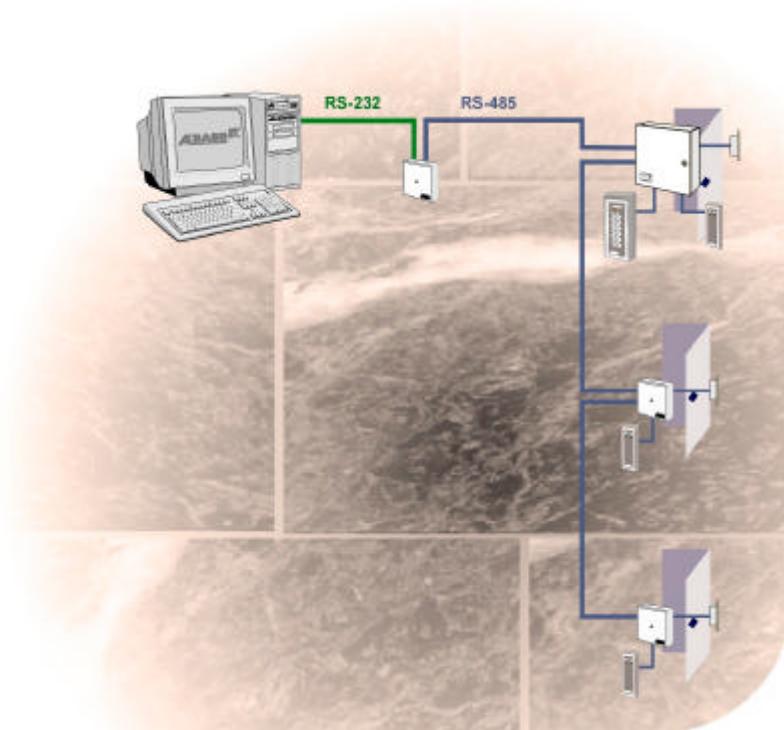


Installation manual



AXCARD

DM-420 IP + AXNET

Ver. 1.3



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AXCARD DM-420 IP

INTRODUCTION.

Besides information about the DM-420 IP control unit, this manual also contains information about AXNET, AXEMAS network for AXCARD readers, and how to configure the network interface available in the DM-420 IP.

DM-420 IP is an dedicated master to AXCARD-system. The device has a network interface that can be connected to a local area network (LAN). This feature allows communication between the Axbase 3000 software and the system using TCP/IP. The master should be mounted in the vicinity of a LAN-connector and should be connected by later instruction. Power supply 24V and AXNET connections to the reader units is also needed. Besides the easy connection you also have other advantages with an dedicated master, it takes care of all the events, sends commands to the reader units, saving the time it's takes to opening doors, switch off and on alarm, witch makes the system faster. Power supply should be 12-30VDC c or 12-18VAC power consumption is max. 25mA. **Use AXEMAS transformer or battery backup to avoid problem.**

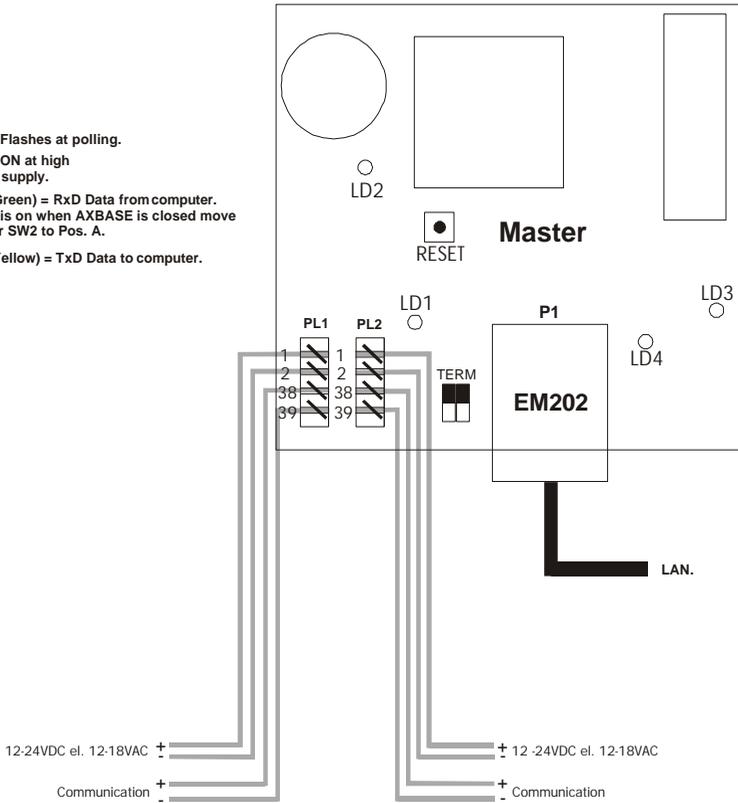
INITIALISATION AND MEMORY RESET.

- Open the master unit.
 - Press and hold the **RESET**-button (5 beep is heard) 1 / sec.
 - 6 fast beep is heard.
 - Release **RESET**-button.
 - Resets the memory and programmes the password.
 - The master is now ready to be used.
- Do the settings for the rest of the reader/control units (see page 14).

NOTE! DM-420 IP can only be used with AXBASE 3000.

CONNECTION OF MASTER DM-420 IP

LD1 = Flashes at polling.
 LD2 = ON at high power supply.
 LD3 (Green) = Rx D Data from computer.
 If LD3 is on when AXBASE is closed move jumper SW2 to Pos. A.
 LD4 (Yellow) = Tx D Data to computer.



NOTE!

