.8 x 0.8 mm flat connector sleeves
007063_b_en_--	01.2005	Name of division
007063_a_en_--	03.2004	First edition

2 Safety

2.1 Safety notices

The safety notices must be observed in order to protect people and property.

The safety notices in this document contain the following elements:

- Symbol for danger
- Signal word
- Nature and origin of the danger
- Consequences if the danger occurs
- Measures or prohibitions for danger avoidance

Symbol for danger



This is the symbol for danger. It warns of **risks of injury**.
Follow all measures identified by this symbol to avoid injury or death.

Additional danger symbols

These symbols indicate general dangers, the type of danger or possible consequences, measures and prohibitions, examples of which are shown in the following table:



General danger



Explosive atmosphere



Voltage/electric shock



Laser light



Battery



Heat


Signal word

The signal word classifies the danger as defined in the following table:

Signal word	Danger level
DANGER	DANGER identifies a dangerous situation, which will result directly in death or serious injury if you do not avoid this situation.
WARNING	WARNING identifies a dangerous situation, which may result in death or serious injury if you do not avoid this situation.
CAUTION	CAUTION identifies a dangerous situation, which could result in slight to moderately serious injury if you do not avoid this situation.
<i>NOTICE</i>	<i>NOTICE</i> identifies possible damage to property that may result from non-observance.


How risk of injury of presented

Information about the risk of injury is shown as follows:

	⚠ WARNING
	Nature and origin of the danger Consequences if the danger occurs <ul style="list-style-type: none"> ● Measures / prohibitions for danger avoidance

How possible damage to property is presented

Information about possible damage to property is shown as follows:


	<i>NOTICE</i>
	Nature and origin of the danger Consequences if the danger occurs <ul style="list-style-type: none"> ● Measures / prohibitions for danger avoidance

2.2 Safety regulations for the method of operation

National standards, regulations and legislation

Siemens products are developed and produced in compliance with the relevant European and international safety standards. Should additional national or local safety standards or legislation concerning the planning, assembly, installation, operation or disposal of the product apply at the place of operation, then these must also be taken into account together with the safety regulations in the product documentation.

Electrical installations

	⚠ WARNING
	<p>Electrical voltage</p> <p>Electric shock</p> <ul style="list-style-type: none"> ● Work on electrical installations may only be carried out by qualified electricians or by instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electrotechnical regulations.

- Wherever possible disconnect products from the power supply when carrying out commissioning, maintenance or repair work on them.
- Lock volt-free areas to prevent them being switched back on again by mistake.
- Label the connection terminals with external external voltage using a 'DANGER External voltage' sign.
- Route mains connections to products separately and fuse them with their own, clearly marked fuse.
- Fit an easily accessible disconnecting device in accordance with IEC 60950-1 outside of installation.
- Produce earthing as stated in local safety regulations.

Assembly, installation, commissioning and maintenance

- If you require tools such as a ladder, these must be safe and must be intended for the work in hand.
- When starting the fire control panel ensure that unstable conditions cannot arise.
- Ensure that all points listed in the 'Testing the product operability' section below are observed.
- You may only set controls to normal function when the product operability has been completely tested and the system has been handed over to the customer.

Testing the product operability

- Prevent the remote transmission from triggering erroneously.
- If testing building installations or activating devices from third-party companies, you must collaborate with the people appointed.
- The activation of fire control installations for test purposes must not cause injury to anyone or damage to the building installations. The following instructions must be observed:
 - Use the correct potential for activation; this is generally the potential of the building installation.
 - Only check controls up to the interface (relay with blocking option).
 - Make sure that only the controls to be tested are activated.
- Inform people before testing the alarming control devices and allow for possible panic responses.
- Inform people about any noise or mist which may be produced.
- Before testing the remote transmission, inform the corresponding alarm and fault signal receiving stations.

Modifications to the system layout and products

Modifications to the system and to individual products may lead to faults, malfunctioning and safety risks. Written confirmation must be obtained from Siemens and the corresponding safety bodies for modifications or additions.

