



gesis® NRG

## BUS SYSTEMS

Examples of decentralized solutions for future-proof mains power and signal supply with flat cable.



# THE **POWER AND LIGHTING SUPPLY** OF THE FUTURE? **PLUGGABLE!**

As an experienced and reliable partner, we can help you satisfy your building infrastructure cabling requirements with safety and efficiency. For over 40 years now, we have been offering our pluggable, decentralized systems as smart cabling solutions for lighting, floor boxes, workstations, and retail spaces.

Floor box supply, flexible workstation supply, and smart lighting are standard building features, especially in rooms used for commercial purposes. Any desired fixture requires suitable technical infrastructure. To this end, we offer optimal installation solutions and energy-efficient automation components. Tight time frames and short-term completion deadlines are the norm for the electrical installer on the construction site. Thanks to pluggable components, our modular gesis® system saves time, is supremely flexible, and is therefore an extremely appealing solution economically.

## THE SYSTEM FOR:

- + OFFICES
- + HOTELS
- + EDUCATIONAL ESTABLISHMENTS
- + SHOPS, MARKETS, FURNITURE STORES
- + HOSPITALS



### **ECONOMICAL PLAN- NING CAPABILITY**

gesis® ensures that project flows can be calculated and guarantees standardized quality in planning and execution.



### **SUSTAINABLE PROCESS QUALITY**

gesis® is the standardized interface for all trades of building installation and automation. The mechanical coding reliably prevents mismatching.



### **QUICKER ASSEMBLY**

Our pluggable components minimize assembly times thanks to well-conceived interface technology and diversified connection technology with prefabricated cable sets.

# GESIS<sup>®</sup> NRG

## QUICK, EASY, AND FLEXIBLE

### ROBUST AND PRACTICAL

- Small number of different components
- Compact, robust adapters and feeds
- Mounting holes on all adapters
- Contact to the flat cable by means of insulation-penetrating termination
- Pluggable outgoing cables with automatic interlock

### RESOURCE-EFFICIENT

- Quick planning and installation
- Reduction in cable material (copper and plastics)
- Short connection cables for end consumers
- Energy savings due to three-phase cabling

### READY FOR CPR

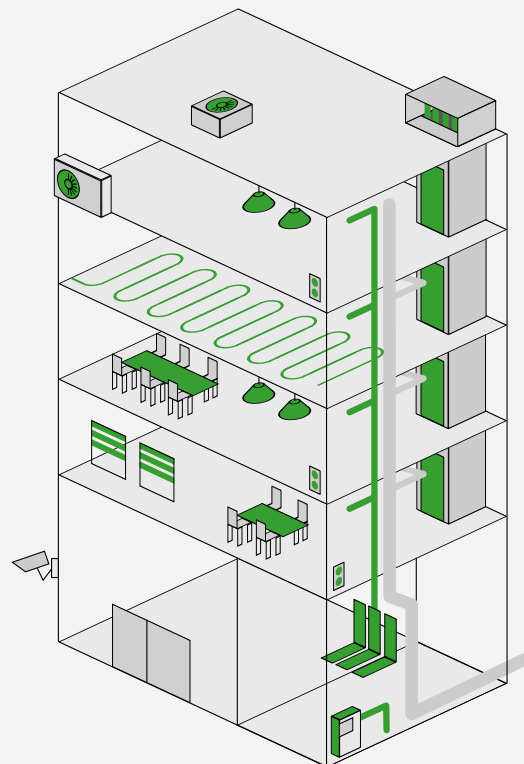
- The flat cable systems are available in the CPR fire classes E<sub>ca</sub> and B2<sub>ca</sub>
- Detailed information can be found in the Wieland Shop <https://eshop.wieland-electric.com>

Scan QR code – view products in the eShop.



### DECENTRALIZED INSTALLATION

- Creates simple, future-proof structures
- Reduces cable quantities (copper, plastics, fire load)
- Brings sufficient energy into the areas of the building due to the three-phase cabling
- The three-phase system reduces cable losses
- Smaller utility rooms increases net floor area



### EASY PLANNING IN ALL AREAS

■ Areas served directly by Wieland    ■ Supported applications



Air conditioning



Sunshade



Ventilation



Lighting



Energy supply



Elevators



Heating control



Camera surveillance



Infrared presence detector



Access control



## ADAPTER

- Adaptation is achieved using insulation-penetrating termination.
- The cable cross section is not reduced.
- The contact screws must be screwed in all the way with the specified torque.

- The adapters can be removed and reused elsewhere. The previous contact point must be taped with the recommended “patch”.



## NOMINAL CROSS SECTION 2.5 OR 4 MM<sup>2</sup>

We recommend the 2.5 mm<sup>2</sup> variant as standard. We recommend the 4 mm<sup>2</sup> variant if

- an increased voltage drop can be expected due to long cable lengths.
- increased neutral conductor loads due to harmonic waves can be expected because of electronic loads.

Supplement 3 to DIN VDE 0100-520 names the applicable reduction factors. The maximum reduction factor to be assumed is 0.65. This means that you are always on the safe side with 4 mm<sup>2</sup> (2.5 mm<sup>2</sup> / 0.65 = 3.85 mm<sup>2</sup>).

## MAINS, SELV, NON-SELV, SIGNAL CABLES

Our cables separate the systems safely and are used for the recommended systems.

	Flat cables with signal			Examples
	Mains 5-pole mains + signal	Mains 7-pole mains + signal	Mains 7-pole mains + SELV	
<b>SELV</b>			X	KNX
<b>PELV</b>			X	
<b>FELV</b>	X	X		1-10V Dimming
<b>Others (also mains)</b>	D; S	D		DALI (D), SMI (S)*

\* in the SMI Specification L (230 V) can be set to I+ or I-

Other voltages, signals, or bus systems can be transmitted, in compliance with the technical data.

## FEED AND FUSE PROTECTION

- We recommend the feed with round cable. You should not connect the cable directly to a distribution unit.
- The 5/7-pole 2.5 and 4 mm<sup>2</sup> cables can be fed with up to 6 mm<sup>2</sup>, while the 10 mm<sup>2</sup> cable can be fed with up to 16 mm<sup>2</sup>.
- The pre-fuses of the 2.5/4 mm<sup>2</sup> cable must not exceed 20 A.
- As a rule, the cables may be 1, 3, or 4-pole with fuse protection. The same outer conductor should never be fed to several wires (neutral conductor overload).
- For fuses, attention must be paid to laying methods and local regulations. The considerations must be the same as for round cables.

## FASTENING AND LAYING METHOD

All cables can be laid on plaster, in cable trays, in cable ducts, in cavity floors or in raised floors. In these areas, they can be used like NYM according to VDE 0298 part 3:2006-06.

Every 50 cm or so, the cable should be secured with the appropriate fastening material such as flat cable clamps/ adapters.

# THE PRE-ASSEMBLED CABLE



## PRE-ASSEMBLED DIRECTLY ON THE CONSTRUCTION SITE

With time pressures on the construction site and defined consumer taps, the flat cable can be ordered from Wieland pre-assembled. The cable only has to

be laid on the construction site and connected to the rest of the installation via connecting cables.



