ABB i-bus® EIB
Shutter Control Unit
Shutter Control Unit, MDRC

- Introduction, application, planning
- Parameters
- Communication objects
Shutter Control Unit, MDRC

- Tracking the position of the sun
- Applications:
  - anti-glare protection
  - daylight redirection
- Installation on DIN rail
- 2 modules width
- Bus connection terminal
Shutter Control Unit, MDRC

Anti-glare protection

- Protection against direct, dazzling daylight
- Maximum use of diffuse daylight
Daylight redirection

- Protection against direct, dazzling daylight
- Defined direction of daylight into the room
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Functions

- 4 façades per shutter control unit

- Per façade adjustable operation mode:
  - horizontal louvres
  - horizontal louvres with light redirection
  - vertical louvres

- 20 shadow objects (e.g. buildings, trees) per unit

- Structuring of the façade:
  - without shadow objects: all windows equal
  - with shadow objects: up to 200 windows individually
    (4 façade with 50 windows each)
  - shutter control units can be operated in parallel
Setting of a shutter control system using sun position tracking

- **Brightness sensor**
- **Shutter control unit**
  - "1" = sun and 8bit value
  - "0" = no sun
- **Shutter actuator**
  - Move into 8bit position
  - Move into pos. for sun = "0"
  - Automatic control
  - Direct positioning (up, down, stop, step)
Planning of a shutter control system using sun position tracking
Shutter Control Unit, MDRC

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Calculation of the sun position

- Building position: latitude, longitude
- Date, time
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**Louvre dimensions**

- Louvre width, louvre spacing

- Angle for louvres fully opened and fully closed

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**Horizontal louvres**

- Louvre width
- Louvre spacing

**Vertical louvres**

- Louvre width
- Louvre spacing
Shutter Control Unit, MDRC

Horizontal louvres with light redirection

- Angular deviation of the reflective surface

- Light emission angle
Effect of shadow objects (e.g. buildings, trees)

- Division of the windows of the façade
  - window grid
    (same sizes and intervals of windows)
  - user-defined (each window individually)
Parameterization of shadow objects
Delay periods

- Delay periods (shutter actuator, brightness sensor)
- Intermediate position when sun is temporarily obscured

![Graph showing real sun brightness and reaction of the shutter over time.]

- Real sun brightness: 0 = no sun; 1 = sun
- Reaction of the shutter: 0 = Position when sun =0; 1 = Position when sun=1
Introduction, application, planning
Parameters
Communication objects
Communication objects „Brightness“

- **Number:**
  up the 4 brightness sensors
  (typically: 3  ->  east, south, west)

- **Brightness levels:**
  Up to 2 (normal / dazzling)
  -> Overriding dependent on actual brightness level

- **Type of brightness sensor:**
  minimum: 0 bis 20.000 Lux
  better: 0 bis 100.000 Lux or pyranometer

- **Delay periods and intermediate position**
Communication objects „Date“ and „Time“

- 2 communication objects for each „Date“ and „Time“ (input and output)
- Shutter control unit as slave, master or separate
Communication objects „Sun“, „Sun position“ and „Sun louvres“

- Sun = „1“: the sun is shining
  -> „move to sun position 0..255“ and „move to sun louvres 0..255“

- Sun = „0“: the sun is not shining
  -> position for sun = „0“
  (corresponding to the parameter setting in the shutter actuator)

- Up to 200 communication objects „Sun“ possible (4 façades with 50 windows each)