Components and spare parts

- Components and spare parts must comply with the technical specifications defined by Siemens. Only use products specified or recommended by Siemens.
- Only use fuses with the specified fuse characteristics.
- Wrong battery types and improper battery changing lead to a risk of explosion. Only use the same battery type or an equivalent battery type recommended by Siemens.
- Batteries must be disposed of in an environmentally friendly manner. Observe national guidelines and regulations.

Disregard of the safety regulations

Before they are delivered, Siemens products are tested to ensure they function correctly when used properly. Siemens disclaims all liability for damage or injuries caused by the incorrect application of the instructions or the disregard of danger warnings contained in the documentation. This applies in particular to the following damage:

- Personal injuries or damage to property caused by improper use and incorrect application
- Personal injuries or damage to property caused by disregarding safety instructions in the documentation or on the product
- Personal injury or damage to property caused by poor maintenance or lack of maintenance

Disclaimer

We have checked that the content of this document matches the hardware and software described. Despite this, we cannot rule out deviations and cannot therefore assume liability for them matching completely. The details in this document are checked regularly and any corrections needed included in subsequent editions.




We are grateful for any suggestions for improvement.


2.3 Standards and directives complied with

A list of the standards and directives complied with is available from your Siemens contact.

2.4 Release Notes

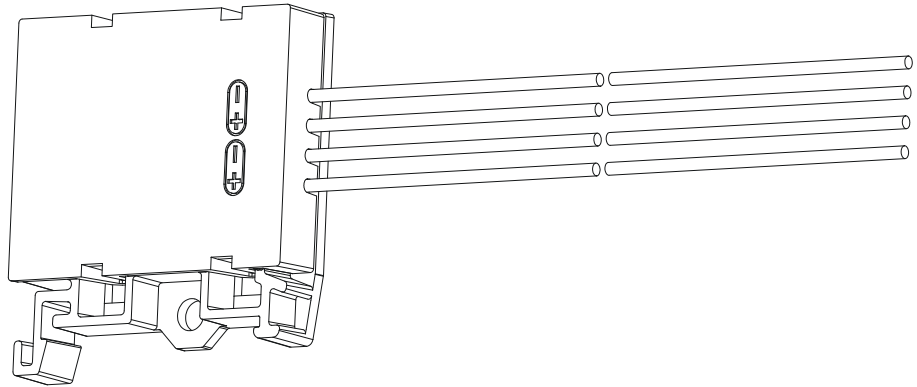
Limitations to the configuration or use of devices in a fire detection installation with a particular firmware version are possible.

	⚠ WARNING
	<p>Limited or non-existent fire detection</p> <p>Personal injury and damage to property in the event of a fire.</p> <ul style="list-style-type: none"> ● Read the 'Release Notes' before you plan and/or configure a fire detection installation. ● Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

	NOTICE
	<p>Incorrect planning and/or configuration</p> <p>Important standards and specifications are not satisfied.</p> <p>Fire detection installation is not accepted for commissioning.</p> <p>Additional expense resulting from necessary new planning and/or configuration.</p> <ul style="list-style-type: none"> ● Read the 'Release Notes' before you plan and/or configure a fire detection installation. ● Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

3 Structure and function

3.1 Overview



FDCL221 line separator

The FDCL221 line separator can detect and disconnect short-circuits in the FDnet/C-NET.

Properties

- Compatible with FS20/FS720 fire detection system
- Communication via the detector line
- Individual addressing of line separators for easy location identification
- Protects the FDnet/C-NET from short-circuits when sub-stubs are connected
- Status indicator (LED) for the line separator
- Different types of installation
- Maintenance-free

Applications

- Line separators are interconnected to ensure that several sub-stub lines do not fail in the event of a short-circuit.
- Modernization of collective detector lines on the addressed FDnet/C-NET system.

