POPULUS K-1-A and POPULUS K-3-A – ACCESS CONTROLLER

The Populus K is an access controller with built-in proximity card reader and capacitive keypad. It is designed for residential and business buildings, offices, shops, apartments, hotel rooms etc.
The controller can have 125kHz or 13.56MHz reading frequency. If the communication is connected to the Ethernet (network), you can connect an additional protocol reader (e.g. Reader O-1-A), to it to open the second door.
The controller allows access for up to 30000 users and saves 100000 events.
It is intended for controlling entries, exits and passes of users in the system and controlling sliding doors, ramp, el. strike, turning alarm on/off… It needs to be set with CODEKS software.
The SDK is also available for this controller. If a user or software producer wants to develop its own application, please contact us.

TECHNICAL DATA

POPULUS K	
K-1-A reading frequency	125kHz
K-1-A reading distance	Up to 10cm
K-1-A current consumption	180mA
K-3-A reading frequency	13.56MHz
K-3-A reading distance	Up to 5cm
K-3-A current consumption	160mA
Dimensions (mm)	90x20x90 (WxHxL)
Protection	IP42
Communication	RS485 & Ethernet
Operating voltage	From 10V DC to 14V DC
Operating temperature	From -20°C to 60°C
Memory	30000 cards or codes 100000 events
Inputs	1x Door status 1x Push button
Outputs	1x Transistor output for el. strike (max.) 0.5A 1x Alarm output (gyroscope activation)
Clock	Real time clock, battery backup (max. ten hours)

USAGE

The controller is designed for use in single-door access control systems or to control some other device.
Since the controller is programmed with the software, it's possible to set exactly who and when can open a controlled door or turn on or off some other device.
The event of card or code use is always recorded in the controller. It is transferred in the software if communication between software and controller is active.
The controller can also be used with the Jantar el. wall module WALL BOX W-R, which has a 230V AC - 12 V DC power supply with a relay that can directly control loads up to a total consumption of 5A. In case of higher total consumption, the appropriate contactor must be used.

Additional protocol reader – two door control

If you connect the controller directly to the Ethernet (network), you can also connect a protocol reader to it (e.g. Reader O-1-A) to control el. strike for second door. This type of usage gives you a low price and high performance set of an access control and energy saving system for two doors.

LED DIODES

Color	Description
White	Device is turned on.
Green	Output is activated.
Red	Card or code has no rights to activate output.

CONNECTOR – Basic connection

Contact	Name	Description
1	12V	12 V DC connection from power supply.
2	GND	Ground connection from power supply.
3	CA	CA communication line connection to controller (RS485 A line).
4	CB	CB communication line connection to controller (RS485 B line).
5	O0	Ground connection to el. strike. When the output is active, it is connected to the ground.
6	O1	Connection to the OFF contact on the power supply (e.g. Power H-2). If the gyroscope function of the controller is enabled in the program, and the controller is moved or tampered with during operation, the power supply of the controller will be turned off (the O1 output will be activated).
7	I0	Door status switch input connection. Input is active when connected to GND.
8	I1	Mechanical button connection for activation of the first output (O0). Input is active when connected to GND.
9	TXP	Connection to Ethernet (network). 1. position on the RJ45 connector. The color of the wire in the network cable is white/orange.
10	TXN	Connection to Ethernet (network). 2. position on the RJ45 connector. The color of the wire in the network cable is orange.
11	RXP	Connection to Ethernet (network). 3. position on the RJ45 connector. The color of the wire in the network cable is white/green.
12	RXN	Connection to Ethernet (network). 6. position on the RJ45 connector. The color of the wire in the network cable is green.

CONNECTOR – Connection when an additional protocol reader is used

Contact	Name	Description
1	12V	12 V DC connection from power supply. 12 V DC connection to protocol reader.
2	GND	Ground connection from power supply. Ground connection to protocol reader.
3	CA	CA communication line connection to a protocol reader (RS485 A line).
4	CB	CB communication line connection to a protocol reader (RS485 B line).
5	O0	Ground connection to el. strike for the first door. When the output is active, it is connected to the ground.
6	O1	Ground connection to el. strike for the second door. When the output is active, it is connected to the ground.
7	I0	Door status switch input connection for the first door. Input is active when connected to GND.
8	I1	Mechanical button connection for activation of the first output (O0). Input is active when connected to GND.
9	TXP	Connection to Ethernet (network). 1. position on the RJ45 connector. The color of the wire in the network cable is white/orange.
10	TXN	Connection to Ethernet (network). 2. position on the RJ45 connector. The color of the wire in the network cable is orange.
11	RXP	Connection to Ethernet (network). 3. position on the RJ45 connector. The color of the wire in the network cable is white/green.
12	RXN	Connection to Ethernet (network). 6. position on the RJ45 connector. The color of the wire in the network cable is green.

