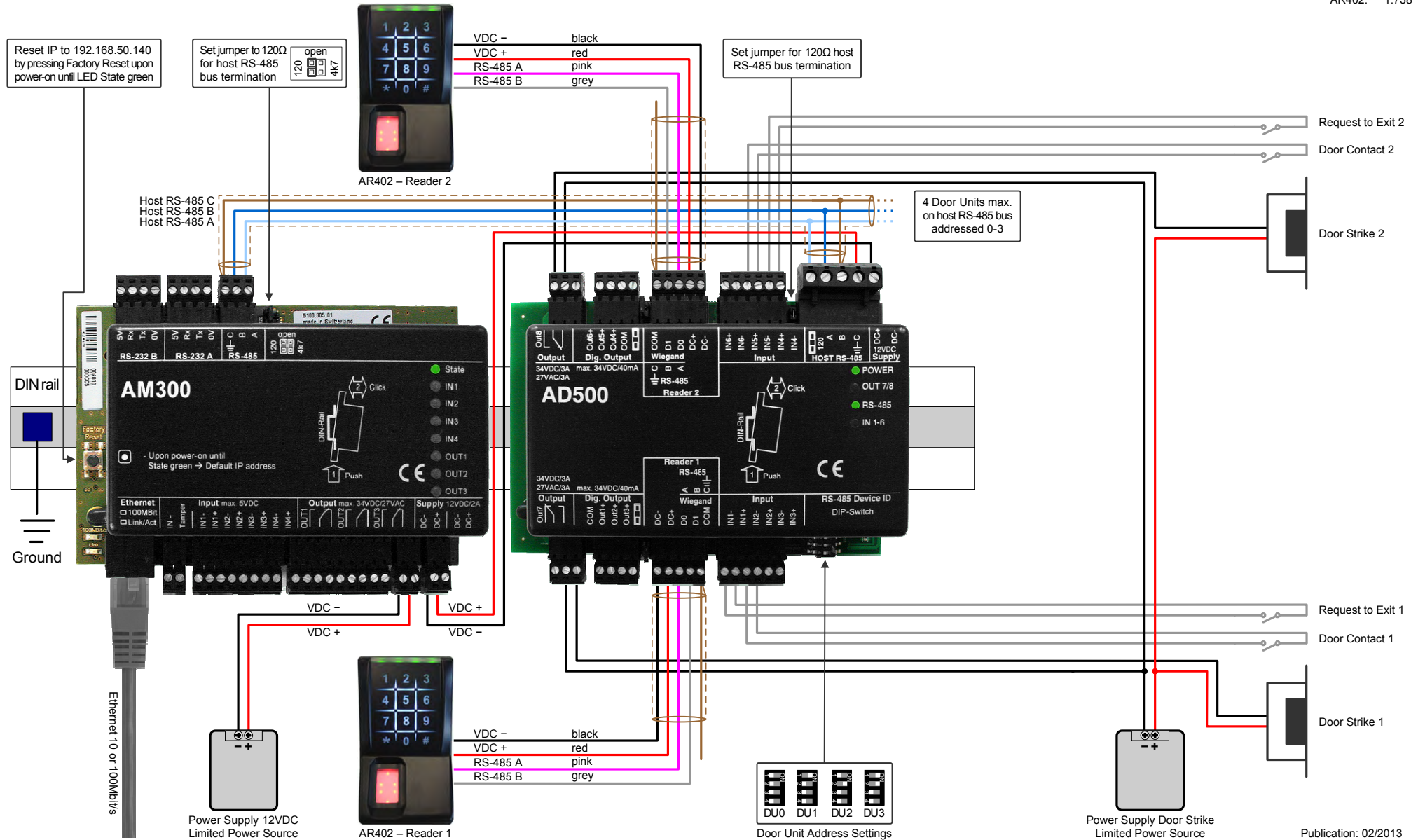


Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402

The information in this document is valid as of software/firmware release:

AM300:	4.12.0
AD500:	2.014
AR402:	1.738



Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402

Step 1 Mount

- Mount DIN rail
- Screw grounding terminal tight on the rail
- Fit the devices to the rail, not tilted

Step 2 Wire

Connect Master Unit AM300 and Door Unit AD500

- RS-485 between AM300 and Door Units
- Set each AD500's address on the RS-485 bus
- RS-485 bus termination 120Ω only on first/last device
- 12VDC Limited Power Source (LPS, SMPS)

Connect AD500 (Reader 1/2) to AR402

- DC+ Red
- DC- Black
- RS-485A Pink
- RS-485B Grey

Connect door locking hardware to AD500

- Out 7/8 Locking devices
Class II relays (max. 34VDC/3A or max. 27VAC/3A)
- IN 2/5 Door contacts (optional)
- IN 1/4 Request to Exit buttons (optional)

For further details on power supply and wiring, see page 3.

