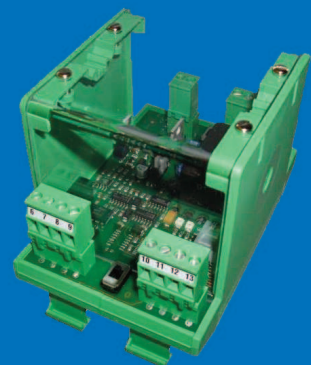




Decentralized Energy Saver Controller for Power & Free Conveyor Systems



About us

MSF-Vathauer Antriebstechnik GmbH & Co KG produces since 1978 mechanical, electrical and electronical drive technology in Detmold (Headquarters) and Oborniki (Poland), In this time MSF-Vathauer developed itselfes to the technology leader for decentralized drives.

MSF-Vathauer provides not only mechanical drives technology to its customers. The focus is upon the development, manufacturing and sales of electronical drives.

Further provides MSF innovative solutions for saving energy resources like heat due to heat recovery with rotary heat exchanger and intelligent drives for conveying systems.

We are able to provide our customers a fast, flexible and suitable technical solution due to our high in-house production depth.

On approximately 6000 m² MSF-Vathauer research, develop and produce devices for the measurement and test engineering, for the control technique and for the drive technology.

Highly trained and motivated teams in our research and development department and at our production lines as soon as many years experience with the development and customising of drive technology guarantee your success.
We are train our employees, representatives and customers within own training facilities continuously.

Our own EMC-Laboratory guarantees a high EMC safety standard for all customised and standard devices.

We are looking forward to close and successful cooperation.

MSF-Vathauer Antriebstechnik GmbH & Co KG

Product Philosophy

Power and data are stored in a standard wire distributed throughout the Energy-Saver- Controller for Power & Free conveyor systems

Application from A to Z

Power & Free conveyors are robust and reliable material handling systems with a high degree of flexibility for the user. The given flexibility is already achieved with the decentralized 'Power & Free Energy-Saver-Control' in the planning and automation phase. The P & F Energy-Saver-Controller is installed in machinery field aktornah anywhere. Through a special P & F Systembusinterface the standard CANopen signals are transformed to a Power & Free-System-CANopen signal. Here, the standard CANopen signals from the controller are used. Furthermore, the control signals of the CANopen-Bus and the input voltage are applied to a standard cable and in this, the resulting power and data bus in the machine field is distributed to the respective Power & Free Energy-Saver-Controller.

The high protection class IP65 Power & Free Energy-Saver-Controller provides a wide range of applications.

Energy saving with maximum performance: After the actuator (solenoid, etc.) has been switched, the current of the magnetic coil is limited to the holding current, so that only a fraction of the energy is required to hold the solenoid in place. The corresponding holding current can be set via the Power & Free system CANopen-Bus in the decentralized controller in the existing Power & Free Holding current management. Energy savings of 30% are generated in the system.

Installation: The Power & Free-Energy-Saver-Controller are installed in difference from the conventional control, decentralized along the rail close to the actuator.

Signalbus CANopen: Via a power and data bus, which is led in a single standard cable (not a hybrid cable), each P & F Controller is controlled according to the conveying process. Multiple Inputs for initiators, RS 485 interface (eg for RFID antenna) and a manual control unit guarantee a flexible use and easy installation. Signal bus CANopen: The traditional standard CANopen signals from a control system are passed directly through the Systembusinterface in the machinery field. Through the Systembusinterface all required signals in the standard cable to the P & F Energy-Saver-Controllers are given, so that allows the resulting Power & Free system CANopen-Bus to implement cable lengths of 300m and more. Also spur cables in the form of linear and tree structures can be laid. The thus generated Power & Free system related CANopen-Bus run is very robust and trouble-free

Savings and benefits: The power supply and the data signals of the CANopen are routed together in a standard cable using the Field Power Box to any energy saver controller and thus be tapped at any position.