Assembly

- Installation in intermediate distributor or directly in a fire control panel
- Attachment options:
 - Directly on a top hat rail TS35
 - Attachment with a screw or cable tie directly on a wall

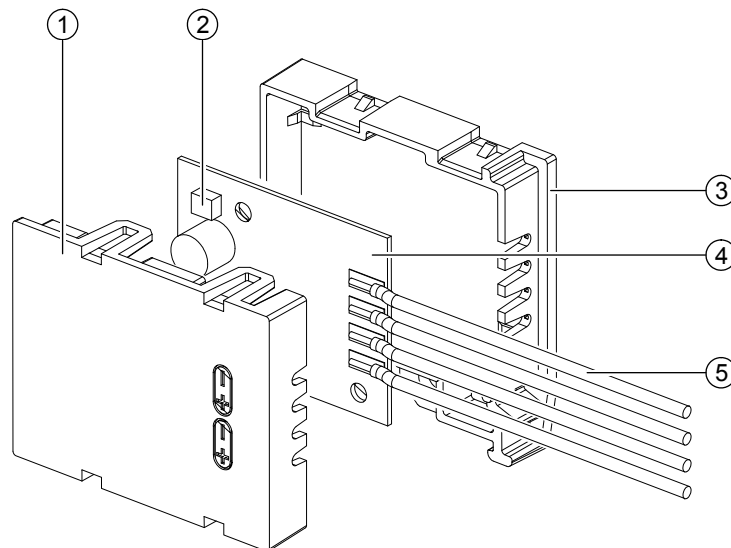
See also

- 📖 Positioning [→ 19]
- 📖 Assembly [→ 20]

3.1.1 Details for ordering

Type	Order no.	Designation
FDCL221	A5Q00004011	Line separator

3.2 Setup



View of FDCL221 with open housing

- | | |
|------------------|--|
| 1 Housing cover | 4 PCB |
| 2 Yellow LED | 5 Stranded cable with 2.8 x 0.8 mm flat connector sleeve |
| 3 Housing bottom | |

3.2.1 Indication elements

The line separator has a status indicator. The yellow LED flashes if the line separator is open or in localization mode.

See also

- 📖 Setup [→ 14]

3.3 Function

The FDCL221 line separator is an electronic switch which is inserted in the FDnet/C-NET.

The function of the line separator in the FDnet/C-NET loop is to connect sub-stub lines to the FDnet/C-NET and selectively disconnect them in the event of a short-circuit. In the event of a short-circuit in the FDnet/C-NET, the line separator disconnects the negative conductor such that the side not affected by the short-circuit can continue to be operated.

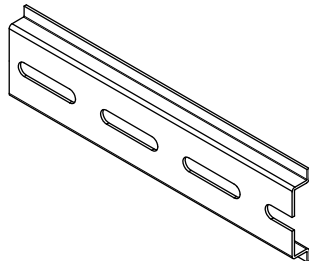
The FDCL221 line separator has 2 x 2 screw terminals for the FDnet/C-NET.

The status of the line separator is indicated by a yellow LED. The LED flashes if the line separator is open or in localization mode.

The line separator is installed in the intermediate distributor or directly in the fire control panel.

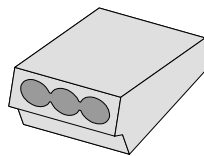
3.4 Accessories

3.4.1 Top hat rail TS35



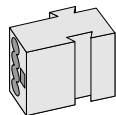
- Standard top hat rail for installing devices
- Width: 35 mm
- Length: 122 mm or 288 mm
- Compatible with:
 - FDCL221 line separator
 - Mounting foot FDCM291
- Order no. (length 122 mm): BPZ:5644780001
- Order no. (length 288 mm): BPZ:5644230001

3.4.2 Connection terminal DBZ1190-AB



- For connecting cables
- For T-branches of additional cabling for detector heating units, sounder base, external alarm indicators, etc.
- For wire diameters of 1 ... 2.5 mm²
- 3-pin
- Order no.: BPZ:4942340001

