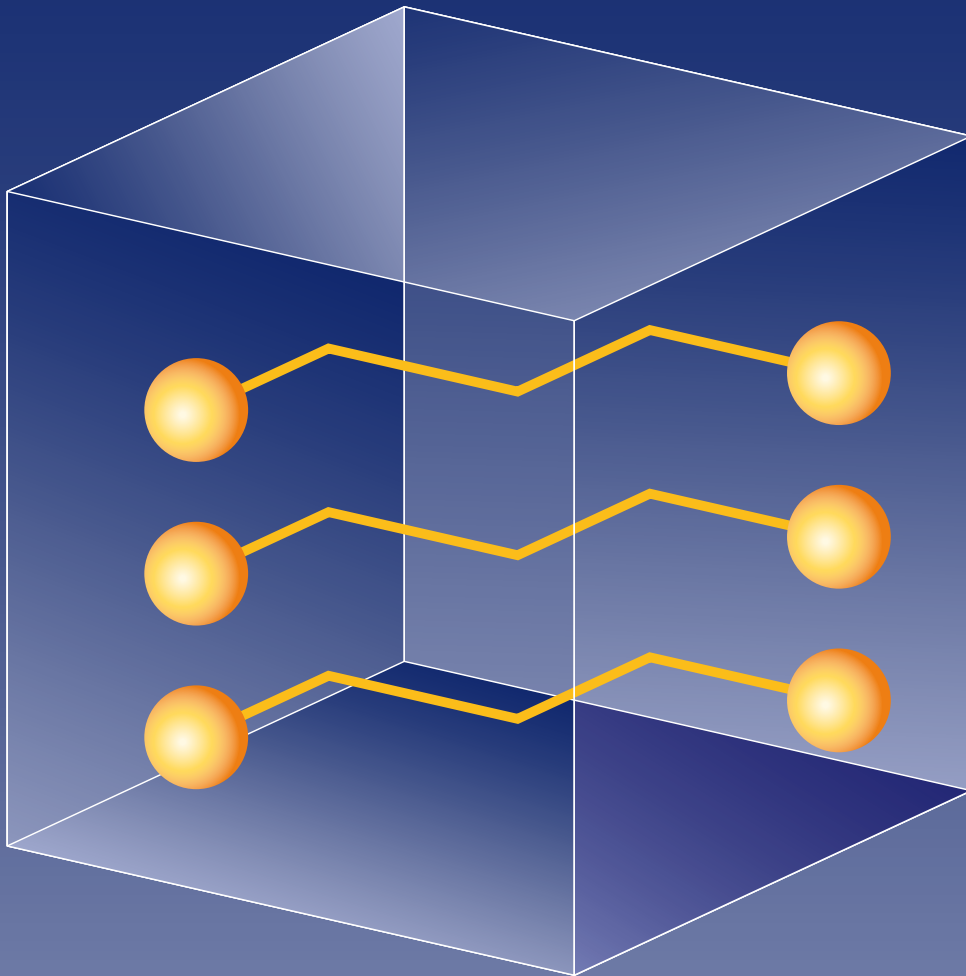


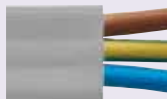
Cabling systems



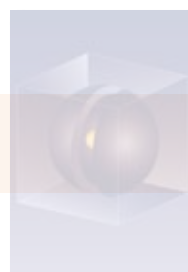
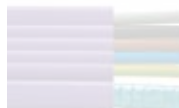
OUR RANGE OF PRODUCTS



CABLING SYSTEMS



BUILDING AUTOMATION



FIRE PROTECTION SYSTEMS



CABLE LAYING SYSTEMS



COMPONENTS FOR
ELECTRICAL INSTALLATION
TECHNOLOGY



ABOUT US



Head office in MuttENZ



Subsidiary in Hölstein

FAMILY FIRM WITH AN INVENTIVE SPIRIT

Woertz has been working as a competent electrical installation technology partner for more than 80 years now. Our many decades of experience are your guarantee for the best possible results. We have the correct screw terminal, flat cable, or plinth duct for your requirements. As a Swiss family firm, we are committed to Swiss values, which are evident in the quality of our products and services as well as the innovation and inventiveness we exhibit in the areas of research and development. Our products are 100% «made in Switzerland».

PRODUCTS

Woertz is the leading provider of comprehensive installation systems and components for electrical installation technology in buildings and infrastructures. These networks form the unseen lifelines of the technical configuration of buildings.

A wide variety of technologies are firmly anchored at Woertz. This fact allows us to address different customer requirements with a wide range of systems and services that meet these demands.

WOERTZ -

YOUR PARTNER FOR COMPREHENSIVE SOLUTIONS

As a reliable partner, Woertz provides its customers with impeccable quality.

The development of pioneering innovations lies at the centre of our accomplishments.

This is evident across our entire company history since 1972 - the year of our first flat cable patent - and extends to the publishing of more than 20 patents.

THE FUTURE

New products have been developed in the area of building automation and security, including complete solutions in the area of tunnel construction.

Innovative development and many years' experience with flat cable technology form the basis for the design of a new safe flat cable. Our objective is to fulfill the strictest European guidelines ensuring a system guarantee of 100%.

SYSTEM AREAS

Our range can be seen in five different brochures:

- flat cable systems
- building automation
- safety systems
- cable laying systems
- components for electrical installation technology



Swiss made

woertz

CONTENTS



P | 6 Introduction



S | 24 data 2x1.5 mm²



S | 28 multibus 4x1.5 mm²



S | 34 3G2.5 mm² 3G4 mm²



S | 38 Technofil 5G1.5 mm² and 5G2.5 mm² Only to be used in Switzerland.



S | 44 power 5G2.5 mm²



S | 50 combi 5G2.5 mm² + 2x1.5 mm²



S | 58 Dali 5G2.5 mm² + 2x1.5 mm²



S | 65 5G4 mm²



S | 69 7G2.5 mm² 7G4 mm²



S | 73 5G10 mm²



S | 77 5G16 mm²



S | 82 Connectors

P | 18 Standards



S | 85 Accessories

IP68



S | 89 IP 3G2.5 mm² IP 3G4 mm²



S | 94 power IP 5G6 mm²



S | 93 combi IP 5G2.5 mm² +2x1.5 mm²



S | 101 power IP 5G2.5 mm²

FE180 E90 see Fire Protection System



S | 107 FE180 3G2.5 mm²



S | 110 FE180 3G4 mm²



S | 112 FE180 5G2.5 mm²



S | 114 FE180 5G4 mm²



S | 116 FE180 5G16 mm²



S | 118 Accessories

INTRODUCTION

Requirements for installation systems

Comfort, reliability, flexibility and optimum cost-effectiveness are the central requirements of builders and investors. Installation systems must guarantee high operational reliability of the controlled functions and efficient adaptation to changing user requirements after installation. System solutions from Woertz ensure that the desired comfort functions such as lighting, security, room temperature, weather protection and others can be implemented.

The quality of cabling systems is thus defined by the investment and maintenance costs for possible repairs and changes or alternatively expansions as well as the operational reliability of the functions connected to it. Misconceptions in the holistic view of the system can lead to increased material and installation costs as well as unexpected additional time and effort for planning and installation. On the other hand, misinterpreted savings can lead to considerable reliability risks as well as to high costs for troubleshooting and network expansion.

Summary

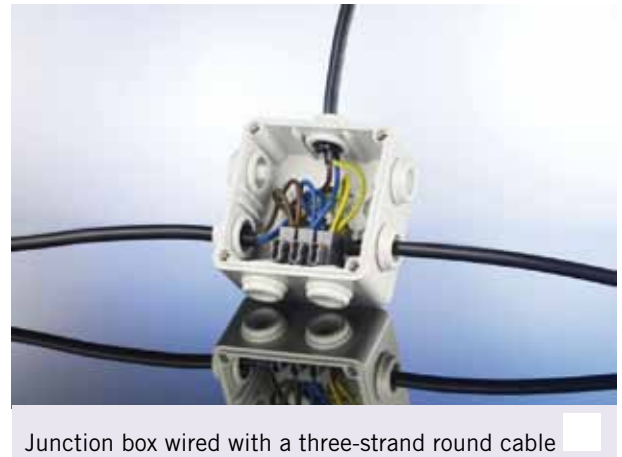
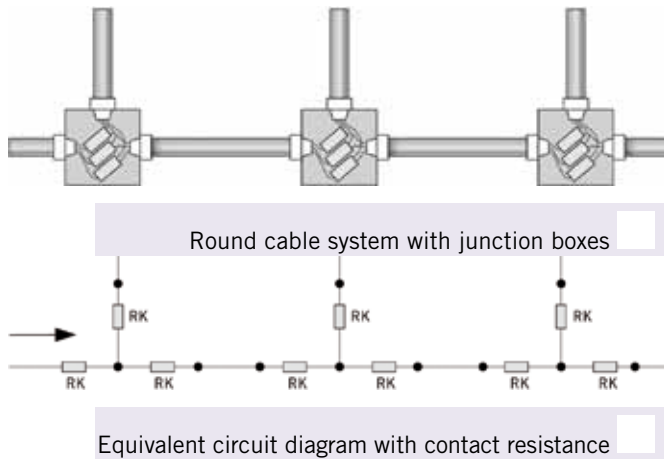
The requirements of a professional installation system can be summarised as follows:

- 1) efficient planning and quick, error-free installation
- 2) low-loss, operationally reliable connections
- 3) long service life with an option for subsequent changes / expansions
- 4) compatibility with upstream and downstream systems as well as new technologies
- 5) optimum cost-effectiveness in connection with the complete installation and service life

The following considerations concern cabling systems and product features for functional buildings, industrial building use and infrastructure buildings. The same principles apply to all types of buildings and infrastructure facilities.

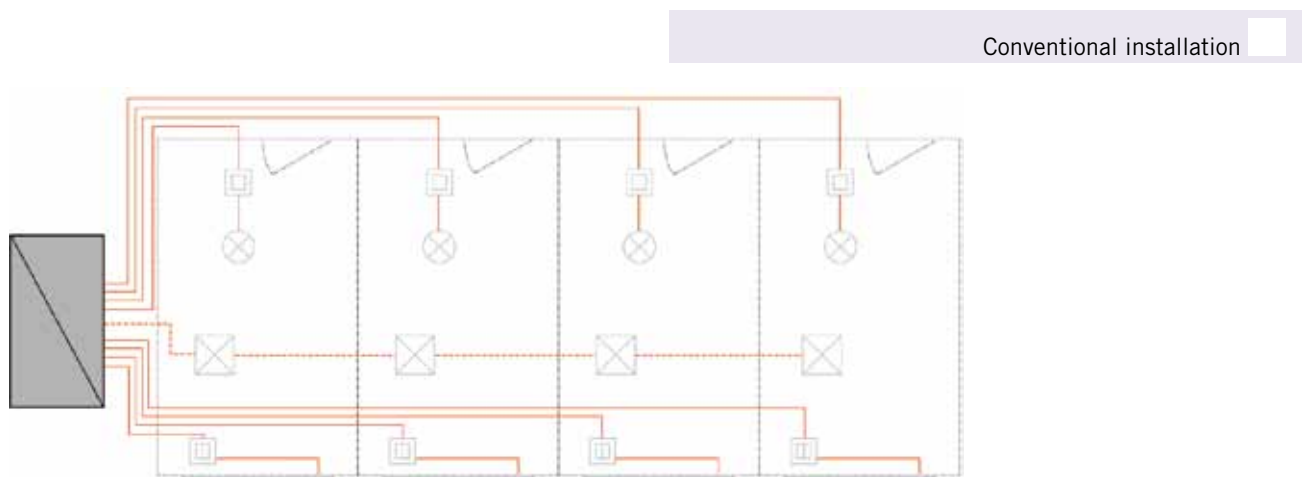
We differentiate between two types of cable installation

The principle of conventional cabling systems

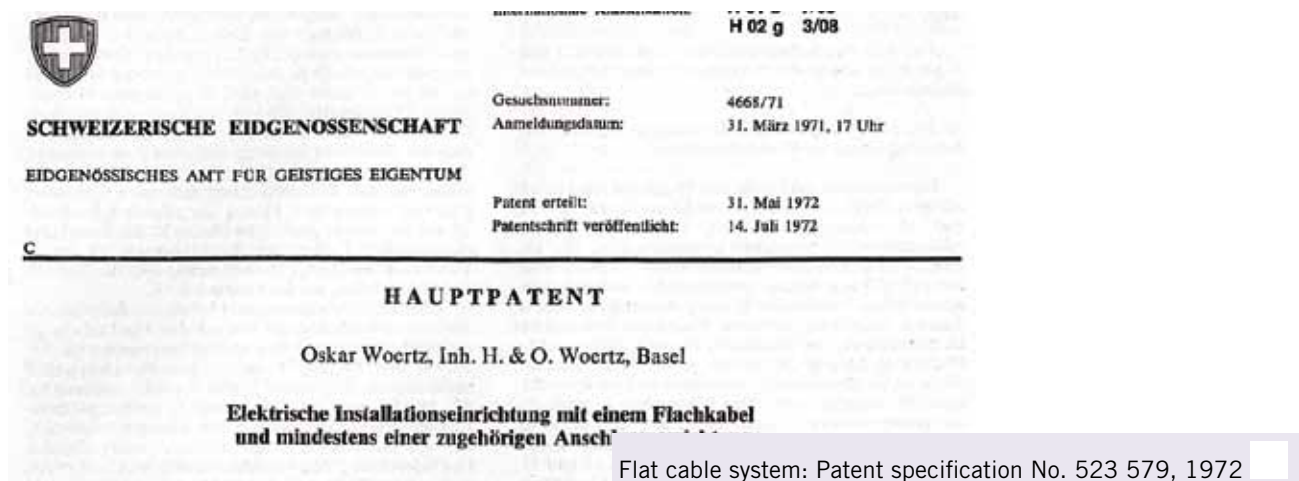


The planned cabling concept is adapted locally during the installation. That way planning mistakes can still be corrected and changes can be taken into consideration at short notice. This applies in particular to subsequent expansion of the cable network.

Electrical installation systems using round cables contain a high number of partition and contact points with many potential risks and possible mistakes. The installation work can thus only be performed by qualified workers. Each cable break is a potential weak point and leads to energy loss. Serial placement of the junction boxes can result in a large-scale failure of the energy distribution in the event of a fault.



Woertz®: Inventors of innovative flat cable technology



Conventional round cable systems are often incapable of fulfilling the high and diverse requirements of buildings and infrastructure buildings. As early as the start of the 1970s, Woertz® decided to offer builders and investors an electrical installation concept that completely meets their demands. Woertz developed an innovative flat cable system and successfully patented it in 1973 as the legal inventor.

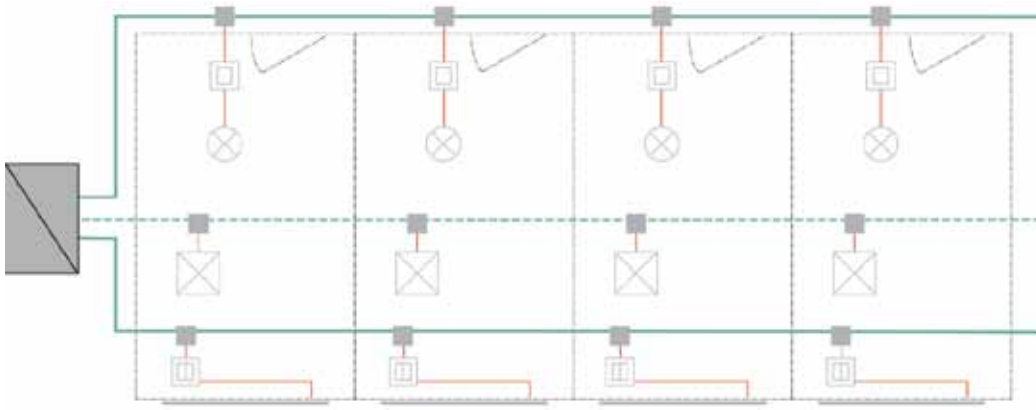
Woertz® flat cable technology has proven itself with planning and installation companies in the market up until now, and is constantly being developed even further. Other manufacturers recognize the benefits of this product solution as well and have integrated the Woertz® flat cable in their product ranges.

The concept of Woertz® flat cable systems

The flat cable system has the following advantages compared to conventional cabling systems:

- a modular, flexible and economical installation system with high operational reliability and capacity
- the leads in the flat cable run parallel and facilitate easy access to the individual leads via junction boxes that can be placed anywhere using a piercing method that does not require stripping,
- reverse polarity protected installation with a short commissioning time and a great reduction in the amount of cable required (fire load reduction), short installation times and less risk of making mistakes,
- the flat cable system allows for pre-assembly of ready-to-install cable segments, and can be adapted at short notice to changed requirements in all phases of construction and utilisation,
- expansion options with data cables for power supply and control of building automation modules without additional cabling

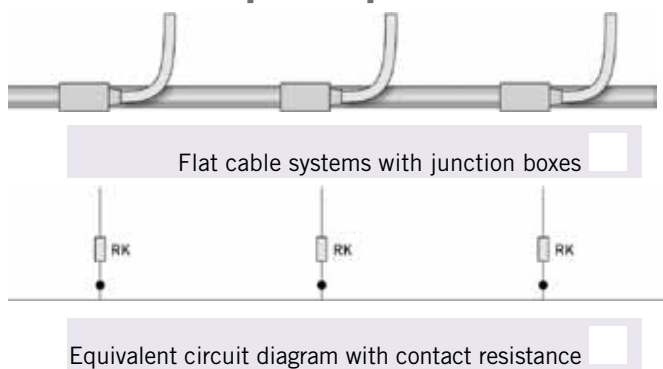




Security

No breaks are required in the Woertz® flat cable system at any point during installation or expansion. Fewer contact points and less cable overall mean fewer potential risks. The quantity of cable is reduced, so the thermal load can be reduced.

Functional principle



Woertz® flat cable with junction box

The principle of Woertz® flat cable systems is that connections and branches can be created at any point directly and efficiently without any cable breaks. Cable connections and boxes can be moved, added or removed as required later on.

The parallel running leads in the cable make it possible to easily access the individual leads through quick installation of feed-in and branching boxes that use an insulation-piercing method.

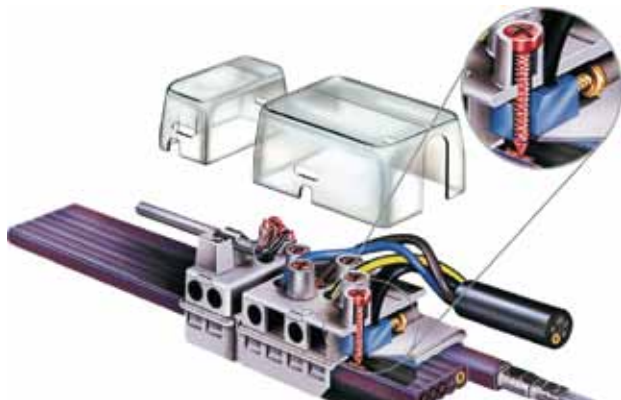
Preparatory work such as stripping cables, separating leads or preparing the ends is completely unnecessary. The asymmetric profile of the cable ensures that the boxes can only be mounted in a specific position, so that all leads and connections are automatically placed correctly. The lack of cable breaks means less contact resistance and loss in the electric circuit, as well as a reduction in potential sources of mistakes. At the same time, it results in increased operational reliability, as the failure of a junction box has no effect on the downstream units.

The planned cabling concept can still be adapted on-site during the installation, by changing a cable length or the number of junction boxes, for example. Planning mistakes can thus be corrected and changes at short notice can be accommodated.

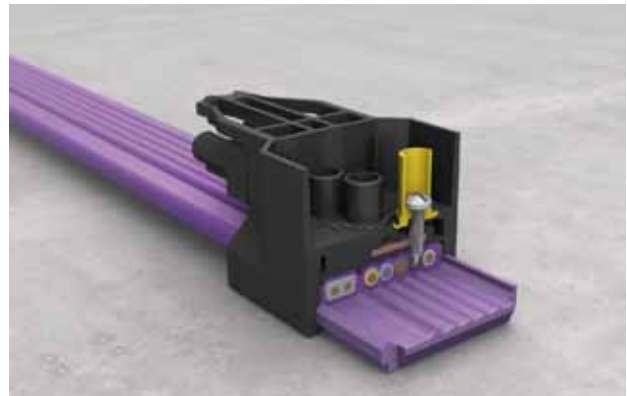
This flexibility reduces the prior planning and measuring work as well as the amount of cable material that is necessary. The considerable savings in cable material, installation work and time clearly improves profitability. This modular system also permits pre-assembly of ready-to-install flat cable lengths that can be installed on-site at the construction site in a relatively short amount of time, and thus efficiency and yield also increase.

Woertz® flat cable connector

The Woertz® connecting principle consists of mounting the junction boxes on the flat cable with an insulation-piercing method. These clamping devices consist of screws or blades that pierce the insulation of the cable by screwing or cutting in respectively thereby establishing a contact with the individual leads. The outgoing leads are then connected to the screws or blades so that they become live. The main line – i.e. the flat cable – does not have to be stripped or cut during this procedure, and the junction boxes can be attached at any place on the cable.



Piercing screws



Woertz combi cable

The insulation-penetrating piercing screws are shown in red. The contact elements and connecting screws for the outgoing leads are in blue and gold. Tapping screws pierce the insulation of the flat cable and the individual leads (black jacket in this case) and contact the copper lead reliably and without stripping.

The patented Woertz® piercing method

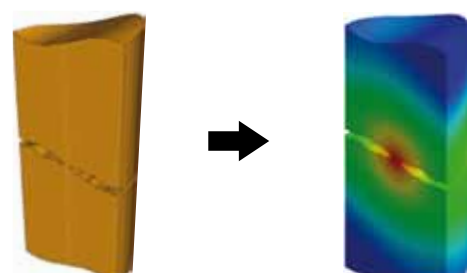
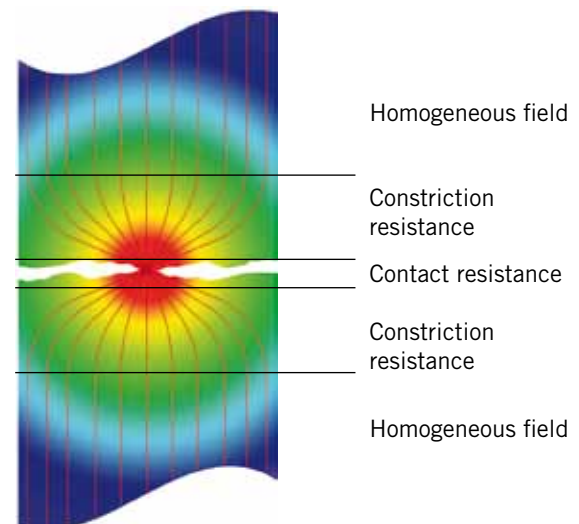
Contacting metal parts

At least two elements are required for a contact. Only careful matching of both elements can lead to an optimum result. One-sided adaptation of one element cannot compensate for any inadequacies in the other.

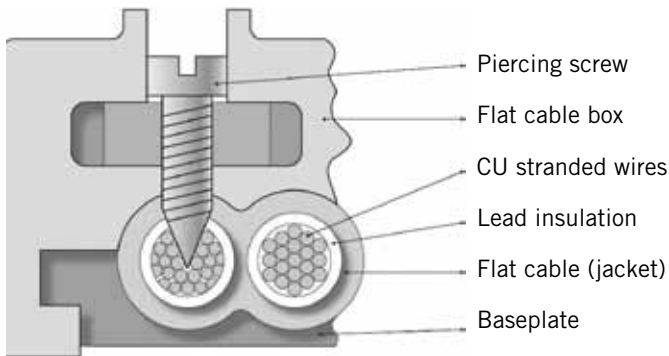
The most important value of an electrical contact is the transition resistance, which is determined by the following physical characteristics:

The increased connection resistance in the live elements resulting from the construction-related constriction of the current paths to the contact surfaces.

The actual contact resistance from one contact element to the other. This is essentially affected by the size of the contact surface, coupling of materials, surface quality, impurity layers and surface pressure. In addition, there are direct cross-connections and dependencies between these parameters.



Electrical lines, contact set-up



Piercing contact with flat cables

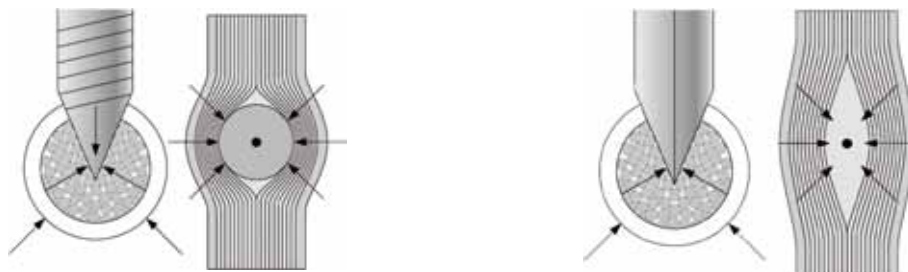
This principle requires a specific set-up regarding penetration of the insulation, the contact and the pressure build-up at the contact points, as well as the long-term reliability, and it places specific requirements on the cable leads. A piercing contact makes use of special tapping screws or blades and is always on cable strands.



The tapping screw or the blade penetrates the insulation of the flat cable and enters the cable strand. This process pushes the stranded wires apart and as a result the individual wires come into contact with a large area of the screw or blade.

Due to the tension on the individual wires, there is surface pressure on the contact surfaces. This large-area pressure on the contact elements promotes the current transfer between the individual wires and ensures low resistance values.

Force development on the contact surfaces and between the individual wires for Woertz® contacts



Variations of the Woertz® piercing method



Contact: Tapping screws

Connection: Screwed



Contact: Tapping screws

Connection: Plugged



Contact: Blades

Connection: Screwed

Piercing contact with Woertz® data cables

In the “building automation” field of application, the flat cable from Woertz® is used in combination with a data cable. In order to prevent interference, the data cable is shielded by closed foil running longitudinally.

A tapping screw or a blade with an insulated intermediate piece is used (Woertz® patent) for the piercing contact of such a data cable. Any possible short-circuit between the lead and the shielding is excluded by this conductor insulation.

The cable shielding - a solution patented by Woertz® - guarantees that the insulated screw or blade never encounters a shield overlap. The retracted shielding foil ensures a clean piercing method and prevents faults.

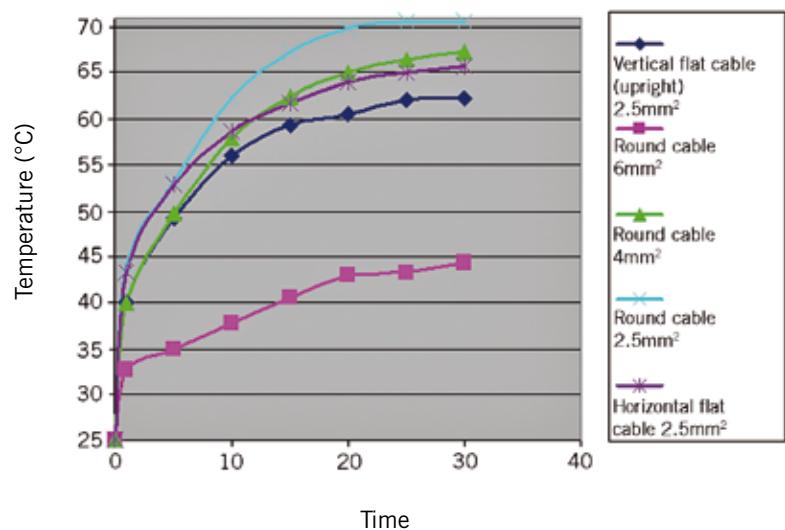
Woertz® flat cable for high cost-effectiveness and efficiency

Capacity of Woertz® flat cable systems

With a flat cable, the heat from the individual leads is given off directly to the outside. In addition, flat cables ensure efficient air cooling and hence greater capacity due to the considerably larger external surface compared to a round cable. In round cables, there is a converse negative effect, because the leads heat each other up due to the compact placement.

This phenomenon means that a flat cable has a lower temperature than a round cable under the same load and can thus carry considerably more current.

Temperature development of a flat cable compared to a round cable



Tests have shown that with the same temperature increase, a flat cable can bear more than twice as much. A flat cable with a smaller Cross-section than a round cable can be used for the same load, which means direct cost savings. Depending on the Cross-section and taking the laying system into consideration, the capacity is regulated by standards and laying regulations.

Benefits

Benefits in general

The tenants in a building – and thus their needs – will often change in the course of the building's useful life. Morn technical installations must be designed to cope with this. Woertz® flat cable systems provide a way for connections to be established or relocated at any point and at any time – and without cable breaks! Furthermore, all this with considerably reduced installation times.

Benefits for builders/investors

Flexible installations can be adapted more easily to the changing requirements of the tenants – requirements that often do not yet exist when the building is under construction. With Woertz® flat cable systems, installations are ready to deal with the requirements of future office facilities. Smaller adjustments generate less work, noise and dust. Even in locations where workstations have to be frequently refitted, rewiring options with flat cable installations can be adapted with a minimum of effort.

Benefits for planners

Woertz® flat cable systems provide the necessary flexibility in situations in which connection points cannot be defined in advance. The installation outlay is significantly reduced for cases where many connections are required in close mutual proximity. High quality planning sets the course for future use, and can react flexibly to short-term changes during the set-up phase – because with flat cable installations from Woertz®, the planner is on the safe side.

Benefits for electrical contractors

Fewer cable breaks and less wiring means fewer potential sources of faults. Thanks to the asymmetric profile of the Woertz® flat cable, the risk of incorrect connections can be practically excluded. The modular system also supports the electrical contractor who is working to deadlines.

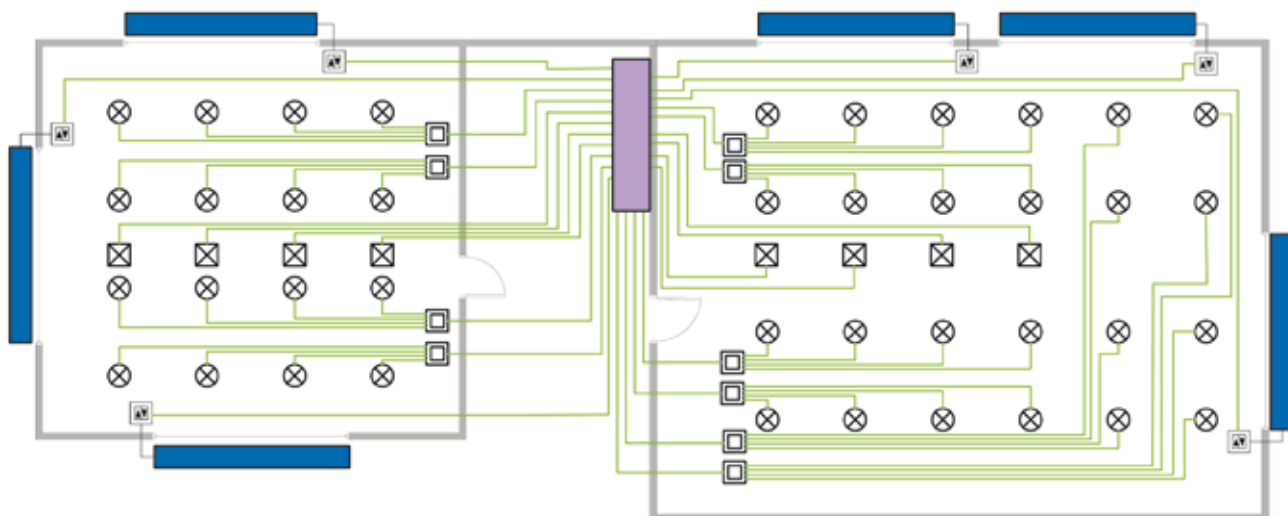
Time saving thanks to prefabrication

On request, Woertz® will deliver pre-assembled, ready-to-install flat cables including feed-in and junction boxes. On request, we can provide flat cable boxes with pre-assembled connection lines. If need be, the consumers to be connected can also be delivered preinstalled and wired. The pre-assembled systems and components can be quickly and efficiently installed at the construction site afterwards.

