



2018/2019

Access to energy and fraud-preventing

Solutions to simplify and secure
electrical distribution

Catalogue
Energy controlling

MICHAUD
Export 



**The French Group Michaud,
has been designing, qualifying, producing
and selling electrical equipment and
connection systems for over 60 years.**

250
staff members



7



establishments
Europe,
North Africa,
Asia

Certified since



8 to 10%
of turnover
invested in R&D

1

Accredited
Test Laboratory



3
Engineering departments

* Accreditation n° 1-0579 available on www.cofrac.fr

From R&D
to after-sales service,
Michaud Export,
as a Michaud
subsidiary, has full
mastery
of its value chain,
ensuring high-level
quality and service
worldwide.



MIRELEC

Mirelec is a Michaud brand,
dedicated to low voltage electrical
distribution equipment.

The brand offers **European
quality** products and solutions
at a **price matching emerging
markets expectations.**



According to the international standards, **Michaud Export**
designs and develops energy distribution solutions. The product
range is focused on two fields of expertise:

- **Low Voltage Network:** to connect and protect the
overhead and underground electrical lines ;

- **Energy Controlling:** to
manage and offer easy
access to electricity.



Michaud Export
in a few words:

Reliability
Support
Adaptability
Quality
Innovation
Expertise
Reactivity
Experience
LISTENING



**Creator of
innovative
solutions**

As a **technical expert in low-voltage networks**,
Michaud focuses R&D on innovative solutions.

Thanks to an **engineering Department dedicated
to international business**, Michaud Export provides
support to Power Utilities in their grid expansion
projects.

From protection to connections, many **innovative
solutions** are already used in major Power Utilities
around the world.



**Partner for
access to
energy**

One-quarter of the world's population does not
have access to energy, being a factor for economic
development.

In this environment, Michaud Export offers a true
support approach to evaluate the situation and to
propose optimal electrification systems.

In order to meet the challenges of sustainable
development, Michaud Export offers a complete
products range dedicated to **Energy Controlling**
in rural and suburban environments, enabling
everyone to have access to electricity.





Management

Distribution

Protection

Existing installation

New installation

Management

Distribution

Protection

Existing installation

New installation

Summary

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Fraud preventing

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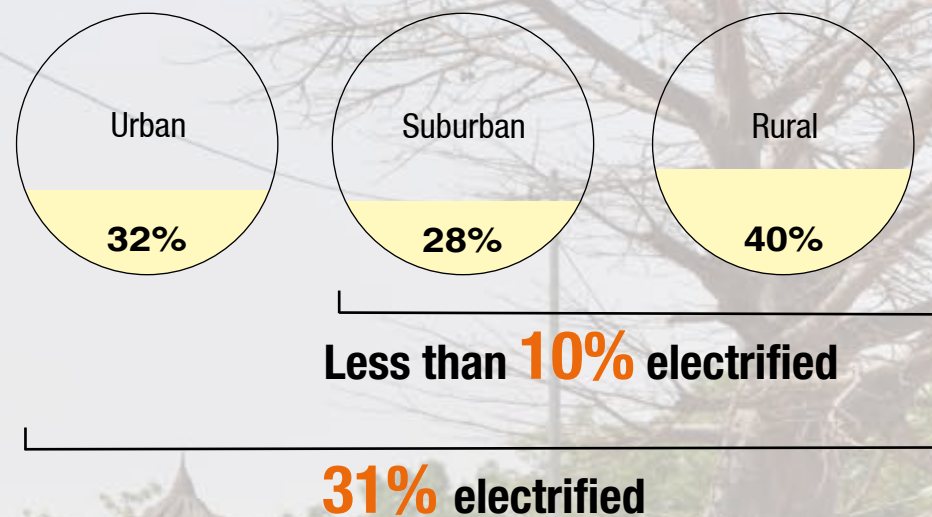
Rural electrification

The access to electricity is increasingly important in developing countries' energy strategies. It allows to achieve the Millennium Development Goals (MDGs).

Rural electrification is a major issue for many regions in the world. For these ones, the electricity remains a rare, expensive and poor-quality resource. It brings some important disparities, more often in the same area.

Example of the Sub-Saharan Africa

Population distribution and access to energy:



Building an **economical and viable operating model** remains a challenge in areas where the density of population and consumptions are low.

The increase of **rural electrification projects** does not reach to counterbalance the African demographic growth.

Access to energy solution

Michaud Export offers a range of products suitable for the **specific context** of the rural electrification, from network protection to energy consumption management.

An adapted dimensioning of electrical equipment and an invoicing way appropriate to the consumer enable long lasting savings as well as a **decrease in management and operation costs**.

Fraud preventing solution

On electrical networks, non-technical losses are the major explanation of power companies' deficits. It is essential to fight against electrical equipment theft to ensure the **viability and the electrical networks sustainability of national power companies**.

Facing this issue, Michaud Export developed fraud preventing solutions based on theft-proof and tamper-proof equipment.

With its solutions, Michaud Export participates to a reliable, economical and sustainable electrification model.

Michaud Export's challenges

Costs optimization



Adaptation to local context



Systems sustainability





Access to energy

Access to energy

Management

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Access to energy

Management

In Kenya, 85% of household customers account for 25% of energy sales. In these conditions, an economical and autonomous management system can improve profitability and encourage access to energy.

The **energy flat fee** invoicing simplifies customers management by lowering operating and maintenance costs.

For Income Generating Activities (IGAs), a solution with simplified metering enables to reduce purchase costs for the operator.



Distribution

Optimising cable cross-sections for actual consumption is an effective way to lower the costs of a project.

With a 2x6mm² cable cross-section, 30A intensity and a reach of 40m, voltage drop is below 2%.

The 2x6mm² cable and corresponding accessories ensure implementation savings up to 30% for the operator.



Protection

In a context where maintenance costs are very high on electrical networks, materials protection is one of the main way to guarantee the equipment **sustainability**.

The network head-end is a key point of a LV infrastructure. Michaud Export proposes an economical alternative technology using fuses. Their high breaking capacity guarantees the installation security.

In addition, electrical networks must be protected with earth systems for people and goods safety.



Simplified management of the consumption



Issues



In developing countries and more particularly in Sub-Saharan Africa the electrical network according to its infrastructure usually only reaches 20% of localities. This deficiency does not enable an **economic and social development** of those territories.



Knowing about this context and being focused into electricity distribution toward the end customer, Michaud Export designed **innovative solutions to optimize connection and business management**.



Operating and selling difficulties of the electrical service in rural areas, sometimes isolated, have been integrated into a global thinking. That is why Michaud Export's innovations take into account **every components of the connection, from cable to customer interface**, through **solutions for consumption management**.

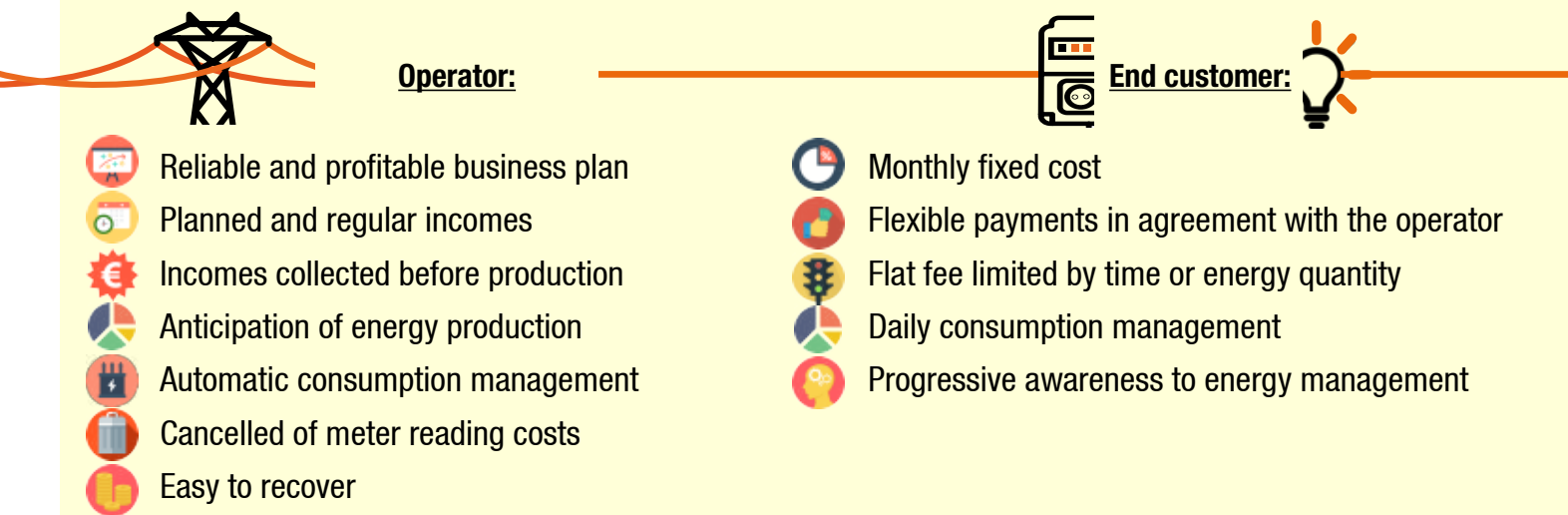
Benefits

- + Support for economic development
- + Minimize implementation, maintenance operating costs
- + Simplify customers' management



Flat fee invoicing

How does the flat fee invoicing system work ?



How does the payment operate ?

In the rural electrification context, end customer's payment management is one of the major difficulties. The flat fee system brings some **flexibility to the operator** by offering various possibilities for payments. According to the economic and social environment of connected villages, customers can pay:

- through **mobile banking solutions**
- through **money transfer solutions**
- with **fiduciary money**

Depending on the end customers number, payments can be settled using a classic IT spreadsheet, easy to manage.

An adapted solution to rural electrification projects

With the **energy manager**, Michaud Export designed a solution which answers to this invoicing system. The energy manager can be set up according to the end customer contract and so frame the consumption.

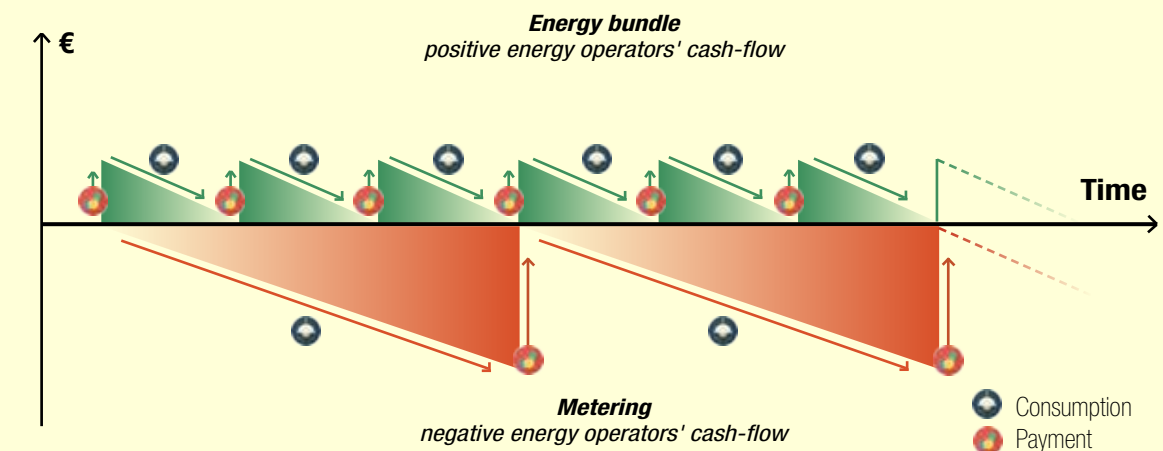
The flat fee invoicing system remains the most suitable way for tiny consumptions.



Flat fee system: worthy advantages

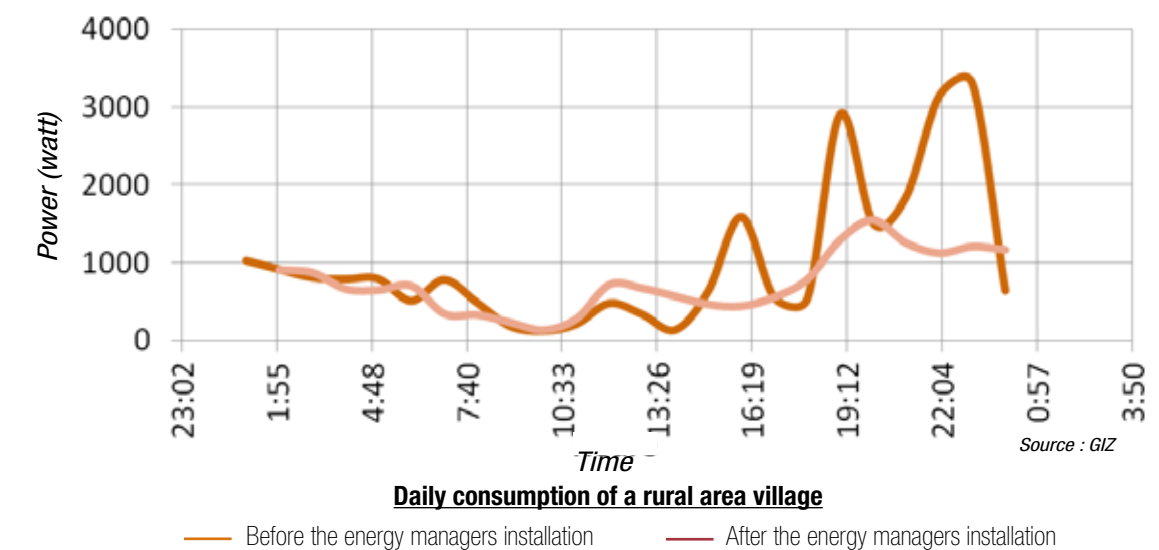
- + Cash flows optimised
- + Limited recovery faults
- + Easy going investments and financing

The flat fee invoicing system allows the operator to collect incomes **before** engendering production costs.