3.4.3 Micro terminal DBZ1190-AA



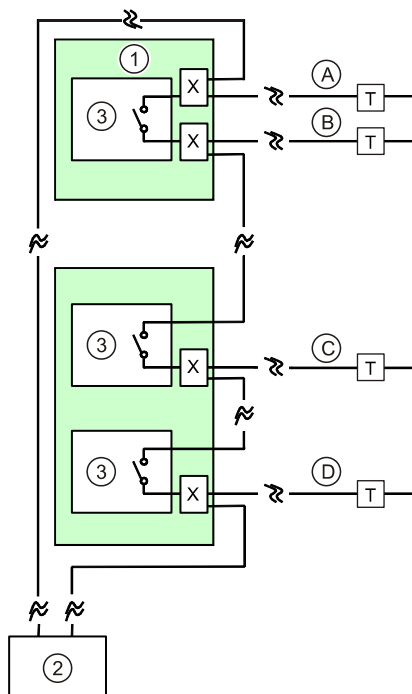
- For connecting cables
- For T-branches of additional cabling for detector heating units, sounder base, external alarm indicators, etc.
- For wire diameters of 0.28 ... 0.5 mm²
- 4-pin
- Order no.: BPZ:4677080001

4 Planning

Unique detector line topology recognition is ensured if at least one device with a separating function is present between two sub-stub lines. In this case a line separator.

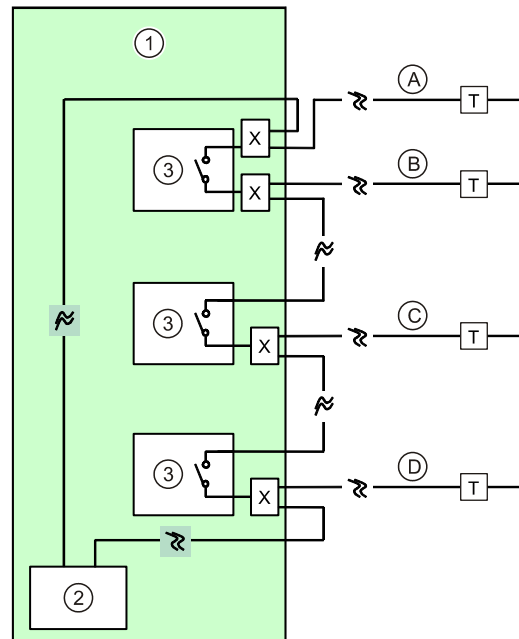
If several sub-stub lines are to be activated on one FDnet/C-NET loop, failure of large numbers of devices must be prevented in the event of a line short-circuit. In this regard the national regulations must be observed. From a FDnet/C-NET communication point of view, the line separator is a normal line participant which occupies one bus address and is visible in the line topology.

The following figures show the common variants of a modernized detector line on which the FDnet/C-NET devices (T) are installed with integrated line separation function. The outgoing stub lines A to D are connected to the FDCL221 line separators via terminal blocks or micro terminals (X).



Housing FDCL221 line separator in intermediate distributors

- | | |
|----------------------------|--------------------------------------|
| 1 Intermediate distributor | C Sub-stub C |
| 2 FDnet/C-NET loop | D Sub-stub D |
| 3 FDCL221 line separator | T FDnet/C-NET device |
| A Sub-stub A | X Terminal blocks or micro terminals |
| B Sub-stub B | |



Housing FDCL221 line separator in the control panel

- | | |
|--------------------------|--------------------------------------|
| 1 Control panel | C Sub-stub C |
| 2 FDnet/C-NET loop | D Sub-stub D |
| 3 FDCL221 line separator | T FDnet/C-NET device |
| A Sub-stub A | X Terminal blocks or micro terminals |
| B Sub-stub B | |

4.1 Compatibility

Compatible with all control panels that support the FDnet/C-NET detector line.

For details see 'List of compatibility'.

Mixed operation with other devices on the same detector line is possible without restrictions.

4.2 Fields of application

The line separator is required in a FDnet/C-NET, where several sub-stub lines converge at one point. This situation mainly occurs when changing from the old collective systems to the addressed FDnet/C-NET system.

See also

☰ Function [→ 15]

4.3 Positioning

When renewing collective systems, the line separators are installed at points where several stub lines converge.

The line separator can usually be housed in an intermediate distributor on different floors.

If all the stub lines are routed individually to the collective control panel, the line separator is directly installed in the new fire control panel.