This system provides you and your customers with the following benefits

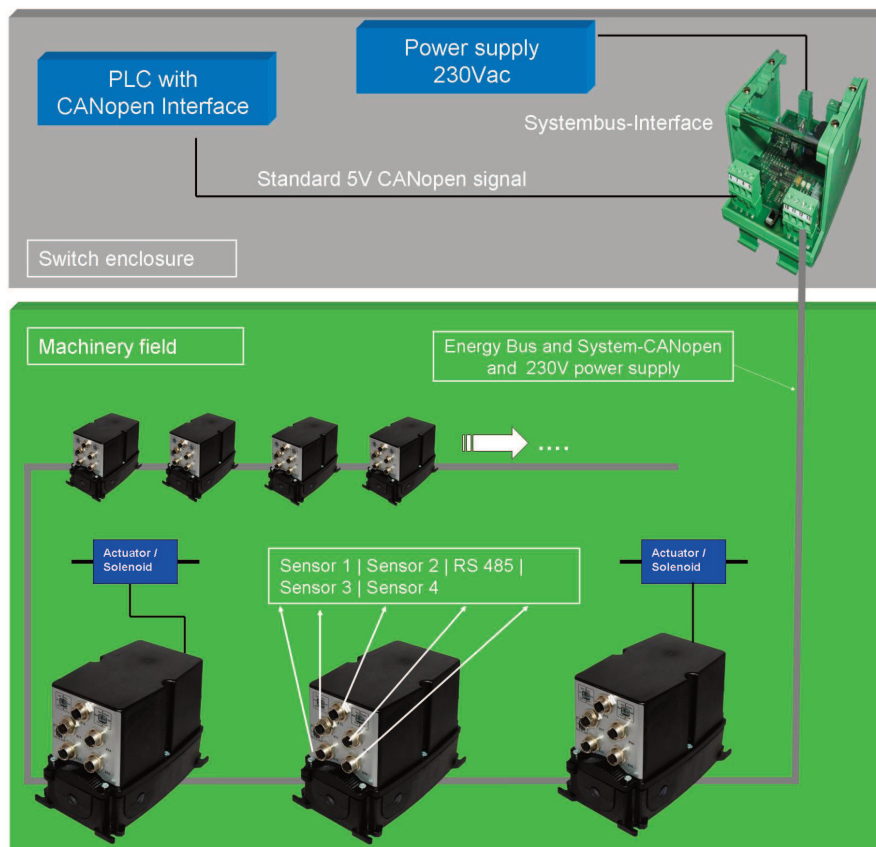
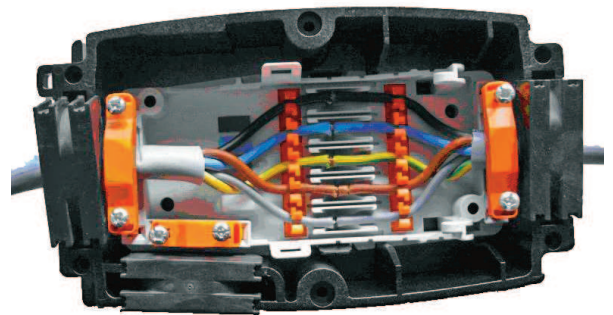
- High system availability
- Quick installation of the new systems
- Retrofit of existing installations
- Flexible expansion of new and existing installations
- Reduction of installation costs
- Reduction of installation material
- Reduction of cables
- Connection of several sensors in the machine field
- RS 485 interface
- Connection of a manual operating unit

Installation topology

Installation topology and control technology

Through the uncut round cable the power lines and the Data lines in the Power Box are connected by the IDC terminal adapter so that both the power supply as well as the CANopen data on the power box of the attachable Energy-Saver-Controller can be tapped.