Installation comparison

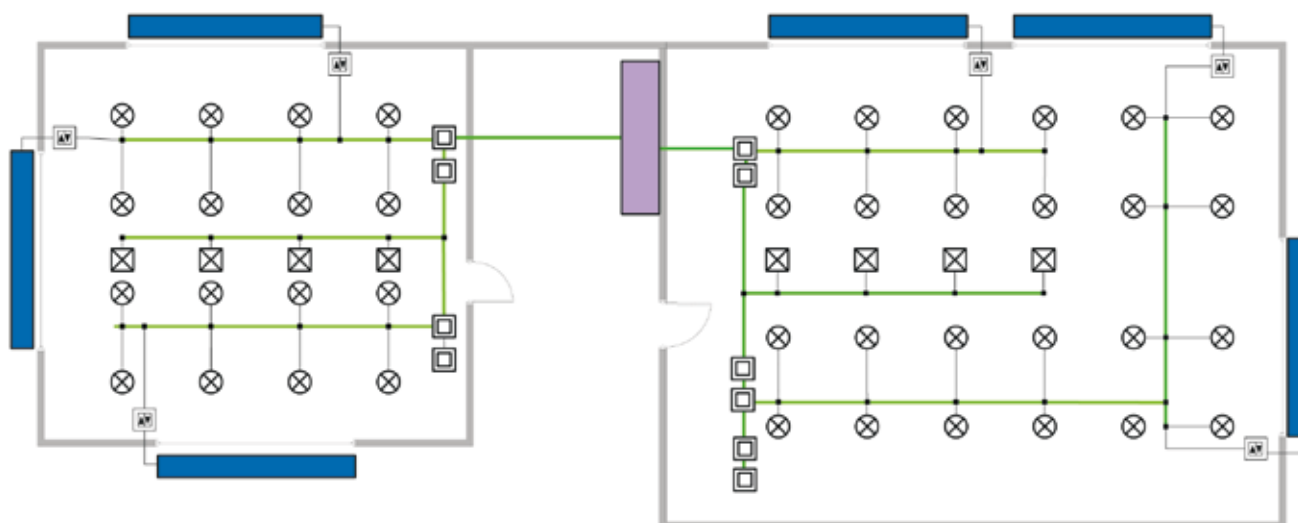
Installation with round cable



used cable length: 320 m





Installation with Woertz flat cable

used cable length: 50 m



 Shutter control system
 Lighting

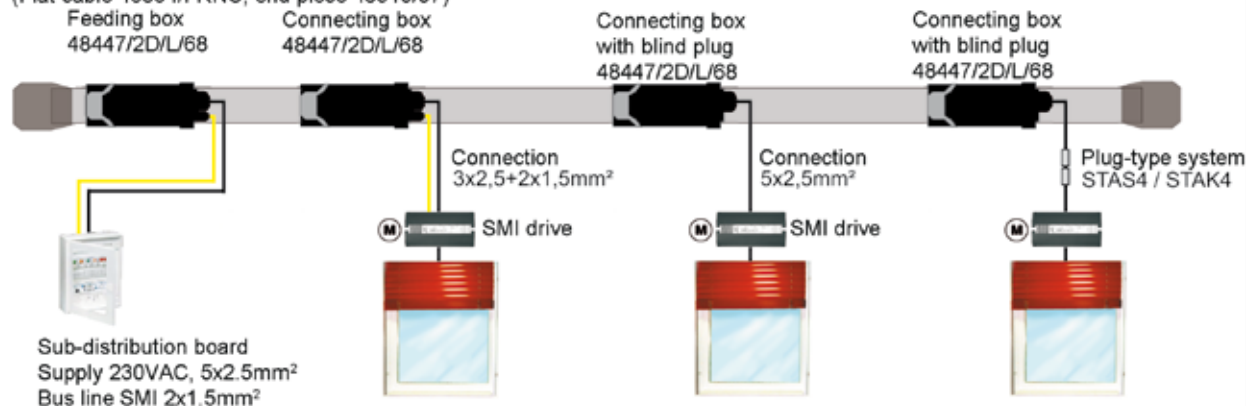
 Push-button
 Floor box

 Blinds
 Subdistribution board

SMI cabling concept with Woertz® flat cable systems

SMI drives 230VAC with flat cable system 5x2.5+2x1.5mm² IP68

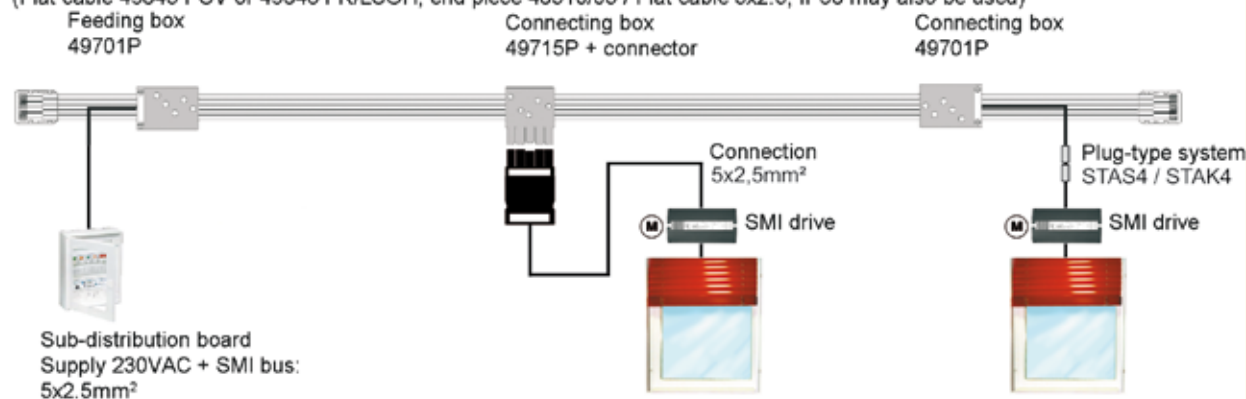
(Flat cable 49864/FRNC, end piece 48510/07)



For outdoor use (facades)

SMI drives 230VAC with flat cable system 5x2.5

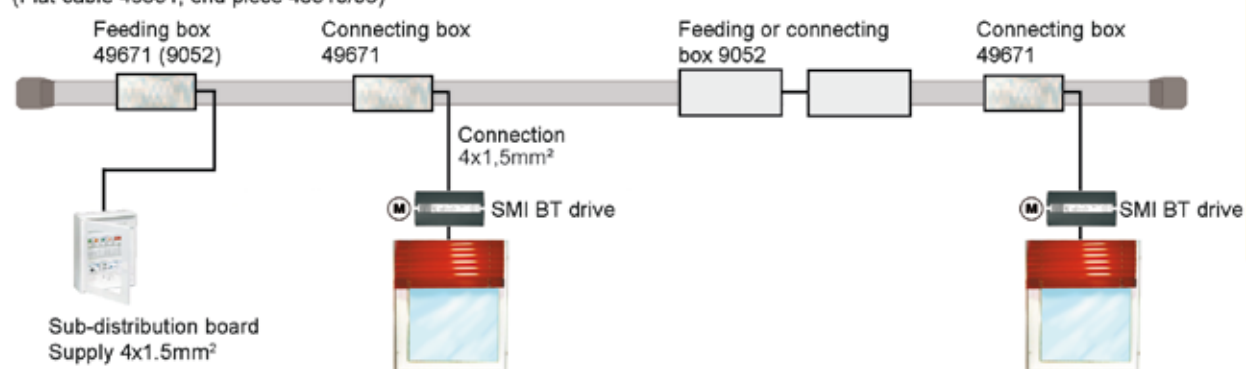
(Flat cable 49845 PCV or 49846 FR/LSOH, end piece 48510/05 / Flat cable 5x2.5, IP68 may also be used)



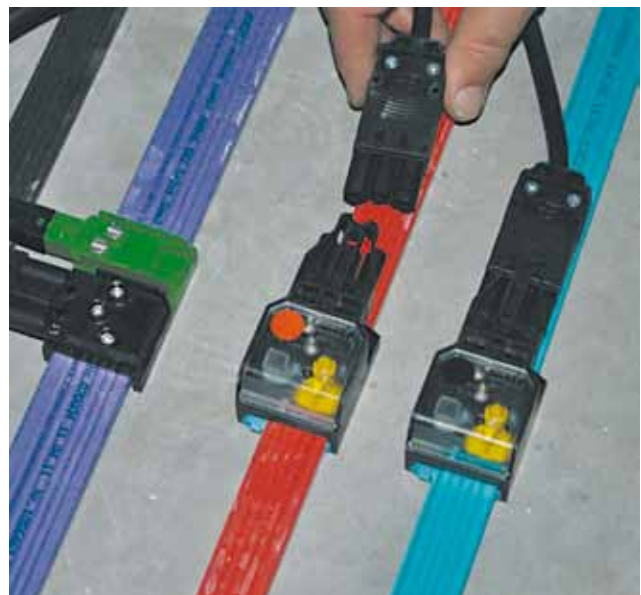
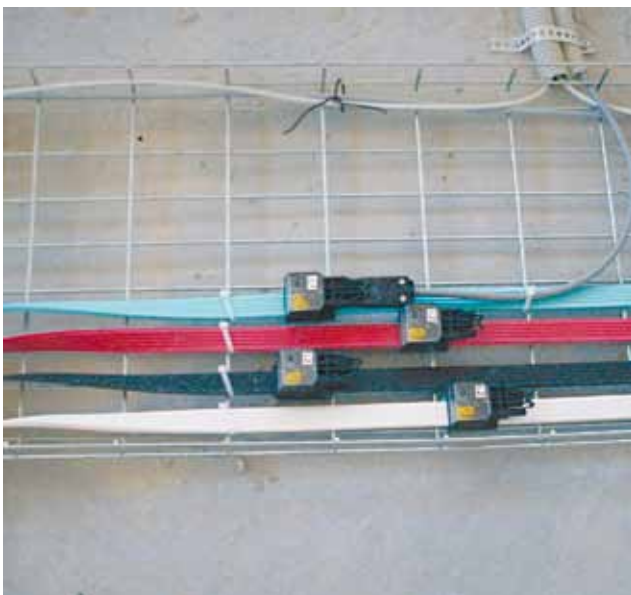
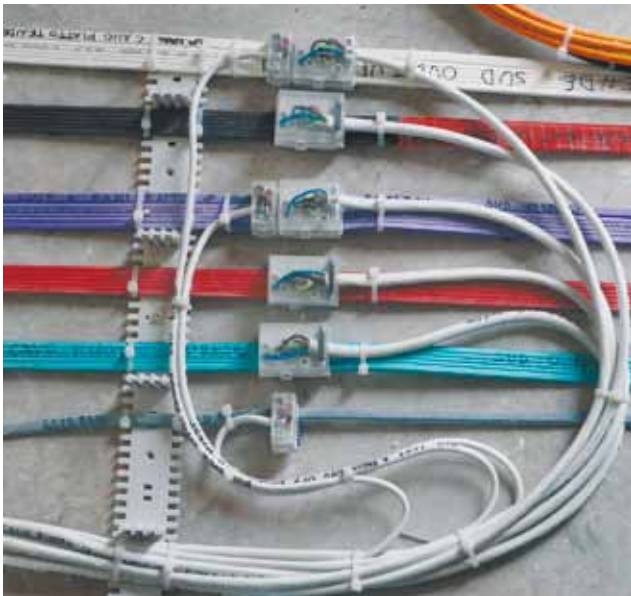
Flat cable installation for indoor use (ceiling, floor, duct)

SMI BT drives with flat cable system Multibus 4x1.5mm²

(Flat cable 49651, end piece 48510/06)



Woertz® flat cable: examples of application










Properties of materials and standards

1) Flame-retardant, self-extinguishing to IEC 60332-1-2 ☒, 2) halogen-free, non corrosive gas to IEC 60754-1/2 ☒

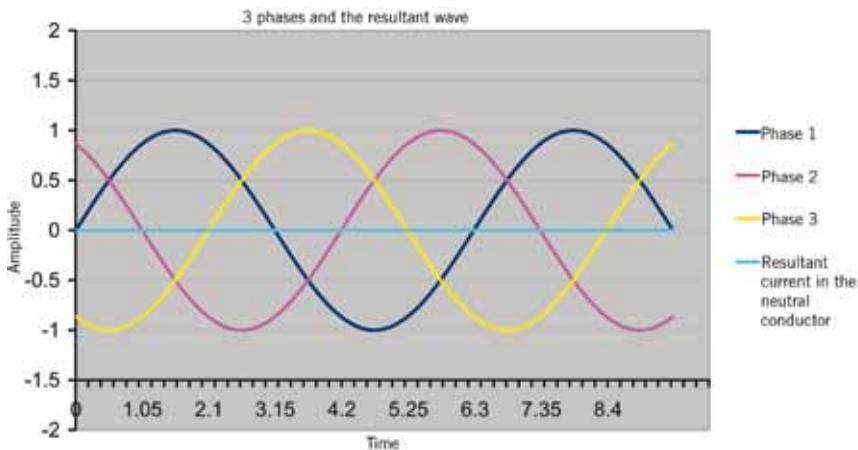
Cross-sectional view	No.	Designation	Type	Copper conductors according to IEC 60228
	49949	Woertz data 2x1.5 mm ²	PVC	Tinned copper, highly flexible, class 5
	49948	Woertz data 2x1.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49651	Woertz multibus 4x1.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49685	Woertz 3G2.5 mm ²	PVC ölbeständig	Tinned copper, highly flexible, class 5
	49686	Woertz 3G2.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49646	Woertz 3G4 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	9040	Woertz technofil 5G1.5 mm ²	PVC	Tinned copper, highly flexible, class 5
	9055	Woertz technofil 5G2.5 mm ²	PVC	Tinned copper, highly flexible, class 5
	49900	Woertz technofil 5G2.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49845	Woertz power 5G2.5 mm ²	PVC	Tinned copper, highly flexible, class 5
	49846	Woertz power 5G2.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49863/FRNC	Woertz power IP 5G2.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49404	Woertz 5G4 mm ²	PVC	Tinned copper, highly flexible, class 5
	49405	Woertz 5G4 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	48780/FRNC	Woertz power IP 5G6 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49884	Woertz power 5G10 mm ²	PVC	Bare copper, highly flexible, class 5
	49885	Woertz power 5G10 mm ²	FR/LSOH	Bare copper, highly flexible, class 5
	49605	Woertz 5G16 mm ²	PVC ölbeständig	Bare copper, highly flexible, class 5
	49606	Woertz 5G16 mm ²	FR/LSOH	Bare copper, highly flexible, class 5
	49600	Woertz 7G2.5 mm ²	PVC ölbeständig	Tinned copper, highly flexible, class 5
	49601	Woertz 7G2.5 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49401	Woertz 7G4 mm ²	FR/LSOH	Tinned copper, highly flexible, class 5
	49945	Woertz combi 5G2.5 mm ² + 2x1.5 mm	PVC	Tinned copper, highly flexible, class 5
	49946	Woertz combi 5G2.5 mm ² + 2x1.5 mm	FR/LSOH	Tinned copper, highly flexible, class 5
	49864/FRNC	Woertz combi IP 5G2.5 mm ² + 2x1.5 mm	FR/LSOH	Tinned copper, highly flexible, class 5
	48250/FE180/NS/OR 48450/FE180/NS/OR	Woertz FE180 3G2.5 mm ² Woertz FE180 3G4 mm ²	FR/LSOH	Bare copper, solid conductors, class 1
	48350/FE180/NS/OR 48650/FE180/NS/OR	Woertz FE180 5G2.5 mm ² Woertz FE180 5G4 mm ²	FR/LSOH	Bare copper, solid conductors, class 1
	48950/FE180/NS/OR	Woertz FE180 5G16 mm ²	FR/LSOH	Bare copper, multistrand conductors, class 2

3) Low fire propagation according to IEC 60332-3-24 ☒, 4) Low smoke generation according to IEC 61034-2 ☒, 5) Insulation integrity FE180 according to IEC 60331 ☒

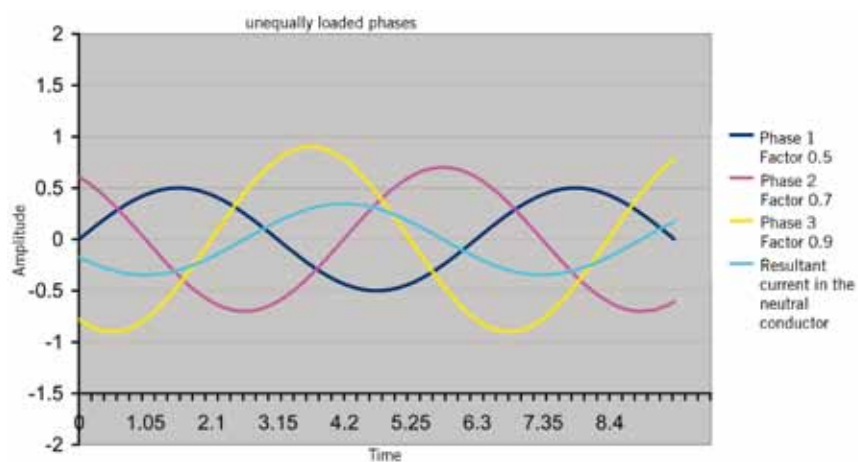
Wire insulation	External sheath					
		1	2	3	4	5
PE according to EN 50290-2-23 with aluminium shield	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PE according to EN 50290-2-23 with aluminium shield	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4 Oil resisting according to HD 603-S1	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PVC according to EN 50363-3	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4 Oil resisting according to HD 603-S1	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PVC according to EN 50363-3	PVC according to EN 50363-4 Oil resisting according to HD 603-S1	<input checked="" type="checkbox"/>				
PE halogen-free according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PE according to HD 604-5H	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Power current: PVC according to EN 50363-3 Bus: PE according to EN 50290-2-23 with aluminium shield	PVC according to EN 50363-4	<input checked="" type="checkbox"/>				
Power current: PVC according to EN 50363-3 Bus: PE according to EN 50290-2-23 with aluminium shield	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Power current: PVC according to EN 50363-3 Bus: PE according to EN 50290-2-23 without shield	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Double-layer insulation, special compound, according to VDE 0266	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Double-layer insulation, special compound, according to VDE 0266	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Double-layer insulation, special compound, according to VDE 0266	PE halogen-free according to IEC 60502-1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Neutral current

In a single-phase network, the same current always has to flow in the neutral conductor, as in the phase conductor.

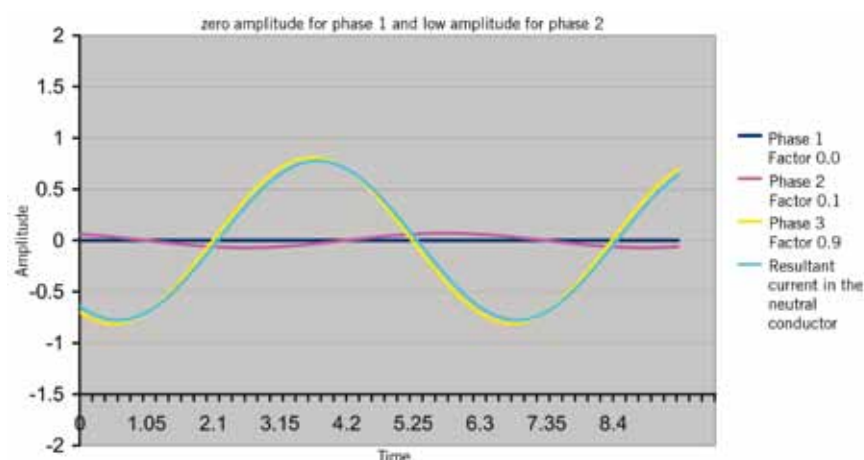


In electrical networks with three phases, voltages with a periodic sinusoidal form are generated in the phase conductors, but the sequences are shifted time-wise by a third of a period. In this case, as a result of these processes that are running periodically, when the voltages are combined together (neutral point), the result at each point in time is „0“.



For a symmetrical load (each phase the same as the load) the currents are cancelled out, and no current subsequently flows in the neutral conductor either. If the individual phases have different loads (different resistances, due to heavier inductive or capacitive loading of different phasings), the currents no longer balance out, a resulting current remains, and this runs in the neutral conductor back to the power source.

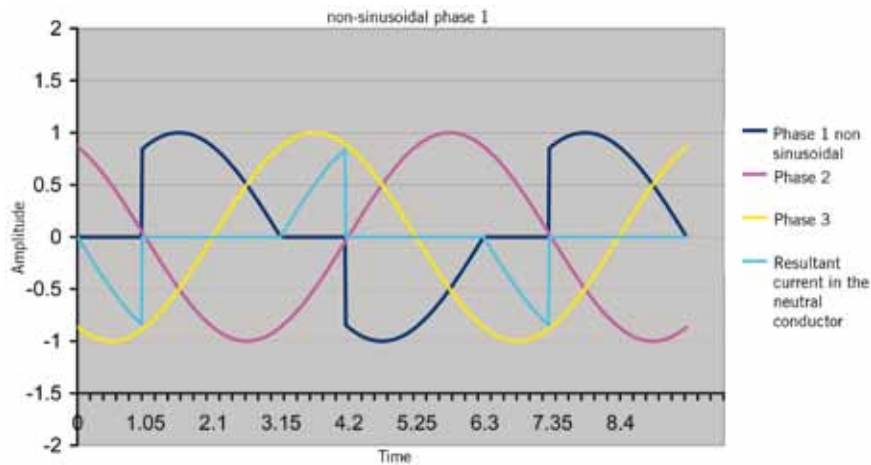
Due to the basic principles of physics and as can be seen from the vector diagram if one or two phases fail and only the remaining one is loaded, this then results in the most extreme asymmetry.



Even in this case, however, it is easy to see (and mathematically deducible) that the maximum neutral current cannot exceed the phase current. (=> basic principle of dimensioning – conductor cross-section for neutral conductor is the same as for phase conductor).

Periodic but non-sinusoidal load

For most electrical devices, especially in office equipment (computers, printers, etc.), electronically regulated power supplies are often used.



Due to their mode of operation, these devices create non-sinusoidal loads in the electric circuits. The individual phases are therefore not only different in the sizes and phasings of the current, the shape of the flowing current is no longer sinusoidal either.

Result The individual phase currents can no longer cancel each other out, and a neutral current flows.

In order to be able to calculate the conditions, we have to go back to basic mathematical principles.

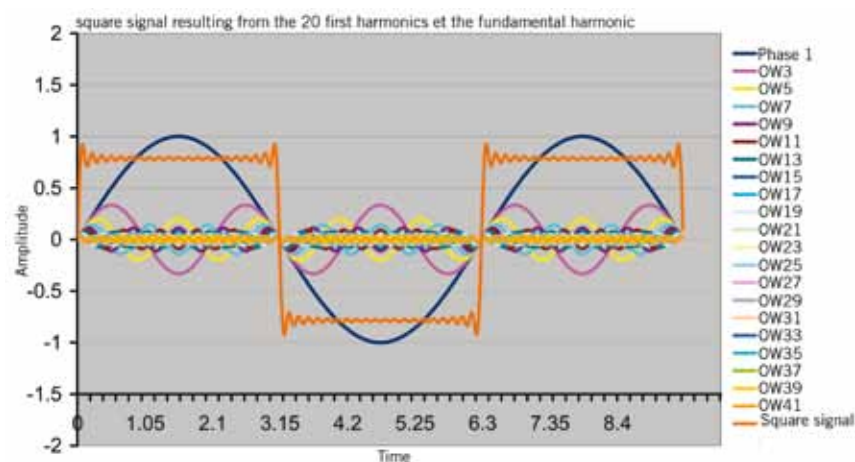
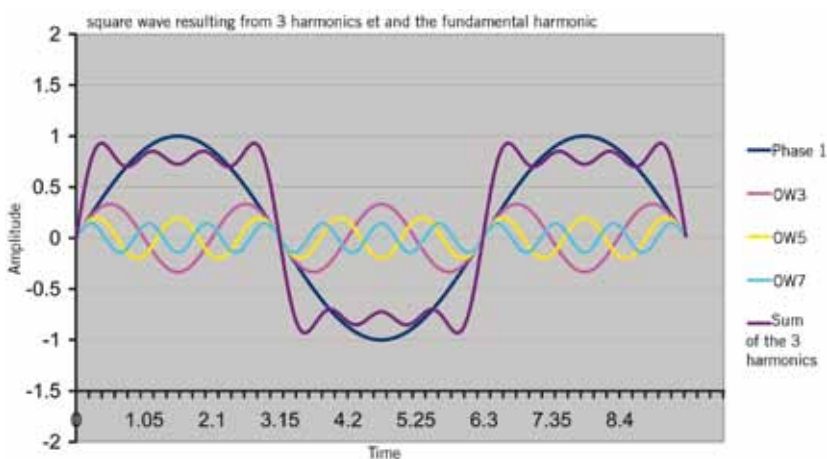
The following is applicable as mathematically proven: Each periodic oscillation can be composed as a result of sinusoidal oscillations with different frequencies and amplitudes (Fourier).

If the half periods are symmetrical mirror images (+ and – parts are equal), only an odd plural number of fundamental oscillations occur:

$$Y(t) = A_1 \sin(\omega t) + A_3 \sin(3\omega t) + A_5 \sin(5\omega t) + A_7 \sin(7\omega t) \dots$$

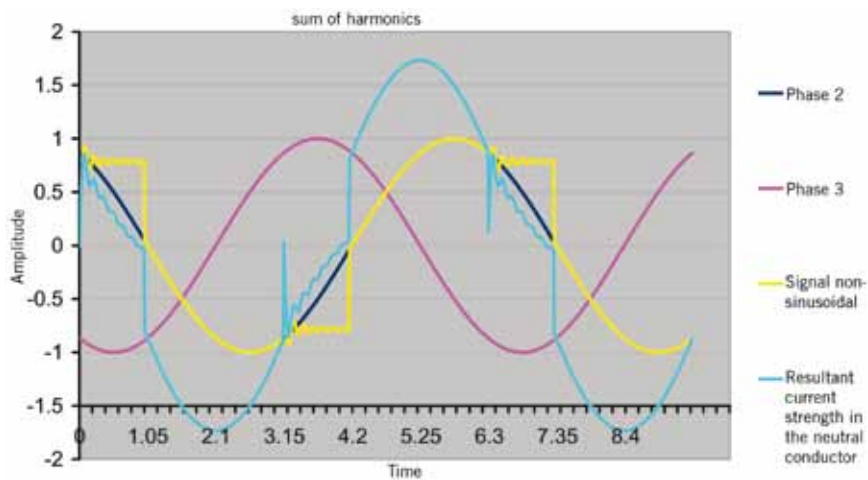
Fundamental wave

Harmonics



If the fundamental waves have a 1/3 phase shift, they cancel each other out. However, the third harmonics (period length 1/3 of the fundamental waves), despite the phase shift of the fundamental wave, have the same phase as the other third harmonics.

Result The fundamental waves have an effect of mutual attenuation on each other, but the 3rd harmonics fall into the same phasing and are added together.



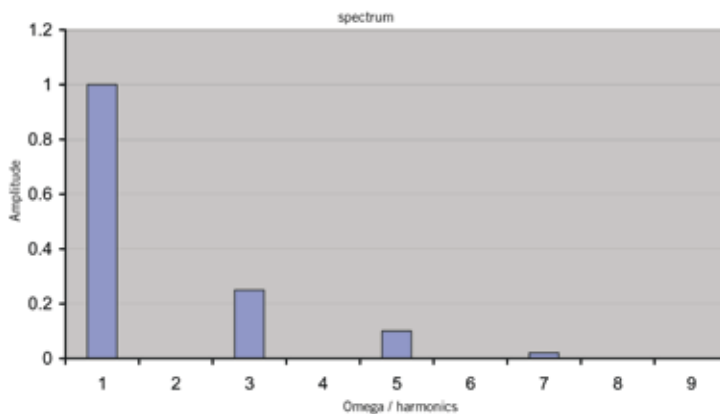
Regardless of the fundamental waves and possible conditions that may exist in practice, without calculations and measurements, you can jump to the wrong conclusion that the neutral conductor may be overloaded.

In practice, you have to analyse actual conditions using basic mathematical principles. If there is a rise in temperature, the effective total current is always a definitive factor. In the pole conductors, this comprises the fundamental wave and the sum of the odd harmonics.

$$I_{\text{eff}} = I_{\text{eff}} 50\text{Hz} + I_{\text{eff}} 150\text{ Hz} + I_{\text{eff}} 250\text{ Hz} + I_{\text{eff}} 350\text{ Hz} + \dots$$

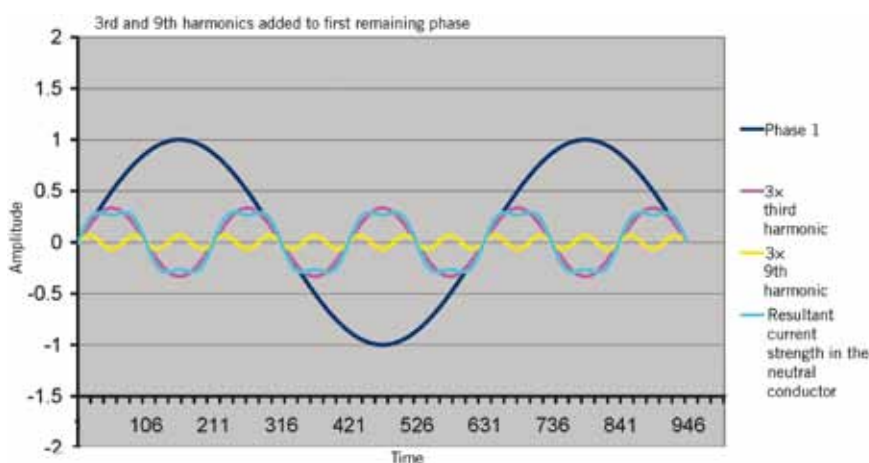
In the neutral conductors, the only flowing elements that strengthen are the 3rd and 9th harmonics. The fundamental wave and the other harmonics have an effect of mutual attenuation on each other.

$$I_{\text{eff}} N = 3 \times I_{\text{eff}} 150\text{ Hz} + 3 \times I_{\text{eff}} 450\text{ Hz} + \dots$$



Numerous tests have proven that even under extreme conditions, the effective value of the total neutral current cannot reach the value of a phase current.

(see „Neutralleiterströme / Elektrotechnik“ chapter 9 section 2 by Arnold / Lovack).



Note

Neutral currents are produced regardless of the cable type used (round or flat cable).

Even under selected adverse conditions, the neutral currents (especially the sum of the harmonics) can in practice not exceed the loading of the pole conductor. As a result of the greater capacity of flat cables due to the larger surface area for the same conductor cross-sections, flat cables can withstand operational loading with very little increase in temperature.



Flat cable 1.5 - 16 mm²

Cabling Systems

Woertz data 2x1.5 mm²

An exceptional bus flat cable which allows to perform various functions in the field of building automation.



- Cable end piece
No. 49732

- Clamp for screwing on
No. 49693

- Junction box with micro-terminal
No. 49722

- branching box for KNX with socket 2-pole
No. 49720

- Connector KNX 2-pole
No. 49740




- Pre-wired connectors
No. 49740/1M - *different lengths on request*

Where are these flat cables used?

- In the field of building automation, to connect intelligent devices such as actuators or sensors via bus.
- Specific use with KNX, DALI, LON etc.