Step 3 Network

Ethernet connection

- Connect the AM300 to a network switch using a CAT5 patch cable
- Do not connect Power Over Ethernet (POE) enabled network
- Alternatively connect the AM300 directly to a PC using a CAT5 crossover cable

Network settings

- Set the IP address of the connected PC to allow connection to the AM300 default IP address

IP address 192.168.50.140
Subnet mask 255.255.255.0

Step 4 Power On

Plug in power supply (LPS, SMPS)

AM300 boot process indication – State LED

- Lit Orange Linux starting
- Lit Green Java starting
- Flashes green ~ ¼ sec Application starting
- Flashes green ~ 1.5 sec Application running

AD500 status indication – Power LED

- Flashes green ~ 1 sec Offline
- Flashes green ~ ¼ sec Online
- Rapidly flashes green RS-485 traffic

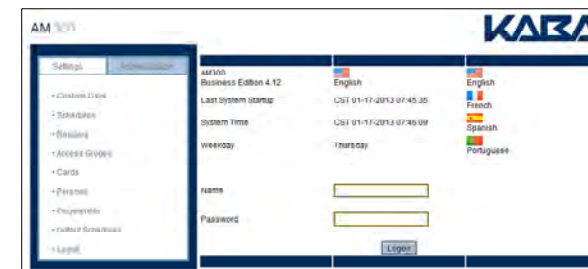
AR402 status indication – 4 Status LEDs

- All LEDs lit red Wiegand Mode
- LED 4 flashes red Offline
- LEDs off, keypad lit Online
- LEDs 2/3 flash red Fingerprint sync in progress

Step 5 Login and configure

Connecting to the AM300

- Open a web browser on your PC
- Enter the default IP address 192.168.50.140
- The login screen is displayed



Login to the system

- Enter the Name user1
- Enter the Password pw
- Click Logon

Setup the system

- Adjust the default settings according to your requirements
- Enter persons, define their access permissions, enroll fingerprints, etc.

Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402

Power supply

12VDC Limited Power Source (LPS)
Output current $\leq 8A$, output power $\leq 100W$
Switched-mode power supply (SMPS)

Calculate the required output power of your 12VDC power supply units according to the devices total power consumption.

AM300	12... 28VDC $\pm 15\%$	3.6W
AD500	12VDC $\pm 15\%$	1.5W
AR402	12... 24VDC $\pm 15\%$	2.5W
AR402-iCLASS	12... 24VDC $\pm 15\%$	3.0W

Permissible cable lengths and types

AM300, AD500

Local Power Supply (2 cables)

Single Conductor AWG 18 (2x)
Max. length < 2m VDC

CAT5 S-UTP AWG 24
Max. length < 1.200m Host RS-485

AR402

Central Power Supply (1 cable)

CAT5 S-UTP AWG 24
Max. length < 100m VDC and RS-485
3 twisted pairs for VDC,
1 twisted pair for RS-485

Local Power Supply (2 cables)

CAT5 S-UTP AWG 24
Max. length < 1.200m RS-485

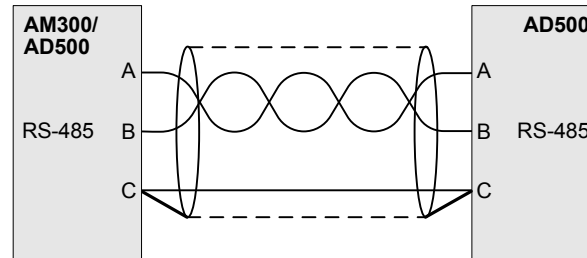
Max. length < 150m VDC
4 twisted pairs for VDC,
or

Single Conductor AWG 21 (2x)
Max. length < 60m VDC

Host RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.

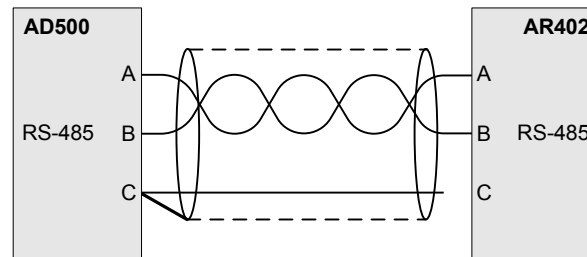
Please note that the foil screen is connected on both ends by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



AR402 RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.

Please note that the foil screen is connected to the AD500 by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



Grounding concept

AM300, AD500 and AR402 are contained within a plastic housing and are not grounded.

- If the devices are operated with an ungrounded power supply, then neither the power supply nor the peripheral devices are grounded.
- If the devices are operated with a grounded power supply, only the power supply is grounded.
- The AM300 ethernet connection is galvanically isolated and is not grounded.
- The shieldings of the RS-485 cables are not grounded, but are instead attached to the C (common) connection.
With bus cabling for the communication connections, please also ensure that there is a continuous connection between the shielding of the RS-485 line and the stubs.
- The DIN rail is to be grounded