- Use only tools intended for KRONE LSA connectors.
- Use only cable with (0,5-0,6 mm diameter).
- Place **max 2 wires** in the same connection.

CONNECTIONS ON PCB.

Connector PL1,2 - POWER SUPPLY and AXNET.

Connector P1 - LAN.

CABLES.

To install Axcard card readers, you should use screened cables. This is to prevent electromagnetic interference. For the communication between compact readers and controllers/central the cable should also be of a twisted pair type.

CONNECTION OF READER TERMINALS.

It is important to use a screened cable and to ensure that you connect the screen at both ends. All housings have holes for the screw connection of the screen

To connect an **ASR-521** (magnetic card reader without keypad) you require:

- 8 wires for data
- 2 wires for extra LED
- 2 wires for tamper switch

To connect an **ARK-531** (magnetic card reader with keypad) you require:

- 10 wires for data
- 2 wires for extra LED
- 2 wires for tamper switch

To connect an **AKP-514** (keypad only) you require:

- 7 wires for data
- 2 wires for extra LED
- 2 wires for tamper switch

To connect a **PR-551** (prox with keypad) you require:

- 10 wires for data
- 2 wires for power supply 12V DC
- 2 wires for extra LED
- 2 wires for tamper switch

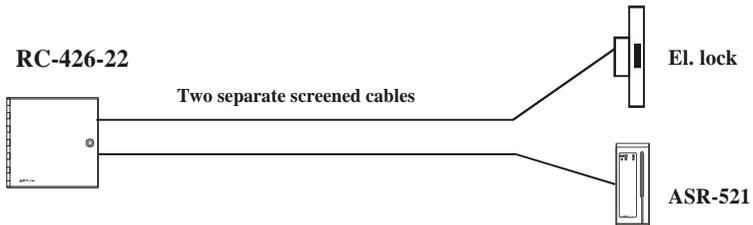
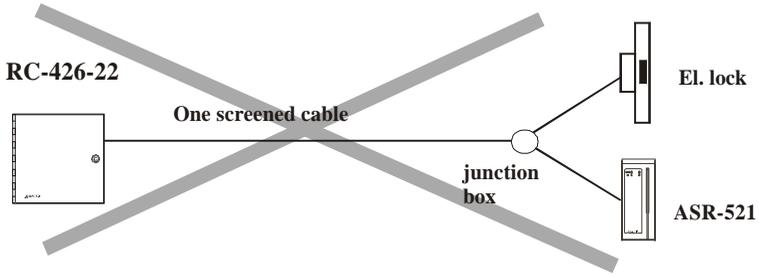
To connect a **FR-521** (magnetic card reader insert without keypad) you require:

- 9 wires for data
- 2 wires for extra LED
- 2 wires for tamper switch

OTHER CONNECTIONS.

For other connections such as electronic lock, exit button, door switch, alarm control, printer and PC, use screened cable.

NOTE! An electronic lock must always be connected using its' own cable to avoid interference's. The only exception is in conjunction with a door position contact



AXNET INSTALLATION.

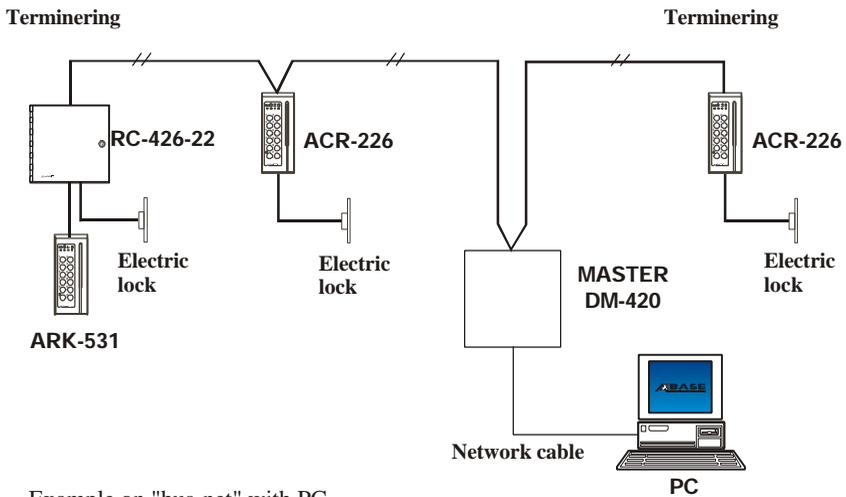
INTRODUCTION.

AXNET is a small local network which makes it possible to connect card reader controllers or compact readers using a two wire data connection. The communication between the readers is a polling system, which means that the master DM-420 IP takes control of all communication. The others are "SLAVES" and are only allowed to respond once the master has polled them.

You can program all the individual readers within the system from the master, by means of a special command. In a similar way, you can connect a printer to the master and run printouts from all the individual readers.