### APPLICATION

If there is little time available on the construction site and the position of the consumers is defined, the installation can be carried out quickly by using pre-assembled flat cables.



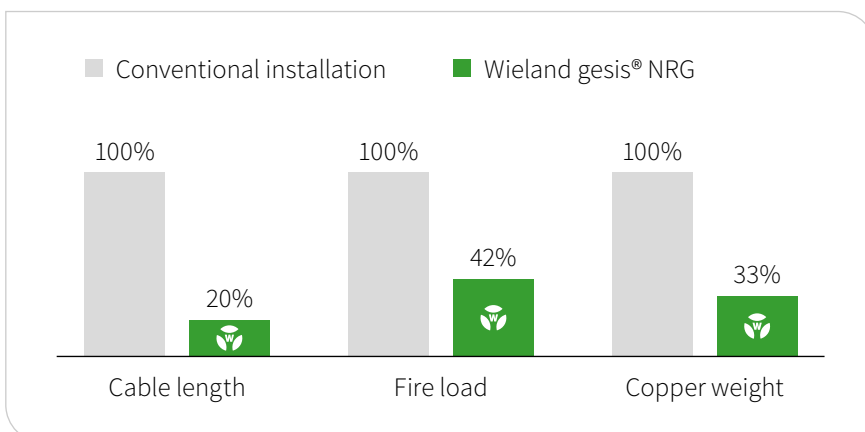
### SOLUTIONS

- The plan can be incorporated directly into a product that can be ordered
- Cables are delivered to the construction site without any further connection work
- Consumers can be connected directly via plug connectors



### BENEFITS

- Time saving of up to 70 % on site due to the elimination of connection work
- High quality of workmanship due to industrial production and 100 % testing
- Subsequent extensions made easy thanks to pluggable components and the gesis® NRG flat cable



# FROM PLANNING TO INSTALLATION



## VERY SIMPLE PLANNING

1. Roughly estimate the cable lengths and number of cables.
2. One feed per harness, with mains and signal separate if applicable.
3. Make sure there are two end plates per mains feed.
4. Determine outlet type and quantity, e.g. 15 floor boxes:  
15 x 3-pole mains adapter with phase selection.
5. Optional accessories: fastening materials and cutting tool.



## TIP

1. Determine cable lengths per harness.
2. Each cable harness always requires:
  - 2 end plates
  - 1 feed
  - Desired number of outlets



## CHECK

1. Estimate of the number of harnesses = number of feeds
2. Number of end plates = 2 x number of harnesses

## CONVENTIONAL

### ORDER



### OUR SERVICE

We can support you with planning and design.

### PRE-ASSEMBLED

### ORDER





### IDEAL CONSTRUCTION PROCESS



Basic configuration:

- Flat cable is delivered on a reel (systemized deliveries also available)
- Lay flat cables and position adapters

Ultimate configuration:

- Plug in end consumer, e.g. floor box



### FUTURE-PROOF

- Expansions and modifications are quick and easy using further adapters
- Flat cables for future-proof systems, e.g. KNX, DALI, SMI.

### QUICK INSTALLATION



- Lay flat cable like an ordinary cable, position end plates
- Mount feed and taps at any point
- Connect feed
- Position all outgoing cables at the taps

### IDEAL CONSTRUCTION PROCESS & QUICK INSTALLATION



- Flat cable is delivered to the construction site pre-assembled with all components (systemized deliveries also available)
- Insert, attach, and connect cable at the desired installation location



# MAINS APPLICATION 5-POLE

2.5/4 mm<sup>2</sup> | Floor box supply



## THE SYSTEM – MAINS

		Flat cable		Flat cable products		Article number		
Cross section	Material	CPR fire class	Article number		2	3		
			green	black				
1	2.5 mm <sup>2</sup>	PVC	E <sub>ca</sub>	00.712.0303.7	00.712.0303.1	4	Cable end cap*	06.564.1753.0
1	2.5 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0303.7	00.770.0303.1	3	Feed	92.050.1553.1
1	4 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0304.7	00.770.0304.1	4	Taps 5-pole	92.051.5453.1
				Similar to RAL 6018	Similar to RAL 9005	5	Taps 3-pole phase selection	92.031.5453.1
							Cable clip (pack=100)	05.562.3000.0
							Cutting tool	F0.000.0051.9

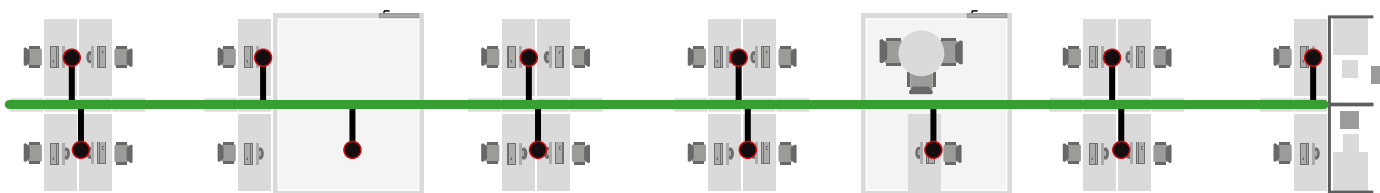
### Key

- a Supply cable, e.g. NYM 5G4 mm<sup>2</sup>, protected with three individual B16A fuses
- b Flat cable to further outlets
- c 3-phase outlet, e.g. to a local system distribution unit
- d 1-phase outlet, e.g. to a floor box
- \* Cable end cap containing silicone. For applications free of paint wetting impairment substances (PWIS), please use the cable end cap 05.562.0653.0 in conjunction with the cutting tool 95.300.0600.0.

## EXAMPLE

### Floor box supply with normal and IT networks

26 floor boxes, each with 500 W projected power with normal and IT networks in 2 segments



### Example (building plan)

The floor boxes are supplied via a gesis® NRG flat cable system 5G4 mm<sup>2</sup> in the raised floor. As the floor boxes can be accessed with normal and IT networks, two different-colored gesis® NRG flat cable systems 5G4 mm<sup>2</sup> are laid parallel. The floor boxes are then connected with two different-colored gesis® connecting cables. The floor boxes are fused centrally in the sub-distributor with 16 A per phase. The model should be halogen-free. For the calculations we assumed 500 W each for NN and IT in each floor box. This means that all the planned flat cable harnesses have a sufficient reserve of at least approximately 30 % for future extensions. With the gesis® connecting cables we have assumed a maximum length of 2 m. The quantity survey is based on the following cable lengths: 75 % 1 m, 25 % 2 m.

