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www.janitza.com

BCM Power Analyser

UMG 804

Installation manual

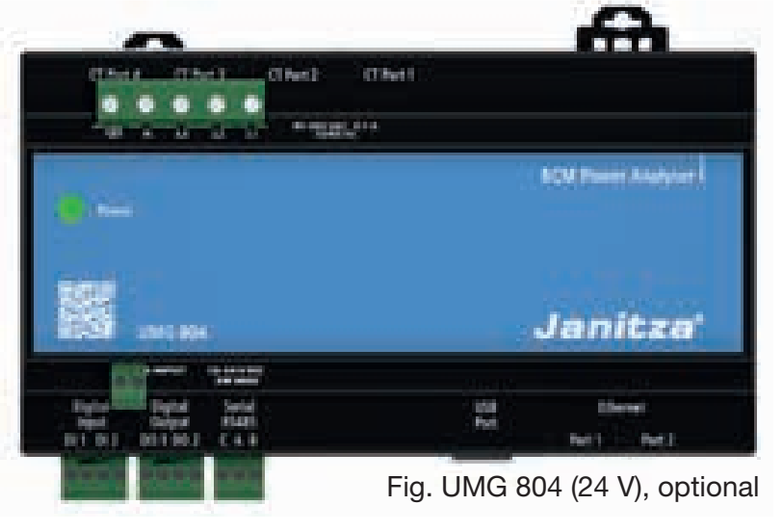

Fig. UMG 804 (24 V), optional

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Janitza®

Safety Information

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This product must be installed inside a suitable fire and electrical enclosure.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Do not use this product for life or safety applications.
- Do not install this product in hazardous or classified locations.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Product may use multiple voltage/power sources. Disconnect ALL sources before servicing.
- Use a properly rated voltage sensing device to confirm that power is off. DO NOT depend on this product for voltage indication.
- Current transformer secondaries (current mode) must be shorted or connected to a burden at all times.
- Products rated only for basic insulation must be installed on insulated conductors.
- Replace all doors, covers and protective devices before powering the equipment.
- The installer is responsible for conformance to all applicable codes.
- Failure to follow these instructions will result in death or serious injury.

A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and installations, and has received safety training to recognize and avoid the hazards involved.
NEC Article 100:
If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

Provide a disconnect device to disconnect the meter from the supply source. Place this device in close proximity to the equipment and within easy reach of the operator, and mark it as the disconnecting device. The disconnecting device shall meet the relevant requirements of IEC 60947-1 and IEC 60947-3 and shall be suitable for the application. In the US and Canada, disconnecting fuse holders can be used.

Provide overcurrent protection and disconnecting device for supply conductors with approved current limiting devices suitable for protecting the wiring. Control system design must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure.

Examples of critical control functions are emergency stop and over-travel stop.

⚠ WARNING

LOSS OF CONTROL

- **Assure that the system will reach a safe state during and after a control path failure.**
- **Separate or redundant control paths must be provided for critical control functions.**
- **Test the effect of transmission delays or failures of communication links.[1]**
- **Each implementation of equipment using communication links must be individually and thoroughly tested for proper operation before placing it in service.**
- **Failure to follow these instructions may cause injury, death or equipment damage.**

[1] For additional information about anticipated transmission delays or failures of the link, refer to NEMA ICS 1.1 (latest edition). Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Controls or its equivalent in your specific country, language, and/or location.

FCC Part 15 information Note:
This equipment has been tested by the manufacturer and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area

is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this product without the express authorization of the manufacturer nullify this statement.

This Class A digital apparatus complies with Canadian ICES-003.)

This symbol indicates an electrical shock hazard exists.

Documentation must be consulted where this symbol is used on the product.

⚠ DANGER

RISQUE DE CHOC ÉLECTRIQUE, D'EXPLOSION OU D'ARC ÉLECTRIQUE

- **Cet appareil doit être installé à l'intérieur d'une armoire offrant une protection contre les risques électriques et d'incendie.**
- **Suivez les bonnes pratiques de travail associées à la sécurité des interventions électriques. Voir l'article NFPA 70E aux États-Unis, ou la réglementation locale en vigueur.**
- **Cet équipement ne doit être installé et entretenu que par du personnel qualifié.**
- **N'utilisez pas ce produit pour des applications de sécurité ou en charge de la protection vitale des personnes.**
- **N'installez pas ce produit dans des endroits dangereux ou classifiés.**
- **Lisez, comprenez et suivez les instructions avant d'installer ce produit.**
- **Coupez toutes les équipements d'alimentation électrique avant de travailler sur ou dans l'équipement.**
- **Le produit est susceptible d'utiliser plusieurs sources de tension, d'alimentation.**
- **Déconnectez TOUTES les sources avant toute intervention d'entretien.**
- **Utilisez un dispositif de détection de tension adéquat afin de vérifier que l'alimentation est bien coupée. NE considérez PAS ce produit comme un indicateur de tension.**
- **Les secondaires du transformateur de courant (mode courant) doivent être en permanence mis en court-circuit ou reliés à une charge.**
- **Les produits n'étant conçus que pour une isolation nominale, doivent être installés sur des conducteurs isolés.**
- **Replacez toutes les portes, tous les capots et dispositifs de protection avant de mettre l'équipement sous tension.**
- **L'installateur est responsable du respect de toutes les réglementations en vigueur.**
- **Le non-respect de ces instructions est susceptible d'entraîner la mort ou des blessures graves.**

Une personne qualiée est une personne disposant des compétences et des connaissances liées à la construction et à l'utilisation de cet équipement et de ces installations électriques, et a suivi une formation de sécurité lui permettant d'identier et d'éviter les risques impliqués. NEC article 100 En cas d'utilisation de l'appareil d'une manière non conforme à celle spéciée par le fabricant, la sécuritéfournie par l'équipement est susceptible d'être compromise. Aucune responsabilité ne sera assumée par le constructeur pour toutes les conséquences découlant de l'utilisation de cet équipement.

Utilisation dans un environnement de pollution de niveau 2 ou inférieur uniquement. Un environnement de niveau de pollution 2 doit contrôler le niveau de pollution conductrice et la possibilité de condensation ou d'humidité élevée. Prendre en compte l'enceinte, l'utilisation correcte de la ventilation, les propriétés thermiques de l'équipement, et les interactions avec l'environnement.

Utiliser un dispositif de déconnexion pour déconnecter l'appareil de mesure de la source d'alimentation. Placer ce dispositif à proximité immédiate de l'équipement et à portée de main de l'opérateur, et l'identier en tant que dispositif de déconnexion par un marquage physique. Le dispositif de déconnexion doit satisfaire aux exigences des articles CEI 609471 et CEI 609473 et doit être adapté à l'application. Aux ÉtatsUnis et au Canada, des portefusibles sectionneurs peuvent être utilisés. Mettre en place une protection contre les surintensités ainsi qu'un dispositif de déconnexion pour les conducteurs d'alimentation, ces protections doivent de plus intégrer des dispositifs de limitation de courant approuvés, appropriés à la protection du câblage.

La conception du système de contrôle doit tenir compte des types de défaillances potentielles des liaisons de commande et, pour certaines fonctions de commande critiques, prévoir un moyen d'atteindre un état de fonctionnement sûr pendant et après la défaillance d'une de ces liaisons. L'arrêt d'urgence et l'arrêt en cas de dépassement de course sont des exemples de fonctions de commande critiques.

⚠ AVERTISSEMENT

PERTE DE LA LIAISON DE COMMANDE

- **Assurez-vous que le système atteigne un état de fonctionnement sûr pendant et après un dysfonctionnement de la liaison de commande.**
- **Des liaisons de commande séparées ou redondantes doivent être prévues pour les fonctions de commande essentielles.**
- **Testez l'effet des retards de transmission ou des pannes des liaisons de communication.[1]**
- **Le fonctionnement correct de chaque installation d'équipements**

Le non-respect de ces instructions est susceptible d'entraîner des blessures, la mort ou des dommages matériels.