For the power and data cable a standard cable (eg Ölflex Classic 100 5x2, 5mm²) is used. Cable lengths of 300m and more (depending on the data transfer rate) can thus be realized



On the control panel or the system level the controller communicates with a standard CANopen system with the Systembusinterface.

Furthermore, the 230Vac power supply for the Energy-Saver-Controller, the actuators and the power supply for the Systembusinterface is also applied. Via a standard cable (eg Ölflex Classic 100 5x2,5mm²) power and data from the Systembusinterface are lead into the machinery field. Cable lengths of 300m and more can thus be achieved. Via the Power Box, the power and data cable (no hybrid cable) are contacted using an IDC connection technology in the machinery field .

Thus, on each in the machinery field built in Power Box an Energy-Saver-Controller can be plugged and tightened with six stainless steel screws.

Each Energy-Saver-Controller provides four sensor inputs, an RS 485 interface and an input for a manual control unit, so that the required sensors are connected directly to the Energy-Saver-Controller. All signals of the sensors (including the signals via the RS 485 interface) are forwarded via the Power & Free-System CANopen-Bus to the plant control.

Installation power- and data-cable on the Energy-Saver-Controller

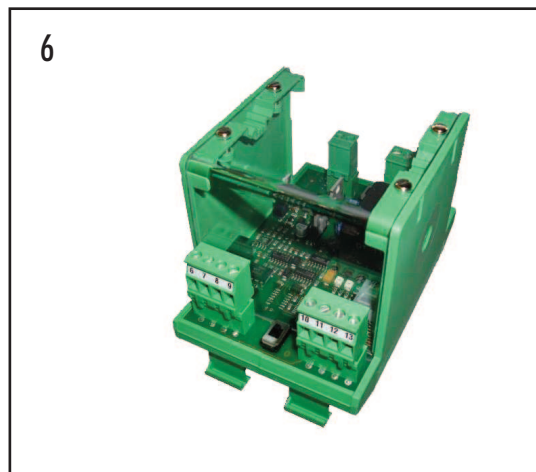
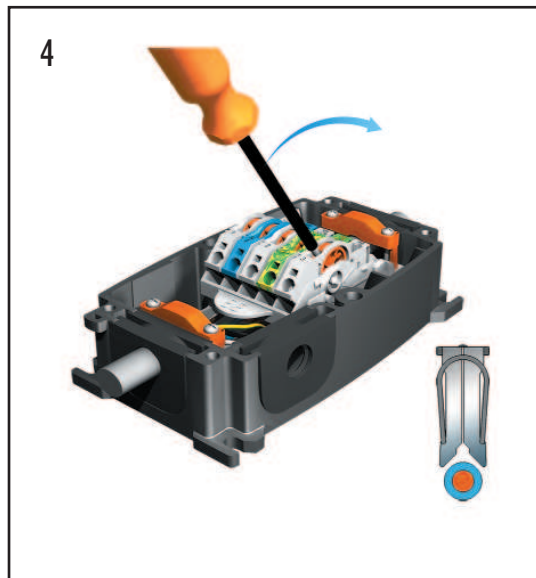
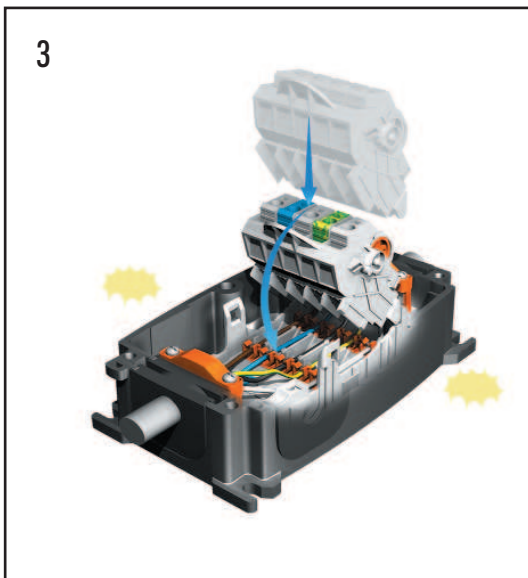
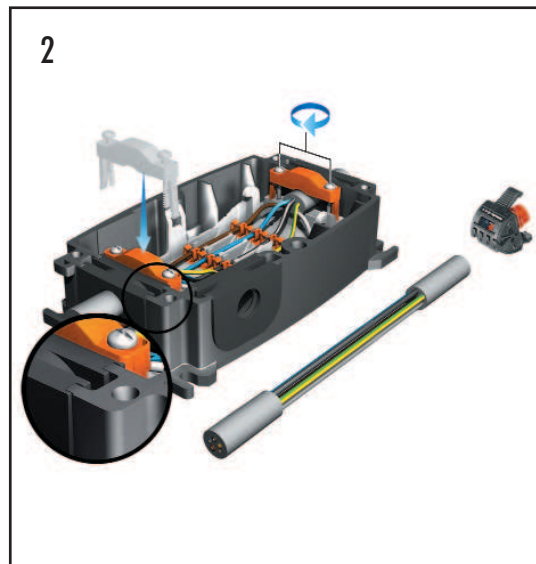
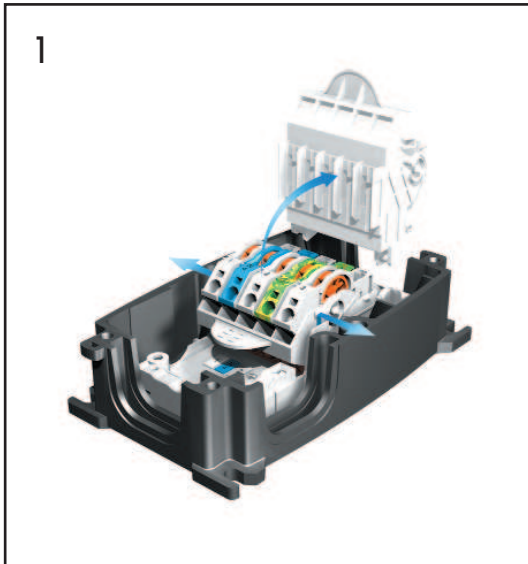
The installation technique