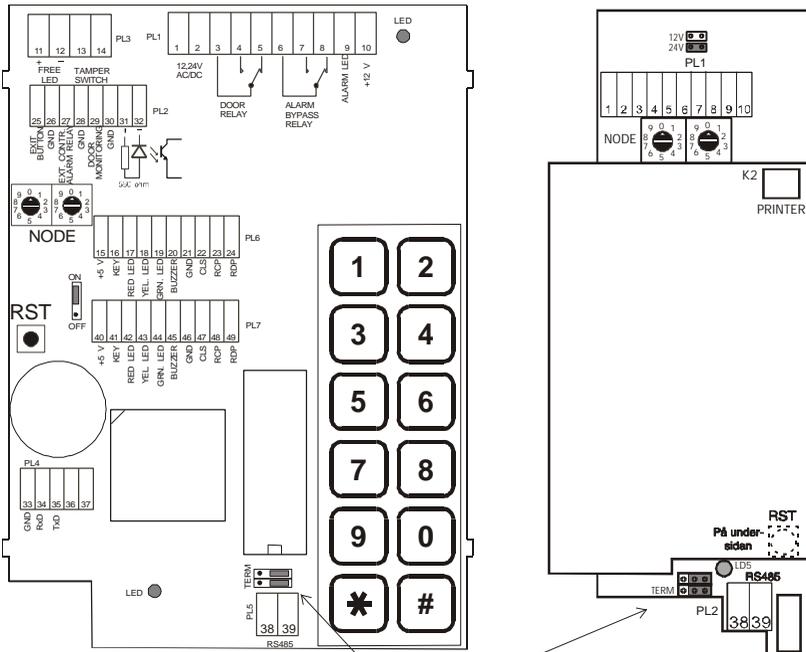
For the communications to run, you need to allocate a NODE-address to each of the readers. This address has to be unique for each reader and is set on the double rotary switch on the main PCB (this not includes the master DM-420 IP which automatically has address 01). The rest of the reader, has address 02,03 and so on.

If you run AXBASE, you can easily mix all the readers in the Axcard-family.



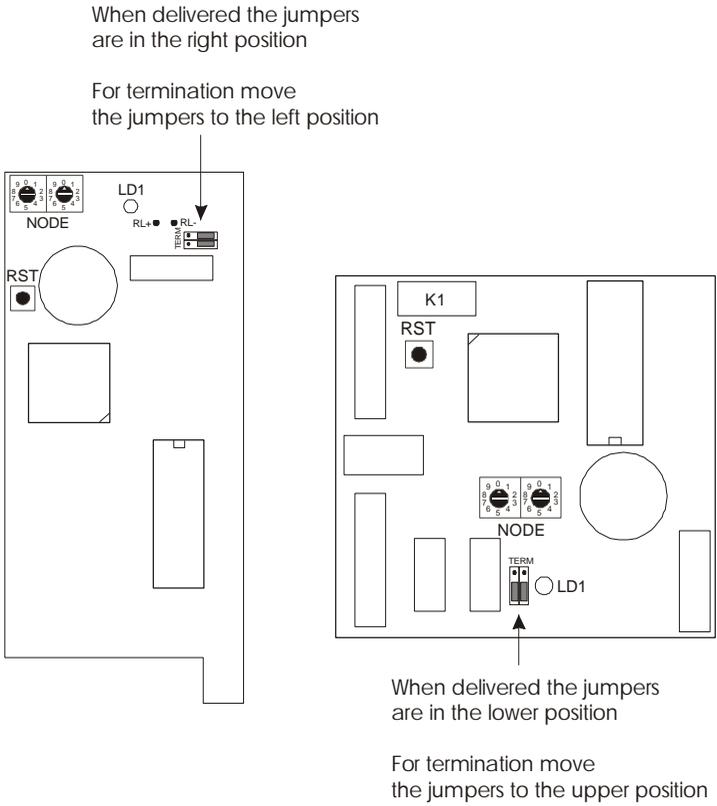
Example on "bus-net" with PC

The electrical connection of the readers should be done using a **screened twisted pair** cable. The highway should be configured as a **bus (daisy chain)** connection. The total length of the highway should not exceed **1200 m**. The screen must be connected in the reader housings. The connection is **polarity dependent** and is galvanically separated from the reader electronics by an opto-coupler. To make the communication resistant to interference, you have to terminate the **first** and **last** readers on the two-wire communication highway. Setting the jumpers "TERM" on the PCB to their left hand position does this.



When delivered the jumper are in the right position

For termination move the jumpers to the left



In AXNET we can permit some deviation from the “bus rule”. If you think its difficult to have two cables to each reader/controller, (one in and one out) you may put a junction box at the ceiling and have a “**drop-cable**”. The maximum length of this is **20 m**. If the length is greater than 20 m; you have to make a termination in the reader/controller. **You must never have more than 5 terminations in any network**



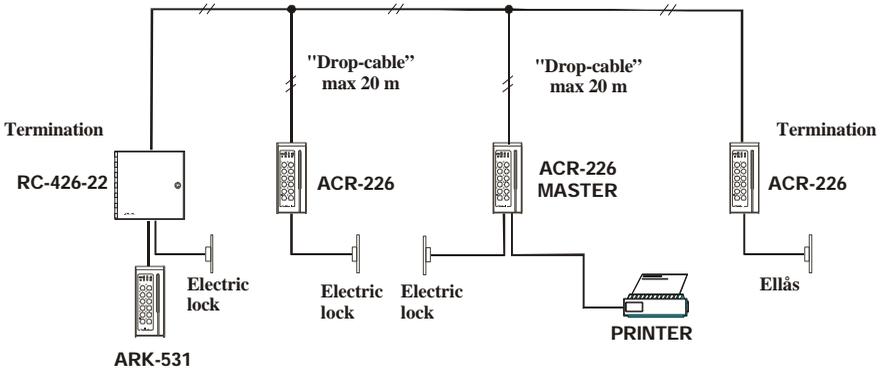
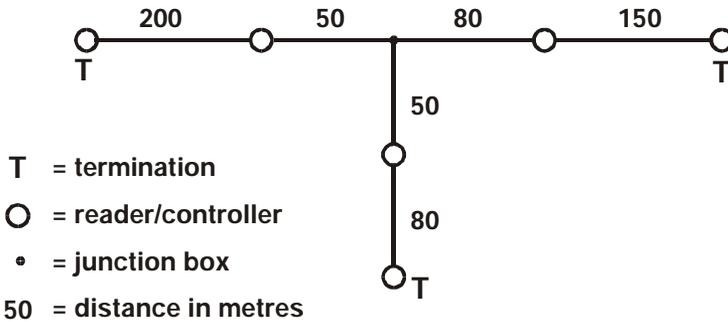


