

Project "Development of a wireless communication system in underground excavations, with particular emphasis on communication and data transmission in the area of exploitation in a pillar-chamber system"

CONTRACT NUMBER
CuBr / III / 5 / NCBR / 2017



The project is co-financed by the National Center for Research and Development under the CuBR program

Annex No. 2

Wrocław, 3 June 2019

Description of the order subject to Inquiry No. 01 /2019/CuBR

1. PURCHASER:

Name: PRODUS S.A.
Address: 54-215 Wrocław, ul. Bystrzycka 69c
VAT ID: 899-000-93-51

Purpose of the order

The purpose of the order is the implementation of a research project: "Development of a wireless communication system in underground excavations with particular emphasis on communication and data transmission in the area of exploitation in a pillar-chamber system" as part of Joint Support of Scientific Research and Development Works for Non-Ferrous Metals CuBR Competition III

Ordered object

Delivery: Hirschmann wireless devices or equivalent with software (firmware)
All devices should be fully compatible and ensure system integrity.

Features of devices:

1. 2 pcs. Access point with parameters:

- Port type and quantity: M12 - LAN combo port: 10/100/1000BASE-TX, 1000BASE-SX/LX; LAN port 10/100BASE-TX M12
- Power supply: double redundant
- Radio Standard: IEEE802.11a/b/g/h/n WLAN interface as per IEEE802.11n, up to 450MBit/s gross bandwidth.
- Supported Radio Standards: 1st WLAN interface as per IEEE802.11n; 2nd WLAN interface as per IEEE802.11n
- Configuration interface COM: V.24 Interfejs, M12 A-Coded
- Antenna connector: N socket, 3 x MiMo antenna connectors, 3 x MiMo antenna connectors
- Frequency band Supports 2.4 GHz and 5 GHz: 2400 -2483.5 MHz (ISM) and 5170 - 5850 MHz Supports 2.4 GHz and 5 GHz: 2400 -2483.5 MHz (ISM) and 5170 - 5850 MHz
- Modulation: 22M0F7D (DSSS/OFDM) at 2.4 GHz 20M0G7D (OFDM) at 5 GHz

Strona 1 z 4

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- Encryption: IEEE 802.11i / WPA2 with passphrase or 802.1x and hardware-accelerated AES, closed network, WEP64, WEP128, WEP152, user authentication, 802.1x /EAP, LEPS, WPA1/TKIP. Please refer to the HiLCOS data sheet for further information.
- Operating voltage: 24/36/48 VDC (18-60 VDC)
- Operating temperature: -40 °C ... 70 °C
- Relative humidity (non-condensing): 10% ... 95%
- MTBF - No less than 58 years (MIL-HDBK-217F)
- Protective paint on PCB: Yes (conformal coating)
- Dimensions (W x H x D): No more than 311 mm x 219 mm x 75 mm
- Protection class : P67
- Approvals: CE, EN 60950-1, RED-EN 300 328 (2,4 GHz), EN 301 893 (5 GHz), EN 302 502 (5,8 GHz), EN 301 489-1, EN 301 489-17, ANSI / ISA 61010-1; CSA klasa1 div2; FM3611 class 1 div.2

2. 18 pcs. Access point with parameters:

- Port Type and Quantity: Up to 2 x Radio interfaces, up to 2 x LAN ports 10/100/1000BASE-TX, Power over Ethernet according to IEEE 802.3af, 1 x V.24/ACA11
- Power supply: M12 5 Pin A-Coded
- Radio Standard: IEEE 802.11a/b/g/h/n WLAN interface as per IEEE 802.11n, 3 x 3 MIMO up to 450 Mbit/s gross bandwidth.
- Supported Radio Standards: 1st WLAN interface as per IEEE802.11n; 2nd WLAN interface as per IEEE802.11n Port konfiguracyjny COM: V.24 Interfejs, M12 kodowanie A
- Antenna connector: N socket, 3 x MiMo antenna connectors, 3 x MiMo antenna connectors
- Frequency Band: Supporting 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz
- Modulation: 20M0F7D (DSSS/OFDM) @ 2.4 GHz, 20M0G7D (OFDM) @ 5 GHz, MCS 0 - MCS23
- Encryption: IEEE 802.11i/WPA2 with passphrase or 802.1x and hardware-accelerated AES, closed network, WEP64, WEP128, WEP152, user authentication, 802.1x/EAP, LEPS, WPA1/TKIP, fast roaming with Opportunistic Key Caching. Please refer to the HiLCOS data sheet for further information.
- Operating voltage: 24 V DC and Power over Ethernet (PoE) IEEE 802.3af
- Operating temperature: -40 °C ... 70 °C
- Relative humidity (non-condensing): 10% ... 95%
- MTBF - No less than 58 years (MIL-HDBK-217F)
- Protective paint on PCB: Yes (conformal coating)Wymiary (szer. X wys. X gł.): Nie większe niż 261 x 189 x 55 mm
- Protection class : P67
- Approvals: EN 60950, EN 300328, EN 301893, UL60950, EN 61000-6-2, EN 61131, E1 i EN 50155

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3. Software (firmware) of access points

Features:

- Fully independent configuration of two radio interfaces
- Parallel operation of two radio interfaces on the same frequency band
- Centralized management from the WLC controller (Wireless Lan Controller)
- Automatic creation of backbone network connections in the tree topology
- SSID of the backbone network depending on the depth of the tree: SSID-0, SSID-1, ..., SSID-7
- Any wireless connection between the AP in the backbone on another radio channel
- Automatic reconstruction of the network in the event of a failure, loss of connection
- Quick reconfiguration of the network topology
- Ability to specify the minimum signal strength required to establish a connection
- Building a network of connections through SSID priorities, signal strength
- Detection of a damaged cable connection
- Disabling radio interfaces after detecting cable connection failure
- Creating a backbone and access network
- Automatically disable broadcasting of an access and backbone network in the event of a connection loss
- Automatic activation of broadcasting of access and backbone network in the event of connection to the network.
- Monitoring network connection, detecting its absence, Alive Test Ping
- Time of interruption in the Client's UDP traffic in case of AP power loss (switching the client to another AP) - no more than 530ms.
- Time of interruption in the Client's UDP traffic in case of AP-powered return (client switching to AP) - no more than 40ms.
- Time of interruption in the Customer's UDP traffic at the depth of the network of connections +1 in the event of loss of AP power (switching the client to another AP) - no more than 600ms.
- Time of interruption in the Customer's UDP traffic at the depth of the connection network +1 in case of AP-powered return (client switching to AP) - no more than 190 ms.
- Fast Roaming customer
- COM port server function

4. Controller of Access Points

Features:

- Minimum number of access points – 50
- Ethernet ports: Not less than 4 pcs. 10/100/1000 Mbit / s
- HiSpeed USB port for USB printer (Print Server)
- COM configuration port
- Power supply: 110V-230V
- Working temperature: 5 °C ... 40 °C
- Relative humidity (non-condensing): 10% ... 95%
- Dimensions (width X height x depth): No more than 435 x 45 x 207 mm
- MTBF - Not less than 300000 h

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5. Software for network management and monitoring

Features

- License for not less than 64 Nody
- Possibility to upgrade the license for a larger number of Nodes
- Supported platforms, Windows / Linux
- Configuration wizard
- Support for SNMP v1 / 2/3
- LLDP protocol support
- Automatic detection of devices in the network
- Distributed network management with hierarchical work levels
- Drawing and visualization of network topology
- Mass configuration of devices
- Condition monitoring and device operation
- Network failure reporting (SNMP trap)
- Automatic configuration backup
- Control of the configuration signature monitoring changes in the device configuration files
- Alerts regarding unauthorized changes to the system
- User roles for controlled access
- History of events in a graphical format
- VLAN browser, MIB viewer, edit and start mode
- Simultaneous device upgrade
- OPC server
- Possibility of direct configuration of devices from the program level
- Generating network inventory reports