[1] Pour plus d'informations sur les latences de transmission ou sur les défaillances de la liaison possibles, reportez-vous à la norme NEMA ICS 1.1 (dernière édition). Safety Guidelines for the Application, Installation and Maintenance of Solid-State Controls (consignes de sécurité pour l'utilisation, l'installation et l'entretien de commandes electroniques) ou son équivalent dans votre pays, votre langue et/ou votre site.

Ce symbole indique qu'il existe un risque de choc électrique.

La documentation doit être consultée lorsque ce symbole est utilisé sur le produit.

1 General information

Disclaimer

It is essential that the information products for the devices are observed to ensure safe operation and achieve the specified performance characteristics and product features. Janitza electronics GmbH assumes no liability for personal injuries, property damage and financial losses resulting from the failure to observe the information products.

Make sure that your information products are legible and accessible. Further documentation can be found on our web site www.janitza.com under Support > Downloads.

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Subject to technical changes.

- Make sure that the installation instructions match your device.
- First, make sure you have read and understood the document accompanying the product.
- Keep the documents accompanying the product accessible through its service life and hand them over to the subsequent owner where applicable.
- Please refer to www.janitza.com for information concerning device revisions and the associated adjustments to the documentation accompanying the product.

Disposal

Please observe the national regulations. Dispose of individual parts, where necessary, depending on the properties and existing country-specific regulations, e.g. as:

Electronic waste, Plastic, Metal or commission a certified disposal company with the scrapping.

Relevant laws, applied standards and directives

Please refer to the Declaration of Conformity on our web site (www.janitza.com) for the laws, standards and directives applied by Janitza electronics GmbH.

2 Safety

Safety instructions

The installation instructions do not include a complete list of all safety measures necessary for operating the device.
Special operating conditions may require additional measures. The installation instructions contain notes that must be observed for your personal safety and to prevent property damage.

Used symbols:

	The additional symbol on the device itself indicates an electrical danger that can result in serious injuries or death.
	The general warning symbol calls attention to possible risks of injury. Observe all the instructions listed under this symbol in order to prevent injuries or even death.

Safety instructions are highlighted by a warning triangle and are presented as follows depending on the level of risk:

⚠ DANGER
Indicates an imminent danger that will result in serious and/or fatal injuries.

⚠ WARNING
Indicates a potentially dangerous situation that can result in serious injuries or death.

⚠CAUTION

Indicates a potentially dangerous situation that can result in minor injuries or property damage.

ATTENTION

Indicates an imminently dangerous situation that can result in property damage or environmental damage in the event of noncompliance.

NOTICE

Points out procedures during which a danger of injuries or property damage does **not** exist.

Safety measures

When operating electrical devices, specific parts of these devices inevitably carry dangerous voltage. As a result, serious bodily harm or property damage can occur if they are not handled correctly:

- Before connecting the device, ground it at the protective conductor terminal if available.
- Dangerous voltages may be present in all circuit parts connected to the voltage supply.
- There may still be dangerous voltages present in the device even after it is disconnected from the supply voltage (capacitor storage).
- Do not operate operating equipment with open current transformer circuits.
- Do not exceed the limit values specified in the user manual and on the rating plate. This must also be observed during inspections and commissioning.
- Observe the safety instructions and warning notices in the documents that accompany the devices.

Qualified personnel

To prevent personal injuries and property damage, only qualified personnel with electrical engineering training may work on the device. They must also have knowledge

- Of the national accident prevention regulations
- In safety technology standards
- In the installation, commissioning and operation of the device.

Intended use

The device is

- intended for installation in switching cabinets and small installation distributors. The device can be installed in any mounting position (please observe section 4).
- not intended for installation in vehicles! Using the device in mobile equipment is considered an unusual environmental condition and is only permissible by special agreement.
- not intended for installation in areas exposed to harmful oils, acids, gases, vapors, dust and radiation, etc.

The prerequisites for smooth and safe operation of the device include proper transport, storage, setup and assembly, as well as proper operation and maintenance.

3 System overview

The UMG 804 Multi-Circuit Monitoring System is designed to measure the current, voltage, and energy consumption and other critical power parameters up to 96 circuits.

Current transformers are connected via a variety of DIN Rail CT Interface Boards optimized for different applications that connect to the UMG 804 via network cables. Each DIN Rail CT Interface Board monitors up to 24 circuits and the UMG 804 hosts up to four interface boards.

The UMG 804 can communicate via Modbus RTU, Modbus TCP/IP, BACnet, SNMP and REST API as well as provides access to real time and logged data via an onboard web server.

Waveform capture and voltage events can be logged on a USB flash drive and viewed on the HTML console or exported over the network.

The UMG 804 also monitors two digital inputs and provides two digital outputs.

⚠WARNING

Risk of injury due to defective devices.

Devices, which may have possibly been damaged due to an improper use, can no longer fulfill the safety regulations and represent a risk of injury.

Shut down the device immediately and secure it against inadvertent commissioning if the device:

- **has visible damage,**
- **no longer functions despite an intact power supply,**
- **was exposed to a prolonged period of unfavorable conditions or transport stresses.**

NOTICE

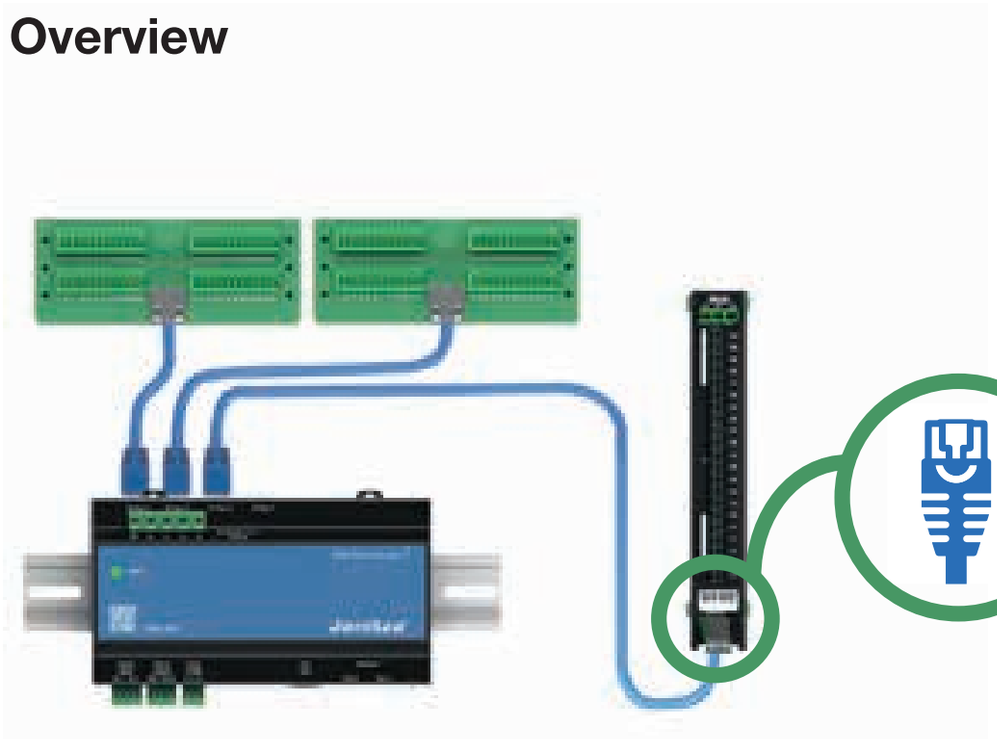
Property damage due to security vulnerabilities in programs, IT networks and protocols.

Security vulnerabilities can result in data misuse, faults and even cause your IT infrastructure to shut down.