4.4 Environmental influences


If the devices are used in industrial applications, consultation with the project manager is required, since plastics do not withstand certain environmental conditions.

The following factors must be taken into consideration:

- Chemicals
- Temperature
- Moisture

The housing is made from plastic and the printed circuit board is sealed with wax for increased corrosion protection.

See also

 Technical data [→ 27]

5 Mounting / Installation

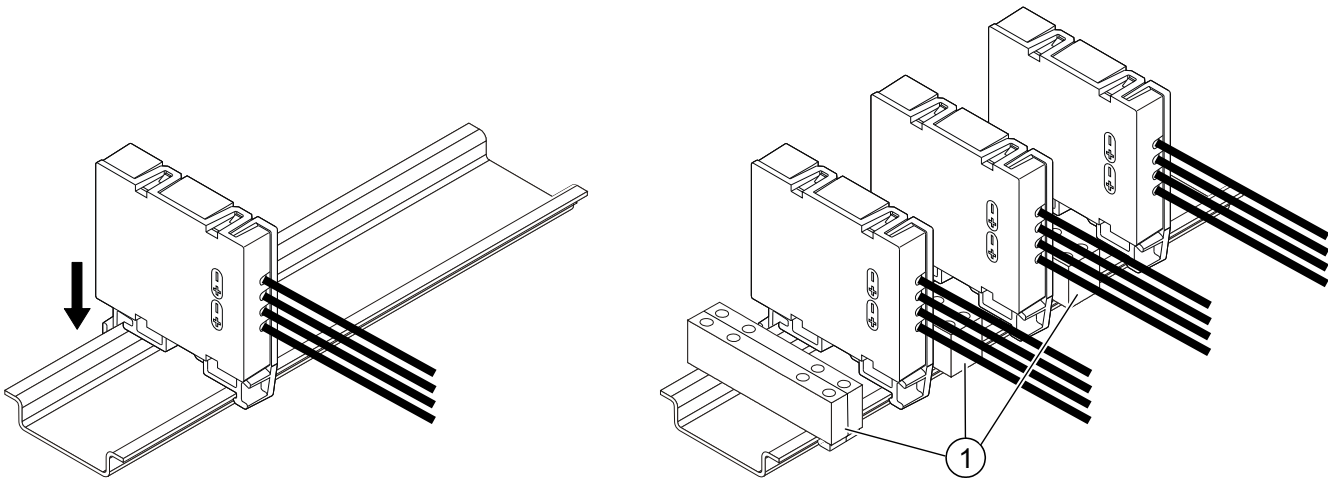
5.1 Assembly

The line separator may be fitted in any position. Ensure that the line separator LED is visible after installation.

You can fit the FDCL221 line separator in various ways:

- Using a top hat rail TS35
- Using the fastening hole

Installation on top hat rail TS35



Line separator installation on a top hat rail

1 Pair of terminal blocks

- Attach the line separator to the top hat rail.



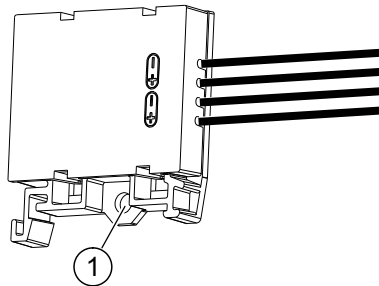
If you are fitting several line separators onto the top hat rail at the same time, we would recommend using a pair of terminal blocks (at least 3 sets) after each line separator. This results in a clear and space-saving form of installation.

The terminal blocks must be ordered by the party responsible for installation.

The terminal block may feature the following forms of connection:

- Flat 2.8 x 0.8 mm plug-type connection (preferred choice)
- Screw terminals or spring terminals
- Soldered connections

Installation with mounting hole



Mounting hole in FDCL221

- 1 Mounting hole with \varnothing 4.4 mm

Use a screw to secure the line separator onto a plane surface or use a cable tie to secure to a grid.