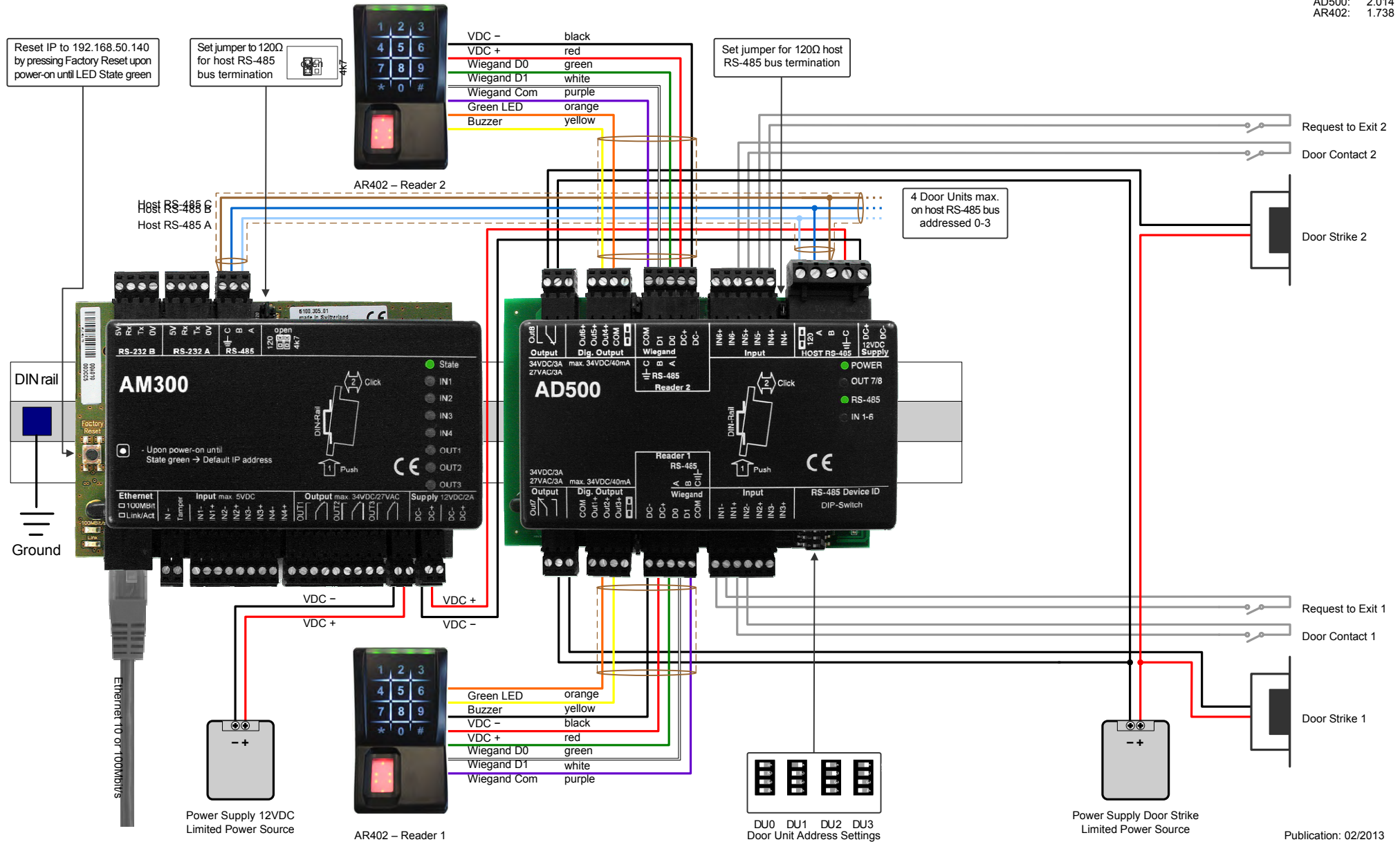
The AR402 metal mounting plate is to be grounded in electrostatic discharge sensitive environments. Connect the ground cable using a 6.3mm female blade connector and push it onto the blade of the AR402 mounting plate.



If necessary, the relevant Kaba support personnel can be contacted regarding protective measures in areas where EMC is an issue.

Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402

The information in this document is valid as of software/firmware release:
 AM300: 4.12.0
 AD500: 2.014
 AR402: 1.738



Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402

Step 1 Mount

- Mount DIN rail
- Screw grounding terminal tight on the rail
- Fit the devices to the rail, not tilted

Step 2 Wire

Connect Master Unit AM300 and Door Unit AD500

- RS-485 between AM300 and Door Units
- Set each AD500's address on the RS-485 bus
- RS-485 bus termination 120Ω only on first/last device
- 12VDC Limited Power Source (LPS, SMPS)

Connect AD500 (Reader 1/2) to AR402

- DC+ Red
- DC- Black
- Wiegand D0 Green
- Wiegand D1 White
- Wiegand COM Purple
- Out 1/4 Orange (green LED)
- Out 2/5 Yellow (Buzzer)

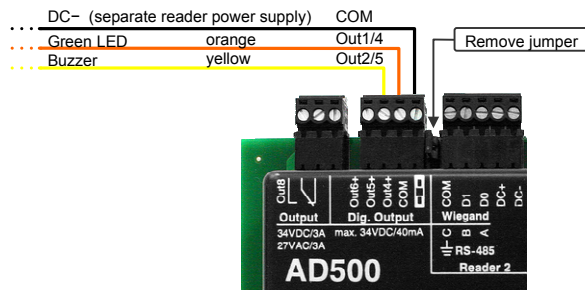
Connect door locking hardware to AD500

- Out 7/8 Locking devices
Class II relays (max. 34VDC/3A or max. 27VAC/3A)
- IN 2/5 Door contacts (optional)
- IN 1/4 Request to Exit buttons (optional)

For further details on power supply and wiring, see page 6.