Financial advantage: better cash flows management

Structural advantage: energy production anticipated



Thanks to an electricity consumption ceiling, the flat fee system enables to know the end customers' maximum consumption. The operator **anticipates production needs** avoiding network failures and demand peaks.

The flat fee invoicing system tends to standardize inhabitants consumptions. It is a **didactic system**, perfectly suitable for end customers electrified for the first time.

Energy manager



K497
cabinet version



K498
module version

MICHAUD

Application

The energy manager is provided with an electronic regulator, controlling power and managing energy automatically without user/operator intervention. It is perfectly suitable for flat fee energy invoicing. It replaces the meter and cancels the requirement of consumption reading. The cabinet can be installed outside thanks to the UV resistant IP34 property. It is designed for a single phase connection.

Description

The energy manager is programmable according to the criterias chosen by the operator :

MANAGEMENT MODE



Time

Allocated time quantity is adjustable down to the last hour.



Energy



Allocated energy quantity is adjustable down to the last watt.

SETTINGS



The energy manager setting can be performed on site.

Power

Maximum instant power allowed (1500W.)

Transfer

Possibility to transfer the remaining time or energy quantity to the next period (1 period maximum).

Observation period

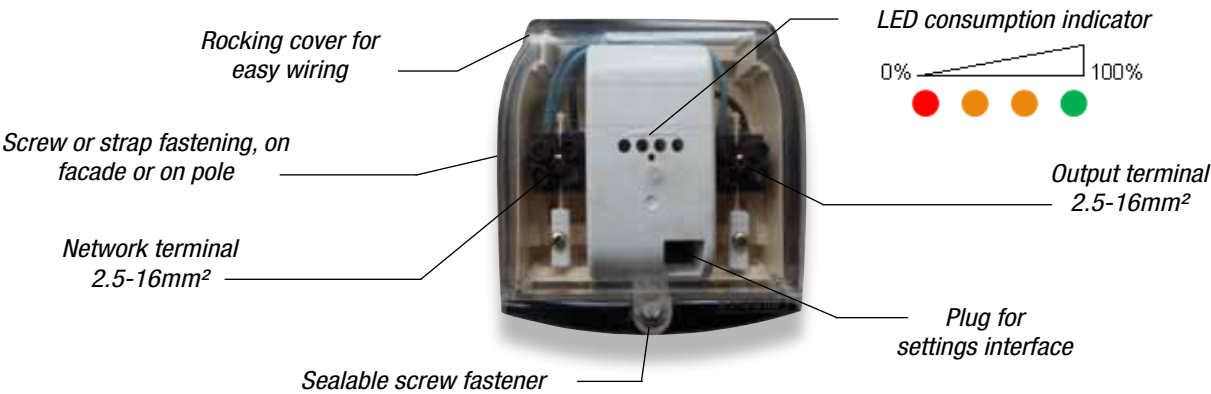
Period while allocated time or energy quantity is defined. This gives a daily or weekly control of the used energy (1 day to 1 week).

Shut down time after overage

Time during which energy is shutting down due to a power overage (up to 3600 seconds).

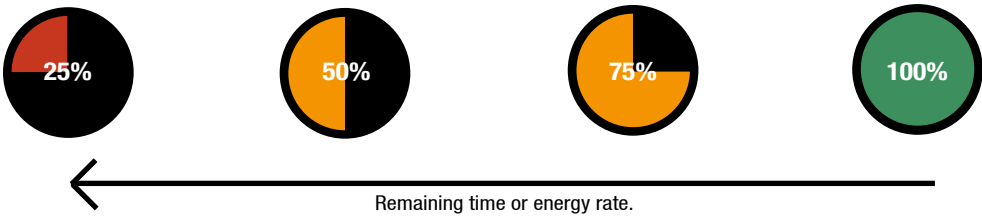
Accepted overage time

Time during which the maximum authorized instant power can be overcome (up to 60 seconds).



The energy manager is provided with 4 LED allowing to see the consumption progress through:

- an intuitive tracking method of colors
- the blinking LED speed



The settings can be modified according to flat fee contract set up by the operator, following households evolution.

Code	Designation	Weight (kg)	Sales unit
K497	PROGRAMMABLE ENERGY MANAGER CABINET 20 - 1 500W	0.360	1
K498	PROGRAMMABLE ENERGY MANAGER MODULE 20 - 1 500W	0.150	1

To fit the environment, the module can be set in different holders, as the modular interface below. **Please enquire.**

SEE SHEET
Modular cabinets: make up your own solution



Energy manager accessories

Configuration

PC kit

The kit comprises an USB key containing the configuration software and an USB cable to connect energy manager to PC.

It is the best solution for the operator to set the energy manager at the office before the installation. Moreover, it allows to program the different flat fees levels offered by the operators.



K499

Application

The energy manager configuration is performed through a software available on PC or tablet.
The last ten settings are kept in memory for a better suscriber follow up.

MICHAUD



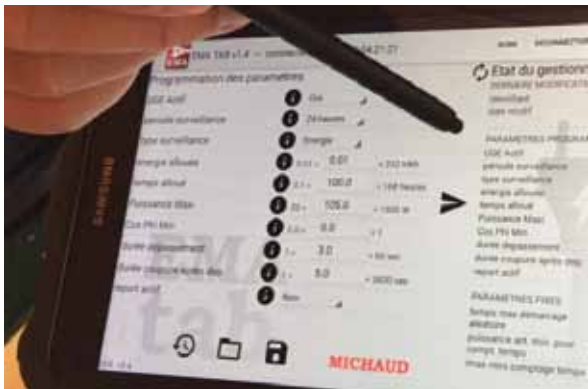
Tablet kit

The tablet kit includes a safe bluetooth system (dongle) and a digital tablet.

It allows an easy access to the energy manager on site.



K488



Option :

The EM (K487) bluetooth extension is available.
Please enquire.



Code	Designation	Weight (kg)	Sales unit
K499	PC ENERGY MANAGER KIT	0.710	1
K488	PROGRAMMABLE ENERGY MANAGER BLUETOOTH DONGLE + TABLET	1.150	1

The connectors allow a safe phase and neutral connection thanks to a cutout function, protecting in this way the energy manager.

Connection

Application

To afford the connection of a single customer as part of a new installation, the energy manager can be associated to connectors.

Description

	Fuse IPC (K224)	IPC (K232)
Function	It is designed to offer safe phase connection and protect both of the electrical installation and the energy manager against electrical faults.	It is designed to offer a watertight and safe connection of the neutral conductor.
Technical specifications	<ul style="list-style-type: none">- Cable sections: 16-95 / 6-16mm².- Insulation piercing technology.- Simultaneous tightening.- Potential free shear head screw.- Very good resistance to harsh weather (humidity, heat...).- IP2x during implementation- IP33 after installation.- Integrated and sealable cutout.- Fuse: size 10.3x38mm gG.	<ul style="list-style-type: none">- Cable sections: 16-95 / 2.5-35mm².- Insulation piercing technology.- Simultaneous tightening.- Potential free shear head screw.- Very good resistance to harsh weather (humidity, heat...).

Code	Designation	Weight (kg)	Sales unit
K224	FUSE CONNECTOR PIERCING 95/16	0.130	10
K232	CONNECTOR CBS / CT 95	0.130	30

For the fuses, please enquire.



Load limiter



Cabinet version



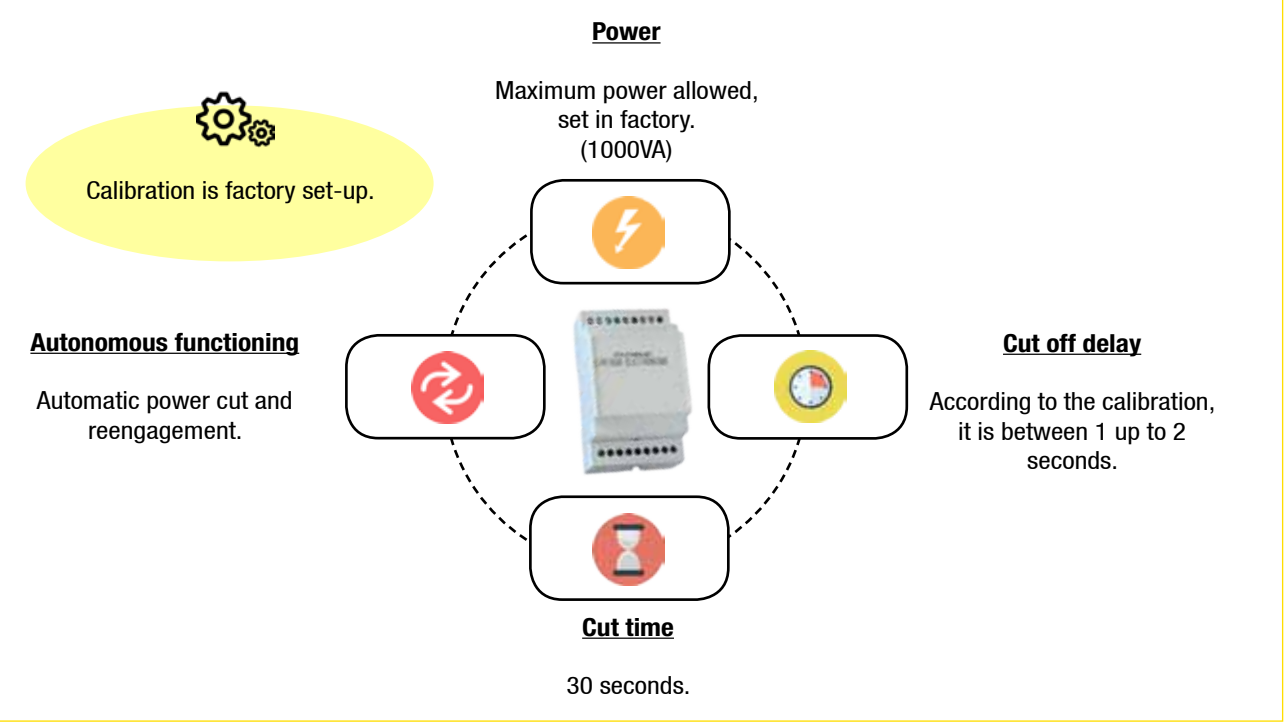
Module version

MICHAUD

Application

The load limiter is provided with an electronic regulator which controls intensity and manages power automatically without user/operator intervention. It is perfectly suitable for flat fee invoicing. It replaces the meter and cancels the requirement of consumption reading. The cabinet can be installed at the top of the pole or on the outside facade with the help of screws and strap. The cabinet resists to UV and to water or insect penetration (IP34D). Its cover closing can be sealed providing an excellent fraud protection. This cabinet limiter can receive a single phase connection with 2.5-16mm² cable sections.

Description



Code	Designation	Weight (kg)	Sales unit
K480	ELECTRONIC LIMITER CABINET 25-75	0.380	1
K481	ELECTRONIC LIMITER CABINET 75-250	0.380	1
K482	ELECTRONIC LIMITER CABINET 250-1000	0.380	1

Integrated version into modular interface



Module Load limiter

MICHAUD

Application

The load limiter module can be placed into an interface. It comprises a cutout and a differential circuit-breaker to ensure goods and people protection. It is equipped with an input through a cable gland for power supply and 2 outputs :
- an electrical outlet for simple access to energy
- a second output through a cable gland and a insulating screw joint for home wiring. The whole is pre wired and is suitable for a single-phase connection. Ideally, it can be installed inside the home or in an outdoor shelter.