With the flexible installation technology MSF-Vathauer Antriebstechnik sets new standards for distributed automation leading to a significant cost reduction and cost efficiency.

Easy to install

1. Unfolding the IDC terminal adapter
2. Strip the power and data cable. Here, the power cable is not cut, but only stripped. The individual wires are uncut inserted into the corresponding marked points and fixed simultaneously
3. Insert and fix the IDC terminal block
4. Contacting the loaded cable wires through the IDC terminal block. Here, the power cable is already contacted without special tools
5. Plugging the Energy-Saver-Controller to the Power Box
6. Installation and connection of the Systembusinterface in the cabinet

Installation power- and data cable on the Energy-Saver-Controller



Connection - and structure forms in a Power & Free conveyor system



The Energy-Saver-Controller for Power & Free floor- or ceiling conveyors is installed close to the actuator (eg solenoid). The actuators are connected via an appropriate cable to the Energy-Saver-Controller.

Via the Systembusinterface the standard CANopen signals are distributed robust and reliably using the power box in the machine field over a distance of 300m to each Energy-Saver-Controller.

Saving energy at maximum performance: After the actuator (solenoid, etc.) has been switched, the current of the magnetic coil is limited to the holding current, so that only a fraction of the energy is required to hold the solenoid in place. The corresponding holding current can be set via the Power & Free system CANopen-Bus in the decentralized controller in the existing Power & Free Holding current management. Energy savings of 30% are generated in the system.