Fig 2: Exemple with "bus-net" and "drop-cables"

To make it easier to decide how to terminate, you can draw a simple sketch of your network

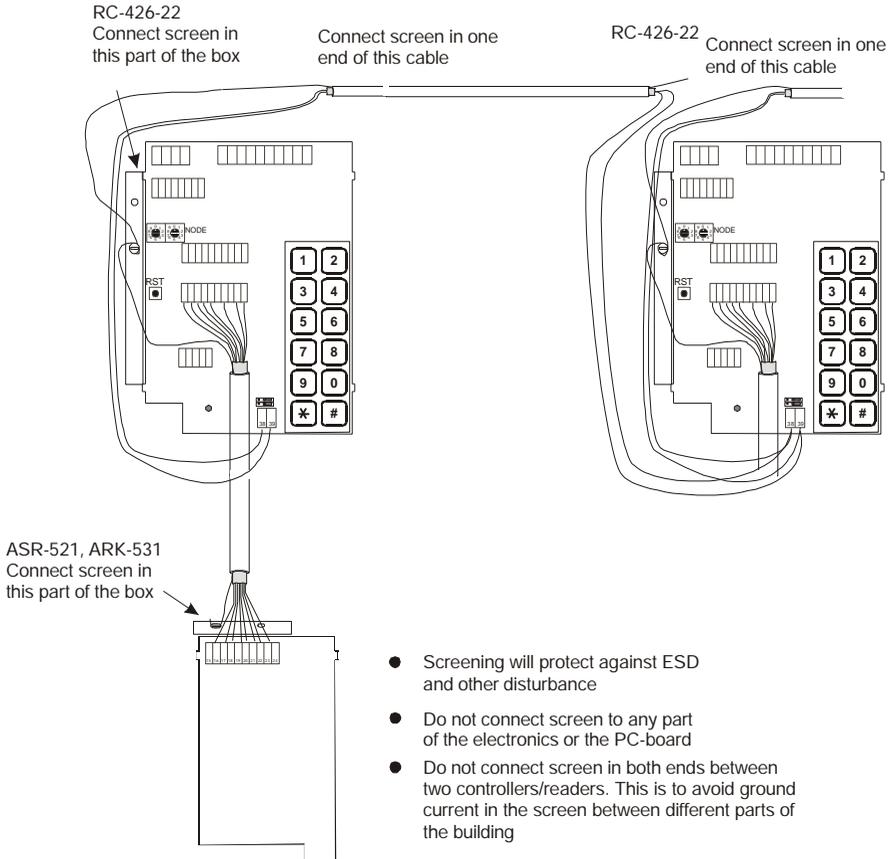


Example of a network with 6 readers/controllers, 3 terminations and 610 m cable.

INTERCONNECTION OF READERS IN NETWORK.

The two-wire communication is connected to PL5: 38 and 39, **the polarity is important**. The cable, which connects the readers/controllers, has to be screened. It's also important how the screen is connected. Connect the screen at only one end.

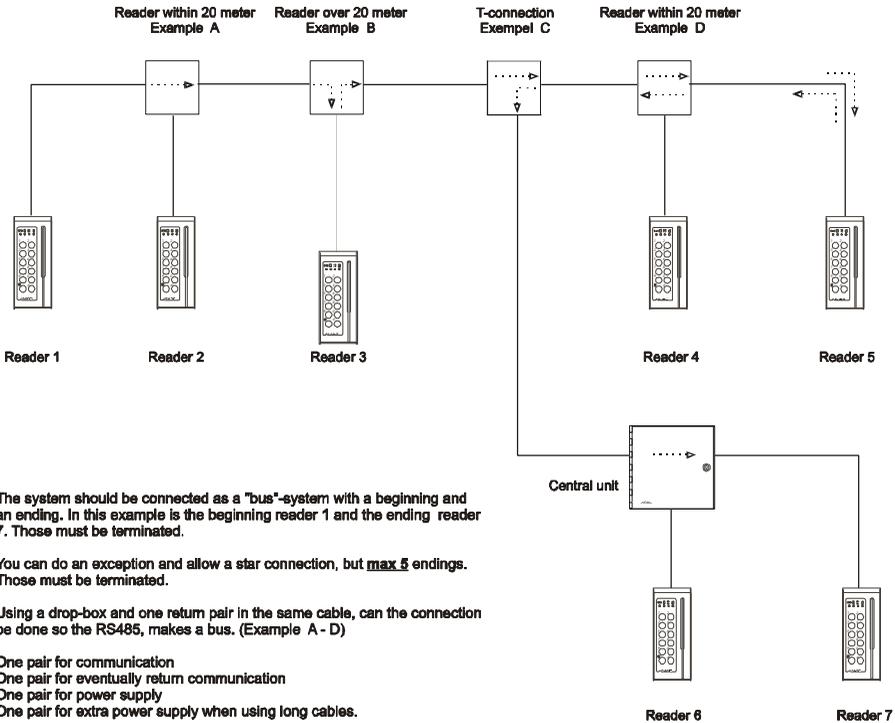
The cable between the controller and the reader terminal also has to be screened, with maximum length of 25 m. On this cable you have to connect the screen at both ends.