Description

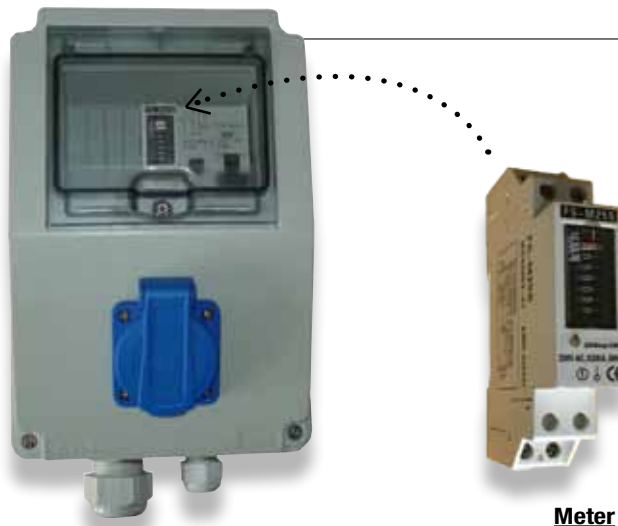
- Envelope:**
- Synthetic materials.
 - Dimensions (LxWxD): 220(260)x150x120mm.
 - Mounted / connected: cutout 10.3x38 (hidden) / differential circuit-breaker / modular electronic load limiter / earthing terminal block / power socket and black domino terminal.
 - Cable gland at the bottom used to route power cables (2x6-16mm² - diameter 13 up to 18mm).
 - Movable window on the front side making the access to modular devices easier.
 - First outlet with power socket having closed protection cover IP54
 - Second outlet with cable gland allowing leading-out cable (2x2.5mm² - diameter 5 up to 10mm).
 - IP43 device with conductors.
 - Fitted with precuts at the bottom enabling the fixing of the envelope with screws, on every kind of material.
 - Anti-fraud: sealing possibility preventing access to the live areas.
- Cutout:**
- Disconnection: Phase and Neutral.
 - Equipped with a fuse 16A gG 10.3x38mm.
 - Hidden cutout, inaccessible from the user.
- Differential circuit-breaker:**
- Nominal current: 5A.
 - Nominal voltage application: 230V / 240V, 50Hz.
 - Breaking capacity: I_{cn} = 3kA.
 - Differential sensitivity: I_Δ = 300mA.
 - Breaking curve: type C.
 - Differential breaking: instantaneously.
- Power socket:**
- Bipolar plug + earthing (type NF C 61-314).
 - Female type.
- Option :**
- As an alternative to the electronic load limiter, another interface is available with a 1A thermal limiter. (K832)
- Please enquire.**



Code	Designation	Weight (kg)	Sales unit
K811	CUSTOMER BOARD 25-75VA	1.000	1
K812	CUSTOMER BOARD 75-250VA	1.000	1
K813	CUSTOMER BOARD 250-1000VA	1.000	1

SEE SHEET
Modular cabinets : make up your own solution

Meter cabinet RE for IGA's



Meter

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Application

This 2 outputs meter cabinet is a solution perfectly suitable for Rural Electrification (RE) and particularly Income Generating Activities (IGA's). It comprises an internal circuit breaker, a meter and a differential circuit breaker to ensure goods and people protection. It is equipped with an input through a large cable gland for power supply and 2 outputs:

- An electrical outlet for simple access to energy,
- Second outlet through a smaller cable gland and black domino terminal for home wiring.

The whole set is pre-wired. Ideally, it can be installed inside the home or below a shelter.

Description

- Envelope:**
- Synthetic materials.
 - Dimensions (L x W x D): 220(260)x150x120mm.
 - Mounted / connected: cutout 10.3x38 (hidden) / meter / differential circuit-breaker / earthing terminal / power socket and terminal black domino terminal.
 - Cable gland at the bottom used to route power cables (2x6-16mm² - diameter 13 up to 18mm).
 - Movable window on the front side making the access to modular devices easier.
 - First outlet with power socket having closed protection cover IP54.
 - Second outlet with cable gland allowing leading-out cable (2x2.5mm² - diameter 5 up to 10mm).
 - IP43 Device with conductors.
 - Fitted with precuts at the bottom enabling the fixing of the envelope with screws, on every kind of material.
 - Anti-fraud: sealing possibility preventing the access to the live areas.

- Cutout:**
- Disconnection: Phase and Neutral.
 - Equipped with a fuse 16A gG 10.3x38mm.
 - Hidden cutout, inaccessible from the user.

- Differential circuit-breaker:**
- Nominal current: 1A, 3A, 5A, 10A or 15A.
 - Nominal voltage application: 230V / 240V, 50Hz.
 - Breaking capacity: I_{cn} = 3kA.
 - Differential sensitivity: I_Δ = 300mA.
 - Breaking curve: type C.
 - Differential breaking: instantaneously.

- Power socket:**
- Bipolar plug + earthing (type NF C 61-314).
 - Female type.



- Meter:**
- Single phase type meter of 1 module size (18mm width).
 - Class of measure: 1.
 - Voltage rate: 230VAc ±10%.
 - Frequency: 50Hz.
 - Maximal current: 30A.

Code	Designation	Weight (kg)	Sales unit
K851	METER CABINET 2.0 1A	1.000	1
K853	METER CABINET 2.0 3A	1.000	1
K855	METER CABINET 2.0 5A	1.000	1
K856	METER CABINET 2.0 10A	1.000	1
K857	METER CABINET 2.0 15A	1.000	1

Option:

As an alternative, the meter cabinet is proposed with one output (1.0), access to energy being possible only through the power socket on the front side.



Code	Designation	Weight (kg)	Sales unit
K841	METER CABINET 1.0 1A	1.000	1
K843	METER CABINET 1.0 3A	1.000	1
K845	METER CABINET 1.0 5A	1.000	1
K846	METER CABINET 1.0 10A	1.000	1
K847	METER CABINET 1.0 15A	1.000	1

SEE SHEET
Modular cabinets: make up your own solution



Reliable and optimized electricity distribution



Issues



As a part of rural electrification programs, **electricity distribution costs** represent a significant budget and are often undervalued. In most cases, those additional charges are due to the transposition of traditional electrification models, without taking care of the economic, social and cultural context of developing countries.



Michaud Export proposes simplified solutions for low voltage connections, following international standards, from the HV/LV transformer aval post to the end customer. The result is **15% to 30% saving** enabling to connect more households and villages with the allocated budget !

Benefits

- + Costs reduction
- + Adaptation to local context
- + Optimized access to energy



Aerial service cable

IEC 60502



Michaud Export
6mm² optimized section
Exclusivity

MIRELEC

Application

This single phase or three-phase aerial cable is used for the connection between the low voltage network and the home. It is perfectly suitable for electrification applications in rural and suburban areas thanks to its optimized 6mm² section. It is stretched to a maximum range of 40m.

Description

This single phase or three phase cable respectively consists of 2 or 4 twisted insulated conductors, phase(s) and neutral.

- Service voltage rate: 600V.
- Conductors core made of aluminium:
 - * Conductors section: 6mm²
 - * Diameter over core: 3.12mm
 - * Number of strands: 7
 - * Diameter of strands: 1.04mm
 - * Mechanical strength of strands: 18.5daN/mm²
 - * Minimum strain of strands: 1.2%
 - * Step factor: 10 - 16
 - * Step direction: right
- Conductors insulation made of polyethylene:
 - * Nominal insulation thickness: 1.2mm
 - * Minimum insulation thickness: 0.98mm
 - * Diameter over insulation: 5.52mm
- Cable characteristics:
 - * Phase identification: marking
 - * Twist step factor: 25 - 60
 - * Twist step direction: right
 - * Twist weight: 75kg / km
 - * Dielectric test / water: 2.5kVac / 1 min
 - * Linear strength to 20°C: 4.5Ω/km
 - * Maximum intensity in permanent capacity in the open air: 30A
 - * Maximum temperature in service: 90°C

- Cable meeting the acceptance criteria of the IEC 60502 standard.

Code	Designation	Packaging	Weight (kg)	Sales unit
U300	AERIAL SERVICE CABLE 2x6mm²	200m ring	15	1
U304	AERIAL SERVICE CABLE 4x6mm²	200m ring	30	1



Other cable sections available.

Please enquire.

Accessories dedicated to the 6mm² cable

EN 50483 CE NF



L 227

This insulation piercing connector is used to perform a tap connection from a network from 16 up to 95mm² with the 6mm² aerial service cable.

Code	Designation	Weight (kg)	Sales unit
L227	CONNECTOR CES/CT 95	0.060	20



L 304

L 306



U 500

This anchoring clamp is used to fix 2x6mm² service cable between the pole and the home. It can be associated with the PF25 fixing clamp L304 for implementation on a wall or a pole, thanks to a screw M10 L306 or strap.

This accessory is used for supporting service network of type 2x6 up to 4x25mm².

K 265



Code	Designation	Weight (kg)	Sales unit
U500	ANCHORING CLAMP 2x6mm² - PA6	0.100	50
U500 4x6	ANCHORING CLAMP 4x6mm² - PA4x6	0.120	50
L304	FIXING CLAMP - PF25	0.010	100
L306	SCREW M10	0.048	30
K265	BELT SUSPENSION WITH RING	0.020	25



SEE SHEET

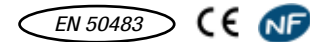
Strap and anticleimbing buckles



This tool is perfectly adapted to strip 6mm² section cables to facilitate wiring to equipment.

Code	Designation	Weight (kg)	Unit sale
F493	STRIPPING TOOL 6mm²	0.150	1

Aerial accessories



Connectors

Application

These connectors are used to connect twisted aerial insulated conductors. Four items are available:

MIRELEC



L227

Street light connector for powering street light lamp and performing tap connection of small section cables from a network (capacity: 16-95 / 1.5-10mm²)



K232

Service connector used to make a tap connection from a network to home (capacity: 16-95 / 2.5-35mm²)



L256

Network connector used to make a tap connection between aerial networks (capacity: 25-95 / 25-95mm²)



L356

Network connector used to make a tap connection between aerial networks (capacity: 35-150 / 35-150mm²)

Code	Designation	Weight (kg)	Sales unit
L227	CONNECTOR CES / CT 95	0.060	200
K232	CONNECTOR CBS / CT 95	0.130	80
L256	CONNECTOR CDRS / CT 95	0.190	50
L356	CONNECTOR CDRS / CT 150	0.400	30



Implementation video available on www.michaud-export.com
(tab Documentation > Implementation videos)



Fixing



U501 + U502

The anchoring assembly EA 54.6 is used for single or double dead-ending of A.B.C. (aerial bundled conductors) with insulated neutral messenger 54.6mm². The anchoring clamp PA 54.6 is fixed on a bracket type CA 54.6.



U503

The suspension assembly ES 54.6 is used for up-holding A.B.C. (aerial bundled conductors) with insulated neutral messenger 54.6mm².

Code	Designation	Weight (kg)	Sales unit
U501	ANCHORING CLAMP 54.6mm² - PA 54.6	0.410	30
U502	ANCHORING BRACKET 54.6mm² - CA 54.6	0.235	50
U503	SUSPENSION ASSEMBLY 54.6mm² - ES 54.6	0.510	30



L311

This accessory is used for anchoring service cable 2x6 up to 4x25mm².

Code	Designation	Weight (kg)	Sales unit
L311	SERVICE ANCHORING CLAMP - PA 25	0.105	50

Nota: For pole hardware (BQC) supply, **please enquire**.



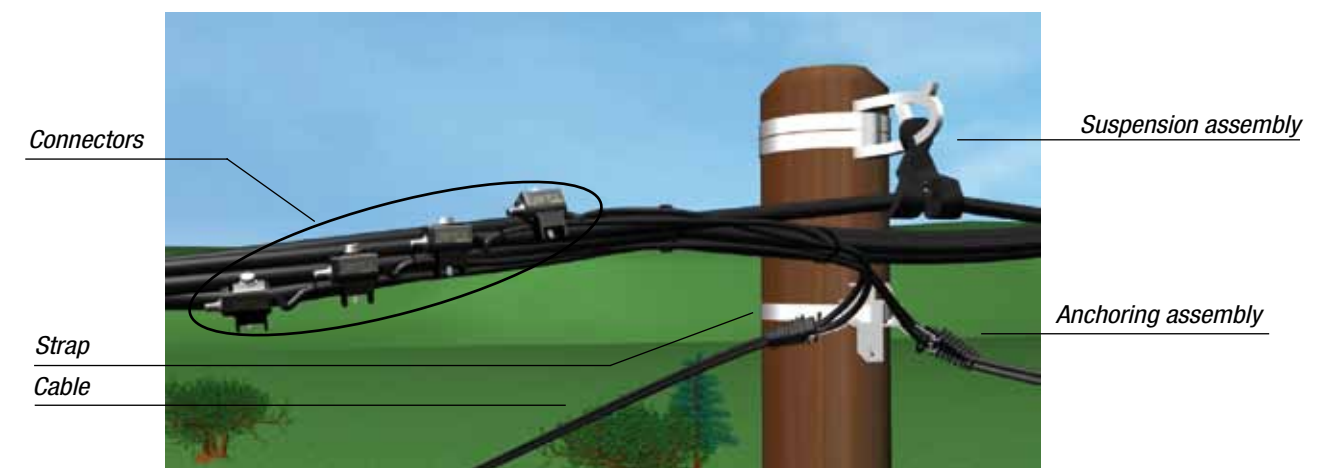
SEE SHEET

Strap and anticleimbing buckles



SEE SHEET

Aerial service cable / Accessories / Fixing clamp PF25 L304



Aerial accessories

Ending fitting



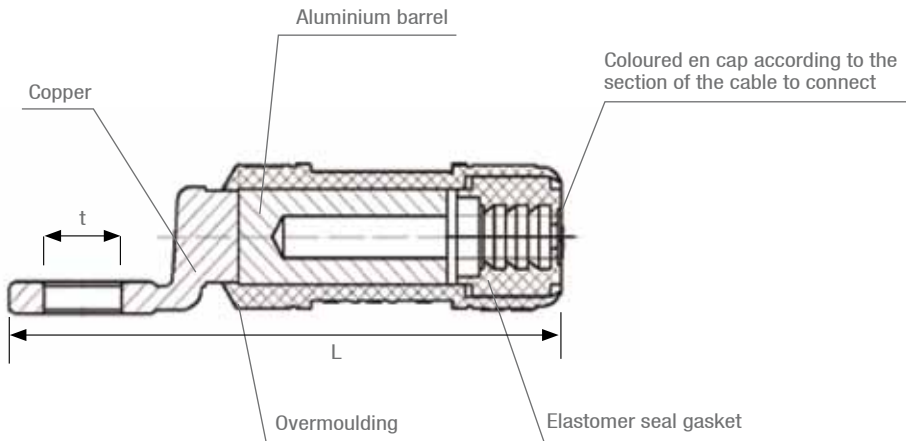
U506

MIRELEC

Application

This spin-welded preinsulated lug is designed to connect low voltage overhead insulated conductors to copper equipment terminals. The cable sections range from 16 to 150mm².