The Systembusinterface is joined in the cabinet with a standard CANopen-Bus controller. The internal technology of the Systembusinterface processes the CANopen-Bus signals to the required interference immunity, so that they are distributed in the machine field over a distance of 300m

Connection - and structure forms in a Power & Free conveyor system

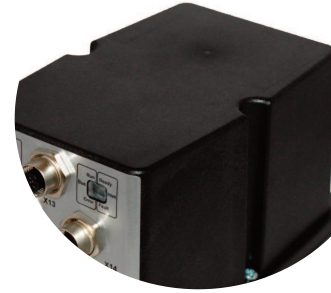


The Power & Free Energy-Saver-Controller is decentralized distributed, located in the machinery field. The Systembusinterface is in the cabinet connected to a control unit with a standard CANopen-Bus. The resulting System-CANopen-Bus is then moved along the Power & Free rail and with only one cable, both the energy as well as data for the Power & Free-Energy-Saver-Controller. Furthermore, at no additional costs, sensors and a manual operation unit can be connected. An RS 485 interface is also available at no extra cost.

With the Power & Free Energy-Saver-Controller, all Power & Free conveyor systems are automated decentralized. The applications can be found again in almost all areas of production.

Product Features Energy-Saver-Controller

Closed housing for high protection



Externally visible status LEDs
M12 plug connectors for
RS 485 interface and sensors



Glass reinforced housing.
Halogen free. Protection degree IP 65



Plug-in connection for the power supply
and data distribution



Easy and quick contact of
Power and data cable by IDC insulation displacement technology

M12 plug connector for an external manual control unit
Connection of the actuator via a metric cable gland



Product Features Energy-Saver-Controller

The system is characterized by a compact design and its numerous inputs. The Energy-Saver-controller has four inputs for connecting the necessary sensors (photoelectric or proximity), and an input on the rear panel for connecting a manual control control unit.

RS 485-Interface: Further provided is an RS485 interface. The signals, which are managed by this interface, are routed one-to-one via the system to the CANopen control system. Herewith a standard RS-485 interface in the machine field is available that can be used via the Power & Free system CANopen-Bus (System Controller or CANopen).

Energy saving in the machine field: Once the actuator has been (solenoid, etc.) switched, then the current of the magnetic coil is limited to the holding current. Only a fraction of the energy is required to maintain the solenoid in place. The corresponding holding current can be set via the Power & Free system CANopen-Bus in the decentralized Power & Free controller using the existing retaining current management. Energy savings of 30% are generated in the system.

Terminator: It is also possible, by means of a slide switch in the Energy-Saver-Controllers, to activate a terminating resistor for the CANopen-Bus at end devices.



Control inputs

The externally visible LEDs provide a quick overview of the device status.

Here are displayed:

- Actuator circuit
- Status manual control unit
- Power & Free-System CANopen-Bus Run
- Power & Free-System CANopen-Bus fault
- Status sensors

Through the integrated M12 plug connectors the sensors can be quickly and easily connected on the Energy-Saver-Controller

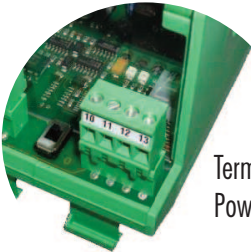
- 4 x sensor
- 1 x RS 485 interface
- 1 x manual control unit



