
Control Drawing

Bullet – Wireless HART Adapter

Documentation

No revision to drawing without prior FM approval.

For installations in the US, the associated apparatus and field device must be FM approved.

For installations in Canada, the associated apparatus and field device must be Canadian certified.

For Zone installations, the associated apparatus and field device must be ATEX / IEC certified.

For installations in EU, control room equipment connected to intrinsically safe associated apparatus shall not use or generate more than the marked Um of the associated apparatus.

Resistance between intrinsically safe ground and earth ground must be less than 1.0 Ohm.

Due to constant revisions, documentation is subject to permanent change. Please refer only to the most up-to-date version, which can be found under www.pepperl-fuchs.com.

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

Only appropriately trained and qualified personnel may carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The personnel must have read and understood the instruction manual.

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Protection of the personnel and the plant is not ensured if the device is not being used according to its intended use.

General

Make sure to consider all applicable laws, standards or directives especially national standards and guidelines such as NEC, CEC, IEC 60079-14 and/or IEC 60079-25.

The usage of 2400 MHz equipment is bound to local restrictions. Ensure that local restrictions allow usage of this device before commissioning.

The device must not be repaired, changed or manipulated.

If there is a defect, always replace the device with an original device from Pepperl+Fuchs.

The device is used in control and instrumentation technology (C&I technology) for wireless data transfer from HART devices.

Take the intended use of the connected devices from the corresponding documentation.

Use the device only within the specified ambient temperature range.

Do not mount the device at locations where an aggressive atmosphere may be present.

Do not mount a damaged or polluted device.


Avoid electrostatic charges which could result in electrostatic discharges while installing or operating the device.

Provide a transient protection. Ensure that the peak value of the transient protection does not exceed 140 % of the rated voltage.

When the device is in operation, maintain at all times a distance of at least 20 cm to the device antenna. This also applies to any other person in the vicinity of the device.

Install cables and cable glands in a way that they are not exposed to mechanical hazards.

Protect cables and cable glands from tensile load and torsional stress, or use certified cable glands.

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Unused cables and connection lines must be either connected to terminals or securely tied down and isolated. If cable glands are needed for installation, the following points must be considered:

- The cable glands used must be suitably certified for the application
- The temperature range of the cable glands must be chosen according to the application.
- The cable glands fitted must not reduce the degree of protection.

If the device has already been operated in general electrical installations, the device may subsequently no longer be installed in electrical installations used in combination with hazardous areas.

All separation distances between non-intrinsically safe circuits and intrinsically safe circuits need to be observed. All separation distances between adjacent intrinsically safe circuits need to be observed.

Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) for USA and Section 12 and Appendix F of the Canadian Electrical Code (CEC Part I, C22.1-12 or later) for Canada, and other local codes, as applicable.

Connection or disconnection of energized non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

The entity concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of U_o (V_{oc}) and I_o (I_{sc}) for the associated apparatus are less than or equal to U_i (V_{max}) and I_i (I_{max}) for the intrinsically safe apparatus.

Capacitance and inductance of the field wiring between intrinsically safe equipment and the associated apparatus shall be calculated and must be included in the system calculations. Cable capacitance C_{cable} plus intrinsically safe equipment capacitance C_i must be less than the capacitance C_o (C_a), marked on any connected associated apparatus. The same applies for the values for inductance (L_{cable} , L_i and L_o or L_a , respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: $C_{cable} = 60 \text{ pF/ft.}$, $L_{cable} = 0.2 \text{ } \mu\text{H/ft.}$

Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.6 for installing intrinsically safe equipment in USA and refer to Section 12 and Appendix F of the National Electrical Code (CEC Part I, C22.1-12 or later) for installing intrinsically safe equipment in Canada.

Delivery, Transport, Disposal


Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Store the device in a clean and dry environment. The permitted ambient conditions (see datasheet) must be considered.

Disposing of device, packaging, and possibly contained batteries must be in compliance with the applicable laws and guidelines of the respective country.