- **To protect your IT system, network, data communications and measurement devices:**
- **Notify your network administrator and/or IT manager.**
- **Always keep the measurement device firmware up to date and protect the communication to the measurement device with an external firewall. Close any unused ports.**
- **Take protective measures against viruses and cyber attacks from the Internet, e.g. through firewall solutions, security updates and antivirus programs.**
- **Eliminate security vulnerabilities and update or renew existing protection for your IT infrastructure.**

4 UMG 804 Installation

Overview



The DIN Rail CT Interface Boards connect to the Smart Ports on the UMG 804 using network cables.

The UMG 804 can also be connected via Splitcore CT with Molex connector (available at Janitza electronics GmbH)

⚠ DANGER

Disconnect power to the panel or equipment on which the monitor is being installed before starting the installation.

⚠ DANGER

Débranchez l'alimentation du panneau ou de l'équipement sur lequel le moniteur est en cours d'installation avant de commencer l'installation.

The UMG 804 can be housed in existing enclosures where permitted by code or inside standard electrical enclosures.

The UMG 804 is installed by mounting on standard 35mm DIN rail (DIN EN 60715). The enclosure can be mounted in any orientation. Secure the DIN rail using a mechanical fastener such as sheet metal screw or bolt to a secure surface.

The device is installed in switching cabinets or in small installation distributors in accordance with DIN 43880 on a 35 mm mounting rail. It can be mounted in any position.

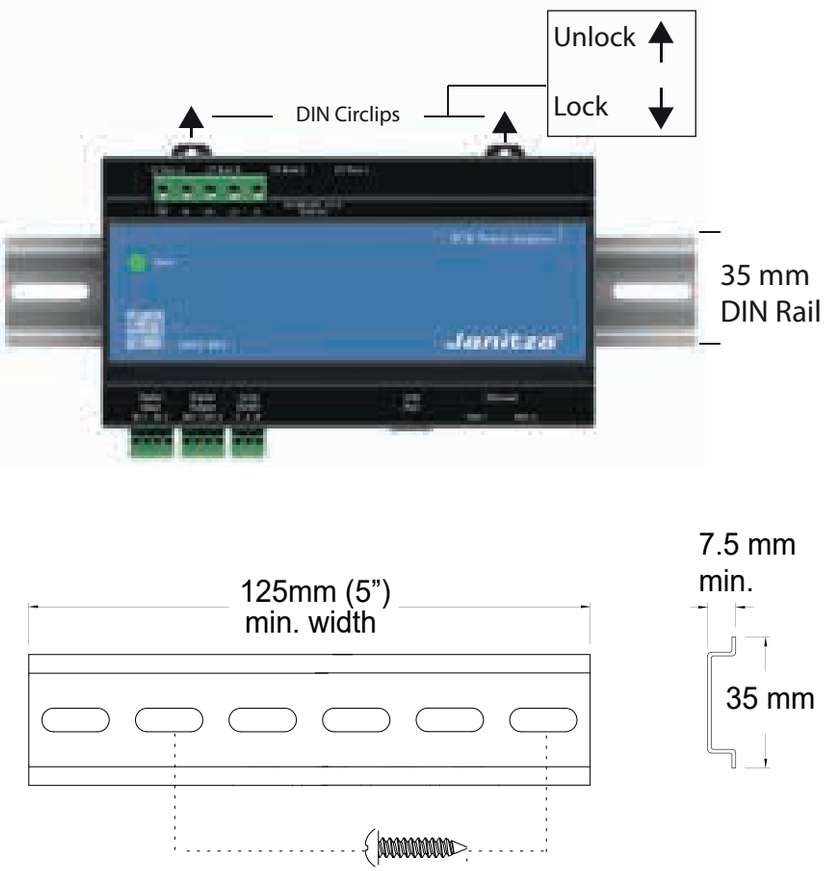


Fig.: UMG 804 Installation

5 Connection of modules

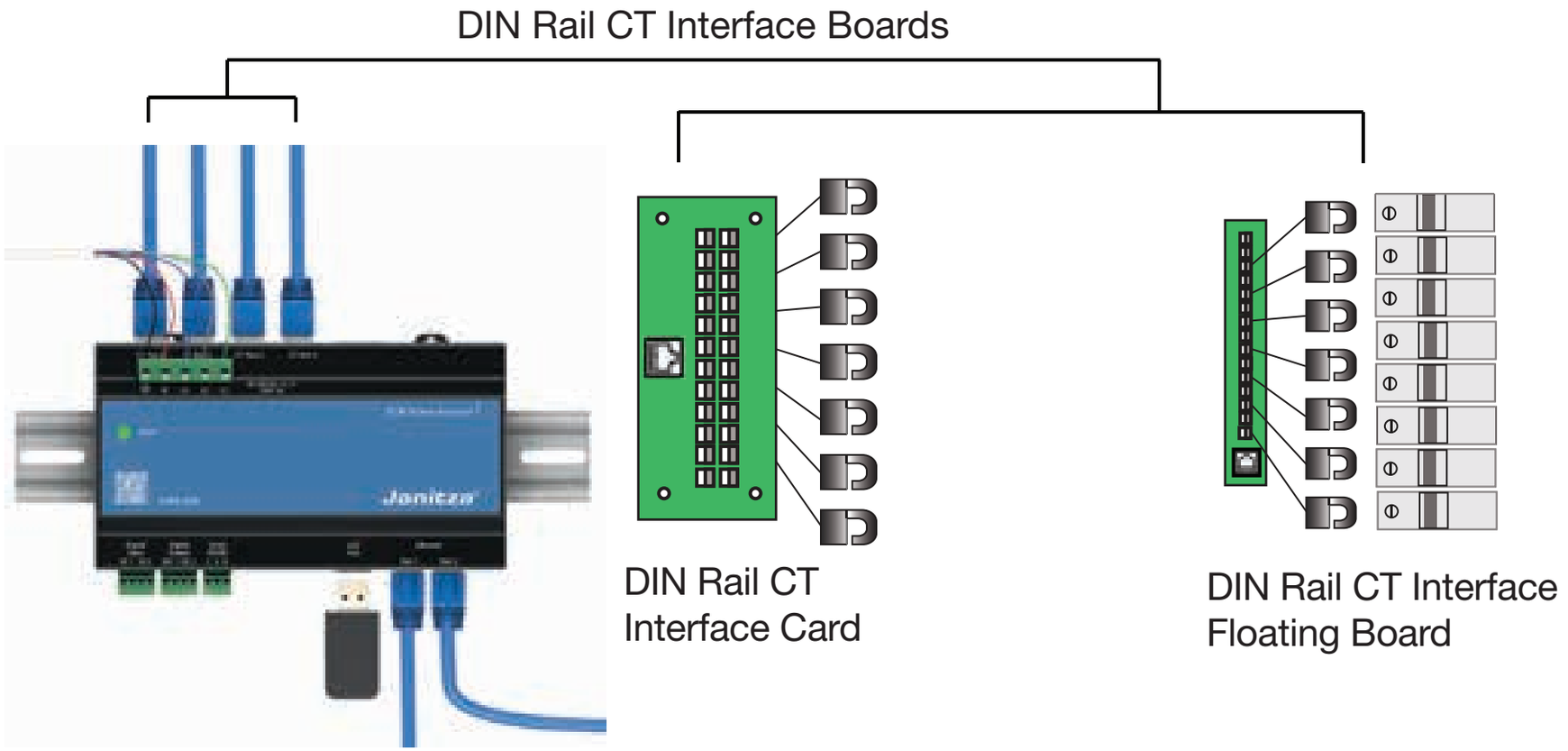


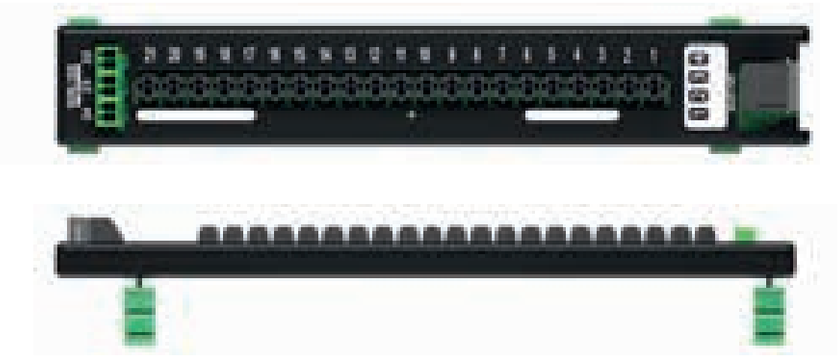
Fig.: DIN Rail CT Interface Boards connect to the Smart Ports on the UMG 804 using network cables