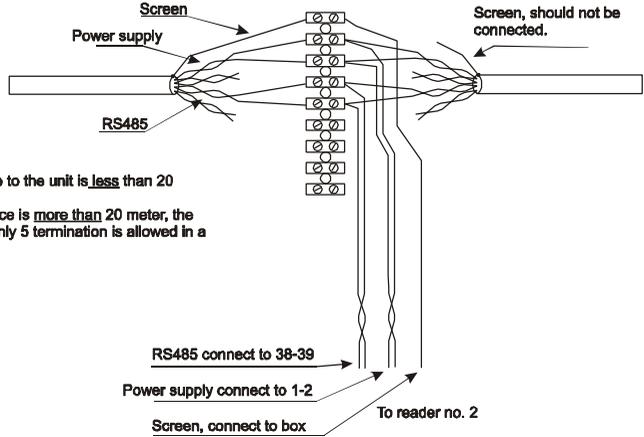
DROP CABLES.

When configuring a system using compact card readers it can be difficult to run the "bus"-cable into the card reader and back again. To alleviate this, use a screw connector and a 2 pair drop-cable down to the reader. The drop-cable length should not exceed 20 metres. To avoid star connection use a return pair. Use the screw connector in drop-box KB-3.

Example of a system using drop-box.

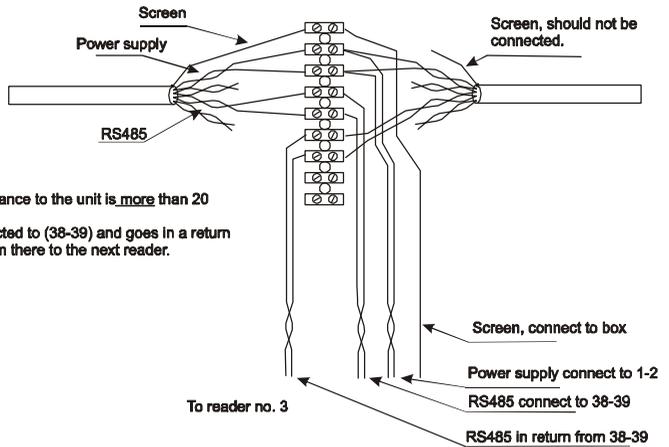


Example A For connection within 20 meter



Use this connection when the distance to the unit is less than 20 meter.
Using this connection when the distance is more than 20 meter, the reader must be terminated. NOTE!! Only 5 termination is allowed in a system.

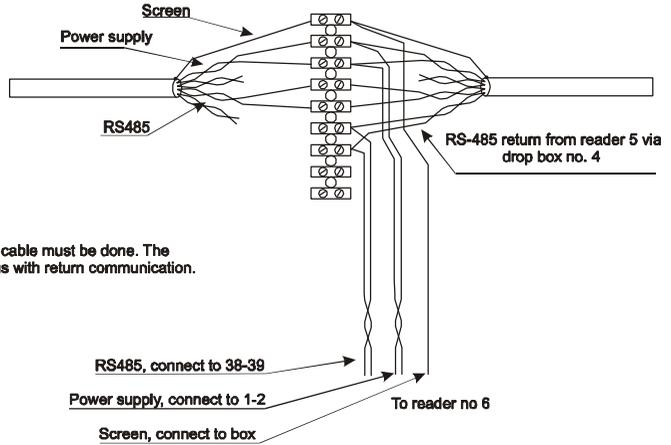
Example B For connection over 20 meter



Use this connection when the distance to the unit is more than 20 meter, and do not terminate.
The communication pair is connected to (38-39) and goes in a return pair, back to the drop box and from there to the next reader.

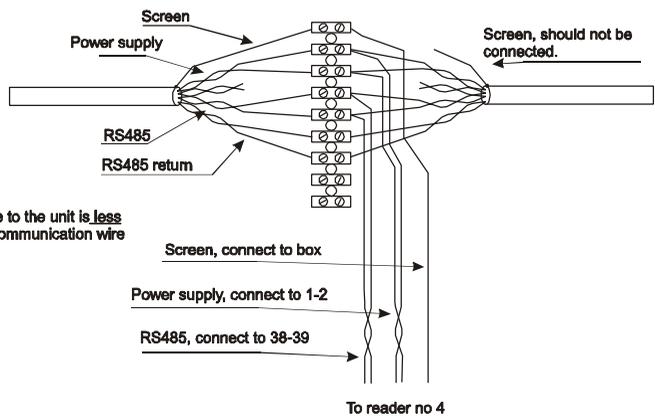


Example C T-connection



Use this connection when a split of a cable must be done. The RS485 is connected so it makes a bus with return communication.

Example D For connection within 20 meter



Use this connection when the distance to the unit is less than 20 meter, and there is a return communication wire from another reader.

START UP OF NETWORK.

- Reset the master DM-420 IP (see page 2).
- Put the node switches (02-32) on all readers/control units.
- Reset all readers/control units. See reset of master (see page 2).
- **NOTE! No password of your own can be used.**
- **Check the termination.**

Go to the AXBASE 3000 manual.



INSTALLATION OF DM-420 IP.

This section describes how a DM-420 IP control unit is installed in one or more existing Axcard-systems, and how to make changes in the Axbase 3000 software. It does also includes instructions about how the DM-420 IP installation should be done when upgrading from Axbase 16/32 to Axbase 3000 at the same time.

➔ Please note that this section does only apply when a DM-420 IP is installed in an already existing Axcard-system that is already running with the Axbase 16/32 or Axbase 3000 software.

Important! When upgrading from Axbase 16/32 to Axbase 3000, the firmware (EPROM) must be changed in all control units (does not apply to DM-420 IP) to a version compatible with Axbase 3000.