### System details using the example of 2 floor boxes



## MATERIALS LIST

Product	Article number	Length / piece	Comments
gesis® NRG BASIC flat cable 5G4 mm <sup>2</sup> , black, halogen-free, B2 <sub>ca</sub>	00.770.0304.1	60 m	Two flat cable harnesses for normal network
gesis® NRG BASIC flat cable 5G4 mm <sup>2</sup> , green, halogen-free, B2 <sub>ca</sub>	00.770.0304.7	60 m	Two flat cable harnesses for IT network
gesis® NRG cable end cap 5G2.5/4 mm <sup>2</sup>	05.564.1753.0	8	Two cable end caps per flat cable harness
gesis® NRG BASIC flat cable feed	92.050.1553.1	4	One feed per flat cable harness
gesis® NRG BASIC flat cable adapter GST18i3, 3-pole, code 1, black, with phase selection	92.031.5453.1	52	One flat cable outlet per floor box and per network
gesis® CLASSIC connecting cable 3G2.5 mm <sup>2</sup> , 1 m, code 1, black, normal network, halogen-free, C <sub>ca</sub>	92.238.1050.1	20	Short connecting cable between flat cable and floor box, normal network, black
gesis® CLASSIC connecting cable 3G2.5 mm <sup>2</sup> , 1 m, code 1, white, IT network, halogen-free, C <sub>ca</sub>	92.238.1050.2	20	Short connecting cable between flat cable and floor box, IT network, white
gesis® CLASSIC connecting cable 3G2.5 mm <sup>2</sup> , 2 m, code 1, black, normal network, halogen-free, C <sub>ca</sub>	92.238.2050.1	6	Long connecting cable between flat cable and floor box, normal network, black
gesis® CLASSIC connecting cable 3G2.5 mm <sup>2</sup> , 2 m, code 1, white, IT network, halogen-free, C <sub>ca</sub>	92.238.2050.2	6	Long connecting cable between flat cable and floor box, IT network, white
Cable clip	05.562.3000.0	240	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	Mandatory for working on cable ends

## PLANNING

### FLAT CABLE

Load/circuit distribution – 2 segments with 2 flat cables each (normal and IT networks). If a high voltage drop can be expected due to long cables, or if high neutral conductor currents due to harmonic waves can be expected because of the use of electronic consumers, we recommend that the 4 mm<sup>2</sup> flat cable be used.

### FUSE PROTECTION AND SUPPLY CABLE

We recommend fuse protection with three individual 16 A circuit breakers with upstream residual current circuit breaker 4-pole / 40 A / 30 mA. The specifications of VDE 0100-520, as defined for conventional round cables, apply to the layout. The maximum fuse protection is 20 A. Should individual floor boxes be protected decentrally, attention must be paid to selectivity with the cable and residual current protection.

### OUTLETS TO THE INDIVIDUAL FLOOR BOXES

These use gesis® CLASSIC 3G2.5 mm<sup>2</sup> cables. To distinguish between the two networks, we recommend outlet cables in black and white. Lengths, cross sections, and cable type must be selected in accordance with local conditions and provisions.

### FLOOR BOXES

Floor boxes can be ordered in the gesis® design from various floor box manufacturers. We will be happy to help you coordinate this.

### FASTENING OF THE FLAT CABLE

The flat cable can be fastened with flat cable adapters, with Wieland clamps for flat cables, or with standard fastening materials such as OBO cable clamps.

### ADVANTAGE OF THIS INSTALLATION OPTION

Using gesis® NRG flat cable systems for floor box supply results in streamlined structures that are easy to maintain. The clean separation of different networks (e.g. NN and IT) is simplified by means of different cable colors.

Extensions can be achieved quickly by simply positioning further outlet adapters without having to move, cut, bare, strip, and wire cables.

The use of three-phase systems up to just before the consumers reduces the voltage drop due to a reduced neutral conductor current, thereby ultimately saving energy.

Our system partners (e.g. OBO, PUK) have floor boxes in their product portfolios that are directly pluggable or adaptable to gesis® NRG flat cables in various designs with and without local fuse protection.

# MAINS + SIGNAL 5-POLE

2.5/4 mm<sup>2</sup> | Lighting control with DALI



## THE SYSTEM – MAINS, 1-PHASE + DALI

		Flat cable		Flat cable products		Article number
	Cross section	Material	CPR fire class	Article number		
				pastel blue (similar to RAL 5024)		
	1	2.5 mm <sup>2</sup>	PVC	E <sub>ca</sub>	00.712.0303.6	2 Cable end cap*
	1	2.5 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0303.6	3 Feed
	1	4 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0304.6	4 Taps 5-pole (mains and DALI)
						Cutting tool
						F0.000.0051.9

### Key

a Supply cable, e.g. NYM 5G2.5 mm<sup>2</sup>, from DALI master + mains with 16A fuse protection

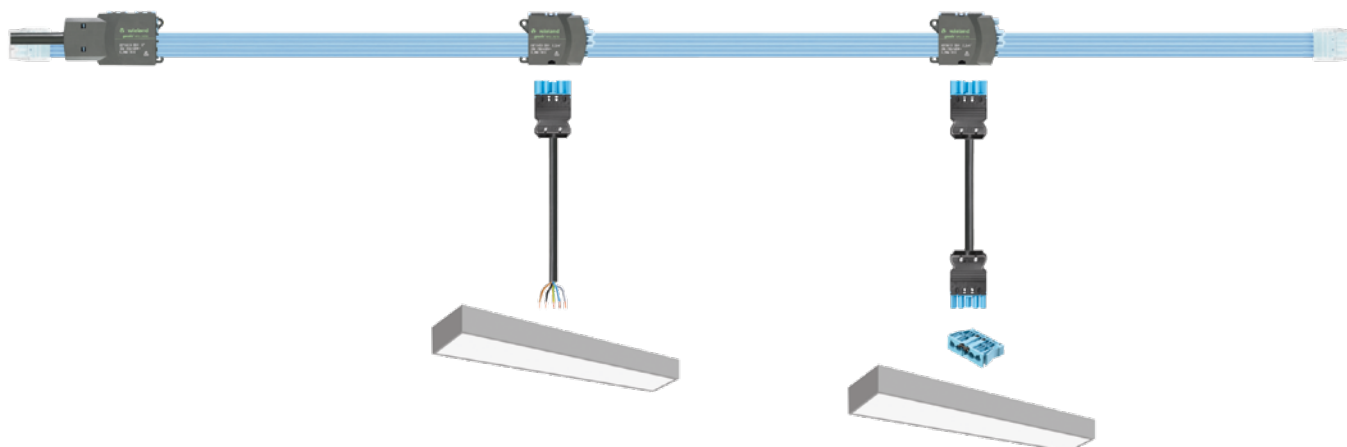
b 5-pole outlet to DALI luminaire, DALI + mains

c Flat cable to further outlets

\* Cable end cap containing silicone. For applications free of paint wetting impairment substances (PWIS), please use the cable end cap 05.562.0653.0 in conjunction with the cutting tool 95.300.0600.0.

## EXAMPLE

### Flat cable for supplying DALI luminaires



The 5-pole gesis® NRG DIMM flat cable 5G2.5 mm<sup>2</sup> supplies energy (1-phase) and the DALI signal to the area. The luminaires can then be supplied with mains power and DALI signal directly via 5-pole flat cable adapters. Depending on the connection technology of the luminaires, 5-pole gesis® NRG connection cables (male/free end) or gesis® connecting cables (male/female) are used. The luminaires can usually be ordered from the manufacturer as already pluggable models (connection cable or device connector (snap-in)).