When using a separate power supply for the readers connect AD500 to AR402 as above, except:

- Connect "COM" to DC- of reader power supply
- Remove jumpers next to "Dig. Output" connectors



Step 3 Network

Ethernet connection

- Connect the AM300 to a network switch using a CAT5 patch cable
- Do not connect Power Over Ethernet (POE) enabled network
- Alternatively connect the AM300 directly to a PC using a CAT5 crossover cable

Network settings

- Set the IP address of the connected PC to allow connection to the AM300 default IP address

IP address 192.168.50.140
 Subnet mask 255.255.255.0

Step 4 Power On

Plug in power supply (LPS, SMPS)

AM300 boot process indication – State LED

- Lit Orange Linux starting
- Lit Green Java starting
- Flashes green ~ ¼ sec Application starting
- Flashes green ~ 1.5 sec Application running

AD500 status indication – Power LED

- Flashes green ~ 1 sec Offline
- Flashes green ~ ¼ sec Online
- Rapidly flashes green RS-485 traffic

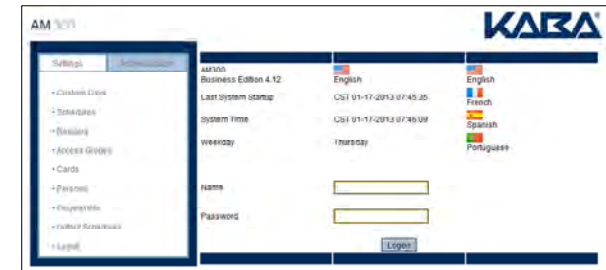
AR402 status indication – 4 Status LEDs

- All LEDs lit red Wiegand Mode

Step 5 Login and configure

Connecting to the AM300

- Open a web browser on your PC
- Enter the default IP address 192.168.50.140
- The login screen is displayed



Login to the system

- Enter the Name user1
- Enter the Password pw
- Click Logon

Setup the system

- Adjust the default settings according to your requirements
- Enter persons, define their access permissions, enroll fingerprints, etc.

Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402

Power supply

12VDC Limited Power Source (LPS)
 Output current ≤ 8A, output power ≤ 100W
 Switched-mode power supply (SMPS)

Calculate the required output power of your 12VDC power supply units according to the devices total power consumption.

AM300	12... 28VDC +/- 15%	3.6W
AD500	12VDC +/- 15%	1.5W
AR402	12... 24VDC +/- 15%	2.5W
AR402-iCLASS	12... 24VDC +/- 15%	3.0W

Permissible cable lengths and types

AM300, AD500

Local Power Supply (2 cables)

Single Conductor AWG 18 (2x)
 Max. length < 2m VDC

CAT5 S-UTP AWG 24
 Max. length < 1.200m Host RS-485

AR402

Central Power Supply (1 cable)

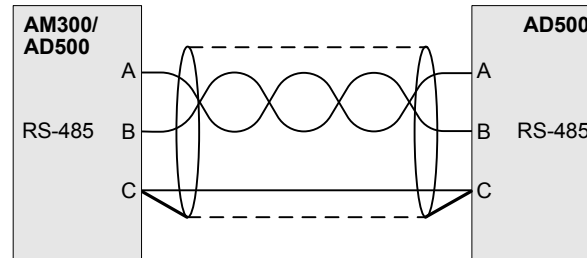
CAT5 S-UTP AWG 24
 Max. length < 40m VDC and Wiegand
 1 twisted pair for VDC,
 3 twisted pairs for Wiegand

Local Power Supply (2 cables)

CAT5 S-UTP AWG 24
 Max. length < 150m Wiegand
 Max. length < 150m VDC
 4 twisted pairs for VDC,
 or
 Single Conductor AWG 21 (2x)
 Max. length < 60m VDC

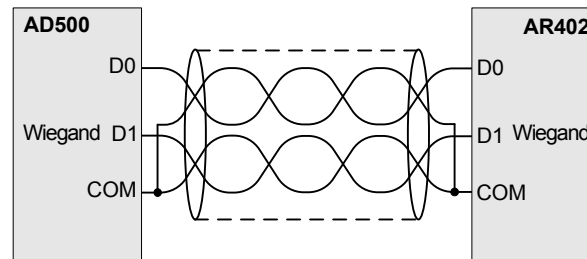
Host RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.
 Please note that the foil screen is connected on both ends by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



AR402 Wiegand connections

Lines D0 and COM, and D1 and COM are routed as a twisted pair of conductors and are not transposed.
 Please note that the foil screen is not connected to COM on either end.



Grounding concept

AM300, AD500 and AR402 are contained within a plastic housing and are not grounded.

- If the devices are operated with an ungrounded power supply, then neither the power supply nor the peripheral devices are grounded.
- If the devices are operated with a grounded power supply, only the power supply is grounded.
- The AM300 ethernet connection is galvanically isolated and is not grounded.
- The shieldings of the RS-485 cables are not grounded, but are instead attached to the C (common) connection.
 With bus cabling for the communication connections, please also ensure that there is a continuous connection between the shielding of the RS-485 line and the stubs.
- The DIN rail is to be grounded



The AR402 metal mounting plate is to be grounded in electrostatic discharge sensitive environments. Connect the ground cable using a 6.3mm female blade connector and push it onto the blade of the AR402 mounting plate.