ATTENTION

Property damage due to noncompliance with the assembly instructions!
Noncompliance with the assembly instructions can damage or destroy your device and its components. Therefore, please observe the following:

- **Observe minimum distances during assembly!**
- **Ensure sufficient air circulation in your installation environment and, where applicable, sufficient cooling with high ambient temperatures!**
- **Ground conductive switchboards!**

6 DIN Rail CT Interface Floating Board (CTS24FBV)



Installation

- DIN Rail CT Interface Floating Boards are oriented according to the panelboard type and numbering scheme in one of the four configurations shown.
- In Top Feed and Bottom Feed orientations the panelboard type and numbering is identical however the user can select to install the Interface Board with the Smart Port (RJ45 connector) top facing (Top Feed) or bottom facing (Bottom Feed).
- Ensure that the connections to the UMG 804 Smart Ports match those shown on the orientation diagrams.
- Smart Ports hosting the Interface Card must be correctly set in the HTML console (refer to the manual under www.janitza.com)

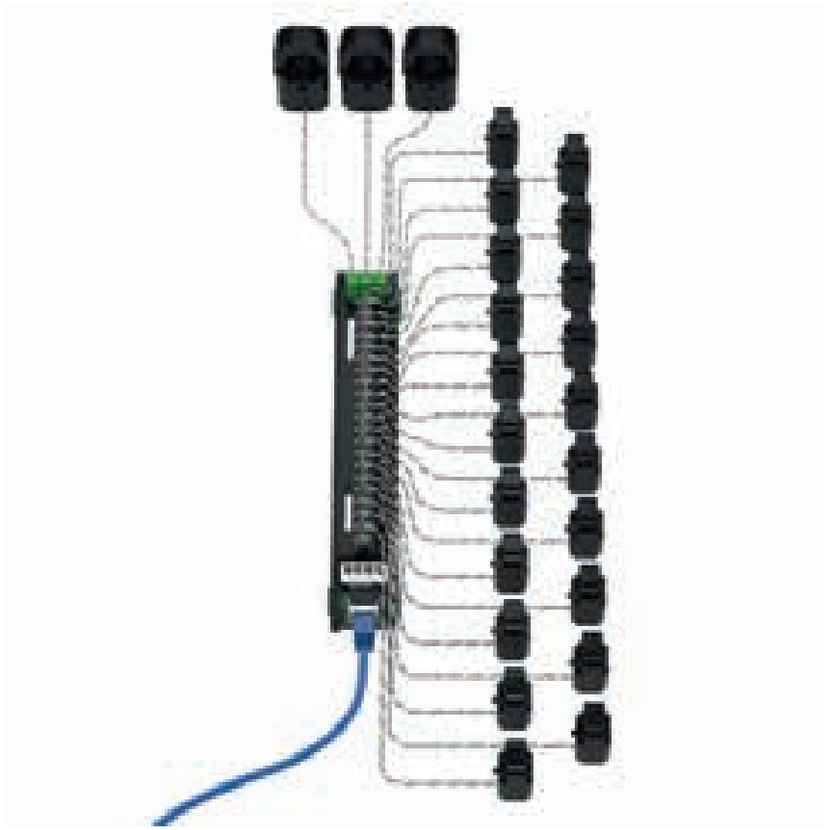
⚠ CAUTION

Note that the when the Ethernet cable is run in the same raceway or conduit area it must have insulation rated to the correct voltages and listings required. For applications up to 240 VAC the in insulation must be rated to 300 VAC. For 480 VAC applications use 600 VAC insulation. The appropriate cables can be provided by Janitza.

⚠ ATTENTION

Notez que lorsque le câble Ethernet est branché dans le même chemin de roulement ou la même zone de conduits, il doit être isolé aux tensions et aux listages requis. Pour les applications jusqu'à 240 VAC, l'isolation intérieure doit être nominale jusqu'à 300 VAC. Pour les applications à 480 VAC, utilisez une isolation 600 VAC. Les câbles appropriés peuvent être fournis par Janitza.

Current Transformer Types



1. Plug the branch CTs into the polarized connectors on the Interface Board, refer to (1)

2. Place the CT on the correct conductor being sure to align the CT with the correct terminal and breaker conductor skipping empty conductors,
refer to (2)

3. Snap the CT closed around the conductor and make sure latch is locked,
refer to (3)

INFORMATION

The CT Orientation is not important; the system will auto correct,

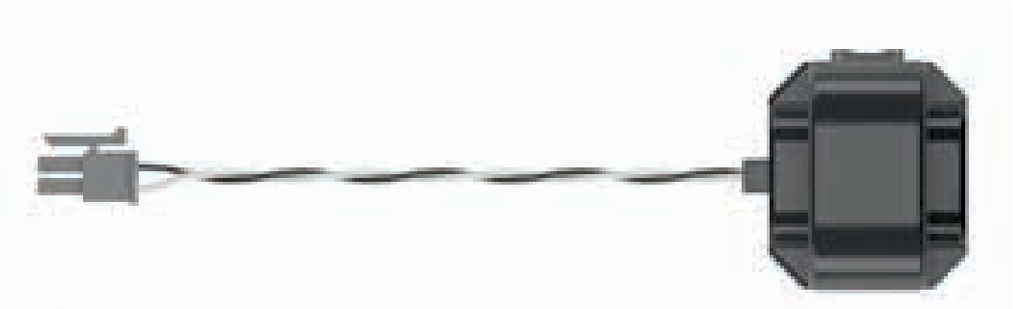
NOTE

Further information can be found in the user manual on our homepage www.janitza.com


MAIN / AUX
24 23 22
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
1 2 3 4
SMART PORT

