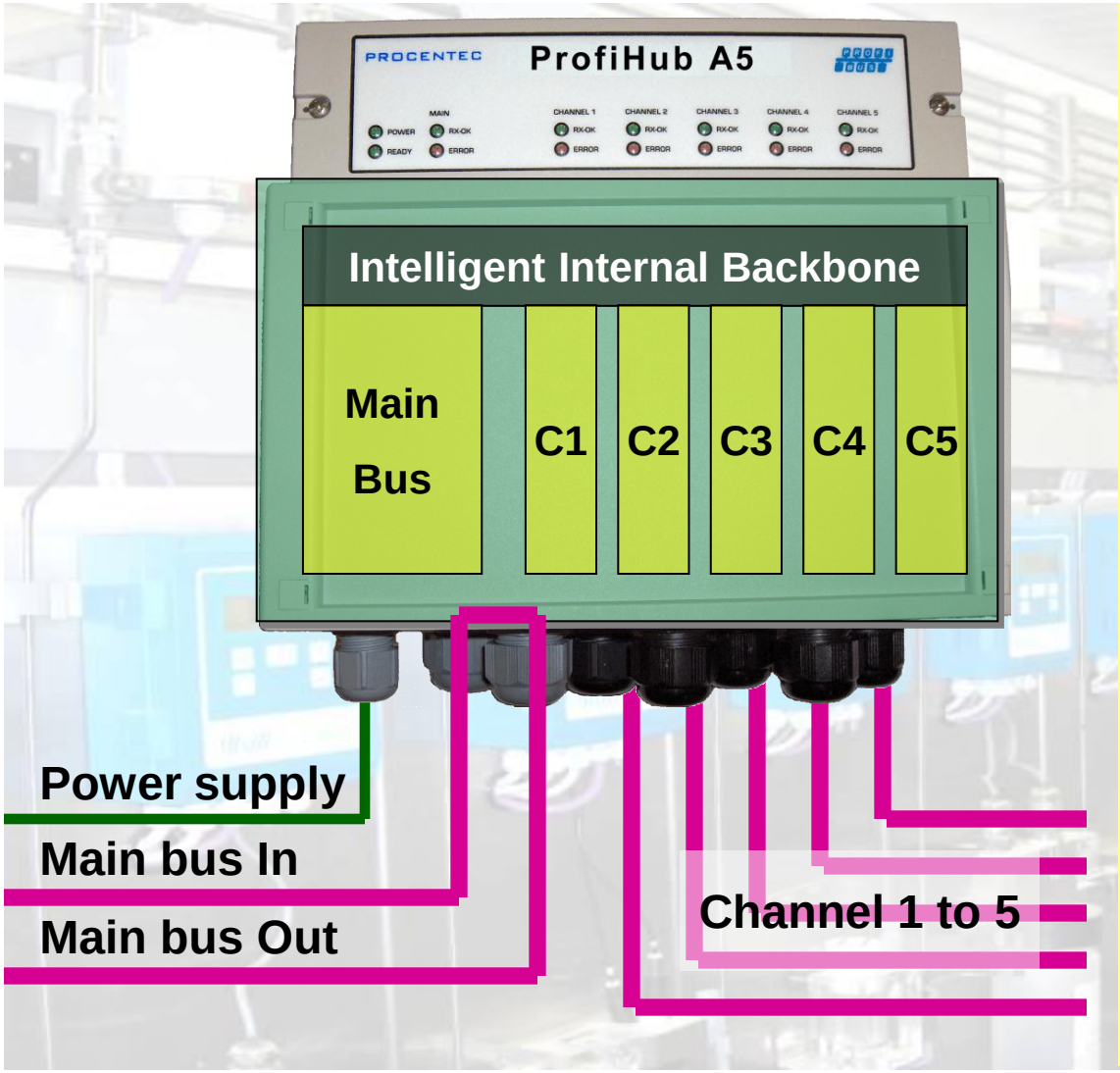
# ProfiHub A5

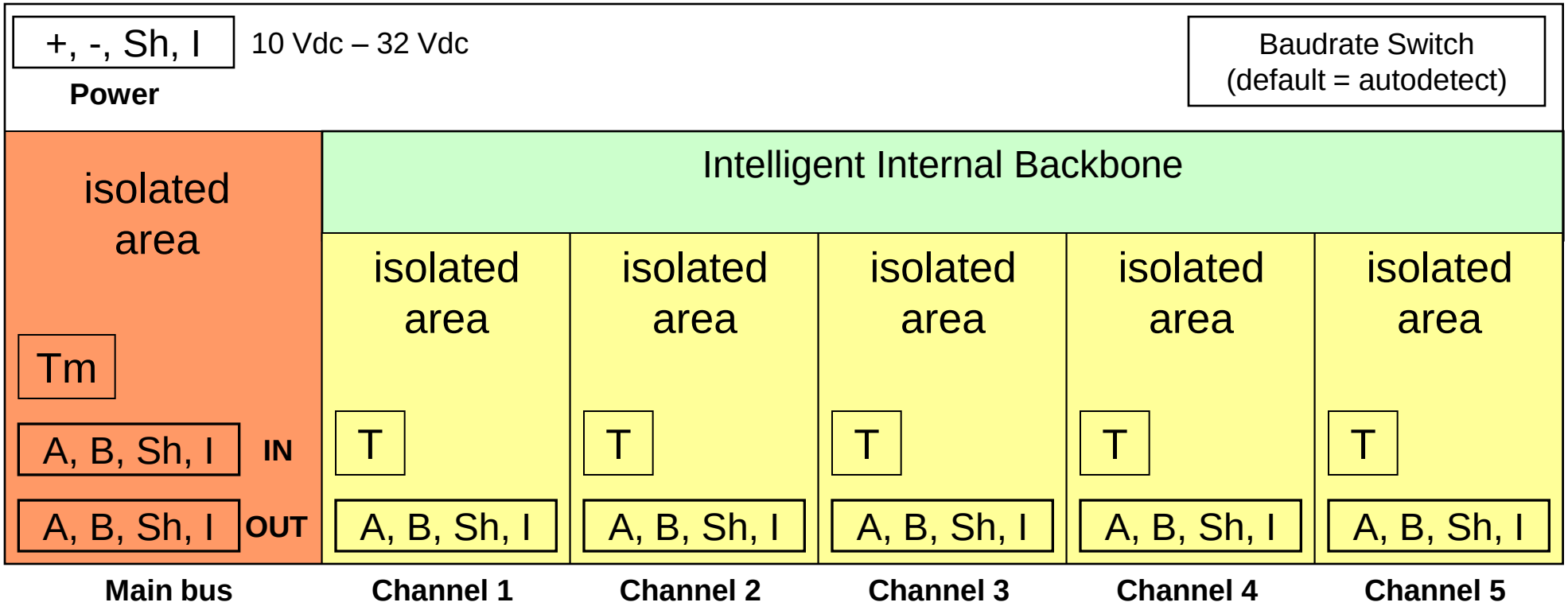
## 5 Channel DP Spur Repeater

# ProfiHub Structure (1)




- The PROFIBUS protocol is completely **transparent** to/from all the channels and the Main bus. This means the ProfiHub does **NOT require an address!**
- Every channel, including the Main bus, is **galvanically isolated**.
- Every channel, including the Main bus, can handle a **maximum of 31 devices** (bus loads).
- **Termination is integrated** and switchable for every channel and Main bus.
- Main Bus-In and -Out are physically connected.

# ProfiHub Structure (2)

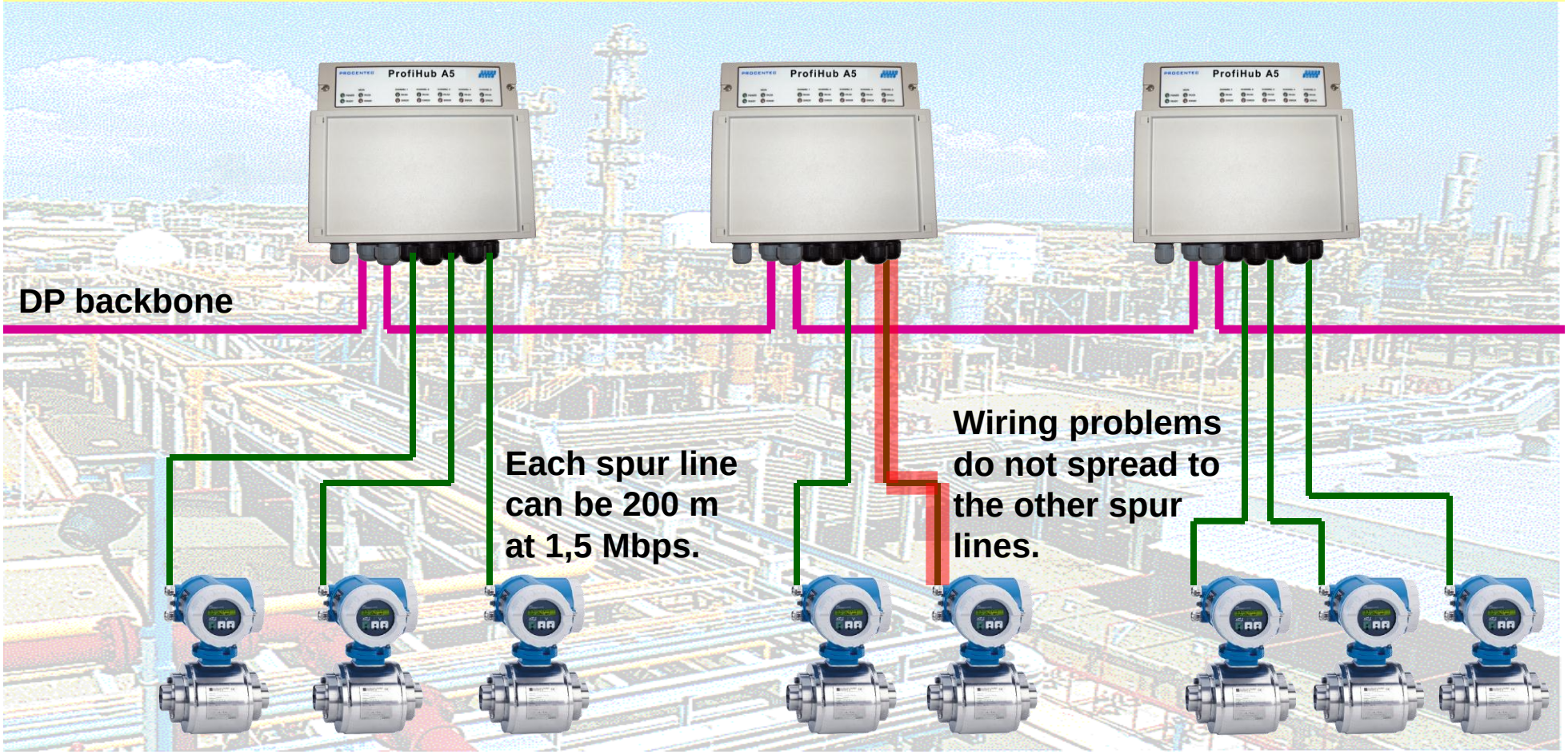



A, B = PROFIBUS DP
Sh = Direct grounding
I = Capacitive grounding

T = Termination (default = ON)
Tm = Termination (default = OFF)

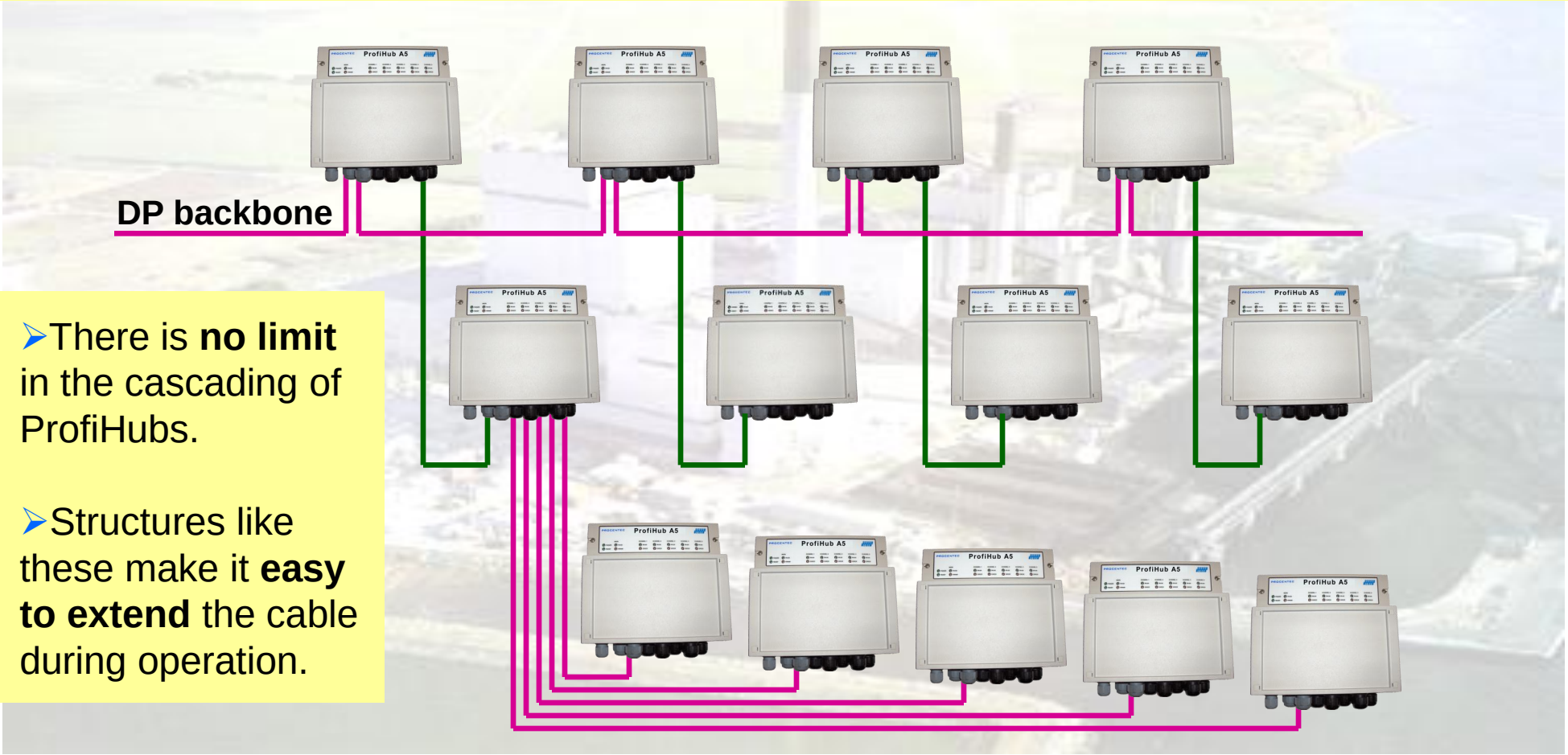
# Application 1 – ‘Dynamic Spur Lines’

***Long spur lines to instruments and the possibility to remove/insert them during operation. Short circuit protection on each spur line is automatically provided.***



# Application 2 – 'Star and Tree Networks'

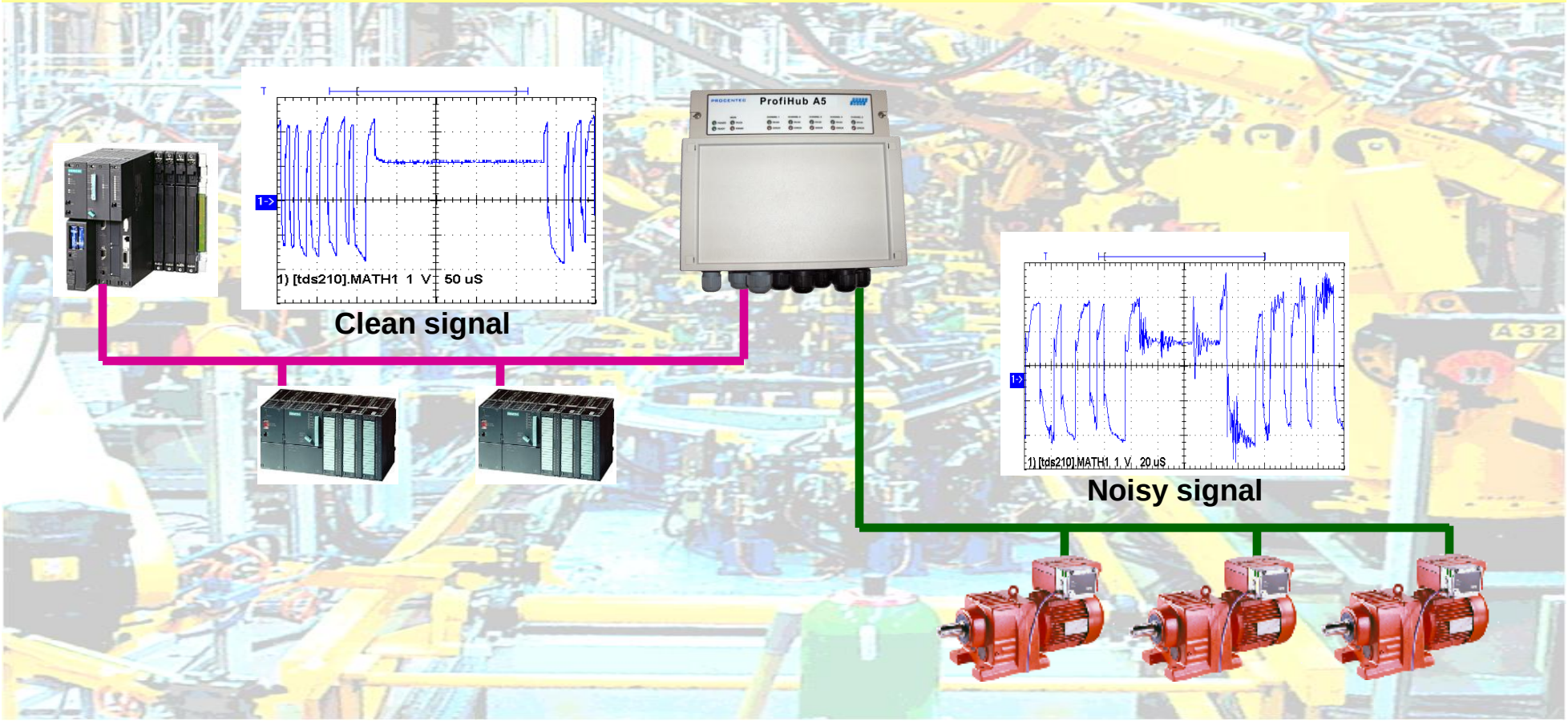
***Large networks with star and tree structures. This can be a combination between inside and outside applications or dirty/dusty environments.***




- There is **no limit** in the cascading of ProfiHubs.
- Structures like these make it **easy to extend** the cable during operation.

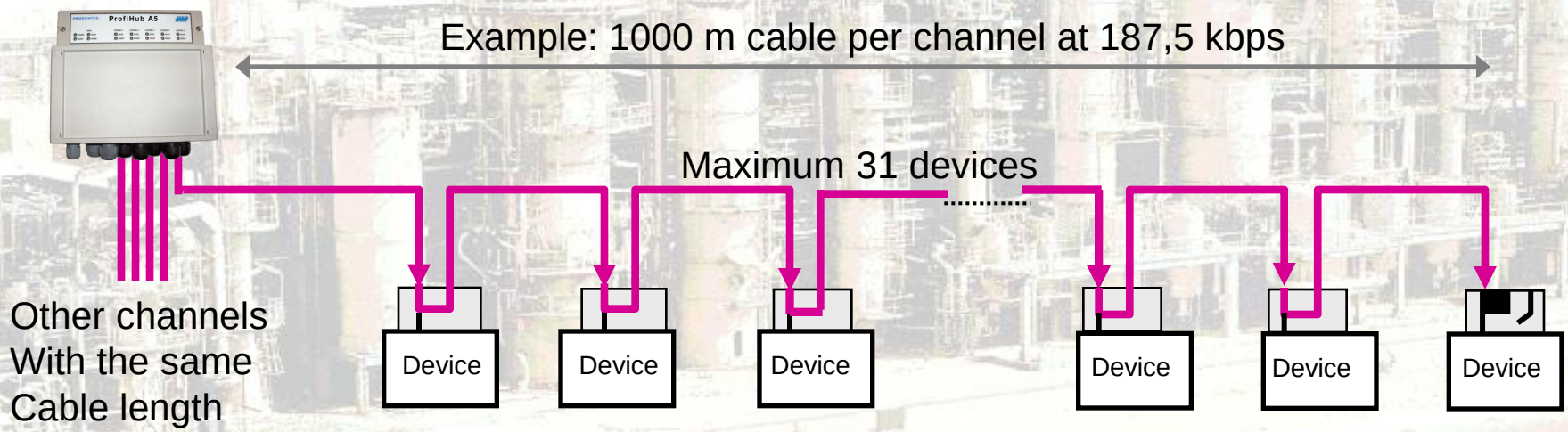
# Application 3 – ‘Barrier for non certified or EMC sensitive devices’

***Because of the isolation and intelligence the ProfiHub provides, it can be used as a barrier for electrical sensitive segments. This keeps the backbone and other channels clean.***



# Advanced bus interface – Cable length

| Baudrate (kbit/s) | 9.6 | 19.2 | 45.45 | 93.75 | 187.5 | 500 | 1500 | 3000 | 6000 | 12000 |
|---|---|---|---|---|---|---|---|---|---|---|
| Segment length (m) | 1200 | 1200 | 1200 | 1200 | 1000 | 400 | 200 | 100 | 100 | 100 |
| Segment length (feet) | 3940 | 3940 | 3940 | 3940 | 3280 | 1310 | 656 | 328 | 328 | 328 |



# Advanced bus interface – Recommended cable specifications

We recommend to use PROFIBUS cable that complies with the following specifications:

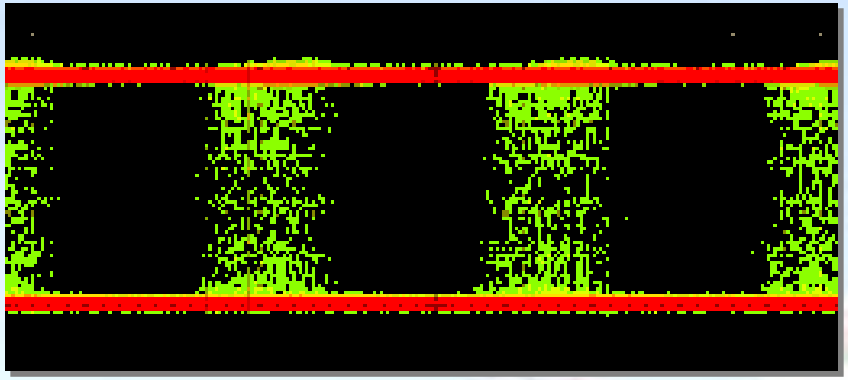
| Parameter | Value |
|---|---|
| Wires | 2 (twisted) |
| Impedance | 135 .. 165 Ohm at 3 to 20 MHz |
| Capacity | < 30 pF/m |
| Loop resistance | < 110 Ohm/km |
| Wire diameter | > 0.64 mm |
| Wire area | > 0.32 $mm^2$ |

<u>The lower the shielding resistance, the better the EMC quality.</u>

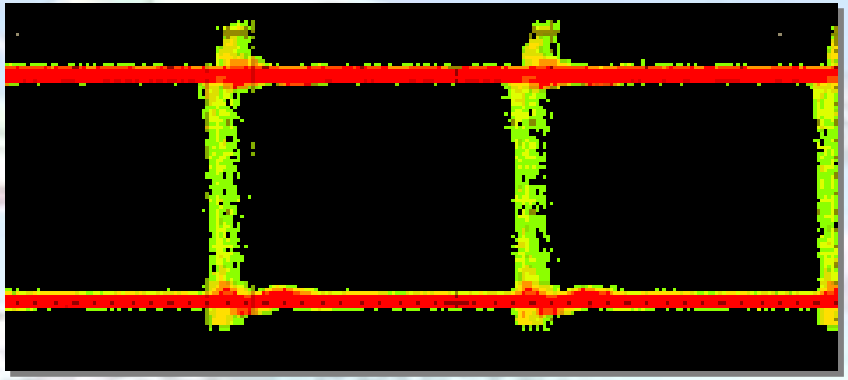
# Advanced bus interface – Capacity

**Lower bus capacity**

The bus capacity has been reduced to a maximum of 10 pF, versus the 15-25 pF of standard PROFIBUS equipment.



Rise- and Fall times with standard PROFIBUS



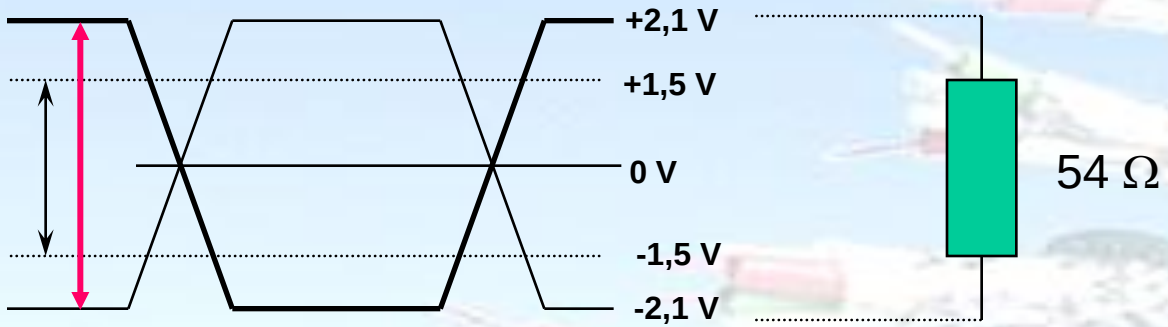
Rise- and Fall times with **ProfiHub**

Lower bus capacity makes the cabling more reliable and reduces reflections when cables wear off.

# Advanced bus interface – Signal amplitude

**Higher signal amplitude**

The minimal signal amplitude at a load of 54 Ohms has been **increased to 2,1 V** (with standard PROFIBUS this is 1,5 V).

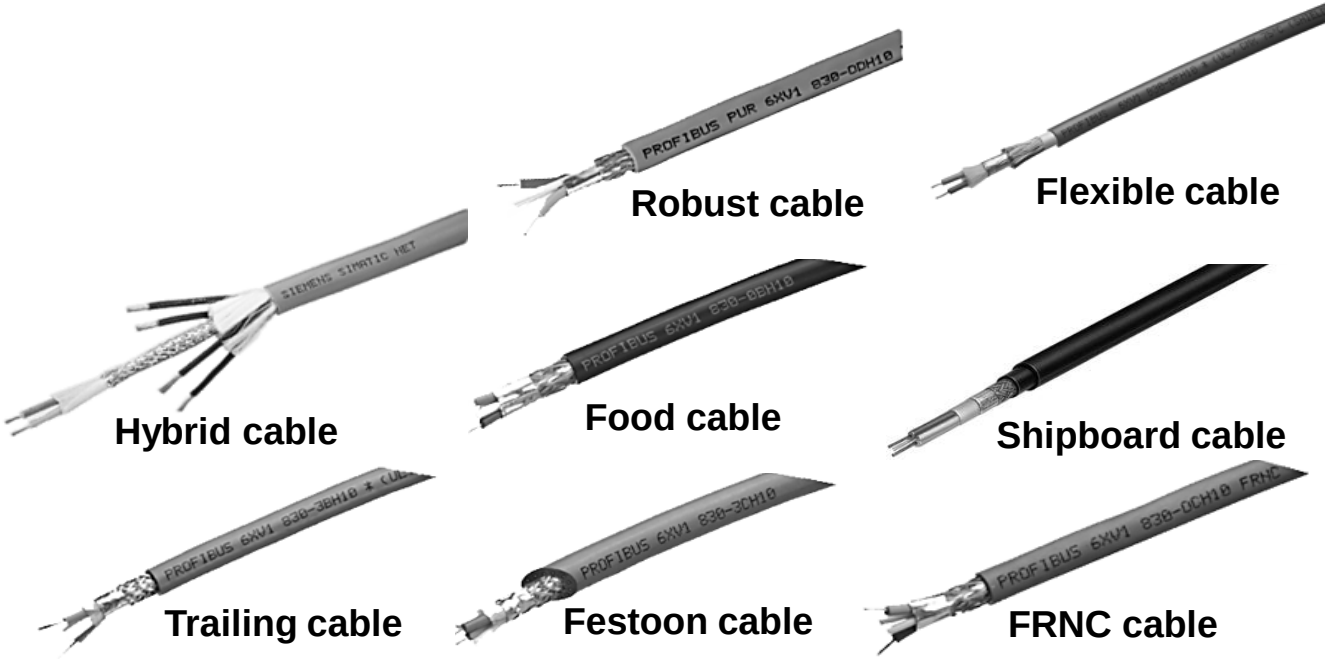



Higher amplitudes create a better behaviour at heavy bus loads.

# Advanced bus interface – Cable types

The ProfiHub accepts all PROFIBUS cables that are available for special areas (with a maximum diameter of 12 mm).

- Robust Cable
- Food Cable
- Underground Cable
- Trailing Cable
- Festoon Cable
- FRNC Cable
- Flexible Cable
- Shipboard Cable
- Hybrid Cable



# ProfiHub Features Summary

- ✓ 5 Galvanic isolated channels (repeater segments).
- ✓ Transparent for all PROFIBUS DP protocols.
- ✓ DP - RS 485 specifications for each channel.
- ✓ 9,6 Kbps to 12 Mbps (automatic detection).
- ✓ 31 devices per channel.
- ✓ 1.200 m spur line length.
- ✓ No limit in serial placement or cascading.
- ✓ No address is required.
- ✓ Integrated termination facilities (switches).
- ✓ Configurable grounding system.
- ✓ IP 65 classification (according to DIN 40 050).