



# Information Module Repeater

November 2014 • ista International GmbH

**ista**

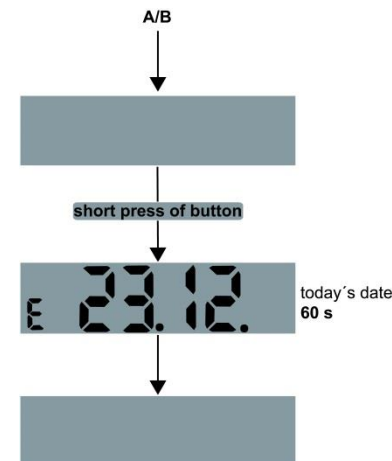
# Contents

- **Function and technical data**
- Notes
- Repeater installation guidelines
- Installation
- Commissioning
- Replacement
- Readout / re-parameterisation
- Summary

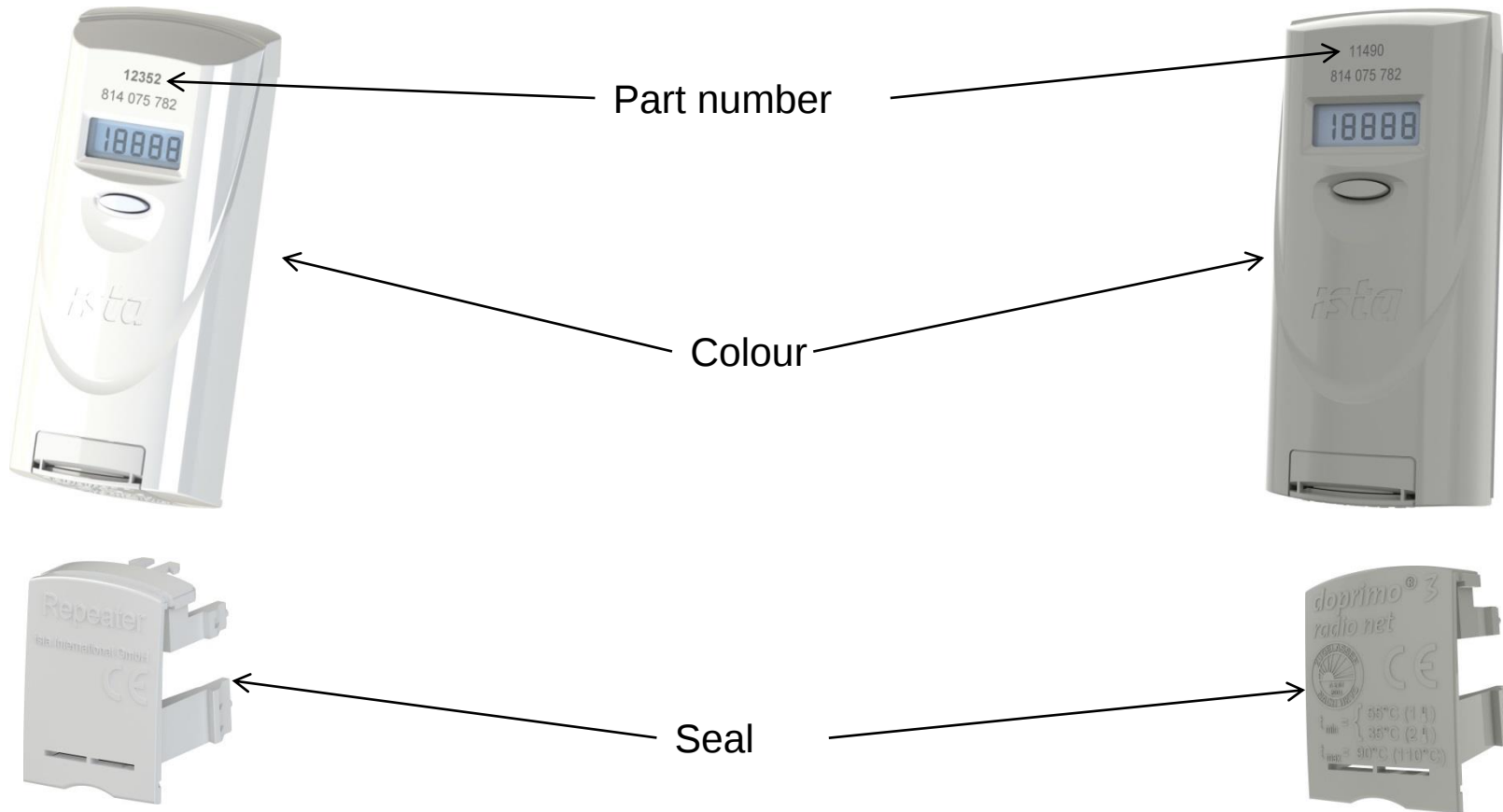


## Application / function

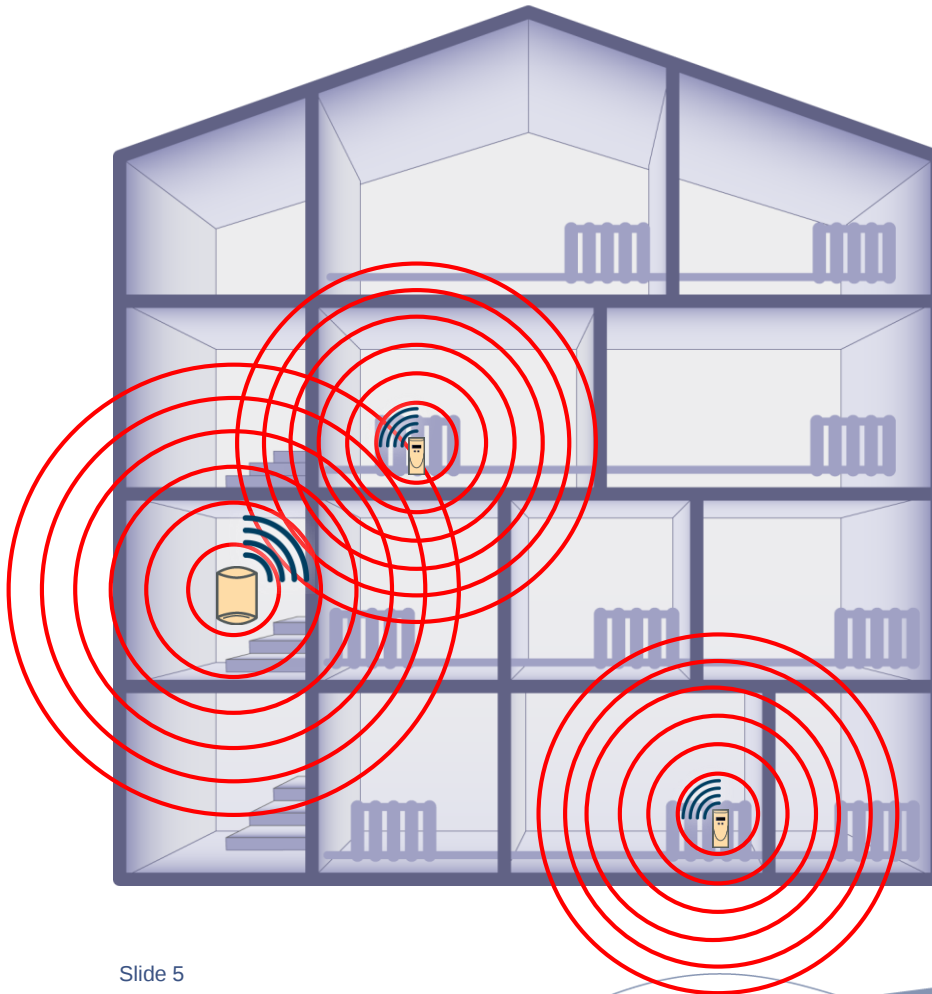
- 'Building bridges' to hitherto not available end device or subnetwork.
- Transfer of all data to and from the end devices
- Parameterising via PDA and MGW
- Shows the current date by keystroke after parameterisation.
- Complete integration into the symphonic sensor net wireless network



# Do not confuse Repeater vs doprimo 3 radio net



# Scenario 1: Radio bridge to end devices



Legend:



Repeater



SGW

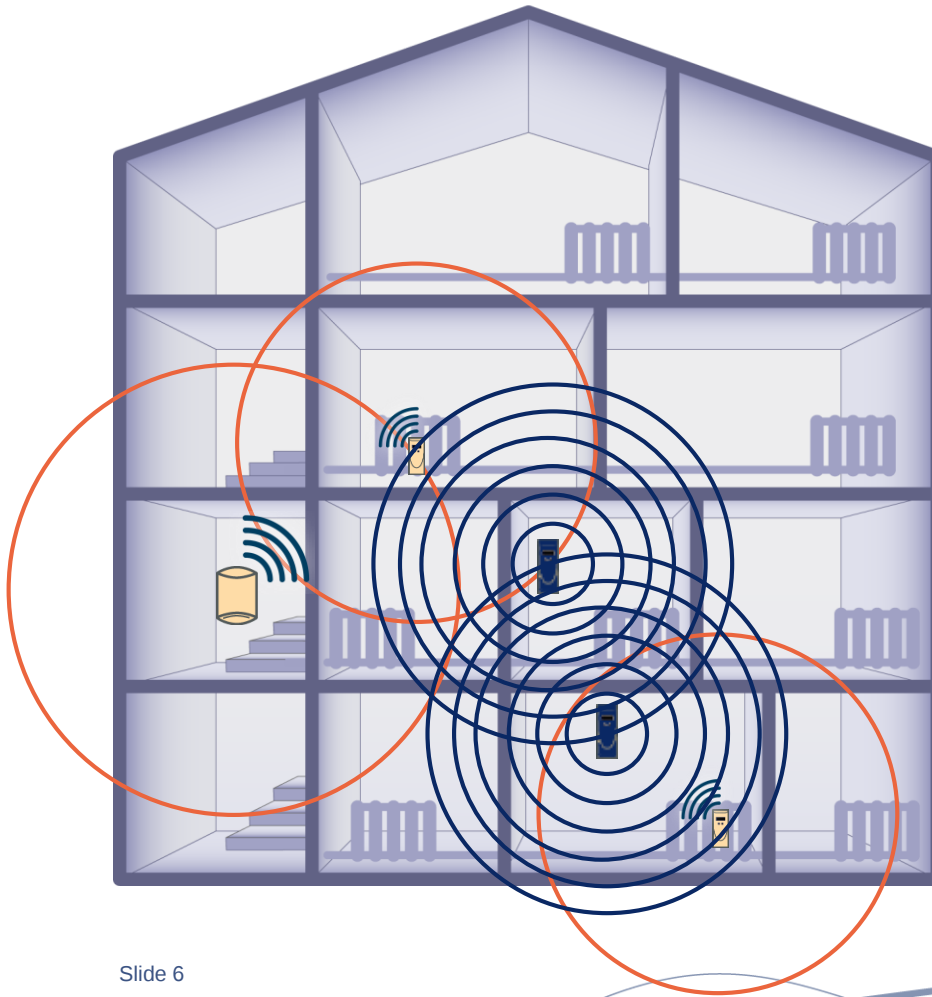


Heat cost allocators



Radio range

# Scenario 1: Radio bridge to end devices



Legend:



Repeater



SGW

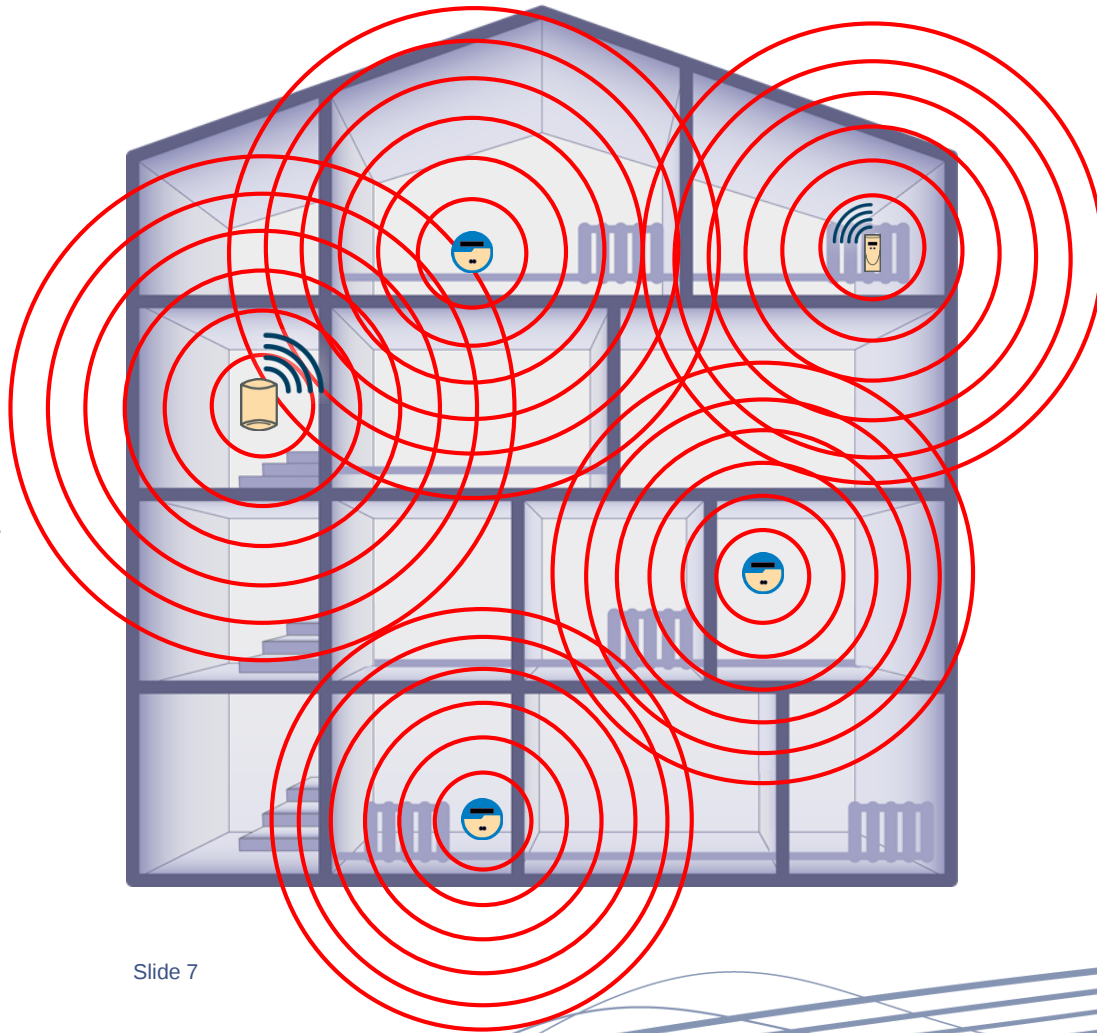


Heat cost allocators



Radio range

## Scenario 2: Increasing Device Density



### Legend:



Repeater



SGW

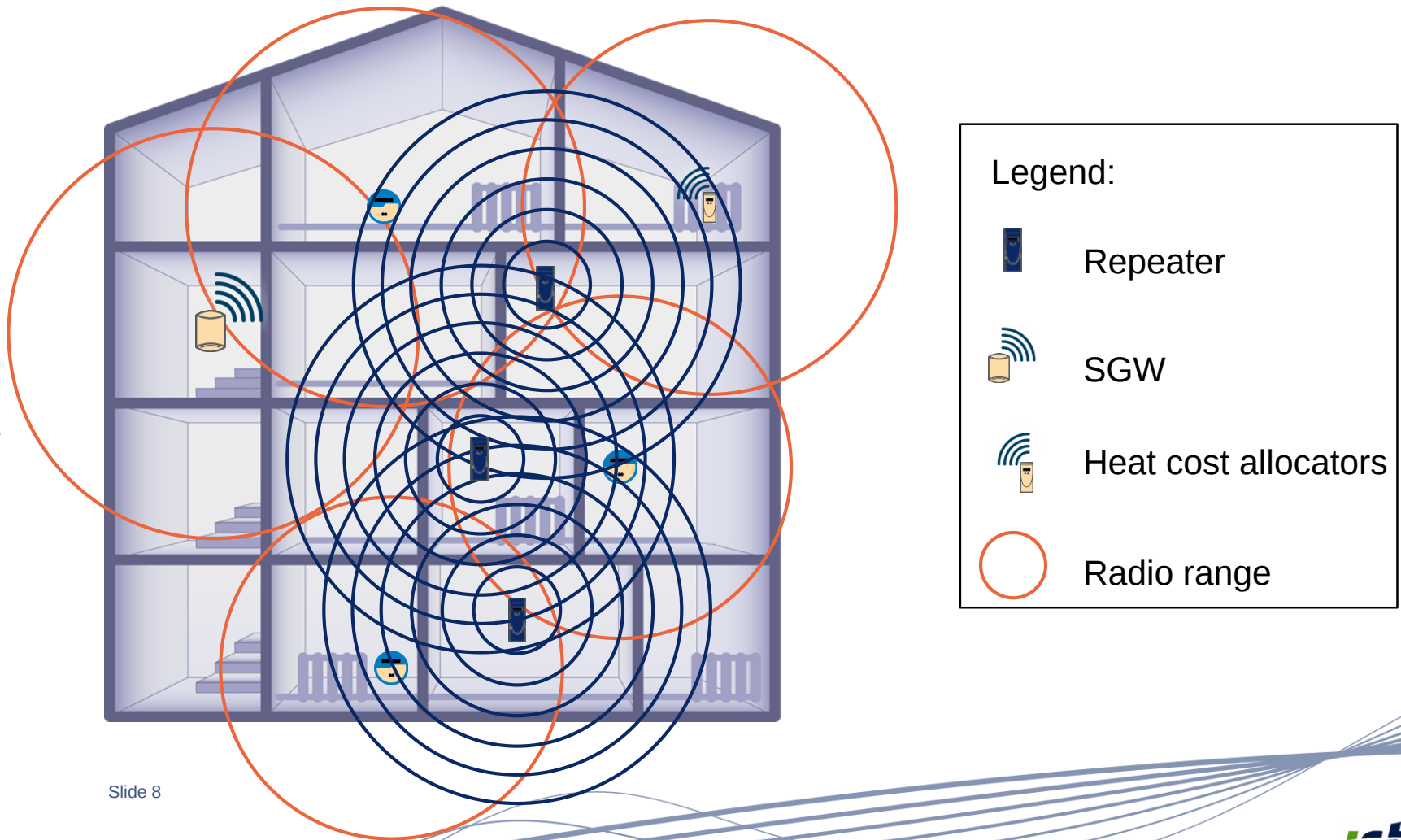


Heat cost allocators

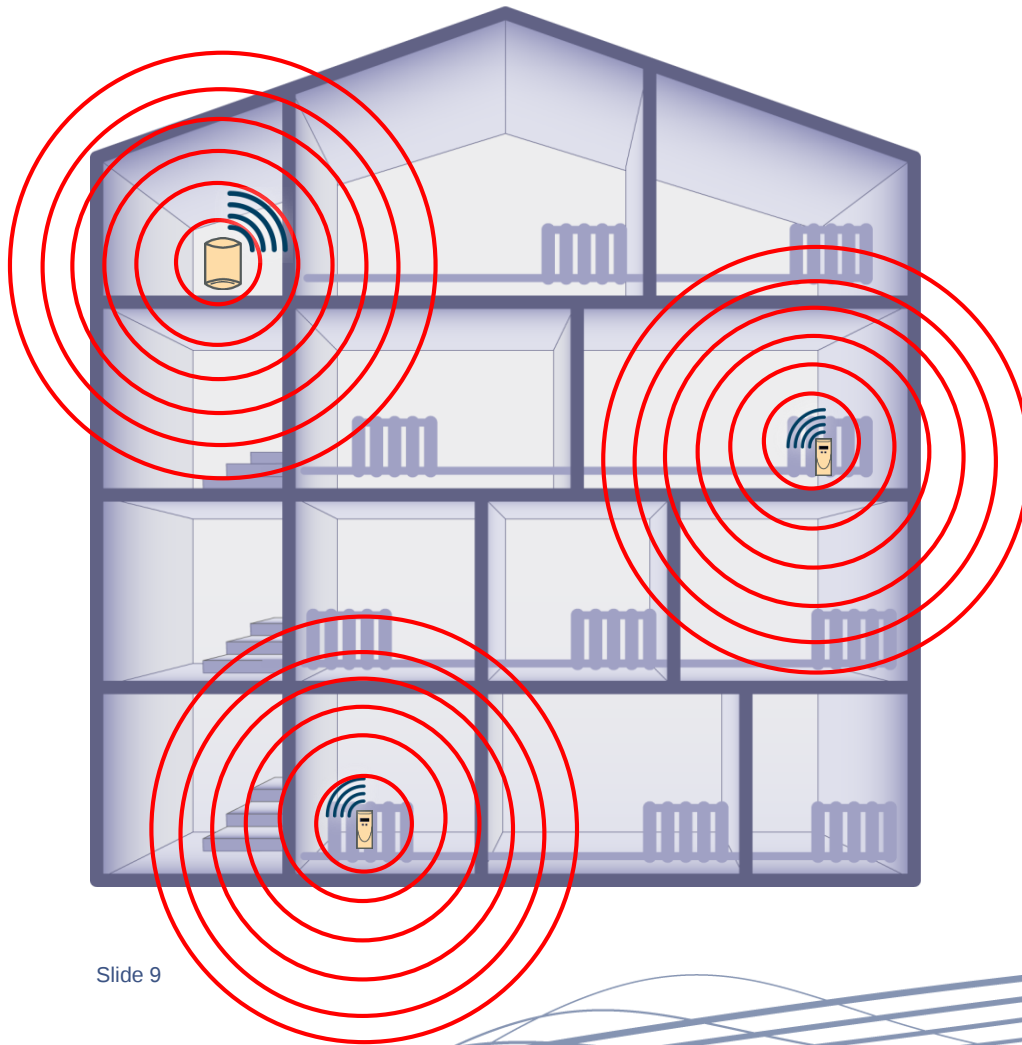


Radio range

## Scenario 2: Increasing Device Density



## Scenario 3: Radio bridge to the SGW



Legend:



Repeater



SGW

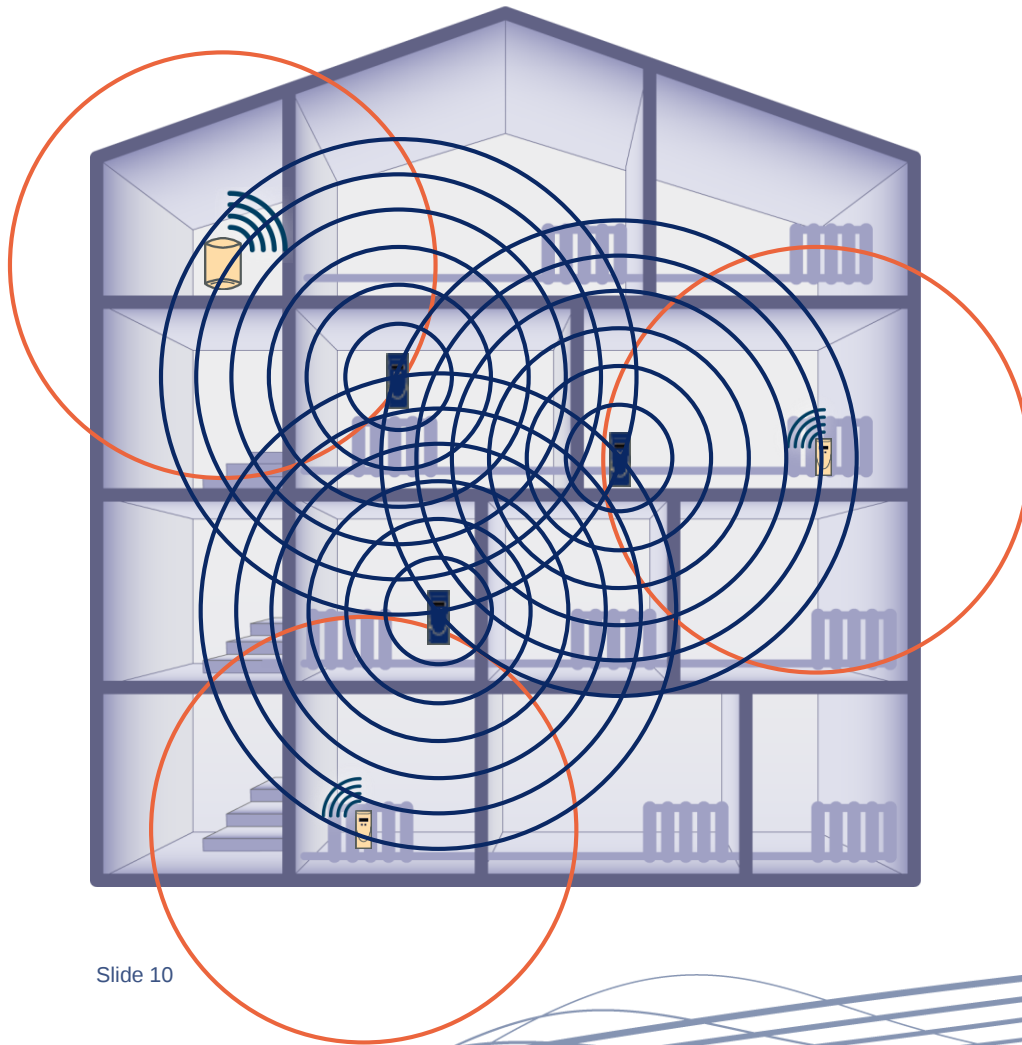


Heat cost allocators



Radio range

## Scenario 3: Radio bridge to the SGW



Legend:



Repeater



SGW



Heat cost allocators



Radio range



# Scope of delivery and accessories

Scope of delivery:

- 10 repeaters with pre-assembled seal

Accessories (not included):

- 10919: HCA-E bottom part doprimo (32 mm)
- 12359: TLogger adhesive roll, 19 mm x 3 m
- 12360: Repeater seal



# Device indicator

## Error status



| Error status (decimal) | Display   | Description                | Required action |
|------------------------|-----------|----------------------------|-----------------|
| <b>1</b>               |           | Dismantling detection      | Check device    |
| <b>2</b>               | <b>P2</b> | Incorrect internal data    | Replace device  |
| <b>16</b>              |           | Battery weak, non-critical |                 |
| <b>128</b>             |           | Other critical error       | Replace device  |

| Extended error status (decimal) | Display   | Description                      | Required action |
|---------------------------------|-----------|----------------------------------|-----------------|
| <b>8</b>                        |           | Time / date error                |                 |
| <b>16</b>                       | <b>P7</b> | Sensor fault in test measurement | Replace device  |
| <b>32</b>                       | <b>P8</b> | Sensor fault in test measurement | Replace device  |
| <b>64</b>                       |           | Other critical error             | Replace device  |

# Technical data

## Memory data



### Administrative data

- Serial number, device ID
- Radio network number
- Current date and time

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### Error information

- Error status
  - Date on which first error occurred
  - Error code
-

# Technical data

## Selection



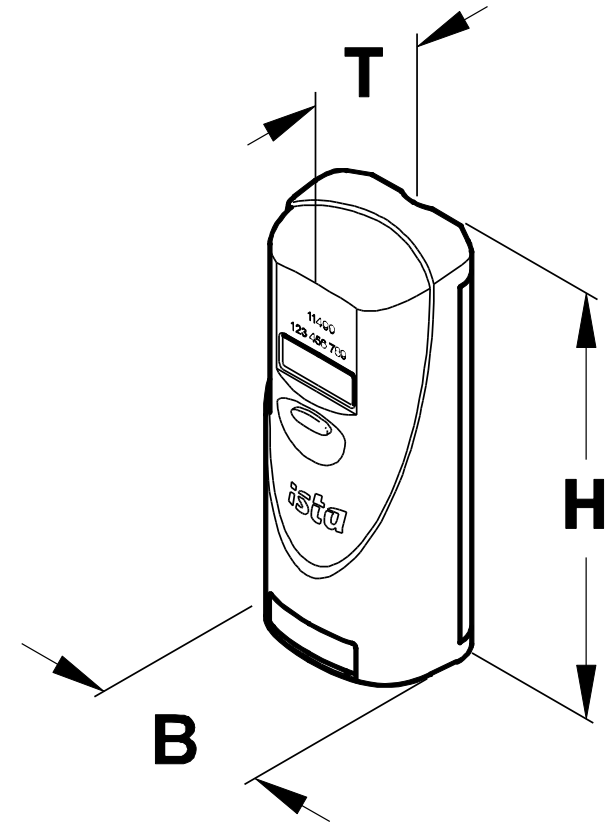
|                                       |                                                                                                                                                                                                                                        |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power supply</b>                   | 3 V lithium battery                                                                                                                                                                                                                    |
| <b>Life cycle</b>                     | 10 years + 1 year spare + 1 year storage                                                                                                                                                                                               |
| <b>Storage</b>                        | Dry and frost-protected                                                                                                                                                                                                                |
| <b>Housing colour</b>                 | RAL 9016 (white)                                                                                                                                                                                                                       |
| <b>Material</b>                       | <ul style="list-style-type: none"><li>■ Top section:<br/>Bayblend FR 3010 (polymer blend based on polycarbonate (PC) and acrylonitrile butadien styrene (ABS) copolymerisate)</li><li>■ Bottom section: Aluminium alloy F 22</li></ul> |
| <b>Type of protection</b>             | IP42 (no outdoor installation, among others)                                                                                                                                                                                           |
| <b>Temperature range in operation</b> | 0 °C up to 65 °C (avoid direct solar radiation)                                                                                                                                                                                        |

# Technical data

## Dimensions



|             |         |
|-------------|---------|
| Height (H): | 92.3 mm |
| Width (B):  | 40.2 mm |
| Depth (T):  | 29.1 mm |



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# Notes on installation



- Before drilling the holes, check whether any buried electricity, gas and water lines are flush-mounted at the installation site.
- Distance to the next sensor net devices (end device, repeater or SGW):
  - Min. 1 m to end devices and repeater
  - Min. 4 m to the SGW
  - Max. 7 m
- Preferably do not mount repeater on the same wall like the next available sensor net device.

# Notes on installation



- Do not mount repeater onto radiators.  
Preferable mount
  - at a height of 2 m.
  - If possible, 30 cm beneath the ceiling.
- Keep 50 cm clearance to electromagnetic interference sources, 2 m to sources of RF interference (WLAN, microwave, etc.).
- Do not exceed 10 hop levels.

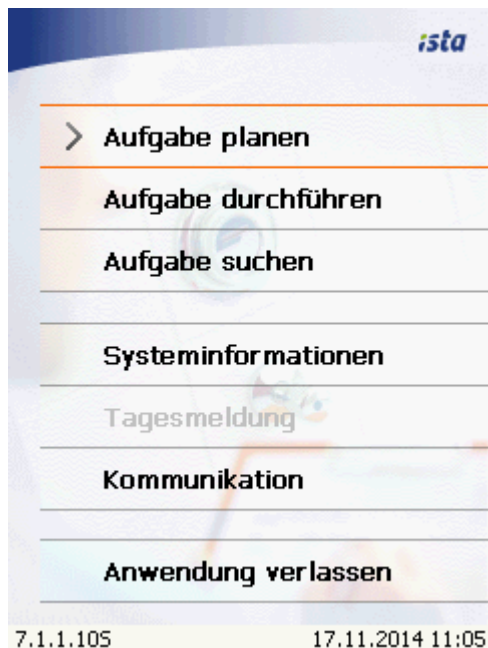
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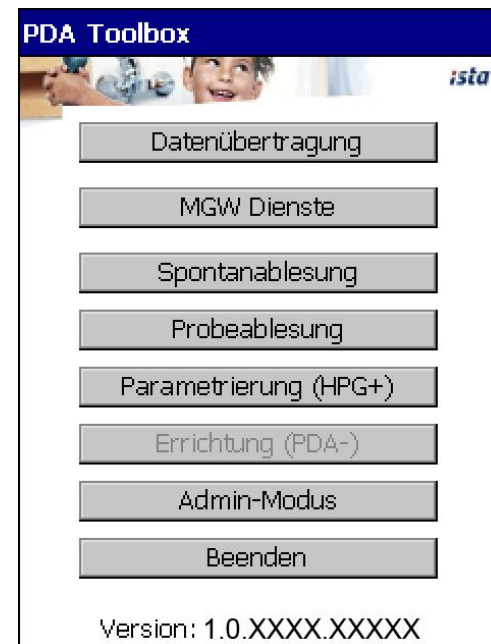
# Repeater installation guidelines

When using:

PDA 3



PDA Toolbox



Please select software

# Repeater installation guidelines (PDA3)

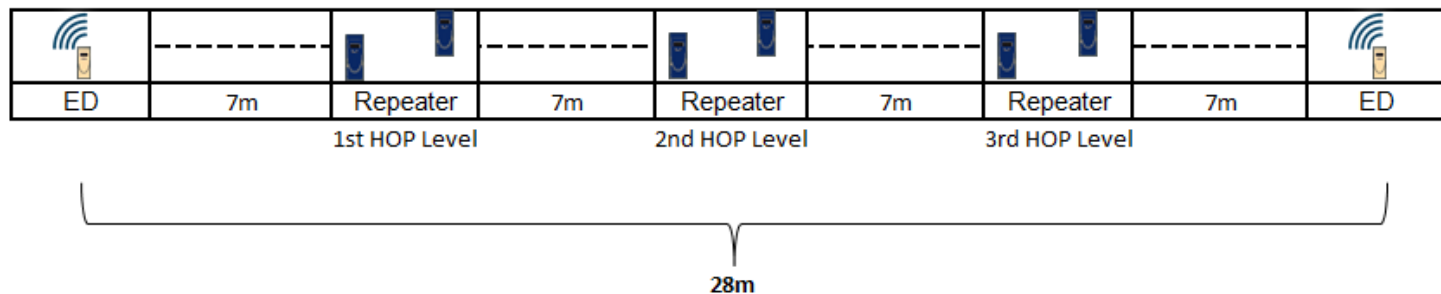
## Scenario 1 – Radio bridge to end devices

### Description:

The repeater is employed as radio bridge to one or few end devices that are not within the range of the existing radio network.

### Notes on implementation:

- Mount at least two repeaters per hop level.



- Mount the repeater in the public area of the property.
- Please report to the branch office if repeaters cannot be mounted due to constructional or other circumstances.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

1. ZAMM team commissions branch office for repeater installation.
2. Processing at the branch office
  - a. Check whether repeater installation is possible.
  - b. Check whether network stop possible (if EDM Premium or smoke detector were not installed)

### **Network stop possible**

- c. Order network stop
- d. Set up ZS06 order for the property (meter reading order for all devices, implementation in > 2 weeks)
- e. Set up ZS12 repeater installation order (implementation in > 2 weeks)

### **Network stop not possible**

- c. Set up ZS04 order for missing end devices
- d. Set up ZS12 repeater installation order

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

3. Processing at the property
  - a. Check locality for:
    - Emergency fire walls and doors
    - EMC protection earthing
    - very narrow corridors ( $< 1$  m width)

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

3. Processing at the property
  - b. Determine installation sites  
(public area, max. 7 m distance to the end devices)
    - Perform meter check reading at the planned installation sites using ZS06 and check whether the not available devices and potential connecting nodes can be reached (observe max. distance).
    - Using ZS04, perform meter check reading at the planned installation site where the repeaters are supposed to integrate the not available devices into the network.
  - c. Installation of repeaters using ZS12.
4. Branch office feedback to the ZAMM team whether installation was performed.
5. Property monitoring (ZAMM team)

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure with meter check reading with ZS06:

- Both the missing and the end devices being stable in the network are received through walk-by at the planned installation site:
  - Installation site suitable, mount two repeaters (observe minimum clearance!).
- Only the missing end devices are received at the planned installation site:
  - Note installation site, mount two repeaters later on (observe minimum clearance!).
  - During reading, slowly move toward the end devices that are stable in the network.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when further end devices are being received.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure with meter check reading with ZS06 (cont'd.):

- Only those devices are received at the planned installation site that are integrated stable into the network:
  - Note installation site, mount two repeaters later on (observe minimum clearance!).
  - During reading, slowly move toward the missing end devices.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when the end devices are being received.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure with meter check reading with ZS06 (cont'd.):

- No end devices are received at the planned installation site:
  - During reading, slowly move toward the missing end devices.
  - Determine the current position as repeater installation site when the missing end devices are received.
  - During reading, slowly move toward the end devices that are stable in the network.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when the end devices are being received.
  - In case the distance between the repeaters should be  $> 7$  m, a further installation site needs to be determined in the middle of the repeaters.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure with meter check reading with ZS04:

- The missing end devices are received through walk-by at the planned installation site.
  - Installation site suitable, mount two repeaters (observe minimum clearance!).
  - Further repeaters need to be installed (gut feeling) if the distance to further end devices seems to be too large.
- No end devices are received at the planned installation site:
  - During walk-by, slowly move toward the missing end devices.
  - Determine the current position as repeater installation site when the end devices are received.
  - Further repeaters need to be installed (gut feeling) if the distance to further end devices seems to be too large.

# Repeater installation guidelines (PDA3)

## Scenario 2 – Increasing device density

### Description:

Use the repeater to increase device density at the property thus improving yield.

### Notes on installation:

- Mount maximum two repeaters per unit.  
First consult with Products (W. Monschau / J. den Elzen) in the event of higher demand per unit.
- The repeaters should preferably be mounted centrally within the unit (e.g. corridor).
- The installation takes place within the unit.

### Process:

Identical to scenario 1

# Repeater installation guidelines (PDA3)

## Scenario 3 – Radio bridge to the SGW

### Description:

The repeater serves as radio bridge from the SGW to all end devices. This scenario is only used if the SGW installation is not feasible within reach of the end devices due to poor GSM reception.

### Notes on implementation:

- Bypass max. two hop levels with repeaters.
- Mount at least five, max. ten repeaters per hop level.
- Mount repeaters in the public area.
- Integrate a maximum of 150 end devices into the network downstream of the repeaters.
- Mount the repeaters preferably centrally in the building

# Repeater installation guidelines (PDA3)

## Scenario 3 – Radio bridge to the SGW

### Execution.

- No suitable installation site can be found close to the end devices when installing new SGWs
  - ➔ SGW is mounted at a position with good GSM reception (max. distance to the end devices approx. 20 m)
- No reading is possible since this is an installation order (this allows repeaters to be installed)
- Mount a minimum of five, maximum ten repeaters based on 'gut feeling' at a distance of approx. 7 m around the SGW (observe minimum clearance among each other!)

# Repeater installation guidelines (PDA3)

## Scenario 3 – Radio bridge to the SGW

### Execution.

- Mount a second repeater level in case of a distance  $> 14$  m between SGW and end devices.
- If possible, mount the repeaters in such a way that as many end devices as can be within reach.
- If the service technician should have no repeaters on site or is not sure regarding installation, he should not mount the SGW but first consult with the branch office or Products.

# Repeater installation guidelines (PDA Toolbox)

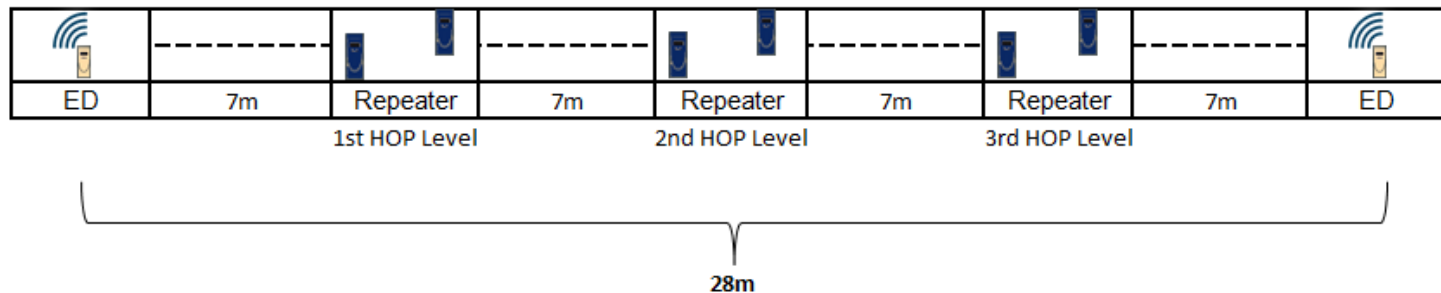
## Scenario 1 – Radio bridge to end devices: Process

### Description:

The repeater is employed as radio bridge to one or few end devices that are not within the range of the existing radio network.

### Notes on implementation:

- Mount at least two repeaters per hop level.
- Do not bridge more than three hop levels (maximum distance between end devices approx. 28 m).



- Mount the repeater in the public area of the property.
- Please report to the branch office if repeaters cannot be mounted due to constructional or other circumstances.

# Repeater installation guidelines (PDA Toolbox)

## Scenario 1 – Radio bridge to end devices: Process

1. ZAMM team or national company commissions branch office for repeater installation.
2. Processing at the branch office
  - a. Check whether repeater installation is possible.
  - b. Check whether network stop possible (if EDM Premium or smoke detector were not installed)

### **Network stop possible**

- c. Order network stop
- d. Commission repeater installation  
(implementation in > 2 weeks)

### **Network stop not possible**

- c. Commission repeater installation

# Repeater installation guidelines (PDA Toolbox)

## Scenario 1 – Radio bridge to end devices: Process

3. Processing at the property
  - a. Check locality for:
    - Emergency fire walls and doors
    - EMC protection earthing
    - very narrow corridors ( $< 1$  m width)

# Repeater installation guidelines (PDA Toolbox)

## Scenario 1 – Radio bridge to end devices: Process

3. Processing at the property
  - b. Determine installation sites  
(public area, max. 7 m distance to the end devices)
    1. Search for potential installation site at a distance of approx. 7 m to the device to be integrated.
    2. Perform spontaneous reading and check to see whether the device to be integrated is received.
  - c. Mount repeaters at the memorized installation positions.
4. Feedback to the ordering party (ZAMM team of national company) whether installation has been performed.
5. Property monitoring (ZAMM team or national company)

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure of spontaneous reading (network stopped):

- Both the missing and the end devices being stable in the network are received through walk-by at the planned installation site:
  - Installation site suitable, mount two repeaters (observe minimum clearance!).
- Only the missing end devices are received at the planned installation site:
  - Note installation site, mount two repeaters later on (observe minimum clearance!).
  - During reading, slowly move toward the end devices that are stable in the network.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when further end devices are being received.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure of spontaneous reading (network stopped, cont'd):

- Only those devices are received at the planned installation site that are integrated stable into the network:
  - Note installation site, mount two repeaters later on (observe minimum clearance!).
  - During reading, slowly move toward the missing end devices.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when the end devices are being received.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure of spontaneous reading (network stopped, cont'd):

- No end devices are received at the planned installation site:
  - During reading, slowly move toward the missing end devices.
  - Determine the current position as repeater installation site when the missing end devices are received.
  - During reading, slowly move toward the end devices that are stable in the network.
  - Determine the current position as further repeater installation site (then min. 4 repeaters will be installed) when the end devices are being received.
  - In case the distance between the repeaters should be  $> 7$  m, a further installation site needs to be determined in the middle of the repeaters.

# Repeater installation guidelines (PDA3)

## Scenario 1 – Radio bridge to end devices: Process

### Procedure of spontaneous reading (network not stopped):

- The missing end devices are received through walk-by at the planned installation site.
  - Installation site suitable, mount two repeaters (observe minimum clearance!).
  - Further repeaters need to be installed (gut feeling) if the distance to further end devices seems to be too large.
- No end devices are received at the planned installation site:
  - During walk-by, slowly move toward the missing end devices.
  - Determine the current position as repeater installation site when the end devices are received.
  - Further repeaters need to be installed (gut feeling) if the distance to further end devices seems to be too large.

# Repeater installation guidelines (PDA3 Toolbox)

## Scenario 2 – Increasing device density

### Description:

Use the repeater to increase device density at the property thus improving yield.

### Notes on implementation:

- Mount maximum two repeaters per unit.  
First consult with Products (W. Monschau / J. den Elzen) in the event of higher demand per unit.
- The repeaters should preferably be mounted centrally within the unit (e.g. corridor).
- The installation takes place within the unit.

### Process:

Identical to scenario 1

# Repeater installation guidelines (PDA Toolbox)

## Scenario 3 – Radio bridge to the SGW

### Description:

The repeater serves as radio bridge from the SGW to all end devices. This scenario is only used if the SGW installation is not feasible within reach of the end devices due to poor GSM reception.

### Notes on implementation:

- Bypass max. two hop levels with repeaters.
- Mount at least five, max. ten repeaters per hop level.
- Mount repeaters in the public area.
- Integrate a maximum of 150 end devices into the network downstream of the repeaters.
- Mount the repeaters preferably centrally in the building

# Repeater installation guidelines (PDA Toolbox)

## Scenario 3 – Radio bridge to the SGW

### Execution.

- No suitable installation site can be found close to the end devices when installing new SGWs
  - ➔ SGW is mounted at a position with good GSM reception (max. distance to the end devices approx. 20 m)
- Perform spontaneous reading within a 7 m radius around the SGW whether end device can be received (identify several potential installation positions as required).
  - End devices can be received:  
Mount at least five, max. ten repeaters at the possible installation positions
  - No end devices can be received:  
Continue walking toward the 'radio cloud' until end devices are received and build a radio bridge of 2 hop levels with five to ten repeaters each.

# Repeater installation guidelines (PDA Toolbox)

## Scenario 3 – Radio bridge to the SGW

### Execution.

- If possible, mount the repeaters in such a way that as many end devices as can be within reach.
- If the service technician should have no repeaters on site or is not sure regarding installation, he should not mount the SGW but first consult with the branch office or Products.

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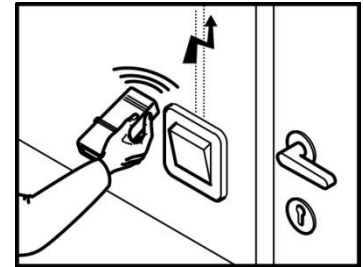
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# Installation

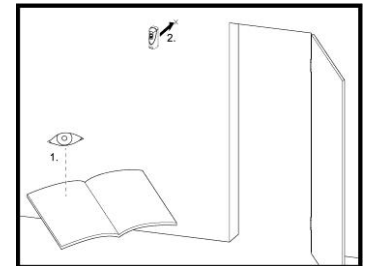
## Screw mounting



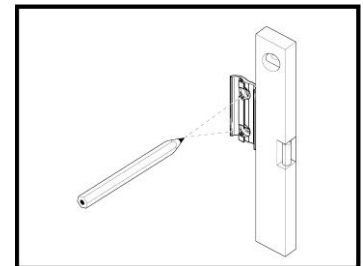
1. Before drilling the holes, check whether any buried electricity, gas and water lines are flush-mounted at the installation site.



2. Look for a suitable installation based on the criteria named above.



3. Use a spirit level to position the bottom part vertically and draw on the drill hole points.

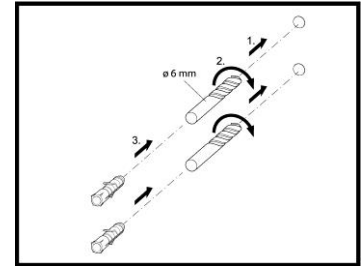


# Installation

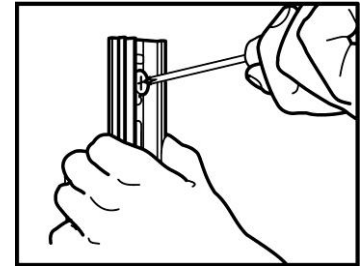
## Screw mounting



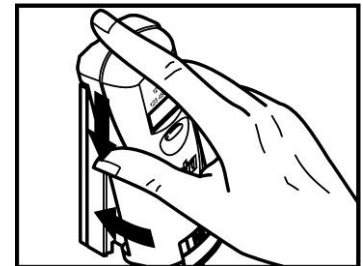
4. Using a drill bit (6 mm), drill the two holes and insert suitable dowels.