CONNECTION OF DM-420 IP.

Those steps must be done in all Axcard-system.

- Replace the existing master unit with DM-420 IP. When it has been connected then reset the unit (see page. 2).
- Install the replaced master unit and change the node switches so that the settings correspond to the systems **last** node number. If the system earlier had 12 units, change the node switches to 13, because the system increased with one unit. Then reset the unit in the same way You did with the DM-420 IP.

UPDATING AXBASE 3000.

Those steps must be done when a DM-420 IP is installed in all systems (as. above) and if You earlier used Axbase 3000 to the access control system.

- Start *Axbase DM-420 Update Wizard* and follow the instructions. This program will adjust the database in Axbase 3000 so it correspond to the new system configuration.
- Start Axbase 3000 and restore the master unit and the last unit in all systems. How to make that is described in *Installation- and User Manual* for Axbase 3000. This can take a while depending on the size of the database.

UPDATING FROM AXBASE 16/32 TO AXBASE 3000.

Those steps must be done when a DM-420 IP has been installed, and if You earlier used Axbase 16/32 to the access control system that will be updated to Axbase 3000.

- Install Axbase 3000.
- Convert Axbase 16/32 database with the *Database converter* tool.
- Start *Axbase DM-420 Update Wizard* and follow the instructions. This program will adjust the database in Axbase 3000 so it correspond to the new system configuration.
- Start Axbase 3000 and restore the master unit and the last unit in all systems. How to make that is described in *Installation- and User Manual* for Axbase 3000. This can take a while depending on the size of the database.

SETUP THE DM420-IP

PREPARATIONS

The following information is required to configure a DM420-IP:

- An IP-address that can be assigned to the DM420-IP.
- A port number that will be used by the device to receive data. You **must** choose a number that also can be used by the computer running Axbase Server (see *Recommendations on choosing a port number*).
- An IP-address and port number that will be used to connect to Axbase Server. The port number **must** be the same number as the port number in the previous step.
- An IP-address to a gateway (router) if the communication between the DM420-IP and Axbase Server will go through different network segments. Note that the router in this case also has to be configured to allow communication between the DM420-IP and Axbase Server.
- A Subnet mask. Normally the subnet mask 255.255.255.0 can be used, but this depends on the network structure. If the network is divided in subnets the correct subnet mask is required.

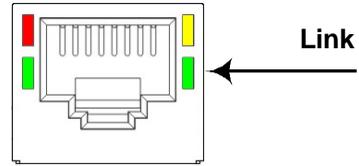
The following equipment and software is needed to configure a DM420-IP:

- A computer that is connected to the same network segment as the DM420-IP. It is also possible to connect a computer directly to a DM420-IP if a crossed network cable is used.
- The DS Manager software must be installed on the computer that will be used to configure the DM420-IP. The section *DS Manager Software Installation* describes how to install the software.

Ensure the following before starting to configure the DM420-IP:

- Ensure that the DM420-IP has power.

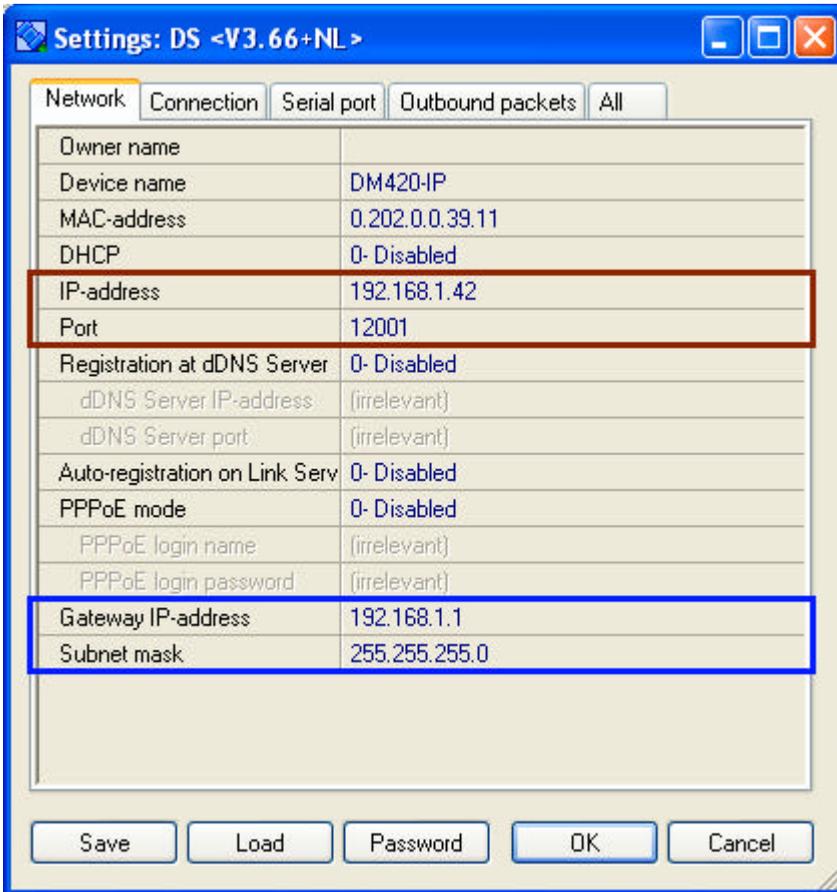
- Ensure that the device is connected to the network or directly to the computer through a crossed network cable. The status led (see the picture) indicates with green light when it has a physical connection to the network/computer.