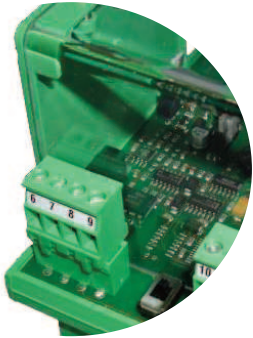
Power output

The actuator is connected by a cable to the Energy-Saver-Controller

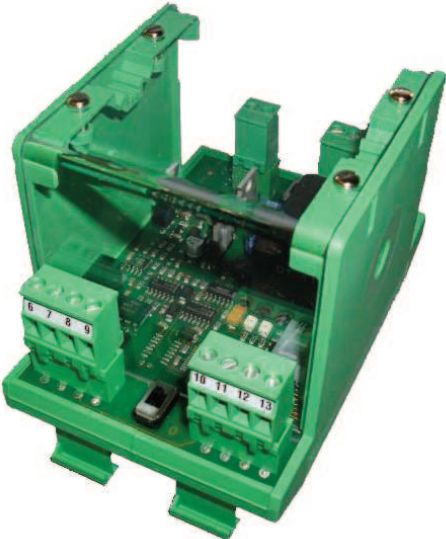
Product Features Systembusinterface



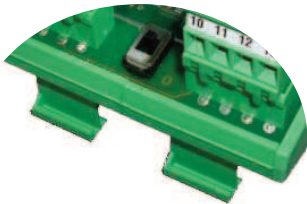
Terminals for Power & Free system CANopen-Bus



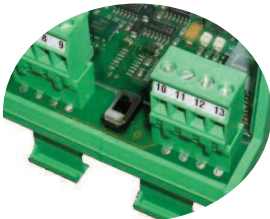
Terminals for diagnostic tool



Housing with back of hand protection
Protection degree IP20



Panel Mount for 35mm rail

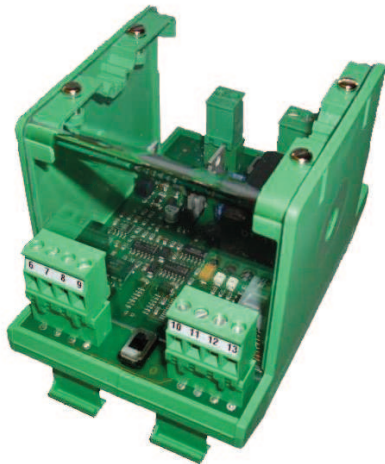


Activation of the terminator

Product Features Systembusinterface

The Systembusinterface is built in the cabinet on a 35mm DIN rail. Screw terminals ensure a secure connection of all cables. At the Systembusinterface both the required power supply, as well as the standard CANopen of the system controller, are connected. At the Power & Free-System-CANopen-Bus sockets are accessible from the outside for diagnostics tests.

Furthermore, status messages are displayed by internal LED's. A 7-segment display indicates any faults in the Power & Free-System-CANopen-Bus.



Connections and control inputs

- Connection standard CANopen of the system control
- Connection point diagnostic
- Power supply connection slide switches

Switch

- Connection and disconnection of the termination resistor

Output Terminals

- Connection for Power & Free-System CANopen-Bus

Technical Data & Specifications

Typ	Power & Free Energy Saver Controller	Systembusinterface
Installation	Power- and Databus: Insulation displacement technology in the machinery field	Cabinet installation
Power Supply	230V 1-phase	230V 1-phase
Power input	60 Watt	N.A.
Output	230Vac 0,255A	N.A.
Cooling	None	None
Inputs / Outputs	4 x digital sensor inputs 1 x RS-485 input 1 x manual control input 1 x actuator output	1 x CANopen input 1 x CANopen output 1 x System bus 1 x Systembusinterface (diagnostic center)
Protection degree	IP 65	IP 20
Dimensions (HxWxD)	157 x 135 x 105 mm	N.A.
On termination	On the device	On the device
Addressing	On the device	N.A.
Error indication	On the device via LEDs and System-CANopen	7-segment display

Accessories for the Field Power® System



Field Power Box - Energy Distribution Box

The Energy Distribution Box is the modular base for decentralised automation.

The Field Power® product family is a unique solution system of your varied uses and create stands in the factory and building automation.