See also

- 📄 Top hat rail TS35 [→ 16]

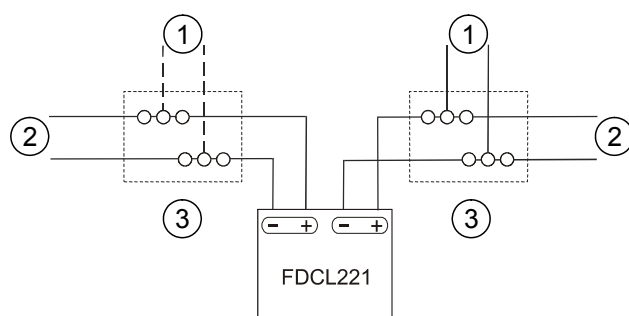
5.2 Electrical connection



Note the positive and negative connections.

Only connect one wire per terminal. This is the only way of ensuring a problem-free connection over the device's entire service life.

The connection diagram shows the electrical connection for the FDCL221 line separator in the FDnet/C-NET using terminal blocks or micro terminals.



FDCL221 connection diagram

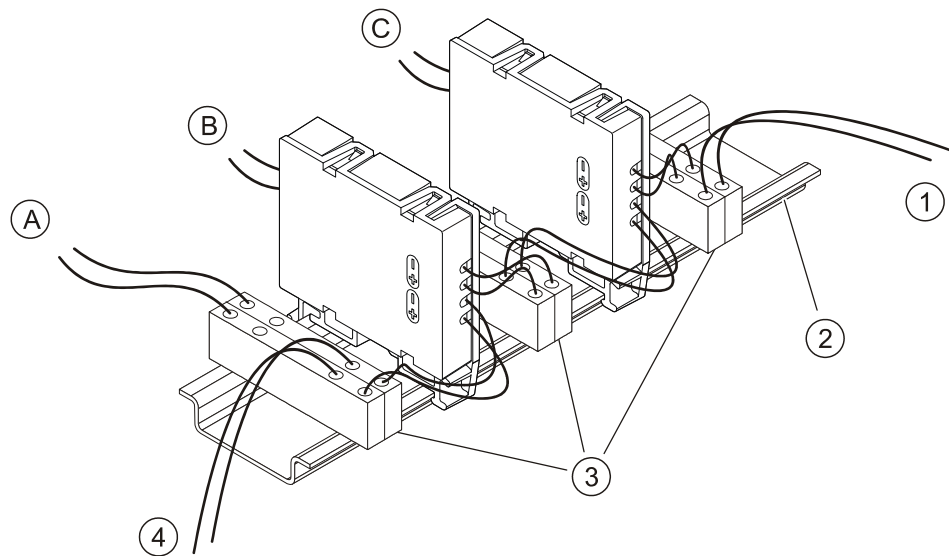
- 1 Sub-stub
- 2 FDnet/C-NET detector line
- 3 Terminal blocks or micro terminals

See also

- Shielded cable [→ 24]

5.2.1 Wiring

- ▷ Always insert a line separator before a sub-stub line.
1. Use a terminal to connect the line separator to the FDnet/C-NET. The pigtails are provided with pressed-on 2.8 x 0.8 mm flat connector sleeves in the factory. Cut off the flat connector sleeves if you don't need them for the connection.
 2. Use the same terminal to connect a sub-stub line to the FDnet/C-NET. The following diagram shows one possible installation variant where the individual components are wired.



Wiring the components of an installation variant

- | | |
|---|--|
| A Sub-stub line A | 2 Top hat rail TS35 |
| B Sub-stub line B | 3 At least 3 sets of terminal blocks |
| C Sub-stub line C | 4 FDnet/C-NET detector line:
From the line module or from the
FDnet/C-NET device |
| 1 FDnet/C-NET detector line:
To the line module or to the next
FDnet/C-NET device | |

See also

- 📄 Planning [→ 17]

5.2.2 Shielded cable

Shielded cables must be earthed in stars at one point (e.g. on the control panel). Cable shieldings must be linked with one another using an insulated micro terminal or connection terminal. The shielding must not touch any extrinsic earthing potentials or metal parts in the device.

See also

- 📄 [Micro terminal DBZ1190-AA \[→ 16\]](#)
- 📄 [Connection terminal DBZ1190-AB \[→ 16\]](#)

6 Commissioning

From a FDnet/C-NET communication point of view, the line separator FDCL221 is a line participant which occupies one bus address and is visible in the line topology.

