



# Topology Connection Concepts

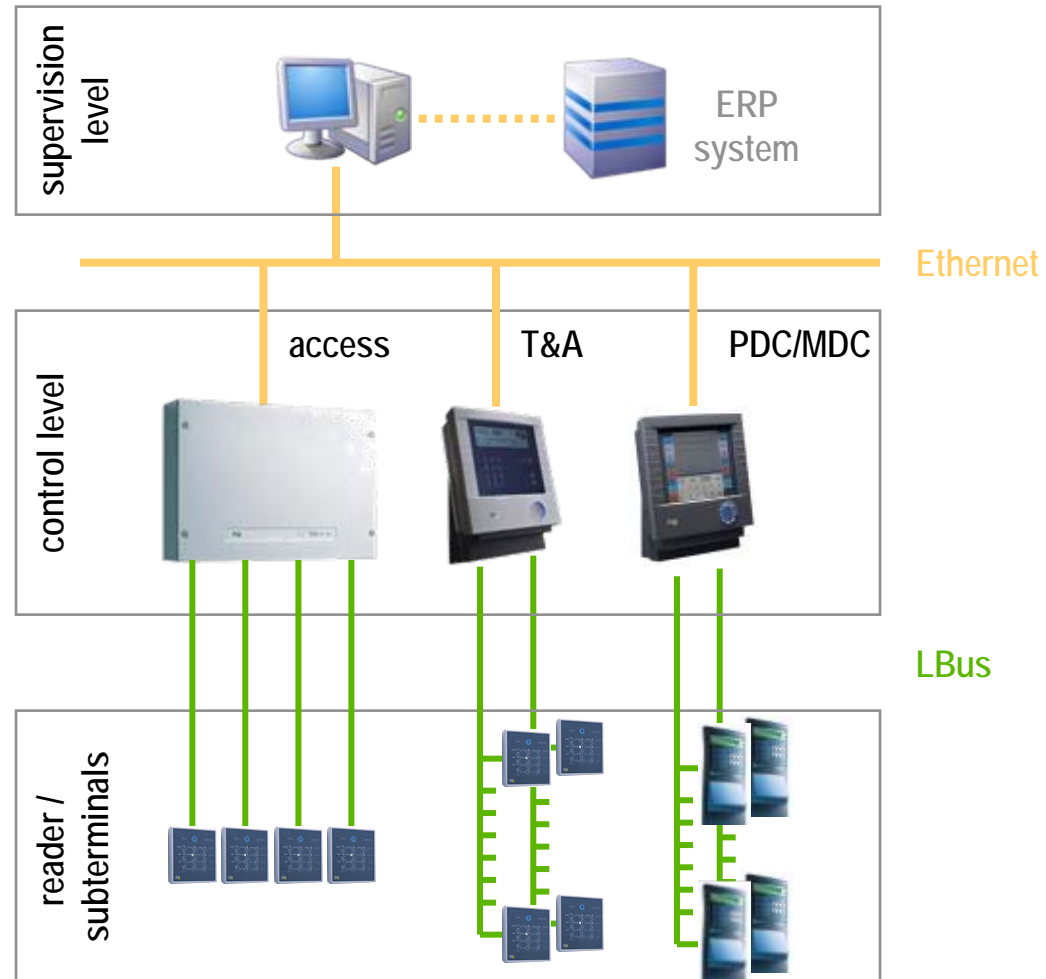
Samples of networking and topology options for  
INTUS readers and terminals

Date: 01 April 2010

## Configuration of a system for access control, time management and production data collection

### Three levels:

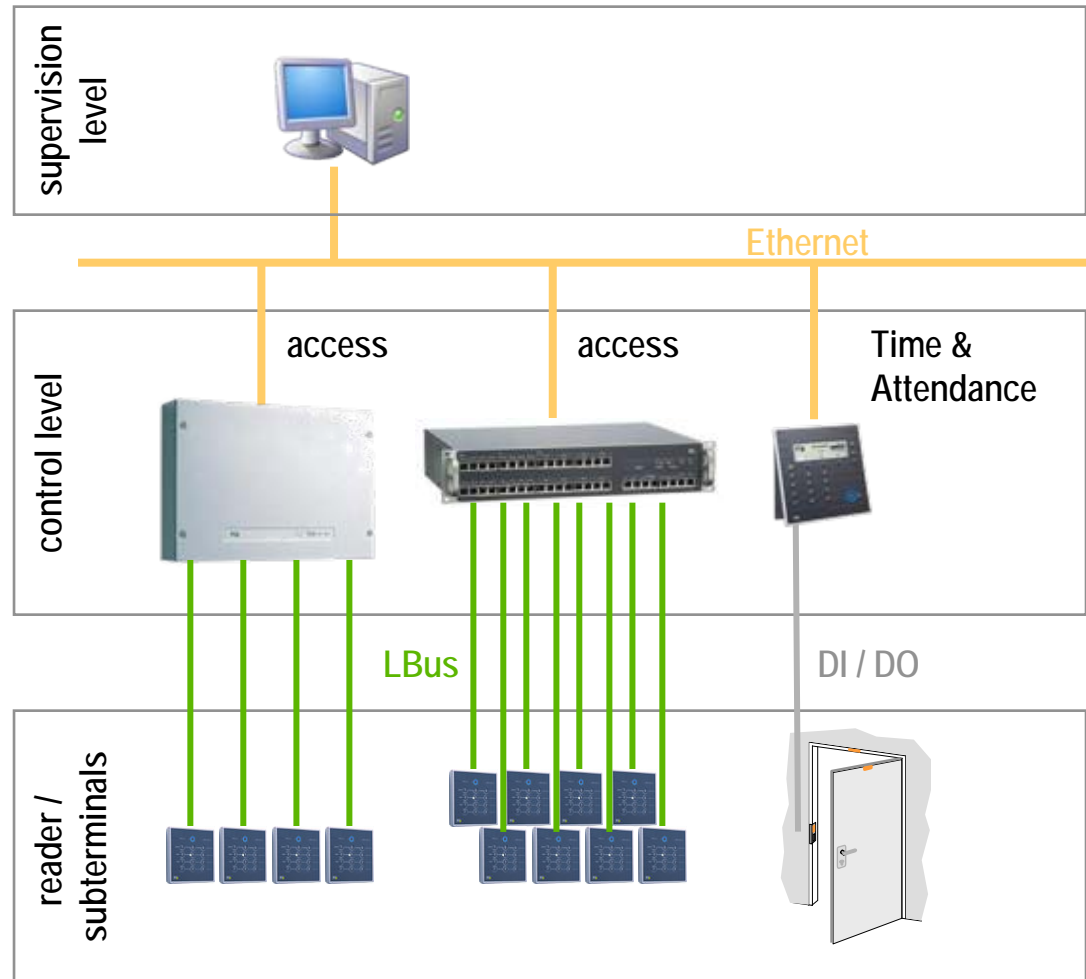
- 1. Supervision level  
Standard PC with ethernet as line supervisor, may be connected with an ERP system
- 2. Control level  
Local intelligent control units for access control and terminals for time&attendance or production data collection / machine data collection, working automonic when ethernets fails
- 3. Reader / subterminal level  
Input units with RFID (barcode, chipcard...), keypad or fingerprint sensor



## Typical configuration of a system for access control and time management

### Access control managers

- INTUS ACM40:  
for 2–4 readers and doors
- INTUS ACM8e:  
for 8–16 readers and doors
- INTUS 5300:  
combined access- and T&A  
terminal with integrated reader for  
one door