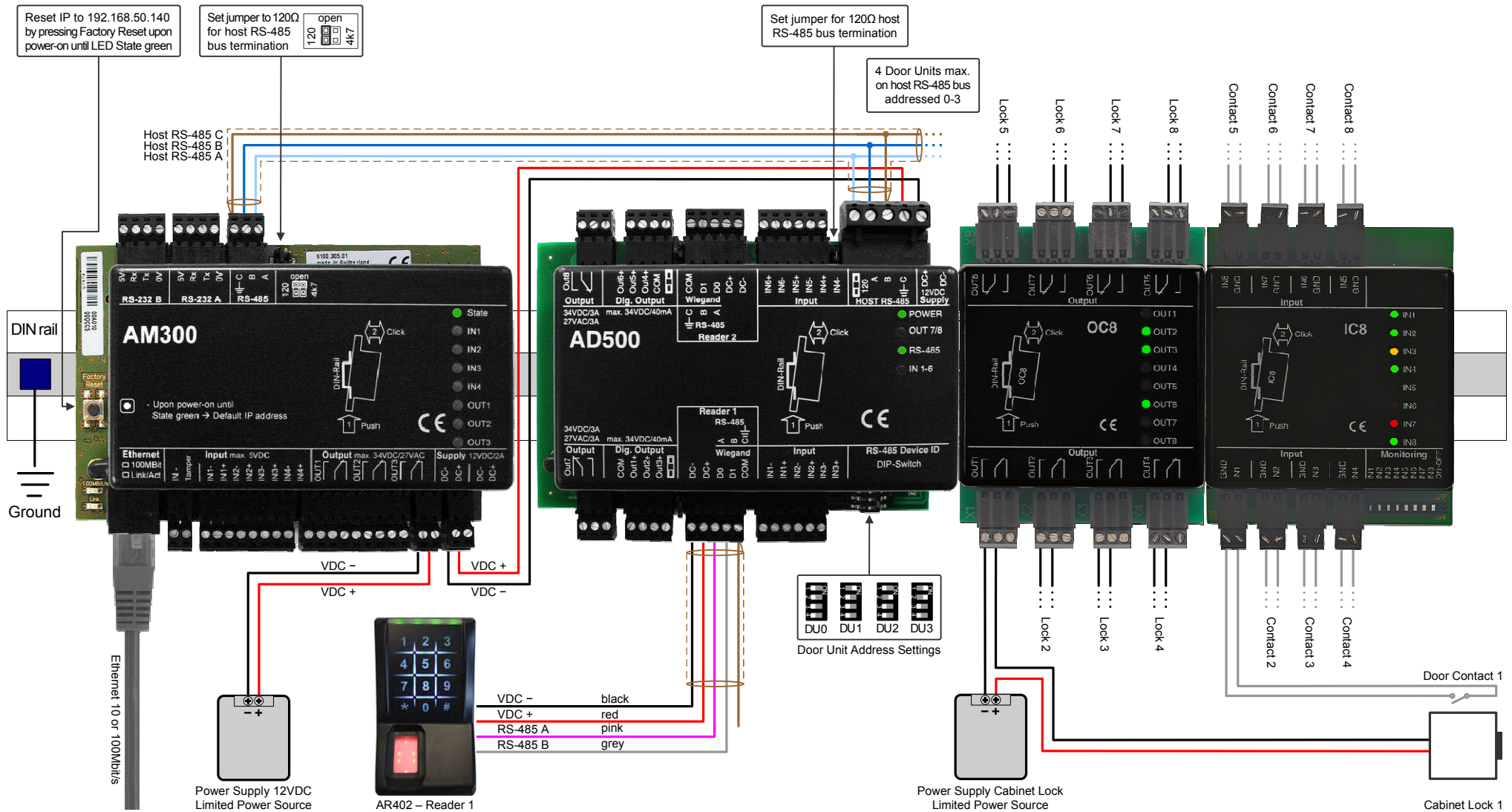


If necessary, the relevant Kaba support personnel can be contacted regarding protective measures in areas where EMC is an issue.

Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402, IC8/OC8 Extension Modules

The information in this document is valid as of software/firmware release:

AM300: 4.12.0
 AD500: 2.014
 AR402: 1.738



Publication: 02/2013

Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402, IC8/OC8 Extension Modules

Step 1 Mount

- Mount DIN rail
- Screw grounding terminal tight on the rail
- Fit the devices to the rail, not tilted
- Plug in OC8/IC8 to an AD500
- No more than three OC8 units can be connected to one AD500
- The number of connected IC8 must match the number of connected OC8 units and is also limited to a maximum of three units
- Insert IC8 extension modules next to the AD500
- The first input/output is always located on the unit closest to the AD500

Step 2 Wire

Connect Master Unit AM300 and Door Unit AD500

- RS-485 between AM300 and Door Units
- Set each AD500's address on the RS-485 bus
- RS-485 bus termination 120Ω only on first/last device
- 12VDC Limited Power Source (LPS, SMPS)

Connect AD500 (Reader 1) to AR402

- DC+ Red
- DC- Black
- RS-485A Pink
- RS-485B Grey

Connect door locking hardware to IC8/OC8

- OC8 Out 1-8 Locking devices Class II relays (max. 30VDC/2A or 30VAC/2A)
- IC8 IN 1-8 Door contacts (optional)

For further details on power supply and wiring, see page 9.