## MATERIALS LIST

Product	Article number	Length / piece	Comments
gegis® NRG DIMM flat cable 5G2.5 mm <sup>2</sup> , pastel blue, halogen-free, BZ <sub>ca</sub>	00.770.0303.6	4 m	Flat cable with 1-phase mains and DALI signal
gegis® NRG cable end cap 5G2.5/4 mm <sup>2</sup>	06.564.1753.0	2	Two cable end caps per flat cable harness
gegis® NRG DIMM flat cable feed	92.050.1653.0	1	One feed per flat cable harness
gegis® NRG DIMM flat cable adapter GST18i5, 5-pole, code 2, pastel blue	92.051.5553.0	2*	One flat cable outlet per luminaire
gegis® CLASSIC connection cable 5G1.5 mm <sup>2</sup> , 1 m, code 2, pastel blue, mains+DALI, halogen-free, C <sub>ca</sub>	92.257.1054.9	1*	Connection cable between flat cable and luminaire (optional in delivery package from luminaire manufacturer)
gegis® CLASSIC connecting cable 5G1.5 mm <sup>2</sup> , 1 m, code 2, pastel blue, mains+DALI, halogen-free, C <sub>ca</sub>	92.257.1050.9	1*	Connecting cable between flat cable and luminaire
gegis® CLASSIC device connector, snap-in, 5-pole, code 2, pastel blue	92.052.8658.0	1*	Device connector for pluggable version of luminaires (in delivery package from luminaire manufacturer)
Cable clip	05.562.3000.0	8	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	Mandatory for working on cable ends

\* the number of pieces must be tailored to the required number of luminaires and their connection method

## PLANNING

### FLAT CABLE

- 2.5 mm<sup>2</sup> flat cable in pastel blue for mains + signal application
- Planning requirement: CPR fire class C<sub>ca</sub>

#### Fuse protection and supply cable

- DALI and mains are fed together from the sub-distributor with NYM 5G2.5 mm<sup>2</sup>.
- Cable protection, e.g. with 16 A. Make sure that the specifications of VDE 0100-520, as defined for conventional round cables, are applied for the layout.

#### Outlets to the individual luminaires

- One outlet is positioned per luminaire.
- The luminaire is connected with a 1 m long gegis® CLASSIC 5G1.5 mm<sup>2</sup> cable.

LUMINAIRES Luminaires can be ordered in the gegis® design from various luminaire manufacturers. We will be happy to help you coordinate this.

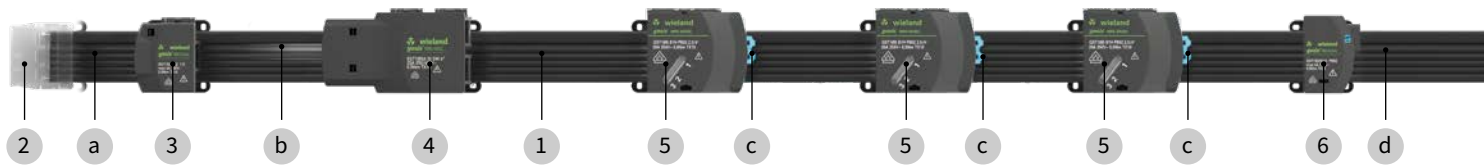
FASTENING OF THE FLAT CABLE Country-specific installation specifications must be observed. Fastening every 50 cm is recommended, as is fastening of the adapters using the designated mounting holes.

### ADVANTAGE OF THIS INSTALLATION OPTION

Using the 5-pole gegis® NRG flat cable system to supply DALI systems results in streamlined structures that are easy to maintain. Adjustments to changed luminaire layouts as part of spatial restructuring can be achieved very quickly and without moving, cutting, baring, stripping, and wiring cables.

# MAINS 5-POLE + SIGNAL 2-POLE

for non-SELV systems | 5G2.5/4 mm<sup>2</sup> + 2x1.5 mm<sup>2</sup> without screen | Mains + DALI application



## THE SYSTEM – 3-PHASE + DALI

Flat cable (each with 2x1.5 mm <sup>2</sup> signal cable)				Flat cable products	Article number	
Cross section	Material	CPR fire class	Article number			
			similar to RAL 9005	2	Cable end cap*	05.562.9753.0
1	2.5 mm <sup>2</sup>	PVC	E <sub>ca</sub>	3	Signal feed	91.020.5453.0
1	2.5 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	4	Mains 5-pole feed	92.050.1553.1
1	4 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	5	Signal + mains outlets with phase selection L1 or L2 or L3	92.051.5653.0
				6	Signal tap, 2-pole	91.021.5453.0
					Cable clip	05.562.3000.0
					Cutting tool	F0.000.0051.9

### Key

- a Supply cable, e.g. NYM 5G4 mm<sup>2</sup>, protected with 16 A fuse
  - b DALI supply cable, e.g. H05Z1Z1-F 2x1.5
  - c 5-pole outlet (mains+DALI) to DALI luminaire, pluggable with GST18i5, code 2, pastel blue
  - d Flat cable to further outlets
- \* Cable end cap containing silicone. For applications free of paint wetting impairment substances (PWIS), please use the cable end cap 05.562.0653.0 in conjunction with the cutting tool 95.300.0600.0.

## EXAMPLE



The 7-pole gesis® NRG BASIC+SIGNAL flat cable 5G2.5+2x1.5 mm<sup>2</sup> supplies energy (3-phase) and the DALI signal to the area. The luminaires can then be supplied with mains power and DALI signal directly via 5-pole flat cable adapters with phase selection. Depending on the connection technology of the luminaires, 5-pole gesis® NRG connection cables (male/free end) or gesis® connecting cables (male/female) are used. The luminaires can usually be ordered from the manufacturer as already pluggable models (connection cable or device connector (snap-in)). For further distribution, various distribution blocks (here in T and H shape) are used.

## MATERIALS LIST

Product	Article number	Length / piece	Comments
ge <sup>sis</sup> ® NRG BASIC+SIGNAL flat cable 5G2.5+2x1.5 mm <sup>2</sup> , black, halogen-free, B2 <sub>ca</sub>	00.770.1323.1	4 m	Flat cable with 3-phase mains and DALI signal
ge <sup>sis</sup> ® NRG cable end cap 5G2.5/4+2x1.5 mm <sup>2</sup>	06.562.9753.0	2	Two cable end caps per flat cable harness
ge <sup>sis</sup> ® NRG BASIC flat cable feed mains	92.050.1553.1	1	One mains feed per flat cable harness
ge <sup>sis</sup> ® NRG BASIC+SIGNAL flat cable feed SIGNAL	91.020.5453.0	2	One DALI feed per flat cable harness
ge <sup>sis</sup> ® NRG DIMM flat cable adapter GST18i5, 5-pole, code 2, pastel blue, with phase selection	92.051.5653.0	1	One flat cable outlet per luminaire harness
ge <sup>sis</sup> ® CLASSIC connecting cable 5G1.5 mm <sup>2</sup> , x m, code 2, pastel blue, mains+DALI, halogen-free, C <sub>ca</sub>	92.257.x050.9	1	Connecting cable between flat cable/distribution blocks and distribution blocks
ge <sup>sis</sup> ® CLASSIC connection cable 5G1.5 mm <sup>2</sup> , 1 m, code 2, pastel blue, mains+DALI, halogen-free, C <sub>ca</sub>	92.257.1054.9	2	Connection cable between flat cable/distribution block and luminaire (optional in delivery package from luminaire manufacturer)
ge <sup>sis</sup> ® CLASSIC distribution block, 1 inlet, 3 outlets, H shape, 5-pole, code 2, pastel blue	92.050.7453.0	8	Distribution block for connecting individual luminaires
ge <sup>sis</sup> ® CLASSIC distribution block, 1 inlet, 2 outlets, T shape, 5-pole, code 2, pastel blue	92.050.3453.0	1	Distribution block for connecting individual luminaires
ge <sup>sis</sup> ® CLASSIC interlock for flying leads, black	05.587.3156.1	1	Is required once for each form of distributor in T shape
Cable clip	05.562.3000.0	12	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	Mandatory for working on cable ends