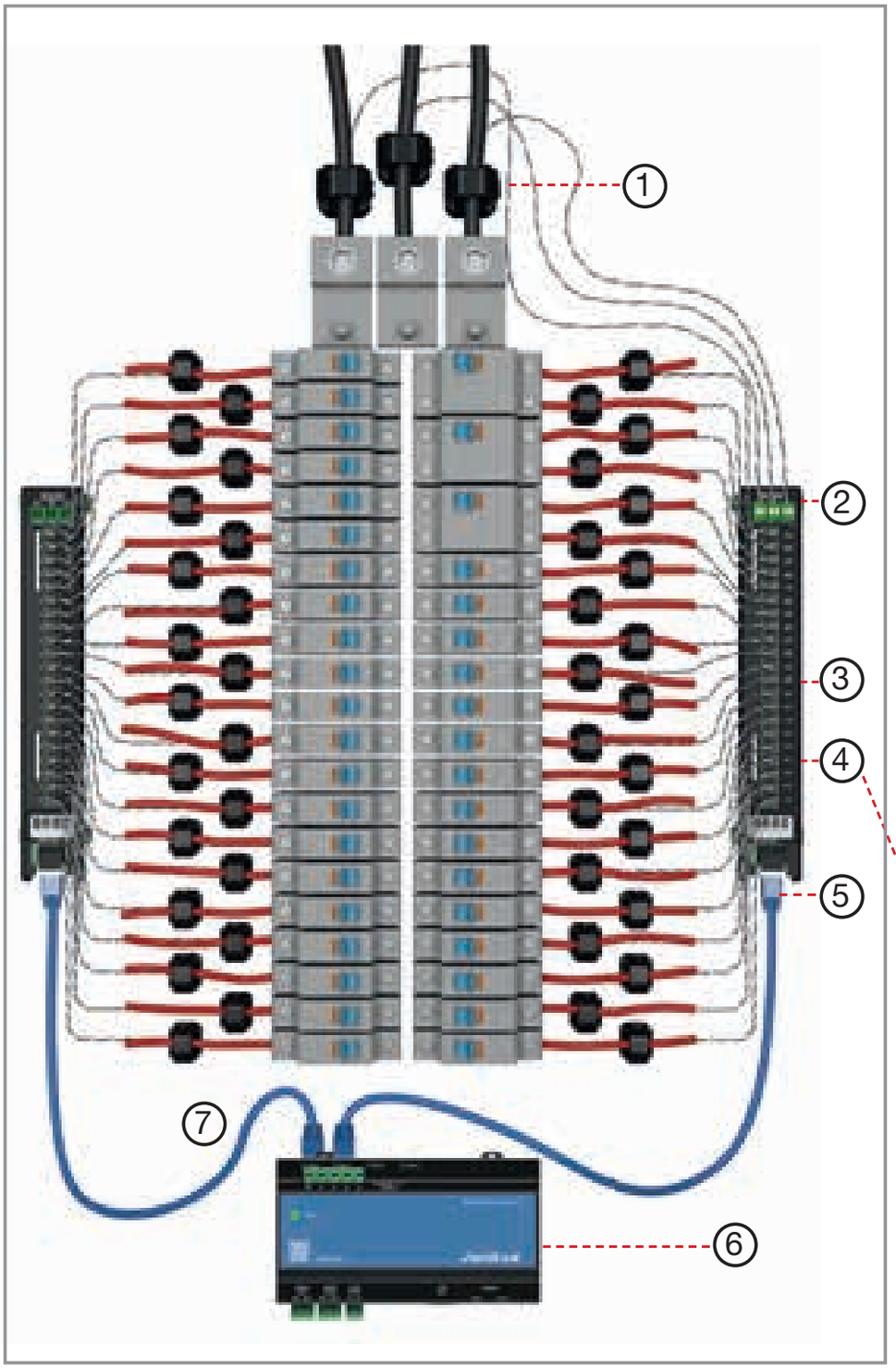
3

2



1

Application Example



① Main input CTs can be connected to CT auxiliary terminal blocks.

② Auxiliary CT Terminal Block: monitors up to three auxiliary CTs per DIN Rail CT Interface Floating Board, typically used to monitor main input circuits.

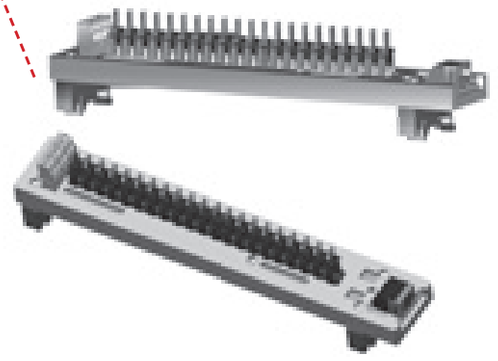
③ Split core CTs are rated for different types (see at technical data).

④ Molex connectors 1-21.

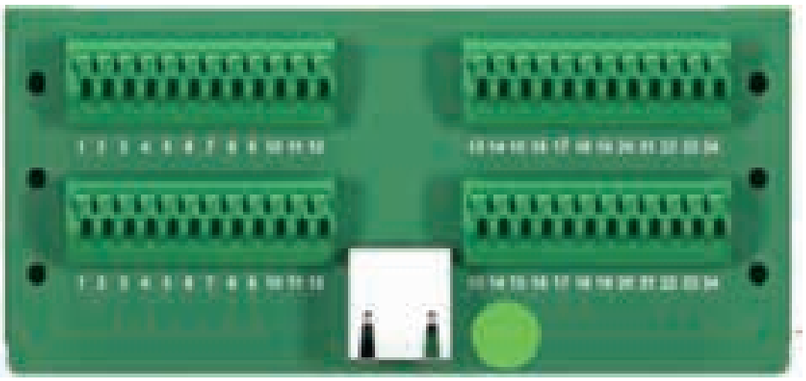
⑤ Smart Port: RJ45 connector used to interface the CT strip with the UMG 804.

⑥ UMG 804: hosts up to four floating interface boards.

⑦ Network Cable: used to connect DIN Rail CT Interface Floating boards.



7 DIN Rail CT Interface Card



Installation

The DIN Rail CT Interface Card is mounted as closed to the location where the CTs are placed to minimize CT wiring distance. The board is installed by mounting it on a standard 35mm DIN rail strip which can be affixed mechanically using screws or bolts, or using VHB tape to affix the DIN rail.

Current Transformer Types

Connect the current transformers (CT's) into to the CT terminal block as shown in figure. Always observe the wiring polarity with the white or positive wire of the CT connecting to the top terminal blocks and black or negative to the bottom terminal blocks as shown in figure. Prior to inserting the CT wires ensure that at least 8 mm (¼") of CT conductor is uninsulated before inserting into the terminal. Gently pull the conductor after insertion to ensure that is secured by the cage connector.

If the conductor needs to be removed from the terminal push the lever on top of the terminal gently pull the conductor when the lever is depressed.

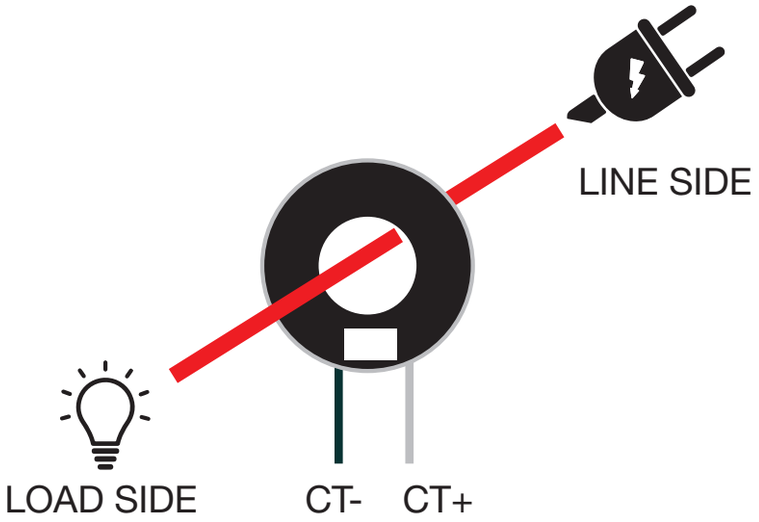
The DIN Rail CT Interface Card is designed to used 0.33 V output CTs provided by Janitza. Other 0.33 V CTs won`t work, Janitza does not warranty the performance if third party CTs are used. DO NOT USE unburdened i.e. current output, CTs as these will destroy the board as well as can produce lethal voltages during installation.

CTs types (i.e. solid core and split core) and current ranges (i.e. 50 A – 600 A) may be mixed on any circuit so long as the correct current specification is configured in the CT setting on the configuration chart.

Split Core

Solid Core

Vout



Note: CT orientation and wiring polarity will be automatically corrected to provide the correct reading.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- **While removing or installing panels and covers, assure that they do not contact an energized bus.**
- **NEVER bypass external fusing.**
- **NEVER short the secondary of a potential transformer.**
- **Before closimg covers and doors, carefully inspect the work area and remove any tools, wire scraps or other objects that may have been left inside the equipment.**

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

RISQUE DE CHOC ÉLECTRIQUE, D'EXPLOSION OU D'ARC ÉLECTRIQUE

- **Lors du retrait ou de l'installation des panneaux et des capots, assurez-vous qu'ils ne sont pas en contact avec un bus sous tension.**
- **NE JAMAIS contourner la fusion externe.**
- **NE JAMAIS court-circuiter le secondaire d'un transformateur de potentiel.**
- **Avant de fermer les portes et les capots, inspectez soigneusement la zone de travail et retirez tous les outils, débris de fils métalliques ou autres objets éventuellement restés à l'intérieur de l'équipement.**

Le non-respect de ces instructions est susceptible d'entraîner la mort ou des blessures graves.