Description



Dimensions in mm

This preinsulated lug meets the requirements of the **NF C 33-021** and **EN 50-483** standards.

Code	Designation	Insulated Al-Cu cable (mm²)	Dimensions (mm)		Weight (kg)	Sales unit
			t	L		
SPIN-WELDED PREINSULATED LUG REQUIRING A E140 CRIMPING DIE						
U506_16-10	CPTAU SPIN-WELDED LUG 16mm² - DIAM 10	16	10.3	75	0.040	10
SPIN-WELDED PREINSULATED LUG REQUIRING A E173 CRIMPING DIE						
U506_25-10	CPTAU SPIN-WELDED LUG 25mm² - DIAM 10	25	10.3	100	0.040	10
U506_35-13	CPTAU SPIN-WELDED LUG 35mm² - DIAM 13	35	13	100	0.070	10
U506_50-13	CPTAU SPIN-WELDED LUG 50mm² - DIAM 13	50	13	100	0.070	10
U506_54-13	CPTAU SPIN-WELDED LUG 54.6mm² - DIAM 13	54.6	13	100	0.070	10
U506_70-13	CPTAU SPIN-WELDED LUG 70mm² - DIAM 13	70	13	100	0.070	10
U506_95-13	CPTAU SPIN-WELDED LUG 95mm² - DIAM 13	95	13	100	0.070	10
SPIN-WELDED PREINSULATED LUG REQUIRING A E215 CRIMPING DIE						
U506_120-13	CPTAU SPIN-WELDED LUG 120mm² - DIAM 13	120	13	118	0.220	10
U506_150-13	CPTAU SPIN-WELDED LUG 150mm² - DIAM 13	150	13	118	0.220	10

Junction



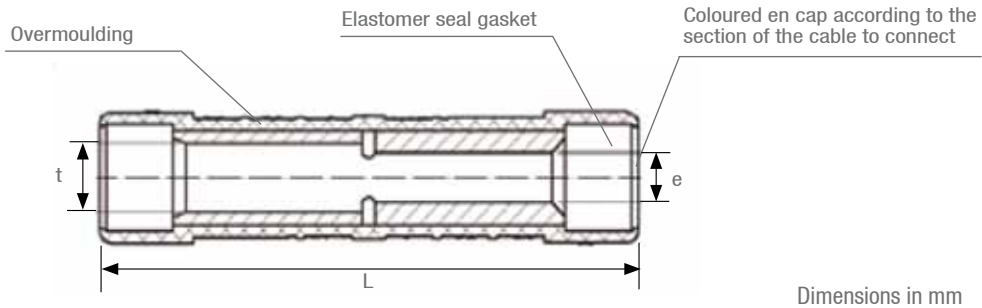
U507

MIRELEC

Application

This preinsulated sleeve is designed for the connection of low voltage overhead insulated conductors to other ones. The junction can be establish between two conductors of equal or unequal sections. All combinations of sections are possible.

Description



Dimensions in mm

This preinsulated lug meets the requirements of the **NF C 33-021** and **EN 50-483** standards.

Code	Designation	Leading-in cable (mm²)	Leading- in colour	Leading-out cable (mm²)	Leading- out colour	Dimensions (mm)			Weight (kg)	Sales unit
						t	e	L		
PHASE SLEEVE REQUIRING A E173 CRIMPING DIE										
U507_16-16	MJPT SLEEVE 16-16	16	Blue	16	Blue	5.3	5.3	98.5	0.060	10
U507_25-25	MJPT SLEEVE 25-25	25	Orange	25	Orange	6.5	6.5		0.060	10
U507_35-25	MJPT SLEEVE 35-25	35	Red	25	Orange	7.9	6.5		0.060	10
U507_35-35	MJPT SLEEVE 35-35	35	Red	35	Red	7.9	7.9		0.060	10
U507_50-25	MJPT SLEEVE 50-25	50	Yellow	25	Orange	8.8	6.5		0.060	10
U507_50-35	MJPT SLEEVE 50-35	50	Yellow	35	Red	8.8	7.9		0.060	10
U507_50-50	MJPT SLEEVE 50-50	50	Yellow	50	Yellow	8.8	8.8		0.055	10
U507_54-25	MJPT SLEEVE 54-25	54.6	Black	25	Orange	10.2	6.5		0.040	10
U507_70-25	MJPT SLEEVE 70-25	70	White	25	Orange	10.4	6.5		0.050	10
U507_70-35	MJPT SLEEVE 70-35	70	White	35	Red	10.4	7.9		0.050	10
U507_70-50	MJPT SLEEVE 70-50	70	White	50	Yellow	10.4	8.8		0.050	10
U507_70-70	MJPT SLEEVE 70-70	70	White	70	White	10.4	10.4		0.050	10
U507_95-35	MJPT SLEEVE 95-35	95	Grey	35	Red	12.2	7.9	0.050	10	
U507_95-50	MJPT SLEEVE 95-50	95	Grey	50	Yellow	12.2	8.8	0.050	10	
U507_95-70	MJPT SLEEVE 95-70	95	Grey	70	White	12.2	10.4	0.050	10	
U507_95-95	MJPT SLEEVE 95-95	95	Grey	95	Grey	12.2	12.2	0.050	10	
NEUTRAL SLEEVE REQUIRING A E173 CRIMPING DIE										
U507_54N-54N	MJPTN SLEEVE 54-54	54.6	Black	54.6	Black	10.2	10.2	173.5	0.080	10
U507_54N-70N	MJPTN SLEEVE 54-70	54.6	Black	70	White	10.2	10.6		0.080	10
U507_70N-70N	MJPTN SLEEVE 70-70	70	White	70	White	10.2	10.6		0.080	10
NEUTRAL SLEEVE REQUIRING A E215 CRIMPING DIE										
U507_95N-95N	MJPTN SLEEVE 95-95	95	Grey	95	Grey	10.2	13.4	175.5	0.080	10

Source, network and people protection



Issues



Harsh climates of many developing countries create regularly disruptions on the lines. In order to protect people, the electrical production sources and networks, Michaud Export offers some **economical and enduring alternatives** to traditional solutions.



Mostly used in Europe, the thermal image circuit-breaker, installed at the top of the pole, causes inopportune power cuts in case of phases imbalance on the network. To avoid this inconvenience, Michaud has designed a very **economical fuse switch disconnecter equipped with fuses of high breaking capacity (HBC)**. This system has the advantage to add protection and breaking points, making easier the network operating and maintenance.



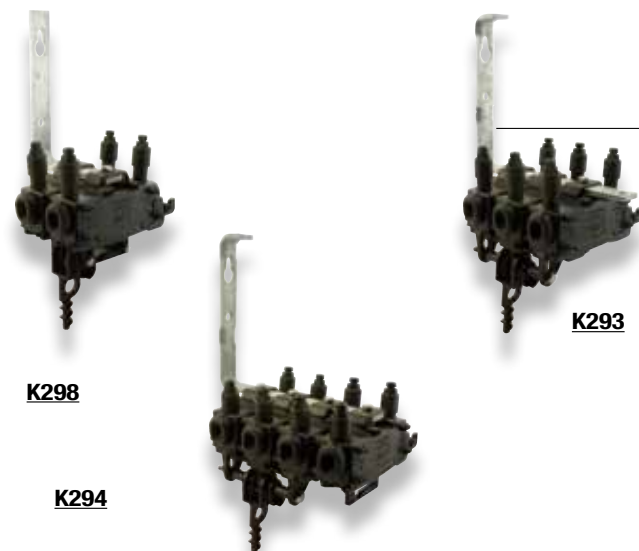
Michaud Export also proposes **earth system solutions** for people and installations protection.

Benefits

- + Safe and sustainable installations
- + Medium and long term profitability
- + Easier networks operating and maintenance



LV network fuse protection Gang fuse switch disconnecter



MICHAUD

Application

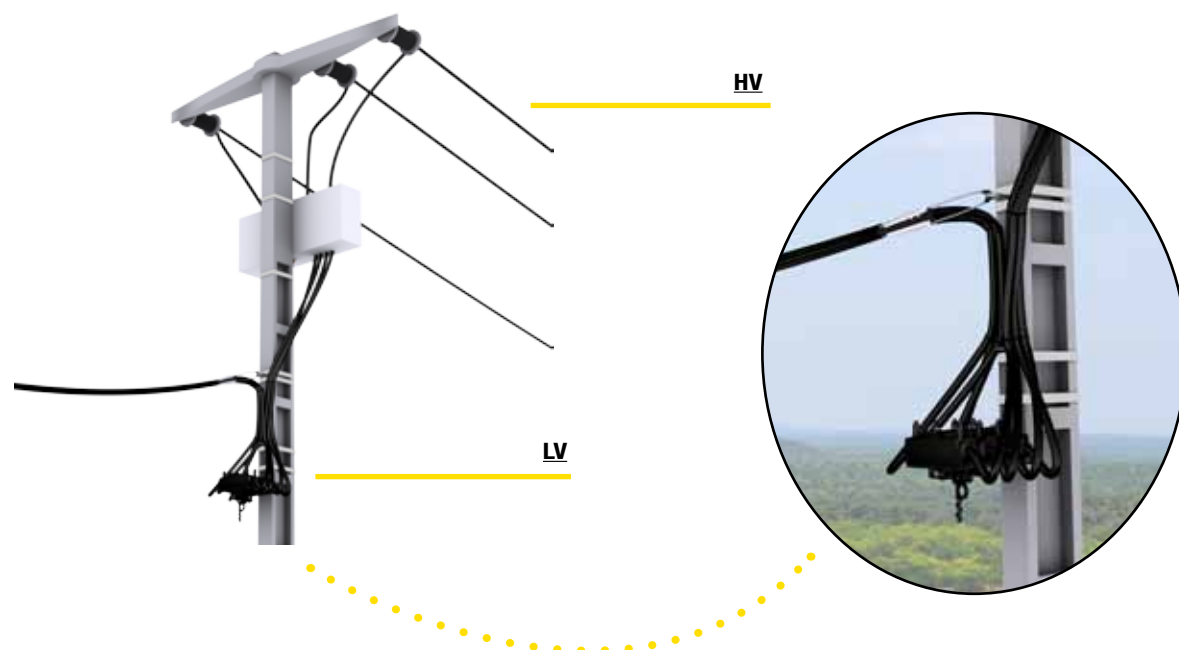
This multi-pole fuse switch disconnecter device is installed below a transformer at the top of the pole. It provides protection up to 160A or cut-off up to 240A. It is attached to the pole and thus protects the transformer and the low-voltage network below it. It protects single phase and three phase transformers.

Description

- The switch disconnecter is installed downstream:
 - * Of the transformer 50kVA with fuses 80A,
 - * Of the transformer 100kVA with fuses 160A,
 - * Of the transformer 160kVA with neutral blade contacts, in order to create a breaking point on the network, each network outlet being possibly and independently protected with a disconnecter.
- This protection system is designed to secure the opening with cable energised and loaded.
- The terminals authorise a connection up to 95mm². The connection is performed with insulation piercing technology, insuring a reliable and secured contact.

The benefits :

- + 50 to 80% more economical than a circuit breaker
- + Strong solution, very little sensitive to charge imbalances
- + Solution available in **single phase and in three phases**



Accessories



An outlet with 2 insulation piercing taps of capacity 6-35mm² can be performed.

This stick equipped with a terminal is used for fuses holder manipulation from the ground level. Its length is 2.65m when the stick is closed, and 5m when the stick is opened.

Code	Designation	Weight (kg)	Sales unit
K293	TRIPLE POLE FUSE SWITCH DISCONNECTOR 160A (Size 00)	2.710	1
K294	QUADRUPLE POLE FUSE SWITCH DISCONNECTOR 160A (Size 00)	3.240	1
K298	DOUBLE POLE FUSE SWITCH DISCONNECTOR 160A (Size 00)	1.850	1
K098	DOUBLE TAP END CONNECTOR (6-35mm ²)	0.115	12
F203	STICK 2E - 5M (TERMINAL U)	3.000	1
F209	BORED TERMINAL END DISCONNECTOR / STICK	0.105	10

Note: - Fixing with two 10mm diameter galvanised steel screws is included with the switch bracket.
- For the supply of fuses and neutral blade contracts, **please enquire**.

