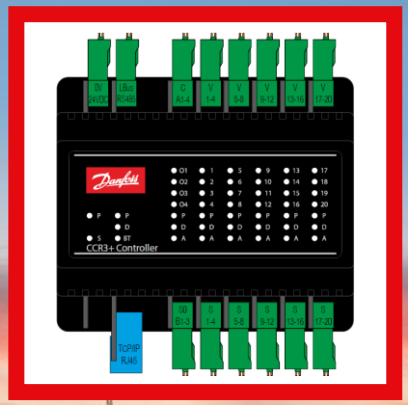
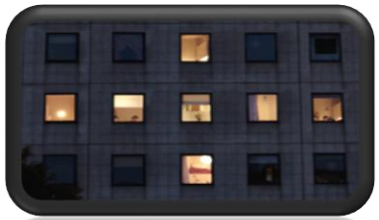
ENGINEERING
TOMORROW

# Energy efficient control in 1-pipe systems with **CCR3+ return temperature controller & temperature registration**

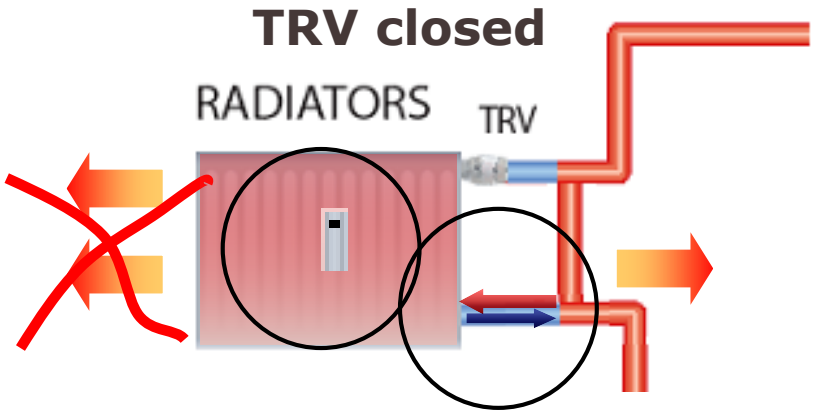


# What are benefits CCR3+ solution?

- Reliable 1-pipe heating system
- Fewer complaints
- 
- Energy efficient solution
- Better indoor comfort
- No need for Commissioning
- More reliable instalation
- Lower energy bill & maintenance cost
- Fast installation & maintenance
- Quick design process
- Evidence of system parameters (connectivity)
- Installation (expansion)

# Problems of not balanced 1-pipe instalations
## Poor room temperature control

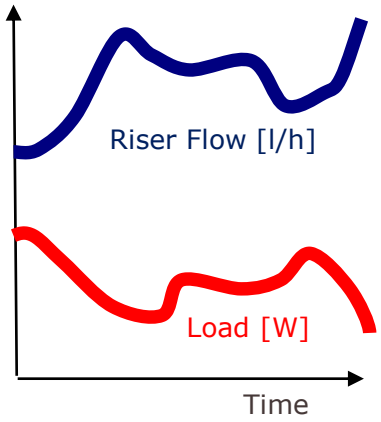
- TRV closes
- Hot pipe keeps heating the room
- Due to backflow also radiator continues to heat the room
- Problems with heat allocators



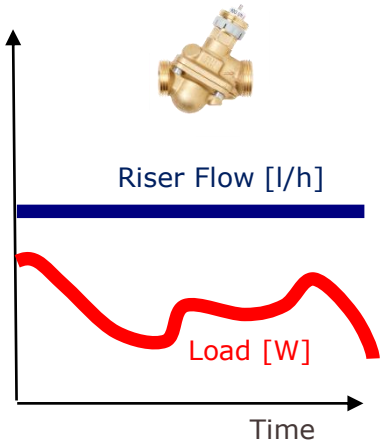

**UNFAIR ENERGY BILLING:**
The all apartments located in higher part of the building are over heated. People almost never used radiators what complicate heat calculation when heat allocators are used!

# Perfect match with Danfoss AB-QTE solution

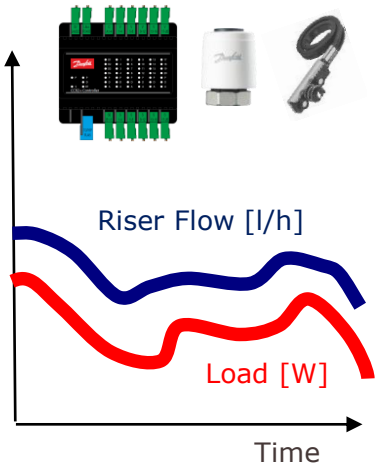
Conventional balancing
MBV




Automatic balancing
AB-QM




Return temperature control
AB-QTE (CCR3)




**AB-QTE keeps & optimize ΔT high by return temperature control. This results in:**

- At low load (night time, sunny weather) flow is reduced
- At high load (daytime, opened staircase doors) flow remains high



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# The solution

AB-QTE with „CCR3+" Controller  makes 1-pipe system adaptive to actual heat demand -> provides maximal energy savings

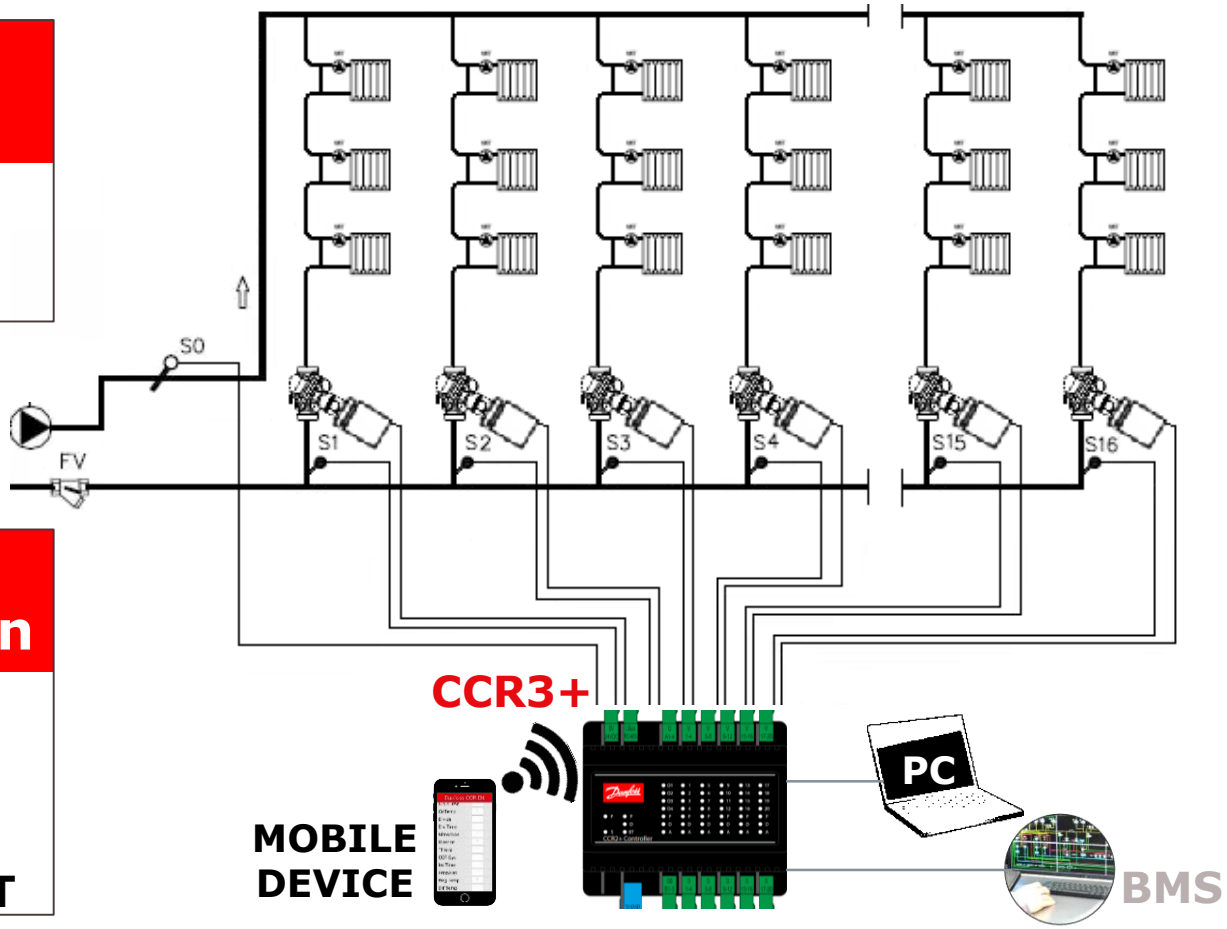
**AB-QM Balancing**

To real system provides **Design flow**

+

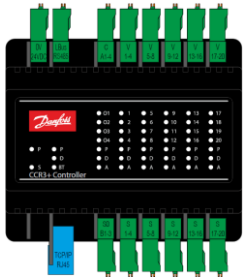
**AB-QTE Optimisation**

Matches real system with actual demand **Variable flow Lower return T**



# CCR3 vs CCR3+

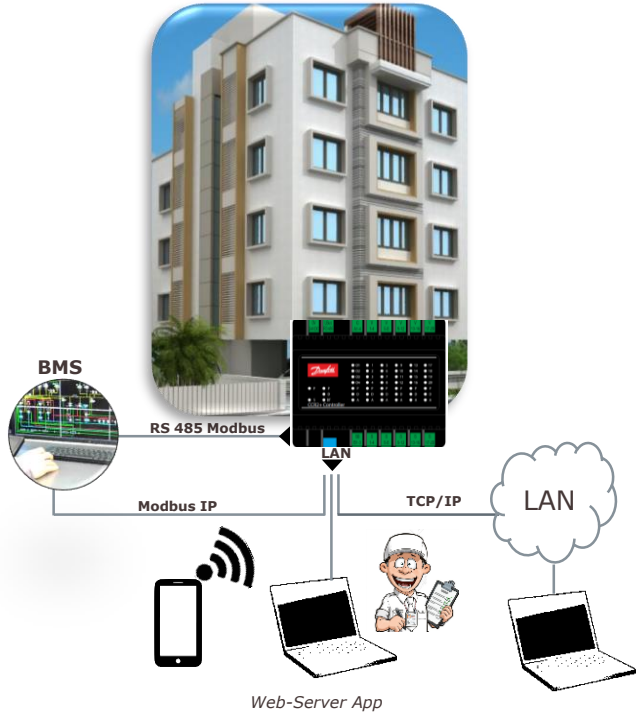

*vs*




| **Main specs:** | **CCR3** | **CCR3+** |
|---|---|---|
| Housing (DIN rail) dimensions (lenght) | 159mm | **-30%** (105mm) |
| Interface | **LCD display** | **PC/Mobile/Tablet** |
| Web server module with LAN (TCP/IP) port | X | ✓ |
| Wi-Fi | X | ✓ |
| Modbuss RS485 RTU | ✓ | ✓ |
| Modbus IP | X | ✓ |
| Nr. of inputs/outputs (risers) | 16 | **20** |
| System expansions | **with CCR2** | **with CCR+ Slave** |
| LED status indicator | X | ✓ |
| Firmware updates: | X | ✓ |
| Storage capacity | 2GB (external) | **8**GB (internal) |
| Power Supply Voltage | 24 V AC | 24 V **DC** |

# Connectivity & flexibility

- Integration/connectivity with BMS (RS485 or Digital Modbus) or another individual solutions
- Webserver access for remote setting/control
- System expansion (large buildings with many risers)
- Big memory capacity (historic data)
- System monitoring/optimizing
- Easy to extend / renovate system to CCR3
- Individual riser setting possible

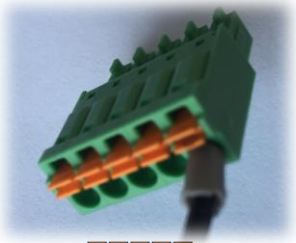


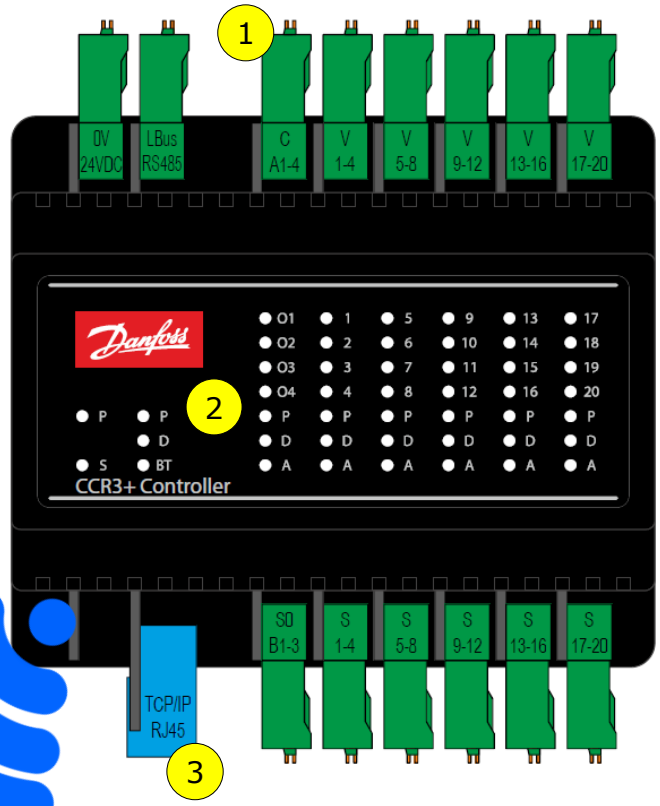
# Product

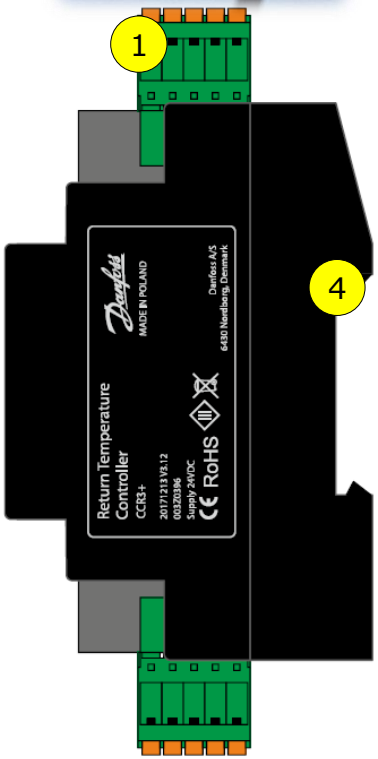
1. Quick Connectors
2. LED status indicators
3. LAN port
4. DIN Rail 35mm

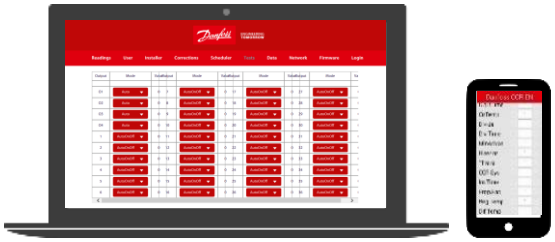
**INTERNAL (build in):**

- Wi-Fi module
- 8GB Internal memory



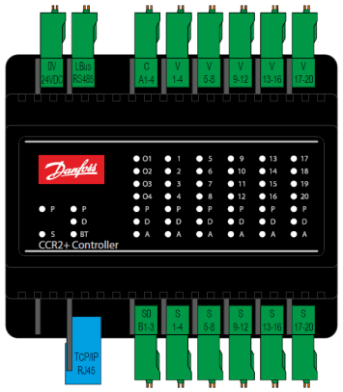


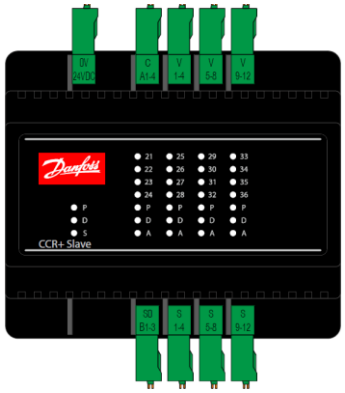



# System expansion with Slave Unit controller

- One CCR3+ Master can be use for 20 risers
- System can be aditional expend with Slave Unit (+16 risers)




CCR+ Master **20 i/o**




CCR+ Salve **16 i/o**

# New CCR+ Firmware (new user interface)

**Main benefits:**

- Ergonomy (TPC/IP web server app
- Compatibility with PC & mobile devices
- Build in tool for PT1000 sensor calibration calculator

A lot of new useful features:

datalogs, setting change, monitoring, troubleshooting, tests

ONLINE demonstration



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