8 Voltage Input / Electrical Connections

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- **While removing or installing panels and covers, assure that they do not contact an energized bus.**
- **NEVER bypass external fusing.**
- **NEVER short the secondary of a potential transformer.**
- **Before closimg covers and doors, carefully inspect the work area and remove any tools, wire scraps or other objects that may have been left inside the equipment.**

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

RISQUE DE CHOC ÉLECTRIQUE, EXPLOSION OU ARC FLASH

- **Lors du retrait ou de l'installation des panneaux et des capots, assurez-vous qu'ils ne touchent pas un bus sous tension.**
- **NE JAMAIS contourner la recherche externe.**
- **NE JAMAIS court-circuiter le secondaire d'un transformateur de potentiel.**
- **Avant de fermer les capots et les portes, inspectez soigneusement la zone de travail et retirez les outils, bouts de fil ou autres objets éventuellement restés à l'intérieur de l'équipement.**

Si ces précautions ne sont pas respectées, cela entraînera la mort ou des blessures graves.

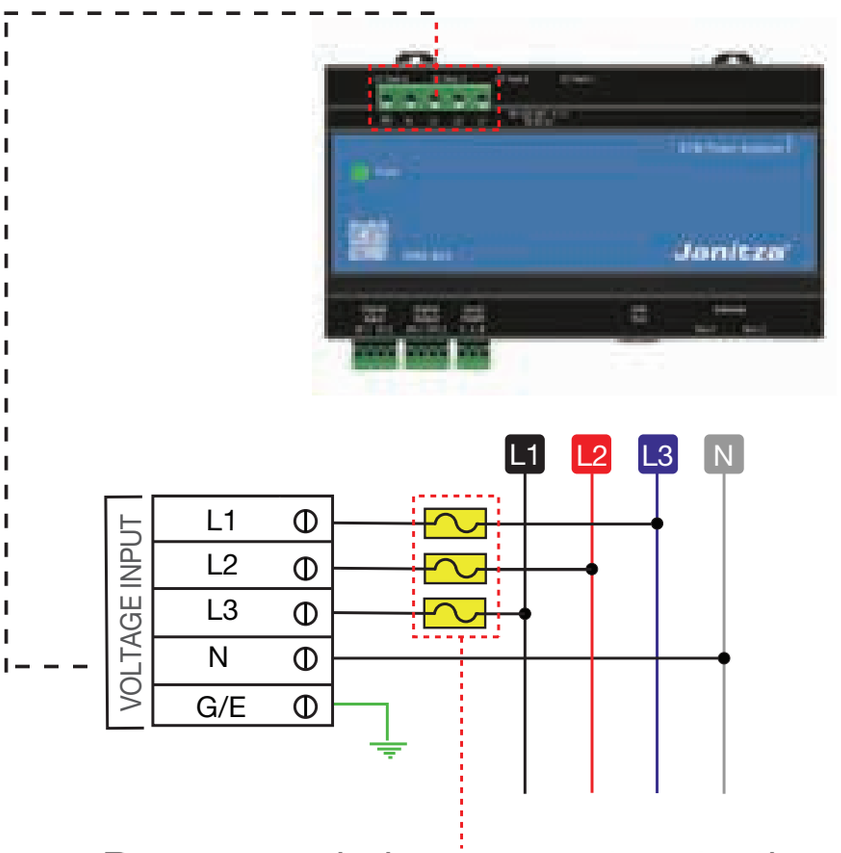
UMG 804 voltage connection wiring

The UMG 804 must be connected to the voltage source being monitored. The Voltage input terminal serves as the both power source to the monitor and voltage sensing. All phases that are to be monitored must be connected. The current consumption of the monitor will not exceed 0.2 A at any operational voltage.

The monitor is fused internally but additional fusing may be required per local and national codes.

Inline fuses are available from Janitza.

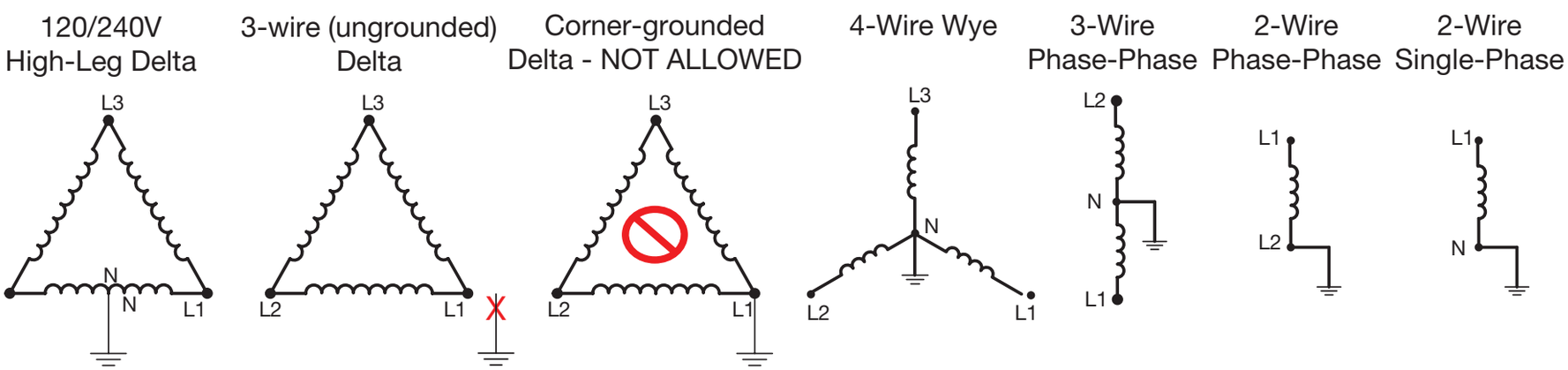
- **Voltage input 230 V AC**



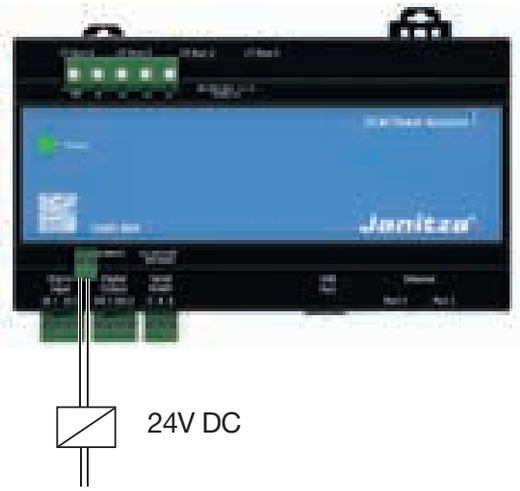
Recommended overcurrent protection:
1.0 A @ 300 V AC

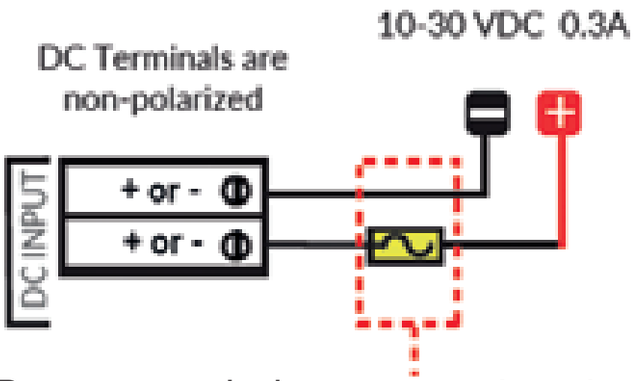
Acceptable wiring configurations

The monitor may be connected to any wiring configuration shown in figure below except for corner grounded delta circuits.