Option:

HPC NH00 fuses are available.

Please enquire.



Implementation video available on www.michaud-export.com
(tab Documentation > Implementation videos)



Earth system

EN 50164 CE NF

U2XX ou F2XX

Copper plated steel rod

MIRELEC

Application

These earth rods are used for earth system power networks.
The copper coating made by an electrolytic process gives a resistance to corrosion as well as a good conductivity.
The reference Standard is **EN 50 164-2**.

Code	Designation	Nominal diameter (mm)	Real diameter (mm)	Length (m)	Weight (kg)	Sales unit
50µm COPPER COATING						
U203	EARTH ROD COPPER 50µm L = 1m DIAM 12.7	14	12.7	1	1.025	10
U204	EARTH ROD COPPER 50µm L = 1.5m DIAM 12.7	14	12.7	1.5	1.537	10
U205	EARTH ROD COPPER 50µm L = 2m DIAM 12.7	14	12.7	2	2.050	10
F226	EARTH ROD COPPER 50µm L = 1m DIAM 14	16	14	1	1.250	10
F244	EARTH ROD COPPER 50µm L = 1.5m DIAM 14	16	14	1.5	1.900	10
F245	EARTH ROD COPPER 50µm L = 2m DIAM 14	16	14	2	2.500	10



Other earth rod dimensions are available (from 1m to 3m) as well as other treatments and thicknesses.

Please enquire.

Option:

Earth rod ends threading available for a potential extension with screwed sleeves.

Please enquire.

Clamps

F234

Application

This clamp enables to establish a connection between the earth rod and the conductor.

Code	Designation	Nominal rod diameter (mm)	Maximal conductors section (mm²)	Screw	Weight (kg)	Sales unit
F234	CONNECTION CLAMP ROD DIAM 12.7 + 14 UNTHREADED	14 - 16	35	M8	0.050	100

Bare copper cable



U05X

Application

These cables allow to conduct the electricity into the earth system and to guarantee the default current runoff.



The copper cable is available:
- in other dimensions
- in insulated copper cable

Please enquire

Connectors

U00X



U02X

Application

These connectors establish a mechanical and electrical connection between two conductors to guarantee the equipotentiality of the system, to make a tap connection or to fix a severed conductor.

Code	Designation	Main conductor (mm²)	Secondary conductor (mm²)	Weight (kg)	Sales unit
U003	"C" SHAPE CONNECTOR 25-6	10 - 25	4 - 6	0.012	10
U004	"C" SHAPE CONNECTOR 25-10	16 - 25	4 - 10	0.012	10
U005	"C" SHAPE CONNECTOR 25-25	16 - 25	16 - 25	0.017	10
U020	JUMPER CLAMP 6-16mm²	6 - 16	6 - 16	0.028	10
U021	JUMPER CLAMP 25-50mm²	25 - 50	25 - 50	0.061	10



U031



U035

U036

Application

This earth system disconnection kit as well as these cutting blades allow the opening of the earth circuit in order to perform an earth resistance measure.

Code	Designation	Conductor section min (mm²)	Conductor section max (mm²)	Weight (kg)	Sales unit
U030	TUBULAR LUG 25-29	25	29	0.020	10
U031	EARTH SYSTEM DISCONNECTION KIT 25-29	25	29	0.060	10
U035	HIGH GROUND CUTTING BLADE	16	35	0.150	10
U036	LOW GROUND CUTTING BLADE	16	35	0.100	10



Fraud preventing

Fraud preventing

Existing installation

Fraud preventing kit	p.44
Aerial connection box 3 outlets	p.46
Strap and anti-climbing buckles	p.48

New installation

Fraud preventing aerial cable	p.52
Aerial connection box 7 outlets	p.54
Fraud preventing meter cabinet	p.56

Fraud preventing

Due to a significant consumption growth, the major issue for power companies is to **follow the demand and look after the rentability**. They have to manage technical and non-technical losses which mine their financial resources.

In order to overcome this lack of resources, companies tended to raise pricing. It causes consumers discontent and encourages the development of energy and equipment theft. Opting for quality and safety turns out to be a better strategy.

Michaud Export's solutions

To create a control and cut-off spot outside the premise



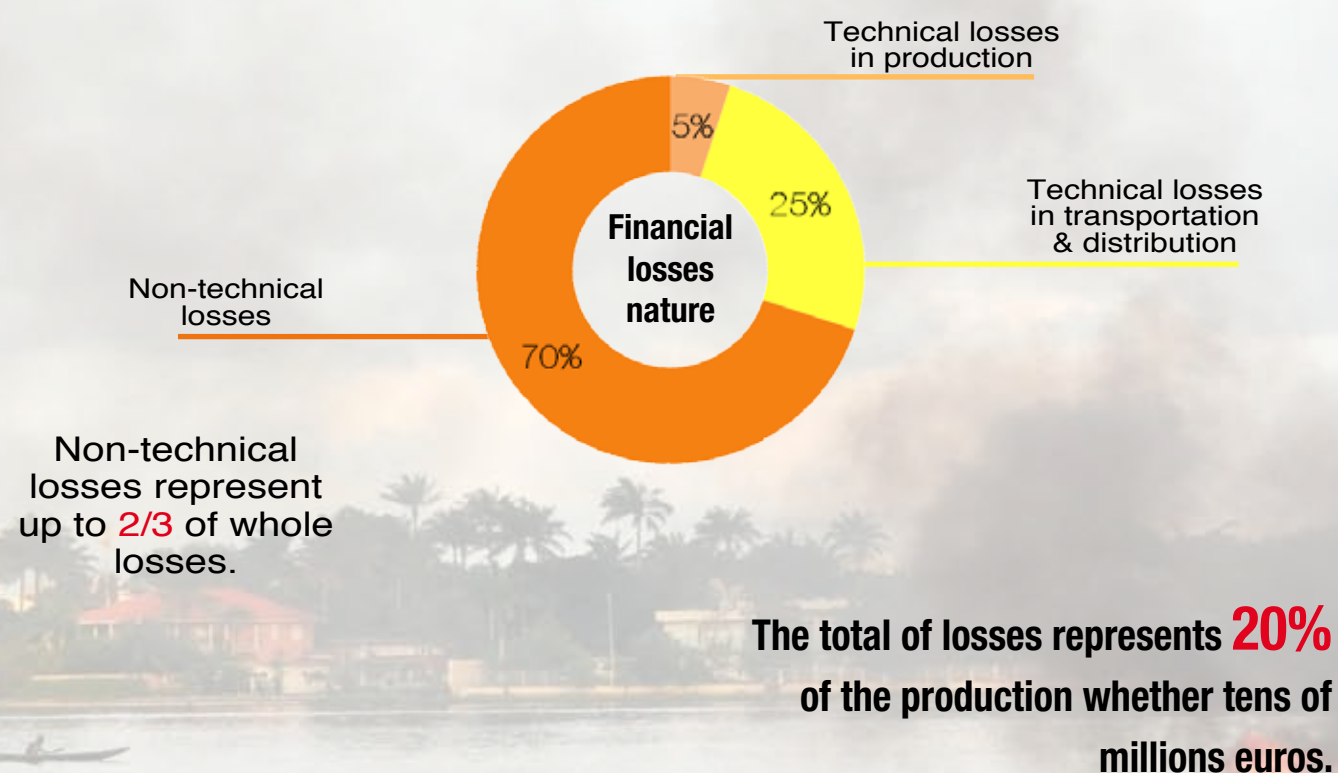
To remove illegal connections on the lines



Use theft-proof products



Case of an African power company:



Fraud origin

Due to its experience and thanks to its **collaborative work** with power companies, Michaud Export identified 4 origins of non-technical losses:

- Subscriber's manipulation on the meter and the circuit breaker
- Pricking out upstream from the meter
- Illegal connection
- Equipment theft

Issues for power companies

It is essential for companies to limit non-technical losses in order to become money maker and to be part of a **virtuous development circle**. A rise of financial resources would allow them to invest and develop their activity. At the end, they finally could improve their network quality and decrease the technical losses.

« It is **3 times less expensive** to save 1 kWh of electricity by improving the electricity grid efficiency rather than to invest in new production means for the same 1 kWh. »

Stabilize the existing network



Issues



When a power company launches a fraud preventing policy, the first step consists of securing existing networks. Many points are often problematic, especially **subscribers' overconsumptions not invoiced** because of fraud upstream from meters, and **illegal connections** on the lines.



Michaud Export proposes simple solutions to implement, in order to renovate networks and overcome these difficulties: **controlling automatically** the energy quantity allocated to customers inside the connection and **improving significantly the network legibility** by reducing “spider’s web” effects.



These technologies are easy to install, reducing the renovation costs of the network. The **return on investment** is short, only few years.

Benefits

- + Network cleaned at a lower cost
- + Invoicing conform to consumption
- + Increase the power companies incomes
- + Significant decrease of non-technical losses

Fraud preventing kit



MICHAUD

Application

This kit is used to control the connection of an individual customer as part of an existing installation.

A mini-switch limits the intensity that can constantly flow in the service line to a given level.

Installed at the top of a pole or on the outside façade, it provides excellent **protection against fraud** in relation to the subscribed power, mainly in the case of meter by-pass/shunt. Massive excess consumption related to fraud can thus be significantly reduced.

The sleeve is easily installed in the existing installation and can be used for constant, automatic control of the customer's consumption while providing an original function with the **integrated cutout**:

- Protection and control of the service line against electrical faults,
- Possible cut-off point for the network manager, making interventions easier.

Description

This kit comprises the followings:

	Cutout sleeve	Mini-switch
Function	It is designed to secure the phase connection and protect installation against electrical faults.	It is designed to permanently limit power provided to customer.
Technical specifications	<ul style="list-style-type: none"> - To be implemented on the customer's phase conductor. - Cable sections: 6-35mm² Al/Cu insulated. - Sleeve using the insulation piercing technology. - Elastic tightening of the cartridge designed to leave it on the costumer side when opening the sleeve (without voltage). - Unique tightening ensured by 2 shear-head screws, with sealing possibility when broken. - Very good resistance to harsh weather conditions (humidity, heat...). - Sealable cutout function. 	<ul style="list-style-type: none"> - Current limitation based on the thermal bimetal principle: <ul style="list-style-type: none"> * Rating current: 5A, 10A, 15A, * Size: 22x58mm, * Level of reversibility: 45A or 60A depending on the rating current. - Fuse cartridge for circuit-breaker function: <ul style="list-style-type: none"> * Breaking capacity: 20kA. - Endurance: from 5 000 up to 15 000 cycles depending on the rating current.

Code	Designation	Weight (kg)	Sales unit
K771	FRAUD-PREVENTING KIT 5A	0.255	1
K772	FRAUD-PREVENTING KIT 10A	0.255	1
K773	FRAUD-PREVENTING KIT 15A	0.255	1

Accessories

EN 50483-4 CE NF

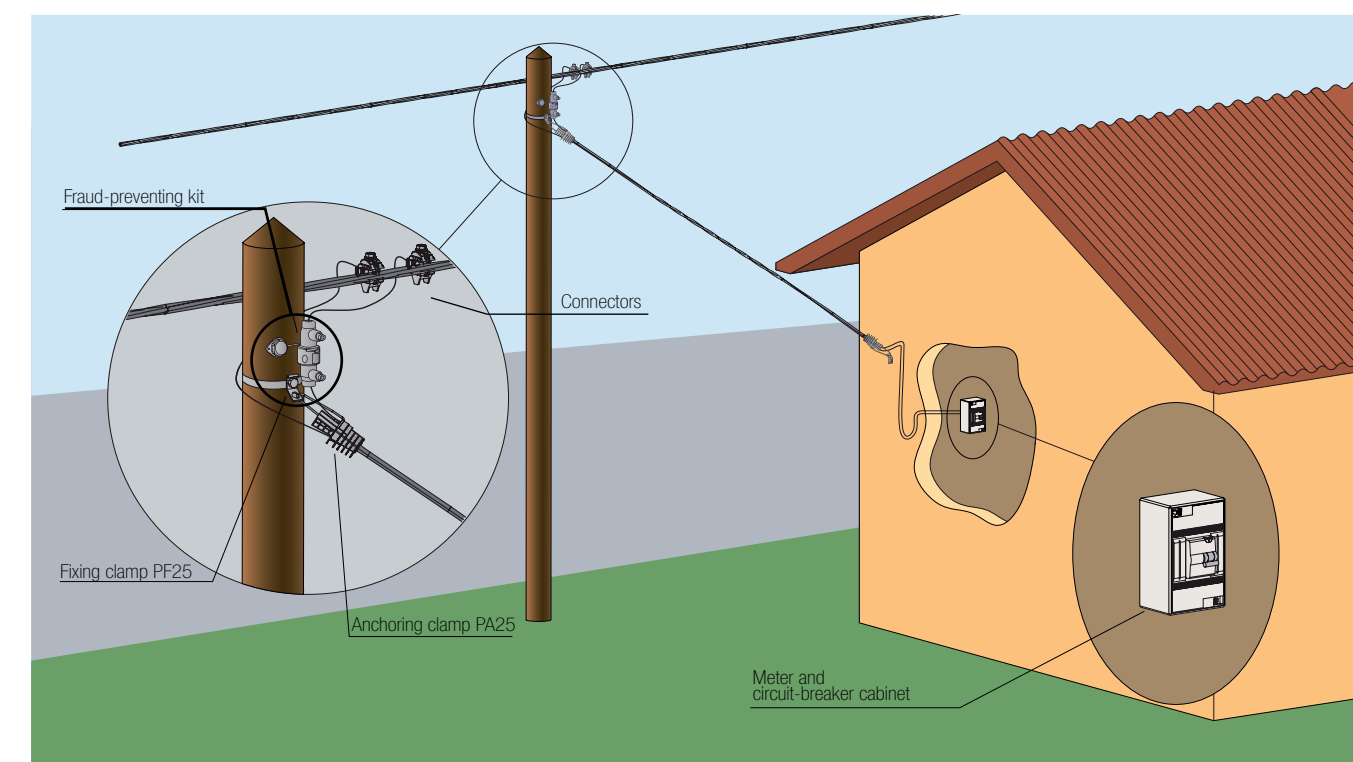


K232

This insulation piercing connector is used to perform a tap connection from a network from 16 up to 95mm² with an insulated tap conductor from 2.5 up to 35mm².