Step 3 Network

Ethernet connection

- Connect the AM300 to a network switch using a CAT5 patch cable
- Do not connect Power Over Ethernet (POE) enabled network
- Alternatively connect the AM300 directly to a PC using a CAT5 crossover cable

Network settings

- Set the IP address of the connected PC to allow connection to the AM300 default IP address

IP address 192.168.50.140
Subnet mask 255.255.255.0

Step 4 Power On

Plug in power supply (LPS, SMPS)

AM300 boot process indication – State LED

- Lit Orange Linux starting
- Lit Green Java starting
- Flashes green ~ ¼ sec Application starting
- Flashes green ~ 1.5 sec Application running

AD500 status indication – Power LED

- Flashes green ~ 1 sec Offline
- Flashes green ~ ¼ sec Online
- Rapidly flashes green RS-485 traffic

AR402 status indication – 4 Status LEDs

- All LEDs lit red Wiegand Mode
- LED 4 flashes red Offline
- LEDs off, keypad lit Online
- LEDs 2/3 flash red Fingerprint sync in progress

Step 5 Login and configure

Connecting to the AM300

- Open a web browser on your PC
- Enter the default IP address 192.168.50.140
- The login screen is displayed



Login to the system

- Enter the Name user1
- Enter the Password pw
- Click Logon

Setup the system

- Adjust the default settings according to your requirements
- Enter persons, define their access permissions, enroll fingerprints, etc.

Master Unit AM300, Door Unit AD500 RS-485, Biometric Reader AR402, IC8/OC8 Extension Modules

Power supply

12VDC Limited Power Source (LPS)
Output current $\leq 8A$, output power $\leq 100W$
Switched-mode power supply (SMPS)

Calculate the required output power of your 12VDC power supply units according to the devices total power consumption.

AM300	12... 28VDC +/- 15%	3.6W
AD500	12VDC +/- 15%	1.5W
AR402	12... 24VDC +/- 15%	2.5W
AR402-iCLASS	12... 24VDC +/- 15%	3.0W
IC8	powered by AD500	0.7W
OC8	powered by AD500	3.5W

Permissible cable lengths and types

AM300, AD500

Local Power Supply (2 cables)

Single Conductor AWG 18 (2x)
Max. length < 2m VDC

CAT5 S-UTP AWG 24
Max. length < 1.200m Host RS-485

AR402

Central Power Supply (1 cable)

CAT5 S-UTP AWG 24
Max. length < 100m VDC and RS-485
3 twisted pairs for VDC,
1 twisted pair for RS-485

Local Power Supply (2 cables)

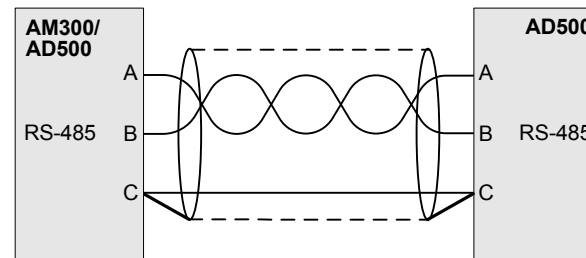
CAT5 S-UTP AWG 24
Max. length < 1.200m RS-485
Max. length < 150m VDC

4 twisted pairs for VDC,
or
Single Conductor AWG 21 (2x)
Max. length < 60m VDC

Host RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.

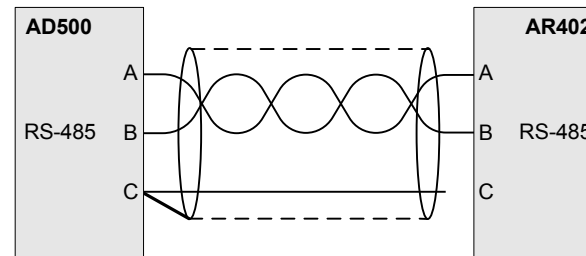
Please note that the foil screen is connected on both ends by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



AR402 RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.

Please note that the foil screen is connected to the AD500 by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



Grounding concept

AM300, AD500, IC8/OC8 and AR402 are contained within a plastic housing and are not grounded.

- If the devices are operated with an ungrounded power supply, then neither the power supply nor the peripheral devices are grounded.
- If the devices are operated with a grounded power supply, only the power supply is grounded.
- The AM300 ethernet connection is galvanically isolated and is not grounded.
- The shieldings of the RS-485 cables are not grounded, but are instead attached to the C (common) connection.
With bus cabling for the communication connections, please also ensure that there is a continuous connection between the shielding of the RS-485 line and the stubs.
- The DIN rail is to be grounded