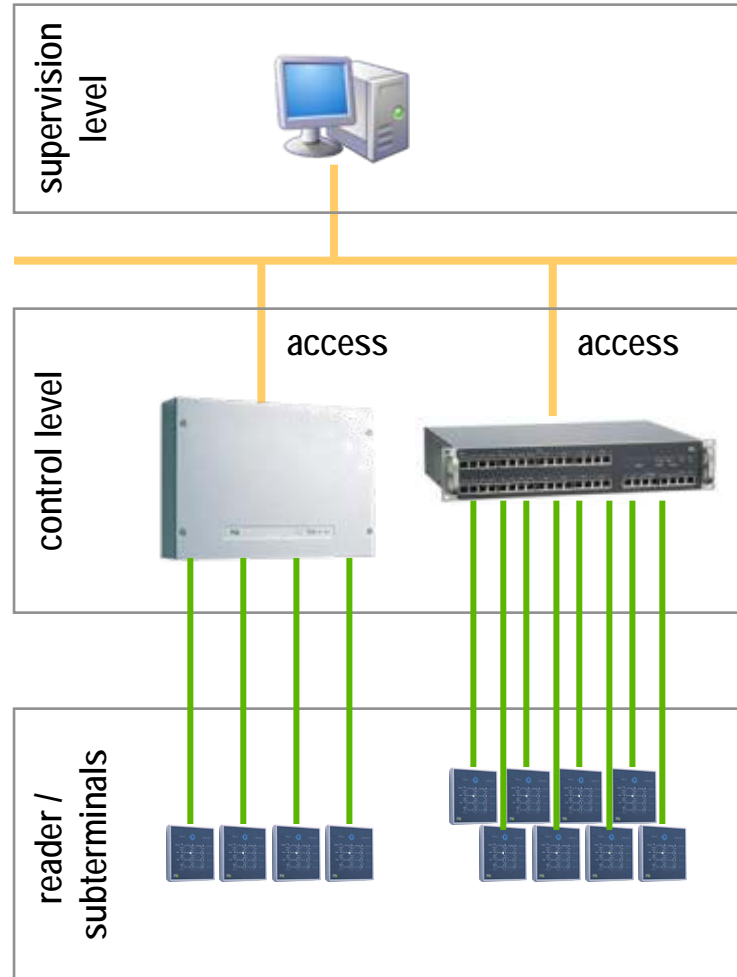
# Networks and protocols

## Network supervisor – control level

- Depending on controller via Ethernet, RS485 or V.24

## Network control level – reader

- RS485 with LBus protocol



<b>Network</b>	<b>Protocol</b>
Ethernet	TCP/IP
RS485	BSC
V.24	

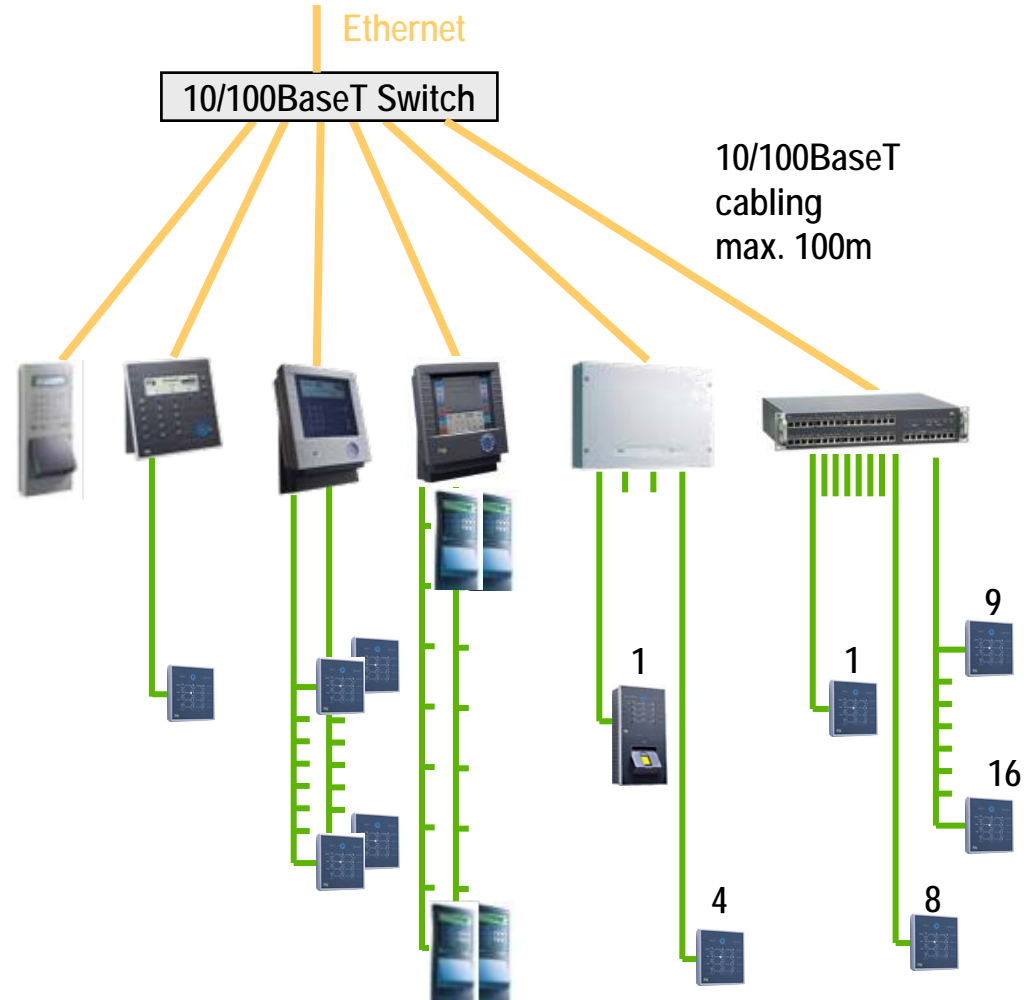
RS485	LBus
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## PC connection: INTUS and ethernet

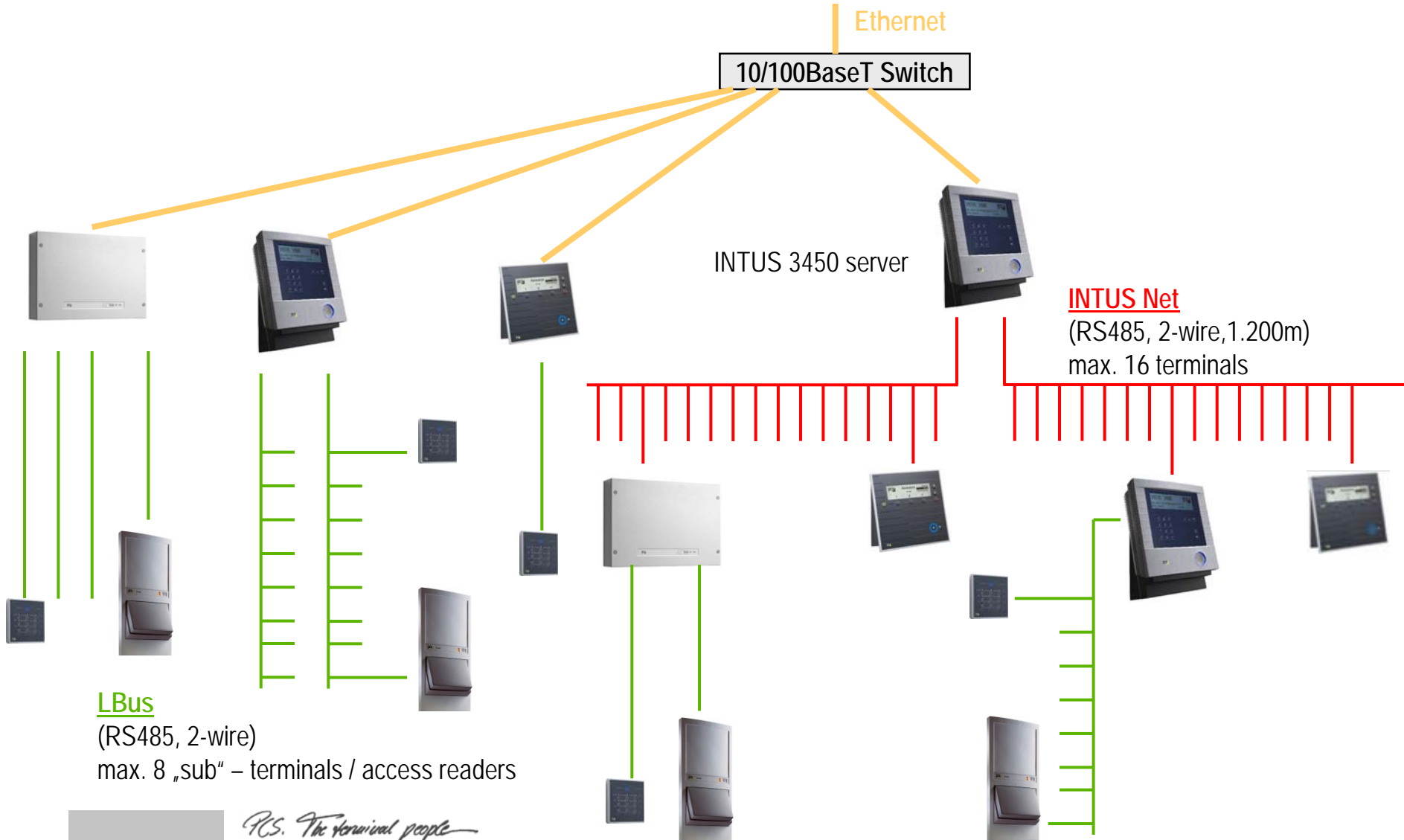
### Connection of INTUS Terminals to an Ethernet

Star topology between Ethernet switch and controllers / terminals

- INTUS 3100  
Compact terminal for T&A. Can control one door
- INTUS 5300  
Compact T&A terminal. Can control one door
- INTUS 3450  
T&A terminal with connection of max. 2x8 subterminals / readers
- INTUS 3600  
PDC terminal with connection of up to 16 subterminals / readers
- INTUS ACM40  
Access control manager for up to 4 doors
- INTUS ACM8e  
Access control manager for up to 8 or 16 doors



## PC connection: Ethernet and INTUS Net



**LBus**  
(RS485, 2-wire)  
max. 8 „sub“ – terminals / access readers

*PCS. The terminal people*

## INTUS 5300 – connections

### Standard

- 1 x Ethernet (10/100 BaseT)
- 1 x Digital Out <sup>1</sup>  
(for 1 door strike)
- 2x Digital In <sup>1</sup>  
(for 2 contacts)