## PLANNING

### DALI INSTALLATION WITH 3-PHASE MAINS FEED

- Cable in black for mains + signal, 5G2.5+2x1.5 mm<sup>2</sup> cross section
- Planning requirement: CPR fire class C<sub>ca</sub>

### FUSE PROTECTION AND SUPPLY CABLE

- The mains feed comes from the sub-distributor with NYM 5G2.5 mm<sup>2</sup>
- We recommend fuse protection with three individual 16 A circuit breakers. The specifications of VDE 0100-520, as defined for conventional round cables, apply to the layout. The maximum fuse protection is 20 A.
- The DALI feed comes in parallel from the sub-distributor or, for example, from the ge<sup>sis</sup>® FLEX DALI outlet/gateway.

### OUTLETS TO THE INDIVIDUAL LUMINAIRES/LUMINAIRE GROUPS

- For each luminaire or luminaire group, one outlet is positioned which connects with DALI and the 230 V mains. The outer conductor can be chosen freely
- Distribution to the luminaires can be achieved directly or via various distribution blocks
- The connection cable to the luminaire is a 1 m long ge<sup>sis</sup>® CLASSIC 5G1.5 mm<sup>2</sup> cable.

### LUMINAIRES

Luminaires can be ordered in the ge<sup>sis</sup>® design from various luminaire manufacturers. We will be happy to help you coordinate this.

### FASTENING OF THE FLAT CABLE

Country-specific installation specifications must be observed. Fastening every 50 cm is recommended, as is fastening of the adapters using the designated mounting holes.

### ADVANTAGE OF THIS INSTALLATION OPTION

Using the 7-pole ge<sup>sis</sup>® NRG flat cable system to supply DALI systems results in streamlined structures that are easy to maintain.

Adjustments to changed luminaire layouts as part of spatial restructuring can be achieved very quickly and without moving, cutting, baring, stripping, and wiring cables.

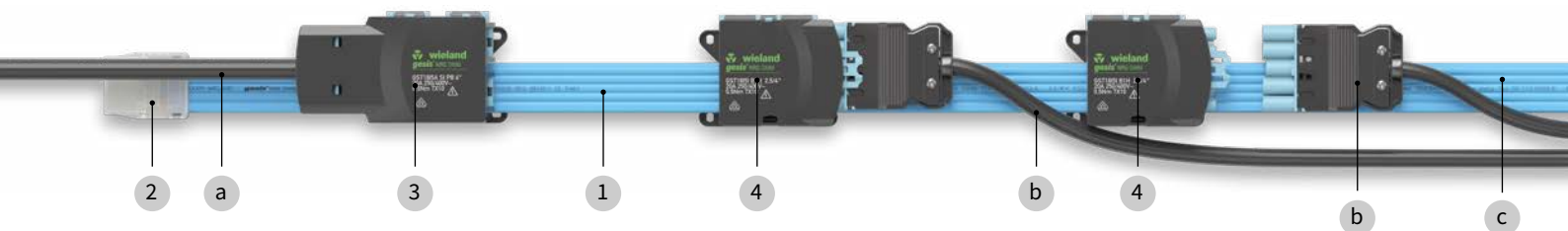
The use of three-phase systems up to just before the consumers reduces cable quantities and therefore provides for a resource-efficient installation in many areas.

In addition, the reduced neutral conductor current reduces the voltage drop, thereby ultimately saving energy.

The 7-pole version is also ideal for covering areas with high light energy demands.

# MAINS + SIGNAL 5-POLE

2.5/4 mm<sup>2</sup> | Sunblind control with SMI



## THE SYSTEM – MAINS, 1-PHASE + SMI

		Flat cable		Flat cable products		Article number	
	Cross section	Material	CPR fire class	Article number			
				pastel blue (similar to RAL 5024)	2	Cable end cap*	05.564.1753.0
1	2.5 mm <sup>2</sup>	PVC	E <sub>ca</sub>	00.712.0303.6	3	Feed	92.050.1653.0
1	2.5 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0303.6	4	Tap 5-pole (mains and SMI)	92.051.5553.0
1	4 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0304.6		Cable clip	05.562.3000.0
						Cutting tool	F0.000.0051.9

### Key

- a Supply cable of gesis® FLEX KNX – SMI gateway, e.g. H05Z1Z1-F 5G2.5 mm<sup>2</sup>
- b 5-pole outlet to SMI sunblind motor, SMI + mains
- c Flat cable to further outlets
- \* Cable end cap containing silicone. For applications free of paint wetting impairment substances (PWIS), please use the cable end cap 05.562.0653.0 in conjunction with the cutting tool 95.300.0600.0.

## EXAMPLE



The 5-pole gesis® NRG DIMM flat cable 5G2.5 mm<sup>2</sup> supplies energy (1-phase) and the SMI signal to the area. The drives can then be supplied with mains power and SMI signal directly via 5-pole flat cable adapters. As a rule, gesis® connectors are then assembled on the connection cable of the drives. The drives can often be ordered from the manufacturer as already pluggable models (pre-assembled plug).



## MATERIALS LIST

Product	Article number	Length / piece	Comments
gegis® NRG DIMM flat cable 5G2.5 mm <sup>2</sup> , pastel blue, halogen-free, B <sub>2ca</sub>	00.770.0303.6	4 m	Flat cable with 1-phase mains and SMI signal
gegis® NRG cable end cap 5G2.5/4 mm <sup>2</sup>	06.564.1753.0	2	Two cable end caps per flat cable harness
gegis® NRG DIMM flat cable feed	92.050.1653.0	1	One feed per flat cable harness
gegis® NRG DIMM flat cable adapter GST18i5, 5-pole, code 2, pastel blue	92.051.5553.0	2	One flat cable outlet per drive
gegis® FLEX KNX SMI gateway	83.020.0635.0	1	Decentrally mountable, directly pluggable KNX-SMI gateway
gegis® CLASSIC connection cable 5G1.5 mm <sup>2</sup> , x m, code 2, pastel blue, mains+DALI, halogen-free, C <sub>ca</sub>	92.257.x054.9	1	Connection cable between gateway and flat cable feed
gegis® CLASSIC connector, plug, GST18i5, 5-pole, code 2, pastel blue	92.954.4453.0	2	Connector for assembling the connection cable of the SMI drive (optional in delivery package from luminaire manufacturer)
Cable clip	05.562.3000.0	8	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	Mandatory for working on cable ends

## PLANNING

### FLAT CABLE

- 2.5 mm<sup>2</sup> halogen-free B<sub>2ca</sub> flat cable in pastel blue for mains + signal application

### FUSE PROTECTION AND SUPPLY CABLE

- SMI and mains are fed together by the gegis® FLEX KNX SMI gateway with a gegis® CLASSIC 5G2.5 mm<sup>2</sup> connection cable, code 2, pastel blue
- We recommend mains fuse protection with 16 A circuit breakers. The specifications of VDE 0100-520, as defined for conventional round cables, apply to the layout.