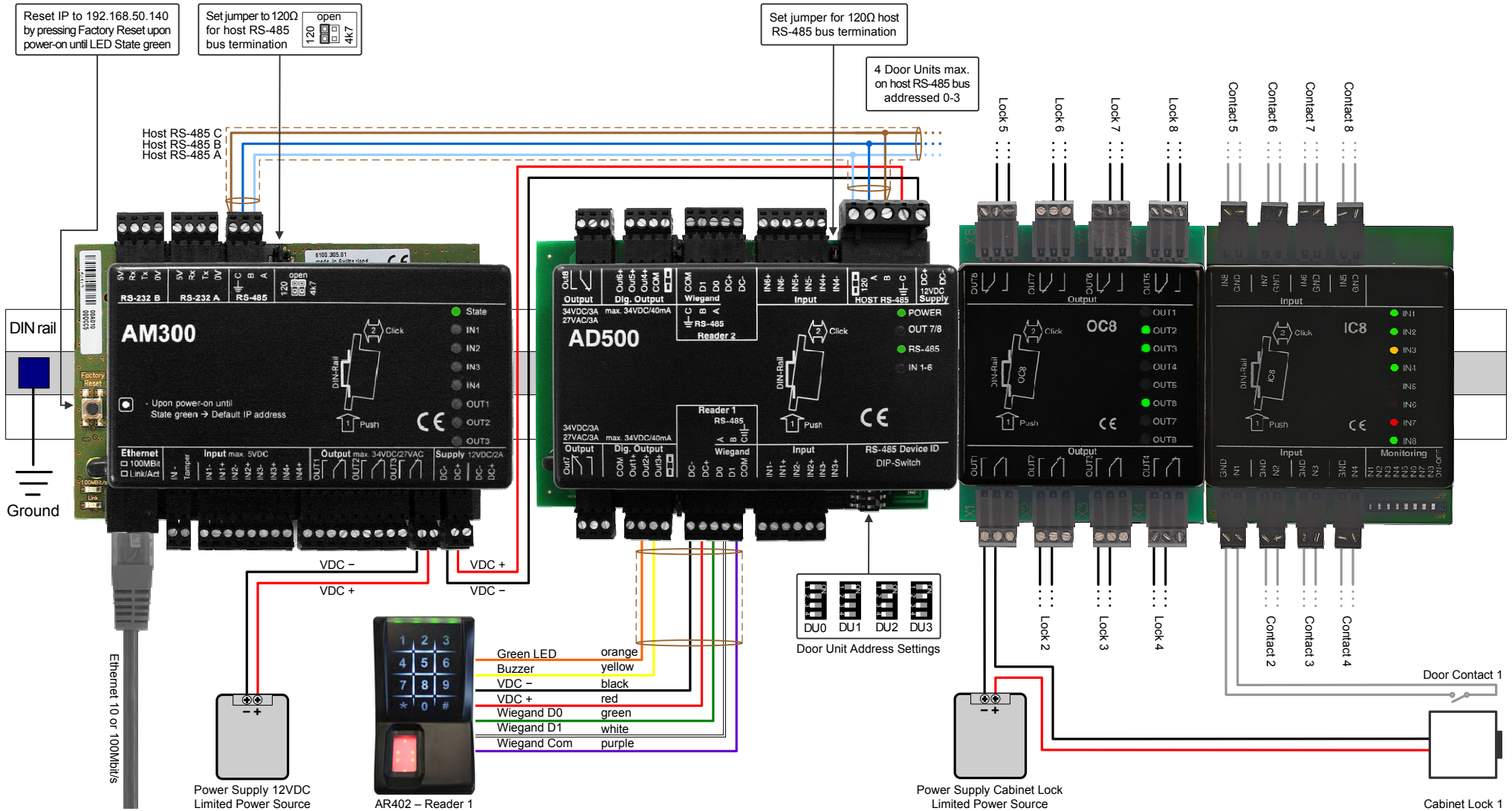
The AR402 metal mounting plate is to be grounded in electrostatic discharge sensitive environments. Connect the ground cable using a 6.3mm female blade connector and push it onto the blade of the AR402 mounting plate.



If necessary, the relevant Kaba support personnel can be contacted regarding protective measures in areas where EMC is an issue.

Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402, IC8/OC8 Extension Modules

The information in this document is valid as of software/firmware release:
 AM300: 4.12.0
 AD500: 2.014
 AR402: 1.73810



Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402, IC8/OC8 Extension Modules

Step 1 Mount

- Mount DIN rail
- Screw grounding terminal tight on the rail
- Fit the devices to the rail, not tilted
- Plug in OC8/IC8 to an AD500
- No more than three OC8 units can be connected to one AD500
- The number of connected IC8 must match the number of connected OC8 units and is also limited to a maximum of three units
- Insert IC8 extension modules next to the AD500
- The first input/output is always located on the unit closest to the AD500

Step 2 Wire

- Connect Master Unit AM300 and Door Unit AD500
- RS-485 between AM300 and Door Units
 - Set each AD500's address on the RS-485 bus
 - RS-485 bus termination 120Ω only on first/last device
 - 12VDC Limited Power Source (LPS, SMPS)

Connect AD500 (Reader 1) to AR402

- DC+ Red
- DC- Black
- Wiegand D0 Green
- Wiegand D1 White
- Wiegand COM Purple
- Out 1/4 Orange (green LED)
- Out 2/5 Yellow (Buzzer)

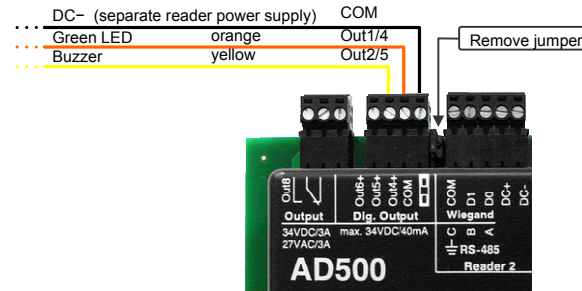
Connect door locking hardware to IC8/OC8

- OC8 Out 1-8 Locking devices
Class II relays (max. 30VDC/2A or 30VAC/2A)
- IC8 IN 1-8 Door contacts (optional)

For further details on power supply and wiring, see page 12.