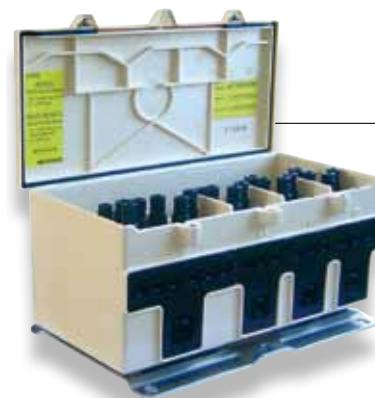
Code	Designation	Weight (kg)	Sales unit
K 232	CONNECTOR CBS/CT 95	0.127	1

MICHAUD recommended installation



Nota: the sleeve must be implemented without mechanical load. The use of appropriated cable ties and cable lengths are recommended in order not to stress the connection.

Aerial connection box 3 outlets



MICHAUD

Application

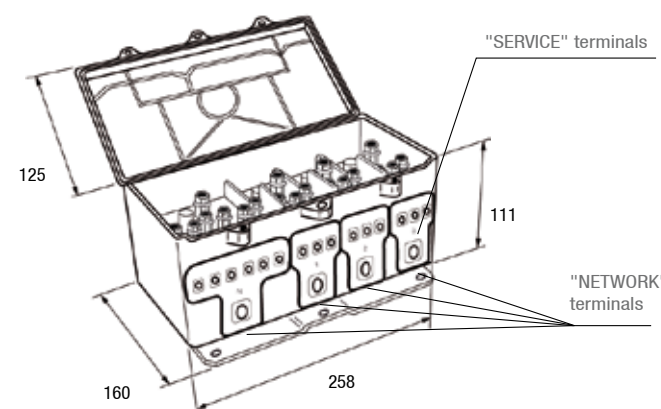
The box makes it possible to establish up to 6 single phase connections or up to 3 three phases connections at one point of the low voltage aerial bundled network.
It can be installed on a façade or a pole.
It can also be used at the network end.

Description

- The colour of the enclosure is ivory.
- The box is equipped with 4 connection blocks (1 neutral + 3 phases). The "neutral block" comprises one inlet and 6 outlets: each "phase box" comprises one inlet and 3 outlets.
Network and Service terminals use either the insulation piercing technology or the stripping technology. The connection blocks are linked 2 by 2 by linking bars.
- Each connection block is accessible with the contact pin of a test probe.
- The inlet and outlet of the conductors in the lower part are performed through elastomer seal sockets.
- The box is delivered with an integrated anti corrosion metal fixing plate. The rigidity of this plate allows it to be installed on uneven surfaces.
- The cover is closed using 2 stainless steel screws.
- An integrated device enables the assembly to be sealed and possibly padlocked.
- The terminal separators inside the box enable the conductors to be connected in any order.
- The degree of protection of the enclosure is IP43 (according to **NF EN 60529**).
- When the cover is opened, the degree of protection of the live parts is IP2X.
- This box meet the acceptance criteria of the **HN 62-S-33** standard.

The benefits :

- + **Perform single phase or three phases connections**
- + **Better spread charges** on the network, thanks to the connections visibility
- + **Guarantee the network durability** (better resistance to corrosion and humidity)
- + **Reduce the number of connectors** (safer network organized, fraud-preventing strengthened)
- + **Disconnect subscribers easily** (network cable unimpacted, possibility to re-use connectors)
- + **Check the potential at the connection terminals** (with a test probe)
- + **Guarantee a better fitters safety** (electric shock risk limited)



Implementation

Caution: the connection is not designed to withstand a mechanical strength on the conductors, which must be anchored.
The maximum flow power in the connection box is 110kVA.

	P 431	P 432
"NETWORK" terminals	<ul style="list-style-type: none"> • "NETWORK" terminals : Insulation piercing Capacity: 35mm² - 150mm² Al or Cu 	<ul style="list-style-type: none"> • "NETWORK" terminals : Stripping Capacity: 35mm² - 150mm² Al or Cu
	<ul style="list-style-type: none"> - Insert the conductor fully through the corresponding seal socket up to the stop. - Tighten the screw until the shear head breaks. - Use a wrench with 17mm hexagonal socket only. 	<ul style="list-style-type: none"> - Strip the conductor over a length of 90mm. - Brush the conductor with neutral grease. - Insert the conductor fully through the corresponding seal socket up to the stop. - Tighten the screw until the shear head breaks. - Use a wrench with 17mm hexagonal socket only.
"SERVICE" terminals	<ul style="list-style-type: none"> • "SERVICE" terminals : Insulation piercing Capacity: 10mm² - 35mm² Al or Cu 16M - 50M Al 	<ul style="list-style-type: none"> • "SERVICE" terminals : Stripping Capacity: 6mm² - 35mm² Al or Cu 16M - 50M Al
	<ul style="list-style-type: none"> - Insert the conductor fully through the seal socket up to the stop. - Tighten the screw until the shear head breaks. - Use a wrench with 10mm hexagonal socket only. 	<ul style="list-style-type: none"> - Strip the conductor to be connected over a length of 30mm. - Brush it with neutral grease. - Insert it fully through the seal socket up to the stop. - Tighten the screw until the shear head breaks. - Use a wrench with 10mm hexagonal socket only. - If reused, the conductor must be cut and stripped again. The recommended torque is 10Nm with an adapted spanner.

Code	Designation	Network terminals	Service terminals	Weight (kg)	Sales unit
P431	INSULATION PIERCING AERIAL CONNECTION BOX 3 OUTLETS	Insulation piercing	Insulation piercing	2.880	1
P432	STRIPPING AERIAL CONNECTION BOX 3 OUTLETS	Stripping	Stripping	2.776	1



Implementation video available on www.michaud-export.com
(tab Documentation > Implementation videos)



Strap and anti-climbing buckles

Strap

EN 10088 CE NF

MICHAUD

Application

This stainless steel strap is mainly used to fix the suspension or anchoring clamp brackets on all types of poles (wooden, metal or concrete).

Description

- This strap packaged in a 50m winder is available in four dimensions:
 - * 10 x 0.4mm
 - * 10 x 0.7mm
 - * 20 x 0.4mm
 - * 20 x 0.7mm
- The strap is made of stainless steel.
- The strap is delivered in a 50m roll inside a strengthened cardboard winder.
- The strap edges are deburred.

Code	Designation	Weight (kg)	Sales unit
K940	50m CARDBOARD WINDER STAINLESS STEEL STRAP EC 10x0.4mm	1.800	5
K941	50m CARDBOARD WINDER STAINLESS STEEL STRAP EC 10x0.7mm	2.800	5
K942	50m CARDBOARD WINDER STAINLESS STEEL STRAP EC 20x0.4mm	3.250	5
K943	50m CARDBOARD WINDER STAINLESS STEEL STRAP EC 20x0.7mm	5.960	5

Option:

Synthetic materials winder is also available.



Code	Designation	Weight (kg)	Sales unit
K945	50m WINDER STAINLESS STEEL STRAP EC 10x0.4mm	1.850	5
K946	50m WINDER STAINLESS STEEL STRAP EC 10x0.7mm	2.950	5
K947	50m WINDER STAINLESS STEEL STRAP EC 20x0.4mm	3.450	5
K948	50m WINDER STAINLESS STEEL STRAP EC 20x0.7mm	5.800	5

Tools



Description

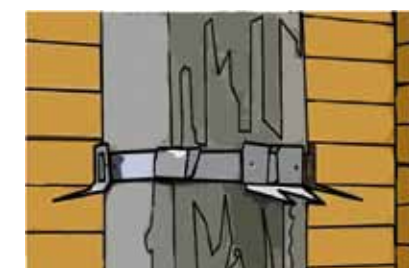
The carrying case with ergonomic inside trim is made of synthetic material. It includes a cutting tool, binding tool and buckles (to be ordered separately).

Implementation

- Cut the required length of strap using the cutting tool.
- Fix the strap around the pole and bracket using a binding tool and attach a buckle.
- Keep the cutting tool and binding tool in the suitable carrying case.

Code	Designation	Weight (kg)	Sales unit
L950	SET OF 100 BUCKLES EC FOR 10mm STRAP	0.360	1
L951	SET OF 100 BUCKLES EC FOR 20mm STRAP	0.610	1
K960	BINDING TOOL RATCHET TYPE FOR STRAP	1.950	1
K961	CUTTING TOOL FOR STRAP	0.550	1
K963	CARRYING CASE FOR STRAP TOOLS	0.550	1

Anti-climbing buckles



MICHAUD

Application

These stainless steel buckles are fixed thanks to the strap to prevent climbing on the pole and the fraud attempt.

Code	Designation	Weight (kg)	Sales unit
K956	SET OF 25 ANTI-CLIMBING STAINLESS STEEL BUCKLES	0.570	1



Implementation video available on www.michaud-export.com
(tab Documentation > Implementation videos)



Fraud
preventing

Secure new connections



Issues



In case of new electrification projects where the fraud preventing issue is present, power companies search for **reliable, economical and hard to hack solutions** to connect their “risky” customers.



Working jointly with African and Asian electrical power companies, Michaud Export targeted several key points to protect on new installations, from network to meter. To connect the end-users, the use of innovative technologies coupled with automatic regulation systems guarantees a **tamper-proof connection**.

Benefits

- + Meters shunt limited
- + Pirate connections restricted
- + Connectors theft for selling avoided
- + Fraudulent manipulations of the circuit breaker reduced

Fraud preventing aerial cable



U301

U302



MIRELEC

Application

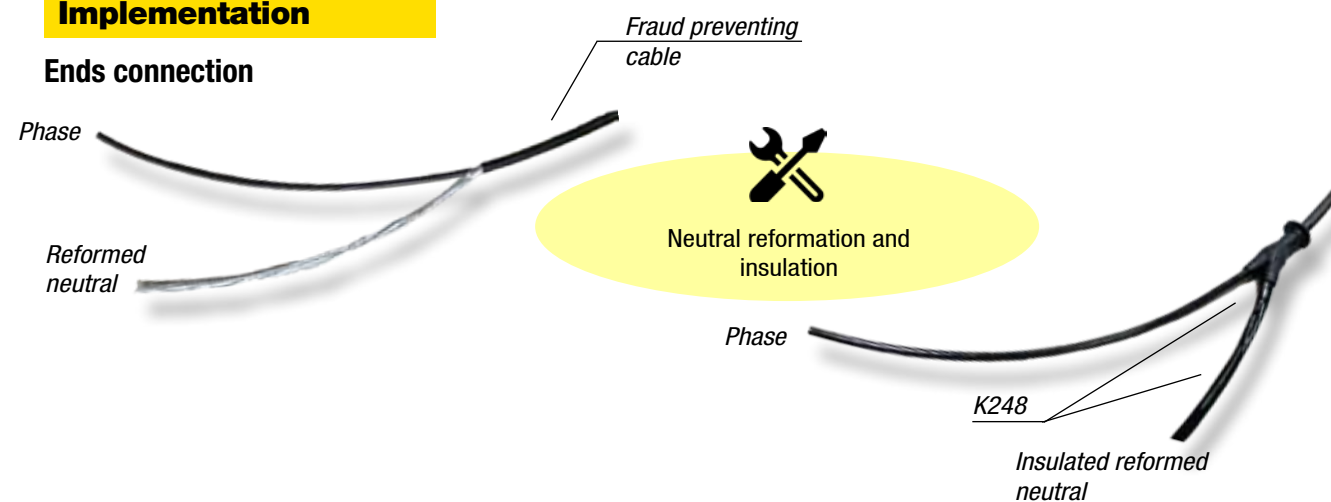
The concentric insulated aerial cable is used for the connection between the low-voltage network and the premise. It is designed to limit fraud and thus to reduce non-technical losses thanks to a concentric neutral cable. Any unauthorised connection to this cable will create a short-circuit and will automatically cut off electricity supply. It is stretched overhead to a maximum range of 40m.

