

**RED11X**  
Line coupler light/door release contact  
RMD 2wire

**Safety instructions**

Electrical equipment may only be installed and assembled by a qualified electrician in accordance with the relevant installation standards, guidelines, regulations, directives, safety and accident prevention regulations of the country.

When installing and laying cables, always comply with the applicable regulations and standards for SELV electrical circuits.

Failure to comply with these instructions may result in damage to the device, fire or other hazards.

These instructions are an integral component of the product and must be retained by the end user.

**Design and layout of the device**

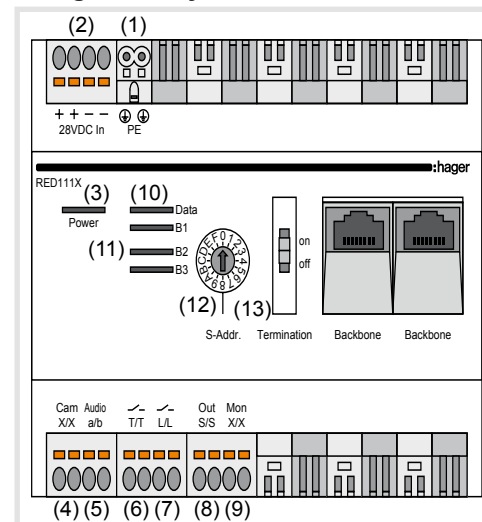


Figure 1: Design and layout of the device

- (1) PE connection for floating output
- (2) Operating voltage connection 28VDC In
- (3) Operating/overload LED Power
- (4) 2-wire video bus Cam X/X for connecting video door stations
- (5) i2-bus audio a/b for connect e.g. audio door stations, bus switching relay, TK interface
- (6) Door release contact T/T (max. 24 V/1 A)
- (7) Light sensor contact L/L (max. 24 V/1 A)
- (8) Additional power supply Out S/S
- (9) 2-wire bus Mon X/X for connection for indoor stations video, indoor stations audio and floor door stations
- (10) Data-LED - data traffic in the coupler line
- (11) B1, B2 and/or B3 LED - display of the backbone status
- (12) S-Addr. Rotary switch for setting the line address
- (13) Switchable backbone terminator
- (14) Backbone connections with RJ45 jacks

**Function**

Couplers connect single lines to a larger system via the backbone line if necessary. Dropped calls are minimized thanks to a well-planned coupler structure.

**Correct use**

- Couplers for audio and/or video systems
- Mounting on DIN rail according to DIN EN 60715
- Not compatible with intercom systems of other manufacturers
- Only suitable for use in indoor areas with no drip and no spray water

**Product characteristics**

- Connect from up to 3 connections simultaneously
- Integrated video signal amplifier (0-20 dB)

- Light sensor contact L/L for external components
- Contact for manipulation protected door release
- Switchable backbone terminator
- Overload protection
- All connections with plug-in terminals.
- Systems with up to 64 couplers, 150 main door stations and 256 indoor stations (video and audio) possible

**Operational status displays**

The LEDs on the front of the coupler display the current operating status:

**Operation/overload LED Power (3)**

- OFF The device is not ready for operation. There is no operating voltage present.
- GREEN The device is ready for operation.
- RED The device is overloaded.

**Data traffic LED Data (10)**

- RED Data traffic in the coupler line

**Backbone LED B1, B2 and B3 (11)**

- Flashing green Video transmission via the displayed backbone.
- GREEN Video and/or audio transmission in the displayed backbone wire pair.

**Information for electricians**

**Installation and electrical connection**

**CAUTION!**  
Risk of destruction of the device  
Fault voltages can occur when working under live voltages.  
Isolate from voltage before connecting the installation environment.

When installing door communication systems, comply with the general safety regulations for telecommunications systems according to VDE 0800:

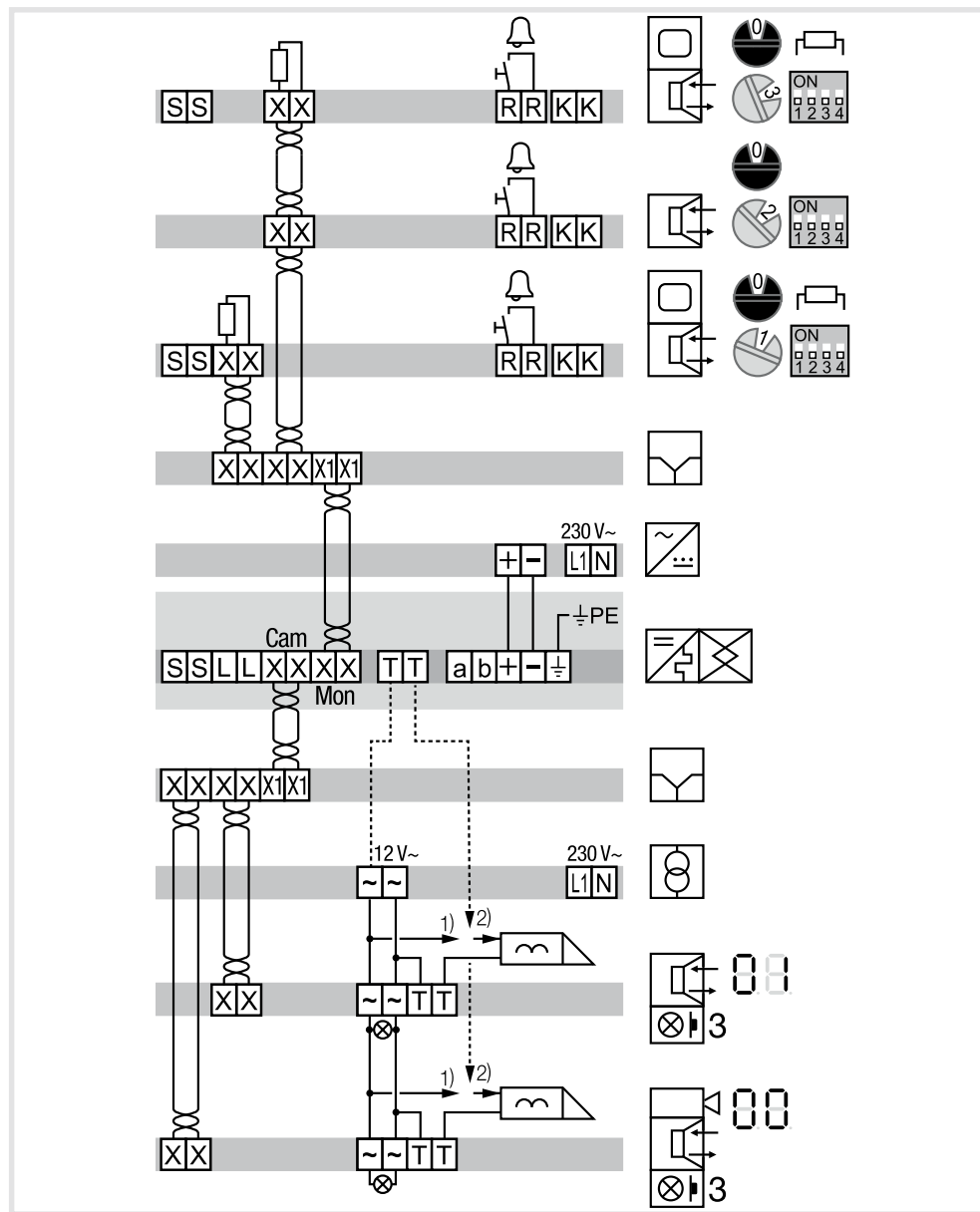
- Separate routing of power and door communication cables according to VDE 0800.
- Partitions between power and door communication cables in shared trunkings.
- Use of standard telecommunications' cables, e. g. J-Y (St) Y with 0.8 mm diameter.

**Avoid interference!**

- The 13-MHz video carrier frequency used for two-wire video door communication systems can cause reciprocal interference with other devices, such as radios, routers and WLAN devices.
- Only use shielded cables corresponding to the qualities recommended in this manual.
- It is essential to comply with the applicable regulations during planning and installation.
- Route cables, wire the devices, and in particular implement shielding and earthing measures as described below.

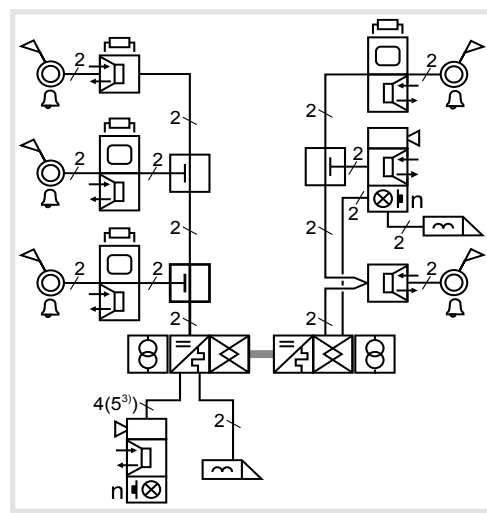
**Installing the device**

- Clip device onto DIN rail in accordance with DIN EN 60715. The operating voltage connection (2) must be at top.
- The device will heat up during operation. Observe maximum operating temperature. Ensure that adequate heat dissipation is provided.



- 1) Standard door release wiring.
- 2) Manipulation protected door release wiring.