### OUTLETS TO THE INDIVIDUAL SMI SUNBLIND MOTORS

- The motor connection cables are assembled on the connectors on site
- The motor connection cables, which are guided through the façade without connectors, can be made short as they are connected to the flat cable at any point

### FASTENING OF THE FLAT CABLE

Country-specific installation specifications must be observed. Fastening every 50 cm is recommended, as is fastening of the adapters using the designated mounting holes.

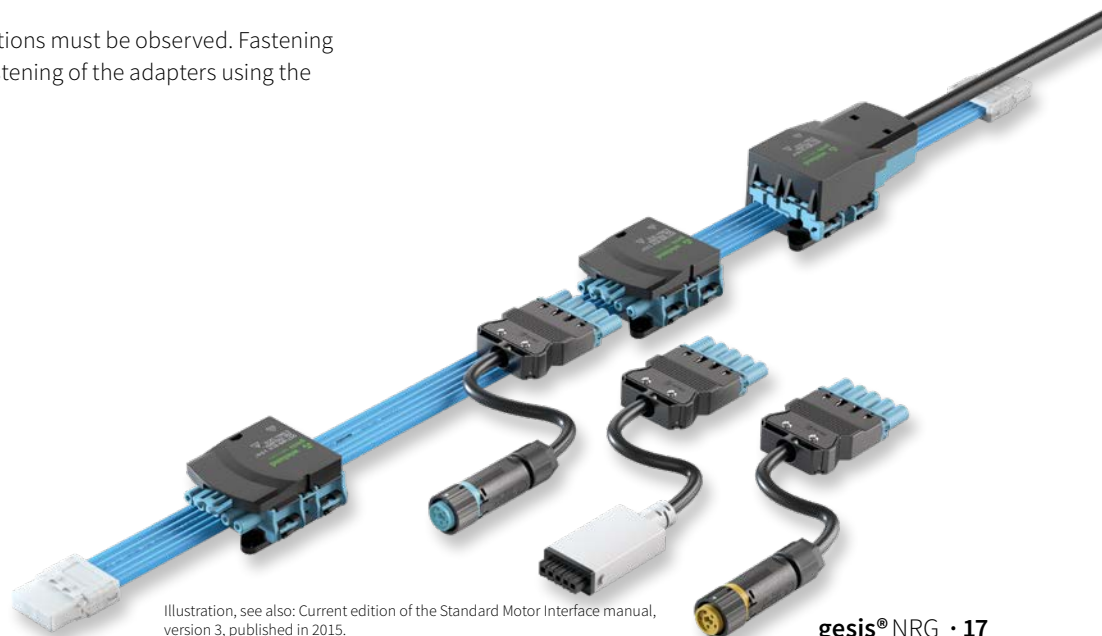
### ADVANTAGE OF THIS INSTALLATION OPTION

The 5-pole gegis® NRG DIMM flat cable ideally represents the bus structure of the SMI system. Depending on the design/placement of the SMI drives, the additional connection technology can be realized indoors with gegis® CLASSIC or outdoors with RST® MINI.

### SMI / STANDARD MOTOR INTERFACE NOTE:

The Standard Motor Interface e.V. manual recommends this installation method as well as other installation suggestions involving connector systems from Wieland.

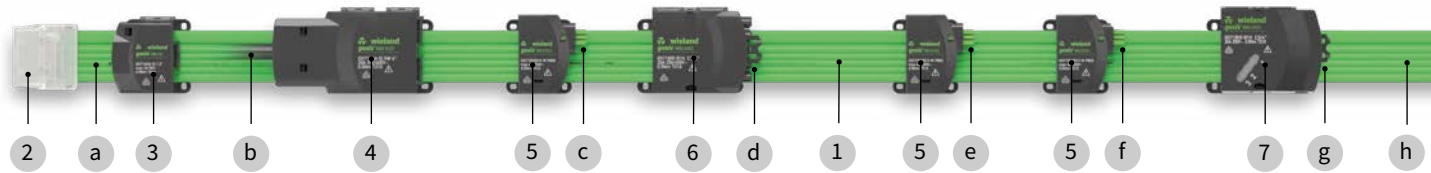
This manual can be found as a download on the official homepage of Standard Motor Interface e.V. at [www.standard-motor-interface.com](http://www.standard-motor-interface.com)



Illustration, see also: Current edition of the Standard Motor Interface manual, version 3, published in 2015.

# MAINS 5-POLE + SELV SYSTEMS

5G2.5/4 mm<sup>2</sup> + 2x1.5 mm<sup>2</sup> screened



## THE SYSTEM – KNX

Flat cable (each with 2x1.5 mm <sup>2</sup> screened bus cable)				Flat cable products	Article number
Cross section	Material	CPR fire class	Article number		
			green (similar to RAL 6017)		
1	2.5 mm <sup>2</sup>	PVC	E <sub>ca</sub>	00.712.0323.7	2 Cable end cap 06.562.4353.0
1	2.5 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0323.7	3 KNX feed 93.420.5453.0
1	4 mm <sup>2</sup>	Halogen-free "CPR"	B2 <sub>ca</sub>	00.770.0324.7	4 Mains 5-pole feed 92.050.1553.1
					5 KNX taps 93.421.5453.0
					6 Mains 5-pole tap 92.051.5453.1
					7 Mains 3-pole tap, phase selection 92.031.5453.1
					Cable clip 05.562.3000.0
					Cutting tool F0.000.0051.9

### Key

- a KNX supply cable, e.g. Y(ST)Y 2x2x0.8 or a different KNX-certified cable
- b Mains supply cable, e.g. NYM 5G4 mm<sup>2</sup>
- c KNX outlet, e.g. to the gesis® FLEX base module
- d Mains 5-pole outlet, e.g. to the gesis® FLEX base module
- e KNX outlet, e.g. to KNX buttons
- f KNX outlet, e.g. to KNX presence detectors
- g Mains 3-pole outlet, e.g. to the gesis® FLEX DALI gateway
- h Flat cable to further room units
- \* Cable end cap containing silicone. For applications free of paint wetting impairment substances (PWIS), please use the cable end cap 05.562.0653.0 in conjunction with the cutting tool 95.300.0600.0.