- **Voltage input 24 V DC (optional)**





Recommended overcurrent protection:
1.0 A @ 300 V AC

NOTE
Devices that can be operated with DC voltage are protected against polarity reversal

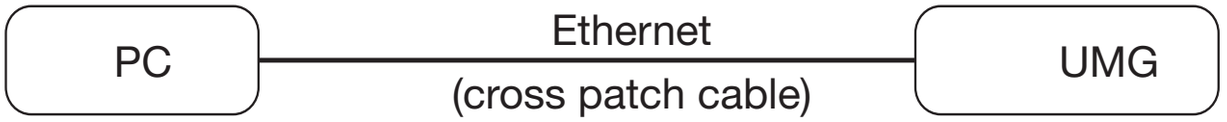
9 Establishing the connection to the PC

The 3 most common connections for communication between PC and device:

Ethernet connection

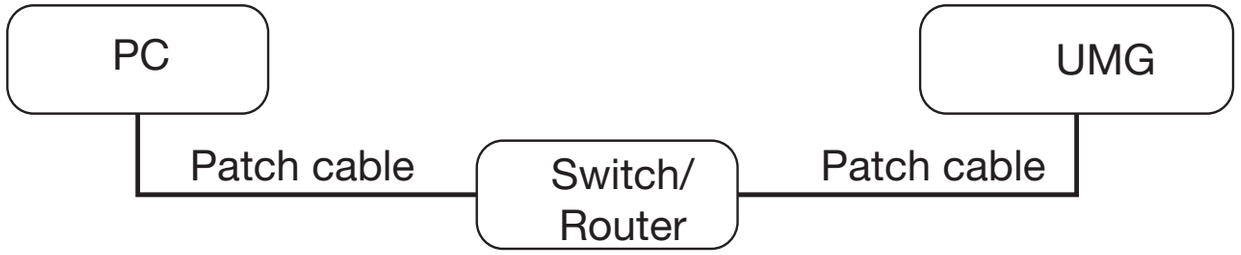
Recommendation: Use at least CAT5 cables!

1.



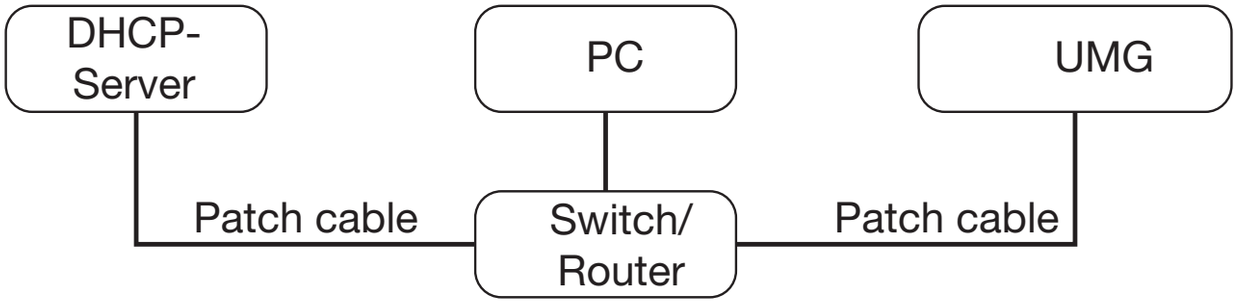
The device and PC require a static IP address.

2.



The device and PC require a static IP address.

3.

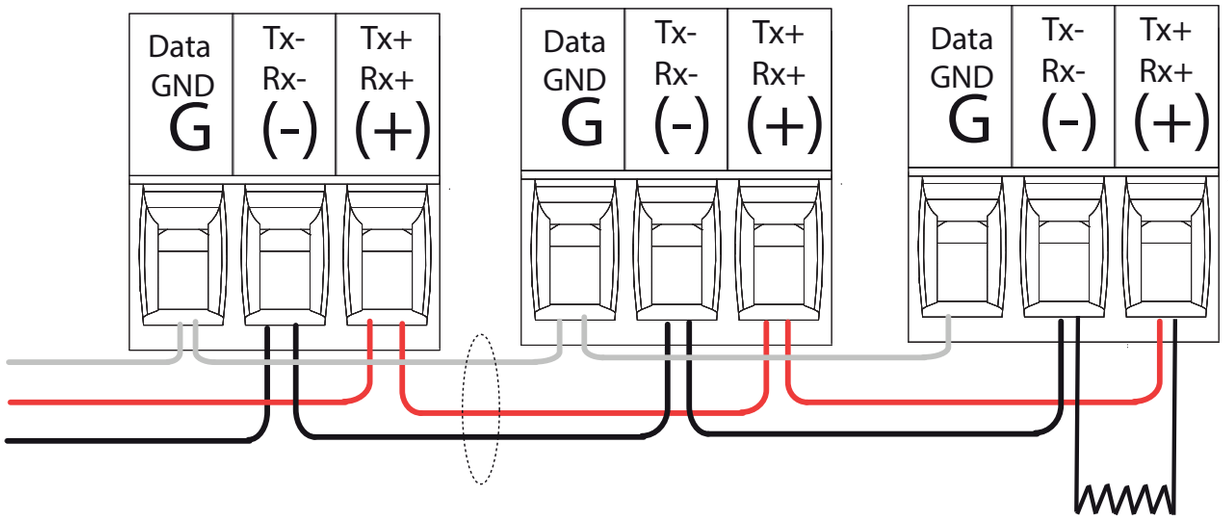


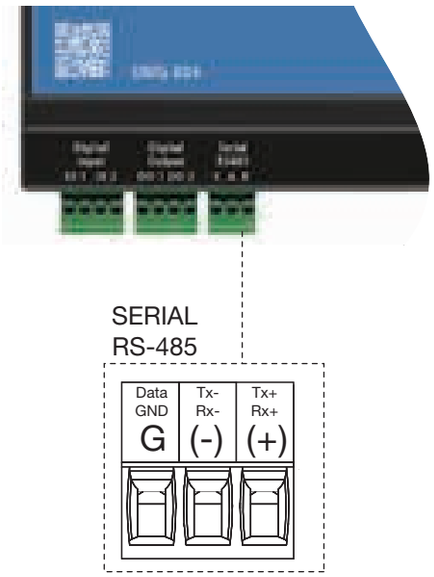
The DHCP server automatically assigns IP addresses to the device and PC.

10 Serial Communications

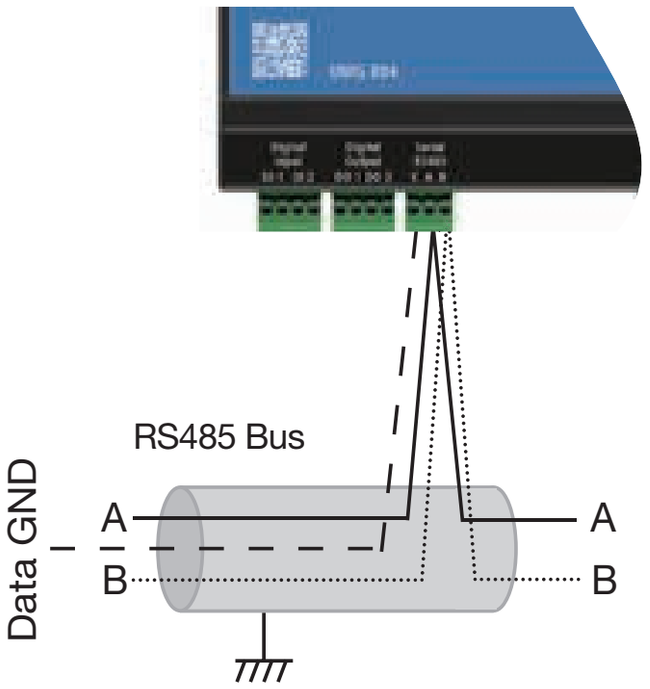
The UMG 804 supports both Modbus TCP/IP and Modbus RTU serials communications.
Connect the shielded 2 wire cable to the 2-wire Modbus RS-485 network with the serial interface jack.
Mechanically secure the RS-485 cable(s) where they enter the electrical panel.
Connect serial cable(s) from the RS-485 loop to the serial connector on the UMG 804. Connect all RS-485 devices in a daisy-chain, and properly terminate the chain as shown on figure.
Follow all applicable wiring and termination connection guidelines for the standard in use.