CONFIGURATION

1. Start the DS Manager software, click **Start**, select **Program**, select **Tibbo**, select **Tibbo Device Server Toolkit** and click **Tibbo DS Manager**.
2. When DS Manager has started the status message *Refreshing device list...* is shown in a number of seconds. This means that DS Manager is automatically searching for all DM420-IP devices available on the network. If this is not done for some reason, ensure that the *Auto-discovery of Local Servers* option is selected in the *Access Mode* menu. Then click the *Refresh* button to start the search. All available DM420-IP that is available on the network should be shown in the list when the search has completed.
3. Select the DM420-IP device that you want to configure and click the *Settings* button. A new window is opened where the settings is displayed and can be changed. Ensure that all settings on each page (*Network*, *Connection*, *Serial port* and *Outbound packets*) is equal to the settings on the corresponding pages illustrated in picture 1-4. In the colour marked areas (see picture 1 and 2) the settings described for each area is entered.

Important! The settings should normally be configured with the correct values already (except for the settings within the colour marked areas). **You should anyway ensure that the settings is equal to the settings in picture 1-4 to avoid problems.**



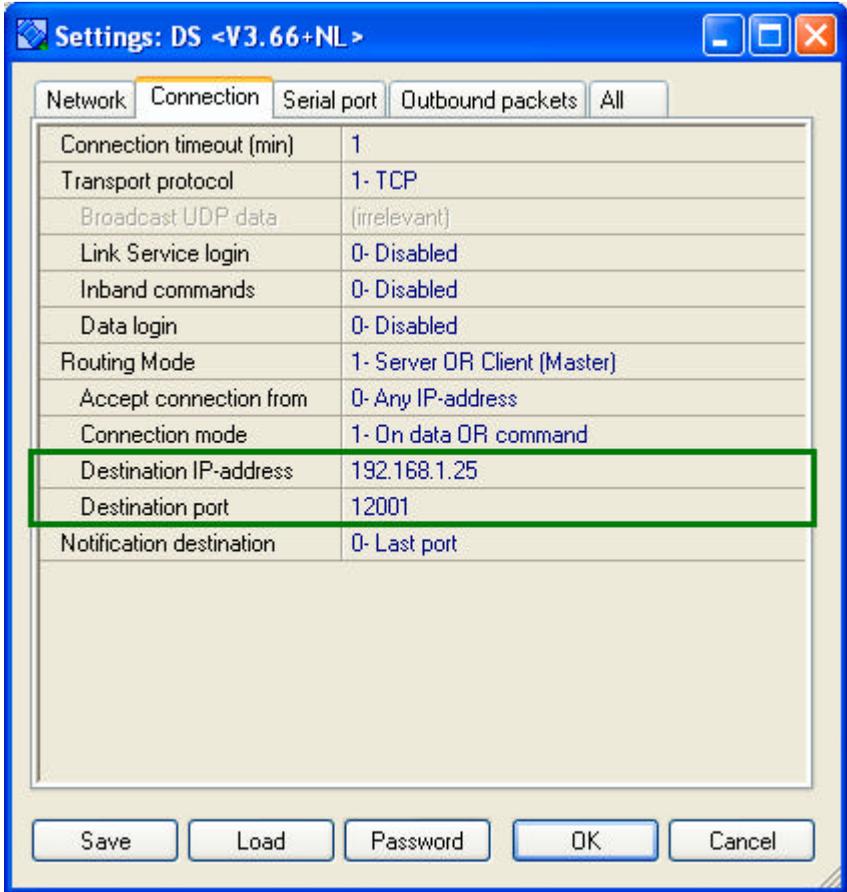
Picture 1 – Network settings



The IP-address of the device (*IP-address*) and port number that will be used to receive data (*Port*).



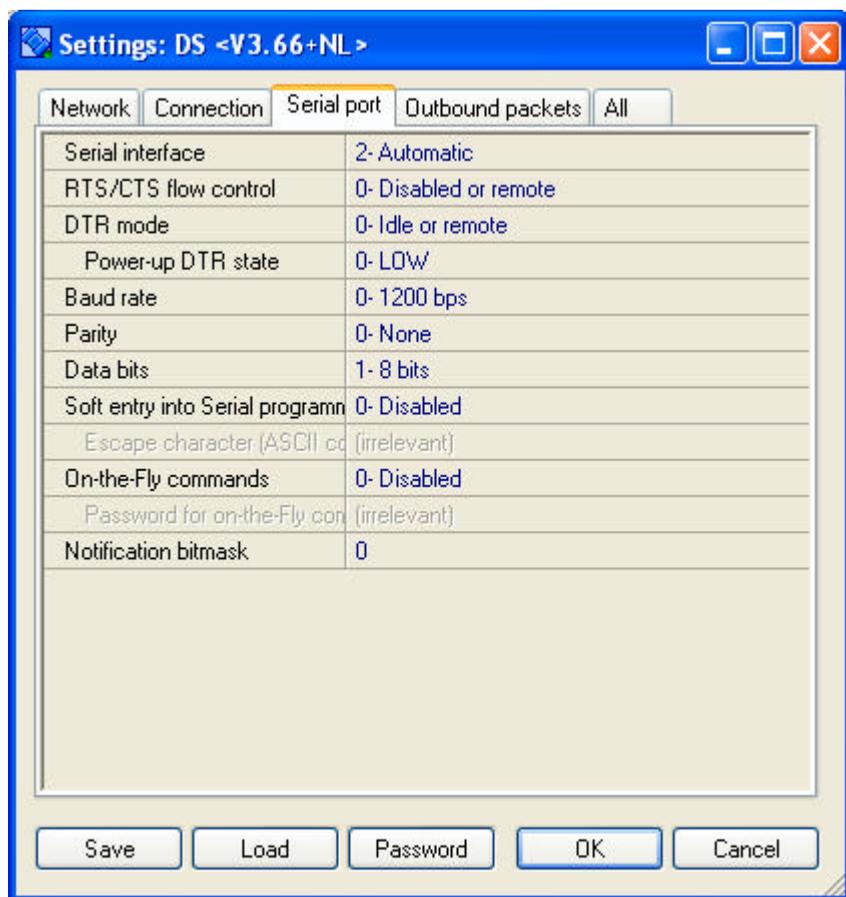
The router IP-address **or** 0.0.0.0 if no gateway is used (*Gateway IP-address*) and the subnet mask address **or** 255.255.255.0 (*Subnet mask*).



