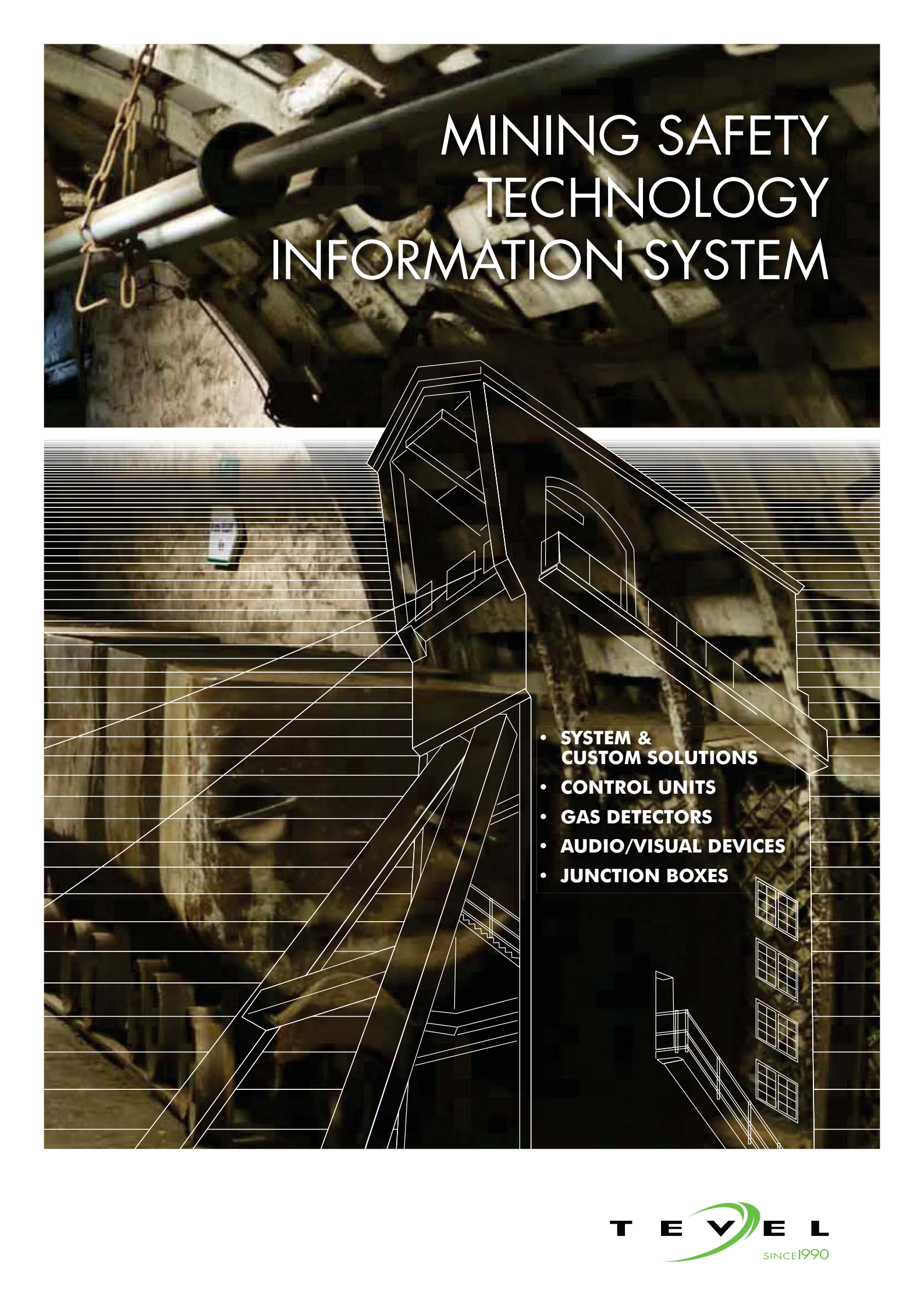
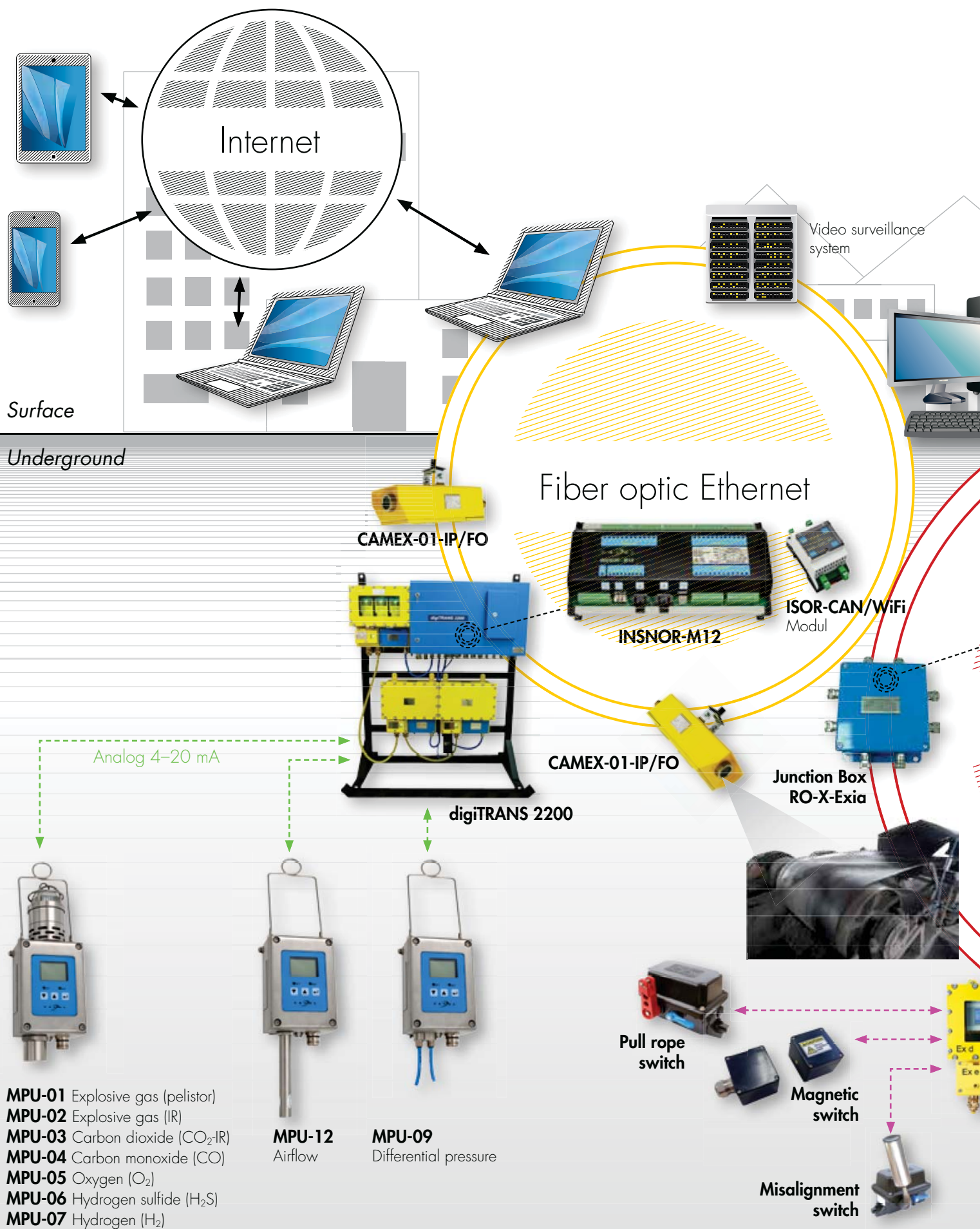


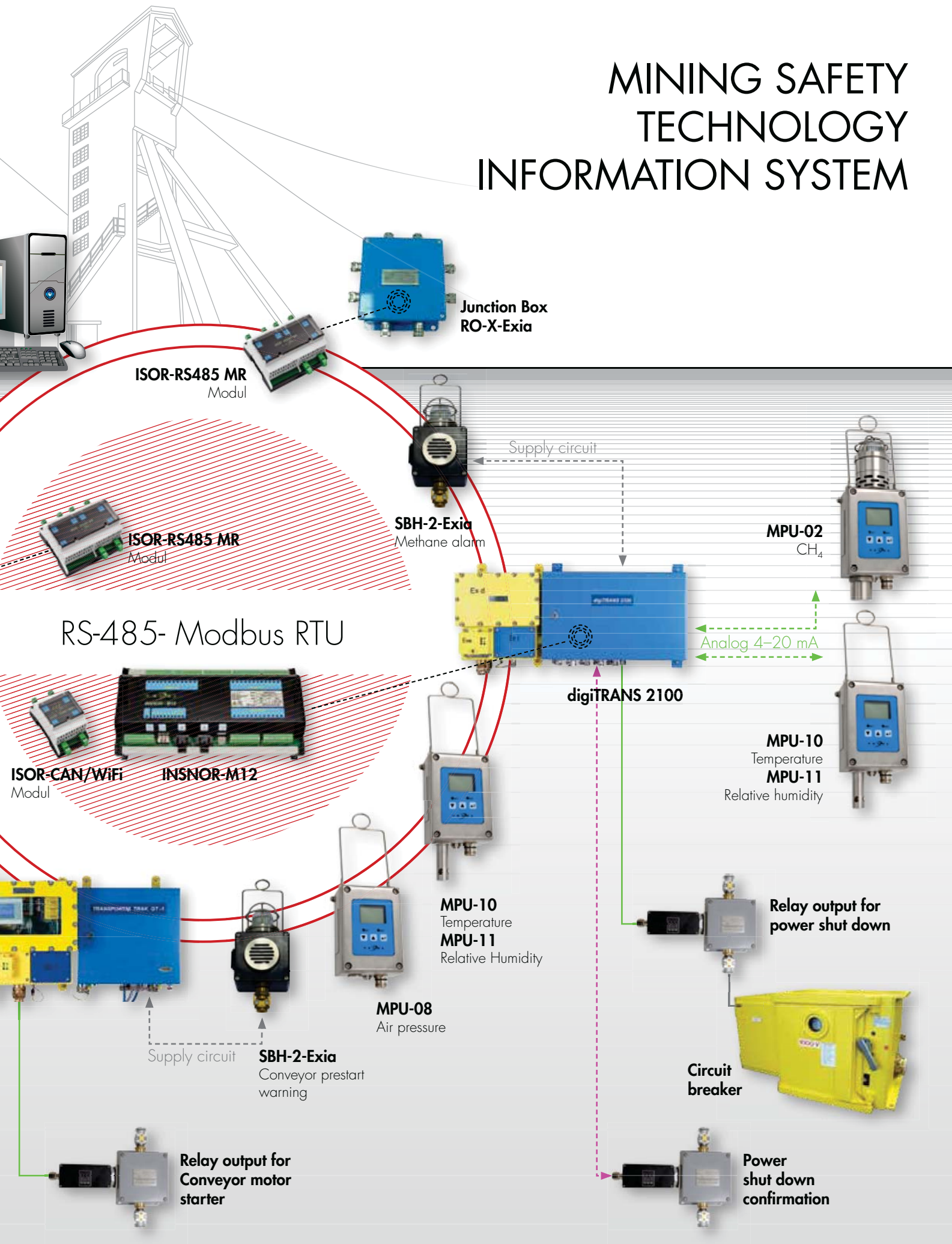
The background of the cover is a photograph of a mining tunnel. In the upper left, there are metal pipes and chains. The rest of the image is filled with a white line-art architectural drawing of a complex tunnel structure, featuring various levels, walkways, and ventilation ducts. The title 'MINING SAFETY TECHNOLOGY INFORMATION SYSTEM' is written in large, white, sans-serif capital letters across the top right.

MINING SAFETY TECHNOLOGY INFORMATION SYSTEM

- **SYSTEM & CUSTOM SOLUTIONS**
- **CONTROL UNITS**
- **GAS DETECTORS**
- **AUDIO/VISUAL DEVICES**
- **JUNCTION BOXES**



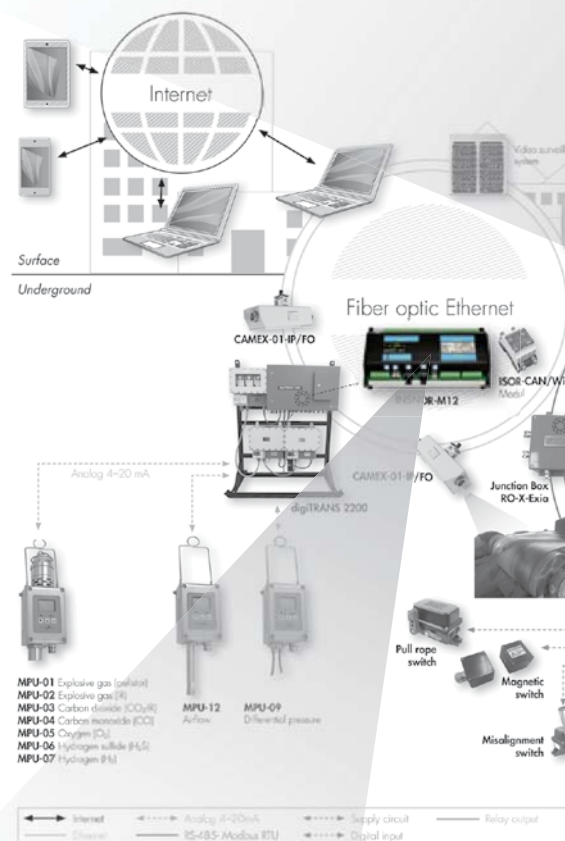
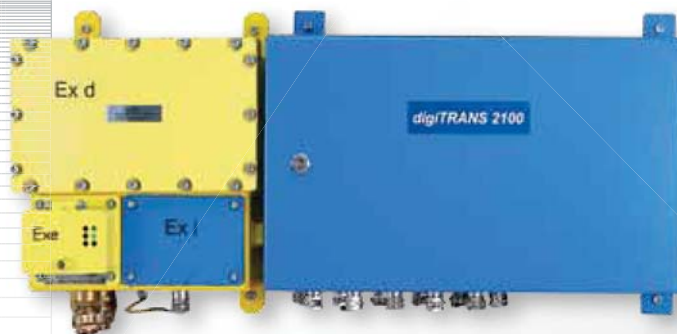
MINING SAFETY TECHNOLOGY INFORMATION SYSTEM



DigiTRANS Control Unit

DigiTRANS is an underground control and alarm system, microprocesor controlled, mainly used for gas detection and automation. Different communication interfaces offer reliable communication with supervisory control and data acquisition system on the surface.

Supply: 230 VAC +/- 10% with 8h battery back up



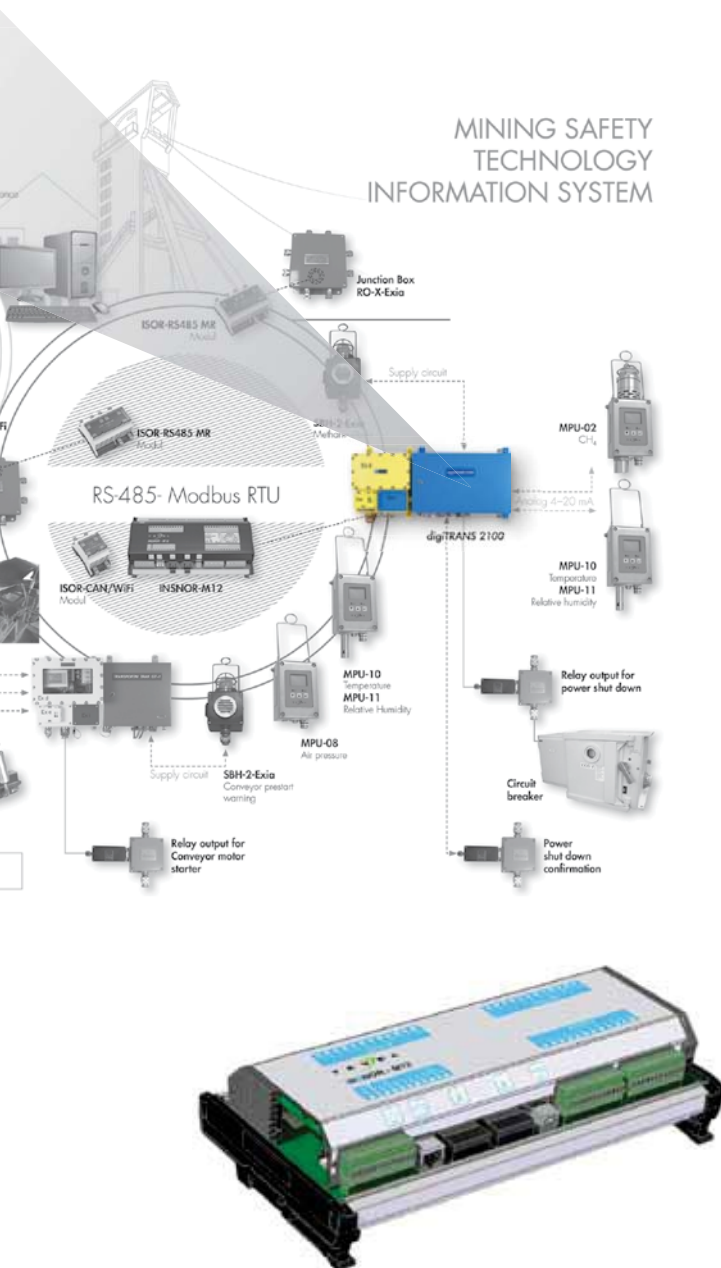
Programmable Controller type INSNOR-M12

The compact programmable controller type INSNOR-M12 is designed for data acquisition, processing, control, and transmission. Data can be transmitted in real-time over long distances via various buses, e.g. to a control center where it can be pre-processed, visualized, stored, and transmitted. The controller is designed according to the standards for use in coal mines endangered by methane and coal dust.

Easy installation on standard DIN rail 35. The device must be installed in a housing with minimum Ingress Protection IP64.

INSNOR-M12 explosion marking:
I M1 Ex ia op is I Ma





The compact programmable controller INSNOR-M12 connection types

- 12 Analog inputs (0.2–1mA or 4–20mA or 5–15Hz)
- 12 Digital inputs ($U_{in}=0V \rightarrow \text{Low (0)}$; $U_{in}=3-15V \rightarrow \text{High (1)}$; $F_{max}=10\text{kHz}$)
- 12 Changeover Relays outputs ($U_{max}=30V$; $I_{max}=2A$; $P_{max}=30W$)
- Serial RS485 – Modbus RTU
- Serial CAN – open
- USB B-type
- Ethernet 10/100Mbps
- 2 Fiber Optic Transceivers (redundant mode), Duplex SC Port (up to 15km)

Benefits

- Compact design
- Simple configuration through the Ethernet or USB interface using a PC, tablet, or smartphone
- Easy programming with advanced PoKeys software

Technical specifications

Type: **INSNOR-M12**

Ex mark: **I M1 Ex ia op is I Ma**

Power supply voltage: $3 \times U_n=12\text{VDC}$, $I_n=300\text{mA}$

(Suitable with Tevels power supply unit **NSB4/x-ia**)

Digital inputs: $U_{min}=3V$

Analog inputs (3 options):

- Current input: 0.2–1mA ($R_{in}=2k\Omega$)
- Current input: 4–20mA : ($R_{in}=180\Omega$)
- Frequency input: 5–15Hz: $U_{min}=3V$

Relay outputs: SPDT switching contacts

($U_{max}=30V$, $I_{max}=2A$, $P_{max}=30W$)

RS485: Modbus RTU

CAN: Can open

Ethernet (RJ45)

USB B-type

2 Fiber Optic Transceivers, Duplex SC Port:

125 MBd MMF Transceiver for Fast Ethernet

(100Base-FX)/ATM/FDDI

(up to 15km)

Operating temperature range: -20°C to $+50^{\circ}\text{C}$

Relative humidity: 15–90% Rh (without condensation)

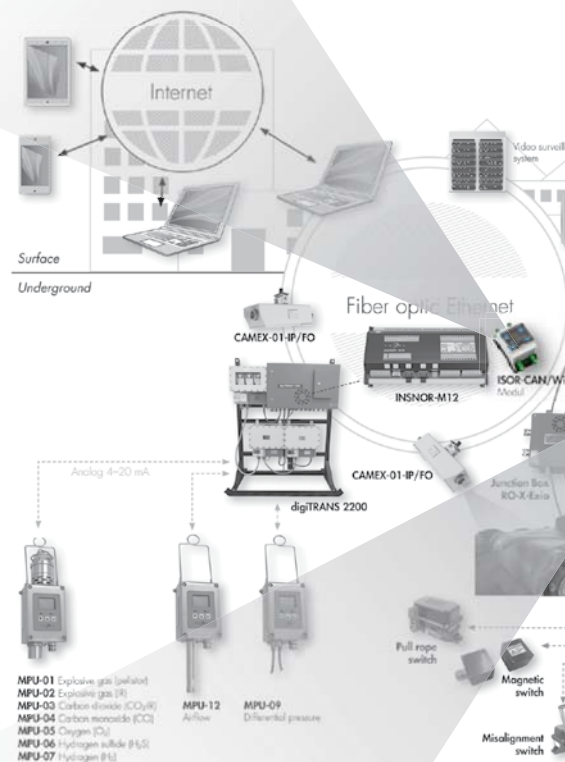
Dimension: $275 \times 143 \times 71$ (L x H x W in mm)

Weight: < 1kg

Modul ISOR-CAN/WiFi

ISOR-CAN/WiFi (interface)

The module serves for wireless (WiFi) communication between (master) INSNOR-M12 and a smart WiFi device such as: PC, tablet or smartphone.



Multichannel Repeater RS485 type ISOR-RS485 MR

Multichannel Repeater RS485 type ISOR-RS485 MR is universal serial line isolator.

- 4 port RS485 hub (multidirection)
- Extend the distance of one single RS485 communications line



MPU-01 or **MPU-01/SBH**
MPU-02 or **MPU-02/SBH**
MPU-03 or **MPU-03/SBH**
MPU-04 or **MPU-04/SBH**
MPU-05 or **MPU-05/SBH**
MPU-06 or **MPU-06/SBH**
MPU-07 or **MPU-07/SBH**

Gas Detectors

Different signal outputs

Optional RS 485 Modbus RTU or CAN communication

Intrinsically safe device

Optional connection via cable gland

Equipped with local display

Easy operation and maintenance

Wide range of sensors

Corrosion resistant stainless steel housing

Gases Detected:

01/ Methane (CH_4 -PEL)

02/ Methane (CH_4 -IR)

03/ Carbon dioxide (CO_2 -IR)

04/ Carbon monoxide (CO)

05/ Oxygen (O_2)

06/ Hydrogen sulfide (H_2S)

07/ Hydrogen (H_2)

Sensor Technologies: infrared (IR), catalytic, electrochemical

Power In/Output: 9–15 VDC I.S./4–20 mA, 0.2–1 mA,

1–5 V, 5–15 Hz





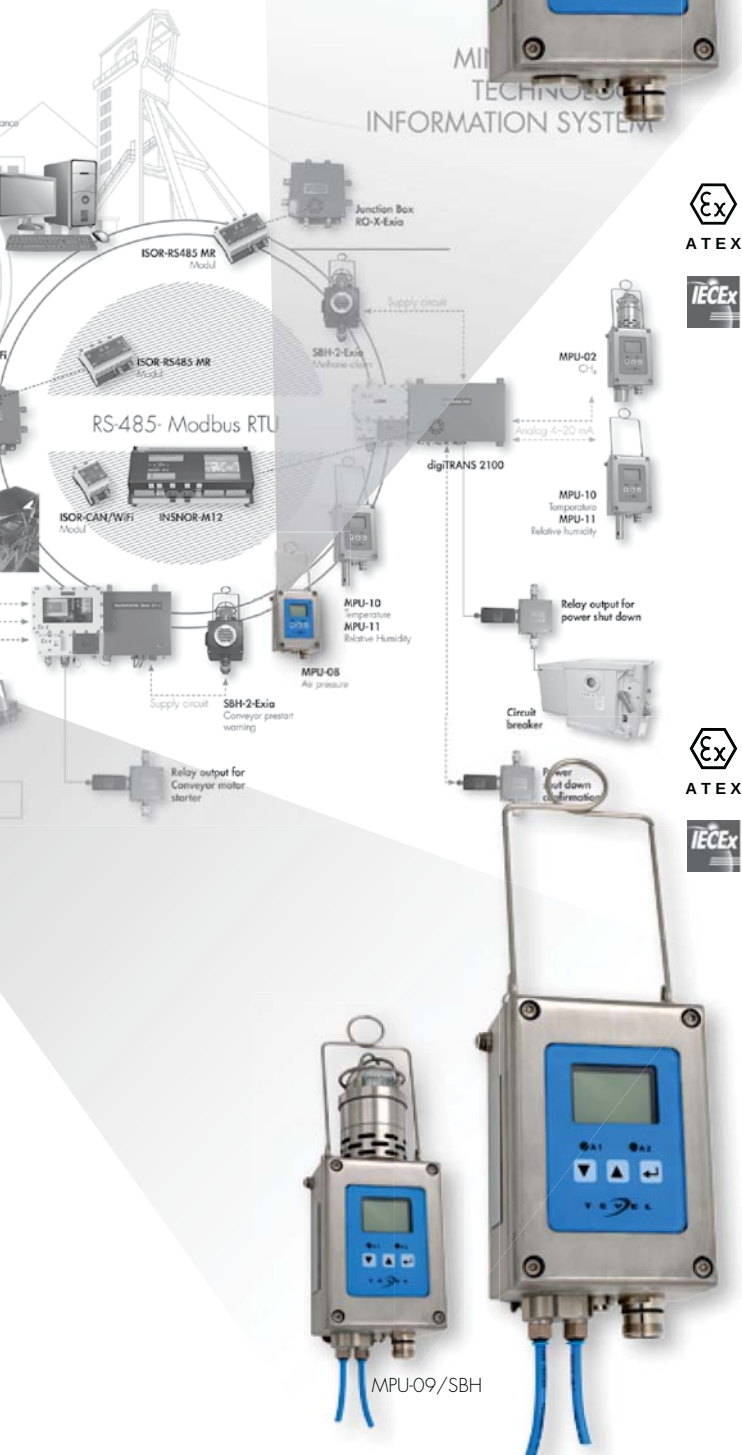
MPU-08/SBH

MPU-08 or MPU-08/SBH

Absolute pressure detector
 Different signal outputs
 Optional RS 485 Modbus RTU or CAN communication
 Intrinsically safe device
 Optional connection via cable gland

Equipped with local display
 Easy operation and maintenance
 Corrosion resistant stainless steel housing

Detection: Air pressure (p)
 Sensor Technologies: Piezoresistive
 Power In/Output: 9–15 VDC I.S./4–20 mA, 0.2–1 mA,
 1–5 V, 5–15 Hz



MPU-09/SBH

MPU-09 or MPU-09/SBH

Differential pressure detector
 Different signal outputs
 Optional RS 485 Modbus RTU or CAN communication
 Intrinsically safe device
 Optional connection via cable gland

Equipped with local display
 Easy operation and maintenance
 Wide range of sensors
 Corrosion resistant stainless steel housing

Detection: Differential pressure (Δp)
 Sensor Technologies: piezoresistive sensor
 Power In/Output: 9–15 VDC I.S./4–20 mA, 0.2–1 mA,
 1–5 V, 5–15 Hz

MPU-10 or MPU-10/SBH MPU-11 or MPU-11/SBH

Temperature or Relative Humidity Detector

Different signal outputs

Optional RS 485 Modbus RTU or CAN communication

Intrinsically safe device

Optional connection via cable gland

Equipped with local display

Easy operation and maintenance

Corrosion resistant stainless steel housing

Detection:

10/ Temperature (T)

11/ Relative humidity (Rh)

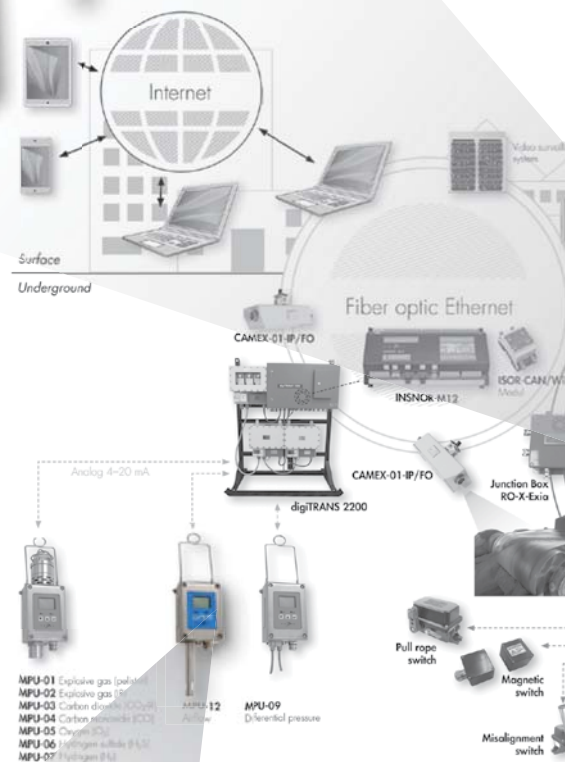
Sensor Technologies: Temperature: band-gap sensor

Relative Humidity: capacitive sensor

Power In/Output: 9-15 VDC I.S./4-20 mA, 0.2-1mA,
1-5 V, 5-15 Hz



MPU-10/SBH
MPU-11/SBH



MPU-01 Explosive gas (Lel) /
MPU-02 Explosive gas (LEL) /
MPU-03 Carbon dioxide (CO2) /
MPU-04 Carbon monoxide (CO) /
MPU-05 Oxygen (O2) /
MPU-06 Hydrogen sulfide (H2S) /
MPU-07 Hydrogen (H2) /
MPU-12 Airflow /
MPU-09 Differential pressure

MPU-12 or MPU-12/SBH

Air Velocity Detector

Different signal outputs

Optional RS 485 Modbus RTU or CAN communication

Intrinsically safe device

Optional connection via cable gland

Equipped with local display

Easy operation and maintenance

Corrosion resistant stainless steel housing

Detection: Air flow rate (v), m/s

Sensor Technologies: thermal conductivity

Power In/Output: 9-15 VDC I.S./4-20 mA, 0.2-1mA,
1-5 V, 5-15 Hz



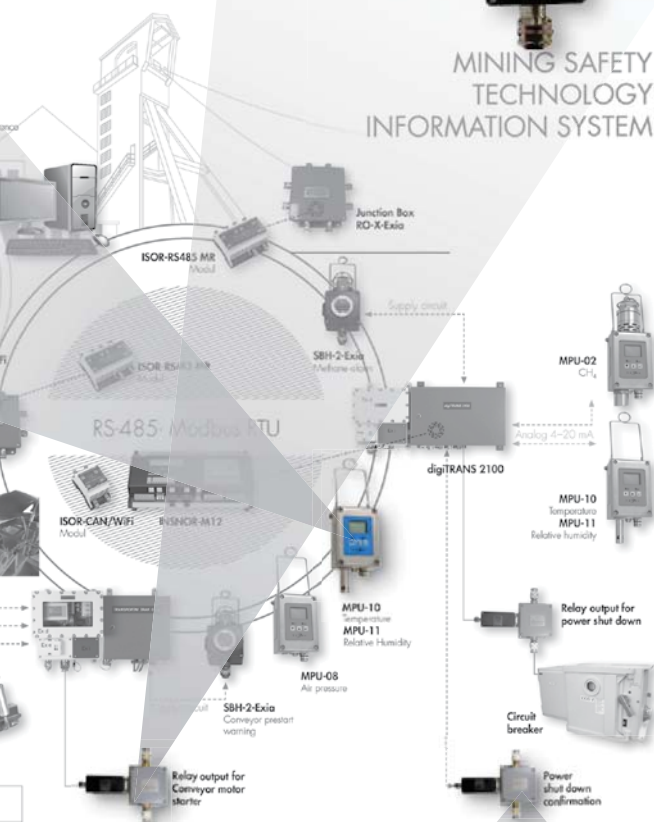
MPU-12/SBH



MINING SAFETY
TECHNOLOGY
INFORMATION SYSTEM



ATEX



ATEX

KLV-230-PEX / RO-01

Control separation element

Direct connection to Ex d or Ex e housings

Line monitoring available

Status LED lights

Easy operation and maintenance

Reinforced polyester housing

Switching capacity: 2 relay outputs (max. 250 VAC/10A)

Power In:

- 24 VAC
- 42 VAC
- 115 VAC
- 230 VAC

PLV-230-PEX / RO-01

Data separation element

Direct connection to Ex d or Ex e housings

Line monitoring available

Status LED lights

Easy operation and maintenance

Reinforced polyester housing

Intrinsically safe relay output

Power In:

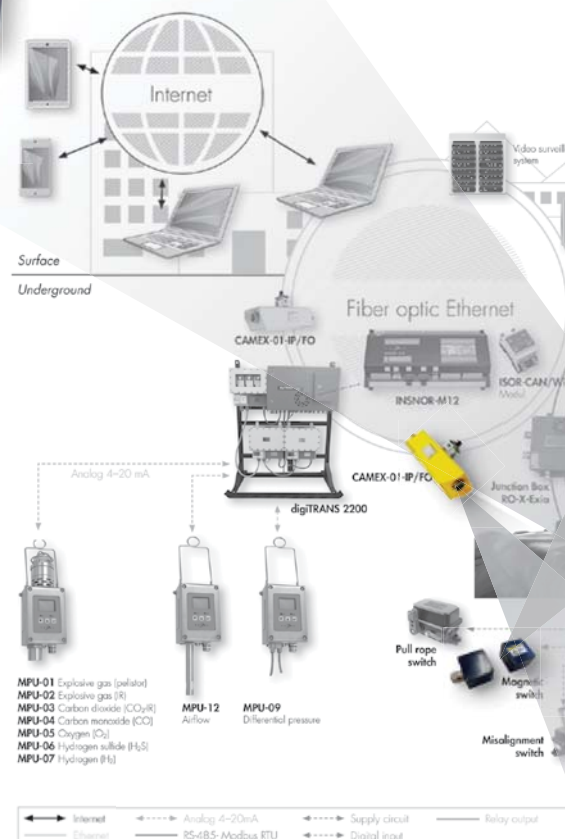
- 24 VAC
- 42 VAC
- 115 VAC
- 230 VAC

SBH-2-Exia

Signal flash Light with Alarm Horn
Intrinsically safe device
Optional connection via connector
Optional test button

Easy operation and maintenance
Reinforced polyester housing

Flash light: LED (red, green, white, blue, yellow)
Buzzer: Piezzo 105 dB
Power In: 9-16 VDC I.S.



SBH-ia/PV

Signal flashing light with horn

Signal flash light with horn SBH-ia/PV is intended for use in mining applications. It is used as audio-visual warning device in case of danger. SBH-ia/PV is made of certificated intrinsically safe flashlight with horn SBH-ia/MPS, which is mounted in inox enclosure IP55.

Features

- IP55
- Supply Voltage: 12-16 VDC (I.S.)
- Current Consumption: 30 mA
- Control Current Consumption: 2-4 mA

Explosion protection: I M1 Ex ia op is I Ma





Magnetic switch

Fixed Magnetic switch

Changeover output

Intrinsically safe device

Optional connection via connector

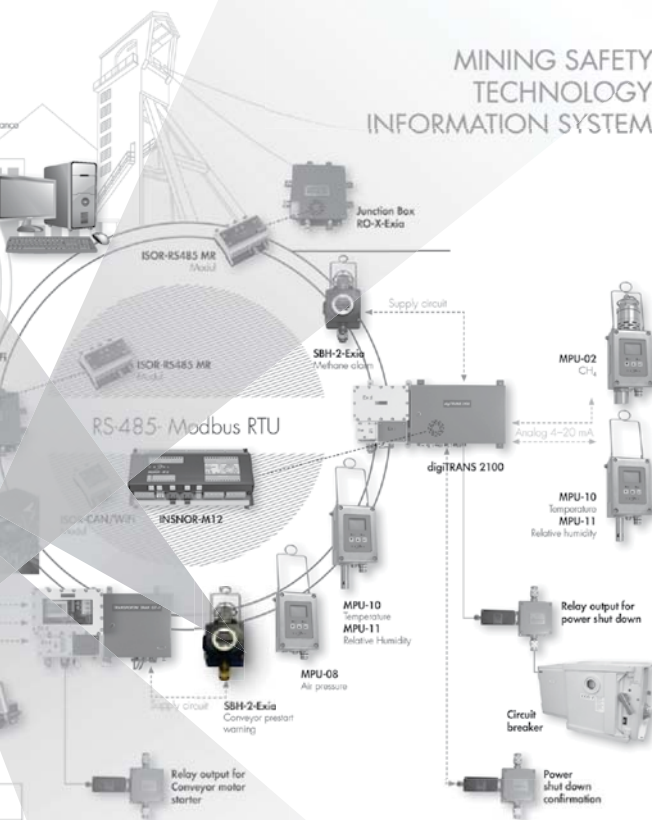
Easy operation and maintenance

Reinforced polyester housing

Detection: status of mechanical devices (air doors)

Sensor Technologies: reed relay

Switching capacity: intrinsically safe: max. 30 VDC/ 660 mA



CAMEX-01-IP/FO

IP camera

Fiber optic connection (single mode, E2000 connection)

Main housing Ex d, Connection chamber Ex e, Signal output

Ex op is

Easy operation and maintenance

Remote managing

Robust housing

Picture transmission range > 15 km

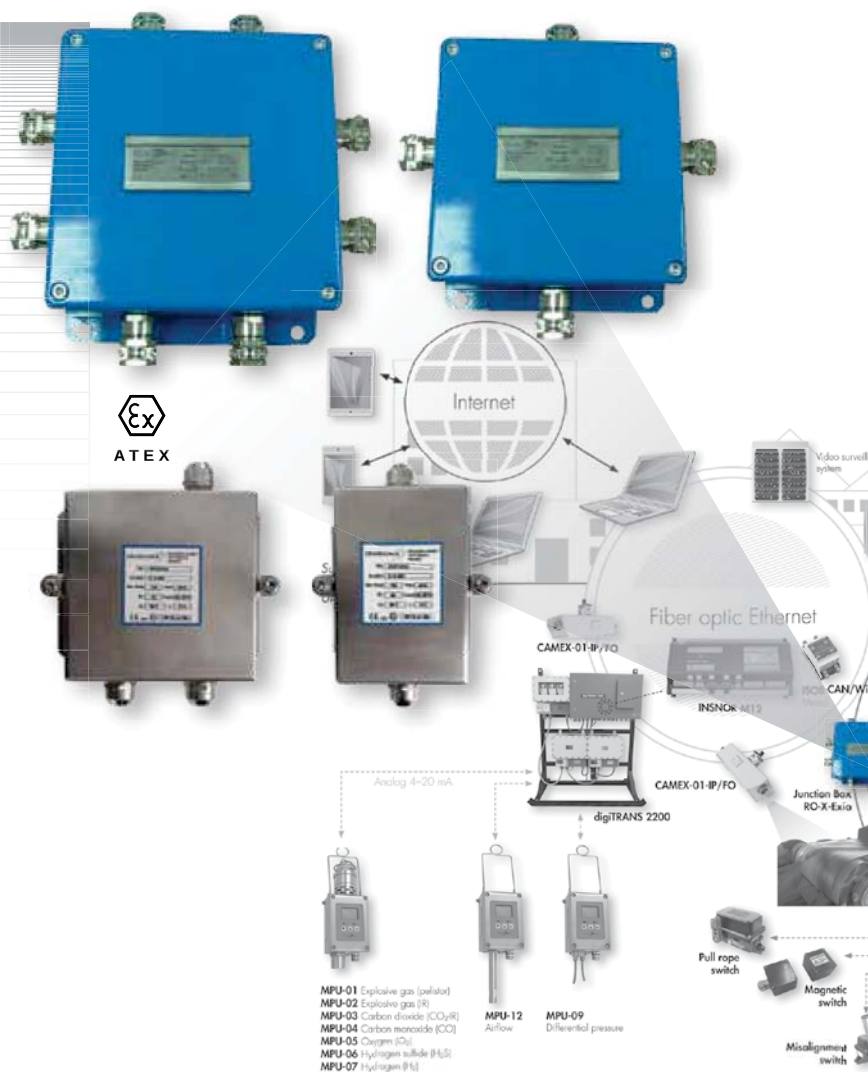
Resolution: 2 MPixel

Supply voltage: 230 VAC, 50 Hz

INSTALLATION COMPONENTS

Junction Box RO-x-Exia/ Junction Box JB-0x-Exia

Sheet steel enclosure/Stainless steel enclosure
Ex ia certified
4 enclosure size options
Customizable configuration of terminals, cable entries
and cable gland types



Junction Box RO-x-Exe

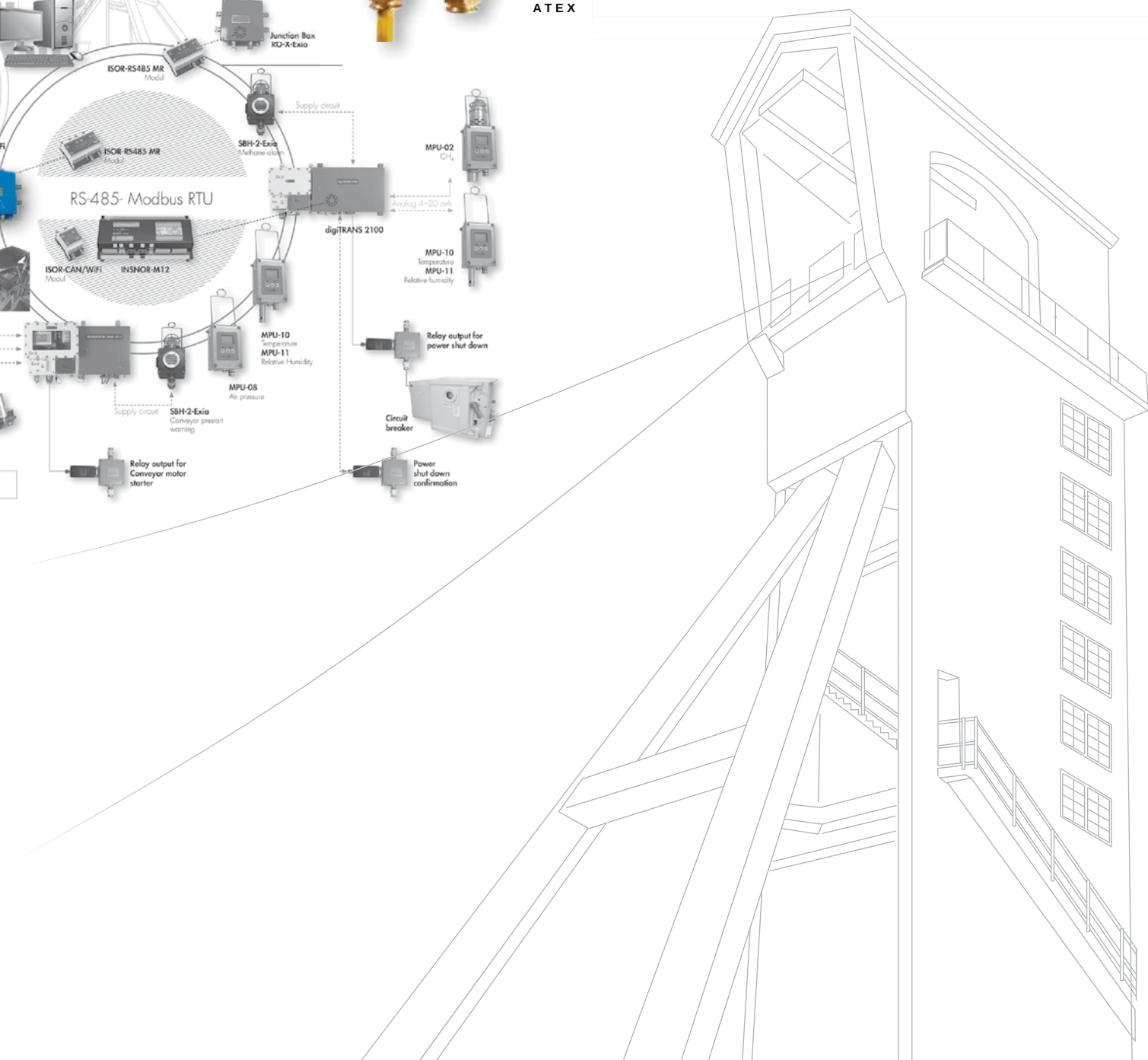
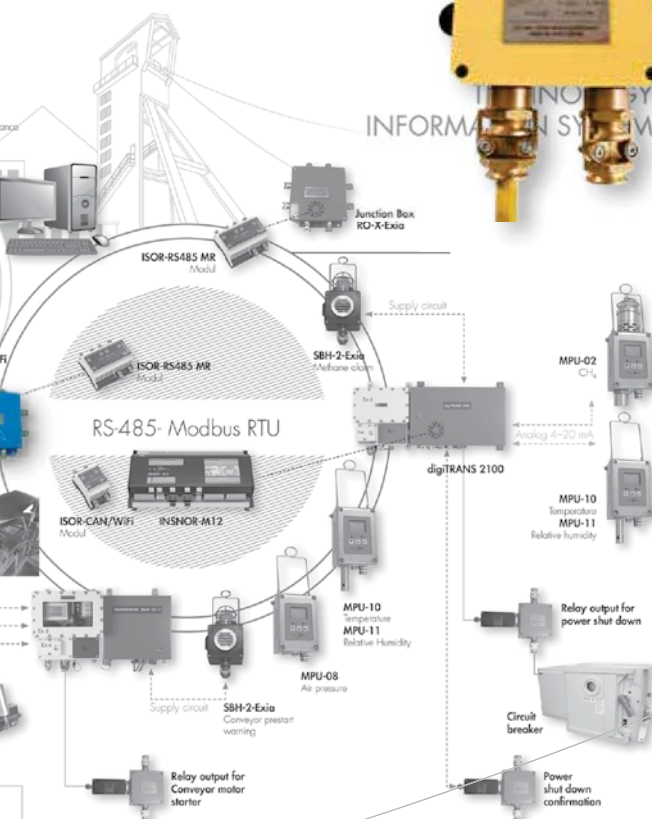
Sheet steel enclosure
Ex e certified
2 enclosure size options
Customizable configuration of terminals, cable
entries and cable gland types



LIGHTING

Explosion proof floodlight LUX-xx-L/x.x

Utilizes latest LED technology lamp type
High quality LED module
In excess of 50.000 hours LED life
Wide supply voltage range
Different colour temperatures available





OUR QUALITY – YOUR SAFETY

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