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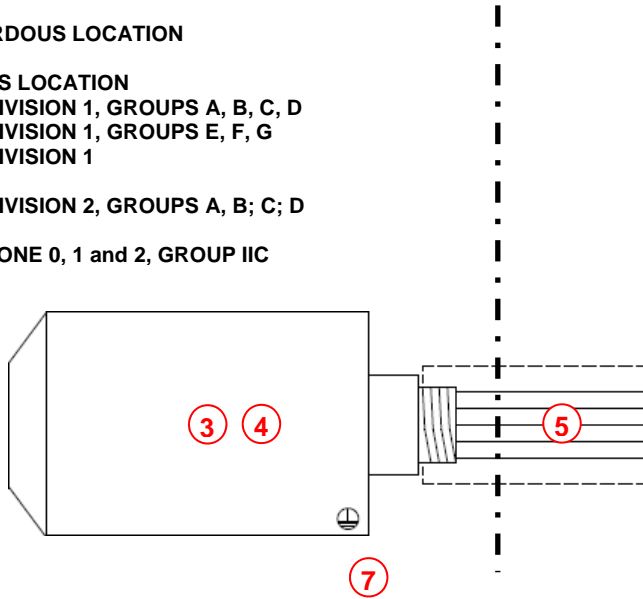
WHA-BLT-F9D0-N-A0-Z0-Ex1

(Bullet – intrinsically safe Wireless HART Adapter)

AREA CLASSIFICATIONS

NON-HAZARDOUS LOCATION
or
HAZARDOUS LOCATION
CLASS I, DIVISION 1, GROUPS A, B, C, D
CLASS II, DIVISION 1, GROUPS E, F, G
CLASS III, DIVISION 1
or
CLASS I, DIVISION 2, GROUPS A, B; C; D
or
CLASS I, ZONE 0, 1 and 2, GROUP IIC

NON-HAZARDOUS LOCATION
or
HAZARDOUS LOCATION



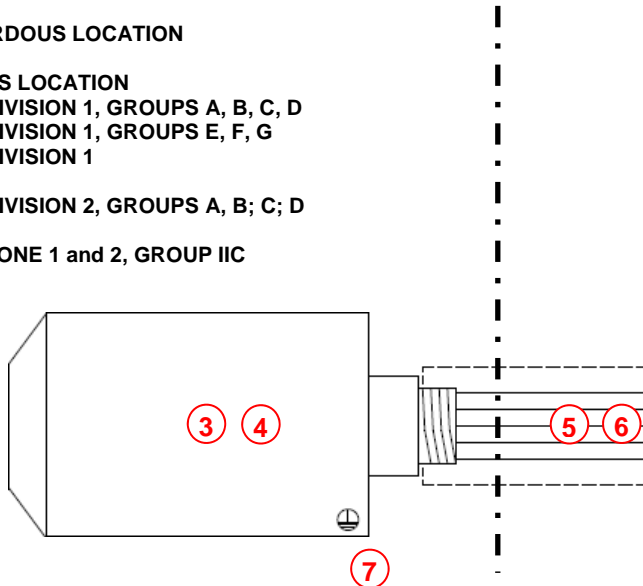
WHA-BLT-F9D0-N-A0-Z1-1

(Bullet – explosion proof Wireless HART Adapter)

AREA CLASSIFICATIONS

NON-HAZARDOUS LOCATION
or
HAZARDOUS LOCATION
CLASS I, DIVISION 1, GROUPS A, B, C, D
CLASS II, DIVISION 1, GROUPS E, F, G
CLASS III, DIVISION 1
or
CLASS I, DIVISION 2, GROUPS A, B; C; D
or
CLASS I, ZONE 1 and 2, GROUP IIC