Figure 2: Wiring diagram of a coupler



- 3) 5 wires are needed for the manipulation protected door release installation in several door stations.

Figure 3: Example, coupling of 2 lines

**Circuit symbols and elements of the circuit diagrams (figure 2, 3, 4, 5 and 6)**

- In-door station
- Video indoor station
- BKV-500 coupler
- Patch cable
- NGV-500 Power supply
- Power transformer 12 V~
- BVV-521 Video branch
- Video distributor 2gang
- Push-button NO contact
- Storey push-button
- Light button
- Terminator/terminating resistor
- Door release
- Audio door station
- Video door station or floor video door station
- Wrapped wire pair

**Connect power supply**

- Connect equipotential bonding conductor to plug-in terminal PE (1).
- Connect NGV-500 power supply to the plug-in terminals + and - (2) according to markings.

If only main video door stations are connected to the couplers, a maximum of 3 couplers can be supplied with a NGV power supply.

**Connecting video door stations**

- Connect main video door stations to the plug-in terminal Cam X/X (4). 0-9 can be set as main video door address.

**Connect indoor station audio, indoor station video or floor door station**

- Connect 2-wire video line (with indoor station, indoor station audio and/or floor door stations) to the plug-in terminals Mon X/X (9).
- Connect the necessary additional power supplies from video indoor stations to the plug-in terminals S/S (8).
- Floor door stations can only call indoor stations in their own line (figure 3). A-F can be set as floor door address.
- Indoor stations that are called very frequently e.g. chancelleries) and main door stations that are used frequently (with several entrances) should be installed in systems on a separate coupler. Thus, dropped calls on the other indoor stations and door stations are minimized.
- In the case of concierge applications (internal calls between two coupler lines) the line address „F“ must be set for the concierge.

**Connect optional devices**

- Connect door electronics from audio door stations, BSR switching relay and TK interface to the plug-in terminals a/b (5).
- Alternatively, it is possible to connect audio components on the X/X bus via an audio output coupler.

**Connect door release protected against manipulation**

- The door release is 2pole controlled for manipulation protection (figure 2 and 4). One pole is scanned via the door release contacts on the main video door stations and the second pole via the door release contact T/T (6) of the coupler.
- In the case of only one main door station, the connection via the door release contact of the main door station can be disregarded. The connection of the door release on the door release contact T/T (6) of the coupler is sufficient.
- The door release lead must not be inserted through the door station in order to protect against manipulation.
- The door release on the door release contact of the coupler can also be unlocked without an incoming call.

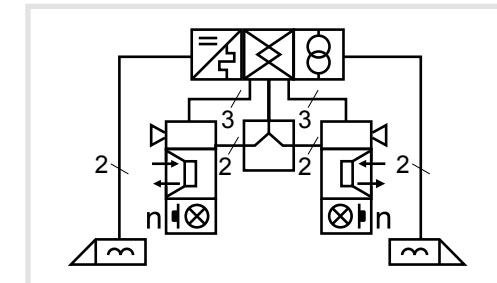


Figure 4: Door release with manipulation protection

**Connecting light sensor contact**

- Connect light sensor contact L/L of the coupler (7) for controlling external low-voltage components.
- Both light sensing contacts are scanned on couplers communicating via the backbone when the light button is pressed.

**Connecting Backbone**

- Connect backbone of the coupler for short connections with RJ45 patch cables (identical assignment), for longer connections with data cables, RMD patch modules and patch cables.
- On the first and last coupler of the backbone the backbone terminator (13) must be switched to on
- Double (in pairs) shielded cables S/FTP min. Cat 6 must be used to avoid malfunctions.

**Setting coupler address**

- Set line address (12) on the couplers.
- Couplers without connected main door stations can use the same line address (address 0 recommended).

**Number of devices on 2 communicating couplers**

The addition of the door stations and indoor stations must not exceed the maximum expansion on 2 couplers communicating via the backbone.

2-wire maximum expansion for 2 communicating couplers	
Addition of door stations	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Addition indoor stations	32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2

- Additionally connected i2-BUS components (telecommunications interface, bus switching relay etc.) are counted as 2 indoor stations.
- The number of indoor stations is limited to 16 per branch.
- If there are video indoor stations in the branch, then the number is reduced to a maximum of 8 indoor stations.
- With video distributors the line can be distributed to additional branches up to maximum expansion.