POWER SUPPLY

The controller need's external power supply to operate.
The Spider W40 power supply is sufficient to power two controllers and two 12V DC electric strikes or two 12V DC magnetic locks (max. 0.5A).
The Spider W5 power supply is sufficient to power one controller and one 12V DC electric strike or one 12V DC magnetic lock (max. 0.5A).

VOLTAGE DROPS and SIGNAL INTERFERENCES

When you connect the controller, use cable with a diameter of at least 0.22mm^2. If the cable length exceeds 25m, use one twisted pair of UTP cables for the positive (+) pole and one for the negative (-) pole. The cable length between power supply and the controller should not exceed 50m. Take into consideration that a 0.22mm^2 cable has a resistance of approximately 9 ohm per 100m. The power supply at the end of cable should be a minimum of 11V. If you are using el. strike, it is highly recommended that the voltage drop is calculated. At greater distances, a thicker cable of 0.5mm^2 or more should be used wherever possible.
If the load is, for example, 0.5A (with el. strike) then, on the 0.22mm^2 cable voltage drop will be 4.5V at 100m. For the device with 60mA consumption, the voltage drop is 0.5V.

For Populus K-3-A to comply with EMC directives (CE), you have to put ferrite core on the cable as close to the reader as possible, making two turns!

Inputs, outputs, environment and installation, reading range

Inputs:

I0 and I1- Inputs are realized with opto-isolators. The input is active, when pulled to ground with an open collector transistor or mechanical switch, which is connecting the input pin of the controller to the Ground.

Outputs:

O0 and O1 - Output has a pre-installed protection diode for an inductive load. It is also protected from current overload. When the output is active it is pulled to ground.

Environment and installation:

Do not install the controller on/in a place, where it can come in contact with water. You must assure good cable joints, protected against moisture, otherwise corrosion may damage the controller. Always connect devices to the controller when it is disconnected from the power. Do not open the housing cover. Damage in such cases is not covered by the warranty. You have to install the controller in an airy place.

Reading range:

The controller has a program algorithm that, at power start, sets parameters based on the installation environment, so as to ensure an optimal reading range. **DO NOT** install the controller directly on metal surfaces and/or cover it with a metal cover; it may stop working/reading. If you plan to test the controller and move it onto different surfaces, then you have to reset it (power off/on) on each surface. Reading distance depends on where the controller is installed. The presence of metal or interferences can significantly reduce the reading distance. It is **not recommended** to install controllers closer than **30cm** from each other in any direction. Otherwise, it may result in inaccurate readings or, indeed, in the controller **not reading at all**.

INSTALLATION

First, mount the back part of the controller's housing on the wall using the two mounting screws included. After mounting the back part, connect the wires to the connector, place the controller on it, and press until you hear a click indicating that the plastic pins are jammed in the front part of the controller's housing. The controller is now successfully installed.
To remove the controller from the wall, slide the screwdriver between the two parts of the housing at the bottom (as close to the plastic pin of the housing as possible) and gently rotate it.

COMMUNICATION

Ethernet:

Connect the controller directly to your network via 9, 10, 11 and 12 contacts. Use at least UTP CAT 5e cable. Adjust network settings of the controller using the Codeks Device Manager software so that it will function properly in your network. Please consult Codeks Device Manager's manual.

The default address of the controller is the same as the last digit of the IP address. E.g. if the IP address of the controller is 192.168.110.105, then the controller's address is 105.
If you have more controllers on the communication line, don't duplicate addresses.

RS485:

Connect the controller to the computer, with one of the power supplies, with communication converter, from the Power or Spider family.
The RS485 communication bus is used between the controllers and Jantar software. Up to 10 controllers can be lined up into one communication line. The maximum length of the communication line is 1000 cable meters. It is recommended that you use an FTP or S-FTP cable. Only a serial connection of controllers in a single communication line is allowed. **Star (parallel) connection is not allowed**. All shields of S-FTP cables must be wired together and at **one point** connected to the earth. Individual connections to the earth are not allowed. Do not connect the shield of the cable to the ground of the controller.

In the event of problems in communication, a termination resistor needs to be added. We recommend using 120 Ohm resistors on each side of the cable. Converters are, on the RS485 side, protected with slow-blow fuses and transient voltage suppressors.

Reset to the factory settings (brainwash):

When the controller is reset to the factory settings (brainwash), the controller address is set to 255.

ORDERING CODES

Code	Specification
POPULUS K-1-A	Access controller in **K** box (A line), integrated reader, frequency 125kHz, integrated keypad integrated Ethernet, for CODEKS software
POPULUS K-3-A	Access controller in **K** box (A line), integrated reader, frequency 13.56MHz, integrated keypad integrated Ethernet, for CODEKS software

OTHER

Please read through our warranty and disclaimer statements.

Connection scheme and additional support for the use of this product can be found on:
http://www.jantar.si/forum/en

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