NON-HAZARDOUS LOCATION
or
HAZARDOUS LOCATION
CLASS I, DIVISION 1 or Zone 1 or
CLASS I, DIVISION 2 or Zone 2



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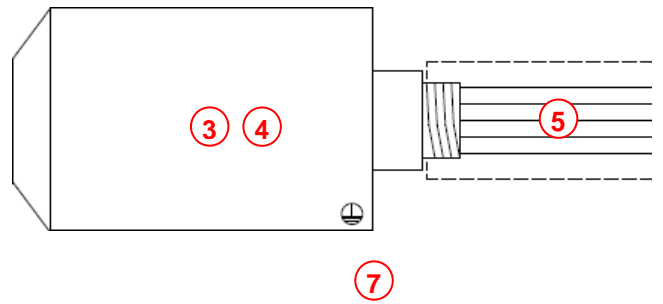
WHA-BLT-F9D0-N-A0-GP-1


(Bullet – general purpose Wireless HART Adapter)

AREA CLASSIFICATIONS

HAZARDOUS LOCATION

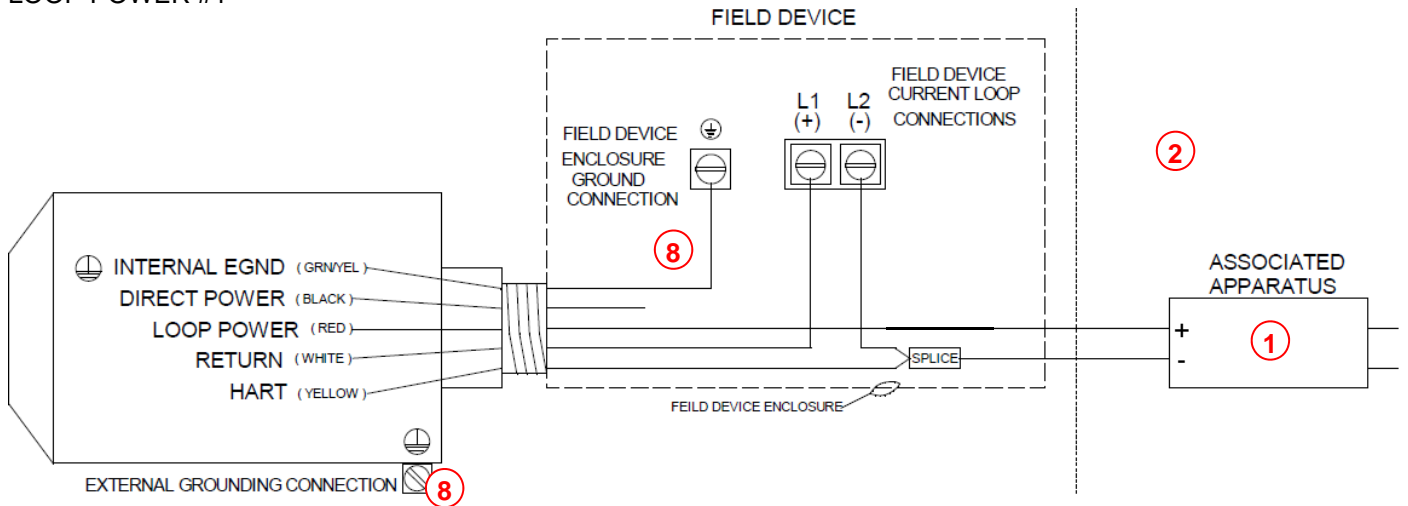
NON-HAZARDOUS LOCATION



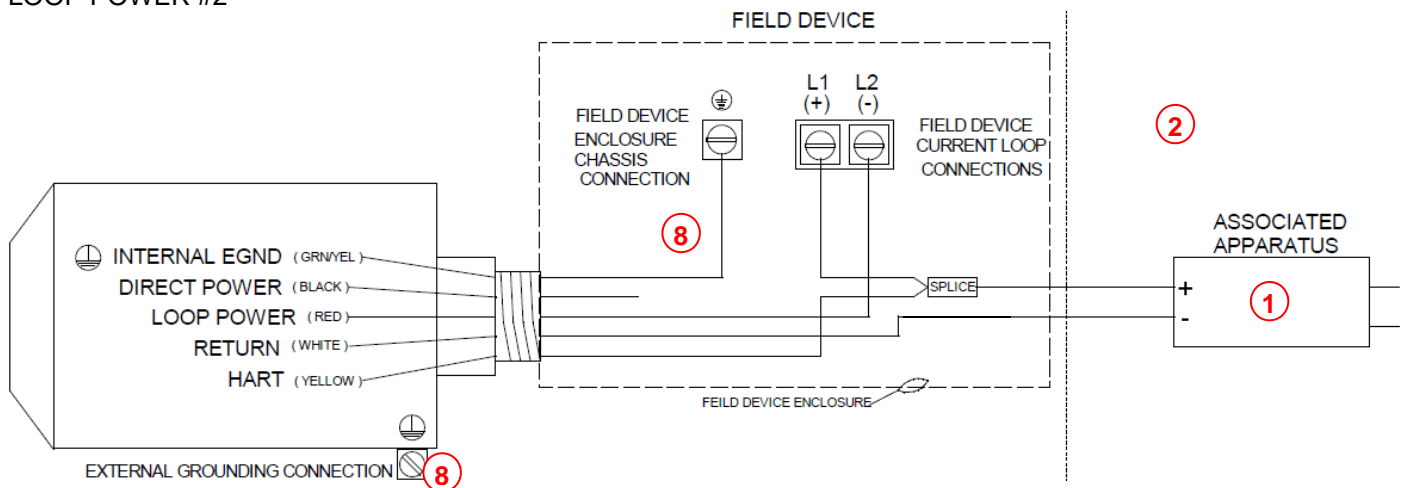
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Interconnections

