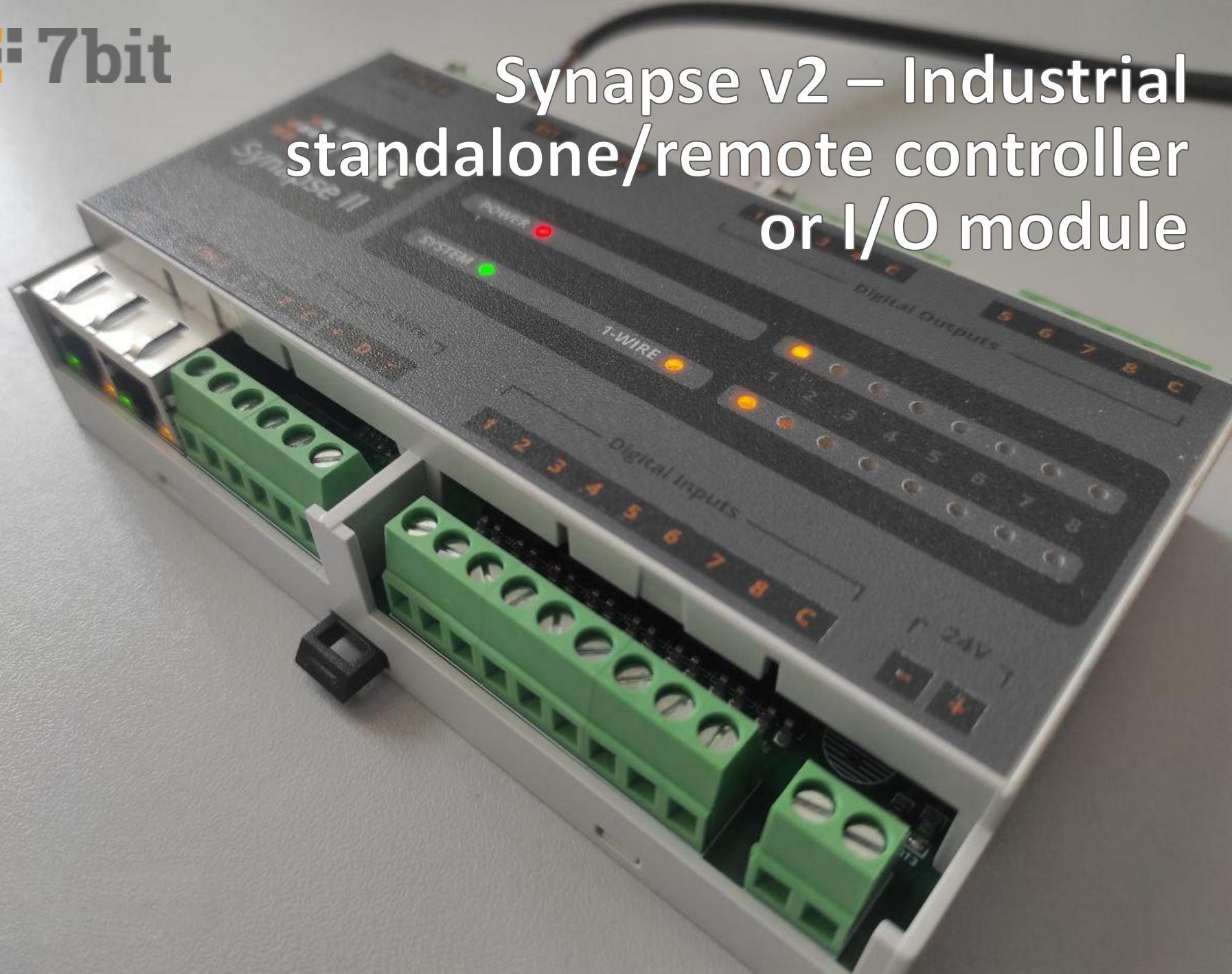


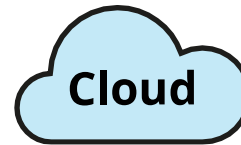


Synapse v2 – Industrial standalone/remote controller or I/O module

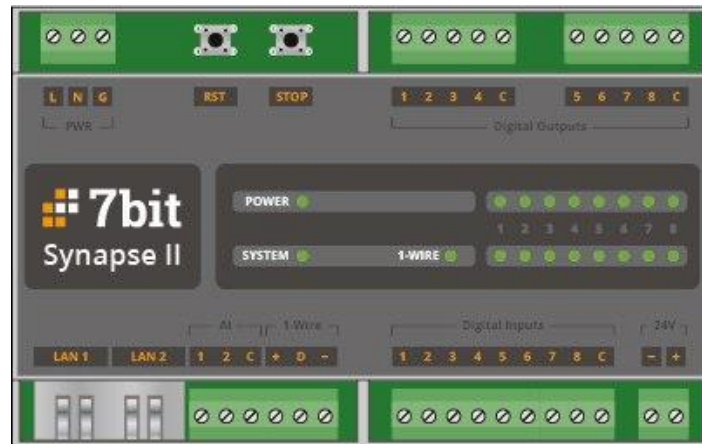


Synapse v2 -Overview

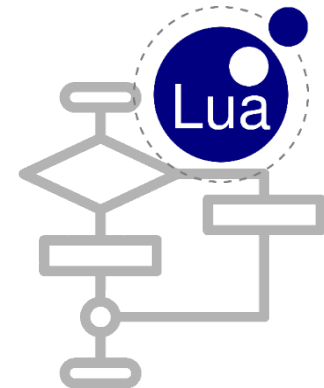
Communication



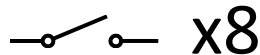
Web interface



Embedded control

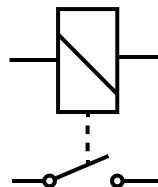


Digital inputs



x8

Relays



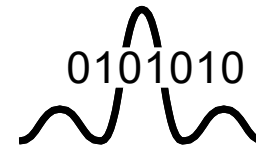
x8

Temperatures

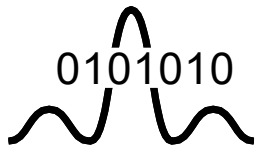


x32

Analog inputs



x2



Analog inputs



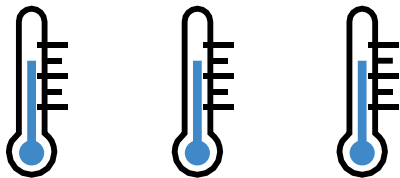
- 2 inputs of 4 .. 20 ma
- Suits for pressure, level, temperature gauges and others



Multi-channel temperature measurements



- 1 digital sensor cost = 1\$ ideal for multi channel temperature measurement
- Almost any 3-wire cable is Ok for the bus, the segment length – up to **200 meters**

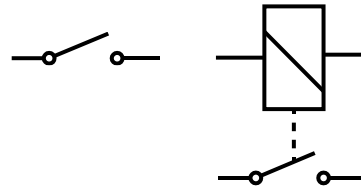
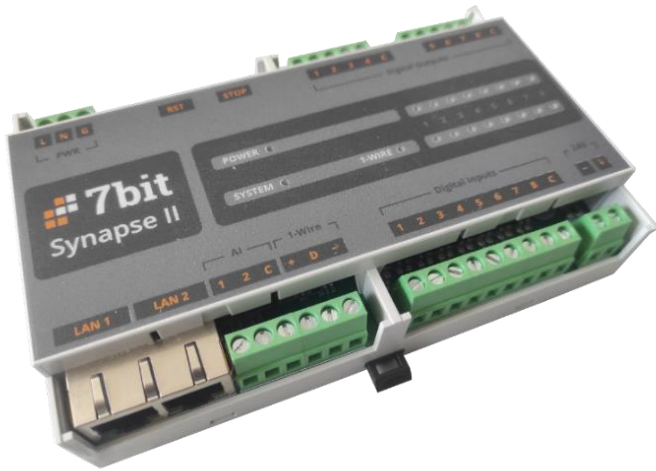


1 ... 32

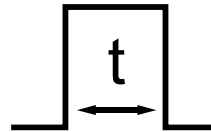
-40 + 85°C



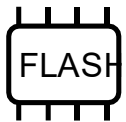
Running hours meters



Switch counters for inputs & outputs



State duration meters for inputs & outputs



Non-volatile

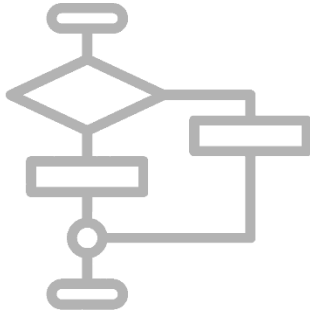


Digital filter for DI

Control functions



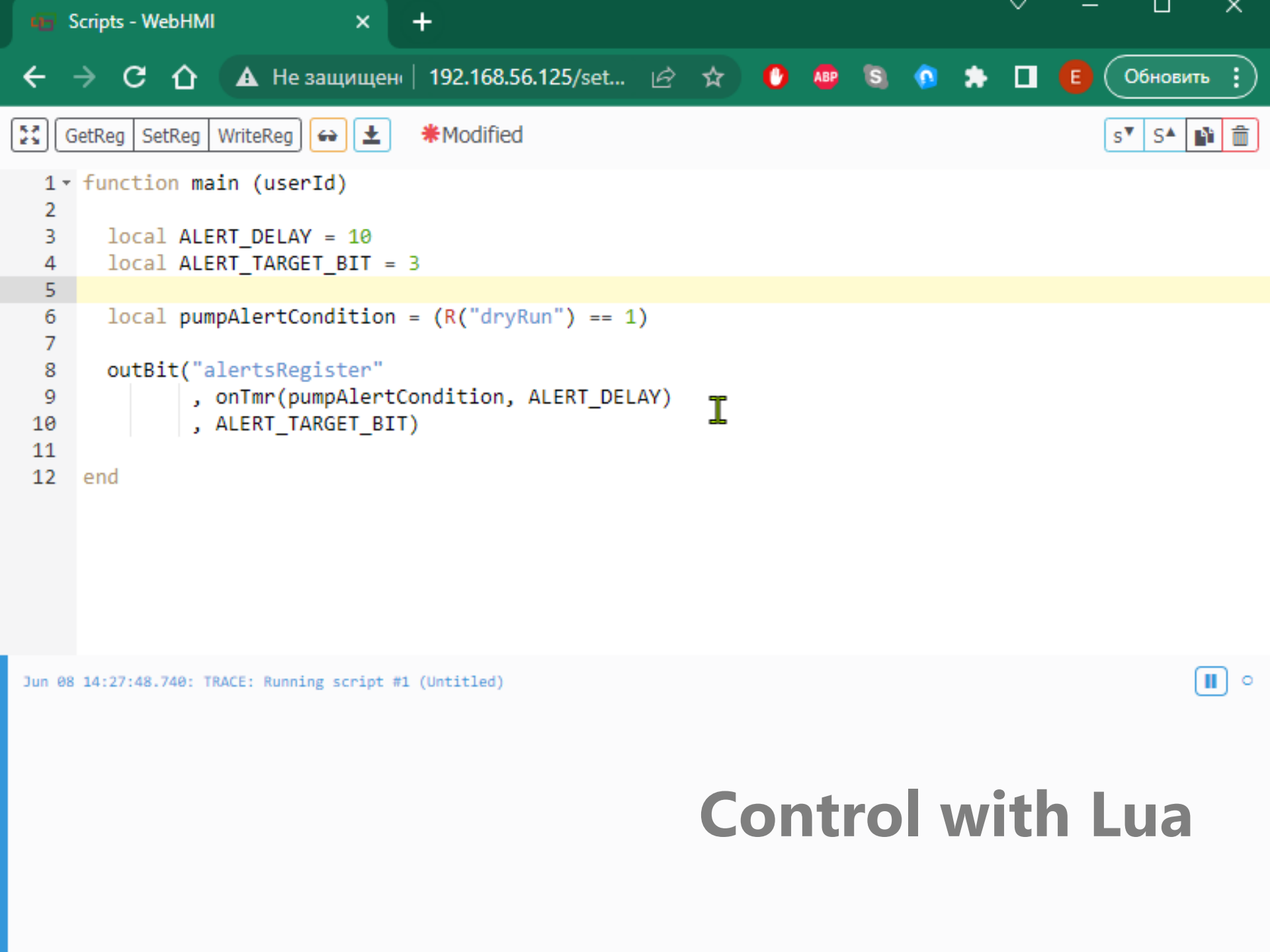
Lua – high level programming language similar to C, Pascal, JavaScript



Allows for implementation of common sequential algorithms and quite complex control, not easy for PLC



Coding & debug is done right from browser



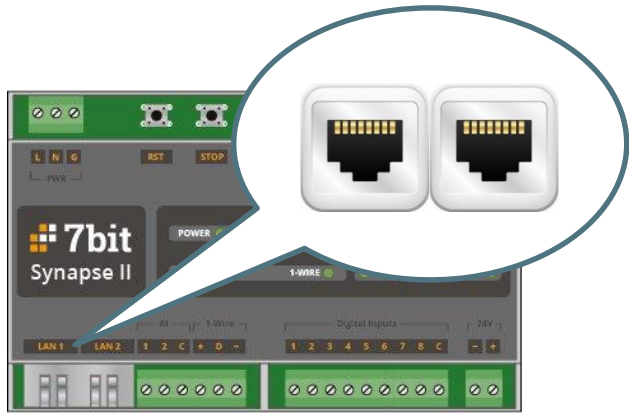
GetReg SetReg WriteReg Modified

```
1 function main (userId)
2
3   local ALERT_DELAY = 10
4   local ALERT_TARGET_BIT = 3
5
6   local pumpAlertCondition = (R("dryRun") == 1)
7
8   outBit("alertsRegister"
9         , onTmr(pumpAlertCondition, ALERT_DELAY)
10        , ALERT_TARGET_BIT)
11
12 end
```

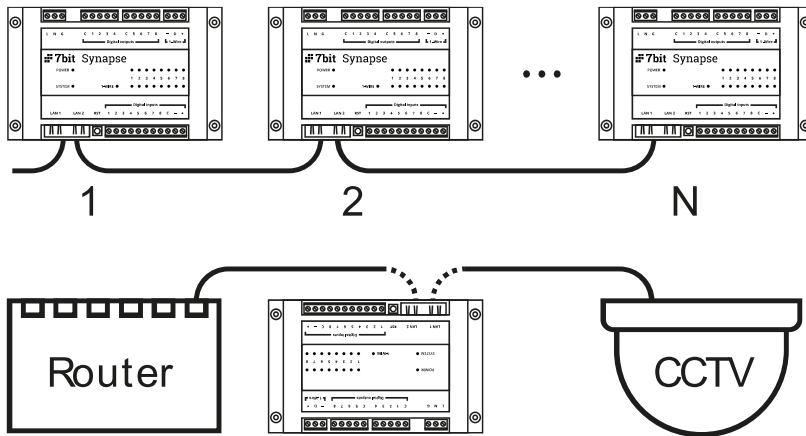
Jun 08 14:27:48.740: TRACE: Running script #1 (Untitled)

Control with Lua

Flexible networking



- Expansion w/o Ethernet switch
- Free port in the end
- Insertion into existing network

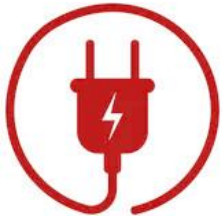


OR

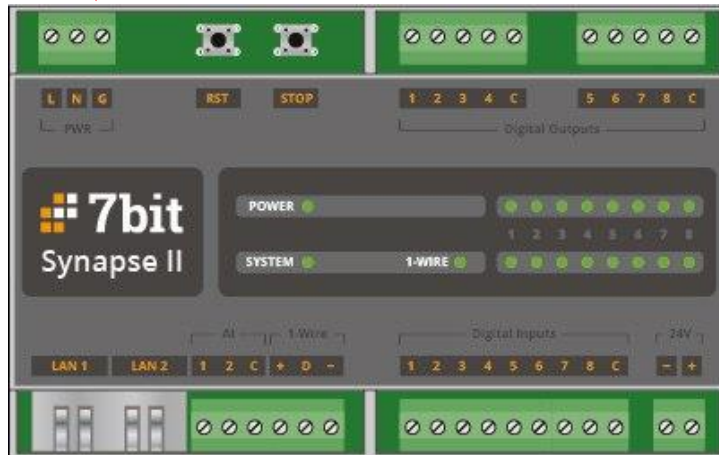


Flexible powering

Option 1



~220 Vac



- Option 1 for simple applications
- Option 2 for best EMC

Option 2



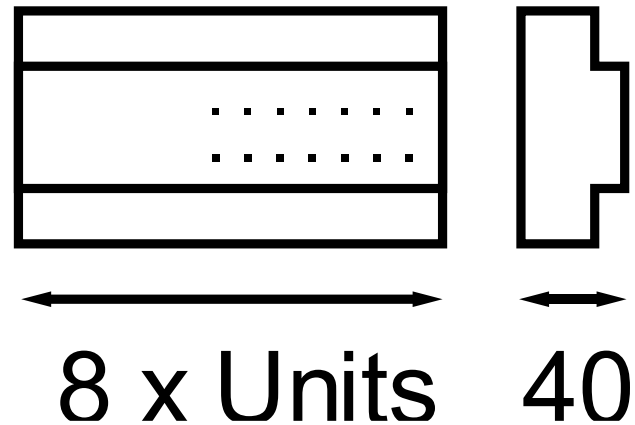
24Vdc

Supplies 24V when fed from 220Vac

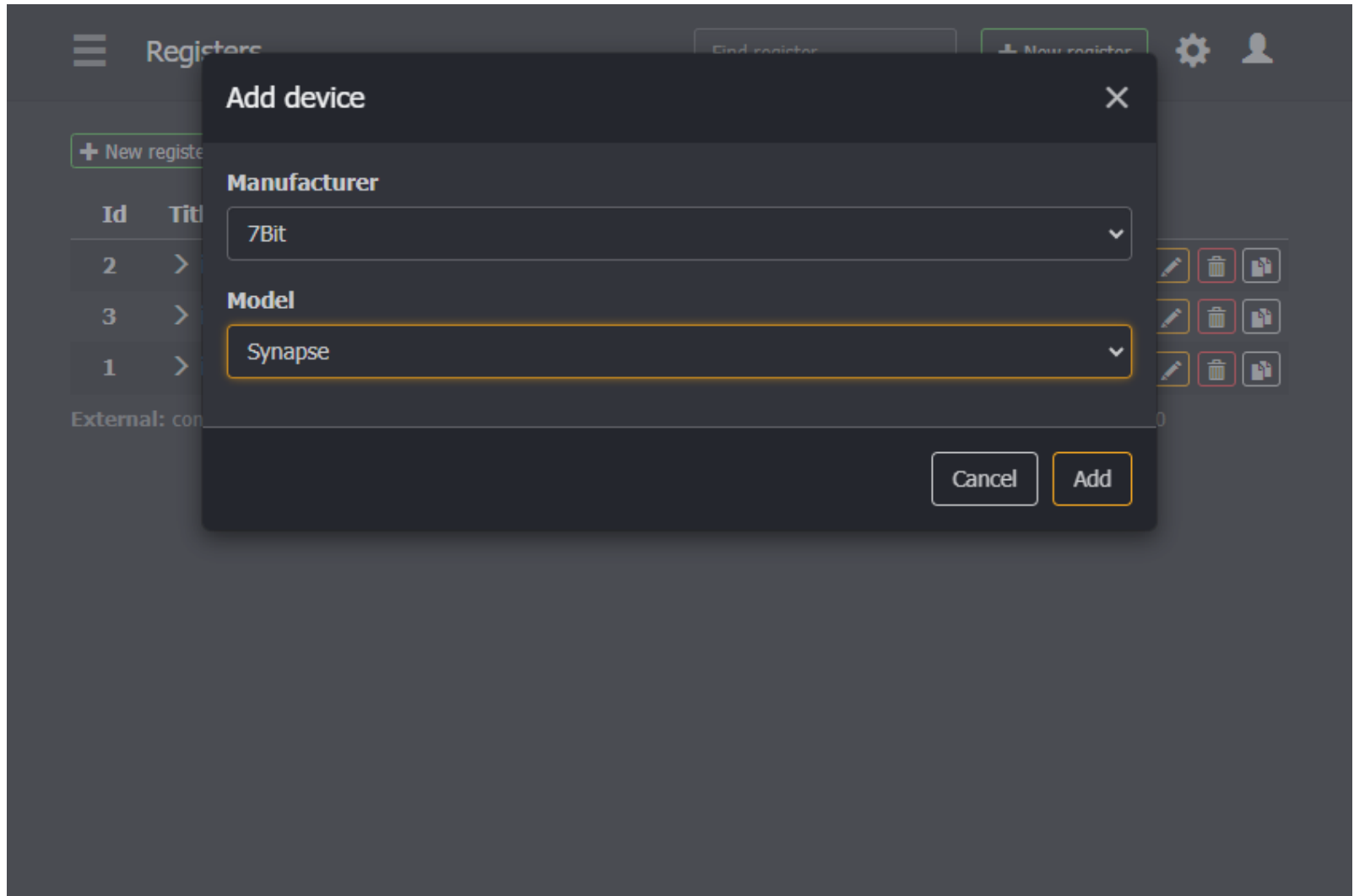
Fits in slim distribution boxes



Slim Design



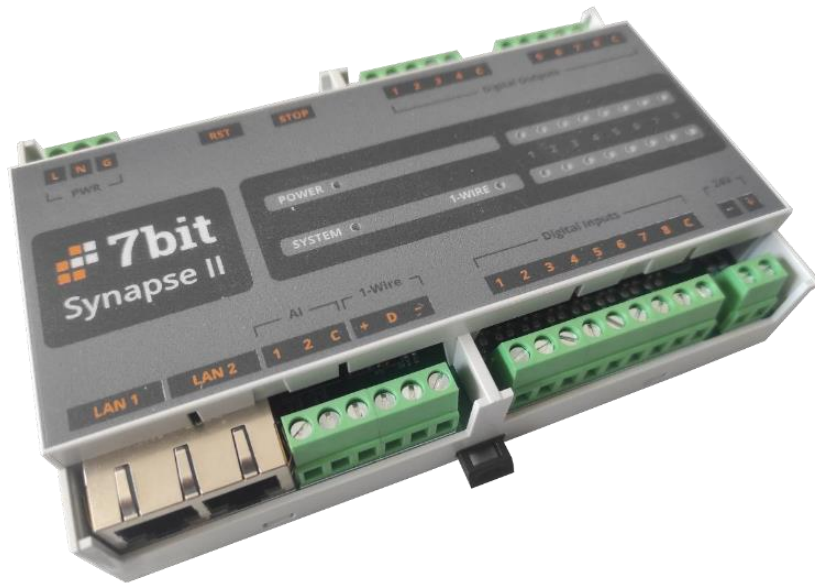
Easy config templates for WebHMI & Level2





Application examples

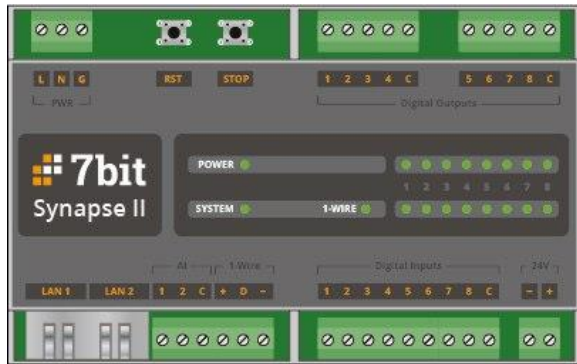
Heating application



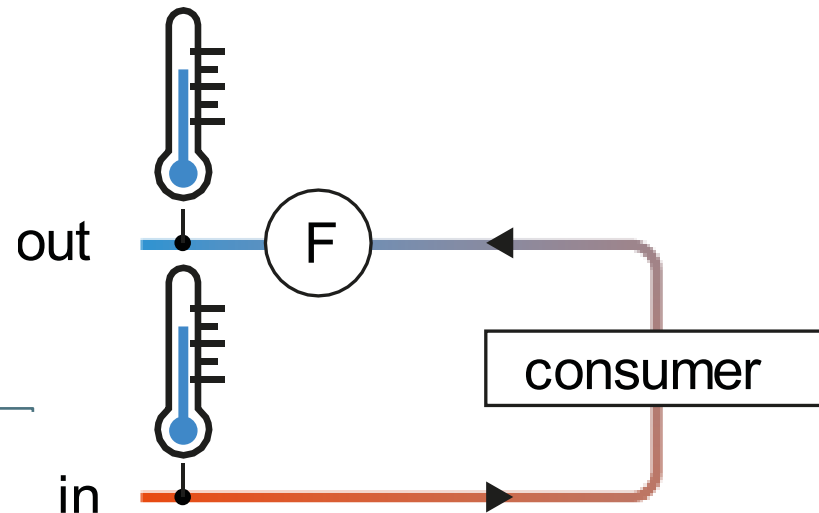
- Pressure & multiple temperature measurements (forward, return, far end, heat exchangers etc.)
- Pump control
- Heat energy metering (fwt + ret + pulse for quantity)
- Electricity metering (pulse input)
- Faults detection
- Valve control



Technological heat metering



$$\Delta Q = mc\Delta T$$

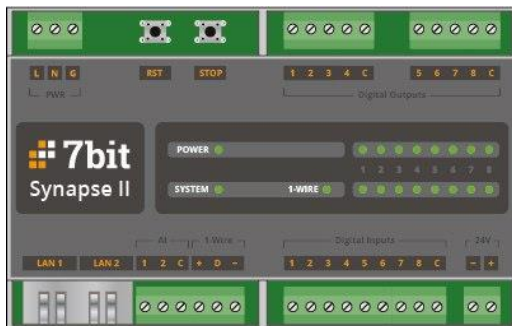
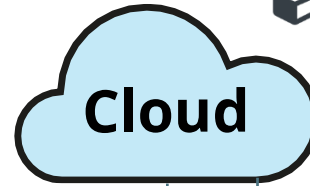


Heating



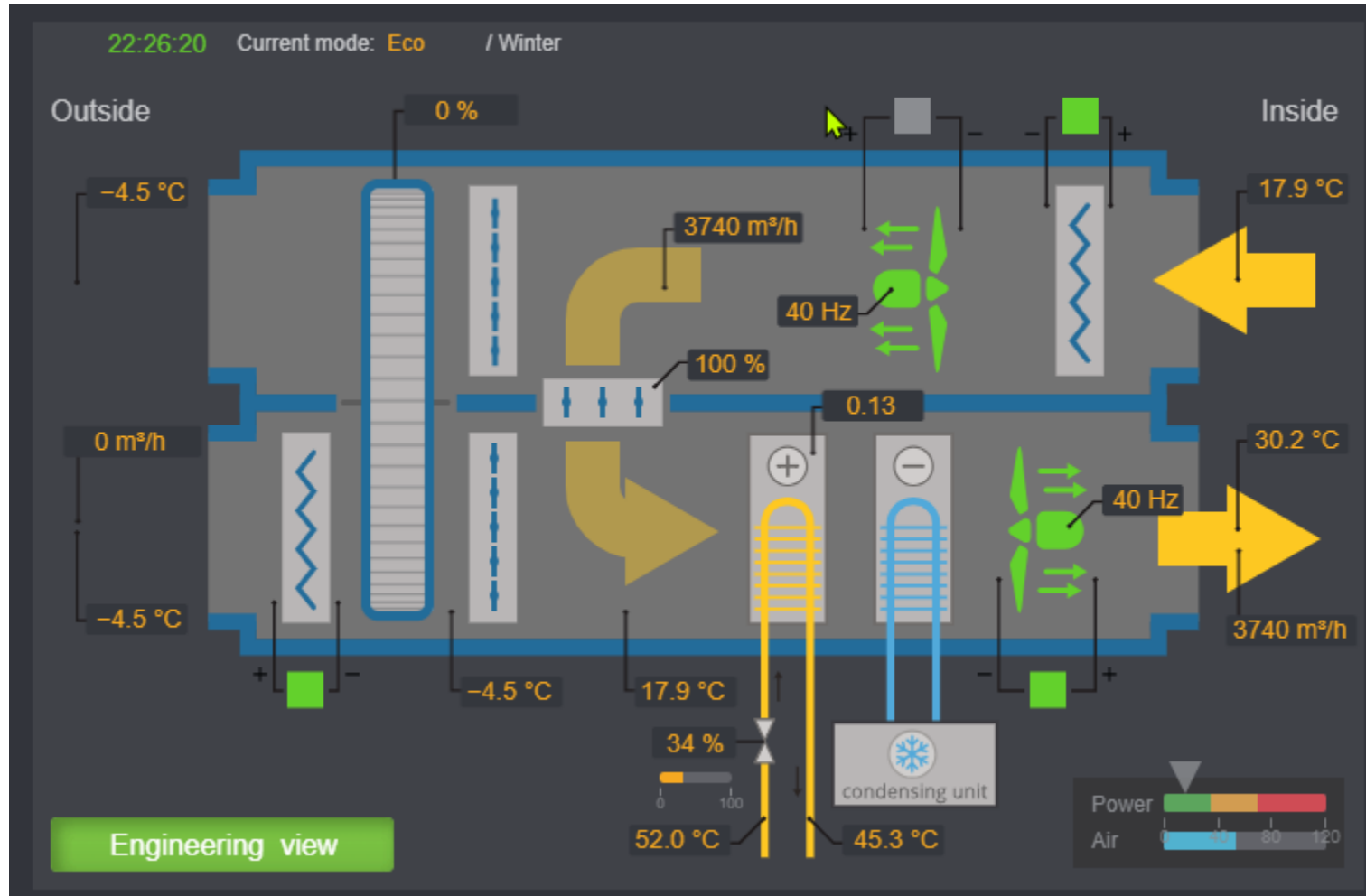
Distributed IoT applications

 Level 2



...