Woertz data 2×1.5 mm²

Flat cable bus 2×1.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
 49949	113 397 300	 49948	113 397 307
 49949/SM*	113 397 309		
* on request			

Technical data




Dimension	mm	11×6	11×6
Weight	g/m	90	86
Fire load	kWh/m	0.48	0.44
No. of leads x cross-section	mm ²	2×1.5	2×1.5
Cu weight	kg/km		

Bus part



Copper conductors		tinned	tinned
Insulation of the leads		polyethylene	polyethylene
Colour of the leads		neutral	neutral
Shield		double shield of aluminium	double shield of aluminium
Cross-section	mm ²	1.5	1.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	V	50	50
Max. rated current	A	3	3
DC-resistance	Ω/km	13.7	13.7
Capacitance	pF/m	70	70
Attenuation at 1Hz	dB/100m	nom. 1.2	nom. 1.2
Charact. impedance at 1MHz	Ω	nom. 75	nom. 75
Cu weight	kg/km	29	29

Woertz data 2×1.5 mm²

Branching boxes to flat cable No. 49948 and No. 49949

for KNX with socket 2-pole		Technical data		bus part	
<div>No.</div> <div>49720</div> <div></div>	<div>Eldas-No.</div> <div>150 706 137</div>	LxWxH mm	47x18x23.5	Cross-section mm²	1.5
		Weight g	12	Rated voltage V	50
		Fire load kWh	0.08	Max. rated current A	3
		socket	type BST14i2	tightening torque Nm	1.0
			code KNX	screwdriver No.	3
		Plastic parts	halogen-free		
		Metal parts	corrosion-resistant		
		Packing unit pce.	50		
Degree of protection		IP20	Pre-wired connectors see page 76		
for bus with socket 2-pole		Technical data		bus part	
<div>No.</div> <div>49721</div> <div></div>	<div>Eldas-No.</div> <div>150 706 237</div>	LxWxH mm	47x18x23.5	Cross-section mm²	1.5
		Weight g	12	Rated voltage V	50
		Fire load kWh	0.08	Max. rated current A	3
		socket	type BST14i3	tightening torque Nm	1.0
			code 3	screwdriver No.	3
		Plastic parts	halogen-free		
		Metal parts	corrosion-resistant		
		Packing unit pce.	50		
Degree of protection		IP20	Pre-wired connectors see page 77		
for bus with socket 2-pole		Technical data		bus part	
<div>No.</div> <div>49727</div> <div></div>		LxWxH mm	47x18x23.5	Cross-section mm²	1.5
		Weight g	12	Rated voltage V	50
		Fire load kWh	0.08	Max. rated current A	3
		socket	code Woertz	tightening torque Nm	1.0
		Plastic parts	halogen-free	screwdriver No.	3
		Metal parts	corrosion-resistant		
		Packing unit pce.	50		
		Degree of protection		IP20	Pre-wired connectors see page 76

Junction box to flat cable No. 49948 and No. 49949

with micro-terminal		Technical data		bus part	
No.	Eldas-No.	LxWxH mm	37x18x23.5	Cross-section mm²	1.5
49722	150 706 337	Weight g	12	Rated voltage V	50
		Fire load kWh	0.08	Max. rated current A	3
		Plastic parts	halogen-free	tightening torque Nm	1.0
		Metal parts	corrosion-resistant	screwdriver No.	3
		Packing unit pce.	50		
		Degree of protection	IP20		
					

Woertz data 2×1.5 mm²

Accessories

Cable end piece		Technical data		
No. 49732	Eldas-No. 150 901 117	LxWxH mm Weight g Fire load kWh Packing unit pce.	20×14×9 1.5 0.02 200	of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.
				
Clamp for screwing on		Technical data		
No. 49693	Eldas-No. 120 008 607	LxWxH mm Weight g Fire load kWh Packing unit pce.	31×10×8.5 1.2 0.01 100	of polyamide 6.6, halogen-free, grey
				
Shears		Technical data		
No. 49930	Eldas-No. 983 045 007	Packing unit pce.	1	For cutting neatly and easily every type of flat cables (max. width 32mm). with sliding anvil, Teflon coated blades
				
Insulating tape		Technical data		
No. 49960	Eldas-No. 171 013 004	LxWxH mm Dielectric strength max. kV/mm Temperature max. °C Packing unit pce.	102×100×2.3 23 +70 10	To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing
				

Woertz® multibus 4×1.5 mm²

Without the cable insulation having to be stripped!



- Cable end piece IP68
No. 48510/06

- Clamp for screwing on
No. 49661

- Junction box - specially adapted to MP bus products
No. 49670

Where are these flat cables used?

- for low voltage installations (rugged version for high mechanical strains).
- as a complement to the flat cable system ecobus combi.
- for heating, ventilating and air-conditioning processes (HVAC).
- for basic controls in buildings.
- specially adapted to MP bus products of the company Belimo.
- for SMI BT applications

Woertz multibus 4×1.5 mm²

flat cable 4×1.5 mm²



halogen-free	
No.	Eldas-No.
■ 49651	113 277 509

Technical data

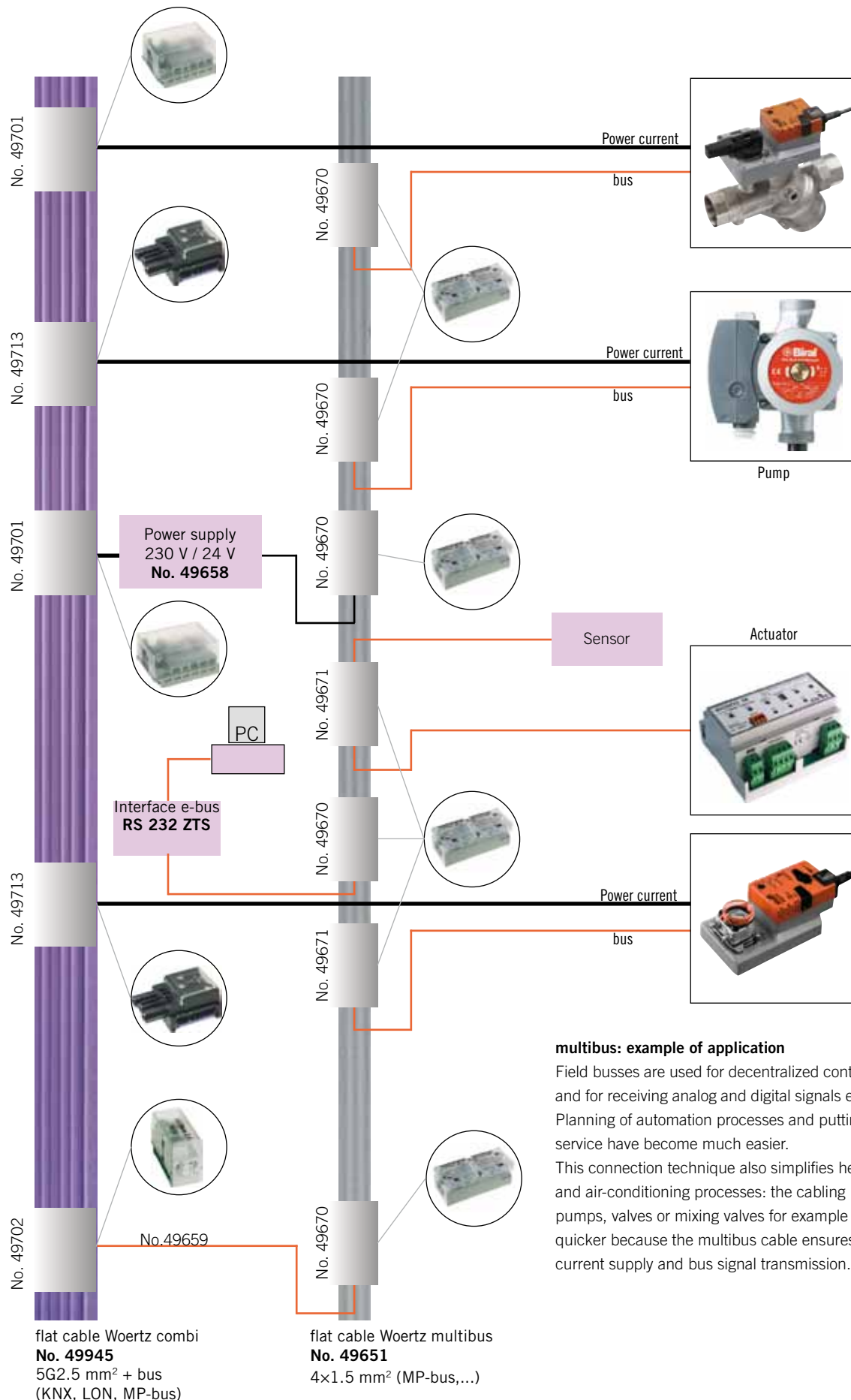
Dimension	mm	16×4.6
Weight	g/m	125
Fire load	kWh/m	0.37
No. of leads x cross-section	mm²	4×1.5

High current part

Copper conductors		tinned, highly flexible
Insulation of the leads		polyethylene
Colour of the leads		black, red, white, brown
Cross-section	mm²	1.5
Test voltage	kV / Hz	4 / 50
Rated voltage	V	300
DC-resistance	Ω/km	13
Cu weight	kg/km	58

Woertz multibus 4x1.5 mm²

Examples of application: Belimo - Multitherm



multibus: example of application

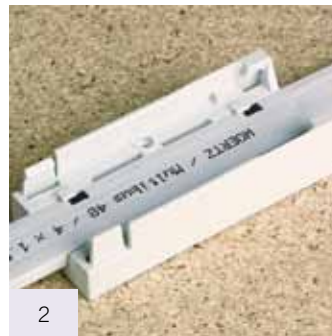
Field busses are used for decentralized controlling of actuators and for receiving analog and digital signals emitted by sensors. Planning of automation processes and putting them into service have become much easier.

This connection technique also simplifies heating, ventilating and air-conditioning processes: the cabling procedures of pumps, valves or mixing valves for example can be performed quicker because the multibus cable ensures both power current supply and bus signal transmission.

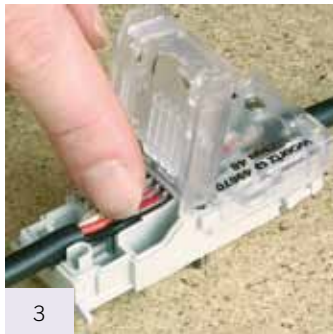
Mounting procedure of branching box No. 49670 / 49671



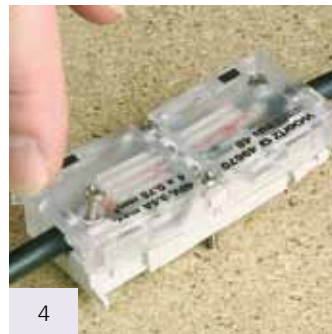
Position the base part of the box and screw it on to its support if required.



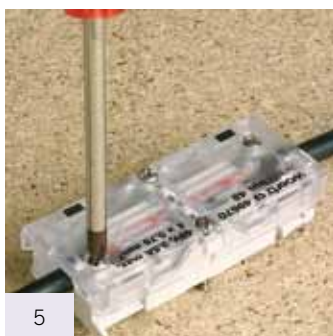
Position the asymmetric multibus flat cable in the right position.



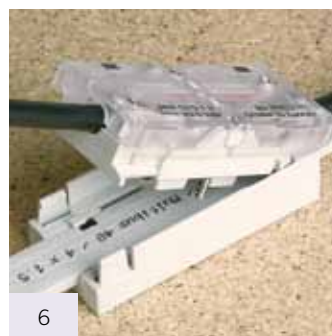
Cut the outgoing round cable to the desired length and dismantle it. Introduce the leads in the provided partitions (the conductors don't have to be stripped of insulation).



Fold back the cover - Lock.



Tighten up the screws of the cover.



Snap together the upper part and the base.



Fold down the upper part.



Tighten up the fastening screws.

Note:
if necessary, the connecting boxes may be marked by means of self-adhesive labels.

The mounting procedure may also occur in a changed order: 1, 2, 6, 7, 8, 3, 4, 5.

Possibility of pre-wiring: Service to our customers.






On request the boxes may be provided in advance with round outgoing cables.

Boxes for pumps, valves or mixing valves for HVAC installations for instance may be prewired with outgoing round cables in our workshops (fig. 3-5). On the building site the prewired boxes have only to be positioned on the flat cable. The electrical contact will be established within a few seconds by means of an electric screw-drive



Woertz multibus 4x1.5 mm²

Junction boxes with 3 or 4 contacts to flat cable No. 49651

Junction box		Technical data		
No.	Eldas No.	LxBxH mm	76x32x27	For 2 round cables 4x0.75 mm² flex with with 1 connector and 3 contacts for supply and branching. specially adapted to MP bus devices from the company Belimo.
49670	150 701 317	Weight g	55.5	
		Fire load kWh	0.4	
		Rated voltage V	48	
		Max. rated current A	3.5	
		Plastic parts	halogen-free	
		Metal parts	corrosion-resistant	
		Packing unit pce.	25	
		Degree of protection	IP20	
49670/1 prewired 1m round cable				
49670/2 prewired 2m round cable				screwdriver No.1
				further lengths on request
Junction box		Technical data		
No.	Eldas No.	LxBxH mm	76x32x27	For 2 round cables 4x0.75mm2 flex with 4 contacts for supply and branching
49671	150 701 347	Weight g	55.5	
		Fire load kWh	0.4	
		Rated voltage V	48	
		Max. rated current A	3.5	
		Plastic parts	halogen-free	
		Metal parts	corrosion-resistant	
		Packing unit pce.	25	
		Degree of protection	IP20	
				screwdriver No.1
Accessories				
Power supply and coupler		Technical data		
No.	Eldas No.	Power supply 230V/24VDC consisting of		
49658	960 905 107	1 power supplyNetzgerät,		
		1 Dose No. 49670,		
		1 Dose No. 49701		
Cable end piece		Technical data		
No.	Eldas No.	LxBxH mm	40x36x16	of polycarbonate, halogen-free; silicone gel
48510/06	120 900 507	Weight g	10.6	
		Packing unit pce.	4	
		Degree of protection	IP68	
		Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.		
Junction box		Technical data		
No.	Eldas No.	Weight g	46.3	for the supply with rigid strands or strands with a cross section different from 0.75mm2
9052	150 706 037	Plastic parts	halogen-free	
		Metal parts	corrosion-resistant	
		Degree of protection	IP20	

Accessories

Flexible round cable		Technical data	
No.	Eldas-No.	Diameter mm	6.8 mm
49665	113 271 047	Fire load kWh/m	0.02
		Temperature range	-30°C to +90°C
		Packing unit m	500
Stopper		Technical data	
No.	Eldas-No.	Weight g	0.5
49675	120 660 007	Packing unit pce.	25
		To obturate unused cable outlets. 1 stopper delivered with connecting boxes No. 49670 and 49671.	
Clamp		Technical data	
No.	Eldas-No.	LxWxH mm	31x10x7
49661	120 008 407	Weight g	6.0
		Fire load kWh	0.01
		Packing unit pce.	100
Clamp		Technical data	
No.	Eldas-No.	LxWxH mm	70x10x10
49664	120 008 507	Weight g	2.0
		Fire load kWh	0.02
		Packing unit pce.	50
Shears		Technical data	
No.	Eldas-No.	Weight g	223
49930	983 045 007	Packing unit pce.	1
		For cutting neatly and easily every type of flat cables (max. width 32mm). With sliding anvil. Teflon coated blades.	
Insulating tape		Technical data	
No.	Eldas-No.	Dimension mmxm	50x1
49632	150 901 147	Weight g	50.1
		Dielectric strength max. kV/mm	18
		Temperature max. °C	+70
		Packing unit m	1
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing.	

Woertz® 3G2.5 mm² and Woertz® 3G4 mm²

The efficiency of this system is related to its great flexibility and extension facility, anywhere, anytime.

- Cable end piece IP68
No. 48510/03
of polycarbonate, halogen-free; silicone gel

- Clamp
No. 49693

- Branching box
No. 49695

- Junction box
No. 49687


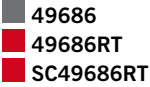
Where are these flat cables used?

- in offices where the number of computers is liable to be increased and the furniture to be displaced.
- in workshops and laboratories equipped with small-sized machines and devices. The flat cables are then laid into floor-, ceiling- or wall ducts
- in shops and show windows where the connecting points may often change
- for the installation of prefabricated houses
- in hanging ceilings for the supply of lamps.

Flat cable enables installations to be completed easily with further connections.

Woertz 3G2.5 mm²

flat cable 3G2.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
 49685 49685/SM*	113 297 807	 49686 49686RT SC49686RT 49686/SM*	113 307 807
L+N+PE		* on request	

Technical data



Dimensions	mm	16.5×6	16.5×6
Weight	g/m	185	185
Fire load	kWh/m	0.583	1.02
No. of leads x cross-section	mm ²	3×2.5	3×2.5

High current part

Copper conductors		tinned, highly flexible	tinned, highly flexible
Insulation of the leads		PVC	vulcanized, flame retardant, polyethylene
Colour of the leads		brown, green/yellow, blue	brown, green/yellow, blue
Cross-section	mm ²	2.5	2.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	kV	0.6/1	0.6/1
DC-resistance	Ω/km	7.98	7.98
Cu weight	kg/km	72	72

Woertz 3G4 mm²

flat cable 3G4 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
 		 49646	
L+N+PE			

Technical data

Dimensions	mm		16.5×6
Weight	g/m		224
Fire load	kWh/m		0.95
No. of leads x cross-section	mm ²		3×4

High current part

Copper conductors			tinned, highly flexible
Insulation of the leads			vulcanized, flame retardant, polyethylene
Colour of the leads			brown, green/yellow, blue
Cross-section	mm ²		3×4
Test voltage	kV / Hz		4 / 50
Rated voltage	kV		0.6/1
DC-resistance	Ω/km		5.09
Cu weight	kg/km		116

Woertz 3G2.5 mm² and Woertz 3G4 mm²


Example of application: SCHAKO EasyBus



Compatible with:
KNX
LON
BacNet
ModBus etc

 **EasyBus**




EasyBus Master

Easy:

- an only cable for both control and supply
- max. cable length 1000m
- 128 participants (CHP, VAV, etc.)
- vereinfachter Anschluss

Safe:

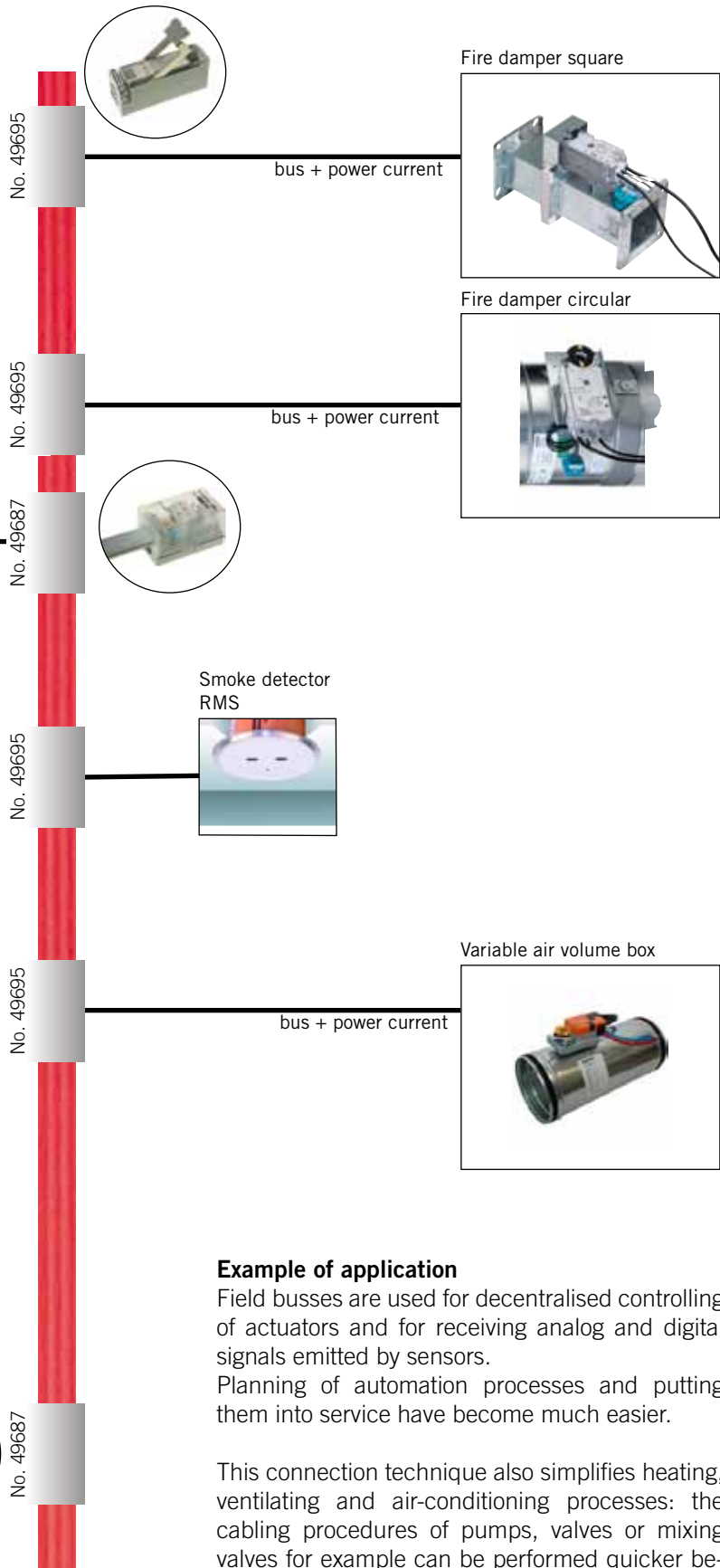
- no faulty wiring
- no connection loss
- arbitrary topology
- easy maintenance
- low fire load

Advantageous

- installing, planning of automation processes and putting them into service have become much easier
- no sub-distribution boxes: enormous - space is gained
- compatible with standard control systems
- participants may be addressed without any tool



Woertz 3x2.5mm²
No. SC49686RT



Example of application

Field busses are used for decentralised controlling of actuators and for receiving analog and digital signals emitted by sensors.




Planning of automation processes and putting them into service have become much easier.

This connection technique also simplifies heating, ventilating and air-conditioning processes: the cabling procedures of pumps, valves or mixing valves for example can be performed quicker because an only cable ensures both power current supply and bus signal transmission.


More information under
<http://www.easybus-system.ch>

Woertz 3G2.5 mm² and Woertz 3G4 mm²

Junction box and connector to flat cable No. 49685, 49686 and 49646

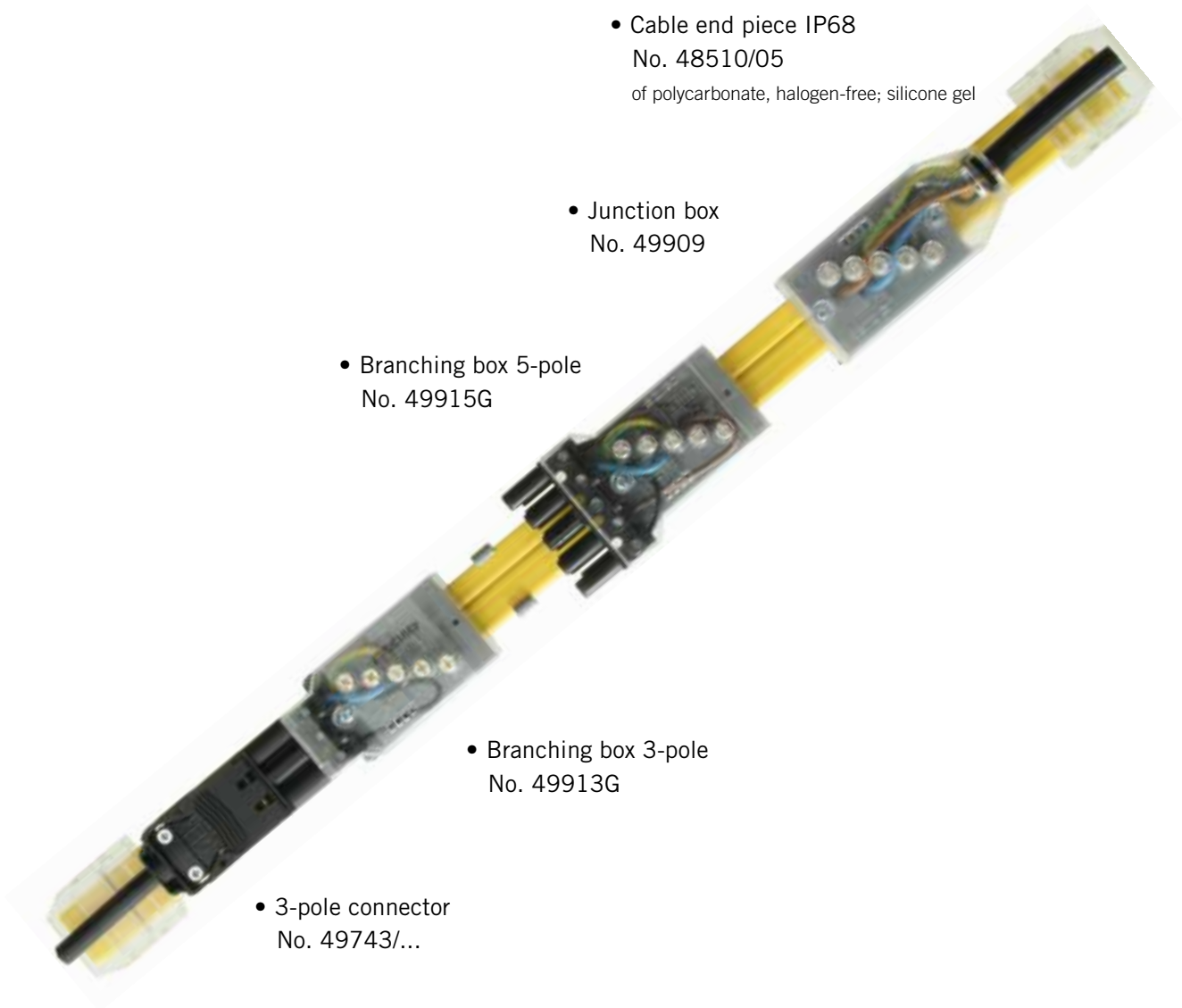
Connecting box		Technical data		
<div>No.</div> <div>49687</div> <div></div>	<div>No. Eldas</div> <div>150 701 407</div>	LxBxH mm	55x33x33	for supply and branching no need to strip the insulation
		Fire load kWh	0.24	
		Connecting capacity Ø in mm	3.75	Plastic parts: halogen-free Metal parts: corrosion-resistant
		Rated voltage V	250	
		Max. rated current A	16	tightening torque Nm 0.7 screwdriver No. 1
		Weight g	45	
		Packing unit pce.	10	
		Degree of protection	IP20	
Branching box		Technical data		
<div>No.</div> <div>49695</div> <div></div>	<div>No. Eldas</div> <div>150 701 457</div>	LxBxH mm	90x30x34	for branching no need to strip the insulation
		Fire load kWh	0.36	
		Connecting capacity Ø in mm	3.75	Plastic parts: halogen-free Metal parts: corrosion-resistant
		Rated voltage V	250	
		Max. rated current A	16	tightening torque Nm 0.7 screwdriver No. 1
		Weight g	85	
		Packing unit pce.	10	
		Degree of protection	IP20	
		<i>further lengths on request</i>		
49695/1 prewired 1m round cable				
49695/2 prewired 2m round cable				
Pre-wired connector		Technical data		
<div>No.</div> <div>49696F</div> <div></div>		LxBxH mm	260x30x34	Pre-wired connector No. 49695 with 10 cm round cable 3G1.5 mm² and Kupplung 3-poles, type GST 18i3 F B2 Z
		Weight g	200	
		Packing unit pce.	1	<i>Pre-wired connectors see page 78</i>
		<i>further lengths on request</i>		
49696/1F prewired 1m round cable				
49696/2F prewired 2m round cable				

Accessories

End piece		Technical data	
No. 48510/03 	No. Eldas 120 900 307	LxBxH mm	40x25x15
		Weight g	9.5
		Fire load kWh	n.a.
		Packing unit pce.	8
		Degree of protection	IP68
		of polycarbonate, halogen-free; silicone gel	
		Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.	
Clamp for screw fixing		Technical data	
No. 49693 	No. Eldas 120 008 607	LxBxH mm	31x10x8.5
		Weight g	0.95
		Fire load kWh	0.01
		Packing unit pce.	100
Shears		Technical data	
No. 49930 	No. Eldas 983 045 007	Weight g	223
		Packing unit pce.	1
		For cutting neatly and easily every type of flat cables	
		With sliding anvil. Teflon coated blades.	
Insulating tape		Technical data	
No. 49960 	No. Eldas 171 013 004	Dimension mm	102x100x2.3
		Weight g	33
		Dielectric strength max. kV/mm	23
		Temperature max. °C	+70
		Packing unit pce.	10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections.	
		Weatherproof, self-fusing	

Woertz® Technofil 5G1.5 mm² and Woertz® Technofil 5G2.5 mm²

Max. 10A per connection. Only to be used in Switzerland!



Where are these flat cables used?


The wide range of flat cable boxes enables numerous connecting problems on receiver circuits to be solved.

Following connectors may be combined thus:

- alternately single-pole or multi-pole receivers
- receivers may be assigned to different switching groups (economy circuits)
- alternate distribution of single-pole receivers among the three phase conductors (load compensation)
- assignation of selected receivers such as emergency light, cash box etc... to emergency supply or safety supply
- permanent connections or plug-type connections (service works become easier)

Woertz Technofil 5G1.5 mm²

flat cable 5G1.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
	9040		
	9040/SM*		
	113 307 609		
	113 307 619		
3 L+N+PE		* on request	

Technical data


Dimensions	mm	23×6
Weight	g/m	235
Fire load	kWh/m	0.92
No. of leads x cross-section	mm ²	5×1.5

High current part

Copper conductors	bare, highly flexible
Insulation of the leads	PVC
Colour of the leads	brown, blue, green/yellow, brown, black
Cross-section	mm ² 1.5
Test voltage	kV 2.5
Rated voltage	kV 0.6 / 1
DC-resistance	Ω/km 13.3
Cu weight	kg/km 72

Woertz Technofil 5G2.5 mm²

flat cable 5G2.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
	9055	49900	
	9055/SM*	49900/SM*	
	113 308 007		113 298 007
	113 308 017		113 298 017
3 L+N+PE		* on request	

Technical data





Dimensions	mm	23×6	23×6
Weight	g/m	275	277
Fire load	kWh/m	0.87	1.37
No. of leads x cross-section	mm ²	5×2.5	5×2.5

High current part

Copper conductors	bare, highly flexible	tinned, highly flexible
Insulation of the leads	PVC	vulcanized, flame retardant, polyethylene
Colour of the leads	brown, blue, green/yellow, black, grey	brown, blue, green/yellow, black, grey
Cross-section	mm ² 2.5	2.5
Test voltage	kV 2.5	2.5
Rated voltage	kV 0.6 / 1	0.6 / 1
DC-resistance	Ω/km 7.1	7.1
Cu weight	kg/km 120	120






Woertz Technofil 5G1.5 mm² and 5G2.5 mm²

Supply and connecting boxes and boxes for several connection points to flat cable No. 9040, 9055 and 49900

Junction box		Technical data	
No. 49901	Eldas-No.	LxWxH mm	95x40x27
	150 708 037	Weight g	87
		Fire load kWh	0.33
		Cross-section mm ²	1 round cable - 5x2.5 2 flat cable - 5x2.5
		Connecting capacity mm ²	2x2.5
		Rated voltage V	500
		Max. rated current max. A	16
		Packing unit pce.	25
		Degree of protection	IP20
		for the connection of 2 cables or supply at the end of the cable	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
Junction box		Technical data	
No. 9052	Eldas-No.	LxWxH mm	70x40x18
	150 706 037	Weight g	47
		Fire load kWh	0.11
		Cross-section mm ²	1 round cable - 5x2.5 1 flat cable - 5x2.5
		Connecting capacity mm ²	1x2.5
		Rated voltage V	500
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		for the connection of 2 cables or supply at the end of the cable	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
Junction box		Technical data	
No. 9045	Eldas-No.	LxWxH mm	61x38x44.5
	150 700 037	Weight g	60
		Fire load kWh	0.30
		for outlet with 1 Td cable max. mm ²	5x1.5
		Connecting capacity Ø	3.75
		Rated voltage V	500
		Max. rated current max. A	10
		Packing unit pce.	50
		Degree of protection	IP20
		for 1 cable outlet with 1 connection point Ø 10 mm	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm (Pointed screws)	0.7
		screwdriver No.	1
		tightening torque Nm (Clamping screws)	0.7
		screwdriver No.	1
Junction box		Technical data	
No. 9047	Eldas-No.	LxWxH mm	61x38x44.5
	150 702 037	Weight g	60
		Fire load kWh	0.30
		for outlet with 1 Td cable max. mm ²	5x1.5
		Connecting capacity Ø	3.75
		Rated voltage V	500
		Max. rated current max. A	10
		Packing unit pce.	50
		Degree of protection	IP20
		for 1 cable outlet with 1 connection point Ø 12 mm	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm (Pointed screws)	0.7
		screwdriver No.	1
		tightening torque Nm (Clamping screws)	0.7
		screwdriver No.	1
Junction box		Technical data	
No. 49905	Eldas-No.	LxWxH mm	61x38x44.5
	150 702 137	Weight g	60
		Fire load kWh	0.30
		for outlet with 1 halogen free cable max. mm ²	5x1.5
		Connecting capacity Ø	3.75
		Rated voltage V	500
		Max. rated current max. A	10
		Packing unit pce.	50
		Degree of protection	IP20
		for 1 cable outlet with 1 connection point Ø 14.5 mm	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm (Pointed screws)	0.7
		screwdriver No.	1
		tightening torque Nm (Clamping screws)	0.7
		screwdriver No.	1
Junction box		Technical data	
No. 9046	Eldas-No.	LxWxH mm	60x38x44.5
	150 701 037	Weight g	60
		Fire load kWh	0.31
		for outlets with 2 Td cables max. mm ²	4x1.5
		Connecting capacity Ø	3.75
		Rated voltage V	500
		Max. rated current max. A	10
		Packing unit pce.	25
		Degree of protection	IP20
		for 2 cable outlets with 2 connection points Ø 9.5 mm	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1

Woertz Technofil 5G1.5 mm² and 5G2.5 mm²

Flat cable boxes for several connection points to flat cable No. 9040, 9055 and 49900

Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	60x38x54	for 3 cable outlets with 3 connection points Ø 8.5 mm
	9053	150 707 037	Weight g	60	
			Fire load kWh	0.34	
			For outlets with 3 Td cables max mm²	3x1.5	
			Connecting capacity Ø	3.75	
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	50	
			Degree of protection	IP20	
				screwdriver No.	1
Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	62x38x31	with visible pointed screws Marking with labels Plastic parts: halogen-free Metal parts: corrosion-resistant
	49908	150 704 337	Weight g	57	
			Fire load kWh	0.30	
			Lateral outlets with 3 Td cables max mm²	3x1.5	
			Connecting capacity Ø	3.75	
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	50	
			Degree of protection	IP20	
				screwdriver No.	1
				tightening torque Nm (Clamping screws)	0.7
				screwdriver No.	1
Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	62x38x31	with masked pointed screws Plastic parts: halogen-free Metal parts: corrosion-resistant
	49906	150 704 237	Weight g	57	
			Fire load kWh	0.30	
			Lateral outlets with 3 Td cables max mm²	3x1.5	
			Connecting capacity Ø	3.75	
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	50	
			Degree of protection	IP20	
				screwdriver No.	1
				tightening torque Nm (Clamping screws)	0.7
				screwdriver No.	1
Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	62x38x31	with visible pointed screws Marking with labels Plastic parts: halogen-free Metal parts: corrosion-resistant
	49909	150 704 437	Weight g	57	
			Fire load kWh	0.30	
			Lateral outlet with 1 Td cables max mm²	5x1.5	
			Connecting capacity Ø	3.75	
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	50	
			Degree of protection	IP20	
				screwdriver No.	1
				tightening torque Nm (Clamping screws)	0.7
				screwdriver No.	1
Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	62x38x27	for insulated cable outlets Plastic parts: halogen-free Metal parts: corrosion-resistant
	9049	150 704 037	Weight g	38	
			Fire load kWh	0.28	
			Cross-section for insulated wires max. mm²	1.5	
			Outlets for 2x2 insulated wires on each narrow side		
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	100	
			Degree of protection	IP20	
				screwdriver No.	1
Connecting box		Technical data			
	No.	Eldas-No.	LxWxH mm	65x38x20	for insulated cable outlets flat execution Plastic parts: halogen-free Metal parts: corrosion-resistant
	9051	150 705 037	Weight g	54	
			Fire load kWh	0.27	
			Cross-section for insulated wires max. mm²	1.5	
			Outlets for insulated wires on all sides		
			Rated voltage V	500	
			Max. rated current max. A	10	
			Packing unit pce.	10	
			Degree of protection	IP20	
				screwdriver No.	1

Woertz Technofil 5G1.5 mm² and 5G2.5 mm²

Branching boxes with socket to flat cable No. 9040, 9055 and 49900

Branching box 3-pole		Technical data	
No.	Eldas-No.	L×W×H mm	88×38×38
49913G/L1	150 748 037	Weight g	71
49913G/L2	150 758 037	Fire load kWh	0.42
49913G/L3	150 768 037	Rated voltage V	250
		Max. rated current max. A	10
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		Degree of protection	IP20
		with socket longitudinal connection	
		tightening torque Nm	
screwdriver No.		1	
		Pre-wired connectors see page 78	
Branching box 5-pole		Technical data	
No.	Eldas-No.	L×W×H mm	88×49×38
49915G	150 716 037	Weight g	96
		Fire load kWh	0.51
		Rated voltage V	250/400
		Max. rated current max. A	10
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		Degree of protection	IP20
with socket longitudinal connection			
tightening torque Nm		0.7	
screwdriver No.		1	
		Pre-wired connectors see page 78	
Feeding box		Technical data	
No.	Eldas-No.	L×W×H mm	95×40×27
49903	150 709 037	Fire load kWh	0.78
		For connection of 1 round cable - mm²	5×2.5
		For connection of 1 flat cable - mm²	5×2.5
		Rated voltage V	500
		Max. rated current max. A	16
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	25
Degree of protection	IP54		
consists of box No. 49901 and 20 cm heat shrinkable sleeve			
splashproof and dustproof IP54			
tightening torque Nm		0.7	
screwdriver No.		1	
Connecting box		Technical data	
No.	Eldas-No.	L×W×H mm	85×44×32
9059M	150 712 037	Weight g	160
		Fire load kWh	0.55
		Rated voltage V	500
		Max. rated current max. A	10
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		Degree of protection	IP54
splashproof and dustproof IP54			
two lateral cable outlets with thread M16 for 1 Td cable up to 3×1.5 mm²			
tightening torque Nm (Pointed screws)		0.7	
screwdriver No.		1	
tightening torque Nm (Clamping screws)		0.7	
screwdriver No.		1	
Cable glands		Technical data	
No.	Eldas-No.	Weight g	56.2
87098M	121 680 407		M16×1.5
		Ø Diameter of cables mm	11-20.5
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		Of nickel-plated brass	
Blind plug		Technical data	
No.	Eldas-No.	Weight g	7.9
87100M	126 222 420		M16×1.5
		Metal parts	corrosion-resistant
		Packing unit pce.	25
		Of nickel-plated brass	

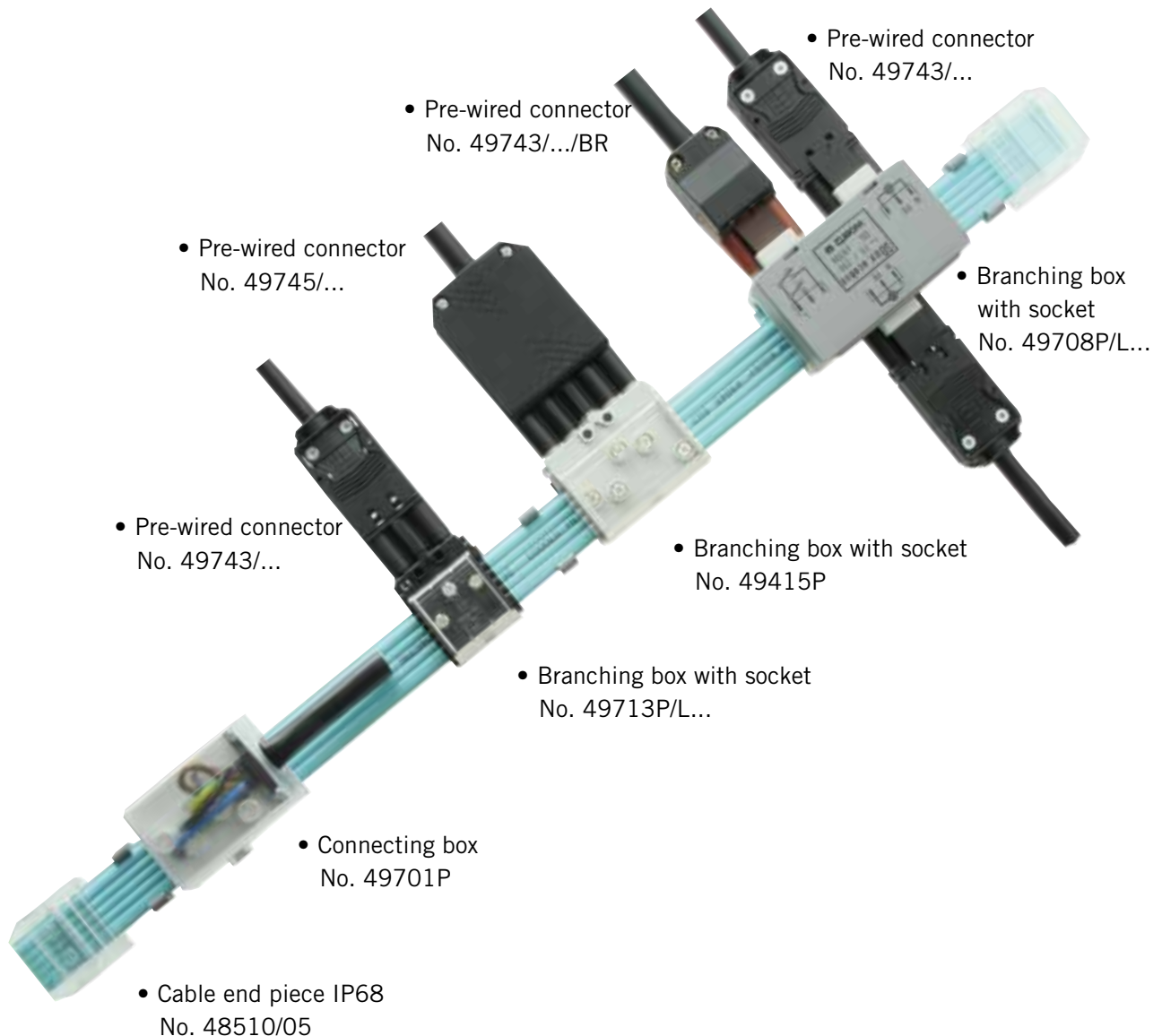
Woertz Technofil 5G1.5 mm² and 5G2.5 mm²

Accessories

Cable end piece		Technical data	
No. 48510/05	Eldas-No. 120 900 407	LxWxH mm Weight g Packing unit pce.	40x36x16 14.3 5
		Degree of protection	IP68
		of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once	
Clamp		Technical data	
No. 9054	Eldas-No. 120 018 007	LxWxH mm Weight g Fire load kWh Packing unit pce.	28.5x13.5x8 1.5 0.01 100
		for screwing on for fastening cables along ceiling of polyamide 6.6, halogen-free	
No. 9042	Eldas-No. 120 008 007	LxWxH mm Weight g Fire load kWh Packing unit pce.	42x8.5x10 2.4 0.02 100
		for screwing on to be used when cable is placed on a base of polyamide 6.6, halogen-free	
No. 9041	Eldas-No. 120 088 007	LxWxH mm Weight g Fire load kWh Packing unit pce.	42x24x10 6.5 0.04 50
		for hanging up for laying flat cable along wire ropes of polyamide 6.6, halogen-free	
No. 9072	Eldas-No. 120 068 107	LxWxH mm Weight g Fire load kWh Packing unit pce.	69x9x8 2 0.02 100
		for clipping on for laying cables into profiles EN 50022-35 of polyamide 6.6, halogen-free	
Cable stripping tool		Technical data	
No. 49933	Eldas-No. 983 050 627	Weight g Packing unit pce.	279 1
		This tool offers the advantage of stripping neatly and easily the cable without damaging the insulation of the conductors.	
Shears		Technical data	
No. 49930	Eldas-No. 983 045 007	Weight g Packing unit pce.	223 1
		For cutting neatly and easily every type of flat cables (max. width 32mm). With sliding anvil. Teflon coated blades.	

Woertz power 5G2.5 mm²

Boxes placed wherever you want.
Displaced whenever you need!




Where are these flat cables used?

- in offices
- in supermarkets and shopping centres
- in museums and exhibitions
- for the lighting of platforms on railway stations and car parks
- for light industry
- for temporary lighting installations on sites

Flat cable enables installations to be completed easily with further connections.

Woertz power 5G2.5 mm²

flat cable 5G2.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
 49845 49845RT 49845SW 49845WS 49845/SM*	 113 383 814	49846 49846GR 49846RT 49846SW 49846WS 49846/SM*	 113 383 954
3 L+N+PE		* on request	

Technical data

Dimension	mm	24x6	24x6
Weight	g/m	259	247
Fire load	kWh/m	0.778	1.28
No. of leads x cross-section	mm ²	5x2.5	5x2.5

High current part

Copper conductors		tinned, highly flexible	tinned, highly flexible
Insulation of the leads		PVC	vulcanized, and flame retardant polyethylene
Colour of the leads		grey, black, brown, blue, green/yellow	grey, black, brown, blue, green/yellow
Cross-section	mm ²	2.5	2.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	kV	0.6/1	0.6/1
DC-resistance	Ω/km	7.98	7.98
Cu weight	kg/km	120	120

Woertz power 5G2.5 mm²

Junction box to flat cable No. 49845 and 49846

Junction box		Technical data	
No.	Eldas-No.	LxWxH mm	58x41x39
49701P	150 776 037	Fire load kWh	0.33
		Cross-section mm ²	5x2.5
		Connecting capacity Ø	3.75
		Rated voltage V	690
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		with screw-type connection for supply and branching no need to strip the insulation	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm (Pointed screws)	0.7
		screwdriver No.	1
		tightening torque Nm (Clamping screws)	0.7
		screwdriver No.	1
Junction box		Technical data	
No.	Eldas-No.	LxWxH mm	95x40x27
49901	150 708 037	Fire load kWh	0.33
		Cross-section for 1 round cable bis mm ²	5x2.5
		Cross-section for 1 flat cable bis mm ²	5x2.5
		Rated voltage V	500
		Max. rated current max. A	16
		Packing unit pce.	25
		Degree of protection	IP20
		with screw-type connection for the connection of 2 cables or supply at the end of the cable	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
Junction box flat execution		Technical data	
No.	Eldas-No.	LxWxH mm	96x60x23
49703P	150 701 017	Fire load kWh	0.38
		Connecting capacity Ø mm	6-13
		Spring clamp terminals	2/Pol
		Rated voltage V	690
		Max. rated current max. A	16
		Cross-section mm ²	(2x) 5x2.5
		Packing unit pce.	50
		Degree of protection	IP20
		for supply and branching, no need to strip the insulation, flat execution 3P+N+PE	
		for two flexible round cable of PVC up to 5x1.5 mm ² with end sleeves for strands or rigid round cables up to 5x2.5 mm ²	
		Plastic parts: halogen-free	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
Branching box with socket		Technical data	
No.	Eldas-No.	LxWxH mm	34.5x57.5x25.7
49713P/L1	150 710 137	Fire load kWh	0.18
		socket	type GST18i3
			code 1
		Rated voltage V	250
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		3-pole	
		lateral connection	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
		<i>Pre-wired connectors see page 78</i>	
Branching box with socket		Technical data	
No.	Eldas-No.	LxWxH mm	48x40x34
49413P	150 710 127	Fire load kWh	0.32
		socket	type GST18i3
			code 1
		Rated voltage V	250
		Max. rated current max. A	16
		Packing unit pce.	25
		Degree of protection	IP20
		3-pole with phase selection	
		longitudinal connection	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
		<i>Pre-wired connectors see page 78</i>	
Branching box with socket		Technical data	
No.	Eldas-No.	LxWxH mm	54x57.5x25.7
49715P	150 710 337	Fire load kWh	0.27
		socket	type GST18i5
			code 1
		Rated voltage V	250/400
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		5-pole	
		lateral connection	
		Metal parts: corrosion-resistant	
		tightening torque Nm	0.7
		screwdriver No.	1
		<i>Pre-wired connectors see page 78</i>	







Woertz power 5G2.5 mm²

Junction box to flat cable No. 49845 and 49846

Junction box SBox		Technical data		
No.	Eldas-No.	LxWxH mm	74x67x37	for lighting installations with I/O switch or impulse switch Plastic parts: halogen-free Metal parts: corrosion-resistant tightening torque Nm 0.7 screwdriver No. 1 <i>Pre-wired connectors see page 77/78</i>
49705P/L1	150 711 317	Fire load kWh	0.51	
49705P/L2	150 711 337	Colour of box L1/L2/L3	l'grey/d'grey/black	
49705P/L3	150 711 357	Socket switch	type GST18i3 code 4 (brown)	
		Socket lamps	type GST18i3 code 1	
		Rated voltage V	250	
		Max. rated current max. A	16	
		Packing unit pce.	50	
		Degree of protection	IP20	
Junction box SBox		Technical data		
No.	Eldas-No.	LxWxH mm	74x67x37	
49706P/L1	150 712 317	Fire load kWh	0.51	
49706P/L2	150 712 337	Colour of box L1/L2/L3	l'grey/d'grey/black	
49706P/L3	150 712 357	Socket switch	type GST18i3 code 4 (brown)	
		Socket lamps	type GST18i3 code 1	
		Rated voltage V	250	
		Max. rated current max. A	16	
		Packing unit pce.	50	
		Degree of protection	IP20	
Junction box SBox		Technical data		for lighting installations with changeover contact Plastic parts: halogen-free Metal parts: corrosion-resistant tightening torque Nm 0.7 screwdriver No. 1 <i>Pre-wired connectors see page 77/78</i>
No.	Eldas-No.	LxWxH mm	74x88x37	
49707P/L1	150 713 317	Fire load kWh	0.54	
49707P/L2	150 713 337	Colour of box L1/L2/L3	l'grey/d'grey/black	
49707P/L3	150 713 357	Socket switch	type GST18i3 code 4 (brown)	
		Socket lamps	type GST18i3 code 1	
		Rated voltage V	250	
		Max. rated current max. A	16	
		Packing unit pce.	50	
		Degree of protection	IP20	
Junction box SBox		Technical data		for lighting installations with series connection Plastic parts: halogen-free Metal parts: corrosion-resistant tightening torque Nm 0.7 screwdriver No. 1 <i>Pre-wired connectors see page 77/78</i>
No.	Eldas-No.	LxWxH mm	74x88x37	
49708P/L1	150 714 317	Fire load kWh	0.54	
49708P/L2	150 714 337	Colour of box L1/L2/L3	l'grey/d'grey/black	
49708P/L3	150 714 357	Socket switch	type GST18i3 code 4 (brown)	
		Socket lamps	type GST18i3 code 1	
		Rated voltage V	250	
		Max. rated current max. A	16	
		Packing unit pce.	50	
		Degree of protection	IP20	
Cable end piece		Technical data		of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.
No.	Eldas-No.	LxWxH mm	40x36x16	
48510/05	120 900 40	Weight g	14.3	
		Fire load kWh	n.a.	
		Packing unit pce.	5	
		Degree of protection	IP68	

Woertz power 5G2.5 mm²

Accessories

Clamp for screwing on		Technical data	
No.	Eldas-No.	LxWxH mm	52x10x10
49731	120 008 107	Weight g	2
		Fire load kWh	0.02
		Packing unit pce.	100
		for cable fastening of polyamide 6.6, halogen-free	
Cable fastening clamp		Technical data	
No.	Eldas-No.	LxWxH mm	40x15x15
49733	150 900 117	Weight g	3.7
49733A	150 900 107	Fire load kWh	0.03
		Packing unit pce.	100
		49733 for screwing on 49733A for sticking on of polyamide 6.6, halogen-free	
Clamp		Technical data	
No.		LxWxH mm	10x51x1
49735		Packing unit pce.	10
		Innxlv48	
Shears		Technical data	
No.	Eldas-No.	Weight g	223
49930	983 045 007	Packing unit pce.	1
		For cutting neatly and easily every type of flat cables (max. width 32mm).	
		With sliding anvil. Teflon coated blades.	
Cable stripping tool		Cable stripping tool	
No.	Eldas-No.	to feeding box 49901, 9052	
49933	983 050 627		
Insulating tape		Technical data	
No.	Eldas-No.	LxWxH mm	102x100x2.3
49960	171 013 004	Weight g	33
		Dielectric strength max. kV/mm	23
		Temperature max. °C	+70
		Packing unit pce.	10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing	
Spacer with clips		Technical data	
No.	Eldas-No.	Packing unit pce.	10
49738P	150 901 027	Suitable for connecting boxes for lighting installations	
		To fix the boxes on a surface.	

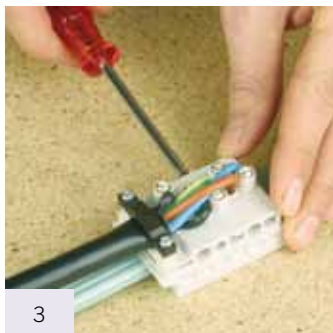
Mounting procedure of junction box No. 49701P



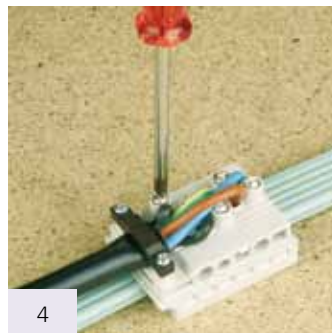
Place the junction box on the flat cable - the different lugs prevent the box from incorrect mounting.



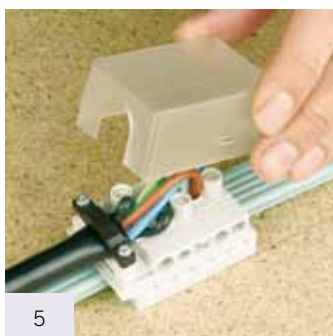
Push on the baseplate (light green). In case of incorrect mounting the bottom part of the box cannot be fitted with normal force.



Introduce the round cable into the flat cable box. Tighten the strain relief clamp to maintain the round cable.



Turn in the pointed screws as far as they will go.



Clip the hood.

The mounting procedure may also occur in a changed order: 3, 1, 2, 4, 5.



To release the hood, insert a screwdriver in the slit provided for the purpose and lift slightly.



The overcurrent protection devices will be chosen in relation to the length of installed cables so that response time conform to specifications in case of malfunction.

Possibility of pre-wiring: the installation becomes more rational!

On request, the connectors may be provided in advance with round outgoing cables.

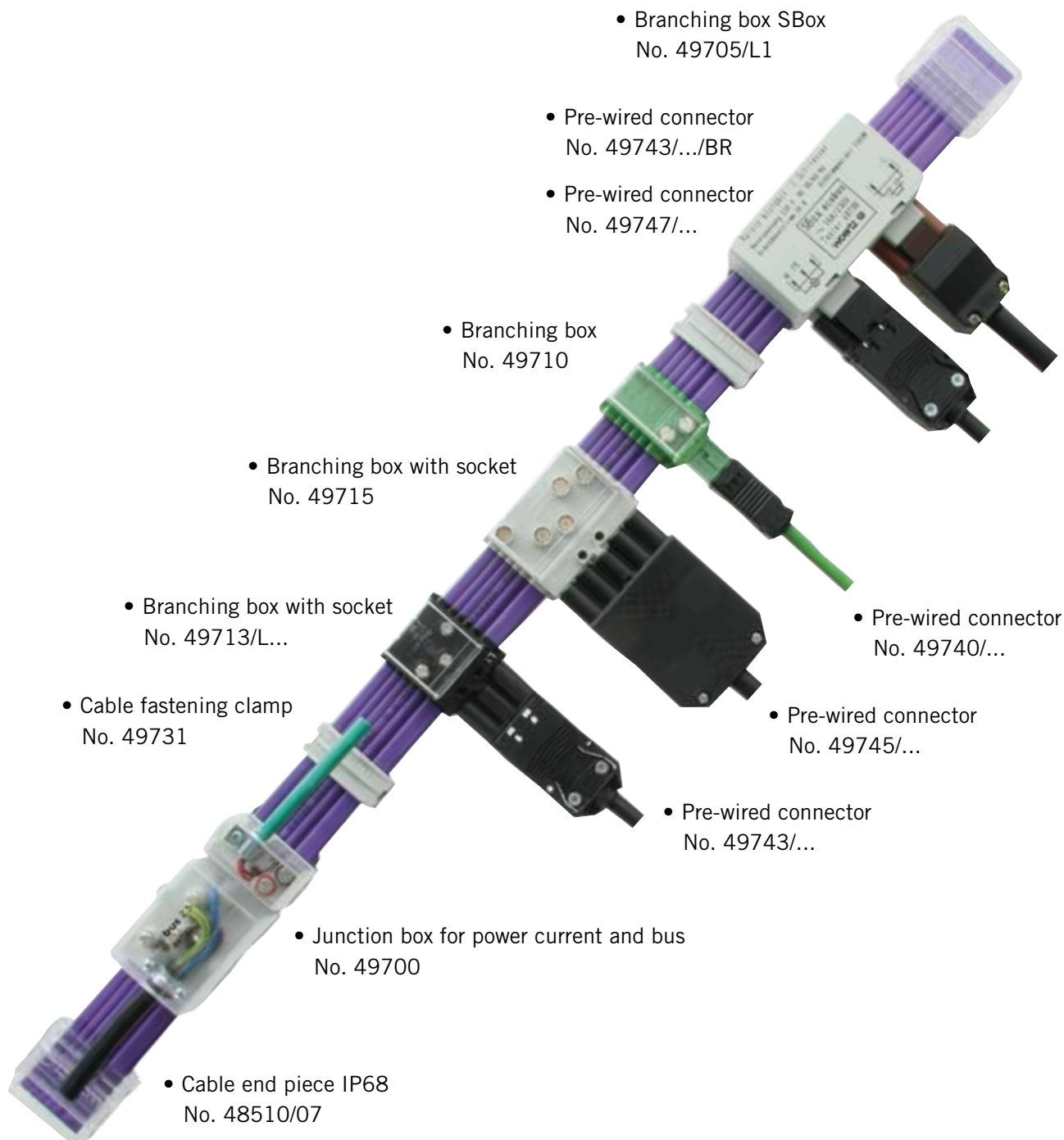
On the building site the pre-wired boxes have only to be positioned - sockets and lighting circuits will be ready to function in a matter of seconds - to your advantage



Woertz combi 5G2.5 mm² + 2×1.5 mm²

Power current and data lines combined in one cable.

Attention: Not with Woertz Dali combinable.




Where are these flat cables used?

- in office buildings
- in hospitals, clinics and residential facilities
- in industrial buildings
- in hotels

Flat cable enables installations to be completed easily with further connections.

Woertz combi 5G2.5 mm² + 2×1.5 mm²

flat cable Woertz combi 5G2.5 mm² + 2×1.5 mm²

	PVC		halogen-free	
	No.	Eldas-No.	No.	Eldas-No.
	49945	113 388 083	49946	113 388 007
	49945RT		49946RT	
	49945SW		49946SW	
	49945WS		49946WS	
	49945/SM*	113 388 084	49946/SM*	113 388 004
* on request				

Technical data

Dimension	mm	32×6	32×6
Weight	g/m	350	340
Fire load	kWh/m	1.18	1.79
No. of leads x cross-section	mm ²	5×2.5 + 2×1.5	5×2.5 + 2×1.5

High current part




Copper conductors		tinned, highly flexible	tinned, highly flexible
Insulation of the leads		PVC	vulcanized and Flame retardant polyethylene
Colour of the leads		grey, black, brown, blue, yellow/green	grey, black, brown, blue, yellow/green
Cross-section	mm ²	2.5	2.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	kV	0.6/1	0.6/1
DC-resistance	Ω/km	7.98	7.98
Cu weight	kg/km	120	120

Bus part


Copper conductors		tinned	tinned
Insulation of the leads		PVC	polyethylene
Colour of the leads		neutral	neutral
Shield		double shield of aluminium	double shield of aluminium
Cross-section	mm ²	1.5	1.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	V	50	50
Max. rated current	A	3	3
DC-resistance	Ω/km	13.7	13.7
Capacitance	pF/m	70	70
Attenuation at 1Hz	dB/m	1.2	1.2
Charact. impedance at 1 MHz	nom Ω	nom. 75	nom. 75
Cu weight	kg/km	29	29

Woertz combi 5G2.5 mm² + 2×1.5 mm²

Junction box with screw-type connection to flat cable No. 49945 and 49946

Junction box 5-pole with bus		Technical data			
<div>No.</div> <div>49700</div> <div></div>	<div>Eldas-No.</div> <div>150 775 137</div>	LxWxH mm	76x41x39	for supply and branching, for power current and bus	
		Weight g	86		
		Fire load kWh	0.47	Plastic parts	halogen-free
		Cross-section mm²	5x2.5+ 2x1.5	Metal parts	corrosion-resistant
		Connecting capacity Ø	3.75 + 3.2	Packing unit pce.	50
		Rated voltage Power current V	690		
		Max. rated current Power current A	16		
		Rated voltage bus part V	50		
		Max. rated current max. bus part A	3		
		Degree of protection	IP20		
Junction box 5-pole		Technical data			
<div>No.</div> <div>49701</div> <div></div>	<div>Eldas-No.</div> <div>150 775 037</div>	LxWxH mm	58x41x39	for supply and branching, for bus	
		Weight g	55		
		Fire load kWh	0.33		
		Cross-section mm²	5x2.5	Plastic parts	halogen-free
		Connecting capacity Ø	3.75	Metal parts	corrosion-resistant
		Rated voltage Power current V	690		
		Max. rated current Power current A	16		
		Packing unit pce.	50	tightening torque Nm	0.7
		Degree of protection	IP20	screwdriver No.	1
		Junction box for bus		Technical data	
<div>No.</div> <div>49702</div> <div></div>	<div>Eldas-No.</div> <div>150 732 037</div>	LxWxH mm	21x41x39	for supply and branching, for bus	
		Weight g	23		
		Fire load kWh	0.14	Plastic parts	halogen-free
		Cross-section mm²	2x1.5	Metal parts	corrosion-resistant
		Connecting capacity Ø	3.2		
		Rated voltage bus part V	50		
		Max. rated current max. bus part A	3		
		Packing unit pce.	50	tightening torque Nm	1.0
		Degree of protection	IP20	screwdriver No.	3

Junction box, flat execution to flat cable No. 49945 and 49946

Connecting box		Technical data		
<div>No. 49703</div> <div>Eldas-No. 150 701 007</div> <div></div>	LxWxH mm	96x60x23	for supply and branching, no need to strip the insulation, flat execution 3P+N+PE	
	Weight g	71.1		
	Fire load kWh	0.38		
	Spring clamp terminals per pole	2	for two flexible round cable of PVC up to	
	Connecting capacity Ø	6-13 mm	5x1.5 mm² with end sleeves for strands or rigid	
	Rated voltage V	690	round cables up to 5x2.5 mm²	
	Max. rated current max. A	16		
	Cross-section mm²	(2x) 5x2.5		
	Plastic parts	halogen-free		
	Metal parts	corrosion-resistant		
Packing unit pce.	50	tightening torque Nm	0.7	
		screwdriver No.	1	
Degree of protection	IP20			