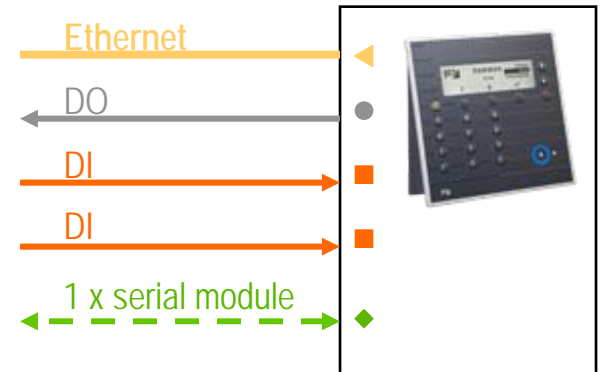
### Option: serial module <sup>1</sup>

- 1 x RS485 (opto-decoupled)  
for host connection or
- 1 x V.24 (not opto-decoupled)  
for host connection or
- 1 x RS485 reader module  
for connection of 1 reader  
(depending on host interface)

RS485, 2 wire

V.24, 4 wire

LBus, 2 wire



standard ———  
option - - -

<sup>1</sup> not for INTUS 5300-PoE and INTUS 5300FP

## INTUS 3450 – connections

### Standard

- 1 x Ethernet (10/100 BaseT)
- 1 x Digital Out  
(for 1 door strike)
- 2x Digital In  
(for 2 contacts)

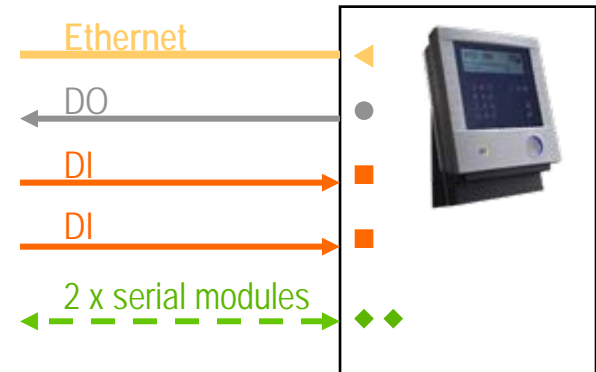
### Option: serial module <sup>1</sup>

- 1 x RS485 (opto-decoupled)  
for host connection or
- 1 x V.24 (not opto-decoupled)  
for host connection and/or
- 2 x RS485 reader module  
for connection of 1 reader  
(depending on host interface)

RS485, 2 wire

V.24, 4 wire

LBus, 2 wire



standard ———  
option - - -

## INTUS ACM40 – connections

### Standard

- 1 x Ethernet 10/100 BaseT
- 4 x Digital Out
- 8 x Digital In
- 2 x RS485 / LBus protocol
- 4 x Digital In, 2 x Digital Out just for system jobs
- 1 x switching relais (door strike, alarm,...)

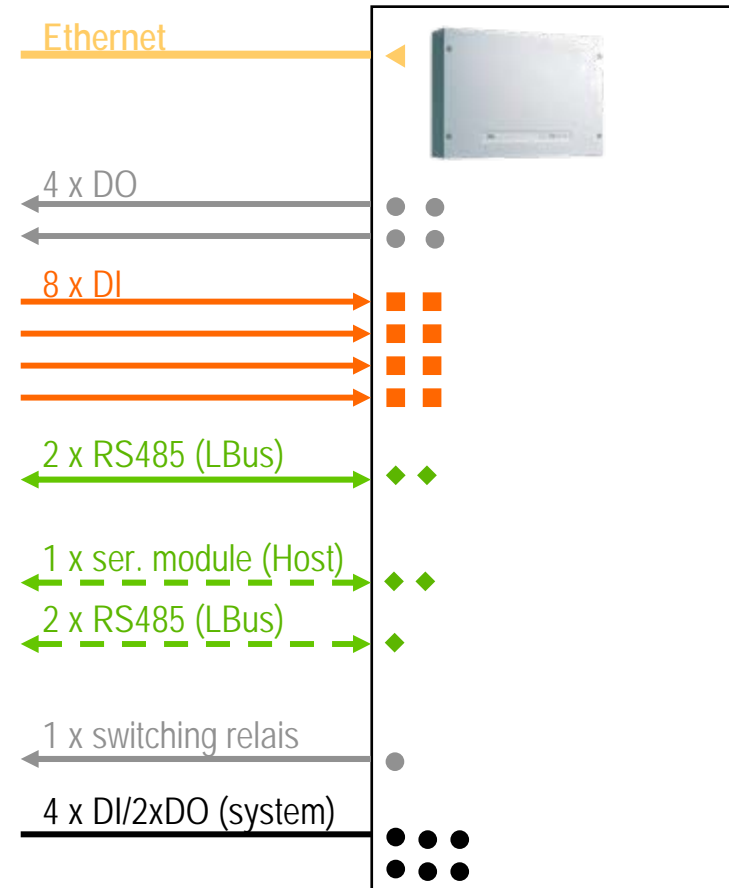
### Option

#### for host connection

- 1 x RS485 (opto-decoupled) or
- 1 x V.24 (not opto-decoupled)

#### for reader / subterminal

- 2 x RS485 LBus (opto-decoupled) for one reader or subterminal each



standard ———  
option - - -

## INTUS ACM8e Rack – connections

### Standard

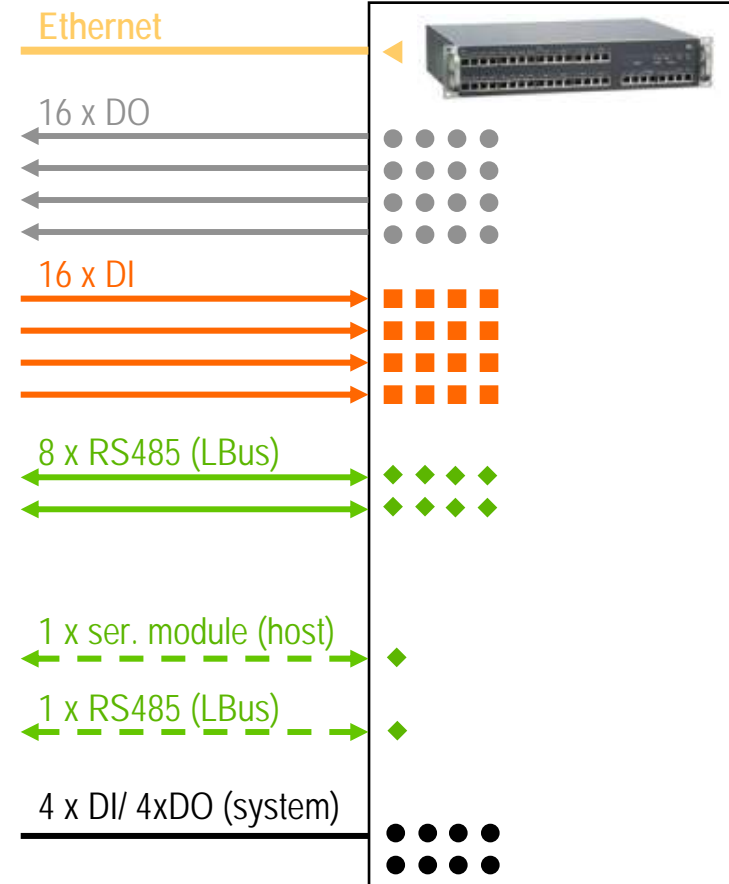
- 1 x Ethernet 10/100 BaseT
- 16 x Digital Out
- 16 x Digital In
- 8 x RS485 / LBus protocol
- 4 x digital in, 4 x digital out only for system tasks

### Option for host connection

- 1 x RS485 (opto-decoupled) or
- 1 x V.24 (not opto-decoupled)

### for readers

- 1 x RS485 LBus (opto-decoupled) for connection of further 1–8 readers



Standard ———  
Option - - -

## INTUS ACM8e Wall – connections

### Standard

- 1 x Ethernet 10/100 BaseT
- 16 x Digital Out
- 16 x Digital In
- 8 x RS485 / LBus protocol, unlocked for 1-4 readers
- 4 x Digital In, 4 x Digital Out only for system tasks

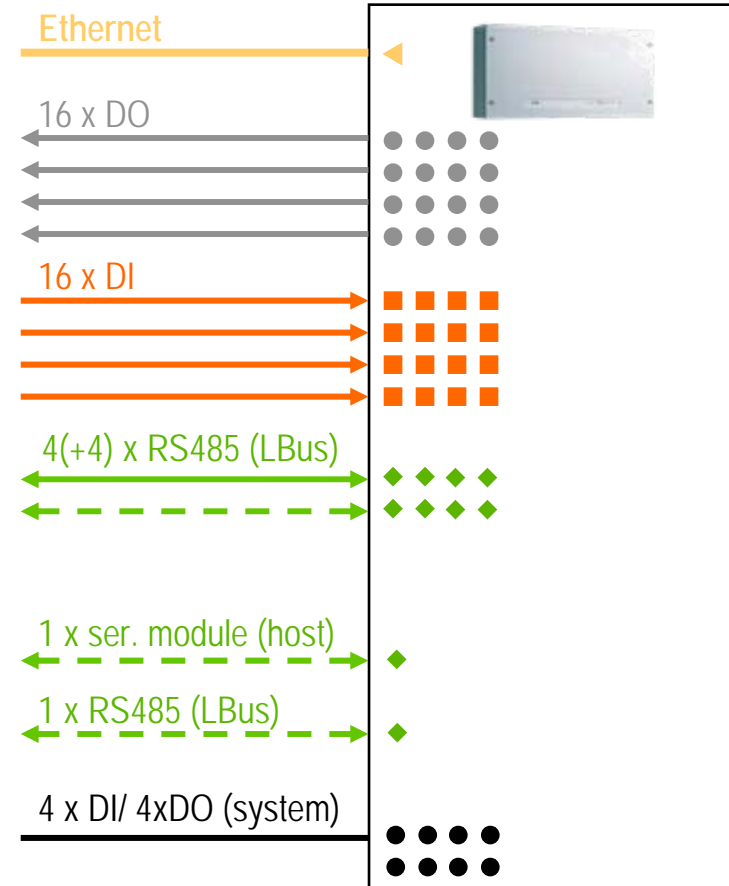
### Option

#### for host connection

- 1 x RS485 (opto-decoupled) or
- 1 x V.24 (not opto-decoupled)