Description

- Single phase or three phase cable comprising:
 - * One or three phase conductor(s) insulated in the central part.
 - * 1 peripheral insulated neutral conductor.
- Service voltage rate: 600V.
- Conductors core made of aluminium.
- Insulation made of cross-linked polythene.
- Cable characteristics:
 - * Weight: 150kg / km for the single phase and 400kg / km for the three phases
 - * Dielectric test / water: 2.5kVAC / 1min
 - * Linear strength to 20°C: 0,045 Ω .m/mm²
 - * Maximum intensity in permanent capacity in the open air: 60A for the single phase and 90A for the three phases.
 - * Maximum temperature in service: 90°C
- Cable meeting the acceptance criteria of the IEC 60502 standard.

Implementation

Ends connection



Code	Designation	Packaging	Weight (kg)	Sales unit
U301	AERIAL SERVICE CONCENTRIC CABLE 13mm ² SINGLE PHASE	500m ring	80	1
U302	AERIAL SERVICE CONCENTRIC CABLE 20mm ² THREE PHASE	500m ring	200	1

Accessories



K77X

The K 77X kit comprises a cutout sleeve and a mini-switch 5, 10 or 15A.



K325

The K325 insulation piercing connector is used to perform the neutral tap connection from a network from 16 up to 70mm². It cannot be putdown to avoid materials theft when the product is implemented.



K248

The K248 kit enables the insulation and the watertightness of the fraud preventing conductor, particularly on neutral conductor by rebuilding its insulation for connection (the sheath is equipped with a socket at its end).



K310

The K310 anchoring clamp is used to fix fraud-preventing round cable 13mm². It can be associated with the fixing clamp PF25 code L304, for implementation on a wall or a pole.

Code	Designation	Weight (kg)	Sales unit
K771	FRAUD-PREVENTING KIT 5A	0.255	1
K325	CONNECTOR CBS / CT NON DISMOUNTABLE	0.120	1
K248	FRAUD-PREVENTING CABLE FULFILMENT KIT - SINGLE PHASE	0.040	1
K249	FRAUD-PREVENTING CABLE FULFILMENT KIT - THREE PHASE	0.040	1
K310	ANCHORING CLAMP FOR CONCENTRIC CABLE - SINGLE PHASE	0.100	1
U508	ANCHORING CLAMP FOR CONCENTRIC CABLE - THREE PHASE	0.120	1

Nota: for the concentric cable implementation tools supply, **please enquire**.

Nota: for the four outlets sheath, **please enquire**.



Aerial connection box 7 outlets



MICHAUD

Application

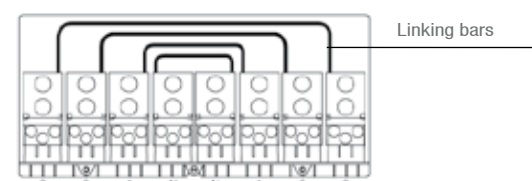
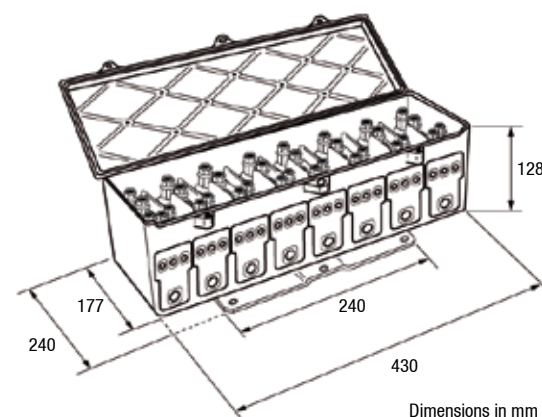
The box makes it possible to establish the junction of 2 overhead networks and the tap connection up to 6 single phase or three phases connections maximum.
It can be installed on a façade or a pole.
It can also be used at the network end.

Description

- The colour of the enclosure is ivory.
- The box is equipped with 8 connection blocks (2 neutral + 6 phases). The "neutral block" comprises one inlet and 6 outlets: each "phase box" comprises one inlet and 3 outlets.
Network terminals use the insulation piercing technology. Service terminals use the stripping technology. The connection blocks are linked 2 by 2 by linking bars.
- Each connection block is accessible with the contact pin of a test probe.
- The inlet and outlet of the conductors in the lower part are performed through elastomer sealed sockets.
- The box is delivered with an integrated anti corrosion metal fixing plate. The rigidity of this plate allows it to be installed on uneven surfaces.
- The cover is closed using 2 stainless steel screws.
- An integrated device enables the assembly to be sealed and possibly padlocked.
- The terminal separators inside the box enable the conductors to be connected in any order.
- The degree of protection of the enclosure is IP43 (according to **NF EN 60529**).
- When the cover is opened, the degree of protection of the live parts is IP2X.
- This box meets the acceptance criteria of the **HN 62-S-33** standard.

The benefits :

- + **Remove the connectors** (safer network organized, fraud-preventing strengthened)
- + **Perform multiple single phase or three phases connections**
- + **Better spread charges** on the network, thanks to the connections visibility
- + **Guarantee the network durability** (better resistance to corrosion and humidity)
- + **Disconnect subscribers easily** (network cable unimpacted, possibility to re-use connectors)
- + **Check the potential at the connection terminals** (with a test probe)
- + **Guarantee a better fitters safety** (electric shock risk limited)



Implementation

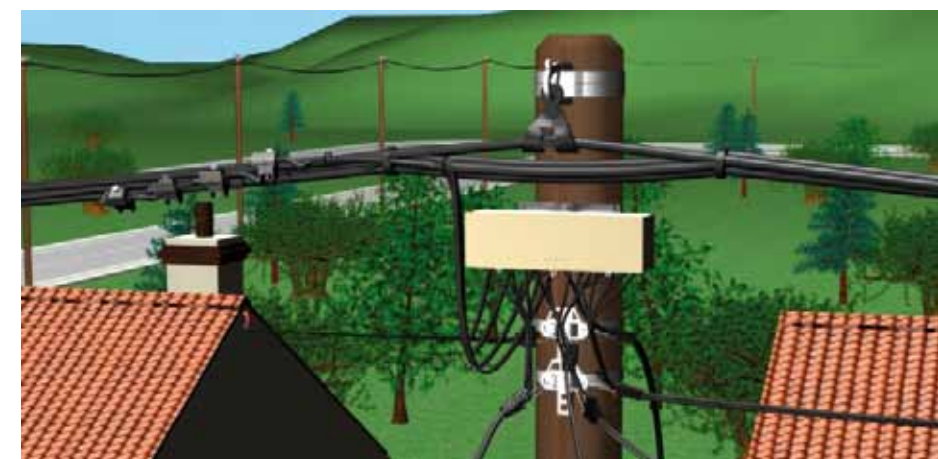
Caution: the connection is not designed to withstand a mechanical strength on the conductors, which must be anchored.
The maximum flow power is 160kVA.

"NETWORK" terminals	"NETWORK" terminals : Insulation piercing Capacity: 50mm ² - 150mm ² Al or Cu
	<ul style="list-style-type: none"> - Insert the conductor fully through the corresponding sealed socket, up to the stop. - Tighten the terminal screw until the shear head breaks. - Use a wrench with 17mm hexagonal socket only.
"SERVICE" terminals	"SERVICE" terminals : Stripping Capacity: 10mm ² - 35mm ² Al or Cu 16M - 50M Al
	<ul style="list-style-type: none"> - Strip the conductor to be connected over a length of 30mm. - Brush it with neutral grease. - Insert it fully through the seal socket up to the stop. - Tighten the screw until the shear head breaks. - Use a wrench with 10mm hexagonal socket only. - If reused, the conductor must be cut and stripped again. The recommended torque is 10Nm with an adapted spanner. - Implementation can be carried out on a live line but the load on the connected conductor must not exceed 60A.

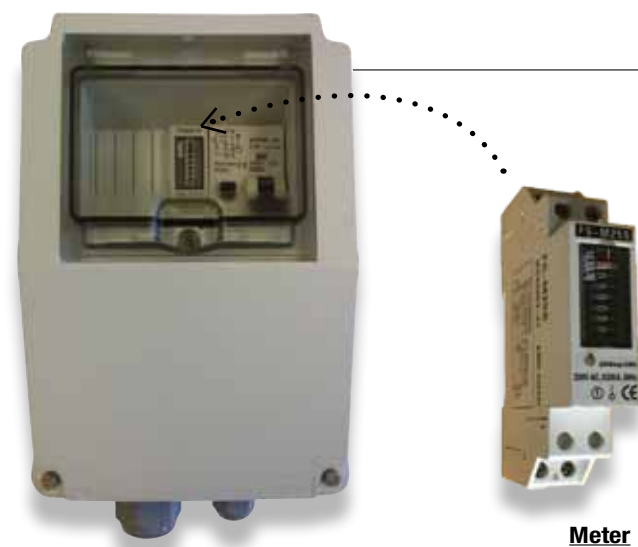
Code	Designation	Network terminals	Service terminals	Weight (kg)	Sales unit
P435	STRIPPING AERIAL CONNECTION BOX 7 OUTLETS	Insulation piercing	Stripping	6.090	1



Implementation video available on www.michaud-export.com
(tab Documentation > Implementation videos)



Fraud preventing meter cabinet



MICHAUD

Application

The fraud preventing meter cabinet is a suitable solution for suburban areas electrification. It comprises an inside cutout, a meter and a differential circuit breaker to ensure goods and people protection. It is equipped with an input through a large cable gland for the antifraud cable and one output through a smaller cable gland for home wiring. Its inside volume enables to receive the fraud preventing cable fulfilment guaranteeing a safe connection. The device is completed with the use of inviolable screws. The whole set is pre-wired and can be installed outdoors, in a shelter to make it visible for the operator.

Description

- Envelope:**
- Synthetic materials.
 - Dimensions (L x W x D): 220(260)x150x120mm.
 - Mounted / connected: cutout 10.3x38 (hidden) / meter / differential circuit-breaker / earthing terminal.
 - Two cable glands at the bottom used to route power cables (PG21 for inlet 2x6-16mm² - diameter 13 up to 18mm, and PG11 for outlet 2x2.5mm²).
 - Movable window on the front side making the access to modular devices easier.
 - IP43 device with conductors.
 - Fitted with precuts at the bottom enabling the fixing of the envelope with screws, on every kind of material.
 - Anti-fraud: sealing possibility preventing the access to the live areas.

- Cut-out:**
- Disconnection: Phase and Neutral.
 - Equipped with a fuse 16A gG 10.3x38mm.
 - Hidden cutout, inaccessible from the user.

- Differential circuit-breaker:**
- Nominal current: 1A, 3A, 5A, 10A or 15A.
 - Nominal voltage application: 230V / 240V, 50Hz.
 - Breaking capacity: I_{cn} = 3kA.
 - Differential sensitivity: I_Δ = 300mA.
 - Breaking curve: type C.
 - Differential breaking: instantaneously.



- Meter:**
- Single phase type meter of 1 module size (18mm width).
 - Class of measure: 1.
 - Voltage rate: 230VAc ±10%.
 - Frequency: 50Hz.
 - Maximum current: 30A.

Code	Designation	Weight (kg)	Sales unit
K821	FRAUD-PREVENTING METER CABINET 1A	1.000	1
K823	FRAUD-PREVENTING METER CABINET 3A	1.000	1
K825	FRAUD-PREVENTING METER CABINET 5A	1.000	1
K826	FRAUD-PREVENTING METER CABINET 10A	1.000	1
K827	FRAUD-PREVENTING METER CABINET 15A	1.000	1

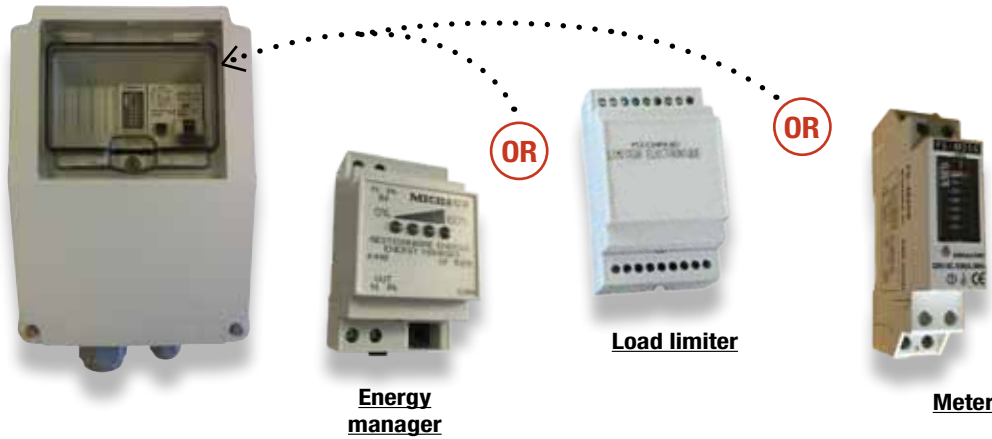
Option:

The cabinet can be equipped with inviolable screws, removable with a specific screwdriver only. They guarantee the non dismantability of the cabinet.