Woertz combi 5G2.5 mm² + 2x1.5 mm²

Branching boxes with socket to flat cable No. 49945 and 49946

Branching box 3-pole		Technical data	
No.	Eldas-No.	LxWxH mm	34.5x57.5x25.7
49713/L1	150 700 137	Weight g	40
49713/L2	150 700 237	Fire load kWh	0.18
49713/L3	150 700 117	Socket	type GST18i3 code 1
		Rated voltage V	250
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		lateral connection	Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 78	
Branching box 3-pole		Technical data	
No.	Eldas-No.	LxWxH mm	48x40x34
49413/C	150 700 127	Weight g	55
		Fire load kWh	0.32
		Socket	type GST18i3 code 1
		Rated voltage V	250
		Max. rated current max. A	16
		Packing unit pce.	25
		Degree of protection	IP20
		longitudinal connection	Phase selection
			Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 78	
Branching box 5-pole		Technical data	
No.	Eldas-No.	LxWxH mm	54x57.5x25.7
49715	150 700 337	Weight g	65
		Fire load kWh	0.27
		Socket	type GST18i5 code 1
		Rated voltage V	250/400
		Max. rated current max. A	16
		Packing unit pce.	50
		Degree of protection	IP20
		with socket lateral connection	Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 78	
Branching box 2-pole for KNX		Technical data	
No.	Eldas-No.	LxWxH mm	27x57.5x25.7
49710	150 701 187	Weight g	18
		Fire load kWh	0.12
		Socket	type BST14i2 code KNX
		Rated voltage V	50
		Max. rated current max. A	3
		Packing unit pce.	50
		Degree of protection	IP20
		with socket lateral connection	Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	1.0
		screwdriver No.	3
		Pre-wired connectors see page 76	
Branching box 2-pole for bus		Technical data	
No.	Eldas-No.	LxWxH mm	27x57.5x25.7
49711	150 702 237	Weight g	18
		Fire load kWh	0.12
		Socket	type BST14i3 code 3
		Rated voltage V	50
		Max. rated current max. A	3
		Packing unit pce.	50
		Degree of protection	IP20
		with socket lateral connection	Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	1.0
		screwdriver No.	3
		Pre-wired connectors see page 77	
Branching box 2-pole for bus		Technical data	
No.		LxWxH mm	27x57.5x25.7
49717		Weight g	18
		Fire load kWh	0.12
		Socket	code Woertz
		Rated voltage V	50
		Max. rated current max. A	3
		Packing unit pce.	50
		Degree of protection	IP20
		lateral connection	Plastic parts Metal parts
			halogen-free corrosion-resistant
		tightening torque Nm	1.0
		screwdriver No.	3
		Pre-wired connectors see page 76	

Woertz combi 5G2.5 mm² + 2x1.5 mm²

Branching boxes with socket to flat cable No. 49945 and 49946

Branching box 2-pole for KNX		Technical data	
	No.	Eldas-No.	LxWxH mm
	49720/C	150 707 137	44x39.5x28
			Weight g
			19
			Fire load kWh
			0.12
			Socket
			type BST14i2
			code KNX
			Rated voltage V
		50	
		Max. rated current max. A	
		3	
		Packing unit pce.	
		50	
		Degree of protection	
		IP20	
		longitudinal connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		tightening torque Nm	
		1.0	
		screwdriver No.	
		3	
		Pre-wired connectors see page 76	

Branching box 2-pole for bus		**Technical data**	
	No.	Eldas-No.	LxWxH mm
49721/C	150 707 237	44x39.5x28	
		Weight g	
		19	
		Fire load kWh	
		0.12	
		Socket	
		type BST14i3	
		code 3	
		Rated voltage V	
		50	
		Max. rated current max. A	
		3	
		Packing unit pce.	
		50	
		Degree of protection	
		IP20	
		longitudinal connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		tightening torque Nm	
		1.0	
		screwdriver No.	
		3	
		Pre-wired connectors see page 77	
Branching box 2-pole for bus		**Technical data**	
	No.	Eldas-No.	LxWxH mm
49727/C	150 707 337	44x39.5x28	
		Weight g	
		19	
		Fire load kWh	
		0.12	
		Socket	
		code Woertz	
		Rated voltage V	
		50	
		Max. rated current max. A	
		3	
		Packing unit pce.	
		50	
		Degree of protection	
		IP20	
		longitudinal connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		tightening torque Nm	
		1.0	
		screwdriver No.	
		3	
		Pre-wired connectors see page 76	
Branching box 2- and 3-pole		**Technical data**	
	No.	Eldas-No.	LxWxH mm
49723/L1	150 701 137	59.5x57.5x25.7	
49723/L2	150 701 237	Weight g	
49723/L3	150 701 117	57.5	
		Fire load kWh	
		0.29	
		Socket	
		type GST18i3 + BST14i2 code KNX	
		Rated voltage Power current V	
		250	
		Rated voltage bus V	
		50	
		Max. rated current max. Power current A	
		16	
		Max. rated current max. bus A	
		3	
		Degree of protection	
		IP20	
		lateral connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		Packing unit pce.	
		50	
		tightening torque Nm (Power current)	
		0.7	
		screwdriver No. (Power current)	
		1	
		tightening torque Nm (bus part)	
		1.0	
		screwdriver No. (bus part)	
		3	
		Pre-wired connectors see page 76/78	
Branching box 2- and 3-pole		**Technical data**	
	No.	Eldas-No.	LxWxH mm
49724/L1	150 703 037	59.5x57.5x25.7	
49724/L2	150 703 137	Weight g	
49724/L3	150 703 017	57.5	
		Fire load kWh	
		0.29	
		Socket	
		type GST18i3 + BST14i3 code 3	
		Rated voltage Power current V	
		250	
		Rated voltage bus V	
		50	
		Max. rated current max. Power current A	
		16	
		Max. rated current max. bus A	
		3	
		Degree of protection	
		IP20	
		lateral connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		Packing unit pce.	
		50	
		tightening torque Nm (Power current)	
		0.7	
		screwdriver No. (Power current)	
		1	
		tightening torque Nm (bus part)	
		1.0	
		screwdriver No. (bus part)	
		3	
		Pre-wired connectors see page 77/78	
Branching box 2- and 5-pole		**Technical data**	
	No.	Eldas-No.	LxWxH mm
49725	150 705 137	79x57.5x25.7	
		Weight g	
		82	
		Fire load kWh	
		0.40	
		Socket	
		type GST18i5 + BST14i2 code KNX	
		Rated voltage Power current V	
		250/400	
		Rated voltage bus V	
		50	
		Max. rated current max. Power current A	
		16	
		Max. rated current max. bus A	
		3	
		Degree of protection	
		IP20	
		lateral connection	
		Plastic parts	
		halogen-free	
		Metal parts	
		corrosion-resistant	
		Packing unit pce.	
		50	
		tightening torque Nm (Power current)	
		0.7	
		screwdriver No. (Power current)	
		1	
		tightening torque Nm (bus part)	
		1.0	
		screwdriver No. (bus part)	
		3	
		Pre-wired connectors see page 76/78	

Woertz combi 5G2.5 mm² + 2x1.5 mm²

Branching box and junction box to flat cable No. 49945 and 49946







branching box 2- and 5-pole		Technical data	
No.	Eldas-No.	LxWxH mm	79x57.5x25.7
49726	150 705 237	Weight g	82
		Fire load kWh	0.40
		Socket type GST18i5 + BST14i3 code 3	
		Rated voltage Power current V	250/400
		Rated voltage bus V	50
		Max. rated current max. Power current A	16
		Max. rated current max. bus A	3
		Degree of protection	IP20
		lateral connection	
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		tightening torque Nm (Power current)	0.7
		screwdriver No. (Power current)	1
		tightening torque Nm (bus part)	1.0
		screwdriver No. (bus part)	3
		Pre-wired connectors see page 77/78	
Junction box SBox		Technical data	
No.	Eldas-No.	LxWxH mm	74x67x37
49705/L1	150 711 307	Weight g	94
49705/L2	150 711 327	Fire load kWh	0.20
49705/L3	150 711 347	Colour of box L1/L2/L3	l'grey/d'grey/black
		Socket switch type GST18i3 code 4 (brown)	
		Socket lamps type GST18i3 code 1	
		Rated voltage V	250
		Max. rated current max. A	16
		Degree of protection	IP20
		for lighting installations with I/O switch	
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 77/78	
Junction box SBox		Technical data	
No.	Eldas-No.	LxWxH mm	74x67x37
49706/L1	150 712 307	Weight g	110
49706/L2	150 712 327	Fire load kWh	0.20
49706/L3	150 712 347	Colour of box L1/L2/L3	l'grey/d'grey/black
		Socket switch type GST18i3 code 4 (brown)	
		Socket lamps type GST18i3 code 1	
		Rated voltage V	250
		Max. rated current max. A	16
		Degree of protection	IP20
		for lighting installations with impulse switch	
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 77/78	
Junction box SBox		Technical data	
No.	Eldas-No.	LxWxH mm	74x88x37
49707/L1	150 713 307	Weight g	120
49707/L2	150 713 327	Fire load kWh	0.20
49707/L3	150 713 347	Colour of box L1/L2/L3	l'grey/d'grey/black
		Socket switch type GST18i3 code 4 (brown)	
		Socket lamps type GST18i3 code 1	
		Rated voltage V	250
		Max. rated current max. A	16
		Degree of protection	IP20
		for lighting installations with changeover contact	
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 77/78	
Junction box SBox		Technical data	
No.	Eldas-No.	LxWxH mm	74x88x37
49708/L1	150 714 307	Weight g	120
49708/L2	150 714 327	Fire load kWh	0.20
49708/L3	150 714 347	Colour of box L1/L2/L3	l'grey/d'grey/black
		Socket switch type GST18i3 code 4 (brown)	
		Socket lamps type GST18i3 code 1	
		Rated voltage V	250
		Max. rated current max. A	16
		Degree of protection	IP20
		for lighting installations with series connection	
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	50
		tightening torque Nm	0.7
		screwdriver No.	1
		Pre-wired connectors see page 77/78	

Raptor actuators - see separate flyer „building automation“



Woertz combi 5G2.5 mm² + 2×1.5 mm²

Accessories

Cable end piece		Technical data	
No. 48510/07	Eldas-No. 120 900 607	L×W×H mm Weight g Fire load kWh Packing unit pce. Degree of protection	40×44×16 16.8 k.A. 4 IP68
		of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.	
Cable fastening clamp		Technical data	
No. 49731	Eldas-No. 120 008 107	L×W×H mm Weight g Fire load kWh Packing unit pce.	52×10×10 2 0.02 100
		To obturate unused cable outlets. 1 stopper delivered with connecting boxes No. 49670 and 49671. of polyamide 6.6, halogen-free	
Clamp for screwing on		Technical data	
No. 49733 49733A	Eldas-No. 150 900 117 150 900 107	L×W×H mm Weight g Fire load kWh Packing unit pce.	40×15×15 3.7 0.03 100
		49733 for screwing on 49733A for sticking on of polyamide 6.6, halogen-free	
Shears		Technical data	
No. 49930	Eldas-No. 983 045 007	Weight g Packing unit pce.	223 1
		For cutting neatly and easily every type of flat cables (max. width 32mm). With sliding anvil. Teflon coated blades.	
Insulating tape		Technical data	
No. 49960	Eldas-No. 171 013 004	L×W×H mm Weight g Dielectric strength max. kV/mm Temperature max. °C Packing unit pce.	102×100×2.3 33 23 +70 10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing	
Spacer with clips		Technical data	
No. 49738	Eldas-No. 150 901 017	Packing unit pce.	10
		Suitable for connecting boxes for lighting installations To fix the boxes on a surface.	

Mounting procedure of junction box No. 49700 / 49701



Place the junction box on the flat cable - the different lugs prevent the box from incorrect mounting.

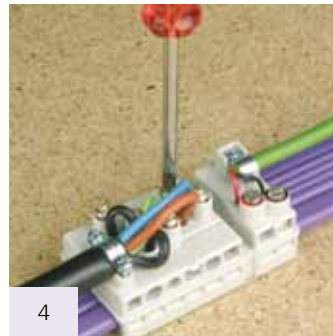


Push on the baseplate (violet). In case of incorrect mounting the bottom part of the box cannot be fitted with normal force.



High current part and bus parts

Introduce the round cable into the flat cable box. Tighten the strain relief clamp to maintain the round cable.

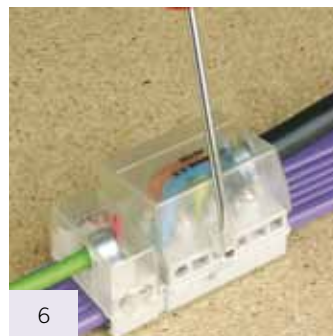


Turn in the pointed screws as far as they will go.



Clip the hood.

The mounting procedure may also occur in a changed order: 3, 1, 2, 4, 5.



To release the hood, insert a screwdriver in the slit provided for the purpose and lift slightly.

Possibility of pre-wiring:

Service to our customers.

On request, the connectors may be provided in advance with round outgoing cables.

The connecting boxes which are dedicated to be placed at regular intervals in office buildings may be mounted in advance (fig. 1-3 above) in our workshops. It is also possible to prewire all the sockets which are mounted in under-window ducts or floor ducts. On the building site, the connection to the flat cable will be done in a matter of seconds! Important time savings will be performed - to your advantage!

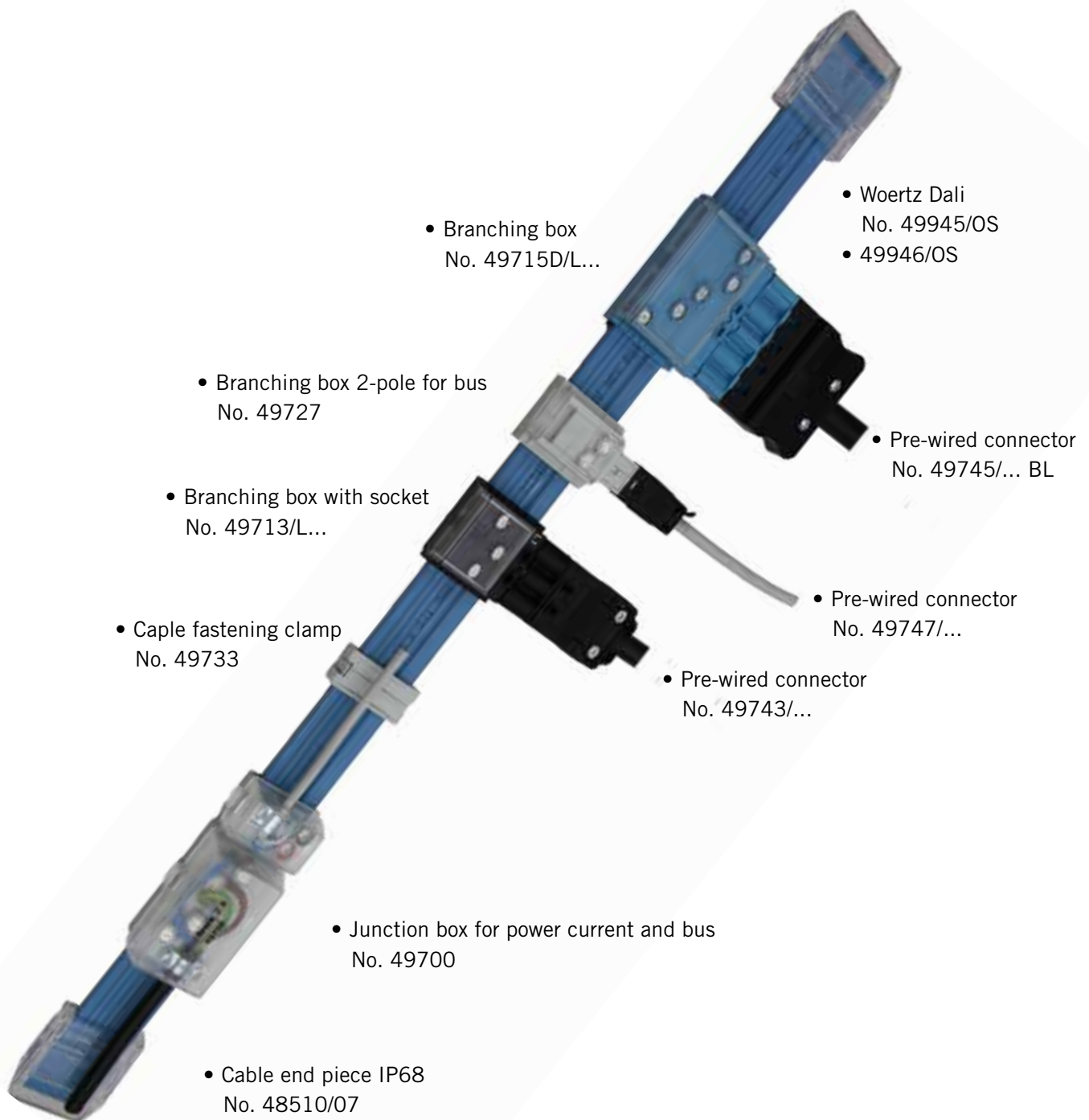


Woertz Dali

5G2.5 mm² + 2×1.5 mm²

Power current and data lines combined in one cable.

Attention: Not with Woertz Combi combinable.






Where are these flat cables used?

- in office buildings
- in hospitals, clinics and residential facilities
- in industrial buildings
- in hotels/restaurants

Flat cable enables installations to be completed easily with further connections.




Woertz Dali 5G2.5 mm² + 2×1.5 mm²

Flat cable Woertz Dali 5G2.5 mm² + 2×1.5 mm²

		PVC	halogen-free
		No.	No.
		 49945/OS shield	 49946/OS shield
		3L+N+PE+2Bus	
Technical Data			
Dimension	mm	32×6	32×6
Weight	g/m	350	340
Fire load	kWh/m	1.18	1.79
No. of leads x cross-section	mm²	5×2.5 + 2×1.5	5×2.5 + 2×1.5
High current part			
Copper conductors		tinned, highly flexible	tinned, highly flexible
Insulation of the leads		PVC	vulcanized and flame retardant polyethylene
Colour of the leads		grey, black, brown, blue, yellow/green	grey, black, brown, blue, yellow/green
Cross-section	mm²	2.5	2.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	kV	0.6/1	0.6/1
DC-resistance	Ω/km	7.98	7.98
Cu weight	kg/km	120	120
Bus part			
Copper conductors		tinned	tinned
Insulation of the leads		PVC	polyethylene
Colour of the leads		neutral	neutral
Cross-section	mm²	1.5	1.5
Test voltage	kV / Hz	4 / 50	4 / 50
Rated voltage	V	50	50
Max. rated currend	A	3	3
DC-resistance	Ω/km	13.7	13.7
Capacitance	pF/m	70	70
Attenuation at 1Hz	dB/m	1.2	1.2
Charact. impedance at 1 MHz	nom Ω	nom. 75	nom. 75
Cu weight	kg/km	29	29





Woertz Dali 5G2.5 mm² + 2×1.5 mm²

Junction box with screw-type connection to flat cable No. 49945 and 49946

Junction box 5-pole with bus		Technical Data	
<div>No. Eldas-Nr. 49700 150 775 137</div> <div></div>	LxWxH mm	76x41x39	Supply and branching for power current part and bus part.
	Weight g	86	
	Fire load kWh	0.47	Plastic parts: halogen-free Metal parts: corrison-resistant
	Cross-section mm²	5x2.5+ 2x1.5	
	Connecting capacity Ø	3.75 + 3.2	
	Rated voltage power current V	690	Packing unit pce. 50
	Max. rated current power current A	16	
	Rated voltage bus part V	50	
	Max. rated current bus part A	3	
	Degree of protection	IP20	
Junction box 5-pole		Technical Data	
<div>No. Eldas-Nr. 49701 150 775 037</div> <div></div>	LxWxH mm	58x41x39	Supply and branching for power current part
	Weight g	55	Plastic parts: halogen-free Metal parts: corrison-resistant
	Fire load kWh	0.33	
	Cross-section mm²	5x2.5	
	Connecting capacity Ø	3.75	tightening torque Nm 0.7 cross recess no. 1
	Rated voltage power current V	690	
	Max. rated current power current A	16	
	Packing unit pce.	50	
	Degree of protection	IP20	
	Junction box for bus		Technical Data
<div>No. Eldas-Nr. 49702 150 732 037</div> <div></div>	LxWxH mm	21x41x39	Supply and branching for bus part
	Weight g	23	Plastic parts: halogen-free Metal parts: corrison-resistant
	Fire load kWh	0.14	
	Cross-section mm²	2x1.5	
	Connecting capacity Ø	3.2	tightening torque Nm 1.0 cross recess no. 3
	Rated voltage power current V	50	
	Rated voltage bus part A	3	
	Packing unit pce.	50	
	Degree of protection	IP20	







Woertz Dali 5G2.5 mm² + 2×1.5 mm²

Branching box with socket to flat cable No. 49945 and 49946




Branching box 3-pole		Technical Data		
No.	Eldas-Nr.	LxWxH mm	34.5x57.5x25.7	Lateral connection
49713/L1	150 700 137	Weight g	40	
49713/L2	150 700 237	Fire load kWh	0.18	Plastic parts: halogen-free
49713/L3	150 700 117	Socket	Typ GST18i3	Metal parts: corrosion-resistant
			Code 1	
		Rated voltage V	250	tightening torque Nm 0.7
		Max. rated current A	16	cross recess no. 1
		Packing unit pce.	50	
		Degree of protection	IP20	<i>Pre-wired connectors see page 78</i>
				
Branching box 3-pole		Technical Data		
No.	Eldas-Nr.	LxWxH mm	48x40x34	Longitudinal connection
49413/C	150 700 127	Weight g	55	
		Fire load kWh	0.32	Phase selection
		Socket	Typ GST18i3	Plastic parts: halogen-free
			Code 1	Metal parts: corrosion-resistant
		Rated voltage V	250	tightening torque Nm 0.7
		Max. rated current A	16	cross recess no. 1
		Packing unit pce.	25	
		Degree of protection	IP20	<i>Pre-wired connectors see page 78</i>
				
Branching box 5-pole		Technical Data		
No.		LxWxH mm	54x57.5x25.7	with socket
49715D/L1		Weight g	65	Lateral connection
L2		Fire load kWh	0.27	
L3		Socket	Typ GST18i5	Plastic parts: halogen-free
			Code 2	Metal parts: corrosion-resistant
		Rated voltage V	250/400	tightening torque Nm 0.7
		Max. rated current A	16	cross recess no. 1
		Packing unit pce.	50	
		Degree of protection	IP20	<i>Pre-wired connectors see page 78</i>
				
Branching box 2-pole for bus		Technical Data		
No.		LxWxH mm	27x57.5x25.7	Anschluss in Querrichtung
49712		Weight g	18	
		Fire load kWh	0.12	Kunststoffteile: halogenfrei
		Socket	Code Woertz	Metallteile: korrosionsschutz
		Rated voltage V	50	
		Max. rated current A	3	Drehmoment Nm 1.0
		Packing unit pce.	50	Schraubendreher Nr. 3
		Degree of protection	IP20	<i>Pre-wired connectors see page 76</i>
				

Woertz Dali 5G2.5 mm² + 2x1.5 mm²

Accessories

Cable end piece		Technical Data	
No. 48510/07	Eldas-Nr. 120 900 607	LxWxH mm Weight g Fire load kWh Packing unit pce. Degree of protection	40x44x16 16.8 n.a. 4 IP68
		of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.	
Cable fastening clamp		Technical Data	
No. 49731	Eldas-Nr. 120 008 107	LxWxH mm Weight g Fire load kWh Packing unit pce.	52x10x10 2 0.02 100
		To obturate unused cable outlets. 1 stopper delivered with connecting boxes No. 49670 and 49671. of polyamide 6.6, halogen-free	
Clamp for screwing on		Technical Data	
No. 49733 49733A	Eldas-Nr. 150 900 117 150 900 107	LxWxH mm Weight g Fire load kWh Packing unit pce.	40x15x15 3.7 0.03 100
		49733 for screwing on 49733A for sticking on of polyamide 6.6, halogen-free	
Shears		Technical Data	
No. 49930	Eldas-Nr. 983 045 007	Weight g Packing unit pce.	223 1
		For cutting neatly and easily every type of flat cables (max. width 32mm). With sliding anvil. Teflon coated blades.	
Insulating tape		Technical Data	
No. 49960	Eldas-Nr. 171 013 004	LxWxH mm Weight g Dielectric strength max. kV/mm Temperature max. °C Packing unit pce.	102x100x2.3 33 23 +70 10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing	
Slide with straight plates		Technical Data	
No. 49738	Eldas-Nr. 150 901 017	Packing unit pce.	10
		Suitable for connecting boxes for lighting installations To fix the boxes on a surface.	

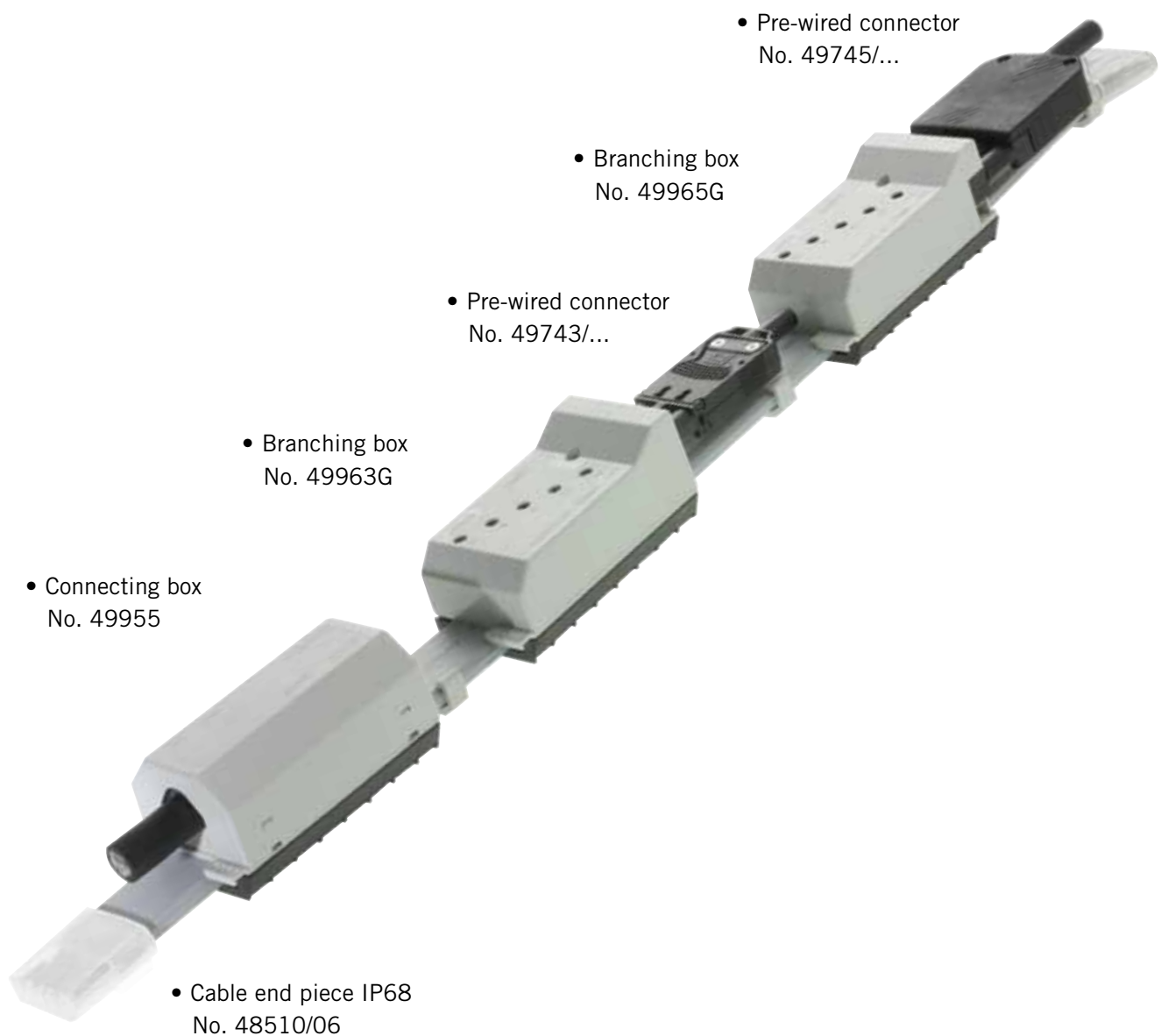
Connectors

Connector and mains socket 5-pole			Technical Data	
No. 49745M/BL			with screw-type connection, with Code 2 type GST 18i5 S S1 Z for one connection cable up to 5×2.5 mm²	
socket 497458F/BL			Height mm 17 Fire load kWh 0.18 Packing unit pce. 10	
			2)*	
Pre-wired connectors - Connector and socket free end			Technical Data	
Connector - free end	<div>different lenghts and colours on request</div> 		with free end 5-polig type GST 18i5 locking possibility with flexible round cable PVC, black	
No. 5G1.5 mm²		No. 5G2.5 mm²		
49745/1M/BL		49745/1M25/BL		
49745/2M/BL		49745/2M25/BL		
49745/3M/BL		49745/3M25/BL		Height mm 17
socket - free end				Length m 1, 2, 3 etc.
49745/1F/BL		49745/1F25/BL		Packing unit pce. 1
49745/2F/BL	49745/2F25/BL		1)* 2)*	
49745/3F/BL	49745/3F/BL			
Extensions - Connector and socket 5-pole			Technical Data	
Connector - socket 5G1.5 mm²	<div>different lenghts and colours on request</div> 		Type GST 18i5 verriegelbar with flexible round cable PVC, black	
No.				
49745/1MF/BL				
49745/2MF/BL				
49745/3MF/BL			Height mm 17	
Connector - socket 5G2.5 mm²			Length m 1, 2, 3 usw.	
49745/1MF25/BL			Packing unit pce. 1	
49745/2MF25/BL		1)* 2)*		
49745/3MF25/BL				

1)* All pre-wired connectors are also halogen-free available.

2)* Brass lead tips or ultrasonically compressed cable ends on request.

Woertz 5G4 mm²




Where are these flat cables used?

- in long corridors and spacious offices
- in supermarkets
- for the lighting of railway stations, car parks or halls
- for light industry


Woertz 5G4 mm²


flat cable 5G4 mm²

		PVC		halogen-free	
		No.	Eldas-No.	No.	Eldas-No.
		49404	113 284 480	49405	113 294 480
3L+N+PE					
Technical data					
Dimensions	mm	26.6x6.7		26.6x6.7	
Weight	g/m	410		410	
Fire load	kWh/m	1.298		1.82	
No. of leads x cross-section	mm ²	5x4		5x4	
High current part					
Copper conductors		tinned, highly flexible		tinned, highly flexible	
Insulation of the leads		PVC		vulcanized, flame retardant polyethylene	
Colour of the leads		grey, black, green/yellow, blue, brown		grey, black, green/yellow, blue, brown	
Cross-section	mm ²	4		4	
Test voltage	kV / Hz	4 / 50		4 / 50	
Rated voltage	kV	0.6/1		0.6/1	
DC-resistance	Ω/km	5.09		5.09	
Cu weight	kg/km	192		192	


Woertz 5G4 mm²

Branching boxes without wire stripping to flat cable No. 49404 and 49405





Box with socket 3-pole		Technical data	
	No.	Eldas-No.	LxWxH mm
	49963G	150 721 007	Weight g
			Fire load kWh
			Socket
			Rated voltage V
			Max. rated current max. A
			Packing unit pce.
			Degree of protection
		112x49x43	with socket 3-pole
		133	longitudinal connection
		0.57	Plastic parts
		type GST18i3	halogen-free
		250/400	Metal parts
		16	corrosion-resistant
		50	tightening torque Nm (Pointed screws)
		IP20	0.7
			screwdriver No.
			1
			tightening torque Nm (Clamping screws)
			0.7
			screwdriver No.
			1
			Pre-wired connectors see page 78

Box with socket 5-pole		Technical data	
	No.	Eldas-No.	LxWxH mm
	49965G	150 721 017	Weight g
			Fire load kWh
			Socket
			Rated voltage V
			Max. rated current max. A
			Packing unit pce.
			Degree of protection
		112x49x43	with socket 5-pole
		143	longitudinal connection
		0.58	Plastic parts
		type GST18i5	halogen-free
		250/400	Metal parts
		16	corrosion-resistant
		50	tightening torque Nm (Pointed screws)
		IP20	0.7
			screwdriver No.
			1
			tightening torque Nm (Clamping screws)
			0.7
			screwdriver No.
			1
			Pre-wired connectors see page 78

Junction box for power current to flat cable No. 49404 and 49405

Junction box		Technical data			
No. 49955	Eldas-No.	L×W×H mm	95×49×44	for supply and branching	
	150 724 037	Weight g	122.5	Plastic parts	halogen-free
		Fire load kWh	0.56	Metal parts	corrosion-resistant
		Rated voltage V	690		
		Max. rated current max. A	25		
		Packing unit pce.	50	tightening torque Nm (Pointed screws)	0.7
				screwdriver No.	1
				tightening torque Nm (Clamping screws)	0.7
				screwdriver No.	1
		Degree of protection	IP20		

Accessories

Cable end piece		Technical data			
<div>No. 48510/06</div> 		LxWxH mm	35x31x22	of polycarbonate, halogen-free; silicone gel	
		Weight g	14.3		
		Fire load kWh	0.06	Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once	
		Packing unit pce.	10		
		Degree of protection	IP68		
Clamp for screwing on		Technical data			
<div>No. 49981</div> <div>Eldas-No. 120 009 007</div> 		LxWxH mm	32x15x8	for cable fastening	
		Weight g	1.5	of polyamide 6.6, halogen-free	
		Fire load kWh	0.01		
		Packing unit pce.	500		
	Shears		Technical data		
<div>No. 49930</div> <div>Eldas-No. 983 045 037</div> 		Weight g	223	For cutting neatly and easily every type of flat cables (max. width 32mm).	
		Packing unit pce.	1		
Insulating tape		Technical data			
<div>No. 49632</div> <div>Eldas-No. 150 901 147</div> 		LxWxH mmxm	50x1	To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections.	
		Weight g	50.1		
		Dielectric strength max. kV/mm	18	Weatherproof, self-fusing.	
		Temperature max.	+70 °C		
		Packing unit m	1		

Woertz 7G2.5 mm² and Woertz 7G4 mm²

The advantage of a higher protection degree and a wider field of application.