#### for readers

- Unlock reader 5-8
- 1 x RS485 LBus (opto-decoupled) for connection of further 1–8 readers

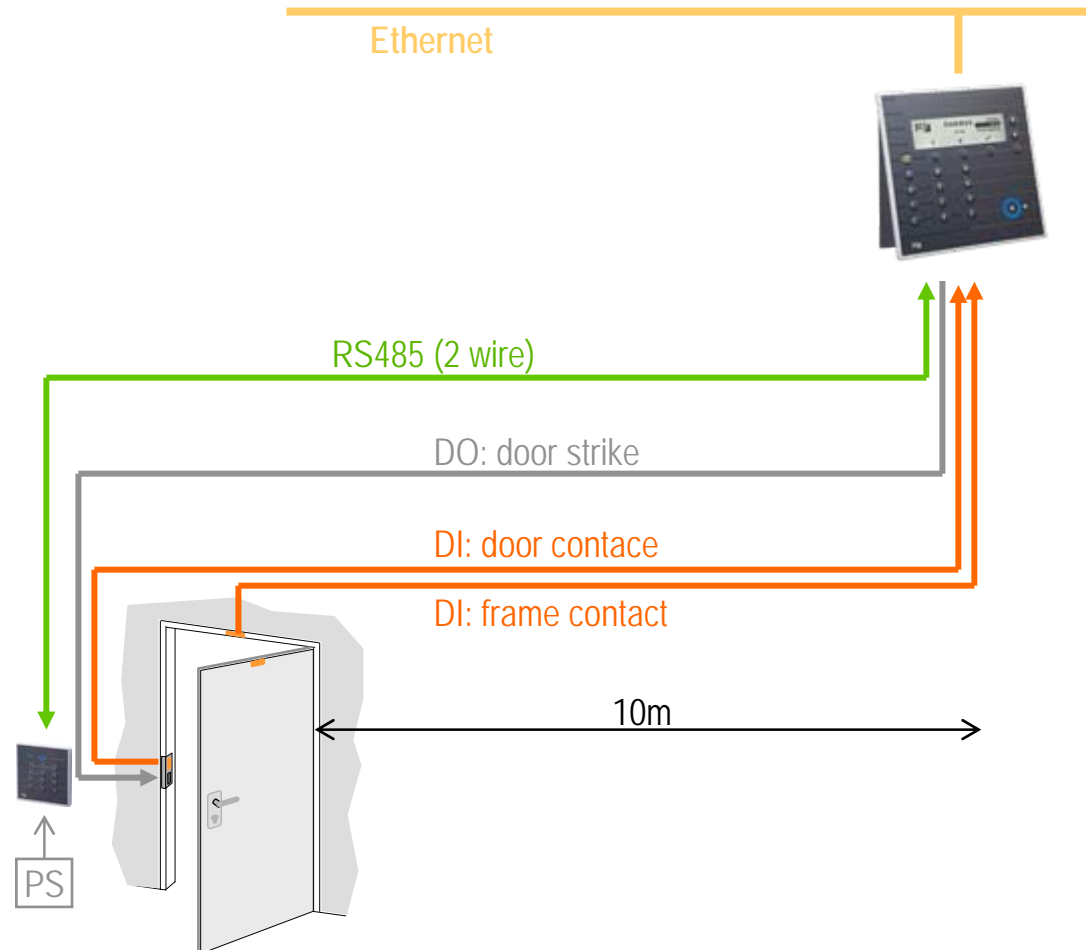


Standard ———  
Option - - -

## Combined access control and time & attendance with one door

### Control of one door to the INTUS 5300

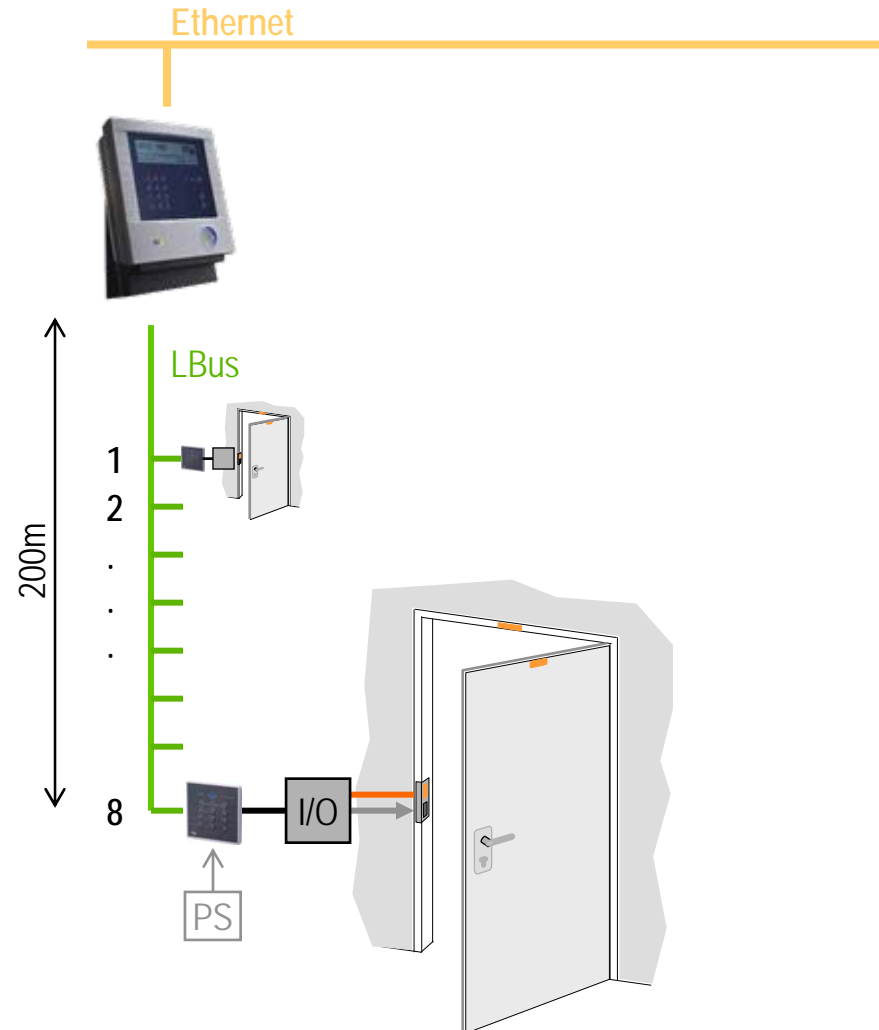
- Line length: max. 10m
- Reader module: connection reader. If mounting the INTUS 5300 directly beside the door also the integrated reader can be used
- Digital Output: Connection of door strike
- Digital Inputs: Connection of door contact and/or frame contact
- Power Supply: Local power supply for reader and door opener