5. Screw the bottom part onto the wall tightly.



6. Position the top part on the bottom part and push it on.

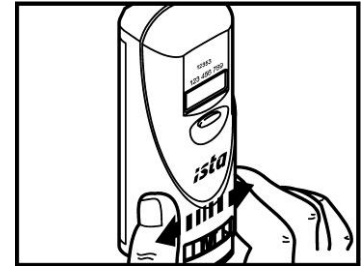


# Installation

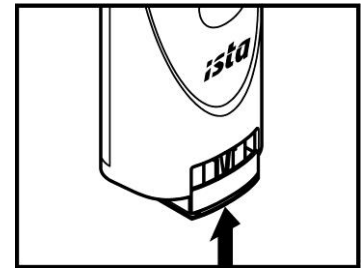
## Screw mounting



7. Check the top part for tight fit.



8. Latch the preassembled seal into place (click noise).



9. Start operating the device.



# Installation

## Glued installation - notes



### ***Risk of damage to the substrate***

To prevent the device from falling off during its whole life, the adhesive pads have a high adhesive force. This means that damage can occur to the substrate (plaster, wallpaper, etc.) when the adhesive pads are removed from the wall.

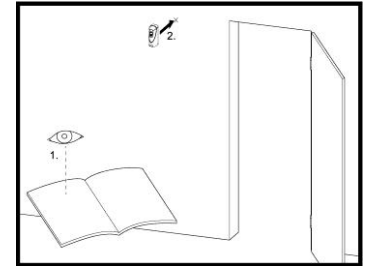
- Only use glued installation upon express instruction from the branch office.
- Glued installation in dry rooms only

# Installation

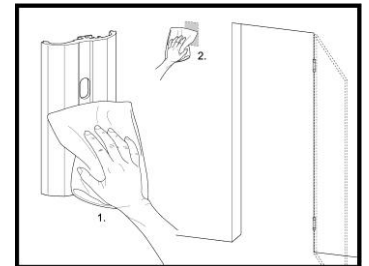
## Glued installation



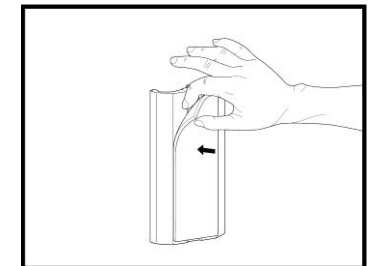
1. Look for a suitable installation based on the criteria named above.



2. Clean the gluing points on the bottom part and on the wall.



3. Stick the adhesive pad onto the back of the bottom part.

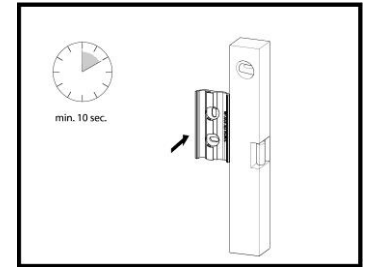


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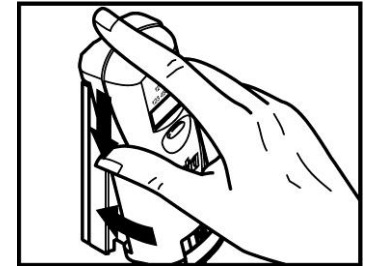
## Glued installation



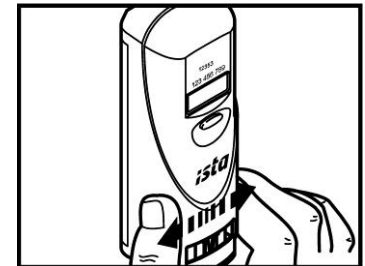
4. Use a spirit level to position the bottom part vertically and stick it onto the wall (press on it for at least 10 s).



5. Position the top part on the bottom part and push it on.



6. Check the top part for tight fit.

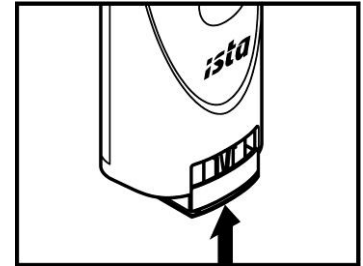


# Installation

## Glued installation



7. Latch the preassembled seal into place (click noise).



8. Start operating the device.



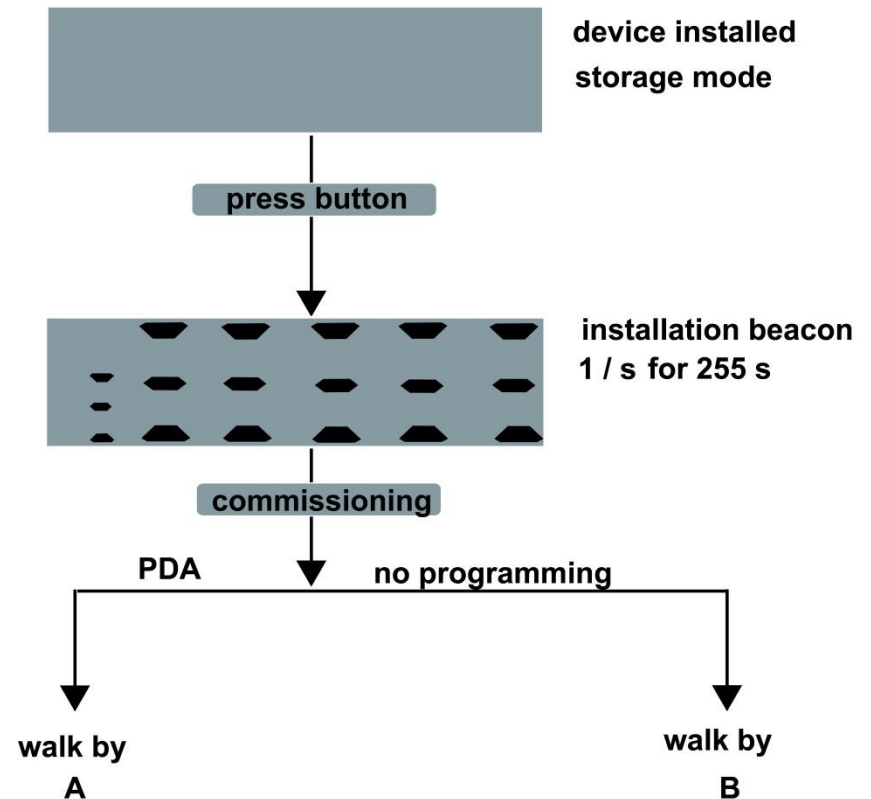
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# Commissioning



1. Press key  
Device changes into installation mode for 4 minutes
2. Parameterising with PDA and MGW
3. After parameterisation or after 4 minutes, the device changes to measuring mode (set-up completed). With no parameterisation within 4 minutes, continue with step 4

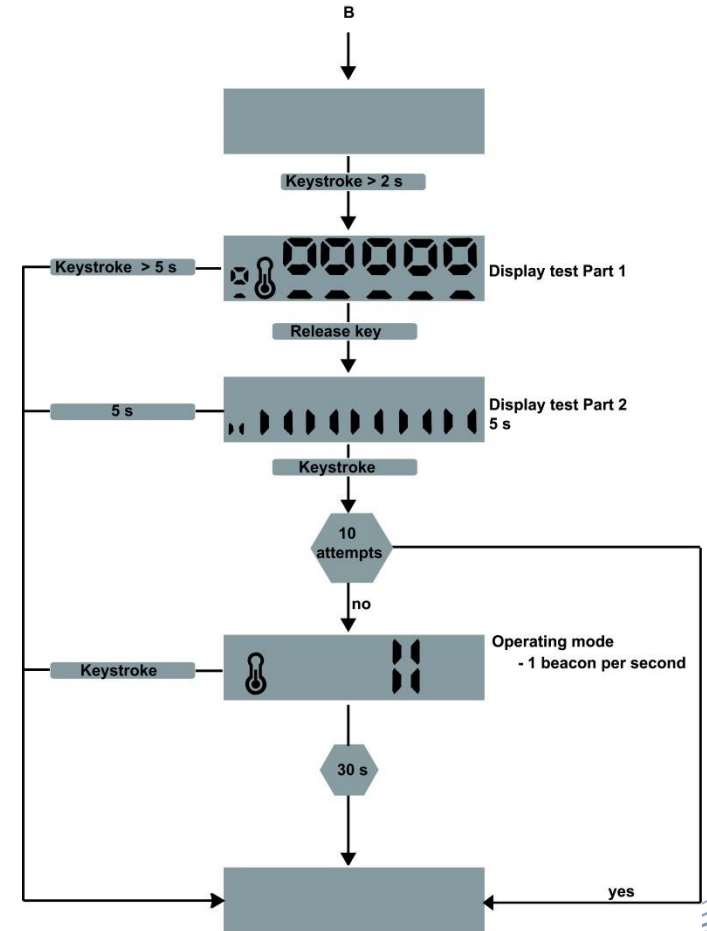


# Set-up

## No programming done with PDA



4. Press key between 2 and 5 s  
The device shows the first part of the display test
5. Release key  
The device shows the second part of the display test
6. Press key within 5 s  
Device changes into installation mode for 2 minutes