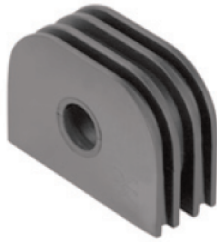
Cable cross-section	6 mm ²
Rated voltage / Rated current	800 V/41 A
Rated voltage / Rated current	8 kV
Insulation material / Material colour	Polycarbonate / black
Flammability class by UL 94	5VA
Halogen free / Silicone free	Yes / Yes
Protection class	IP 65
Temperature mounting, min.-max.	10 °C ... 40 °C
Working temperature, min.-max	-40 °C ... 55 °C
Single-wire, min.-max	2,5 mm ² ... 6 mm ²
Multi-wired, in.-max.	2,5 mm ² ... 6 mm ²
Fine-wired, min.-max.	2,5 mm ² ... 6 mm ²
Extra fine-wired, min.-max.	2,5 mm ² ... 6 mm ²
Blade size	0,6 x 3,5 mm



Field Power Box - Plug

Cable cross-section	4 mm ²
Rated voltage / Rated current	90 V/32 A
Surge voltage	kV
Mounting	stuck
Insulation material / Material colour	PA GF/black
Flammability class by UL 94	V0
Working temperature, min.-max	-50 °C ... 120 °C
Cable outflow direction	90°
Inspection tapping	2 mm
Code able	Yes
Connection technique	Push In
Poles	5
Number of connections/Poles	1

Accessories for the Field Power® System



Field Power Box - Dichtungen

The gaskets are pocketed without tools in the intended openings of the cases IP65. This allows the assembly of the energy management quick and easy. The gaskets are to be chosen to the used cable diameter. For the FieldPower® Box are three gaskets are required.

Material	EPDM
Flammability class by UL 94	HB
Colour	black
Thickness	1.8 mm
Type of cable	round / ribbon
Halogen free	yes
Silicone free	yes
Tightness	IP 65
Diameter Ø	
7.5 - 9 mm	RKDG D9 PT6
9 - 11 mm	RKDG D11 PT6
11 - 13 mm	RKDG D13 PT6
13 - 15 mm	RKDG D15 PT6
15 - 17 mm	RKDG D17 PT6