## Combined access control and time & attendance with eight doors

### Connection of 8 RFID readers to the INTUS 3450

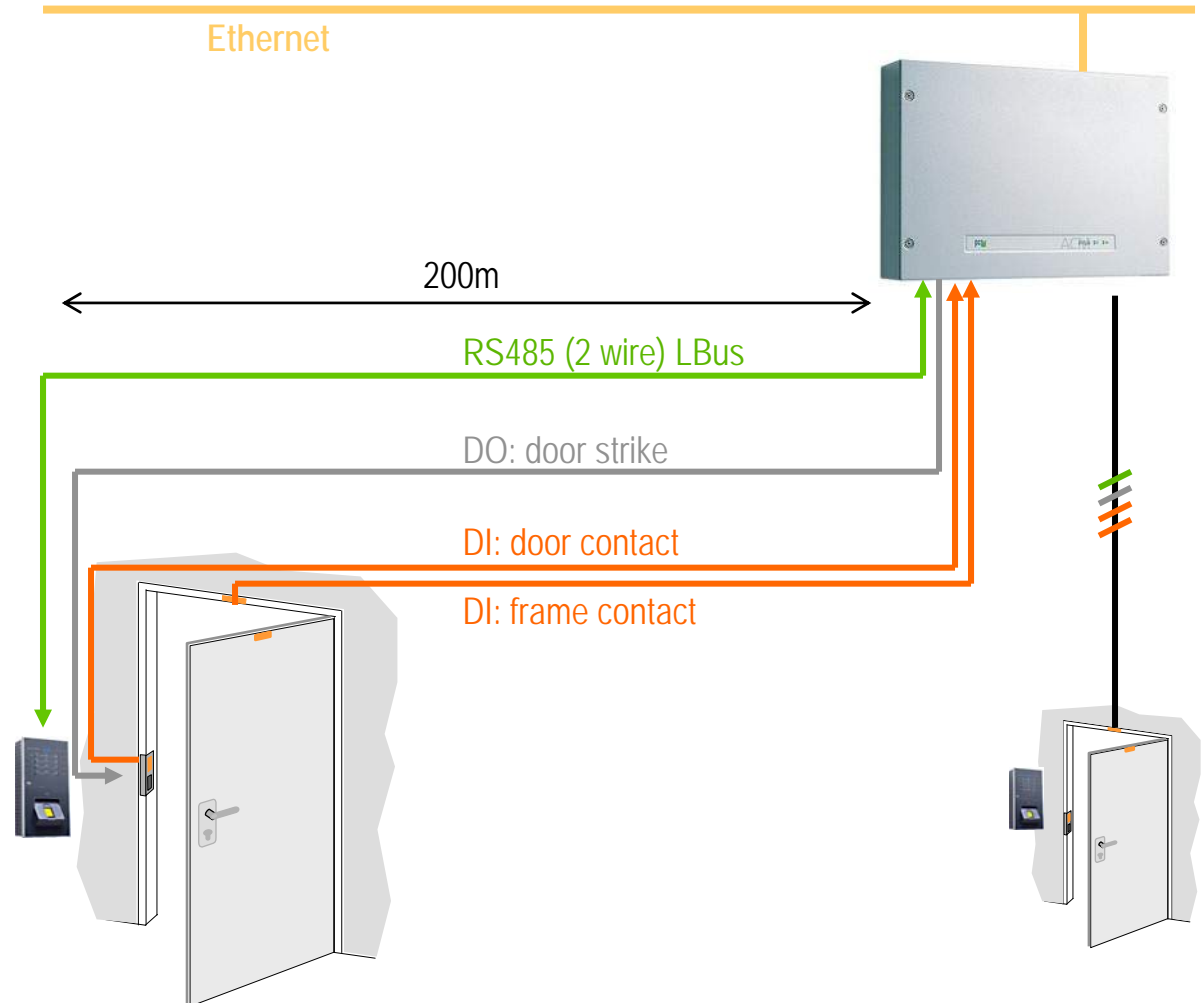
- Line length: max. 200m (depending on cable cross-section)
- LBus: Connection of 1-8 readers
- I/O module: Connection of door strike and door contact
- Power Supply: local power supply for reader, door strike and I/O module



## Two doors with enhances safety requirements

### Control of two doors to INTUS ACM40

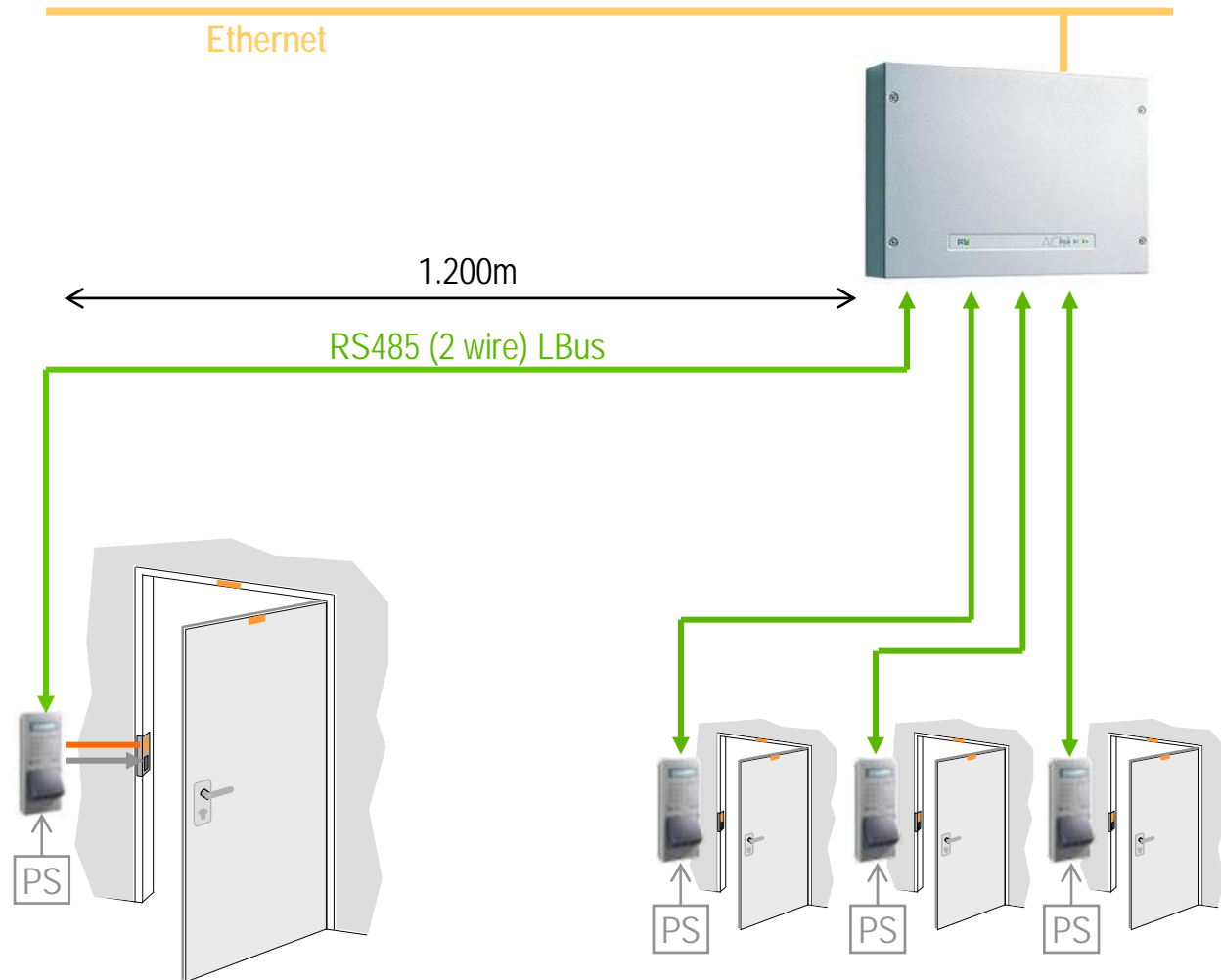
- Enhanced safety requirement by control of the door contact and frame contact as well as additionally scanning of the fingerprints with INTUS 600FP
- Line length: max. 200m (depending on cable cross-section)
- Power Supply : INTUS 600FP and door strike by the INTUS ACM40
- Control of door contact and frame contact via Digital-In / Digital-Out interfaces



## Four doors with standard safety requirements up to 1.200m

### Control of four doors with INTUS ACM40 via subterminals

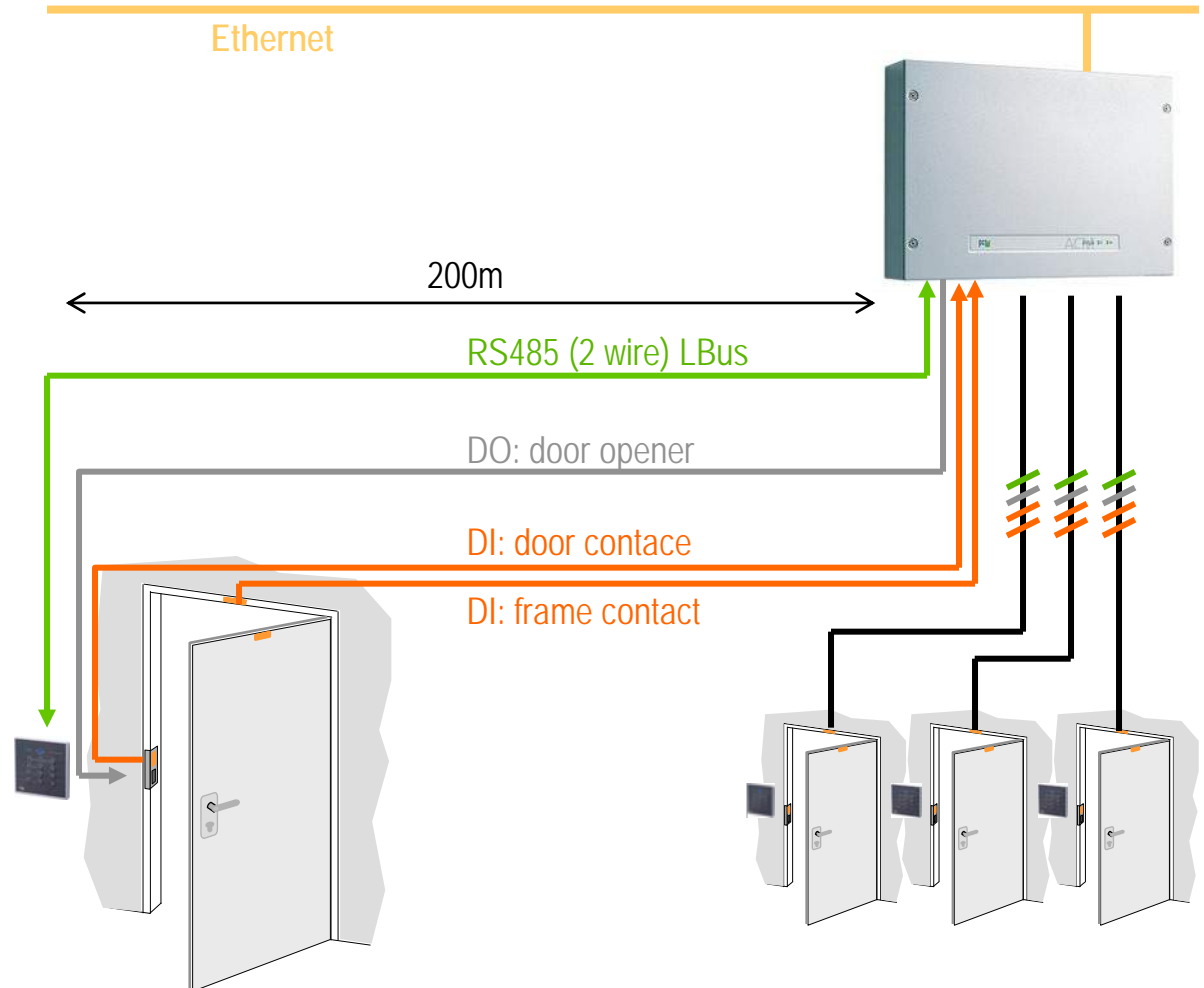
- Line length: max. 1.200m
- Readers: Subterminals INTUS 1600 (opto-decoupled)
- Power Supply: local power supply of the subterminals and door strike
- Control of door and frame contacts via Digital In of the INTUS 1600