Where are these flat cables used?

- for the industrial automation
- 5 conductors for supply voltage 3L+N+PE and 2 conductors for low voltage 24V/48V or control voltage 230VAC.

Woertz 7G2.5 mm²

flat cable 7G2.5 mm²

		PVC		halogen-free	
		No.	Eldas-No.	No.	Eldas-No.
		■ 49600	113 288 780	■ 49601	113 298 780
	5L+N+PE				
Technical data					
Dimensions	mm	35×6		35×6	
Weight	g/m	402		401	
Fire load	kWh/m	1.31		2.02	
No. of leads x cross-section	mm ²	7×2.5		7×2.5	
High current part					
Copper conductors		tinned, highly flexible		tinned, highly flexible	
Insulation of the leads		PVC		flame retardant polyethylene	
Colour of the leads		brown/black/grey/blue/green-yellow/red/white		brown/black/grey/blue/green-yellow/red/white	
Cross-section	mm ²	2.5		2.5	
Test voltage	kV / Hz	4 / 50		4 / 50	
Rated voltage	kV	0.6/1		0.6/1	
DC-resistance	Ω/km	8.21		8.21	
Cu weight	kg/km	168		168	


Woertz 7G4 mm²

flat cable 7G4 mm²


		PVC		halogen-free	
		No.	Eldas-No.	No.	Eldas-No.
				■ 49401	
	5L+N+PE				
Technical data					
Dimensions	mm			35×6	
Weight	g/m			491	
Fire load	kWh/m			1.98	
No. of leads x cross-section	mm ²			7×4	
High current part					
Copper conductors				tinned, highly flexible	
Insulation of the leads				flame retardant polyethylene	
Colour of the leads				brown/black/grey/blue/green-yellow/red/white	
Cross-section	mm ²			4	
Test voltage	kV / Hz			4 / 50	
Rated voltage	kV			0.6/1	
DC-resistance	Ω/km			5.09	
Cu weight	kg/km			270	


Woertz 7G2.5 mm² and 7G4 mm²

Junction box to flat cable No. 49600, 49601 and 49401

Junction box 7-pole		Technical data			
No.	Eldas-No.	LxWxH mm	172x57x60	for supply and branching without wire stripping with 1 outlet M25x1.5	
49613	150 077 037	Weight g	350		
		Fire load kWh	1.68		
		Connecting capacity mm	2.8x3.8	tightening torque Nm (Pointed screws)	0.7
		Rated voltage V	250/400	screwdriver No.	1
		Max. rated current max. A	16	tightening torque Nm (Clamping screws)	0.7
		Plastic parts	halogen-free	screwdriver No.	1
		Metal parts	corrosion-resistant	Degree of protection	IP65
		Packing unit pce.	5		

Connecting base and connector to flat cable No. 49600, 49601 and 49401

Connecting base		Technical data			
No.	Eldas-No.	LxWxH mm	135x57x53	to Connector No. 49626	
49611	150 077 437	Weight g	200		
		Fire load kWh	0.83		
		Rated voltage V	250/400		
		Max. rated current max. A	16		
		Plastic parts	halogen-free		
		Metal parts	corrosion-resistant		
		Packing unit pce.	5	tightening torque Nm	0.7
		Degree of protection	IP65	screwdriver No.	1

Connector 7-pole		Technical data	
No.	Eldas-No.	LxWxH mm	83x56x73
49626	150 977 437	Weight g	160
		Fire load kWh	0.47
		Rated voltage V	250/400
		Max. rated current max. A	16
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Packing unit pce.	5
		Degree of protection	IP65
			with 1 outlet M25x1.5 to connecting base No. 49611









Cable gland (to be ordered separately)

see page 74



Woertz 7G2.5 mm² and 7G4 mm²

Accessories

Cable end piece		Technical data		
<div>No. 49620</div> <div></div>	<div>Eldas-No. 150 901 137</div>	LxWxH mm	62x23x53	<div>of polycarbonate, halogen-free</div> <div>Before mounting the cable, first strip it at both ends for a distance of 19mm so that the specified creepage distance will be observed.</div>
		Weight g	32	
		Fire load kWh	0.22	
		Packing unit pce.	10	
		Degree of protection	IP65	
Clamp		Technical data		
<div>No. 49731</div> <div></div>	<div>Eldas-No. 120 008 107</div>	LxWxH mm	52x10x10	<div>for cable fastening</div> <div>of polyamide 6.6, halogen-free</div>
		Weight g	2	
		Fire load kWh	0.02	
		Packing unit pce.	100	
Cable stripping tool		Technical data		
<div>No. 49623</div> <div></div>	<div>Eldas-No. 983 053 107</div>	Weight g	273	<div>This tool offers the advantage of stripping neatly and easily the cable without damaging the insulation of the conductors.</div> <div>Note: The cable has to be stripped at both ends for a distance of 19mm so that the conductors can be inserted properly in the end pieces..</div>
		Packing unit pce.	1	
Shears		Technical data		
<div>No. 49930</div> <div></div>	<div>Eldas-No. 983 045 007</div>	Weight g	223	<div>For cutting neatly and easily every type of flat cables (max. width 32mm).</div>
		Packing unit pce.	1	
Insulating tape		Technical data		
<div>No. 49632</div> <div></div>	<div>Eldas-No. 150 901 147</div>	LxWxH mmxm	50x1	<div>To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections.</div> <div>Weatherproof, self-fusing</div>
		Weight g	50.1	
		Dielectric strength max. kV/mm	18	
		Temperature max.	+70 °C	
		Packing unit m	1	
Protection cover		Technical data		
<div>No. 49627</div> <div></div>	<div>Eldas-No. 150 900 907</div>	Weight g	15.5	<div>Cover IP65 to connecting base No. 49611</div> <div>halogen-free</div>
		Fire load kWh	0.16	
		Packing unit pce.	5	

Woertz power 5G10 mm²

When you need more power.






Where are these flat cables used?

- For the lighting of halls
- For the supply of loads in open-plan offices through round or flat cables
- In data processing centers
- In hotels/restaurants
- In shopping centers
- In hospitals, clinics, residential facilities



Woertz power 5G10 mm²

flat cable 5G10 mm²

		PVC		halogen-free	
		No.	Eldas-No.	No.	Eldas-No.
		 49884	113 289 518	 49885	113 389 504
3 L+N+PE					
Technical data					
Dimension	mm	38.5×10		38.5×10	
Weight	g/m	845		845	
Fire load	kWh/m	2.12		3.43	
No. of leads x cross-section	mm²	5×10		5×10	
High current part					
Copper conductors		bare, highly flexible		bare, highly flexible	
Insulation of the leads		PVC		vulcanized, and flame retardant polyethylene	
Colour of the leads		brown, blue, green/yellow, black, grey		brown, blue, green/yellow, black, grey	
Cross-section	mm²	10		10	
Test voltage	kV / Hz	4 / 50		4 / 50	
Rated voltage	kV	0.6/1		0.6/1	
DC-resistance	Ω/km	1.91		1.91	
Packing unit	m	250/500		250/500	
Cu weight	kg/km	480		480	

Woertz power 5G10 mm²

Junction-/branching box to flat cable No. 49884 and 49885

Junction box		Technical data		
<div>No. 49971</div> <div>Eldas-No. 150 724 047</div> <div></div>	LxWxH mm	160x90x55	for the supply at the end of the cable	
	Weight g	556		
	Fire load kWh	1.20		
	Connecting capacity mm	5.2x9		
	Rated voltage V	750		
	Max. rated current max. A	57		
	Plastic parts	halogen-free		
	Metal parts	corrosion-resistant		
	Packing unit pce.	2		
	Degree of protection	IP20		
	Branching box			Technical data
<div>No. 49970</div> <div>Eldas-No. 150 705 337</div> <div></div>	LxWxH mm	110x51x48	for 5x4 mm² round cables, without wire stripping	
	Weight g	156		
	Fire load kWh	0.62		
	Connecting capacity mm	3.9x3.4	tightening torque Nm	1.4
	Rated voltage V	690	screwdriver No.	2
	Max. rated current max. A	25		
	Plastic parts	halogen-free		
	Metal parts	corrosion-resistant		
	Packing unit pce.	25		
	Degree of protection	IP20		

Accessories

Cable end piece		Technical data	
No.	Eldas-No.	LxWxH mm	47x40x17
49972	120 900 007	Weight g	11.5
		Fire load kWh	0.10
		Packing unit pce.	10
		Before mounting the cable, first strip it at both ends for a distance of 19 mm so that the specified creepage distance will be observed.	
Set of two clamps		Technical data	
No.	Eldas-No.	LxWxH mm (one half)	56x15x12
49977	120 000 007	Weight g	6.5
		Fire load kWh	0.04
		Ø fixing holes mm	4.5
		Distance between fixing holes mm	47
		Packing unit pce.	100
for screwing on - To fix the cable of polyamide 6.6, halogen-free			
Cable stripping tool		Technical data	
No.	Eldas-No.	Weight g	60.5
49976	983 050 727	Packing unit pce.	1
		The cable stripping tool allows the sheath to be split up on the narrow sides of the cable. Both sheath parts may then be cut by means of the shears.	
		Note: The cable has to be stripped at both ends for a distance of 20 mm so that the conductors can be inserted properly in the end pieces.	
Shears		Technical data	
No.	Eldas-No.	Weight g	582
49929	983 045 037	Packing unit pce.	1
		For cutting neatly and easily every type of flat cables (max. width 32mm).	
Insulating tape		Technical data	
No.	Eldas-No.	LxWxH mm	102x100x2.3
49960	171 013 004	Weight g	33
		Dielectric strength max. kV/mm	23
		Temperature max.	+70 °C
		Packing unit pce.	10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections.	
		Weatherproof, self-fusing	

Woertz 5G16 mm² (IP65)

Efficient cabling for both power supply and distribution and also for feeding distribution boxes.

- Cable end piece
No. 49630 - IP65

- Clamp
No. 49634




- Junction box
No. 49615

Where are these flat cable used?

- As flexible power rails for the supply of machinery
- As rising mains
- For the supply of distribution blocks
- For exhibitions and trade fairs
- For temporary installations on building sites
- For the lighting of tunnels
- For the shipbuilding
- For the lighting of halls
- For the supply of open-spaces (flat cable or round cable for feeding the receivers)
- Socket circuits with decentralised protection




Woertz 5G16 mm²

flat cable 5G16 mm²

		PVC		halogen-free	
		No.	Eldas-No.	No.	Eldas-No.
	3 L+N+PE	 49605	113 289 680	 49606	113 299 680
Technical data					
Dimension	mm	48.5×11.3		48.5×11.3	
Weight	g/m	1300		1300	
Fire load	kWh/m	2.95		4.96	
No. of leads x cross-section	mm²	5×16		5×16	
High current part					
Copper conductors		bare, highly flexible		bare, highly flexible	
Insulation of the leads		PVC		polyethylene Compound	
Colour of the leads		brown, blue, green/yellow, black, grey		brown, blue, green/yellow, black, grey	
Cross-section	mm²	16		16	
Test voltage	kV / Hz	4 / 50		4 / 50	
Rated voltage	kV	0.6/1		0.6/1	
DC-resistance	Ω/km	1.21		1.21	
Packing unit	m	250/500		250/500	
Cu weight	kg/km	768		768	

Woertz 5G16 mm²

Junction box and branching box to flat cable No. 49605 and 49606

Junction box		Technical data	
No. 49615	Eldas-No. 150 285 037	L×W×H mm 200×85×91	Junction box 5×16 mm ²
		Weight g 800	with 1 outlet M40×1.5 for 1 Zuleitung with round cable 5×16 mm ²
		Fire load kWh 3.30	
		Rated Cross-section mm ² 16	
		Rated voltage V 690	tightening torque Nm (Pointed screws) 3.5
		Max. rated current max. A 63	screwdriver No. 2
		Plastic parts halogen-free	tightening torque Nm (Clamping screws) 2
		Metal parts corrosion-resistant	screwdriver No. 2
		Packing unit pce. 1	
Branching box		Technical data	
No. 49616	Eldas-No. 150 713 037	L×W×H mm 200×85×73	branching box 5×10 mm ² with 2 outlets M25×1.5
		Weight g 650	for max. 1 round cable 5×10 mm ² or 2 round cable 5×6 mm ²
		Fire load kWh 2.97	
		Rated Cross-section mm ² 16	
		Rated voltage V 690	tightening torque Nm (Pointed screws) 3.5
		Max. rated current max. A 63	screwdriver No. 2
		Plastic parts halogen-free	tightening torque Nm (Clamping screws) 2
		Metal parts corrosion-resistant	screwdriver No. 2
		Packing unit pce. 1	
		Degree of protection IP65	
with baseplate of aluminium			
No. 49615A 49616A			
Cable glands (see page 74)			
			

Accessories

Cable end piece		Technical data	
	No.	Eldas-No.	LxWxH mm
	49630	150 901 137	80x30x57
			Weight g
			44
			Fire load kWh
		0,31	
		Packing unit pce.	
		4	
		Degree of protection	
		IP65	
Clamp		Technical data	
	No.	Eldas-No.	Dimension mm
	49634	120 018 017	10x77x1
			Weight g
			7
		Packing unit pce.	
		100	
Cable stripping tool		Technical data	
	No.	Eldas-No.	Weight g
	49633	983 053 057	59
			Packing unit pce.
		1	
		The cable stripping tool allows the sheath to be split up on the narrow sides of the cable. Both sheath parts may then be cut by means of the shears.	
		Note: The cable has to be stripped at both ends for a distance of 25mm so that the conductors can be inserted properly in the end pieces.	
Shears		Technical data	
	No.	Eldas-No.	Weight g
	49929	983 045 037	582
			Packing unit pce.
		1	
		For cutting neatly and easily every type of flat cables (max. width 32mm).	
Insulating tape		Technical data	
	No.	Eldas-No.	Dimension mmxm
	49632	150 901 147	50x1
			Weight g
			50.1
			Dielectric strength max. kV/mm
			18
		Temperature max. °C	
		+70	
		Packing unit m	
		1	
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections.	
		Weatherproof, self-fusing	

Woertz 5G16 mm²

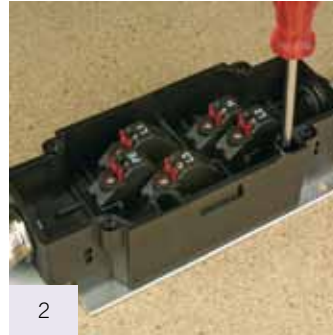
Cable glands

<div>Cable glands</div> <div><div>No. 49628</div><div>Eldas-No. 121 730 607</div><div></div></div>	<div>Technical data</div> <div><div><div>Weight g</div><div>23.3</div></div><div><div>Ø Diameter of cables mm</div><div>M25×1.5</div></div><div><div>Packing unit pce.</div><div>9.0-16.0</div></div><div><div></div><div>5</div></div></div> <div><div>of polyamide</div><div>delivered with O-ring seal of NBR, Ø 22×2 mm</div></div>
<div>Cable glands</div> <div><div>No. 49629</div><div>Eldas-No. 121 730 617</div><div></div></div>	<div>Technical data</div> <div><div><div>Weight g</div><div>22.6</div></div><div><div>Ø Diameter of cables mm</div><div>M25×1.5</div></div><div><div>Packing unit pce.</div><div>13.0-18.0</div></div><div><div></div><div>5</div></div></div> <div><div>of polyamide</div><div>delivered with O-ring seal of NBR, Ø 22×2 mm</div><div>halogen-free</div></div>
<div>Cable glands</div> <div><div>No. 49635</div><div>Eldas-No. 121 720 807</div><div></div></div>	<div>Technical data</div> <div><div><div>Weight g</div><div>76.4</div></div><div><div>Ø Diameter of cables mm</div><div>M40×1.5</div></div><div><div>Packing unit pce.</div><div>20.0-26.0</div></div><div><div></div><div>5</div></div></div> <div><div>Of plastic material</div><div>delivered with O-ring seal of NBR</div></div>
<div>Cable glands</div> <div><div>No. 49637</div><div>Eldas-No. 121 100 607</div><div></div></div>	<div>Technical data</div> <div><div><div>Weight g</div><div>56.2</div></div><div><div>Ø Diameter of cables mm</div><div>M25×1.5</div></div><div><div>Packing unit pce.</div><div>11.0-20.5</div></div><div><div></div><div>5</div></div></div> <div><div>Of nickel-plated brass</div><div>delivered with O-ring seal of NBR, Ø 22×2 mm</div><div>corrosion-resistant</div></div>
<div>Blind plug</div> <div><div>No. 49639</div><div>Eldas-No. 126 227 014</div><div></div></div>	<div>Technical data</div> <div><div><div>Weight g</div><div>7.9</div></div><div><div></div><div>M25×1.5</div></div><div><div>Packing unit pce.</div><div>5</div></div></div> <div><div>Of plastic material</div><div>delivered with O-ring</div><div>halogen-free</div></div>

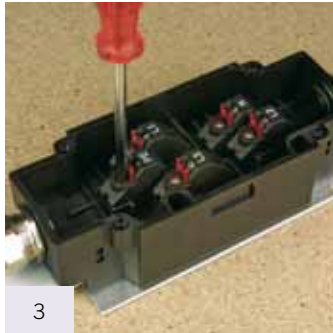
Mounting procedure of Junction box No. 49615



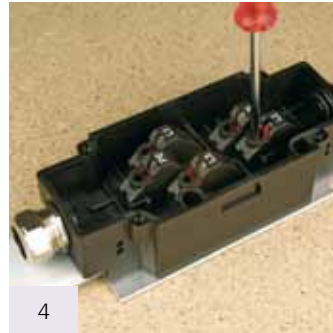
Open the baseplate. Insert the flat cable between box and baseplate.



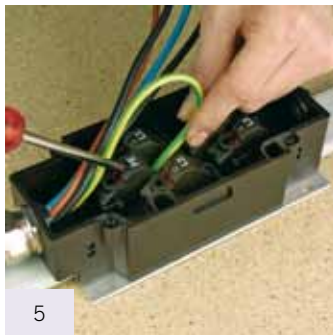
Fold the baseplate back and tighten up both fastening screws.



Turn in the pointed screws...

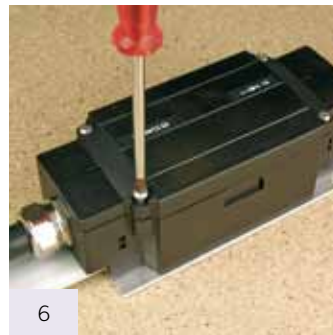


... until the red indicators are recessed.



Connect the round cable leads to the connecting terminals.

Mounting can also be performed in a different order: 5, 1, 2, 3, 4, 6.



Place the cover and tighten up the screws.

Possibility of pre-wiring:

Service to our customers.

On request, the connectors may be provided in advance with round outgoing cables.

For temporary installations, distribution blocks, cabins and machines for example, prewiring may be performed beforehand in our workshops (fig. 4). On the mounting site, there is no need to cut cables. The connection to the flat cable will be done in a matter of seconds, just using a screwdriver! Important time savings will thus be performed - to your advantage!








Connectors

Connector and socket KNX 2-pole		Technical data
No. connector 49740M type BST 14i2 F S1 Z socket 49740F type BST 14i2 F B1 Z	Eldas-No. 157 800 288 150 901 127	 <p>with spring connection, with code KNX. to single-wire and highly flexible leads 0.25-0.75 mm² with strain relief and locking, to leads ø 5-7mm.</p> <p>Height mm 14.4 Fire load kWh 0.04 Packing unit pce. 50</p>
Snap-in KNX 2-pole		Technical data
No. 49420M type BST 14i2 49420F type BST 14i2	(see picture) 	<p>with spring connection, with code KNX. to single-wire and highly flexible leads 0.25-0.75 mm², with locking.</p> <p>Dimensions LxWxH mm 23.5x19.5x29.5 Mounting opening: mm 17.8x17.8 Sheet thickness mm 0.5-2.5 Fire load kWh 0.04 Packing unit pce. 25</p>
Pre-wired connectors		Technical data
No. 49340/1M 49340/2M 49340/3M 49340/1F 49340/2F 49340/3F 49340/... different lengths on request	Eldas-No. 157 881 288 157 882 288 157 883 288 	<p>Connector with one free cable end, 2-pole type BST 14i2 KF-S, code KNX with flexible round cable 2x0.5 mm², green</p> <p>stripping length of sheath mm 20 stripping length of insulation mm 8 Height mm 14.4 Length m 1, 2, 3 etc. Packing unit pce. 1</p>
Connector and bus socket 2-pole		Technical data
No. Connector 49747M socket 49747F		<p>with spring connection, with code Woertz (incompatible with code KNX) to single-wire and highly flexible leads 0.25-0.75mm² with strain relief and locking to leads ø 5-7mm.</p> <p>Height mm 14.4 Fire load kWh 0.04 Packing unit pce. 50</p>
Snap-in bus 2-pole		Technical data
No. 49421M 49421F	(see picture) 	<p>with spring connection, with code Woertz (incompatible with code KNX) to single-wire and highly flexible leads 0.25-0.75 mm², with locking.</p> <p>Dimensions LxWxH mm 23.5x19.5x29.5 Mounting opening mm 17.8x17.8 Sheet thickness mm 0.5-2.5 Fire load kWh 0.04 Packing unit pce. 25</p>
Pre-wired connectors		Technical data
No. 49747/1M 49747/2M 49747/3M 49747/1F 49747/2F 49747/3F 49747/... different lengths on request	Eldas-No. 157 881 238 157 882 238 157 883 238 	<p>Connector with one free cable end 2-pole (shield not connected) code Woertz with flexible round cable 2x0.5 mm², grey</p> <p>stripping length of sheath mm 20 stripping length of insulation mm 8 Height mm 14.4 Length m 1, 2, 3 etc. Packing unit pce. 1</p>

Connectors

Connector and bus socket 2-pole		Technical data	
No.	Eldas-No.		with spring connection, with code 3 (incompatible with code KNX).
Connector			to single-wire and highly flexible leads
49741M	157 804 218		0.25-0.75mm ²
type BST 14i3 F S1 Z			with strain relief and locking to leads ø 5-7mm.
Socket			Height mm 14.4
49741F			Fire load kWh 0.04
type BST 14i3 F B1 Z			Packing unit pce. 50
Pre-wired connectors		Technical data	
No.	Eldas-No.		Connector with one free cable end 2-pole (shield not connected)
49741/1M	157 881 238		type BST 14i3 F S1 Z, code 3
49741/2M	157 882 238		with flexible round cable 2x0.5 mm ² , grey
49741/3M	157 883 238		stripping length of sheath mm 20
49741/1F			stripping length of insulation mm 8
49741/2F			Height mm 14.4
49741/3F			Length m 1, 2, 3 uws.
49741/...	<i>different lengths on request</i>		Packing unit pce. 1
Pre-wired connectors		Technical data	
No.			connector with free cable end 3-pole P+N+PE
49743/1M/BR			type GST 18i3 S S1 Z, code 4 (brown)
49743/2M/BR			locking possibility
49743/3M/BR			with flexible round cable 3G1.5 mm ² , PVC, black
49743/1F/BR			Height mm 25
49743/2F/BR			Length m 1, 2, 3 uws.
49743/3F/BR			Packing unit pce. 1
49743/...	<i>different lengths on request</i>		
Mains connector 3-pole		Technical data	
No.	Eldas-No.		with screw-type connection, black/brown, with code 4 (brown)
49743/M/BR	157 800 328		type GST 18i3 S S1 Z
			to single-wire and highly flexible leads
			1.5-2.5 mm ²
			with cord-grip ø 8-11 mm.
			Height mm 25
			Fire load kWh 0.18
			Packing unit pce. 10
Locking		Technical data	
No.	Eldas-No.		Mechanical link between box and connector
49750	150 900 118		Length mm 37.5
			Packing unit pce. 10
Distributor block			
No.			
49782/2SF2P	2-pole, KNX, 2 outputs F, 1 input M		
49783/2SF3P	3-pole, GST, 2 outputs F, 1 input M		
49783/3SF3P	3-pole, GST, 3 outputs F, 1 input M		
49783/5SF3P	3-pole, GST, 5 outputs F, 1 input M		
49785/1SFL1	5-pole, 1 output F 5P, 1 1 output F 3PL1		
49785/1SFL2	5-pole, 1 output F 5P, 1 1 output F 3PL2		
49785/1SFL3	5-pole, 1 output F 5P, 1 1 output F 3PL3		
49785/2SF5P	5-pole, GST, 2 outputs F, 1 input M		
49785/2SF5P/BL	5-pole, GST, 2 outputs F, 1 input M/BL		
49785/3SF5P	5-pole, GST, 3 outputs F, 1 input M		

Connectors

Connector and mains socket 3-pole			Technical data	
No. 49743M	Eldas-No. 157 800 318		with screw-type connection, with code 1 type GST 18i3 S S1 Z for one connection cable up to 3x2.5 mm²	
Socket 49743F			Height mm 13 Fire load kWh 0.11 Packing unit pce. 10	
Pre-wired connectors - Connector and socket free end			Technical data	
Connector - free end		<i>different lenghts and colours on request</i>	with free end 3-pole	
No. 3G1.5 mm²	No. 3G2.5 mm²		type GST 18i3 locking possibility	
49743/1M	49743/1M25		with flexible round cable PVC, black	
49743/2M	49743/2M25		Height mm 13	
49743/3M	49743/3M25		Length m 1, 2, 3 etc.	
socket - free end			halogen-free also available	
49743/1F	49743/1F25		Packing unit pce. 1	
49743/2F	49743/2F25		1)+2)*	
49743/3F	49743/3F25			
Extensions - Connector and socket 3-pole			Technical data	
Connector - socket 3G1.5 mm²		<i>different lenghts and colours on request</i>	type GST 18i3 locking possibility	
No.			with flexible round cable PVC, black	
49743/1MF			Height mm 13	
49743/2MF			Length m 1, 2, 3 etc.	
49743/3MF			Packing unit pce. 1	
Connector - socket 3G2.5 mm²				
49743/1MF25				
49743/2MF25				
49743/3MF25				
Connector and mains socket 5-pole			Technical data	
No. 49745M	Eldas-No. 157 800 518		with screw-type connection, with code 1 type GST 18i5 S S1 Z for one connection cable up to 5x2.5 mm²	
Socket 49745F			Height mm 17 Fire load kWh 0.18 Packing unit pce. 10	
Pre-wired connectors - Connector and socket free end			Technical data	
Connector - free end		<i>different lenghts and colours on request</i>	with free end 5-pole	
No. 5G1.5 mm²	No. 5G2.5 mm²		type GST 18i5 locking possibility	
49745/1M	49745/1M25		with flexible round cable PVC, black	
49745/2M	49745/2M25		Height mm 17	
49745/3M	49745/3M25		Length m 1, 2, 3 etc.	
socket - free end			Packing unit pce. 1	
49745/1F	49745/1F25			
49745/2F	49745/2F25			
49745/3F	49745/3F25			
Extensions - Connector and socket 5-pole			Technical data	
Connector - socket 5G1.5 mm²		<i>different lenghts and colours on request</i>	type GST 18i5with locking	
No.			with flexible round cable PVC, black	
49745/1MF			Height mm 17	
49745/2MF			Length m 1, 2, 3 etc.	
49745/3MF			Packing unit pce. 1	
Connector - socket 5G2.5 mm²				
49745/1MF25				
49745/2MF25				
49745/3MF25				

1)* All pre-wired connectors are also halogen-free available.

2)* Brass lead tips or ultrasonically compressed cable ends on request.

Accessories

Torque screwdriver 0.6–2.0 Nm		Technical data
<div><div>No. 49825</div><div></div></div>		<div><div>Grip:</div><div>Torque is infinitely variable with torque setter adjusting tool (included in the delivery). Ergonomic multi-component grip, protective insulation 1,000 V AC, tested for safety by the German TÜV (Technical Inspection Association). Grip size adjusted optimally to torque area. A click signals that the preset torque value has been reached.</div><div>Standards:</div><div>Manufactured in accordance with IEC 60900:2004. EN ISO 6789, BS EN 26789, ASME B107.14M.</div><div>Precision:</div><div>±6%, traceable back to national standards.</div><div>Holder:</div><div>slimTorque VDE bit holder (included in the delivery) for 6mm slimBits.</div></div>



IP68 Quick connection system

IP68 Quick connection system

Woertz IP 3G2.5 mm² and Woertz IP 3G4 mm²

A high protection degree, short installation procedures, easy handling and expansion possibilities are the main features of the system: anytime, anywhere, IP68 protected.



- Cable end piece IP68
No. 48510/03

- Quick junction box No. 48243/L/68


Where are these flat cables used?

- In installations related to stringent requirements. Its high protection degree allows this system to be used in tunnels, where many connections have to be made. Thanks to the rapid installation substantial time savings will be performed.
- Flexibility and robustness make the system ideal for building constructions, public works and open cast works in both construction and exploitation phases.
- In industrial washing plants, car wash sites or cleaning installations for tunnels or underground parking where powerful jets of water are used.
- The reliable components also suit outdoor applications such as market places, trade fairs and openair events.
- IP66/68 allows not only the use in wet but also in dusty environment. The system therefore suits workshops, joineries or industrial plants.
- No need to seal the connecting boxes or to sever the cable, new potential sources of errors are thus avoided.

Flat cable enables installations to be completed easily with further connections anywhere, anytime.