Commissioning is not mandatory. The procedure for the control panel depends on the fire detection installation.

7 Maintenance and troubleshooting

The line separator module is maintenance-free. It monitors itself and has to be replaced if damaged.

8 Specifications

8.1 Technical data

Detector line	Operating voltage	12 ... 33 V DC
	Operating current (quiescent)	250 μ A
	Maximum current connection factor	1
	Quiescent current connection factor	1
	Address connection factor	1
	Separator connection factor	1
	Protocol	FDnet/C-NET
	Compatibility	See 'List of compatibility'
Line separator	Line voltage:	
	• Nominal	32 V DC (= V_{nom})
	• Minimum	12 V DC (= V_{min})
	• Maximum	33 V DC (= V_{max})
	Voltage at which the separator opens:	
	• Minimum	7.5 V DC (= $V_{SO min}$)
	• Maximum	10.5 V DC (= $V_{SO max}$)
	Permanent current when switches are closed:	Max. 0.5 A (= $I_{C max}$)
	Switching current (e.g. in the event of a short-circuit)	Max. 1 A (= $I_{S max}$)
	Leakage current when switches are open:	Max. 1 mA (= $I_{L max}$)
Serial impedance when switches are closed:	Max. 0.5 Ω (= $Z_{C max}$)	
External alarm indicators	Number of external alarm indicators that can be connected	None
Connections	Detector line:	
	• Design	Strands 500 mm long with pressed-on 2.8 x 0.8 mm flat connector sleeves
	• Cable cross section	0.5 mm ²
Ambient conditions	Operating temperature/permissible ambient temperature	-25 ... +70 °C
	Storage temperature	-30 ... +80 °C
	Air humidity	\leq 95 % rel.
	Protection categories according to EN 60529 / IEC 60529	IP44

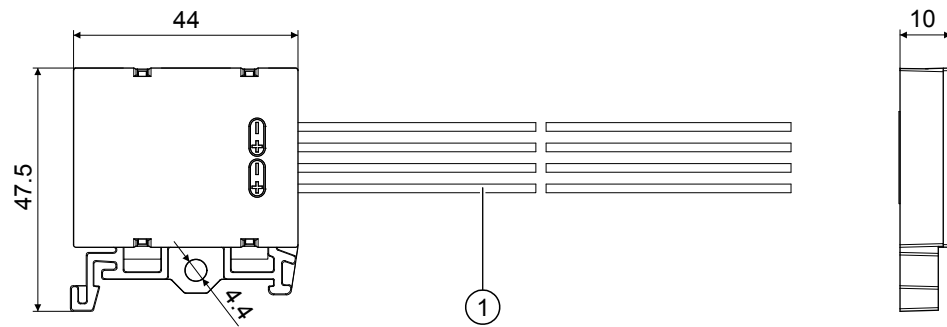
Mechanical data

Dimensions (L x W x H)	47.5 x 44 x 10 mm
Weight	0,04 kg
Material:	
● Housing	PC
Colour	Transparent

Standards

Standards	EN 54-17
VdS approvals	G204030
LPCB approvals	126ae/01
Certificates	0786-CPD-20449
CE conformity mark	Yes
Protection categories	IEC 60529
QA Standards	<ul style="list-style-type: none">● Siemens Standard SN 36350● ISO 9001● ISO 9004

8.2 Dimensions



Dimensions of FDCL221 line separator

- 1 Pigtail 0.5 mm², length = 500 mm, with 2.8 x 0.8 mm flat connector sleeve pressed on in the factory

8.3 Environmental compatibility

- Reusable materials
- Electronic parts and synthetic materials can be easily separated
- Halogen-free synthetic materials, marked by embossed code
- The synthetic materials used do not generate any toxic substances during combustion.

Larger synthetic parts are marked in accordance with DIN 4840 and ISO/DIS 1469. The material codes for basic polymers conform to DIN 728 or ISO 043. This makes separation for recycling possible.

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