## Four doors with enhanced safety requirements up to 200m

### Control of four doors by INTUS ACM40 with direct control

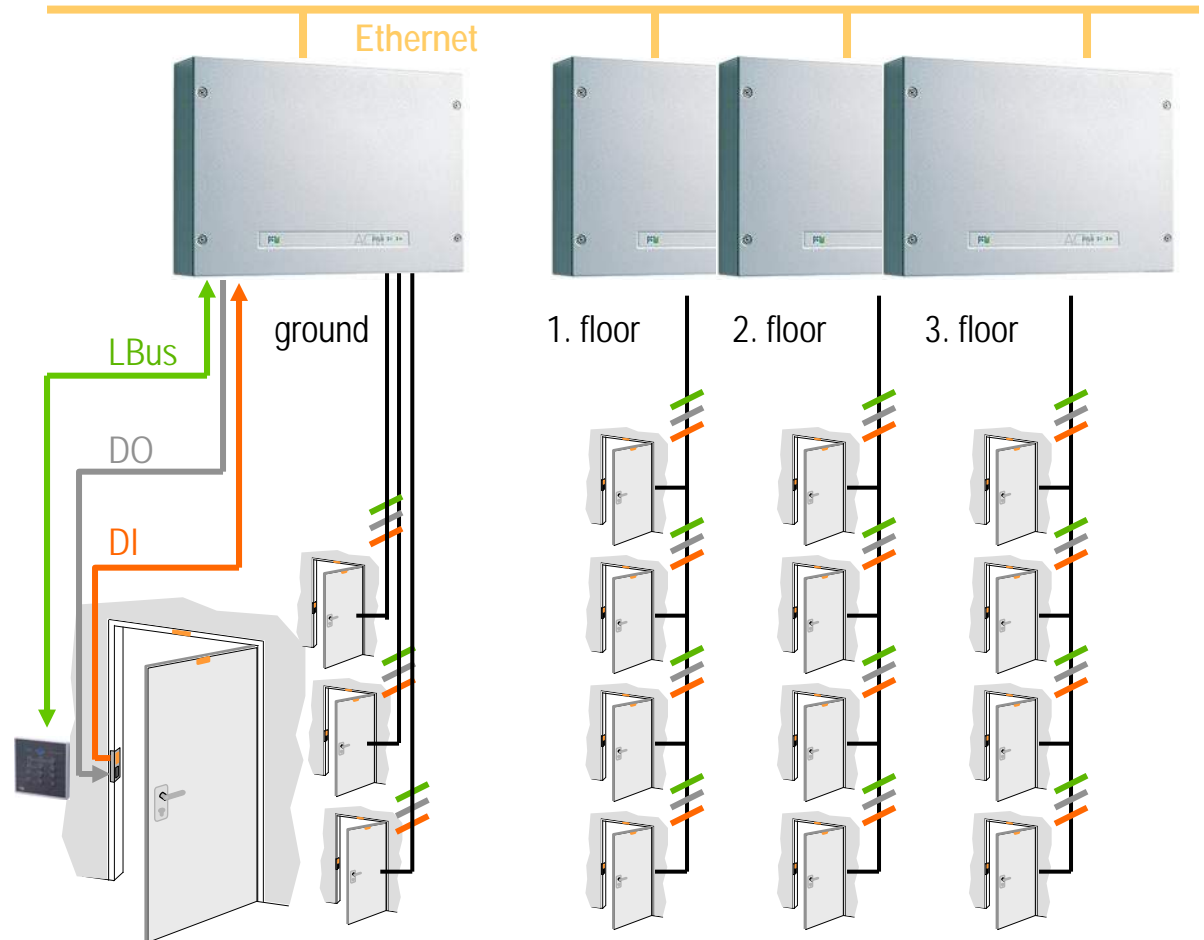
- Enhanced safety requirements by control of door and frame contact and additional input of PIN number on the reader
- Line length: max. 200m using not-opto-decoupled readers (depending on cable cross-section)
- Readers: INTUS 600 with PIN code
- Power Supply: Readers and door opener via INTUS ACM40
- Control of door and frame contacts via Digital Inputs



## Control of 16 doors on several floors

Control of four doors each via INTUS ACM40 with direct control

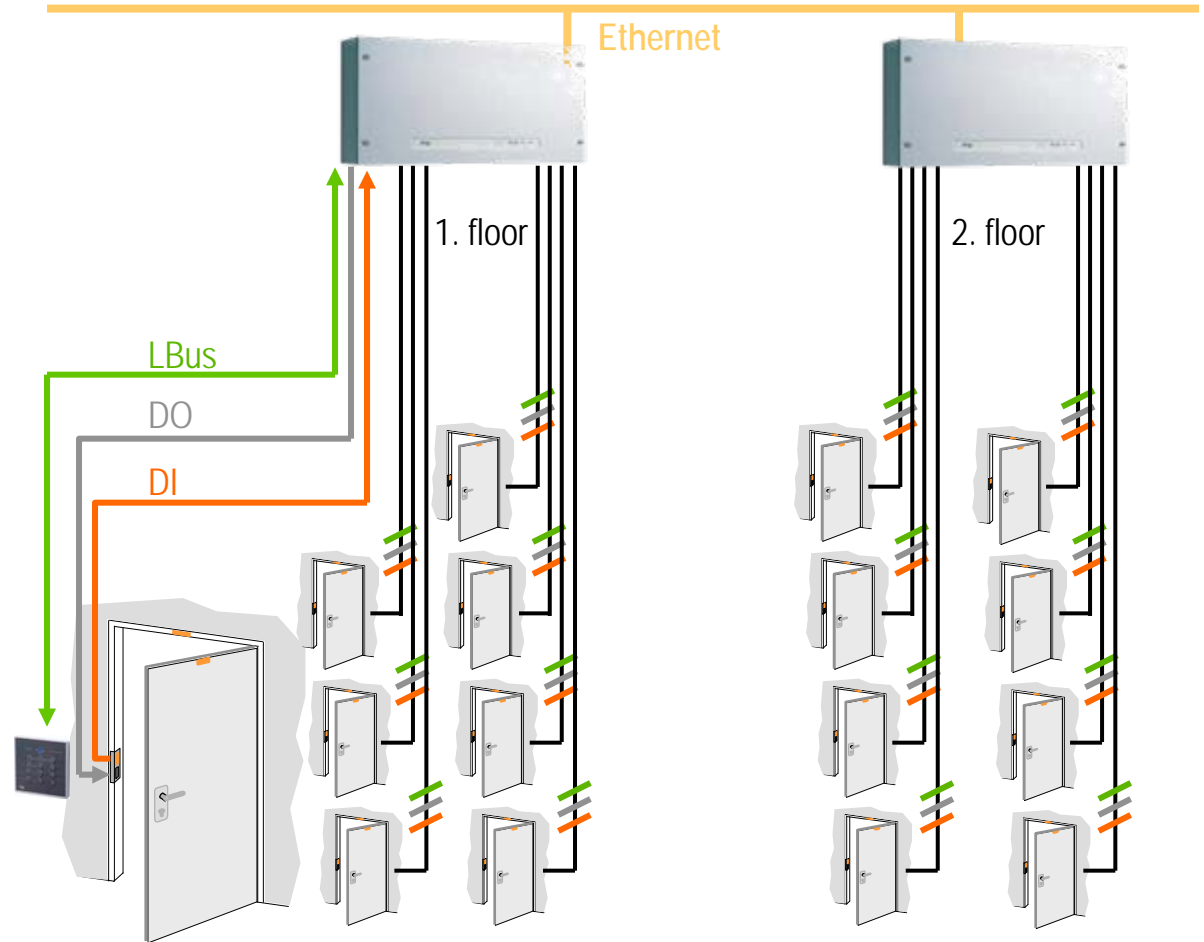
- Line length: max. 200m using non-opto-decoupled readers (depending on cable cross-section)
- Power Supply: Readers and door strikes via INTUS ACM40