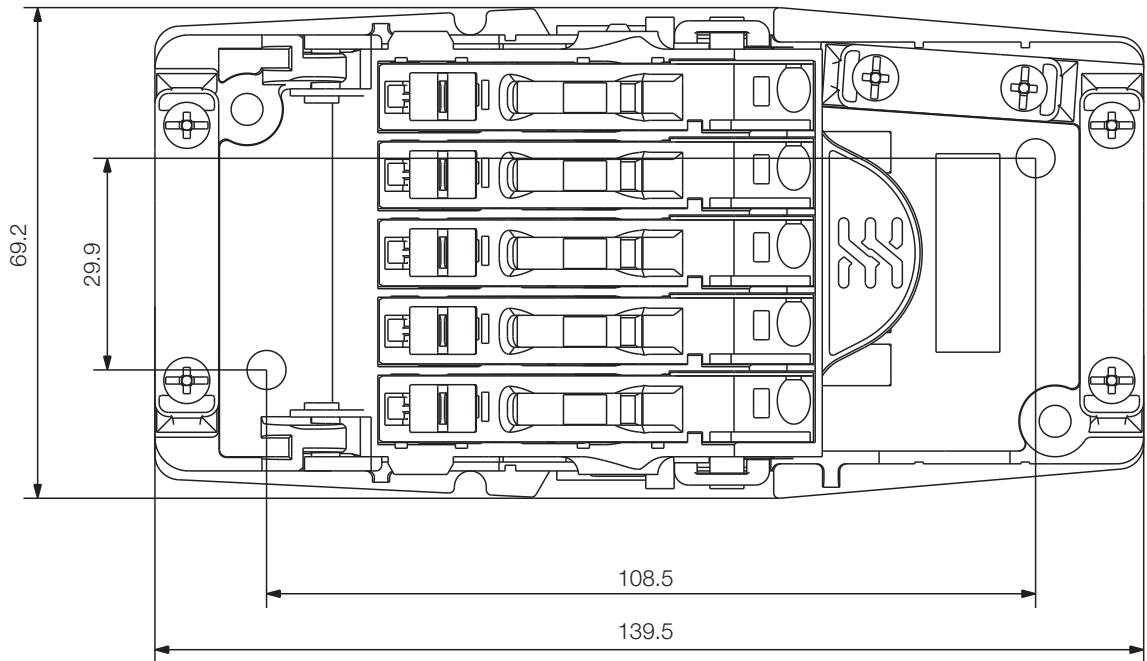


Sheathing strippers for PVC-insulated round cable - Type AM 16

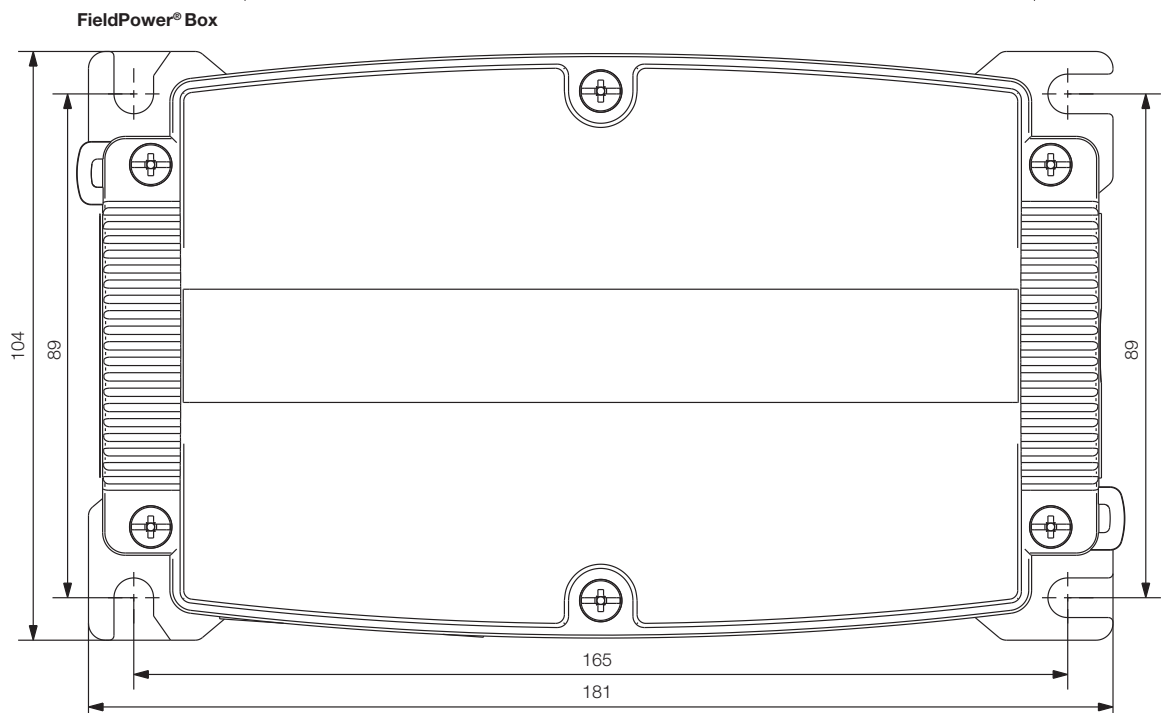
- Stripping of the insulation possible at any point of the cable
- Very well suited for stripping of cables in the cable channel
- Pivoting blade for circular- and longitudinal section
- Handle tips with integrated cutter for breaking cut insulation
- Pivoting blade for circular, longitudinal and spiral cuts
- Bracket with integrated cutter for breaking cut insulation
- Spare blade integrated
- Cable type: PVC round cable
- Cable diameter: 6 - 17.3 mm
- Adjustable cutting depth: 0.8 - 2.5 mm
- Length: 53mm
- Weight: 60g

Drilling Template

PT6



FieldPower® Box



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