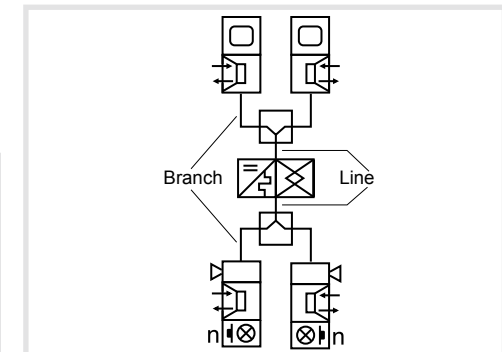


Figure 5: Lines and branches

**Cable lengths and attenuations**

Information for calculating signal attenuations in 2-wire video systems can be found in the system manual.

The video amplifier integrated in the coupler compensates an attenuation of up to 20dB generated between the main video door station and the coupler. As a result, the maximum signal level is available again on the connection Mon X/X of the coupler. From there, the attenuation can be a maximum of 40 dB until the last indoor station. The signal losses occurring on the coupler in the backbone are also compensated by the integrated video amplifier.

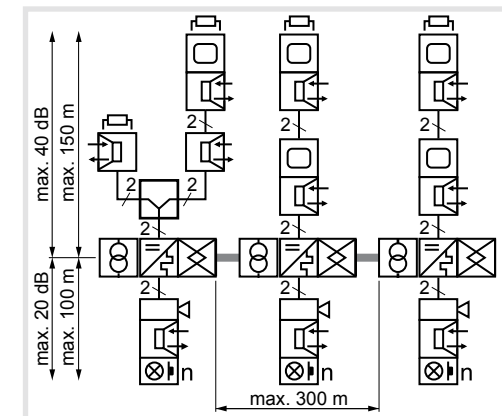


Figure 6: Maximum attenuations and cable lengths

- The length of all the connected bus cables of 2 couplers to be coupled must not exceed 1000 m. The worst possible case must always be considered for systems with several couplers.
- Single-sided earthing of the cable shield in the distributor increases interference resistance.
- A large number of clamping points/conductors, which may also be soiled, increase the transition resistance, leading to faults.

Cable type	Max. cable length [m]	Max. attenuation [dB]	Max. loop resistance [Ω]
Cable from coupler to video/audio indoor station			
J-Y(ST)Y 0.6 mm	75 m 150 m <sup>1)</sup>	40 dB	15 Ω
J-Y(ST)Y 0.8 mm	150 m 150 m <sup>1)</sup>	40 dB	15 Ω
CAT 0.5 mm	50 m 100 m <sup>1)</sup> 150 m <sup>2)</sup>	40 dB	15 Ω
Cable from coupler to main video door station			
J-Y(ST)Y 0.6 mm	75 m	20 dB	15 Ω
J-Y(ST)Y 0.8 mm	100 m	20 dB	15 Ω
CAT 0.5 mm	50 m	20 dB	15 Ω
Cable from door release/lighting to the transformer with door release current consumption 1 A (0.5 A)			
J-Y(ST)Y 0.6 mm	30 m; 60 m <sup>3)</sup> (60 m; 120 m <sup>3)</sup> )	-	3.5 Ω (7 Ω)
J-Y(ST)Y 0.8 mm	50 m; 100 m <sup>3)</sup> (100 m; 200 m <sup>3)</sup> )	-	3.5 Ω (7 Ω)
CAT 0.5 mm	20 m; 40 m <sup>3)</sup> (40 m; 80 m <sup>3)</sup> )	-	3.5 Ω (7 Ω)
Cable from coupler to coupler			
J-Y(ST)Y 0.6 mm	-	-	-
J-Y(ST)Y 0.8 mm	-	-	-
CAT 0.5 mm	300 m	20 dB <sup>4)</sup>	60 Ω

1) Cable length for indoor video indoor stations with connection of the additional infeed.  
2) With wire doubling on additional infeed  
3) With wire doubling  
4) Typical cable attenuation with Cat 6/7 network cables ~6dB/100m

Table 3: Line data

**Appendix**

**Troubleshooting**

If interference occurs in telecommunications systems, radio services or other systems during the operation of existing video door communication systems, measures for shielding and earthing the cables and for filtering must be implemented.

- For this purpose, connect all of the drain wires of the cables in a star shape using a terminal.
- Connect all drain wires to the PE rail in the distribution box.

**Technical data**

Supply voltage +/-	28 V =
Standby current consumption without bus load	approx. 60 mA
Door release contact TT potential-free	max. 24 V/1 A
Light contact LL potential-free	max. 24 V/1 A
Degree of protection	IP 20
Relative humidity	0-65% (no condensation)
Backbone cable length	max. 300 m
Couplers per system	max. 64
Coupler addresses per system	max. 16
Operating temperature	+5°C ... +40°C
Storage/transport temperature	-20°C ... +60°C
Connecting terminals for conductor diameter	0.5 ... 0.8 mm
RMD	6 modules
Dimensions W x H x D	106 x 90 x 67 mm