## EXAMPLE



The 7-pole gesis® NRG BASIC+SELV flat cable 5G2.5+2x1.5 mm<sup>2</sup> supplies energy (3-phase) and the KNX to the area. Consumers/field devices/actuators/module units can then be supplied directly with mains power via 3-pole flat cable adapters with phase selection; the KNX is tapped via a further 2-pole adapter. With the use of Wieland KNX systems, the room automation components are then connected via a gesis® connecting cable.

## MATERIALS LIST

Product	Article number	Length / piece	Comments
gesis® NRG BASIC+SELV flat cable 5G2.5+2x1.5 mm <sup>2</sup> , green, halogen-free, B <sub>2ca</sub>	00.770.0323.7	6 m	Flat cable with 3-phase mains and KNX
gesis® NRG cable end cap 5G2.5/4+2x1.5 mm <sup>2</sup>	06.562.9753.0	2	Two cable end caps per flat cable harness
gesis® NRG BASIC flat cable feed mains	92.050.1553.1	1	One mains feed per flat cable harness
gesis® NRG BASIC+SIGNAL flat cable feed SELV	93.420.5453.0	1	One KNX feed per flat cable harness
gesis® NRG BASIC flat cable adapter GST18i3, 3-pole, code 1, black, with phase selection	92.031.5453.1	2	One mains flat cable outlet per consumer/field device/actuator/module unit
gesis® NRG BASIC+SELV flat cable adapter BST14i2, 2-pole, green	93.421.5453.0	2	One KNX flat cable outlet per field device/actuator/module unit
gesis® CLASSIC connecting cable 3G1.5 mm <sup>2</sup> , x m, code 1, black, halogen-free, C <sub>ca</sub>	92.232.x050.1	2	Connecting cable between flat cable and consumer/field device/actuator/module unit
gesis® NV connecting cable 2x0.5 mm <sup>2</sup> , x m, code green (KNX), halogen-free, C <sub>ca</sub>	94.425.x050.7	2	Connecting cable between flat cable and field device/actuator/module unit
gesis® KNX FLEX base module	83.020.0601.0	1	Base module for managing up to 6 extension modules
gesis® FLEX binary input 8-fold	83.020.0622.0	1	8-fold binary input to incorporate conventional local buttons
gesis® FLEX DALI output 4-fold	83.020.0630.0	1	Extension module as 4-fold DALI actuator for managing 4x 16 electronic ballasts (broadcast)
gesis® FLEX sunblind outlet 2-fold 230 V	83.020.0624.0	1	Extension module as 2-fold sunblind actuator for AC 230 V drives
gesis® FLEX-DA64 KNX DALI gateway	83.020.0643.0	1	Decentrally mountable, directly pluggable gateway for up to 64 DALI2 ballasts
Cable clip	05.562.3000.0	12	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	Mandatory for working on cable ends

## PLANNING

### FLAT CABLE

- Halogen-free B<sub>2ca</sub> flat cable in green for mains + SELV, 5G2.5+2x1.5 mm<sup>2</sup> cross section

### SUPPLY CABLE

- KNX from the sub-distributor
- 5-pole mains from the sub-distributor, preferably as 4 mm<sup>2</sup> model to minimize voltage drops and associated losses
- We recommend fuse protection with three individual 16 A circuit breakers with upstream residual current circuit breaker 4-pole / 40 A / 30 mA. The specifications of VDE 0100-520, as defined for conventional round cables, apply to the layout. The maximum fuse protection is 16 A.

### OUTLETS TO THE INDIVIDUAL ACTUATORS / SENSORS

- One mains and KNX adapter each for KNX actuators
- One KNX adapter each for KNX sensors
- Note: The KNX cables are from the BST14i2 product range. The connector interface is stipulated in the KNX manual – KNX Connector Type 7.1 can be found in Volume 9 Chapter 3.9

### FASTENING OF THE FLAT CABLE

Country-specific installation specifications must be observed. Fastening every 50 cm is recommended, as is fastening of the adapters using the designated mounting holes.

### ADVANTAGE OF THIS INSTALLATION OPTION

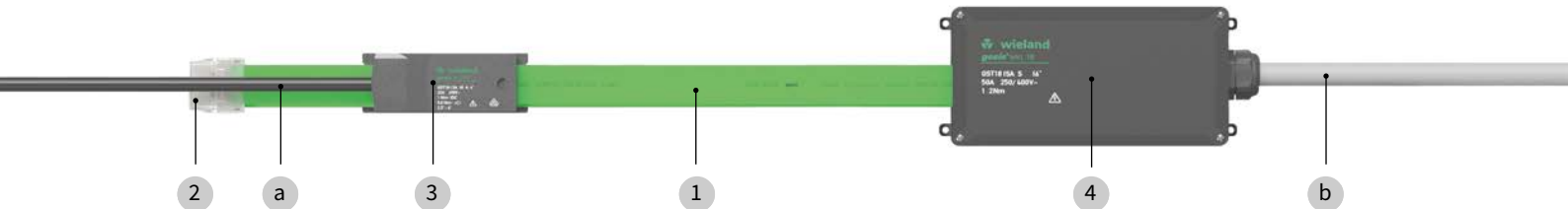
The 7-pole gesis® NRG flat cable for mains + SELV bus systems ideally represents the bus structure of the KNX system; this results in streamlined structures that are easy to maintain.

The use of three-phase systems up to just before the consumers reduces cable quantities and therefore provides for a resource-efficient installation in many areas.

In addition, the reduced neutral conductor current reduces the voltage drop, thereby ultimately saving energy.

# MAINS 5-POLE

10 mm<sup>2</sup> | Application of energy supply in the area



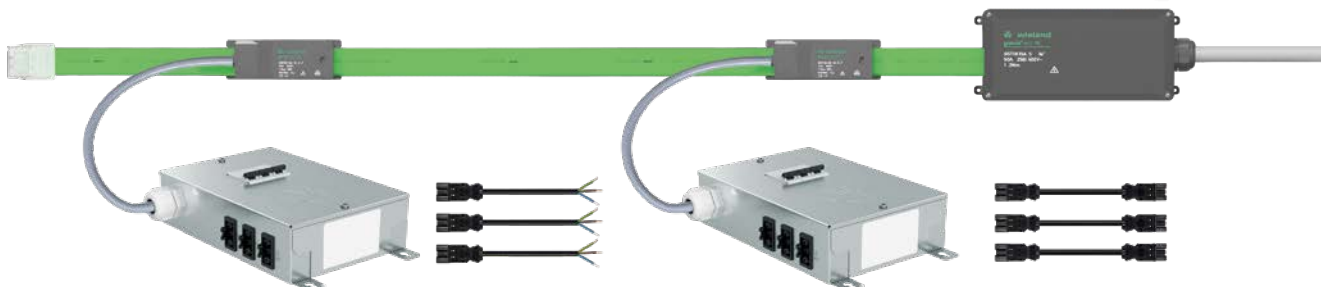
## THE SYSTEM – 10 MM<sup>2</sup> CABLE

Flat cable				Flat cable products		Article number
Cross section	Material	CPR fire class	Article number	2	3	
1	10 mm <sup>2</sup>	PVC	00.702.0306.7	Cable end cap	Outlet adapter	Z6.562.4453.0
1	10 mm <sup>2</sup>	Halogen-free "CPR"	00.770.0306.7	Feed		92.050.9153.0

### Key

- a Outlet cable
- b Feed cable

## EXAMPLE



The 5-pole gesis® NRG flat cable 5G10 mm<sup>2</sup> supplies energy (3-phase, up to 50 A) to the area. Here, gesis® RAN system distribution units are then connected to pre-assembled connection cables and flat cable adapters. The system distribution units are built to the customer's wishes and contain the necessary safety devices as well as the pluggable outlets needed for the application.