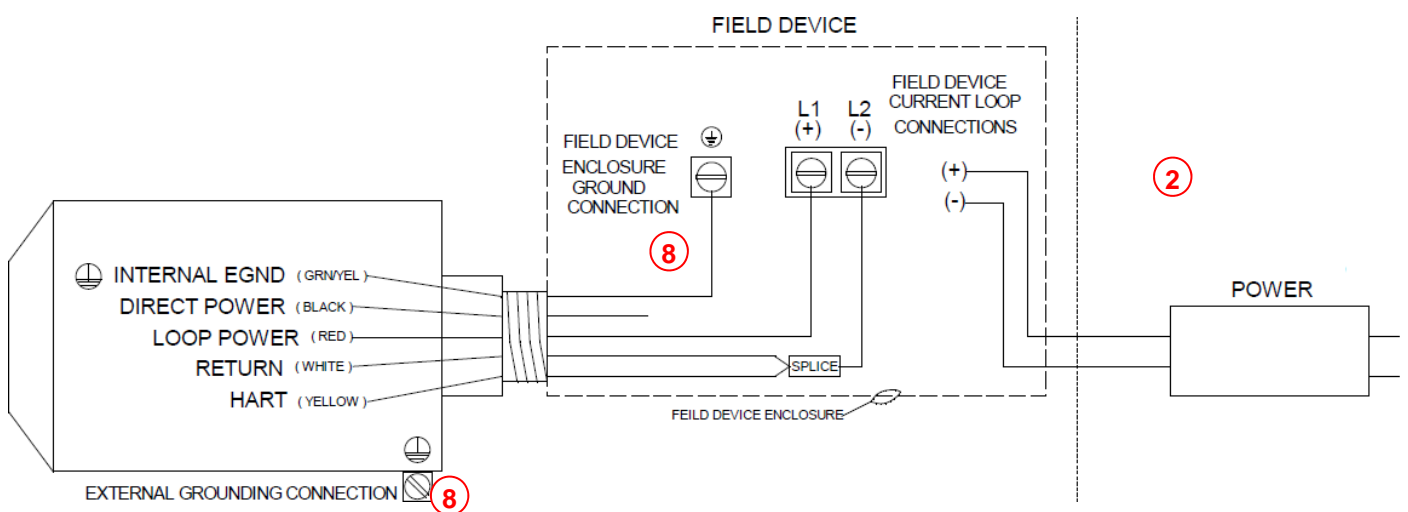
LOOP POWER #1



LOOP POWER #2



LOOP POWER #3 – ACTIVE DEVICE



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Control Drawing

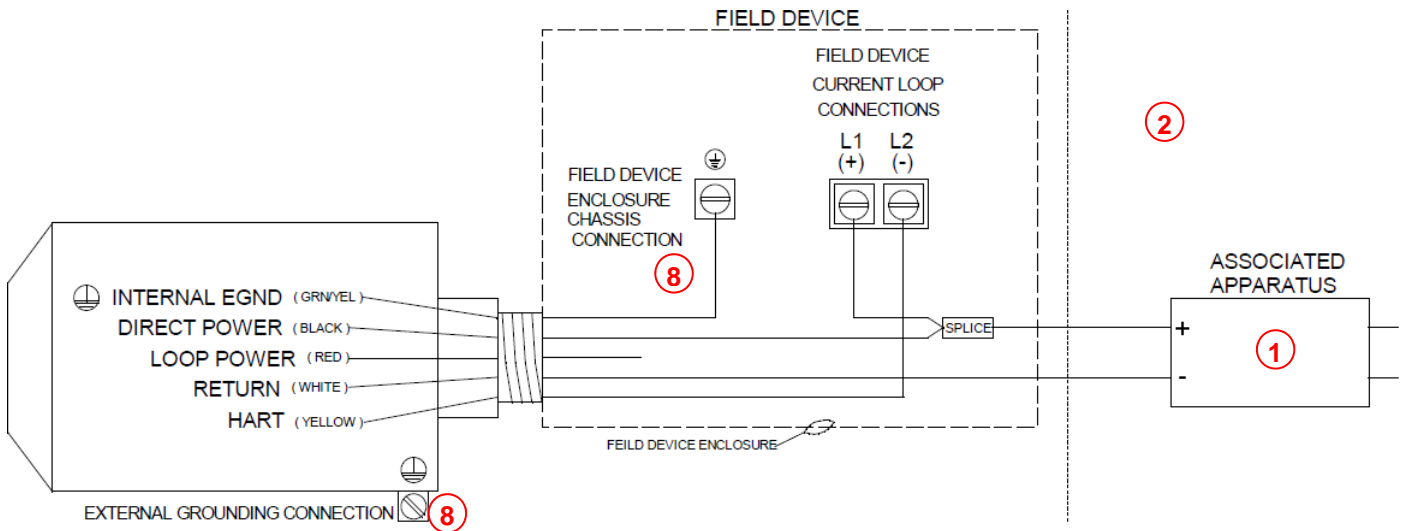