When using a separate power supply for the readers connect AD500 to AR402 as above, except:

- Connect "COM" to DC- of reader power supply
- Remove jumpers next to "Dig. Output" connectors



Step 3 Network

Ethernet connection

- Connect the AM300 to a network switch using a CAT5 patch cable
- Do not connect Power Over Ethernet (POE) enabled network
- Alternatively connect the AM300 directly to a PC using a CAT5 crossover cable

Network settings

- Set the IP address of the connected PC to allow connection to the AM300 default IP address

IP address 192.168.50.140
Subnet mask 255.255.255.0

Step 4 Power On

Plug in power supply (LPS, SMPS)

AM300 boot process indication – State LED

- Lit Orange Linux starting
- Lit Green Java starting
- Flashes green ~ ¼ sec Application starting
- Flashes green ~ 1.5 sec Application running

AD500 status indication – Power LED

- Flashes green ~ 1 sec Offline
- Flashes green ~ ¼ sec Online
- Rapidly flashes green RS-485 traffic

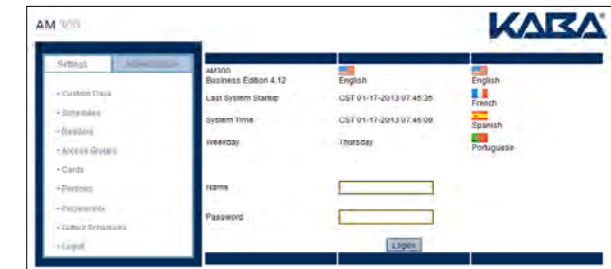
AR402 status indication – 4 Status LEDs

- All LEDs lit red Wiegand Mode

Step 5 Login and configure

Connecting to the AM300

- Open a web browser on your PC
- Enter the default IP address 192.168.50.140
- The login screen is displayed



Login to the system

- Enter the Name user1
- Enter the Password pw
- Click Logon

Setup the system

- Adjust the default settings according to your requirements
- Enter persons, define their access permissions, enroll fingerprints, etc.

Master Unit AM300, Door Unit AD500 Wiegand, Biometric Reader AR402, IC8/OC8 Extension Modules

Power supply

12VDC Limited Power Source (LPS)
Output current $\leq 8A$, output power $\leq 100W$
Switched-mode power supply (SMPS)

Calculate the required output power of your 12VDC power supply units according to the devices total power consumption.

AM300	12... 28VDC +/- 15%	3.6W
AD500	12VDC +/- 15%	1.5W
AR402	12... 24VDC +/- 15%	2.5W
AR402-iCLASS	12... 24VDC +/- 15%	3.0W
IC8	powered by AD500	0.7W
OC8	powered by AD500	3.5W

Permissible cable lengths and types

AM300, AD500

Local Power Supply (2 cables)

Single Conductor AWG 18 (2x)
Max. length < 2m VDC

CAT5 S-UTP AWG 24
Max. length < 1.200m Host RS-485

AR402

Central Power Supply (1 cable)

CAT5 S-UTP AWG 24
Max. length < 40m VDC and Wiegand
1 twisted pair for VDC,
3 twisted pairs for Wiegand

Local Power Supply (2 cables)

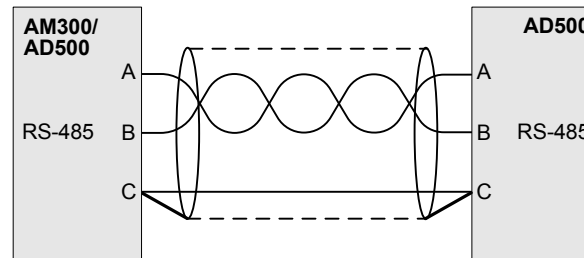
CAT5 S-UTP AWG 24
Max. length < 150m Wiegand
Max. length < 150m VDC
4 twisted pairs for VDC,
or

Single Conductor AWG 21 (2x)
Max. length < 60m VDC

Host RS-485 connections

Lines A and B are routed as a twisted pair of conductors and are not transposed.

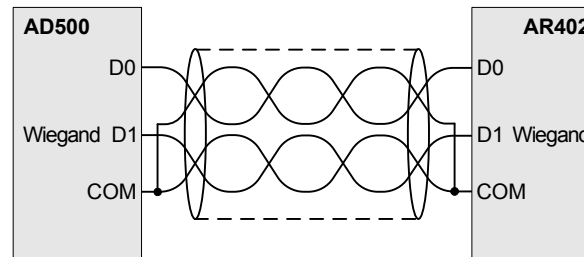
Please note that the foil screen is connected on both ends by means of a sheath wire. To avoid short circuits, the sheath wire should be insulated with a heat-shrinkable tube, for example.



AR402 Wiegand connections

Lines D0 and COM, and D1 and COM are routed as a twisted pair of conductors and are not transposed.

Please note that the foil screen is not connected to COM on either end.



Grounding concept

AM300, AD500, IC8/OC8 and AR402 are contained within a plastic housing and are not grounded.

- If the devices are operated with an ungrounded power supply, then neither the power supply nor the peripheral devices are grounded.
- If the devices are operated with a grounded power supply, only the power supply is grounded.
- The AM300 ethernet connection is galvanically isolated and is not grounded.
- The shieldings of the RS-485 cables are not grounded, but are instead attached to the C (common) connection.
With bus cabling for the communication connections, please also ensure that there is a continuous connection between the shielding of the RS-485 line and the stubs.
- The DIN rail is to be grounded



The AR402 metal mounting plate is to be grounded in electrostatic discharge sensitive environments. Connect the ground cable using a 6.3mm female blade connector and push it onto the blade of the AR402 mounting plate.



If necessary, the relevant Kaba support personnel can be contacted regarding protective measures in areas where EMC is an issue.