TIEFENBACH
Control Systems GmbH

TIBA™ CoalCam

INTRINSICALLY SAFE CAMERA SYSTEM FOR MONITORING HAZARDOUS AREAS

HIGHLIGHTS:

- WLAN data transmission
- Data exchange with other systems
- Optional fiber optic interface
- Intrinsically safe circuit 12V DC +/-20%
- Current consumption < 400mA
- Angle of view: 137.9°
- High Sensitivity
- CMOS sensor

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WHAT IS THE COALCAM?

The **CoalCam** is a camera system designed for monitoring hazardous areas. One field of application is monitoring the face area underground as the potential danger for the operating personnel is very high in the immediate vicinity of the mining machine.

Thanks to the use of the camera system it will no longer be necessary to have persons present in hazardous areas.

Another possible application is the overhead monorail system. There, the dangerous area is the travel track. Due to the wireless data transmission an unmanned operation of the overhead monorail is possible.

Applications for the camera system are manifold and they include, for example, belt transfer stations, area monitoring, stageloaders, and drives of any kind. Roadheading machines such as Continuous Miners, but also boom-type roadheaders and tunnel boring machines entail a high risk for the personnel.

HOW DOES THE COALCAM WORK?

The **CoalCam** can transmit the pictures and/or data collected to a station in the entry via radio. A camera module transmits its data packages via WLAN to a socalled „Gateway“ using the least possible number of intermediate stations.

In a „Longwall Monitoring“ application the Gateway is the last camera module before the interface between face and entry. It thus does not only serve as camera but also as a central collection point for all data to be transmitted. From the Gateway the data are sent to the MCU located in the entry.

Depending on the distance between Gateway and MCU, the ambient conditions, and the radio extension possible in space the two transmission options WLAN or fiber optics are available.

From the MCU, the data are transmitted via a fiber optic cable to a PC at the surface.

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DESIGN

The intrinsically safe camera system is designed as twin camera system. Two camera units are housed in an enclosure and offset by 90°. The use of special lenses permits a monitoring range of 180°.
The enclosure consist of extremely impact-resistant plastic. The enclosure is installed in a holder made of stainless steel. Lenses with a special coating ensure a permanently good view over the area to be monitored.

DATA TRANSMISSION

The data transmission between the cameras and the MCU in the entry is effected completely wireless in a **WLAN MESH-network**. If very large distances have to be bridged the camera additionally provides a **fiber optic interface**.

Installation is quite simple. It is only necessary to connect an intrinsically safe power supply via **SKK24 connectors**.

The data transmission between the cameras and the MCU in the entry is effected completely wireless in a WLAN MESH-network.

To simplify cable routing in a complete installation the cameras are equipped with two connectors which ensures that the supply voltage is passed on easily.

The first **CoalCam** of a monitoring system is configured as Gateway and coordinates the entire communication of the installation. The intelligent data management ensures that the data are transmitted to the MCU on the shortest route.

Each **CoalCam** has a unique address. This makes it easy for the end user to replace a camera in the system.

Control commands can also be transmitted via the radio network. Thus, e.g. individual cameras can be activated direct.

A highlight is the data exchange with other systems. To this end, Tiefenbach offers a special intrinsically safe Gateway which communicates with other systems via fiber optic interface and integrates without problems into the camera network via WLAN.

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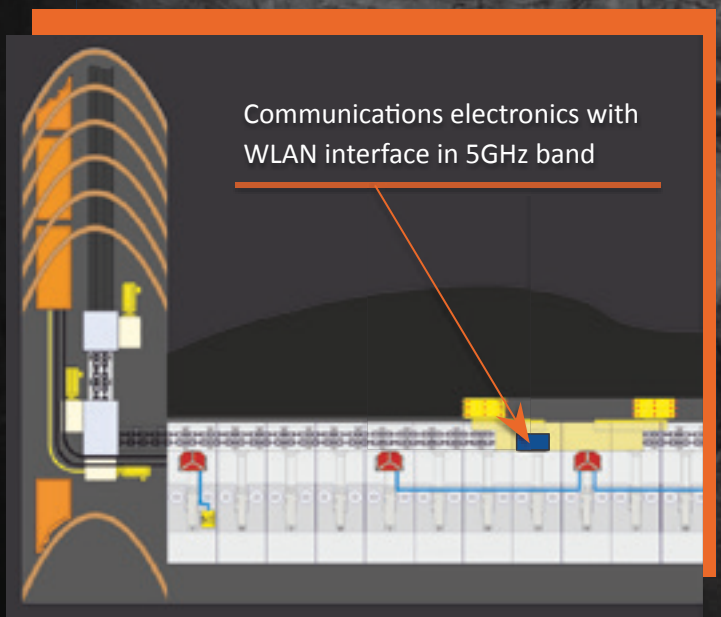

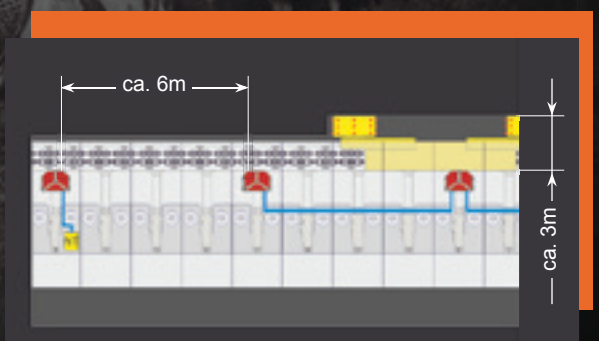

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A typical application is the data exchange with a shearer. Here, machine data can be transmitted to the station in the entry or remote control of the shearer can be initiated.

A special feature for the user is the web-server which will optionally also make the image data available at the surface, e.g. on a smart phone or tablet.

A graphical user interface permits the simple installation of the system, controls the optimum connection to the machine in order to automatically link the camera control to the machine position and serves for diagnostic purposes. Furthermore, control commands can be initiated here.

ELECTRICAL DATA:

SUPPLY VOLTAGE:	Ui ≤ 13V DC
CURRENT CONSUMPTION:	Ii ≤ 375mA
RADIO FREQUENCY:	4.900 – 5.830 Ghz
RADIO TRANSMITTING POWER:	< 15 dBm
OPTICAL TRANSMITTING POWER:	< 0 dBm

APPROVALS:

ATEX:	**IBEXu 14 ATEX 1258**
Zündschutzart:	**I M1 Ex ia I MA**
IECEx:	**CoC IECEx 14.0029**
Zündschutzart:	**Ex ia I MA**

AMBIENT TEMPERATURE:	-20°C ≤ Tamb ≤ 60°C
PROTECTION GRADE:	IP67 acc. to DIN 60529

KONTAKT

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Revision: 1.0-05_2015