Code	Designation	Weight (kg)	Sales unit
F333	INVIOABLE SCREW FOR CABINET (pack of 100 pieces)	0.500	1
F334	SCREWDRIVER FOR INVIOABLE SCREW	0.070	1

Modular: The meter cabinet is adapted to the environment because receiving any form of metering, management or load limitation module. For more details, **please enquire**.



SEE SHEET
Modular cabinets : make up your own solution

Modular cabinets : make up your own solution



1. Choose your cabinet

Individual cabinet

The transparent front door enables a clear readability of components like LED. Modules are fixed on DIN rail. It is implemented in a shelter or inside the premise.



Available space :
5 modulars

Fraud preventing option



Single plug option



Benefits

- + Customized solution
- + Wide range of customers' management
- + Possibility to combine different management modules
- + Several protection technologies
- + Components implemented in serie and/or in parallel

Collective cabinet

The cabinet enables to gather equipment to optimize costs of several connections. Modules are fixed on DIN rail. It is implemented at the top of a pole.



Available space :
10 modulars

Other dimensions are available,
please enquire.

2. Select your functions

Management



Load limiter

3 MODULARS



Thermal limiter

1 MODULAR



Clock

2 MODULARS



Energy manager

3 MODULARS

Metering



Mechanical and electronical meters

1 MODULAR

Protection

Installations



Cut-out

1 MODULAR



Circuit breaker

1 MODULAR

People



Differential cut-out

2 MODULARS

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Web site

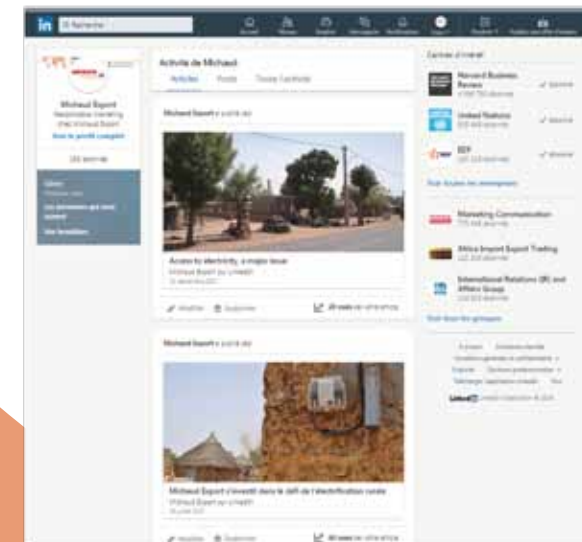
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YouTube

Follow our YouTube channel in order to discover products implementation videos and this way facilite your installations on the field.



Implementation

These products must be implemented and used in **compliance with the applicable regulations** with a skilled, qualified professional undertaking to do so following the generally accepted rules of the trade.

For **live-line** implementation or handling, the electrician must comply with the requirements for live-line work conditions and must be equipped with the necessary personal protection equipment. The implementation temperature limits are: -10°C to +40°C.

Live-line work is carried out under the responsibility of the ordering customer in compliance with the applicable rules.

Before powering up the equipment, all the required verifications must be carried out.

Tools

The product should be installed and used with **suitable tools**.

The screw heads should be driven in and tightened with the appropriate tool: **allen key** for hexagonal cap screws, **flat screwdriver** for slotted screw heads of the right size, **Phillips screwdriver** for cruciform screw heads, **HSHC screw head (awls)** for hollow hexagonal screw heads, etc. The screw heads with no torque-limiting device must be tightened to the recommended torque and must not be tightened again.



Recommendations for use

The installation instructions must be read carefully before using the product.

The product must be used and implemented in compliance with these recommendations for use and installation instructions; it must be used for the applications for which it was defined by the operator/manager of the network and on an electrical installation that is compliant and compatible with the product.

Never exceed the capacities indicated on the device and in the instructions sheet.

Unless explicitly indicated, products are designed for no-load connection.



Environment

Please group your waste together and follow the recycling and destruction instructions before leaving the worksite.

For further information:
www.michaud-export.com



Join us on Michaud Export
LinkedIn web page !

- APPLICATION OF CONDITIONS:
Purchaser make himself acquainted with these general selling conditions which shall lay down the Parties law, except purchaser's written denunciation ratified by MICHAUD EXPORT and despite opposite clauses that could be included in the purchaser's general conditions. Possible renunciation of one or few clauses herein does not interfere with the validity of the other clauses.
Except any formal and express derogation made by MICHAUD EXPORT, all purchaser's orders carry off his full and entire consent to the present General Selling Conditions which prevail over any Purchasing Conditions. All particular purchasing clauses or conditions aiming to modify the present conditions must not be contrary to the seller's ones.
- ORDER:
Any order shall not constitute a contract unless accepted in writing by MICHAUD EXPORT.
- PRICE LIST:
Unless otherwise stated by MICHAUD EXPORT, price lists and commercial offers are established in Euro €, excluding any other currency, even Euro indexed currencies, and is governed by Incoterms 2010 to be defined with the purchaser in the particular conditions.
3.2 The price list is established for standard items with specific given technical characteristics. Any technical changes on products to adapt them to other specifications or standards may lead to extra unit costs and price revision.
3.3 Unless otherwise stated by MICHAUD EXPORT, MICHAUD EXPORT reserves the right to gather purchaser's orders and to deal with according to a minimum invoice amount of 800 € excluding tax and freight charges (according to general price list in due force on the order date). Any order which amount is lower than 1 500 € shall result in the invoicing of a fixed sum of 150 € meant to cover administrative fees.
3.4 Unless otherwise stated and written by MICHAUD EXPORT, validity of the price list is one month starting when given to the purchaser.
3.5 The price list is subject to alteration without notice.
- DELIVERY TIME:
4.1 The delivery time is defined as the case may be according to the commercial relationships established with the purchaser. MICHAUD EXPORT use their best endeavours to deliver the goods by the time fixed for delivery, however, in case of delay, they will not be responsible for any loss or damage thereby caused to the purchaser unless expressly accepted in writing by MICHAUD EXPORT.
4.2 Should partial or delayed deliveries occur, it does not justify any cancellation of purchaser's orders, and MICHAUD EXPORT shall not be liable and responsible for any actual or potential, direct or indirect, or consequential damages caused to the purchaser through delay or by failing on deliveries.
- DISPATCH:
5.1 MICHAUD EXPORT use their best endeavours to select appropriate method of delivery with no responsibility on it. Choice shall be made freely unless purchaser's contrary notice who then support following additional cost that may follow.
5.2 Ex-works delivery is considered as an effective delivery, notably regarding modalities and payment terms.
5.3 Partial loss or damage during in transit must be reported to the carrier and to MICHAUD EXPORT in writing by registered letter with proof of delivery within three days after receipt of the goods by the purchaser. If these conditions are not complied with, the purchaser will be responsible for any loss or damage that may occur during transit.
The purchaser commits to return to MICHAUD EXPORT at his own costs and risks the products he rejected during his check-up for due investigation. The purchaser agrees that MICHAUD EXPORT shall return the products at the purchaser's cost and risks after examination or any possible repair or replacement.
- USE OF THE PRODUCTS:
The purchaser has to follow imperatively the laws, current prescriptions in due force and custom rules regarding instruction procedures and use of the products. MICHAUD EXPORT shall not be responsible in case of wrong use of the products according to the specifications and prescriptions of use advised by MICHAUD EXPORT.
- TESTING AND INSPECTION:
When testing and/or inspection is required by the purchaser, tests shall be carried out at MICHAUD SA's facilities, and relevant costs shall be covered by the purchaser, unless any exemption agreed and approved by MICHAUD EXPORT.
- WARRANTY:
8.1 MICHAUD EXPORT guarantees the purchaser against latent defect of the goods according to the conditions driven by the law.
Once a guaranteed shortcoming is stated by the buyer, it is up to him to send his reclamation to MICHAUD EXPORT with a registered letter with proof of delivery within a time limit of three months starting from the fault's appearance.
This reclamation has to be accompanied by a detailed description of the fault's nature.
After this period of time the goods delivered shall be deemed as in good condition and the purchaser is no longer entitled to make a complaint about any defect on the products.
- 8.2 MICHAUD EXPORT guarantees its products for a period of one year after delivery or shifting from our facilities.
In case of fault, defect, non-conformity proved or admitted by MICHAUD EXPORT, MICHAUD EXPORT undertakes to replace the products admitted defective in reasonable time. In order to be replaced, rejected products shall be returned. No other prejudice of damage shall be required by the purchaser.
- 8.3 The guarantee is excluding the followings:
- If the product has been repaired or modified by the buyer or by third parties chosen by him ; or
- If it concerns items that have been made by sub-contractors or MICHAUD EXPORT

suppliers to whom the normal producer or Subcontractor guaranty applies ; or
- If the defect is coming from the buyer's negligence, or recklessness ; or
- If the defect is the result of a force majeure or of an external event.

- TAKING BACK OF THE PRODUCTS:
In case the purchaser renounces to the ordered and delivered products, no taking back will be considered unless expressly accepted in writing by MICHAUD EXPORT. Rejected goods shall be sent back to the French plant defined by MICHAUD EXPORT. Credit of the sent back goods will be registered after receipt in the warehouse. Taking back value will systematically take into consideration a reduction to be defined for administrative and check-up cost as well as a reduction for restoration of the product and packaging if necessary.
- PAYMENT:
10.1 Payment terms are defined with the purchaser in the particular conditions. All goods shall be paid to the MICHAUD EXPORT head office located in Viriat France whatever the payment terms used. Invoice date shall be the starting point of the settlement period.
10.2 Legal property transfer of the goods shall be retained until full payment of the whole sold goods. MICHAUD EXPORT keep the property of the goods until full payment of their price, sending bank drafts or any other bond notes building payment obligation not constituting a payment.
10.3 Any unpaid draft or invoice being at maturity will produce due interest, without giving notice. Applicable penalties shall be equivalent to three times the legal interest rate at the payment date located on the invoice. Payment of any other sums owed by the failing debtor shall be immediately payable, even if they are accepted draft. Any full or partial non-execution by the Customer of the payment obligations or any delay in payment shall, without prejudice to any damages and interests, lead to the payment of fees of 40 € for collection charges set down by decret made pursuant to the section 121 of this act. Moreover, MICHAUD EXPORT keep the right, in that case, to suspend or cancel fulfilment of the contracts and pending orders and demand cash in advance payment of any other delivery, whatsoever past conditions agreed for such delivery.
10.4 Any change in the purchaser situation regarding sale or other party's investment in the business, decease, incompetence, suspension of payment, official recovery, official receivership, temporary proceedings suspension, dissolution or form modification, even after partial fulfilment of the contracts or pending orders entails application of the same conditions as the ones described in case of unpaid invoice.
- FORCE MAJEURE:
Neither MICHAUD EXPORT nor the buyer can be held responsible for a possible delay or lack in their obligations' execution, if this delay or lack is the result of a force majeure. A force majeure exists notably in the following situations, if they present certain characteristics of a force majeure, this means if the event was irresistible, unforeseeable, and externally provoked. This non-exhaustive list enumerates some situations which constitute a force majeure: explosions, fires, incidents, destruction of machinery, factories and equipment, natural disasters, acts by governmental authorities (refusing or cancellation of a license ...), wars, or any acts of war, flooding, riots, or social conflicts.

The party that faces such a circumstance which responds to the above given definition must immediately inform in writing the other party of this intervention and when this circumstance possibly ends. In the case of absence of information, the concerned party can not prevail over, unless in the case of intervening circumstances, which also prevent any communication.

Where a force majeure case which responds to the above definition intervenes, the time for the contract's execution is prolonged for a period of time corresponding to the event's duration. This does not include any payment of damages and interest or a penalty for the delay.
However if the above mentioned circumstances do persist for a period of time of 6 months, each party can cancel the contract without any payment of damages and interest.
- CANCELLATION:
The contract is cancelled by law, without the need of any judicial formality where there are serious shortcomings by one of the parties concerning essential obligations. Cancellation would become effective within one month after the mailing of a registered letter with proof of delivery of an earlier made formal notice which stayed unfruitful.

The essential obligations, which the parties have to fulfill, notably consist of the due payment by the buyer or the merchandise's non-delivery by MICHAUD EXPORT. In case of a serious shortcoming to the contract's essential obligations, the sale will be cancelled in good law without prejudice of damages and interest that can be claimed.

Any tolerance that one party allows the other not to prevail immediately over one of its rights, will not prejudice the party's rights to prevail over them later, except in case of a contrary convention or stipulation to the present conditions.
- JURISDICTION ATTRIBUTION:
These General Selling Conditions shall be ruled and governed by the French Law as followed by the courts. Any dispute deriving from these General Selling Conditions, after failure of a previous conciliation procedure shall be of the exclusive French jurisdiction of the competent Commercial Court of Lyon located in France. Each party accepts to bear any costs and expenses it would have exposed.
- OFFICIAL LANGUAGE:
The French version of these general selling conditions, available upon enquiry, is the only legally acceptable version.



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