Woertz IP 3G2.5 mm²

flat cable IP 3G2.5 mm²

PVC		halogen-free
No.	Eldas-No.	No. Eldas-No.
 L+N+PE	49685	49686
Technical data		
Dimensions	mm	16.5×6
Weight	g/m	185
Fire load	kWh/m	0.583
No. of leads x cross-section	mm ²	3×2.5
High current part		
Copper conductors	tinned, highly flexible	tinned, highly flexible
Insulation of the leads	PVC oil resisting	vulcanized, flame retardant polyethylene
Colour of the leads	brown, green/yellow, blue	brown, green/yellow, blue
Cross-section	mm ²	2.5
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
DC-resistance	Ω/km	7.98
Cu weight	kg/km	72

Woertz IP 3G4 mm²

flat cable IP 3G4 mm²

PVC		halogen-free
No.	Eldas-No.	No. Eldas-No.
 L+N+PE		49646
Technical data		
Dimensions	mm	16.5×6
Weight	g/m	224
Fire load	kWh/m	0.95
No. of leads x cross-section	mm ²	3×4
High current part		
Copper conductors	tinned, highly flexible	tinned, highly flexible
Insulation of the leads	vulcanized, flame retardant polyethylene	vulcanized, flame retardant polyethylene
Colour of the leads	brown, green/yellow, blue	brown, green/yellow, blue
Cross-section	mm ²	4
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
DC-resistance	Ω/km	5.09
Cu weight	kg/km	116





Woertz IP 3G2.5 mm² and Woertz IP 3G4 mm²

Woertz Quick connection technique to flat cable No. 49685, 49686 and 49646

IP68 box to flat cable		Technical data					
No.	Eldas-No.	LxWxH mm	120x30.5x42.5	Woertz patented piercing technique, without any tool			
48243/L/68	150 701 467	Fire load kWh	0.29				
		Fire behaviour	UL 94-V0	Protection IP68 (single contacting) / Protection IP40 (multiple contacting)			
		Rated voltage V/Hz	690/50				
		Test current A	24				
		Cable gland thread	M16x1.5				
		Installation temperature min.	+5 °C	tightening torque Nm	0.7		
		Packing unit pce.	5	screwdriver No.	1		
		Degree of protection	IP66/IP68 (2 m, 30 min)				
IP68 LED box to flat cable		Technical data					
No.		LxWxH mm	17.5x30.5x54.5	Light source (Light emitting diode), LED			
48243/LED/230V		Power consumption W	7	Colour of light white			
		Luminous flux lm	380				
		Colour temperature K	5000				
		max. ambient temperature °C	80				
		Angle of radiation °	120				
		Supply voltage VAC	230				
		Current consumption mA	30				
		Packing unit pce.	5	Degree of protection IP65/IP68 (2 m, 30 min)			
		Cable glands		Technical data			
		No.	Eldas-No.			of polyamide, grey	
48560/01/M16	121 682 507	Diameter of cables M16x1.5 mm	4.5-6.0	delivered with O-ring seal of NBR			
			6.0-8.0				
			8.0-10.5	halogen-free			
48560/03/M16	121 682 517						
48560/05/M16	121 682 527						
		Packing unit pce.	5				

Woertz IP 3G2.5 mm² and Woertz IP 3G4 mm²

Accessories

End piece without stripping		Technical data		
No. 48510/03	Eldas-No. 120 900 307	LxWxH mm Weight g Fire load kWh Packing unit pce. Degree of protection	40x25x15 na 8 IP68	of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once..
				
Clamp		Technical data		
No. 49693	Eldas-No. 120 008 607	LxWxH mm Fire load kWh Packing unit pce.	31x10x8.5 0.01 100	of polyamide 6.6, halogen-free, grey
				
Shears		Technical data		
No. 49930	Eldas-No. 983 045 007	Packing unit pce.	1	For cutting neatly and easily every type of flat cables (max. width 32mm). With sliding anvil. Teflon coated blades.
				
Insulating tape		Technical data		
No. 49960	Eldas-No. 171 013 004	Dimension mm Dielectric strength max. kV/mm Temperature max. °C Packing unit m	102x100x2.3 23 +70 10	To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing.
				

Woertz power IP 5G2.5 mm²

Every connection you need where you need it...

Hard conditions don't affect products with a high IP protection degree...

- Cable end piece IP68
No. 48510/08

- Quick junction box IP68
No. 48385/L/68

- Quick junction box IP68 with fastening
possibility for secure mounting
No. 48385/L/68/S

Where are these flat cables used?

- In installations related to stringent requirements. Its high protection degree allows this system to be used in tunnels, where many connections have to be made. Thanks to the rapid installation substantial time savings will be performed.
- Flexibility and robustness make the system ideal for building constructions, public works and open cast works in both construction and exploitation phases.
- Three-phase loads may be supplied through this system. The lamps are distributed over the different pole conductors and individually switched.
- In industrial washing plants, car wash sites or cleaning installations for tunnels or underground parking where powerful jets of water are used.
- IP66/68 allows not only the use in wet but also in dusty environment. The system therefore suits workshops, joineries or industrial plants.
- No need to seal the connecting boxes or to sever the cable, new potential sources of errors are thus avoided.

Flat cable enables installations to be completed easily with further connections anywhere, anytime.

Woertz power IP 5G2.5 mm²

flat cable IP 5G2.5 mm²



3 L+N+PE

halogen-free

No.	Eldas-No.
■ 49863/FRNC	150 710 317

Technical data

Dimension	mm	24x6
Weight	g/m	247
Fire load	kWh/m	0.671
No. of leads x cross-section	mm ²	5x2.5

High current part

Copper conductors		tinned, highly flexible
Insulation of the leads		vulcanized and flame retardant polyethylene
Colour of the leads		grey, black, brown, blue, green/yellow
Cross-section	mm ²	2.5
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
DC-resistance	Ω/km	7.98
Max. operating temperature		-15 °C bis +90 °C
Min. installation temperature		+5 °C
Bending radius		min. 6x cable thickness
Cu weight	kg/km	120

Flat cable box for IP68 applications







Supply and pre-wired connector



Box	Technical data	
No. Eldas-No. 48385/L/68 150 710 407	LxWxH without cable gland mm 155x50x55 LxWxH with fastening facility mm 155x75x55 Fire load kWh 0.74 Fire behaviour UL 94-V0 Connecting capacity mm 3.0x3.5 Cross-section mm ² 2.5 Cross-section with Litzenhülse mm ² 4 Rated voltage V/Hz 400/50 Test voltage kV/Hz 4 / 50 Test current power max. A 24 Packing unit pce. 1	mounting without any tool Thread of cable gland: M20x1.5 Fastening (screws or cable ties)
Fastening: 48385/L/68/S 150 710 417	Degree of protection IP65/IP68 (2 m, 30 min)	

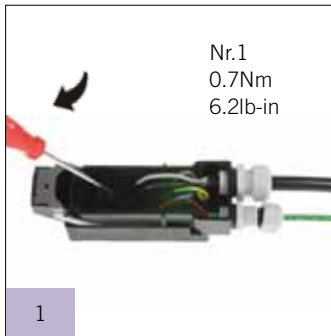
Woertz power IP 5G2.5 mm²

Accessories

End piece without stripping		Technical data	
No.	Eldas-No.	L×W×H mm	40×36×16
48510/05	120 900 617	Weight g	14.3
		Fire load kWh	k.A.
		Packing unit pce.	5
		Degree of protection	IP68
		of polycarbonate, halogen-free; silicone gel Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.	
Cable fastening clamp		Technical data	
No.	Eldas-No.	L×W×H mm	52×10×10
49731	120 008 107	Weight g	2
		Fire load kWh	0.02
		Packing unit pce.	100
		for cable fastening	
		of polyamide 6.6, halogen-free	
Clamp for screwing on		Technical data	
No.	Eldas-No.	L×W×H mm	40×15×15
49733	150 900 117	Weight g	3.7
49733A	150 900 107	Fire load kWh	0.03
		Packing unit pce.	100
		49733 for screwing on 49733A for sticking on	
		of polyamide 6.6, halogen-free	
Shears		Technical data	
No.	Eldas-No.	Weight g	223
49930	983 045 007	Packing unit pce.	1
		For cutting neatly and easily every type of flat cables (max. width 32mm).	
		With sliding anvil. Teflon coated blades.	
Insulating tape		Technical data	
No.	Eldas-No.	L×W×H mm	102×100×2.3
49960	171 013 004	Weight g	33
		Dielectric strength max. kV/mm	23
		Temperature max. °C	70
		Packing unit pce.	10
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing.	
Cable glands		Technical data	
No.	Eldas-No.	Diameter of cables mm	8.0-11.0
48560/03/M20	121 682 607		11.0-15.0
48560/05/M20	121 682 617	Packing unit pce.	5
		of polyamide, grey	
		M20×1.5	
		delivered with O-ring seal of NBR halogen-free	

Mounting procedure of the flat cable box No. 48385/L/68

(can be used for supply and branching!)



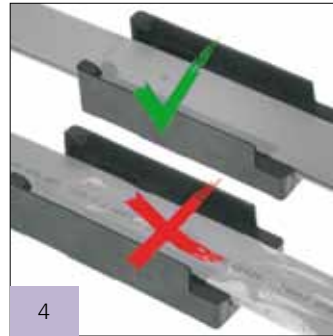
Open the cover. Put the cable gland on the round cable. Cut the round cable to the desired length and remove the sheath. Introduce the leads after having stripped off the insulation and tighten the clamping screws. Check if the O-ring seal is at the right position and tighten the cable gland.



Mount the cover again.



Position the base of the junction box and screw it on to its support if required.



Position the asymmetric fl at cable (right position is shown by the groove in one narrow side of the cable sheath). Is the fl at cable not in the right position, it cannot be inserted into the base. The cable has to be clean, undamaged, free from grease and oil residue.



Snap together the upper part and the base.



Fold back the lever. It must audibly click into place. The box is thus connected and locked. It is also possible to secure the lever by using the supplied screw. The cover may be marked if necessary.

Possibility of pre-wiring:

Service to our customers.

On request the connecting boxes may be provided in advance with round outgoing cables.



The overcurrent protection devices will be chosen in relation to the length of installed cables so that their response time conform to specifications in case of malfunction.



The box has only to be connected to the cable once. If the box has to be displaced, the protection degree of the system will no more be fulfilled. However the box may be used as IP40 box. It is absolutely necessary to reinsulate correctly the holes due to the cutting teeth by means of the insulating tape, in order to ensure the IP protection degree. We do not assume liability for defects occurring through improper operation!

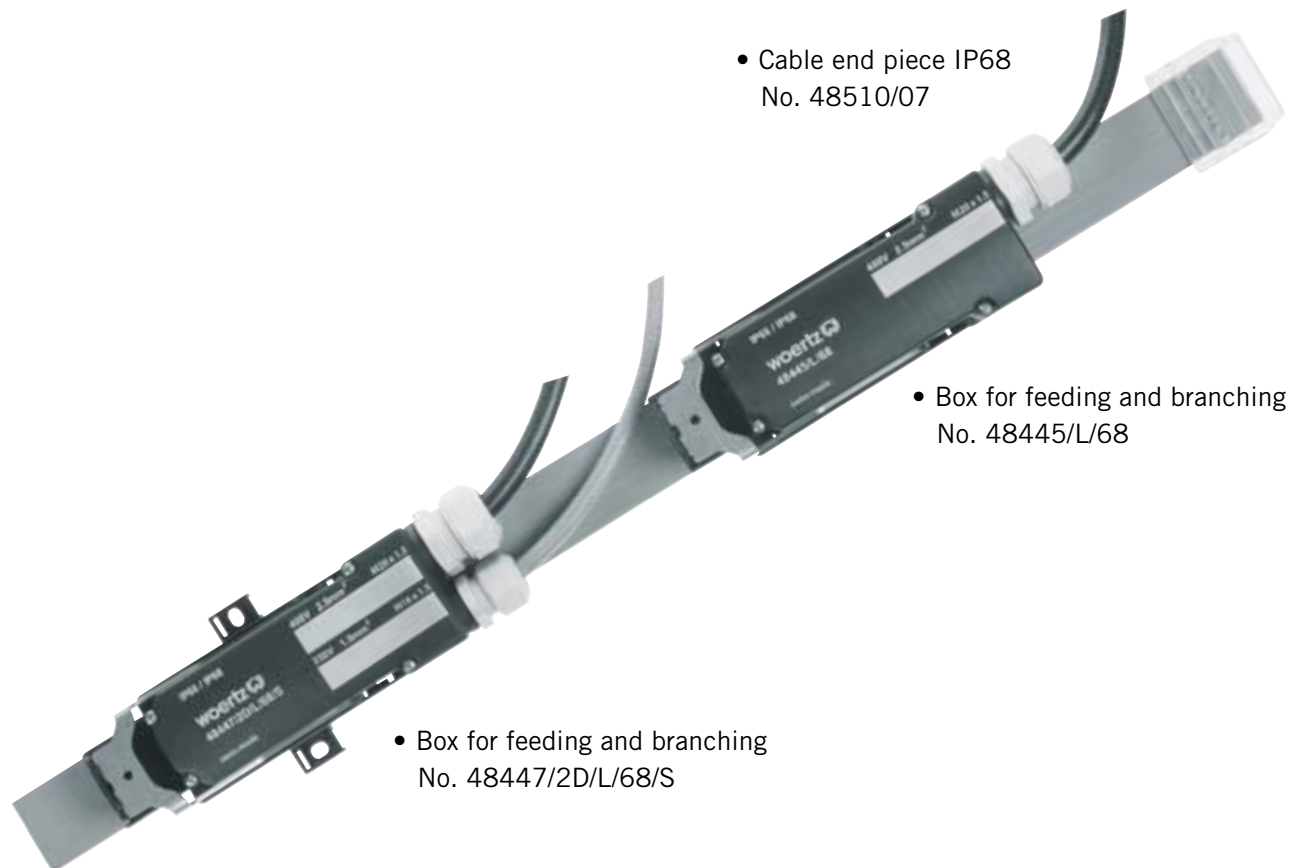


A high IP protection degree requires the highest demands on the installation material. The Woertz System guarantee only applies to original products finished in our workshops (such as flat cables, boxes and accessories) or provided by appropriate, controlled suppliers.

Woertz combi IP

5G2.5 mm² + 2×1.5 mm²

For the first time bus technology finds application under more stringent requirements. Power current conductors and bus conductors are moulded here in a single cable sheath.





Where is this flat cable system used?

- Three-phase loads may be supplied through this system. The same cable may also carry bus data.
- The flat cable ecobus combi with shielded bus cable finds broad application in the KNX technology for instance; power bus systems like DALI may be fed through the ecobus combi flat cable with unshielded bus cable.
- Flexibility and robustness make the system ideal for building constructions, public works and open cast works in both construction and exploitation phases.
- For the first time bus technology finds application under more stringent requirements. The high protection degree enables for instance DALI light control to be used in street tunnels.
- In industrial washing plants, car wash sites or cleaning installations for tunnels or underground parking where powerful jets of water are used.
- IP66/68 allows not only the use in wet but also in dusty environment. The system therefore suits workshops, joineries or industrial plants.
- No need to seal the connecting boxes or to sever the cable, new potential sources of errors are thus avoided.

Flat cable enables installations to be completed easily with further connections anywhere, anytime.


Woertz combi IP 5G2.5 mm² + 2×1.5 mm² - without shield


flat cable combi IP 5G2.5 mm² + 2×1.5 mm²

PVC		halogen-free	
No.	Eldas-No.	No.	Eldas-No.
<div></div>		<div> 49864/FRNC</div>	
3L+N+PE+2 bus without shield			
Technical data			
Dimension	mm	33×6	
Weight	g/m	340	
Fire load	kWh/m	1.9	
No. of leads x cross-section	mm²	5×2.5 + 2×1.5	
High current part			
Copper conductors		CU tinned, class 5	
Insulation of the leads		vulcanized and flame retardant polyethylene	
Colour of the leads		grey, black, brown, blue, yellow/green	
Cross-section	mm²	2.5	
Test voltage	kV / Hz	4 / 50	
Rated voltage	kV	0.6/1	
DC-resistance	Ω/km	7.98	
Cu weight	kg/km	120	
Bus part			
Copper conductors		CU tinned, class 5	
Insulation of the leads		vulcanized and flame retardant polyethylene	
Colour of the leads		neutral	
Cross-section	mm²	1.5	
Test voltage	kV / Hz	4 / 50	
Rated voltage	V	230	
Max. rated current	A	3	
DC-resistance	Ω/km	13.3	
Capacitance	pF/m	70	
Attenuation at 1Hz	dB/100m	1.2/100	
Charact. impedance at 1 MHz	nom Ω	nom. 75	
max. operating temperature		-15 °C to +90 °C	
min. installation temperature		+5 °C	
Cu weight	kg/km	29	

Woertz combi IP 5G2.5 mm² + 2×1.5 mm² - **without shield**


Boxes for feeding and branching, for IP68 applications


Feeding and branching box		Technical data	
No. 48445/L/68	Eldas-No.	Weight g	210
	150 703 707	L×W×H mm, without cable gland	155×50×55
		L×W×H mm, with fastening facility	155×75×55
		Fire load kWh	0.74
with fastening facility: No. 48445/L/68/S	Eldas-No.	Fire behaviour	UL 94-V0
	150 703 717	Connecting capacity mm	3.0×3.5
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Degree of protection	IP65/IP68 (2 m, 30 min)
		No. of leads x cross-section mm ²	5×2.5
		Cross-section of wires with end sleeves mm ²	4
		Test current power power current part A	24
		Test voltage kV/Hz	4 / 50
		Rated voltage Power current V/Hz	400/50
		Thread of cable gland	M20×1.5
		tightening torque Nm	0.7
		screwdriver No.	1


Feeding and branching box		Technical data	
No. 48447/2D/L/68	Eldas-No.	Weight g	210
	150 703 607	L×W×H mm, without cable gland	155×50×55
		L×W×H mm, with fastening facility	155×75×55
		Fire load kWh	0.74
with fastening facility: No. 48447/2D/L/68/S	Eldas-No.	Fire behaviour	UL 94-V0
	150 703 617	Connecting capacity mm	3.0×3.5
		Plastic parts	halogen-free
		Metal parts	corrosion-resistant
		Degree of protection	IP65/IP68 (2 m, 30 min)
		No. of leads x cross-section mm ²	5×2.5+2×1.5
		Cross-section of wires with end sleeves mm ²	4 + 1.5
		Test current power power current part A	24
		Test voltage kV/Hz	4 / 50
		Rated voltage Power current V/Hz	400/50
		Rated voltage bus V/Hz	230/50
		Max. rated current bus part A	3
		Thread of cable gland	M20×1.5 & M16×1.5
		tightening torque Nm	0.7
		screwdriver No.	1


Woertz combi IP 5G2.5 mm² + 2×1.5 mm²


Accessories


Cable end piece		Technical data		
No.	Eldas-No.	LxWxH mm	40x44x16	of polycarbonate, halogen-free; silicone gel
48510/07	120 900 607	Weight g	16.8	
		Fire load kWh	n.a.	
		Packing unit pce.	4	
		Degree of protection	IP68	
Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable. Cable end piece may only be mounted once.				

Cable fastening clamp		Technical data		
No.	Eldas-No.	LxWxH mm	52x10x10	for cable fastening
49731	120 008 107	Weight g	2	of polyamide 6.6, halogen-free
		Fire load kWh	0.02	
		Packing unit pce.	100	

Clamp for screwing on		Technical data		
No.	Eldas-No.	LxWxH mm	40x15x15	49733 for screwing on
49733	150 900 117	Weight g	3.7	49733A for sticking on
49733A	150 900 107	Fire load kWh	0.03	of polyamide 6.6, halogen-free
		Packing unit pce.	100	

Shears		Technical data		
No.	Eldas-No.	Weight g	223	for cutting neatly and easily every type of flat cables (max. width 32mm).
49930	983 045 007	Packing unit pce.	1	
		With sliding anvil. Teflon coated blades		

Insulating tape		Technical data		
No.	Eldas-No.	LxWxH mm	102x100x2.3	to reinsulate correctly the holes due to cutting teeth when removing or displacing connections.
49960	171 013 004	Weight g	33	
		Dielectric strength max. kV/mm	23	Weatherproof, self-fusing.
		Temperature max. °C	+70	
		Packing unit pce.	10	

Cable glands		Technical data		
No.	Eldas-No.			of polyamide, grey
48560/01/M16	121 682 507	Diameter of cables M16x1.5 mm	4.5-6.0	delivered with O-Ring seal of NBR
48560/03/M16	121 682 517		6.0-8.0	
48560/05/M16	121 682 527		8.0-10.5	
48560/03/M20	121 682 607	Diameter of cables M20x1.5 mm	8.0-11.0	halogen-free
48560/05/M20	121 682 617		11.0-15.0	
		Packing unit pce.		5

Woertz power IP 5G6 mm²

Every connection you need where you need it...

Hard conditions don't affect products with a high IP protection degree...



- Quick junction box IP68
No. 48785/L/68

- Quick junction box IP68 with fastening
possibility for secure mounting
No. 48785/L/68/S




Where are these flat cables used?

- In installations related to stringent requirements. Its high protection degree allows this system to be used in tunnels, where many connections have to be made. Thanks to the rapid installation substantial time savings will be performed.
- Flexibility and robustness make the system ideal for building constructions, public works and open cast works in both construction and exploitation phases.
- In industrial washing plants, car wash sites or cleaning installations for tunnels or underground parking where powerful jets of water are used.
- The reliable components also suit outdoor applications such as market places, trade fairs and openair events.
- IP66/68 allows not only the use in wet but also in dusty environment. The system therefore suits workshops, joineries or industrial plants.
- No need to seal the connecting boxes or to sever the cable, new potential sources of errors are thus avoided.

Flat cable enables installations to be completed easily with further connections anywhere, anytime.


Woertz power IP 5G6 mm²

flat cable IP 5G6 mm²

PVC		halogen-free
No.	Eldas-No.	No. Eldas-No.
		 48780/FRNC
3L+N+PE		
Technical data		
Dimensions	mm	32x7.5
Weight	g/m	510
Fire load	kWh	1.8
No. of leads x cross-section	mm ²	5x6
High current part		
Copper conductors		tinned, class 5
Insulation of the leads		vulcanized, flame retardant polyethylene
Colour of the leads		grey, black, green/yellow, blue, brown
Cross-section	mm ²	6
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
DC-resistance	Ω/km	3.39
Cu weight	kg/km	288
Junction box	Technical data	
No. 48781 / 65		
	LxWxH mm	122x120x90 (without cable gland)
	Max. rated current	32
	Test voltage kV/Hz	4/50
	Rated voltage V/Hz	690/50
	Degree of protection	IP65
	Fire load kWh	4.08
	Packing unit pce.	1
	IP68 on request	
	Plastic parts: halogen-free	
	Metal parts: corrosion-resistant	






Flat cable boxes for IP68 application

Feeding and branching box

Box	Technical data	
No.	Eldas-No.	
48785/L/68		
	LxWxH without cable gland mm	155x50x55
	LxWxH with fastening facility mm	155x75x55
	Fire load kWh	0.74
	Fire behaviour	UL 94-V0
	Connecting capacity mm	3.0x3.5
	Cross-section mm	2.5
	Cross-section with Litzenhülse mm	4
	Rated voltage V/Hz	400/50
	Test voltage V/Hz	4 / 50
	Test current power max. A	24
	Weight g	210
	Packing unit pce.	1
	Degree of protection	IP65/IP68 (2 m, 30 min)
fastening facility: 48785/L/68/S		
		may be mounted without any tool
		Thread of cable glands: M20x1.5
		Fastening facility by means of screws and cable ties

Woertz power IP 5G6 mm²

Accessories

Heat-shrinkable end cap		Technical data	
No. 48511/24		L×Ø mm Weight g Packing unit pce. Degree of protection	77×26 10.6 5 IP68
		Provided with adhesive and sealing compound inside Note: Cut neatly both ends of the cable before mounting the end pieces. No need to strip the cable may only be mounted once.	
Cable clamp for screwing on		Technical data	
No. 49981	Eldas-No. 120 009 007	L×W×H mm Weight g Fire load kWh Packing unit pce.	32×15×8 1.5 0.01 500
		for cable fastening of polyamide 6.6, halogen-free	
Shears		Technical data	
No. 49930	Eldas-No. 983 045 037	Weight g Packing unit pce.	223 1
		For cutting neatly and easily every type of flat cables (max. width 32mm).	
Insulating tape		Technical data	
No. 49632	Eldas-No. 150 901 147	L×W×H mm×m Weight g Dielectric strength max. kV/mm Temperature max. Packing unit m	50×1 50.1 18 +70 °C 1
		To reinsulate correctly the holes due to pointed screws or cutting teeth when removing or displacing connections. Weatherproof, self-fusing.	
Cable glands		Technical data	
No. 48560/03/M20 48560/05/M20	Eldas-No. 121 682 607 121 682 617	Diameter of cables mm Packing unit pce.	8.0-11.0 11.0-15.0 5
		of polyamide, grey M20×1.5 delivered with O-ring seal of NBR halogen-free	

Basic standards and concepts

A high protection degree requires the highest demands on the installation material.









The IP rating is used to specify the environmental protection - electrical enclosure - of electrical equipment (electrical devices, lighting or installations).

The degrees of protection are most commonly expressed as „IP“ followed by two characteristic numerals. The letters IP stands for Ingress Protection.

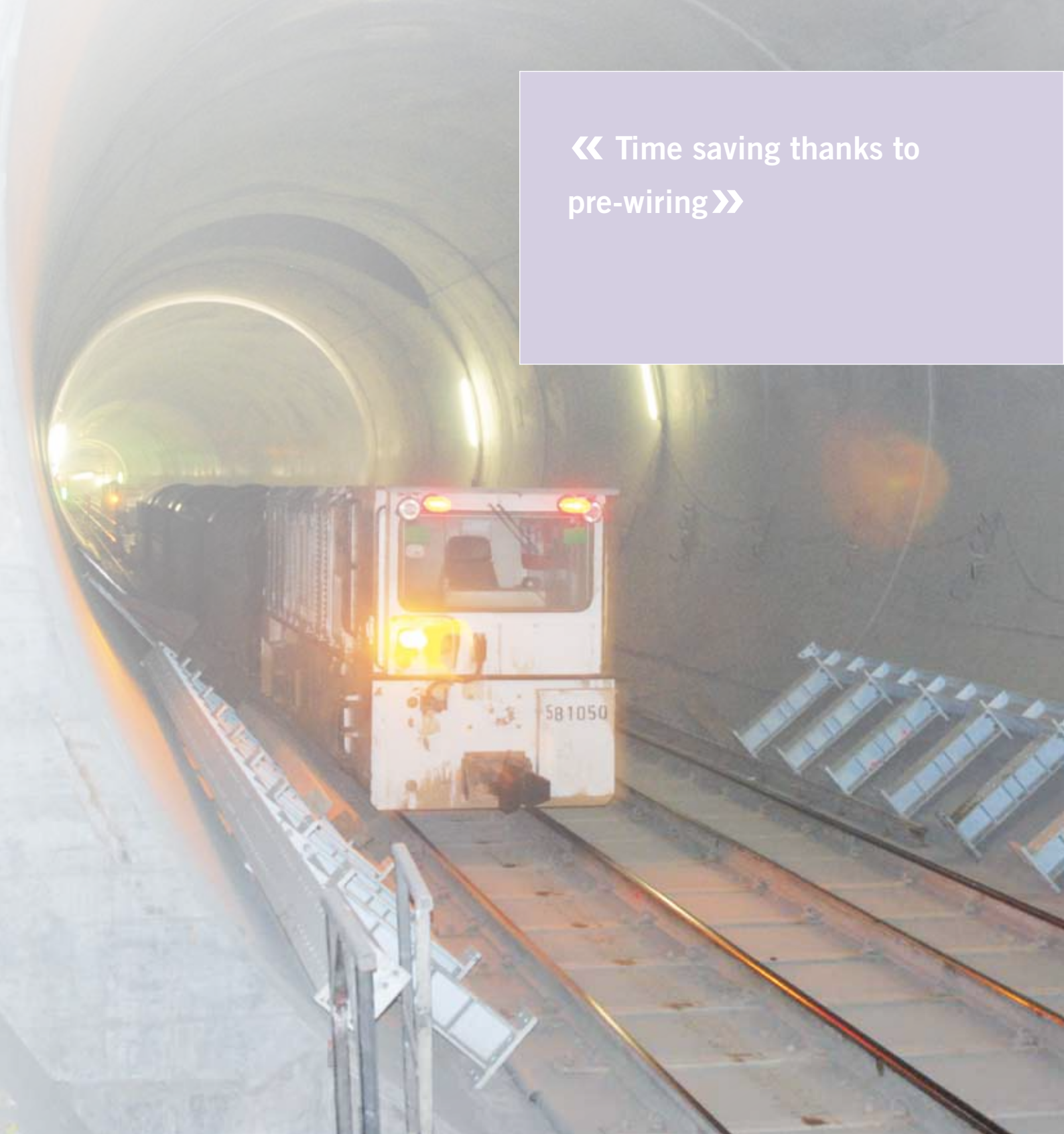
The first numeral indicates the degree of protection against accidental contacts and penetration of solid foreign bodies.

The second numeral indicates the degree of protection against harmful effects of water.

When the degree of protection corresponding to one of the numerals is not stated (be it unnecessary or unknown) it is, replaced by an X.

First characteristic numeral	Protection degree	Symbols	Second characteristic numeral	Protection degree	Symbols
0	non-protected		0	non-protected	
1	Protection against solid bodies exceeding 50mm dia. No protection against deliberate access.		1	Protection against vertically falling drops	
2	Protection against solid bodies exceeding 12.5mm dia. Keep fingers away.		2	Protection against dripping water when tilted up to 15° in relation to its normal position	
3	Protection against solid bodies exceeding 2.5mm dia. Keep away tools and wires.		3	Protection against water falling at an angle up to 60° in relation to the vertical position	
4	Protection against solid bodies exceeding 1mm dia. Keep away tools and wires.		4	Protection against splashing water	
5	Protection against dust penetration, total protection against any contact		5	Protection against water jets from any direction	
6	Total protection against dust penetration, total protection against any contact		6	Protection against heavy seas or inundations	
			7	Protection against the effects of immersion under defined conditions of pressure and time	
			8	Protection against long submersion	

« Time saving thanks to
pre-wiring »





Safety systems FE180

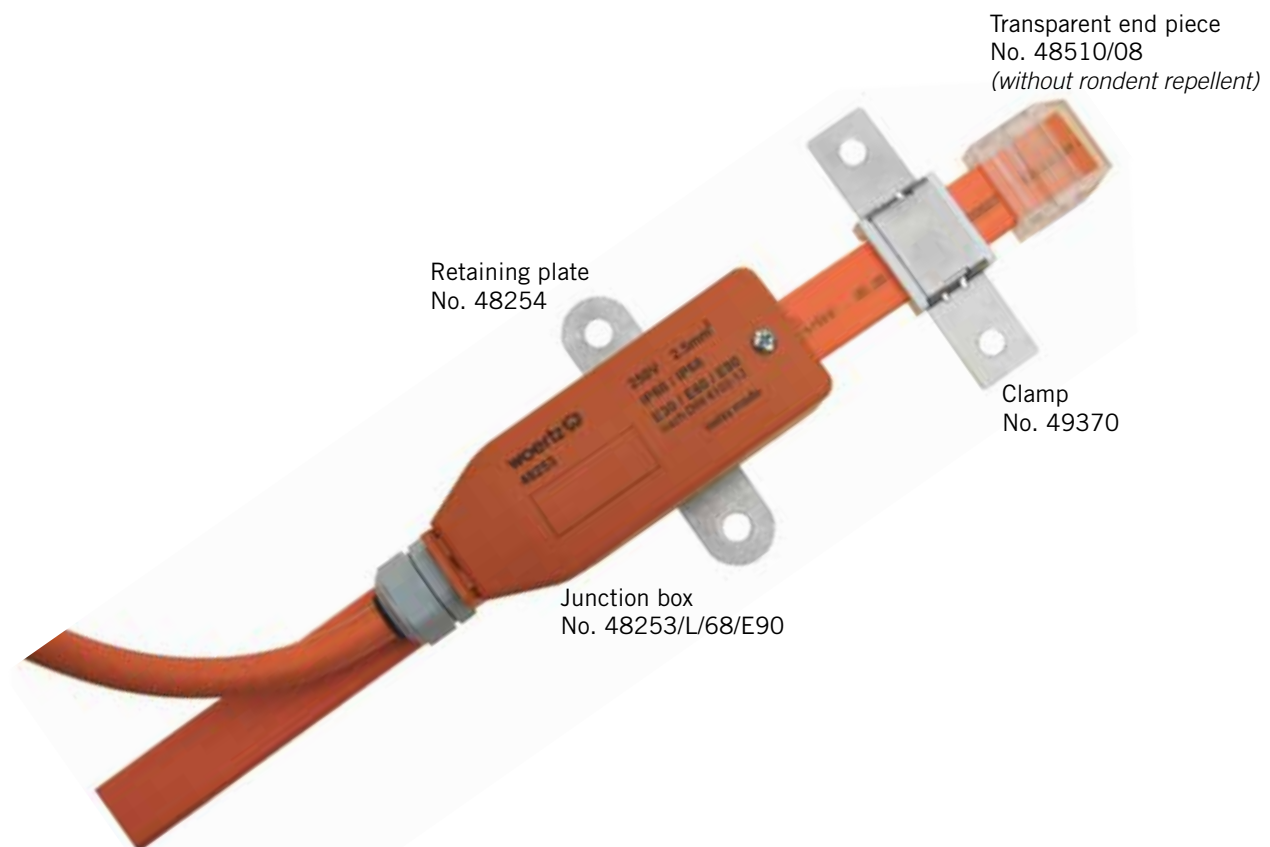
Woertz FE180

3G2.5 mm² + 3G4 mm²

5G2.5 mm² + 5G4 mm²

5G16 mm²

Thanks to this installation system based upon flat cable, all the components related to safety are continuously supplied, even in case of fire. The high degree of protection enables this system to be used even under stringent conditions.