## Control of 16 doors on two floors

Control of eight doors each via INTUS ACM8e Wall with direct control

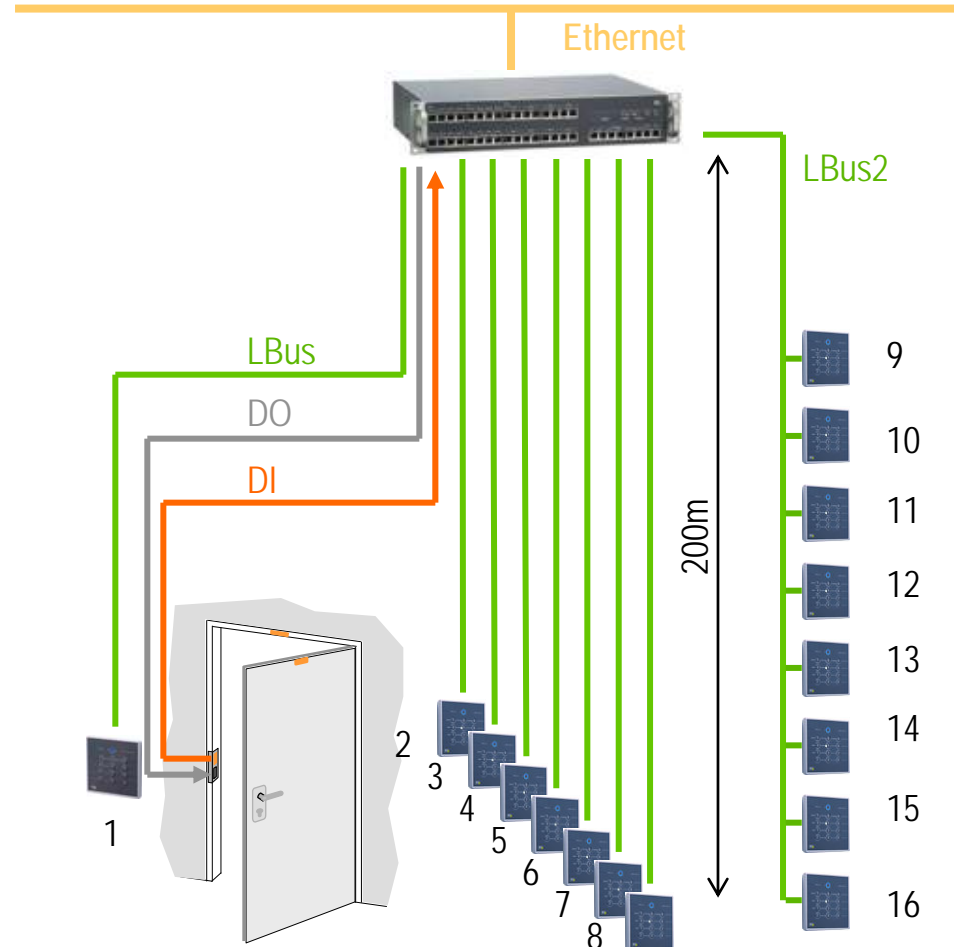
- Line length: max. 200m using non-opto-decoupled readers (depending on cable cross-section)
- Power Supply: Readers and door strikes via INTUS ACM8e



## Control of 16 doors via second LBus

### Control of additional eight doors via LBus2 of the INTUS ACM8e

- Point-to-point connection of the reader 1–8 via eight standard LBus interfaces
- Multipoint connection of reader 9–16 via the optional LBus2 interface
- Control of 16 door strikes and the 16 door contacts by the 16 standard Digital-In/Digital-Out interfaces
- Line length: max. 200m (depending on cable cross-section)
- Power Supply:
  - reader 1–8 and door strikes via INTUS ACM8e,
  - reader 9–16 and door strikes with local power supply