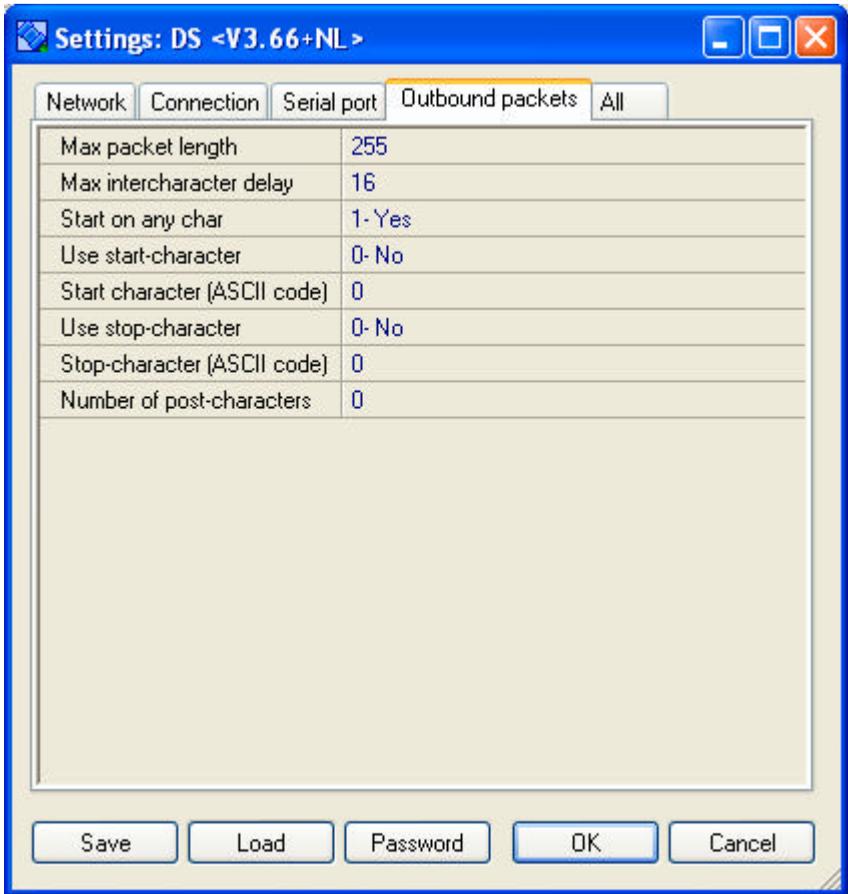
Picture 2 – Connection settings



The IP-address (*Destination IP-address*) and port number (*Destination port*) required to connect to Axbase Server.



Picture 3 – Serial port settings



Picture 4 - Outbound packets settings

4. When all settings has been correctly set and verified, click *OK* to save the settings. When the settings has been stored the DM420-IP will reboot automatically in order to apply the changes. Also, the list of available DM420-IP will be updated and it can happen that the device disappears (if the reboot did not complete before the update). If the device is not available in the list of detected DM420-IP, wait a number of seconds and click *Refresh* to update the list.

DS MANAGER SOFTWARE INSTALLATION

The DS Manager software is used to configure a DM420-IP. The installation program is available on the Axbase 3000 CD. The software can also be downloaded from the Axema Access Control website.

Follow the steps below to install DS Manager:

- The software installation requires administrative privileges on the computer. You must logon as a user with these privileges.
- To start the installation program available on the Axbase 3000 CD: insert the CD in the CD-player. Then start *setup.exe* located in the *Utilities\Network\Tibbo* folder on the CD. If you have downloaded the software from Internet: start the downloaded file. Before the installation program can start, you may need to confirm that you want to start the downloaded file (as a security check in Windows).
- When the installation program has started, do the following:
 1. Click ***I Agree*** to accept the license agreement.
 2. Ensure that ***Select the type of install*** is set to ***Full***. Then, click ***Next*** >.
 3. If you want to change the location of where the software will be installed, change the ***Destination Folder***. Click ***Install***.
 4. When the installation has completed, click ***Finish*** to close the installation program.
- When the installation has completed, you may need to restart the computer before DS Manager can be used. In that case the installation program will ask you to do this.
- DS Manager is started by clicking ***Start***. Then select ***Program***, select ***Tibbo***, select ***Tibbo Device Server Toolkit*** and click ***Tibbo DS Manager***.

RECOMMENDATIONS ON CHOOSING A PORT NUMBER

Start by choosing a port number that can be used on the computer that is running Axbase Server. A port number can be in the range from 1 to 65535, but you are recommended to use a number higher than 5000 to avoid conflicts with other programs on the computer. You should choose a high number as possible. Ask a IT-administrator for help if needed.

Choosing a port number **must** meet the following criterias:

- The port number **must not** already be in use by another Axcad-system installed in Axbase 3000.
- The port number **must** be available on the the computer and not used by any other software.



Installed by:

Telephone: