
SPE Multidrop Enhancements Mixing Segment Considerations Trunk Connection

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Purpose

- Trunk connection LTspice model
- Utilize 802.3cg component measurements for LTspice model
 - 2 wire terminal
- 802.3da Applications – Trunk/drop cabling

LTspice Model - status

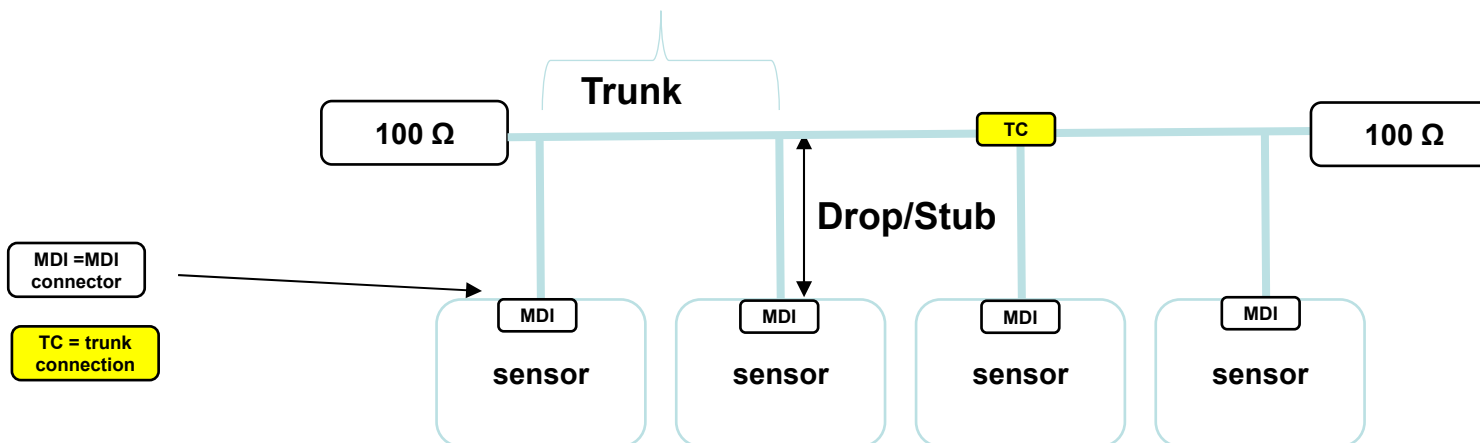
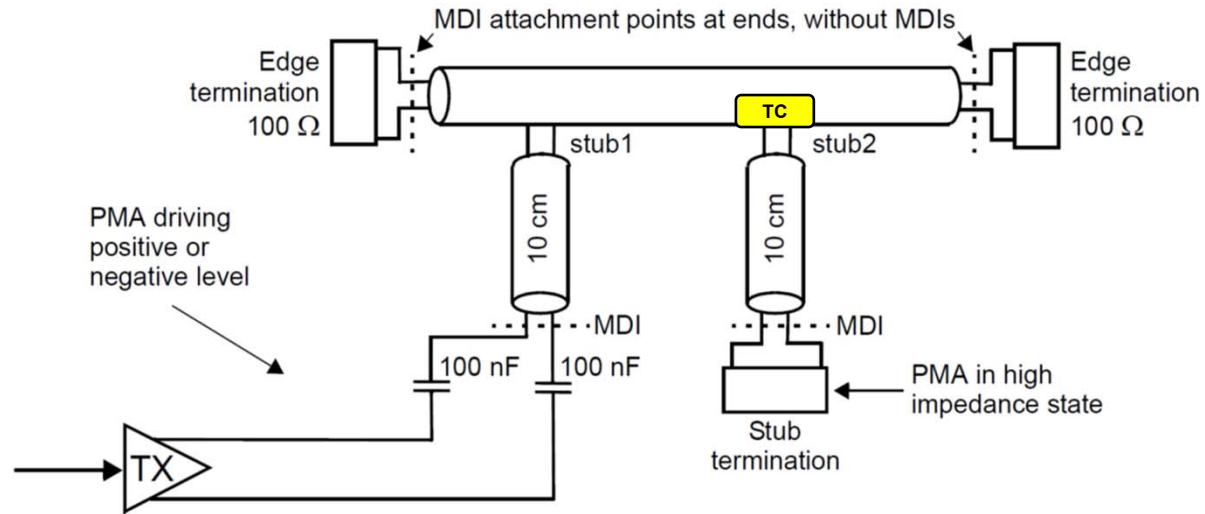
- Cable models – Trunk and Drop/Stubs
- TX/RX terminations with PoDL

-MDI impedance limit parameters			
Parameter name	Unit of measure	Minimum value	Maximum value
R	k Ω	10	—
L	μ H	80	—
C_{tot}	pF	—	180
C_{node}	pF	—	15

Source: IEEE Std 802.3cg™-2019

Trunk Connection

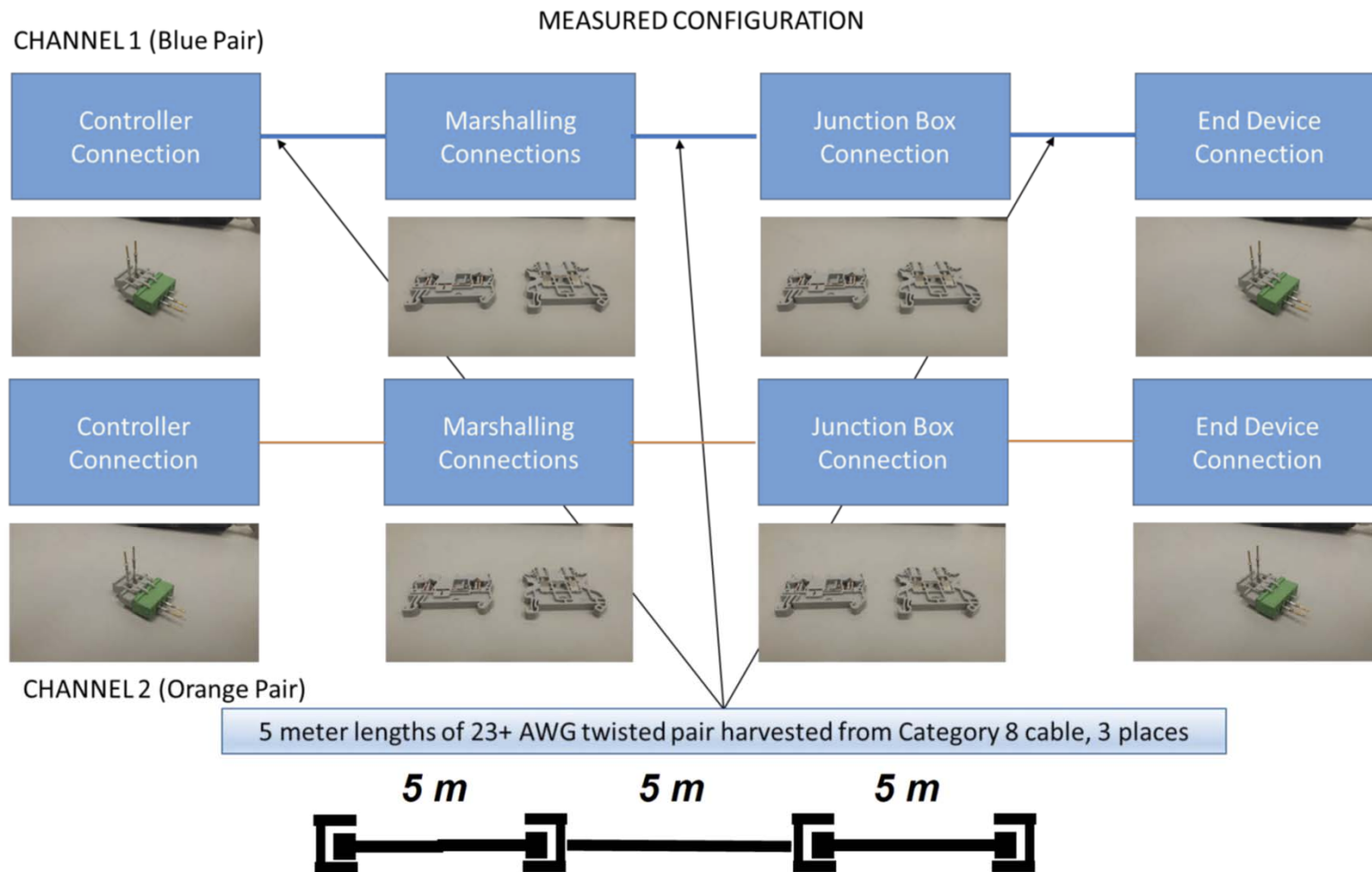
- 802.3cg does not specify trunk connection



802.3cg Link Segment Measurements

Link Segment Measurements

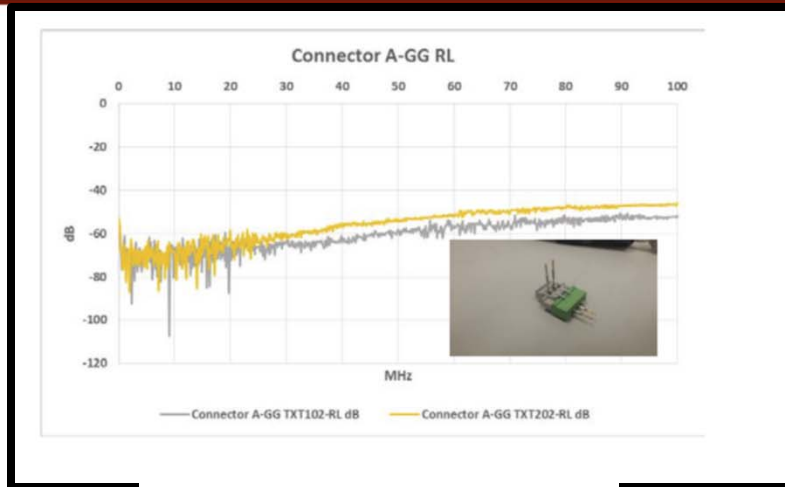
https://www.ieee802.org/3/10SPE/public/Nov2016/diminico_01b_1116.pdf



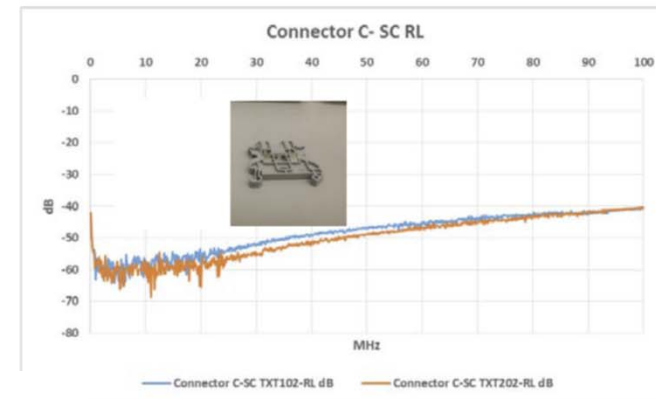
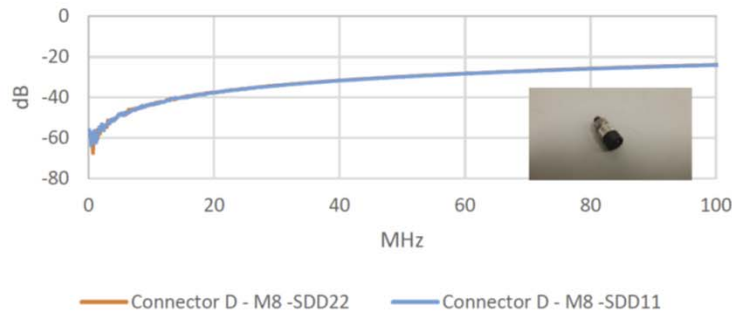
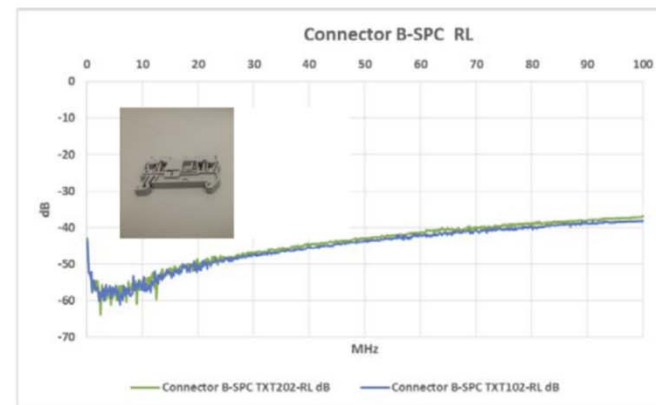
10 Mb/s SPMD Enhancement TG

Component Measurements

Connector Return Loss Measurements



2 wire terminal



Source:

https://www.ieee802.org/3/cg/public/Jan2017/diminico_01a_0117.pdf

IL < 0.02 dB

100 KHz ≤ f ≤ 20 MHz

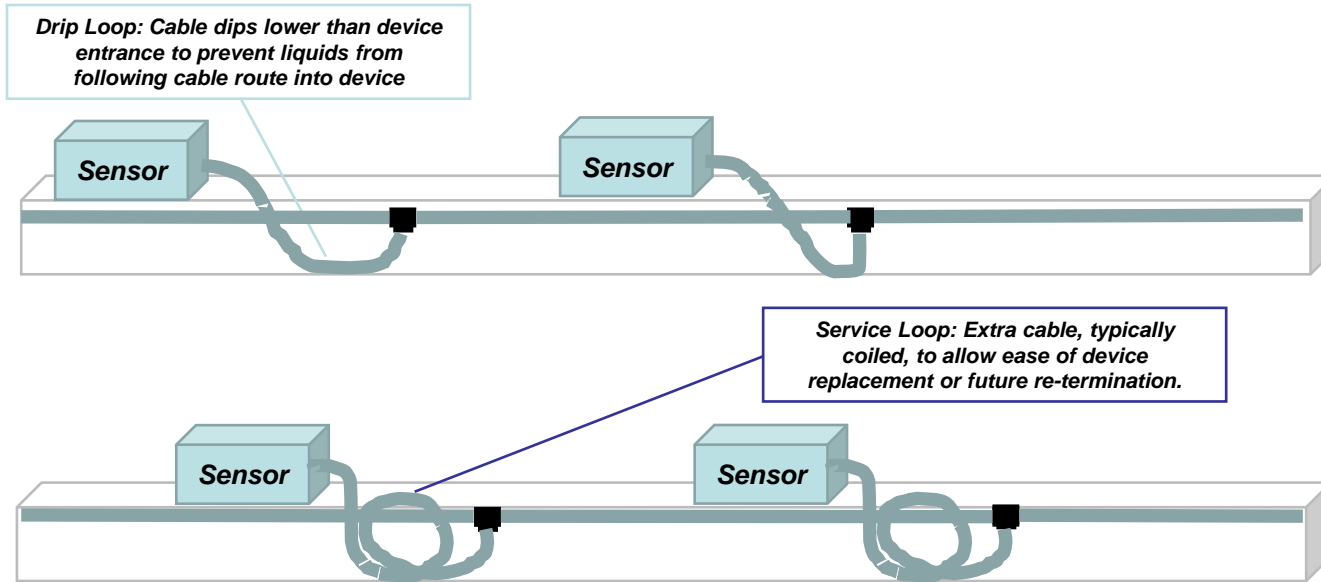
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Summary Models

- Trunk connection LTspice model
- Utilize 802.3cg component measurements for LTspice model
 - 2 wire terminal

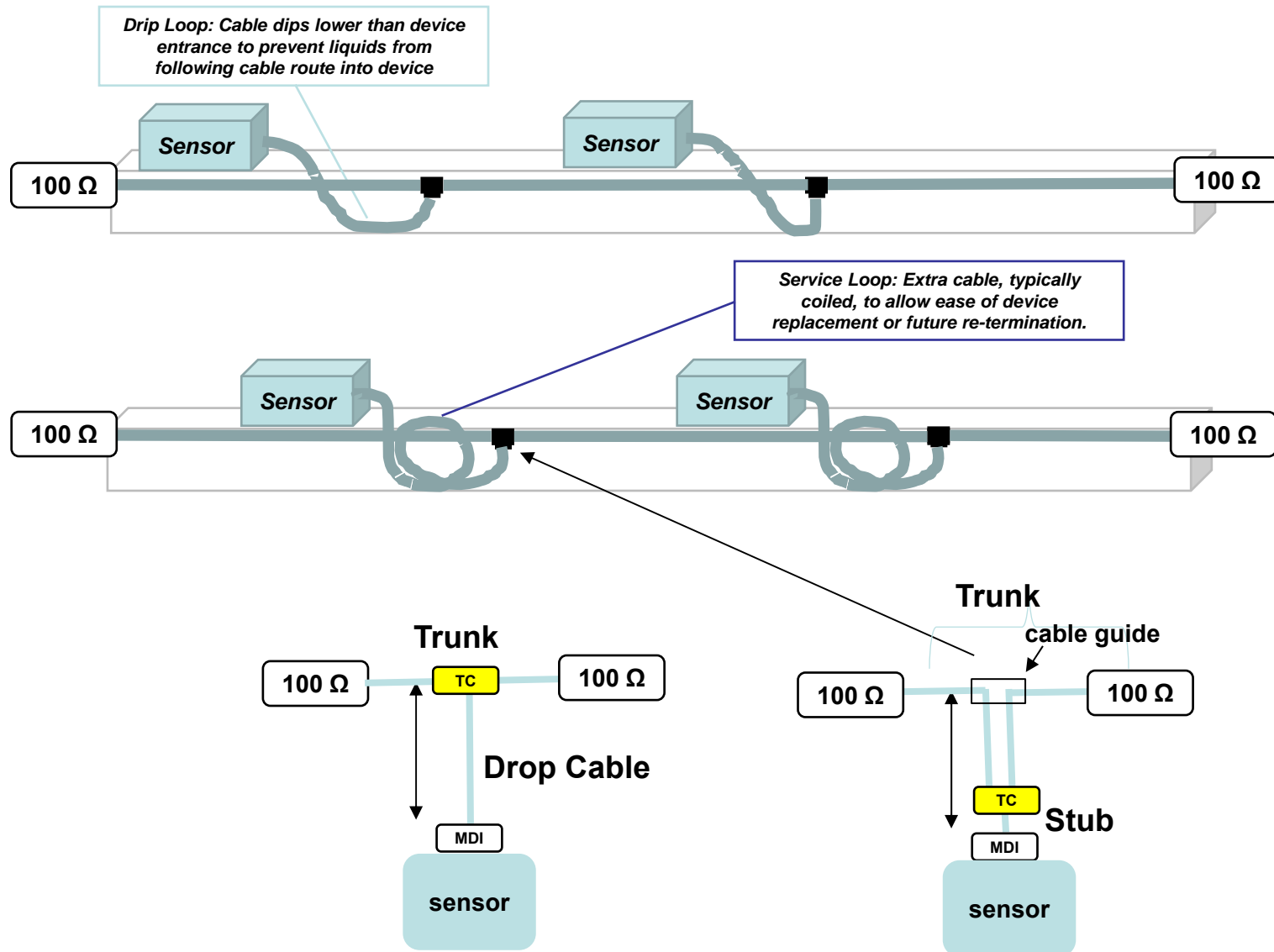
802.3da Applications

Drop Length/Mixing Segment Length



Spur Length (mm)	Application	Comments
100mm	Per 802.3cg	Very short for machine building practices
300mm (~12")	Fairly typical length for drip loop installations	Fairly commonplace in sensor applications
500mm (~20")	Service Loop applications	

Trunk Connections



10BASE2 Thinnet Tap

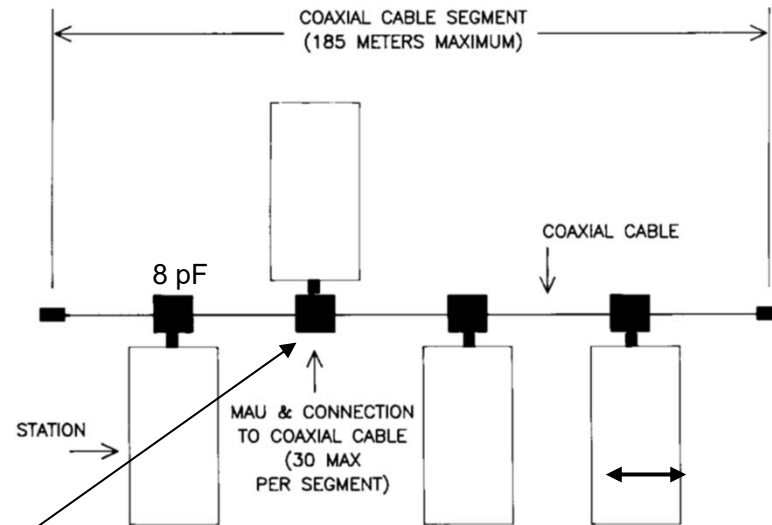
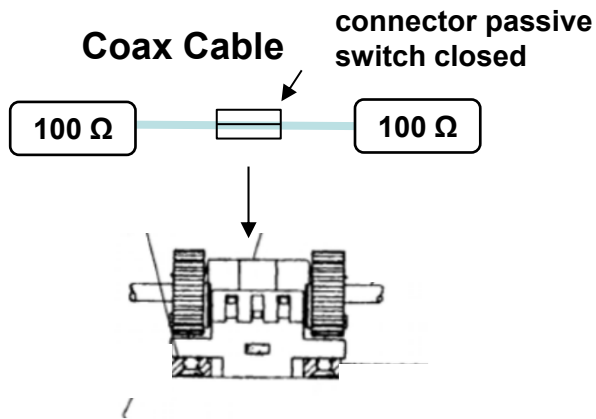
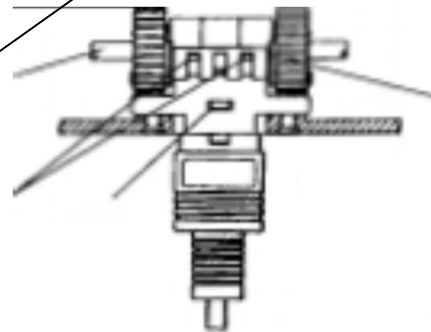
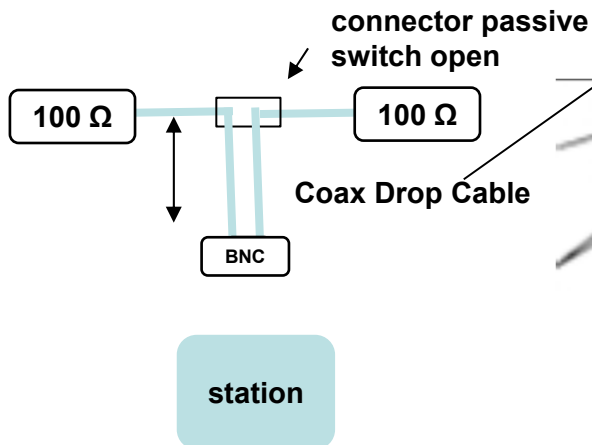
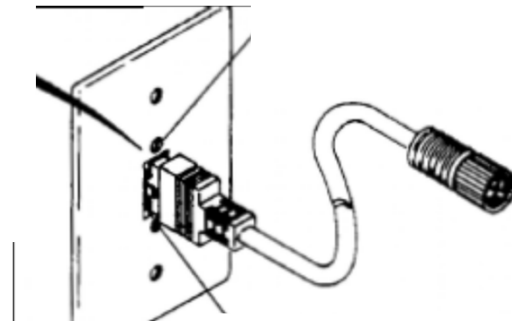


Figure 10-8—The minimum system configuration

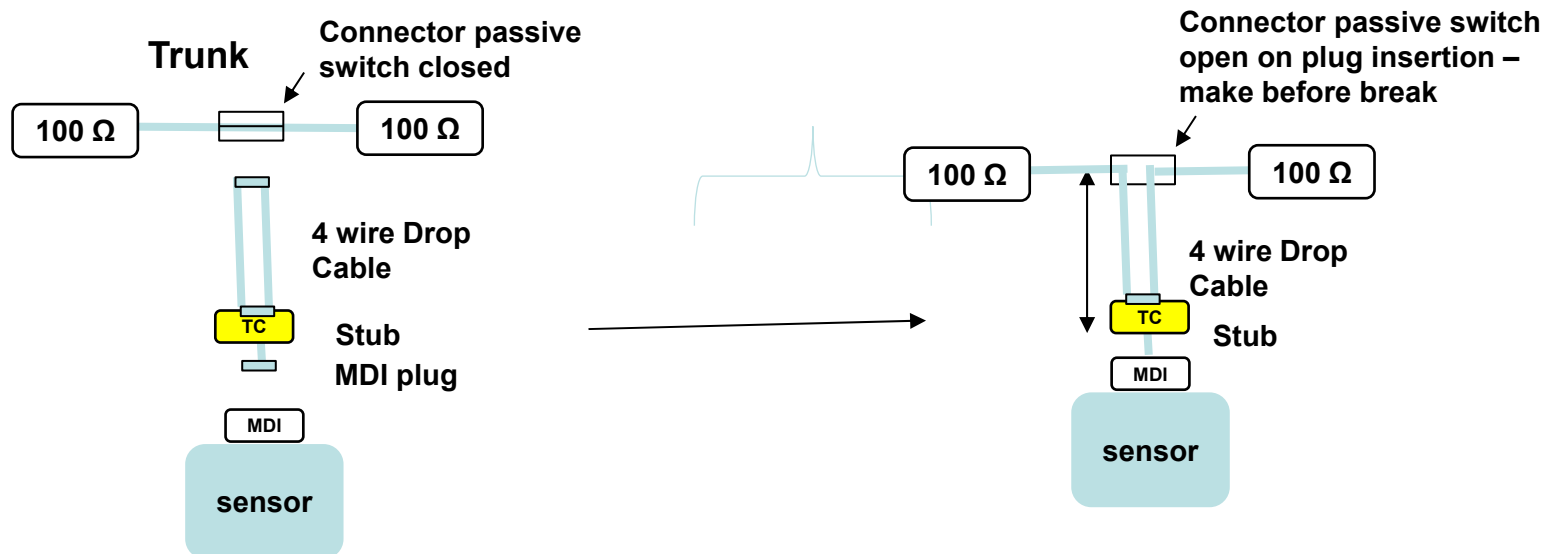
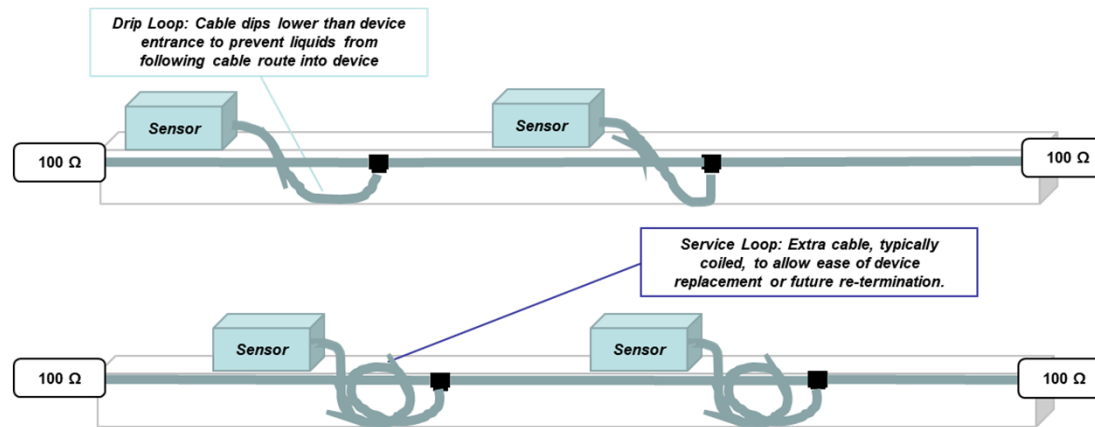


Cable plug inserted
- make before break



station

Trunk Connections



Trunk, attachment point, and trunk/drop cable can be specified independent of mixing segment enabling independent s-parameter measurements of mixing segment components.

Summary – Application Related

- Trunk connection definition needs to support recognized applications.
- TIA/ISO encouraged to develop supporting cabling specifications.
 - Trunk/drop cabling options
 - + Inline tap, Trunk cable guides
- IEC
 - MDI connector reference