## Access control center in a 19" rack for 32 doors

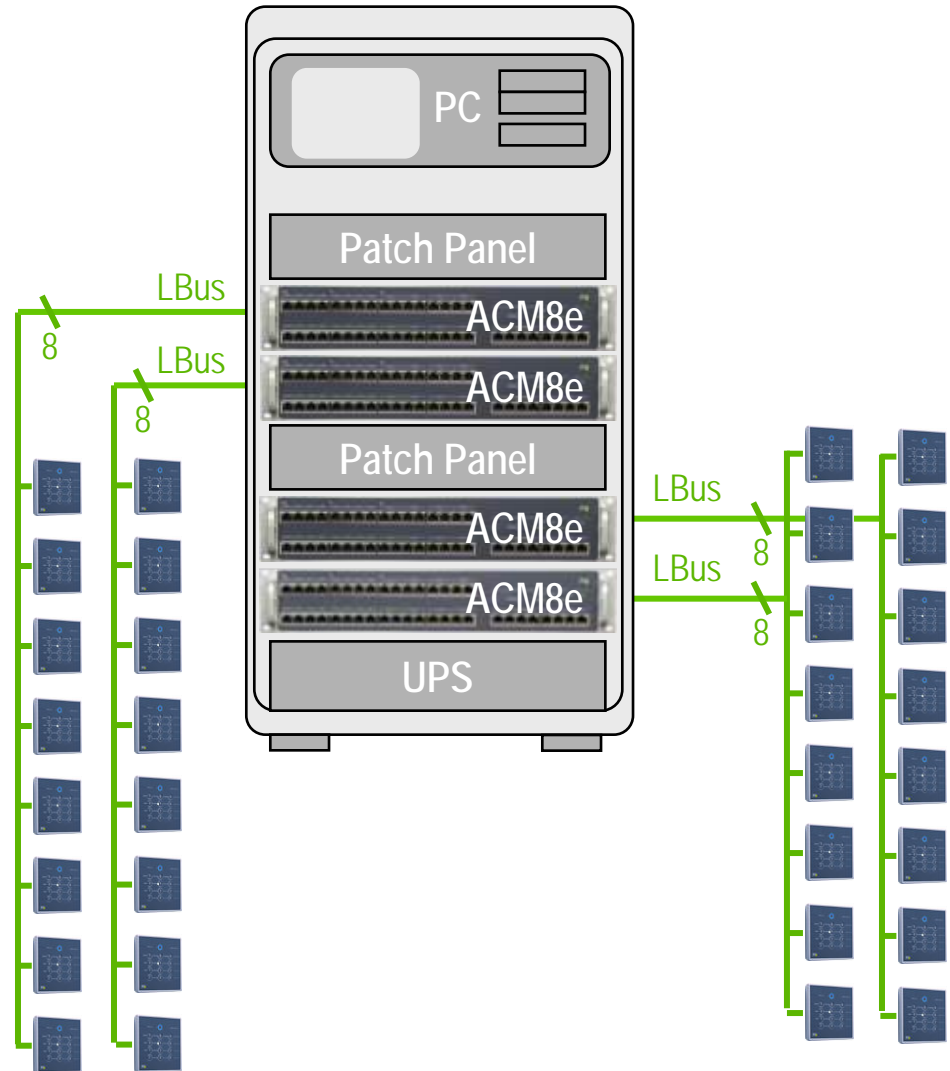
Four INTUS ACM8e  
in a 19 rack with

Panel PC

Patchpanels

Four INTUS ACM8e access control  
managers

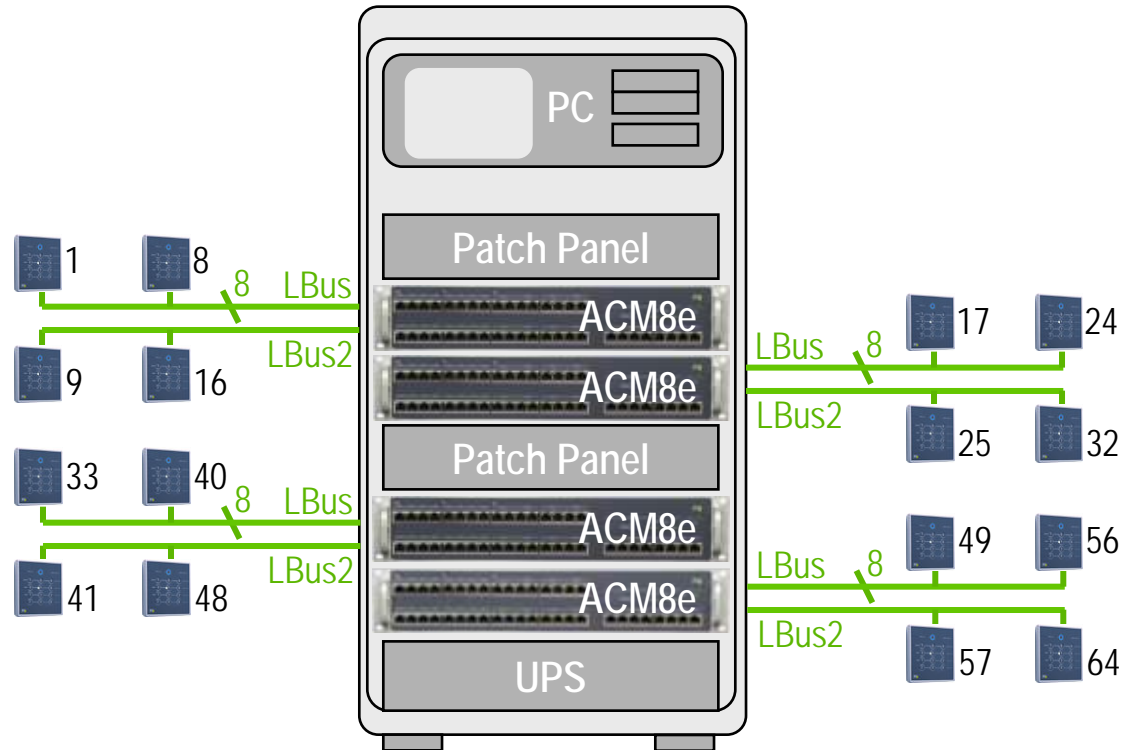
Uninterruptible power supply



## Access control center in a 19" rack for 64 doors

Four INTUS ACM8e  
in a 19" rack and use of  
LBus2 interfaces

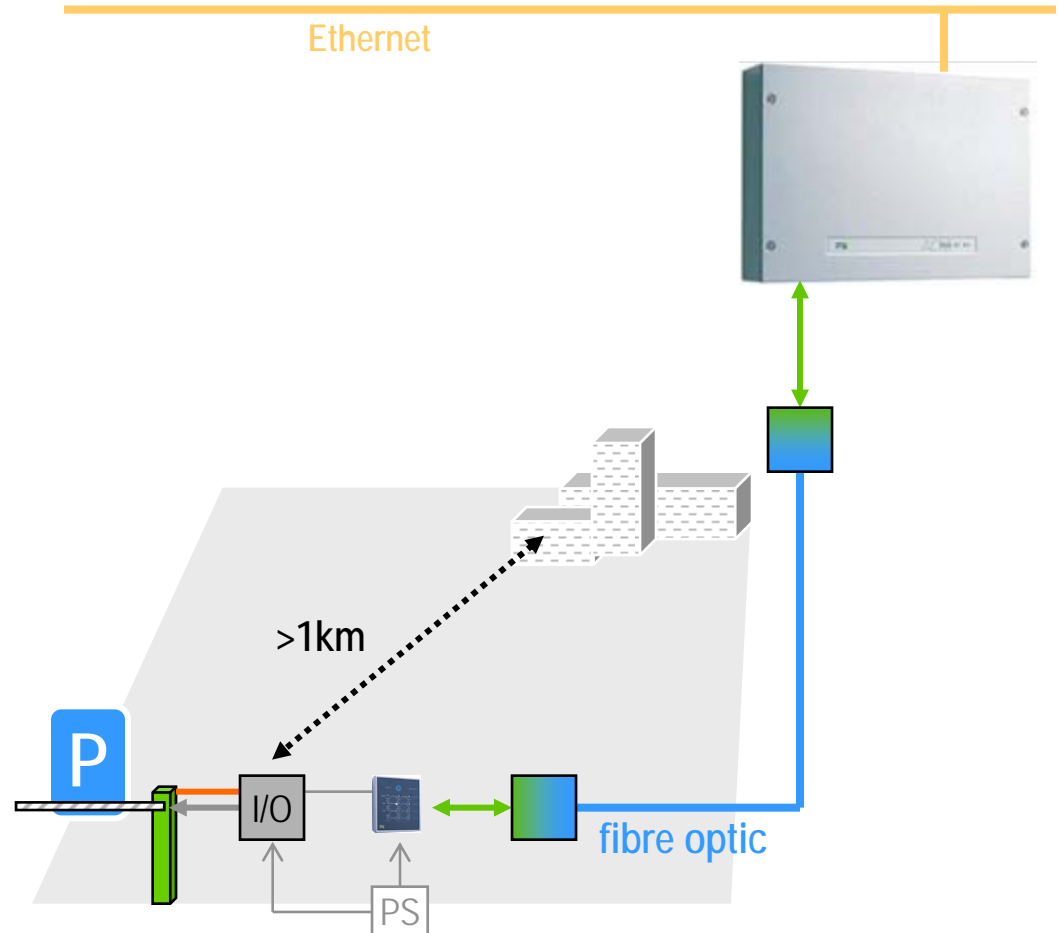
Using the second LBus interface up to  
64 readers can be connected.



## 100% galvanic isolation

### Potential difference in industrial environment

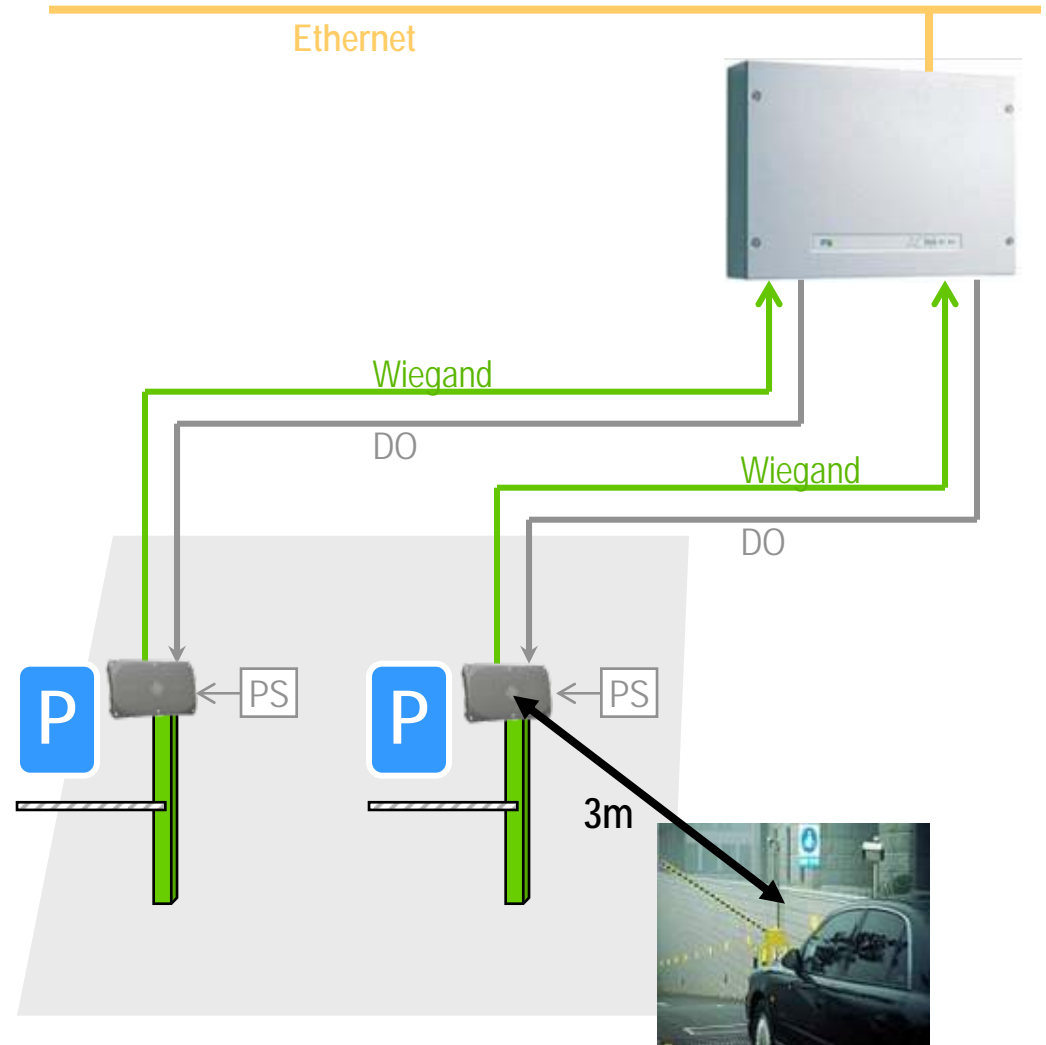
- 100% secure with large potential difference between access control manager and remote building / gate
- Line length: more than 1km; depending on used technology also several kilometers possible
- Digital In / Digital Out for gate control by local I/O module in secure area
- Power Supply: local power supply of I/O module and reader



## Remote gate control

### Large distance reader – access card

- Line length INTUS ACM40/Wiegand – gate: 150m (depending on cable cross-section)
- Reader: TagMaster long-distance reader
- Distance reader – card: up to 6 m
- Power Supply: local power supply of the readers



## Video documentation of critical access areas

### Video documentation

- Automatic video recording of unauthorized access attempts
- Control of two doors with INTUS ACM40
- Pick up of the pictures from the video server with INTUS COM version 2.8