## MATERIALS LIST

Product	Article number	Length / piece	Comments
gesis® NRG flat cable 5G10 mm <sup>2</sup> , green, B2 <sub>ca</sub>	00.770.0306.7	4 m	Flat cable harness for supplying energy to the area
gesis® NRG cable end cap 5G10 mm <sup>2</sup>	Z6.562.4453.0	1	One cable end cap per flat cable harness when using the end feed
gesis® NRG flat cable feed	92.050.9053.0	1	One feed per flat cable harness
gesis® RAN system distribution unit with pre-assembled connection cable (max. 3 m) and flat cable adapter	98.530.1200.0	2	System distribution unit with safety devices and pluggable outlets
Cable clip	05.563.9753.0	8	For fixing the flat cable in place, optional
Cutting tool	F0.000.0051.9	1	For working on cable ends, optional

## PLANNING

### FLAT CABLE

- The 5G10 mm<sup>2</sup> halogen-free B2<sub>ca</sub> flat cable is laid in the cable support system. The cable support system is arranged so that the flat cables form a comprehensive energy supply system for electrical retailers, for example.

### FUSE PROTECTION AND SUPPLY CABLE

- The supply cable is 5G16 mm<sup>2</sup>. The high cross section is used to minimize voltage drops and associated power losses as well as loop resistances.
- Cable protection can be achieved with 50 A. The specifications of VDE0100-520, as defined for conventional round cables, apply to the layout.

### OUTLETS

The individual outlets have a maximum current carrying capacity of 25 A and are connected with the decentralized fuse in a system distribution unit directly with a 4 mm<sup>2</sup> cable that is shorter than 3 m. The fuses must be laid out such that the cable is protected between the flat cable and the system distribution unit. This cross section reduction complies with DIN VDE 0100-430 (VDE 0100-430):2010-10, Section 433.2.2. The system distribution units have pluggable outlets from the gesis® product range, thereby enabling problem-free and quick electrification of the display space in the event of a modification.

### FASTENING OF THE FLAT CABLE

Country-specific installation specifications must be observed. Fastening every 50 cm is recommended, as is fastening of the adapters using the designated mounting holes.

### ADVANTAGE OF THIS INSTALLATION OPTION

Using the gesis® NRG flat cable system 5G10 mm<sup>2</sup> as the infrastructure for the energy supply results in streamlined structures that are easy to maintain.

Adjustments to a changed use of the areas supplied can be achieved very quickly and without moving, cutting, baring, stripping, and wiring cables.

The use of three-phase systems up to just before the consumers reduces cable quantities and therefore provides for a resource-efficient installation in many areas.

In addition, the reduced neutral conductor current reduces the voltage drop, thereby ultimately saving energy.

	5G2,5/4 BASIC	5G2,5/4 DIMM	5G2.5/4+2x1.5 not screened	5G2.5/4+2x1.5 screened	5G10
					
<b>Flat cables</b>	x=7      x=1				
PVC      2.5 <sup>2</sup> E <sub>ca</sub>	00.712.0303.x	00.712.0303.6	00.712.1323.1	00.712.0323.7	-
Halogen-free    2.5 <sup>2</sup> B2 <sub>ca</sub>	00.770.0303.x	00.770.0303.6	00.770.1323.1	00.770.0323.7	-
Halogen-free    4 <sup>2</sup> B2 <sub>ca</sub>	00.770.0304.x	00.770.0304.6	00.770.1324.1	00.770.0324.7	-
PVC      10 <sup>2</sup> E <sub>ca</sub>	-	-	-	-	00.702.0306.7
Halogen-free    10 <sup>2</sup> B2 <sub>ca</sub>	-	-	-	-	00.770.0306.7
<b>Mains 5-pole feed</b>	 92.050.1553.1	-	 92.050.1553.1	 92.050.1553.1	 92.050.9053.0 92.050.8853.0
<b>Mains 5-pole outlet 3, N, PE, 2, 1</b>	 92.051.5453.1	-	 92.051.5453.1	 92.051.5453.1	 92.050.9153.0
<b>Mains 3-pole outlet L, N, PE</b>	 92.031.5453.1	-	 92.031.5453.1	 92.031.5453.1	-
<b>Mains 3-pole + signal feed</b>	-	 92.050.1653.0	-	-	-
<b>Mains 3-pole + 250 V signal e.g. DALI outlet L, N, PE, D1, D2</b>	-	 92.051.5553.0	 92.051.5653.0	-	-
1~ 					
<b>Mains 3-pole + 250 V signal e.g. TouchDIM or SMI outlet L, N, PE, D1, D2</b>	-	 92.051.5553.0	-	-	-
1~ 					
<b>Only 250 V / 6 A signal e.g. DALI feed</b>	-	 92.050.1653.0	 91.020.5453.0	-	-
1~ 					
<b>Only 250 V / 6 A signal e.g. DALI outlet D1, D2</b>	-	 92.051.5553.0	 91.021.5453.0	-	-
					
<b>Only SELV 3 A e.g. KNX feed</b>	-	-	-	 93.420.5453.0	-
<b>Only SELV 3 A e.g. KNX outlet 1+, 2-</b>	-	-	-	 93.421.5453.0	-
SELV 					
<b>End cap <sup>1)2)</sup></b>	 06.562.0653.0	 06.562.0653.0	 -	 06.562.4353.0	 Z6.562.4453.0
<b>End cap containing silicone <sup>1)</sup></b>	06.564.1753.0	06.564.1753.0	06.562.9753.0	-	-
<b>Matching connector variants</b>	gesis® CLASSIC, 3-pole, coding color black  gesis® CLASSIC, 5-pole, coding color black	gesis® CLASSIC, 5-pole, coding color pastel blue	gesis® CLASSIC, 3-pole, coding color black  gesis® CLASSIC, 5-pole, coding color black + pastel blue  gesis® MINI, 2-pole, coding color pastel blue	gesis® CLASSIC, 3-pole, coding color black  gesis® CLASSIC, 5-pole, coding color black	-
				gesis® NV, 2-pole, coding color green	

<sup>1)</sup> 2 end plates per cable piece. <sup>2)</sup> Special cutting tool mandatory.

# INFO TO GO

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## GESIS® NRG

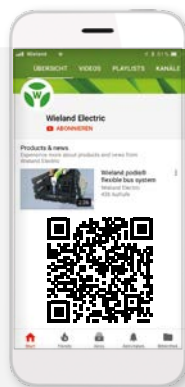
Application examples for the flexible and efficient electrical installation with flat cable.

Bestell-Nr. 0663.1



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