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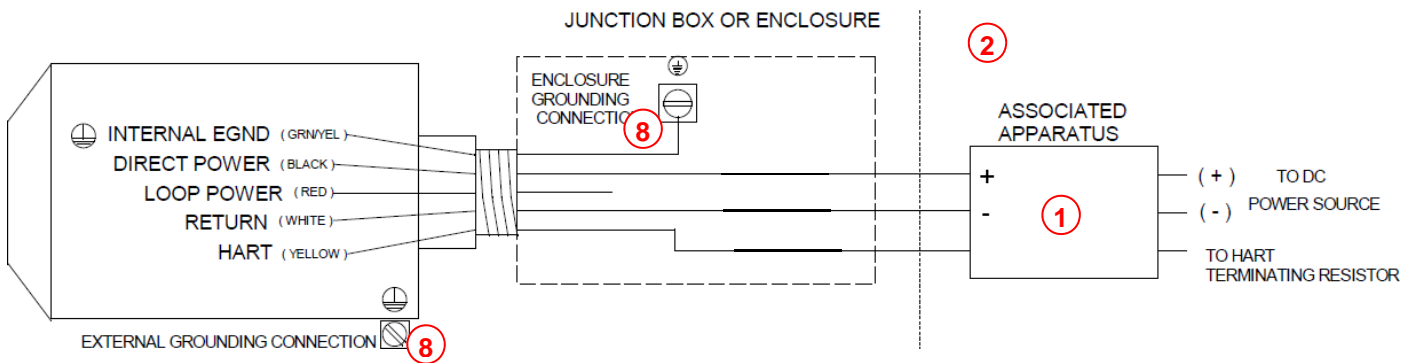
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DIRECT POWER #1 – FIELD DEVICE CONTROL



DIRECT POWER #2 - REPREATER



All interconnections allow multi-drop (several field devices), see data sheet and manual for more information.

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Special conditions of safe use

- ① [The associated apparatus must provide resistively limited characteristics.
- ② [Provide a transient protection. Ensure that the peak value of the transient protection does not exceed 140 % of the rated voltage.
- ③ [Using the tick box provided on the nameplate, the user shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
- ④ [The equipment contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.
- ⑤ [Dust-tight conduit seals must be used to ensure the degree of protection.
The flying leads of the apparatus shall be suitably protected against mechanical damage and terminated within an NRTL Approved, Listed or Recognized terminal or junction facility suitable for the location and conditions of use.
Unused cables and connection lines must be either connected to terminals or securely tied down and isolated.
- ⑥ [The Class I, Zone 1 AEx d IIC configuration requires the use of an NRTL Approved, Listed or Recognized cable seal, suitable for the location and conditions of use, installed at the apparatus and prior to the terminal or junction facility.
- ⑦ [The ambient temperature range is $-40\text{ °C} < T_a < +85\text{ °C}$ for temperature class T5 and ordinary location and $-40\text{ °C} < T_a < +75\text{ °C}$ for temperature class T6.
- ⑧ [The device provides a grounding terminal to which an equipotential bonding conductor with a minimum cross section of 4 mm^2 must be connected. The tightening torque for all screws is 1.1 Nm.

WARNING – *Explosion Hazard – Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous.*

AVERTISSEMENT – *RISQUE D'EXPLOSION - Ne pas déconnecter l'appareil si sous tension ou en présence d'une atmosphère explosive.*


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Table 1 – ELECTRICAL PARAMETERS								
MODEL TYPE	FIELD CONNECTIONS	$U_{\text{ext_power}}$ [V]	$I_{\text{ext_power}}$ [mA]	ENTITY PARAMETERS				
				U_i (V_{max}) [V]	I_i (I_{max}) [mA]	P_i (P_{max}) [mW]	C_i [nF]	L_i [μ H]
WHA-BLT-F9D0-N-A0-Z0-Ex1	See INTERCONNECTIONS above	See U_i	See I_i	30	120	900	negligible	596
WHA-BLT-F9D0-N-A0-Z1-1	See INTERCONNECTIONS above	7 – 32	< 25	n.a.	n.a.	n.a.	n.a.	n.a.
WHA-BLT-F9D0-N-A0-GP-1	See INTERCONNECTIONS above	7 - 32	< 25	n.a.	n.a.	n.a.	n.a.	n.a.

Important for the determination (verification) of intrinsic safety:

The values of L_o and C_o of the associated apparatus are allowed if one of the following conditions is met:


- The total L_i of the external circuit (excluding the cable) is < 1% of the L_o (L_a) value or
- The total C_i of the external circuit (excluding the cable) is < 1% of the C_o (C_a) value.

The values of L_o and C_o of the associated apparatus shall be reduced to 50% when both of the following conditions are met:

- the total L_i of the external circuit (excluding the cable) is \geq 1% of the L_o (L_a) value and
- the total C_i of the external circuit (excluding the cable) is \geq 1% of the C_o (C_a) value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for IIA and IIB and 600nF for IIC.

When C_o (C_a) of the associated apparatus is > 22 μ F, then total cable capacitance shall be limited to 22 μ F.

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