Where are these flat cables used?

- In installations running under stringent conditions
- For feeding safety components: emergency lighting and way guidance systems, smoke extraction systems or elevators specially meant for fire and rescue service.
- Quick and safe installation for industrial or functional buildings (offices or shopping centres)
- The high degree of protection enables this system to be used in tunnels or on industrial sites
- The system turns out to be very flexible and robust in building and utilization phases
- IP68 enables the system to be used in damp environment; the boxes are dust proof and may be used thus in workshops (joiner's) or similar industrial rooms.
- Labor intensive sealing of the boxes is not necessary: as the cable never has to be interrupted there is no source of possible error.

Thanks to the flat cable additional loads may be connected anytime at any point.

Woertz FE180 3G2.5 mm²

flat cable for E30 to E90 application



1L+N+PE

halogen-free

No.

482500R

48250GE

Technical data

Dimension	mm	24x6
Weight	g/m	247
Fire load	kWh/m	1.48
No. of leads x cross-section	mm ²	3x2.5

High current part

Copper conductors	CU bare
Insulation of the leads	ceramic insulated live parts
Colour of the leads	brown, blue, yellow/green
Cross-section	mm ² 2.5
Test voltage	kV / Hz 4 / 50
Rated voltage	kV 0.6/1
Properties of material	FRNC/LSOH
Additives in sheath	to keep away rodents
Insulation integrity	FE180
Function integrity	E90 (see catalogue Safety Systems)
DC-resistance	Ω/km 7.98
max. operating temperature (at conductor)	-15 °C to +90 °C
min. installation temperature	+5 °C
Cu weight	kg/km 72

Junction box

No.

48253/01

48253/02

48253/03



Technical data

with cable gland D 6.0-8.0	M20x1.5
with cable gland D 8.0-11.0	
with cable gland D 11.0-15.0	

Contacts of copper alloy






Plastic parts: halogen-free
Metal parts: V4A

LxWxH mm	137x50x49 (without cable gland)
Weight g	330
Test current A	24
Test voltage kV/Hz	4/50
Rated voltage V/Hz	690/50
Degree of protection	IP66/IP68 (2 m, 30 min.)
Function integrity	E90
Thread of cable gland	M20x1.5
Contacts	Woertz Piercing
Packing unit pce.	1

Protection on request

Accessories

Flat cable box for E30 to E90 applications

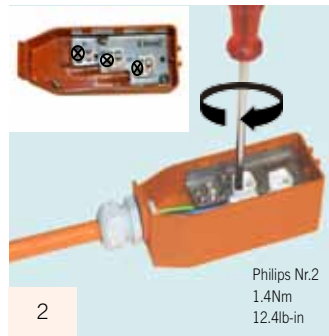
Cable end piece		Technical data	
<div>No. 48510/08</div> <div></div>	Eldas-No. 120 900 617	LxWxH mm 40x36x16	Of polycarbonate, halogen-free, with silicone gel Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation. Cable end pieces can only be mounted once.
		Fire load kWh/m k.A.	
		Packing unit pce. 5	
		Protection degree IP68	
Cable end piece		Technical data	
<div>No. 48510/08/NS</div> <div></div>		LxWxH mm 40x36x16	of synthetic, rodent-repellent, white, halogen-free silicone gel Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation. Cable end pieces can only be mounted once.
		Fire load kWh k.A.	
		Packing unit pce. 5	
		Protection degree IP68	
Clamp		Technical data	
<div>No. 49370</div> <div></div>		Material high quality steel V4A and ceramic	
		LxWxH mm 103.5x32x12.5	
		Mounting shaft mm 80	
		for E30 to E90 application	
	Packing unit pce. 10		
Shears		Technical data	
<div>No. 49930</div> <div></div>	Eldas-No. 983 045 007	Weight g 223	For cutting neatly and easily every type of flat cables of max. width 32mm. With sliding anvil. Teflon coated blades.
		Packing unit pce. 1	
Cable glands		Technical data	
<div>No. 48560/02/M20 48560/03/M20 48560/05/M20</div> <div></div>		Diameter of cables mm 6.0-8.0	of polyamide, grey M20x1.5 delivered with O-ring seal of NBR halogen-free
		8.0-11.0	
		11.0-15.0	
		Packing unit pce. 5	
Retaining plate		Technical data	
<div>No. 48254</div> <div></div>		Material high quality steel V4A	
		LxW mm 80x105	
		mounting shaft mm 80	
		fastening hole mm ø9.5	
	Packing unit pce. 10		

Mounting procedure of junction box No. 48253/L/68/E90

(may be used for both feeding and branching)

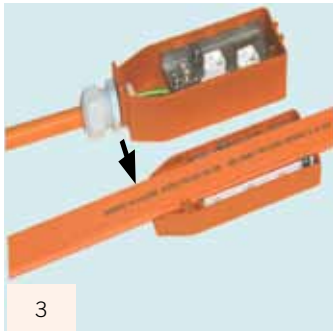


Remove the cover plate of the box. The cable gland has to be prepared and mounted on the branching cable (round cable). Cut the latter to the desired length and dismantle it. Introduce the stripped leads.

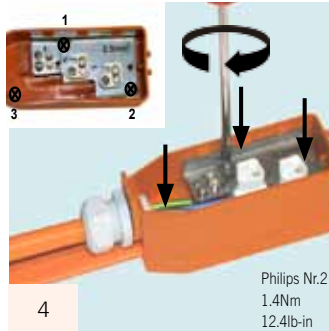


Tighten up the 3 screws. Once the O-ring positions correctly in the cable gland, tighten up the latter.

Philips Nr.2
1.4Nm
12.4lb-in

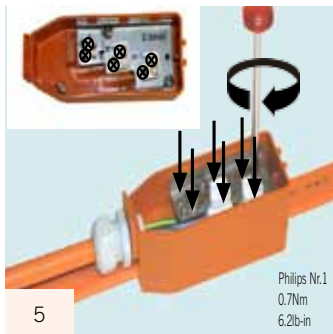


Position the flat cable in the right position. The lug in the base acts as a reference point. It has to match the lug of the flat cable. In case of incorrect mounting the box cannot be fitted with normal force. The cable must be cleaned, gel and oil must be removed.



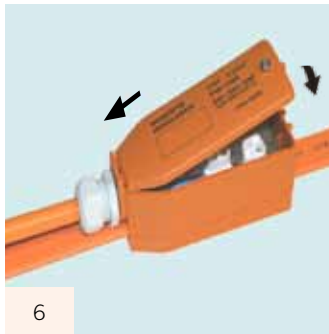
Snap together the upper part and the base. Tighten up the 3 fastening screws of the base.

Philips Nr.2
1.4Nm
12.4lb-in



Tighten up the 6 piercing screws (Twin-Piercing) in order to establish contact with the flat cable cores.

Philips Nr.1
0.7Nm
6.2lb-in



Replace the cover plate carefully and tighten up the screws. The box may be marked if necessary.

Pre-wiring means cost-saving

Service to our customers.

On request the boxes may be provided in advance with round outgoing cables.



The overcurrent protection devices will be chosen in relation to the length of installed cables so that their response time conforms to specifications in case of malfunction. The circuit integrity E90 will only be maintained if the Woertz components are correctly used and fastened with the prescribed material.





The box will be connected to the cable only once. If it has to be displaced, the degree of protection of the box and of the whole system will not be guaranteed anymore. The box may only be used later as a box with protection degree IP40. The holes in the sheath have to be reinsulated to maintain the protection degree. We cannot accept any liability for damage caused by incorrect use.




A high IP degree of protection imposes particularly high requirements in terms of installation material. The Woertz guarantee only applies to original products finished in our workshops such as flat cables, boxes and round cables with connectors.

Woertz FE180 3G4 mm²

flat cable for E30 to E90 application

		halogen-free
		No.  484500R
1L+N+PE		
Technical data		
Dimension	mm	24x7
Weight	g/m	330
Fire load	kWh/m	1.75
No. of leads x cross-section	mm ²	3x4
High current part		
Copper conductors		CU bare
Insulation of the leads		ceramic insulated live parts
Colour of the leads		brown, blue, yellow/green
Cross-section	mm ²	4
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
Properties of material		FRNC/LSOH
Additives in sheath		to keep away rodents
Insulation integrity		FE180
Function integrity		E90
DC-resistance	Ω/km	4.61
max. operating temperature (at conductor)		-15 °C to +90 °C
min. installation temperature		+5 °C
Cu weight	kg/km	116

Connecting box	Technical Data	
No. 48453/01 48453/02 48453/03	with cable gland D 6.0-8.0 with cable gland D 8.0-11.0 with cable gland D 11.0-15.0	M20x1.5
	LxWxH mm	137x50x49 (without cable gland)
	Weight g	330
	Test current A	24
	Test voltage kV/Hz	4/50
	Rated voltage V/Hz	690/50
	Degree of protection	IP66/IP68 (2 m, 30 min.)
	Function integrity	E90
	Thread of cable gland	M20x1.5
	Contacts	Woertz Piercing
	Packing unit pce.	1
	Protection on request	
	Contacts of copper allo Plastic parts: halogen-free Metal parts: V4A	



Accessories

Flat cable box for E30 to E90 applications

Heat-shrinkable end cap		Technical data	
No. 48511/42		LxØ mm	105x42
		Weight g	33.8
		Packing unit pce.	5
		End cap with adhesive and sealant.	
		Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation. Cable end pieces can only be mounted once. Halogen-free	
Clamp		Technical data	
No. 49370		Material	high quality steel V4A and ceramic
		LxWxH mm	103.5x32x12.5
		Mounting shaft mm	80
		for E30 to E90 application	
		Packing unit pce.	10
Shears		Technical data	
No. 49930	Eldas-Nr. 983 045 007	Weight g	223
		Packing unit pce.	1
		For cutting neatly and easily every type of flat cables of max. width 32mm.	
		With sliding anvil. Teflon coated blades.	
Cable glands		Technical data	
No. 48560/02/M20	Eldas-Nr.	Diameter of cables mm	of polyamide, grey
48560/03/M20	121 682 607	6.0-8.0	M20x1.5
48560/05/M20	121 682 617	8.0-11.0	
		11.0-15.0	delivered with O-ring seal of NBR
		Packing unit pce	1
		halogen-free	
Retaining plate		Technical data	
No. 48254		Material	high quality steel V4A
		LxW mm	80x105
		mounting shaft mm	80
		fastening hole mm	ø9.5
		Packing unit pce.	10

Woertz FE180 5G2.5 mm²

flat cable for E30 to E90 applications


	halogen-free	
	No.	
		483500R
	3L+N+PE	

Technical data

Dimension	mm	37×6
Weight	g/m	420
Fire load	kWh/m	2.36
No. of leads x cross-section	mm ²	5×2.5

High current part

Copper conductors	CU bare	
Insulation of the leads	ceramic insulated live parts	
Colour of the leads	grey, black, brown, blue, yellow/green	
Cross-section	mm ²	2.5
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
Properties of material	FRNC/LSOH	
Additives in sheath	to keep away rodents	
Insulation integrity	FE180	
Function integrity	E90 (see catalogue Safety Systems)	
DC-resistance	Ω/km	7.41
max. operating temperature (at conductor)	-15 °C bis +90 °C	
min. installation temperature	+5 °C	
Cu weight	kg/km	120

Connecting boxes	Technical data	
No.		
48353/01	with cable gland D 6.0-8.0	M20x1.5
48353/02	with cable gland D 8.0-11.0	
48353/03	with cable gland D 11.0-15.0	Contacts of copper allo
48355/01	with cable gland D 12.5-16.0	M25x1.5
48355/02	with cable gland D 16.0-20.5	Plastic parts: halogen-free Metal parts: V4A
	LxWxH mm	185×65×70 (without cable gland)
	Test current A	24
	Test voltage kV/Hz	4/50
	Rated voltage V/Hz	690/50
	Degree of protection	IP66/IP68 (2 m, 30 min.)
	Function integrity	E90
	Contacts	Woertz Piercing
	Packing unit pce.	1
	Protection on request	



Accessories

Flat cable box for E30 to E90 applications

Heat-shrinkable cap		Technical data	
No. 48511/42 		LxØ mm	105x42
		Weight g	33.8
		Packing unit pce.	5
	End cap with adhesive and sealant		
		Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation.	
		Cable end pieces can only be mounted once.	
		Halogen-free	
Clamp		Technical data	
No. 49371 		Material	high quality steel V4A and ceramic
		LxW×H mm	117.5x32x12.5
		Mounting shaft mm	94
	for E30 to E90 application		
		Packing unit pce.	10
Shears		Technical data	
No. 49930 	Eldas-No.	Weight g	223
	983 045 007	Packing unit pce.	1
		For cutting neatly and easily every type of flat cables of max. width 32mm.	
		With sliding anvil. Teflon coated blades.	
Cable glands		Technical data	
No. 48560/02/M20 48560/03/M20 48560/05/M20 48560/03/M25 48560/05/M25 		Diameter of cables mm	6.0-8.0
			8.0-11.0
			11.0-15.0
			12.5-16.0
			16.0-20.5
		Packing unit pce.	5
	of polyamide, grey M20×1.5		
	delivered with O-ring seal of NBR		
halogen-free			
Retaining plate		Technical data	
No. 48354 		Material	high quality steel V4A
		LxB mm	122x119
		Mounting shaft mm	94
		Fastening hole mm	ø9.5
		Packing unit pce	10

Woertz FE180 5G4 mm²

flat cable for E30 to E90 applications

	halogen-free
	No.
	 483500R


3L+N+PE

Technical data

Dimension	mm	37×7
Weight	g/m	500
Fire load	kWh/m	2.52
No. of leads x cross-section	mm ²	5×4

High current part

Copper conductors	CU bare
Insulation of the leads	ceramic insulated live parts
Colour of the leads	grey, black, brown, blue, yellow/green
Cross-section	mm ² 4
Test voltage	kV / Hz 4 / 50
Rated voltage	kV 0.6/1
Properties of material	FRNC/LSOH
Additives in sheath	to keep away rodents
Insulation integrity	FE180
Function integrity	E90
DC-resistance	Ω/km 7.41
max. operating temperature (at conductor)	-15 °C bis +90 °C
min. installation temperature	+5 °C
Cu weight	kg/km 192

Connecting boxes	Technical data	
No.		
48653/01	with cable gland D 6.0-8.0	M20x1.5
48653/02	with cable gland D 8.0-11.0	
48653/03	with cable gland D 11.0-15.0	Contacts of copper allo
48655/01	with cable gland D 12.5-16.0	M25x1.5
48655/02	with cable gland D 16.0-20.5	Plastic parts: halogen-free Metal parts: V4A
	L×W×H mm	185×65×70 (without cable gland)
	Test current A	24
	Test voltage kV/Hz	4/50
	Rated voltage V/Hz	690/50
	Degree of protection	IP66/IP68 (2 m, 30 min.)
	Function integrity	E90
	Contacts	Woertz Piercing
	Packing unit pce.	1
	Protection on request	

Accessories

Flat cable box for E30 to E90 applications

Heat-shrinkable cap		Technical data	
No. 48511/42 		LxØ mm Weight g Packing unit pce.	105x42 33.8 5
		End cap with adhesive and sealant Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation. Cable end pieces can only be mounted once. Halogen-free	
Clamp		Technical data	
No. 49371 		Material LxWxH mm Mounting shaft mm for E30 to E90 application Packing unit pce.	high quality steel V4A and ceramic 117.5x32x12.5 94 10
Shears		Technical data	
No. 49930 	Eldas-No. 983 045 007	Weight g Packing unit pce.	223 1
		For cutting neatly and easily every type of flat cables of max. width 32mm. With sliding anvil. Teflon coated blades.	
Cable glands		Technical data	
No. 48560/02/M20 48560/03/M20 48560/05/M20 48560/03/M25 48560/05/M25 		Diameter of cables mm 6.0-8.0 8.0-11.0 11.0-15.0 12.5-16.0 16.0-20.5 Packing unit pce.	of polyamide, grey M20x1.5 delivered with O-ring seal of NBR halogen-free 1
Retaining plate		Technical data	
No. 48354 		Material LxB mm Mounting shaft mm Fastening hole mm Packing unit pce	high quality steel V4A 122x119 94 ø9.5 10

Woertz FE180 5G16 mm²


flat cable for E30 to E90 applications



3L+N+PE

halogen-free

No.

 **489500R**

Technical data

Dimension	mm	52×11
Weight	g/m	1436
Fire load	kWh/m	4.96
No. of leads x cross-section	mm ²	5×16

High current part

Copper conductors		CU bare
Insulation of the leads		ceramic insulated live parts
Colour of the leads		grey, black, brown, blue, yellow/green
Cross-section	mm ²	16
Test voltage	kV / Hz	4 / 50
Rated voltage	kV	0.6/1
Properties of material		FRNC/LSOH
Additives in sheath		to keep away rodents
Insulation integrity		FE180
Function integrity		E90 (see catalogue Safety Systems)
DC-resistance	Ω/km	1.15
max. operating temperature (at conductor)		-15 °C to +90 °C
min. installation temperature		+5 °C
Cu weight	kg/km	768

Caution

The cable has to be cut with a belt saw.

Branching boxes

No.

48353/01

48353/02

48353/03

48355/01

48355/02







Technical data

with cable gland D 6.0-8.0	M20x1.5	Contacts of copper alloy
with cable gland D 8.0-11.0		
with cable gland D 11.0-15.0		
with cable gland D 12.5-16.0	M25x1.5	Plastic parts: halogen-free Metal parts: V4A
with cable gland D 16.0-20.5		
LxWxH mm	146×85×77 (without cable gland)	
Weight g	820	
Test current A	24	
Test voltage kV/Hz	4/50	
Rated voltage V/Hz	690/50	
Degree of protection	IP66/IP68 (2 m, 30 min.)	
Function integrity	E90	
Contacts	Woertz Piercing	
Packing unit pce.	1	
Safety clip on request		

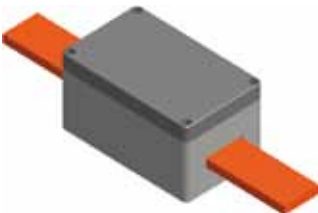
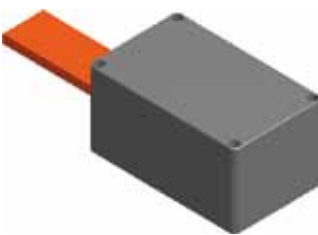
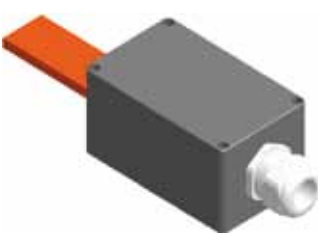
Accessories

Flat cable box for E30 to E90 applications

Heat-shrinkable cap No. 48511/55 	Technical data LxØ mm 165x55 Weight g 76.6 Packing unit pce. 5	End cap with adhesive and sealant Note: Cut cable ends cleanly and smoothly. Then mount the end pieces. No need to strip insulation. Cable end pieces can only be mounted once. Halogen-free
Clamp No. 49379 	Technical data Material high quality steel V4A and ceramic LxWxH mm 139.5x32x18 Mounting shaft mm 116 for E30 to E90 application Packing unit pce. 10	
Cable glands No. 48560/02/M20 48560/03/M20 48560/05/M20 48560/03/M25 48560/05/M25 	Technical data Diameter of cables mm 6.0-8.0 8.0-11.0 11.0-15.0 12.5-16.0 16.0-20.5 Packing unit pce. 1	of polyamide, grey M20x1.5 delivered with O-ring seal of NBR halogen-free
Retaining plate No. 48954 	Technical data Material high quality steel V4A LxB mm 110x141 mounting shaft 116 Fastening hole mm ø9.5 Packing unit pce 10	

Accessories

Flat cable box for E30 to E90 applications

<div>Connecting box 5G16 FK/FK</div> <div>No. 49318</div> <div></div>	<div>Technical data</div> <table><tr><td>LxWxH mm</td><td>180x110x90</td></tr><tr><td>Test current</td><td>76</td></tr><tr><td>Test voltage kV/Hz</td><td>4/50</td></tr><tr><td>Rated voltage V/Hz</td><td>690/50</td></tr><tr><td>Protection class (with cast resin)</td><td>IP66/IP68</td></tr><tr><td>Function integrity</td><td>E30 to E90</td></tr><tr><td>Packing unit pce.</td><td>1</td></tr></table>	LxWxH mm	180x110x90	Test current	76	Test voltage kV/Hz	4/50	Rated voltage V/Hz	690/50	Protection class (with cast resin)	IP66/IP68	Function integrity	E30 to E90	Packing unit pce.	1	<div>Plastic partshalogen-free</div> <div>Metal parts: V2A/V4A</div> <div>Contact elements</div> <div>Copper alloy ceramic isolated</div>
LxWxH mm	180x110x90															
Test current	76															
Test voltage kV/Hz	4/50															
Rated voltage V/Hz	690/50															
Protection class (with cast resin)	IP66/IP68															
Function integrity	E30 to E90															
Packing unit pce.	1															
<div>Termination socket 5G16</div> <div>No. 49319</div> <div></div>	<div>Technical data</div> <table><tr><td>LxWxH mm</td><td>180x110x90</td></tr><tr><td>Test current</td><td>76</td></tr><tr><td>Test voltage kV/Hz</td><td>4/50</td></tr><tr><td>Rated voltage V/Hz</td><td>690/50</td></tr><tr><td>Protection class (with cast resin)</td><td>IP66/IP68</td></tr><tr><td>Function integrity</td><td>E30 to E90</td></tr><tr><td>Packing unit pce.</td><td>1</td></tr></table>	LxWxH mm	180x110x90	Test current	76	Test voltage kV/Hz	4/50	Rated voltage V/Hz	690/50	Protection class (with cast resin)	IP66/IP68	Function integrity	E30 to E90	Packing unit pce.	1	<div>Plastic partshalogen-free</div> <div>Metal parts: V2A/V4A</div> <div>Contact elements</div> <div>Copper alloy ceramic isolated</div>
LxWxH mm	180x110x90															
Test current	76															
Test voltage kV/Hz	4/50															
Rated voltage V/Hz	690/50															
Protection class (with cast resin)	IP66/IP68															
Function integrity	E30 to E90															
Packing unit pce.	1															
<div>Connecting box 5G16 RK/FK</div> <div>No. 49320</div> <div></div>	<div>Technical data</div> <table><tr><td>LxWxH mm</td><td>180x110x90</td></tr><tr><td>Test current</td><td>76</td></tr><tr><td>Test voltage kV/Hz</td><td>4/50</td></tr><tr><td>Rated voltage V/Hz</td><td>690/50</td></tr><tr><td>Protection class (with cast resin)</td><td>IP66/IP68</td></tr><tr><td>Function integrity</td><td>E30 to E90</td></tr><tr><td>Packing unit pce.</td><td>1</td></tr></table> <div>+counter nut included cable gland</div>	LxWxH mm	180x110x90	Test current	76	Test voltage kV/Hz	4/50	Rated voltage V/Hz	690/50	Protection class (with cast resin)	IP66/IP68	Function integrity	E30 to E90	Packing unit pce.	1	<div>Plastic partshalogen-free</div> <div>Metal parts: V2A/V4A</div> <div>Contact elements</div> <div>Copper alloy ceramic isolated</div>
LxWxH mm	180x110x90															
Test current	76															
Test voltage kV/Hz	4/50															
Rated voltage V/Hz	690/50															
Protection class (with cast resin)	IP66/IP68															
Function integrity	E30 to E90															
Packing unit pce.	1															

Basic standards and concepts

The requirements in terms of function integrity are very high. And standards and system concepts are extensive.

All Woertz halogen-free cables (FRLS/OH) are conforming to following standards:

Features of flat cable system	Standards
Halogen-free (OH), non-corrosive gas	IEC 60754-2 EN 50267
Self-extinguishing (FR)	IEC 60332-1 EN 60332-1
Low heat conductivity	IEC 60332-3 CAT.C EN 50266-2-4
Low smoke (LS)	IEC 61034 EN 50268
Structure of the cable, on basis of	DIN VDE 250-214 and DIN VDE 0281

The Woertz system is also conforming to following standards:

Features of flat cable system	Standards
Insulation integrity FE180	IEC 60331-11/-21 (180 minutes) EN 50266-2-4
Function integrity E90	DIN 4102 part 12

Fire and its effects are not modellable. 100% safety cannot be guaranteed - today no known material can withstand temperatures over 1000°C.

Normed tests only cover 95% of the cases which may occur and enable comparative values to be obtained in order to determine different levels of safety.

Insulation integrity FE

The basic test (according to IEC 60331) is designed to stress the insulation of a cable by submitting it to a flame temperature of at least 750°C (test length 50cm).

If the electrical current flows for the 180 experimental minutes, if no short-circuit occurs, the test turns out positive and the circuit integrity of the cable is classified as FE 180 (FE = effect of fire or flame).

Function integrity E

Testing the function integrity requires measuring the duration for which electrical current goes on feeding safety components such as emergency lighting and way guidance systems, smoke extraction systems or elevators specially meant for fire and rescue service.

The function integrity indicates the duration for which an installation should continue to function in case of fire. This applies to the whole installation, cables, boxes, cable ducts and fastening accessories.

Function integrity is designated by the letter E together with a figure. E 90 means that the installation should continue to function for 90 minutes. Further usual standards are E60 and E30. No short-circuit and no voltage failure should occur for the given durations.

General terms and conditions

1. Prices for Swiss market

Prices are understood as EXW in CHF excluding VAT (sales tax). The prices in effect at the date of receipt of order apply; surcharges taking account increases of costs of metals are reserved.

2. Packaging and delivery costs

All articles – depending on their weight and bulk – will be shipped by mail, parcel post, truck, airmail or ship, in each case under the liability of the recipient. Additional costs for express deliveries or unusual packaging are at the expense of the recipient. Pallets, boxes, containers, cable drums shall be invoiced at cost price. We will not take back special crates, disposable pallets and boxes. We will not replace breakages, damage and losses during transport free of charge. The transport company should be immediately notified of any damage.

3. Performance

Productions of special drawings, as well as changes to drawings that depart from the performance offered shall be invoiced according to time outlay incurred. This likewise applies for additional project planning effort. Additional work (such as adaptations, special parts, sections, cutouts, notches etc.) that is not detailed in the tender shall be invoiced separately, according to time outlay. The additional work incurred for retrospective individual orders or special versions or reworking shall be invoiced. The tools required for customized orders shall be invoiced according to previously stated prices. Such tools shall remain our property. If we are not awarded the order, we reserve the right to submit invoices for specially-manufactured patterns as well as our work in developing the project. We reserve the right to deviations due to raw materials and production within the permitted tolerances, and these do not place us under obligation to accept returned goods.

4. Invoicing and payment conditions for Swiss market

Orders with a value under CHF 50.00 shall be invoiced with a minimum charge of CHF 50.00 (excl. surcharges). Orders with a value under CHF 100.00 shall be invoiced net at list price. Invoices are payable within 10 days from the invoice data with 2% discount or within 30 days net. A processing fee will be levied in the event of arrears. Deliveries to recipients who are unknown to us and have previously not fulfilled their payment obligations shall be against cash on delivery or advance payment. We reserve the right to share our payment experiences with an information pool.

5. Execution of orders

The cancellation or suspension of orders by the ordering party requires our express agreement, and must occur within 7 days of notification. In particular with the delivery of custom-made articles we reserve an under- or over-delivery of up to 10%. If orders are cancelled any additional costs thereby incurred will be invoiced. Goods ordered on a standby basis must be accepted within the defined period.

6. Delivery date

The specified delivery dates shall be observed wherever possible. We are released from the obligation to respect the delivery date by: Operational disruptions, material deficiencies, official regulations, labour disputes, call up of reservists and other cases of force majeure. Claims due to late delivery will be rejected. The delivery period starts on the date on which we are in possession of all required technical, design and commercial specifications from the ordering party relating to design modifications etc.

7. Warranty

For material or design faults on the articles delivered, we extend a warranty such that we will replace products that we recognize as being faulty at no extra charge in the 12 months after the installation of the respective products, however no later than 18 months thereafter. These must be forwarded to us with an enclosed delivery note. This warranty shall lapse if improper work is carried out on the product. If circumstances do not allow the corrective work to be carried out at our workshops, the warranty is limited to the free of charge replacement of the device. We do not accept expenditure or time outlays that have been caused outside our company.

8. System guarantee

The Woertz guarantee only applies to original products finished in our workshops such as flat cables, boxes and round cables with connectors.

9. Liability

Any claims by the ordering party other than those expressly named in these conditions of delivery, regardless of the legal basis on which they are made, especially all claims for compensation for damages, abatement and cancellation of the contract or withdrawal from the contract, are excluded. We only accept liability in the context of mandatory statutory provisions.

10. Reservation of proprietary rights

All delivered goods remain our property until all demands in respect of these goods have been fulfilled. We reserve the right to enter the reservation of ownership in the official registers in accordance with respective national laws. The costs for such entries shall be borne by the purchaser.

11. Return deliveries

Each return delivery requires our previous agreement and should occur within 12 months after delivery. A delivery note shall be enclosed with the return delivery. In the case of returns of standard equipment that are not due to incorrect delivery on our part, there will only be a reimbursement if the value of goods exceeds CHF 100.00, and we shall charge at least 25% of the value of goods for our own outlays. Returns can only be accepted in the original packaging and with a delivery note. Return of custom-made products of any kind is excluded.

12. Claims

Claims regarding to the number of items, weight, faults, etc. can only be taken into account if they are made within 7 days of receipt of the goods.

13. Export

Prices are understood as EXW in CHF or in EUR excl. VAT (sales tax). This will be separately charged in accordance with the respectively applicable statutory rate. For exports, the minimum invoice value is EUR 300.00/CHF 500.- or USD 500.-. Deliveries are against advance payment or by mutual agreement. The export of products and parts thereof may be subject to export licensing requirements due to their nature or foreseen use.

14. Proprietary rights

Our goods are largely protected by patents in Switzerland and in other countries. Transgressions of these proprietary rights will be prosecuted.

15. Place of fulfilment and legal venue

The place of fulfilment is Muttens and the legal venue in all events is Arlesheim, Switzerland.

General points



COMPANY

Head office

Hofackerstrasse 47
P.O. Box 948
CH-4132 MuttENZ 1
Tel.: + 41 61 466 33 33
Fax: + 41 61 461 96 06

Subsidiary

Bärenmattenstrasse 3
CH-4434 Hölstein
Tel.: + 41 61 956 56 56
Fax: + 41 61 956 56 00

info@woertz.ch
www.woertz.ch

Branches

MBA - Mueller Building
Automation AG
Woertz Systemhaus
Am Goldberg 2
D - 99817 Eisenach
Tel. 49(0)3691/621360
Fax 49(0)3691/621361
www.mba-ag.com
info@woertzonline.de
www.woertzonline.de

Woertz Carolina Inc.
2325 Prosperity Way,
Suite 4
Florence, SC 29501

phone 843-407-1265
fax 843-407-1389
cell 843-536-6428
info@woertz-carolina.com
www.woertz-carolina.com



SALES

Business hours

Monday-Friday
07:00–12:00
13:15–17:15
(except for public holidays)
Tel.: +41 61 466 33 44
Fax: +41 61 461 37 53

Collections:

07:00–16:00
You can collect any pre-ordered products at the customer counter one hour later.



OUR STRENGTHS

Technical advice appropriate to the application.

High availability of standard products.

Custom designs for special applications.

Fast, flexible, and professional.

Woertz:

More than 80 years' experience in the field of electrical installation technology.



SYSTEM GUARANTEE

The Woertz system guarantee applies exclusively to original Woertz products and Woertz system solutions, that is, Woertz® contact boxes, Woertz® flat cables, or other products that have been checked and approved by Woertz for these contacts.