# Set-up

## No programming done with PDA



7. Following parameterisation or 2 minutes, the devices switches to operating mode

After 2 minutes without parameterisation continue with step 4. (A total of 10 attempts)

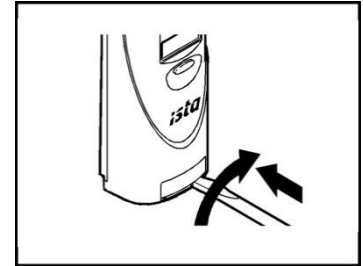
# Contents

- Function and technical data
- Notes
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- **Replacement**
- Readout / re-parameterisation
- Summary

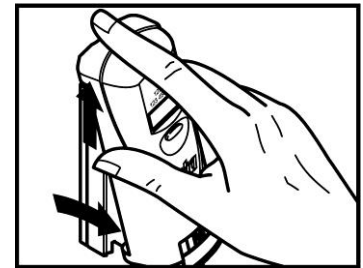
# Replacement



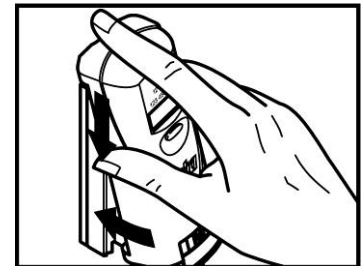
1. Destroy the seal.



2. Detach old upper part.  
Check old lower part, replace in case of damage.



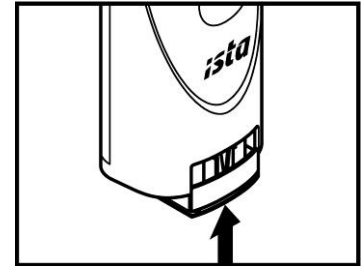
3. Fit new upper part  
onto existing lower part



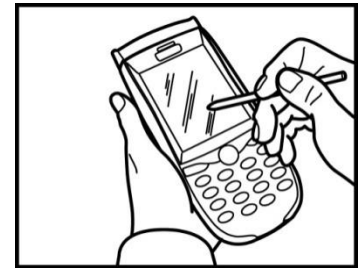
# Replacement



4. Allow prefitted seal to engage.  
Seal snaps in with a click.



5. Commissioning by means of the PDA



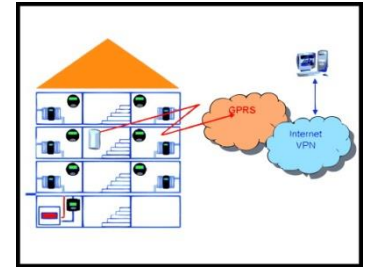
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# Readout AMM



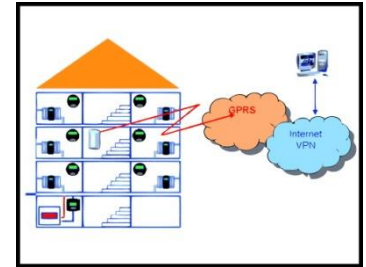
## 1. Readout via symphonic sensor net.



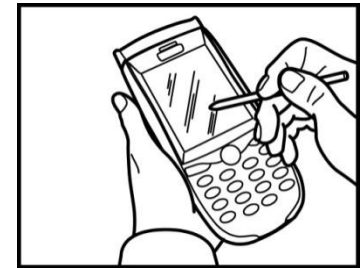
# Readout Walk-by



1. Read out devices  
by walk-by using PDA/MGW.



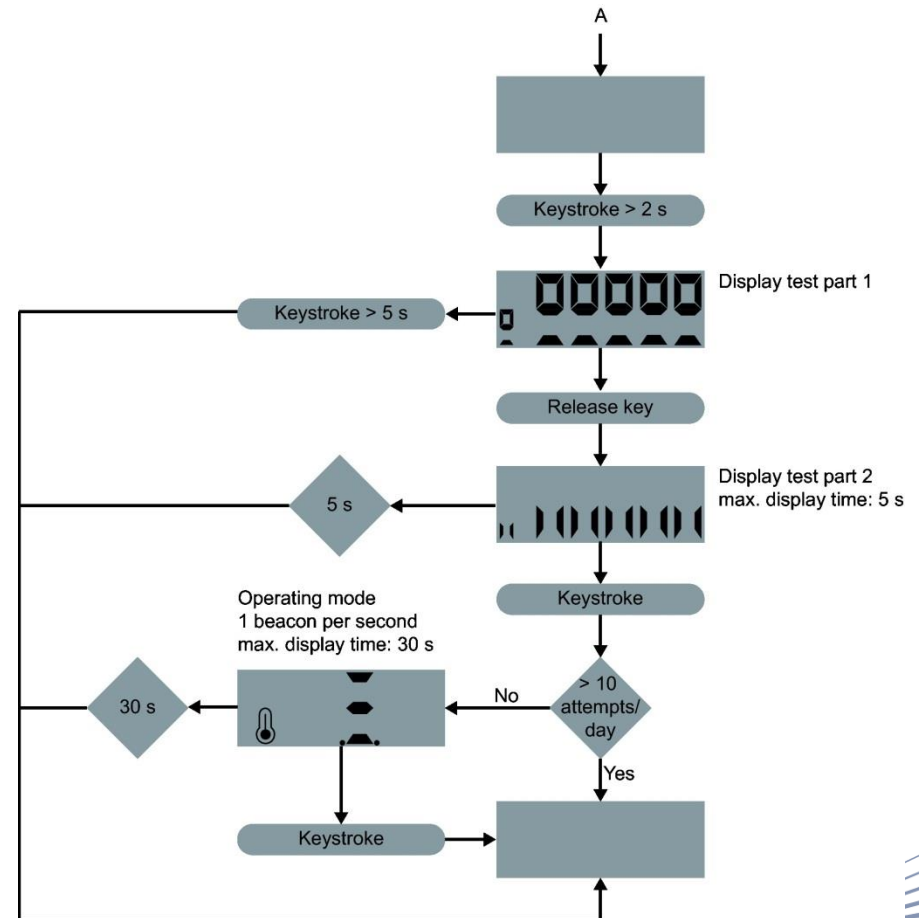
2. Check data in the PDA.  
Are all devices recorded?



# Readout

## Single device service readout / re-parameterisation

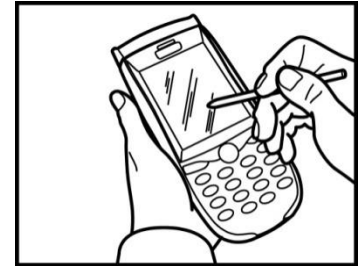
1. Press key between 2 and 5 s  
The device shows the first part of the display test
2. Release key  
The device shows the second part of the display test
3. Press key within 5 s  
Device transmits readout beacon for 30 s.



# Readout

## Single device service readout / re-parameterisation

4. Readout the device / re-parameterise using PDA and MGW.



# Contents

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- **Summary**



# Instead of a summary

**You are now equipped with the necessary skills**

Basic knowledge about the symphonic sensor net

Knowledge of the repeater jobs

Knowledge about the most important technical data

Knowledge about assembly, replacement and reading

ista device manuals and installation instructions

**Make large use of these during your work!**

# End of the theoretical part



**And now we wish you fun and  
success  
with the practical activity!**



The contacts at your ista branch would be happy to help you should you have any further questions.