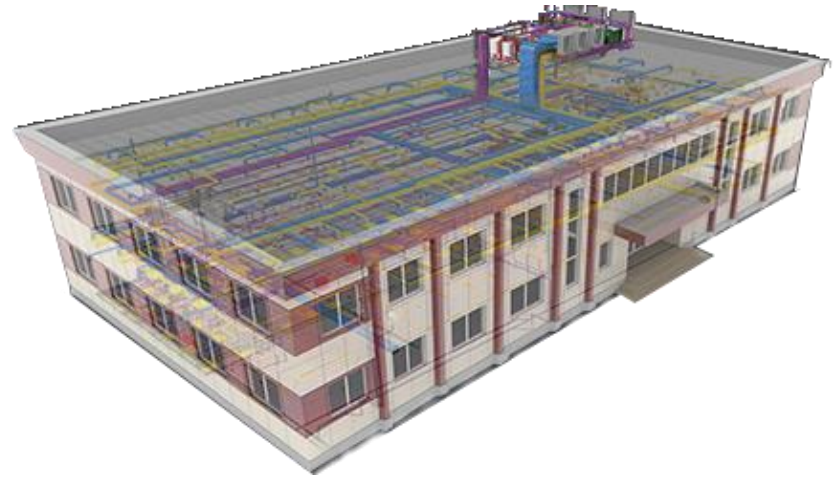
Control for small units and machines, e.g. vent units



Other applications



Greenhouses

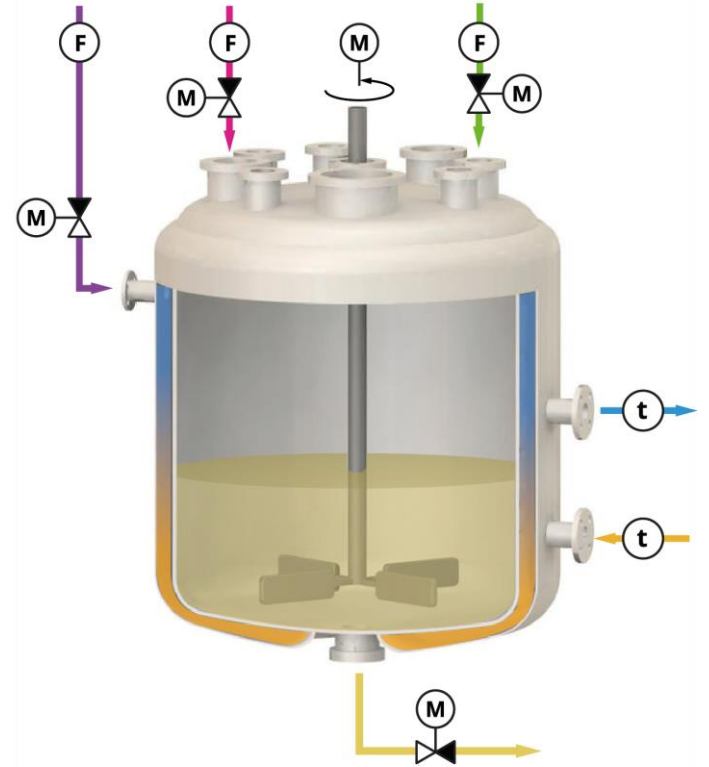


Building automation

Other applications



Machines & FA



Process control