Note that while both the Modbus RTU standards identify requirements for RS-485 line polarization/bias and termination, the value and placement of these resistors varies for each standard. The UMG 804 does not implement any RS-485 line polarization/bias or termination internally. For the RS-485 cable, use shielded, twisted-pair wire that is voltage-rated for the installation.
Connect the shield to Earth Ground somewhere on the RS-485 bus (single point connection only).





Serial communication port



Serial communications port (detail)

NOTE

Property damage due to incorrect network settings!
Incorrect network settings can cause faults in the IT network!

- **Before installation, have your network administrator inform you about the correct network settings.**

11 Technical data

General	
Device dimensions (approx.)	w=158.7 mm, h=108.5 mm, d=59.2 mm (w=6.248 in, h=4.271 in, d=2.330 in)

Transport and storage The following information applies to devices which are transported or stored in the original packaging.	
Temperature	-40 °C to 70 °C (-40 °F to 158 °F)

Ambient conditions during operation	
The device is intended for weatherproof, fixed installation and must be connected to the ground wire connection! Protection class I in acc. with IEC 60536 (VDE 0106, Part 1).	
Working temperature range	0 °C to 60 °C (32 °F to 140 °F)
Relative humidity	< 95 % RH (without condensation)
Operating altitude	0 .. 2000 m (0 ...1.24 mi) max.
Pollution degree	pollution degree 2
Mounting position	any orientation
Ventilation	not required; 3 W heat rejection
Protection against ingress of solid foreign bodies and water	requires secondary enclosure

AC Power Supply	
Installations of overvoltage category	internally fused; install external fuse as required by code
Protection of the supply voltage (fuse)	1 A @ 300 V AC
Overvoltage category	II, degree 2
Operating range	90 .. 300 V AC (50-60 Hz)
Power consumption	< 0.1 A @ 277 V AC (< 3W)
24 V DC Power Supply	
Installations of overvoltage category	internally fused; install external fuse as required by code
Protection of the supply voltage (fuse)	0.5 A @ 24 V DC
Overvoltage category	III, degree 2
Operating range	12 .. 24 V DC
Power consumption	< 0.5 A @ 12 .. 24 V (< 3 W)

Terminal connection capacity (AC supply voltage) Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	24-12 AWG / 0.205-3.31 mm^2
Terminal pins, core end sheath	slot screw type
Tightening torque	5.0 Lb-In / 0.56 Nm
Stripping length	5.5 mm (0.22 in) max.

Terminal connection capacity (DC supply voltage)	
Rigid/flexible	22-16 AWG / 0.324-1.31 mm^2
Flexible with core end sheath without plastic sleeve	22-16 AWG / 0.324-1.31 mm^2
Flexible with core end sheath with plastic sleeve	22-16 AWG / 0.324-1.31 mm^2
Tightening torque	5.0 Lb-In / 0.56 Nm
Stripping length	5 mm (0.2 in) recommeded

Current measurement on modules	
Rated current	0 .. 600 A (external current transducer dependant)
Resolution	0.01 A
Overload for 1 s	200 %

Voltage measurement The voltage measurement inputs are suitable for measurements in the following power supply systems		
Three-phase 4-conductor systems with nominal voltages up to	480 VAC	
Three-phase 3-conductor systems, unearthed, with nominal voltages up to	277 VAC	
From a safety and reliability perspective, the voltage measurement inputs are designed as follows		
Overvoltage category	230V: CAT II	24 V: CAT III
Protection of voltage measurement	Impedance limited plus clamping diodes / MOV	
Measurement range L-N	0 .. 277 VAC	
Measurement range L-L	0 .. 480 VAC	
Resolution	0.01 VAC	
Crest factor	1.9 @ 240 VAC	
Impedance	2.5 MΩ	
Power consumption	<0.1 A @ 277 VAC (< 3 W)	
Sampling rate	40 kHz	
Frequency range of the fundamental oscillation	40 .. 70 Hz	

Digital inputs	
Quantity	2

Note: two inputs for dry contacts

Digital outputs	
Quantity	2
Switching voltage	30 V DC
Switching current	100 mA maximum
Cable lenght	screw in terminal block

Terminal connection capacity (digital inputs and outputs)	
Rigid/flexible	22-16 AWG / 0.324-1.31 mm^2
Flexible with core end sheath without plastic sleeve	22-16 AWG / 0.324-1.31 mm^2
Flexible with core end sheath with plastic sleeve	22-16 AWG / 0.324-1.31 mm^2
Tightening torque	5.0 Lb-In / 0.56 Nm
Stripping length	5 mm (0.2 in) recommeded

RS485 interface x-wire connection	
Protocol	MODBUS-RTU
Transmission rate	9600, 19200, 38400, 57600, 115200 Baud
Termination resistor	120 Ω (consult manual on master device)

Ethernet interface	
Connection	10/100
Function	Supports Modbus output as well as direct polling of HTML web pages from onboard server
Protocols	Modbus TCP/IP, BACnet IP

Note: dual Ethernet ports to allow for connection of multiple devices without the requirement of switch. REST protocols is supported.

Accuracy Measurement uncertainty on the device applies when using the following metering ranges. The measured value must be within the specified limits. The measurement uncertainty is not specified outside of these limits.	
Power/Energy - DIN Rail CT Interface Floating Board - DIN Rail CT Interface Card	IEC 61557-12 Class 0.5; IEC 62053-22 Class 0.5S
Current transformers - CT-SC-010 - CT-SC-012 - CT-SC-024 - CT-SC-036	IEC 61869-10 Class 0.5*
Voltage	± 0.5 % of reading 90 to 277 VAC line-to-neutral
Current	Subject to external CT accuracy
Minimum ON Current	50 mA
Circuit capacity	24 x 4 channels (96 circuits total)

* in combination with the UMG 804 and the DIN Rail CT Interface Floating Board/ DIN Rail CT Interface Card

AC Split Core Current Transformers Specifications
Voltage outputs @ 0.333 V
Frequency 50 Hz - 400 Hz
Operating temperature -40 °C to 70 °C (-40 °F to 158 °F)
Storage temperature -45 °C to 85 °C (-49 °F to 185 °F)
UL certified

Modul	Art. no.	Input Current	Ø mm (in)	Cable lenght m (in)	Accuracy class	Usable for Interface
CT-SC-010-50-JZ	15.03.170	50 A	10 (0.394)	0.25 (0.394)	0.5*	Floating
CT-SC-010-50	15.03.133	50 A	10 (0.394)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-010-75-JZ	15.03.130	75 A	10 (0.394)	0.25 (0.394)	0.5*	Floating
CT-SC-010-75	15.03.134	75 A	10 (0.394)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-012-100-JZ	15.03.131	100 A	12 (0.472)	0.25 (0.394)	0.5*	Floating
CT-SC-012-100	15.03.172	100 A	12 (0.472)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-024-100	15.03.135	100 A	24 (0.945)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-024-200	15.03.136	200 A	24 (0.945)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-024-250	15.03.137	250 A	24 (0.945)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-036-400	15.03.138	400 A	36 (1.420)	2,0 (78.74)	0.5*	DIN-Rail
CT-SC-036-600	15.03.139	600 A	36 (1.420)	2,0 (78.74)	0.5*	DIN-Rail

* in combination with the UMG 804 and the DIN Rail CT Interface Floating Board/ DIN Rail CT Interface Card

Further information can be found in the separate data sheet for the current transformers.

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Subject to technical alterations

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