FM Approvals
Member of the FM Global Group

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

CaM 153-Obcdefghi. MYCOM-S Transmitter.
NI / I / 2 / ABCD / T4 Ta = 50°C; DIP / II, III / 1 / EFG / T4 Ta = 50°C;
AIS / I, II, III / 1 / ABCDEFG — 136620; Entity; I / 1 / [AEx ia] / IIC — 136620; Entity; Type 4
Entity Parameter: Refer to control drawing for specified values.
For option b = 5 or 6 (a = P only)
a = Measurement type: P or L
b = Measurement Input: 1, 2, 3, 4, 5, or 6.
c = Measurement output: A, C, or E.
d = Contacts, current input: 0, 1, 2, or 4.
e = Power supply: 0 or 8.
f = Language versions: A or B.
g = Cable connection: 0, 1, or 2.
h = Additional equipment: 0 or 1.
i = Configuration: 0.

CaM 153-Pbcdefghi. MYCOM-S Transmitter.
NI / I / 2 / ABCD / T4 Ta = 50°C; I / 2 / IIC / T4 Ta = 50°C;
DIP / II, III / 1 / EFG / T4 Ta = 50°C;
ANI / I, II, III / 2 / ABCDEFG — 136626; NIFW;
[I /2] / IIC / T4 Ta = 50°C — 136626; NIFW; Type 4
NI Field Wiring Parameter: Refer to control drawing for specified values.
For option b = 5 or 6 (a = P only)
a = Measurement type: P or L
b = Measurement Input: 1, 2, 3, 4, 5, or 6.
c = Measurement output: A, C, or E.
d = Contacts, current input: 0, 1, 2, or 4.
e = Power supply: 0 or 8.
f = Language versions: A or B.
g = Cable connection: 0, 1, or 2.
h = Additional equipment: 0 or 1.
i = Configuration: 0.

CLS12, CLS13, CLS15, CLS21. Conductivity Probes. (When used with CLM 153-O or CLM 153-P .)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626 ; I /2 AEx nA IIC /T6 Ta =75°C

CLS12, CLS13, CLS15, CLS21. Conductivity Probes. (When used with CLM 153-O or CLM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C

CLS16-abc. Conductivity Probes. (When used with CLM 153-O or CLM 153-P .)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626 ; I /2 AEx nA IIC /T6 Ta =75°C
a = Process connection: 3C, 3D, 3E, 4C, 4D, or 4E.
b = Cable connection: 1, 2, or 3.
c = Temperature sensor: A or B.

CLS16-abc. Conductivity Probes. (When used with CLM 153-O or CLM 153-P .)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C
a = Process connection: 3C, 3D, 3E, 4C, 4D, or 4E.
b = Cable connection: 1, 2, or 3.
c = Temperature sensor: A or B.

CLS50-Oabc. Conductivity Probe. (When used with CLM 153-O or CLM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C
a = Process connection and material, any single digit or character.
b = Probe material, any single character.
c = Max temperature 125°C and cable length 60 m, 1, 2, 3, 4 or 9.

CLS50-Oabc. Conductivity Probe. (When used with CLM 153-O or CLM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C
a = Process connection and material, any single digit or character.
b = Probe material, any single character.
c = Max temperature 125°C and cable length 60 m, 1, 2, 3, 4 or 9.

CPF81-ab1cd. pH Electrode. (When used with CPM 153-O or CPM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C
a = Application NN, NH, LN or LH.
b = Version 1, 2 or 3.
c = Equipment A or C.
d = Cable connection 2 or 3.

CPF81-ab1cd. pH Electrode. (When used with CPM 153-O or CPM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C
a = Application NN, NH, LN or LH.
b = Version 1, 2 or 3.
c = Equipment A or C.
d = Cable connection 2 or 3.

CPF82-PAa1Ab. ORP Electrode. (When used with CPM 153-O or CPM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C
a = Version 1 or 3.
b = Cable connection 2 or 3.

CPF82-PAa1Ab. ORP Electrode. (When used with CPM 153-O or CPM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C
a = Version 1 or 3.
b = Cable connection 2 or 3.

CPS11,CPS12,CPS13,CPS41,CPS42,CPS64,CPS71,CPS72. pH Electrodes. (When used CPM 153-O or CPM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C

CPS11,CPS12,CPS13,CPS41,CPS42 CPS64,CPS71,CPS72. pH Electrodes. (When used with CPM 153-O or CPM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C

CPS401,CPS441,CPS471,CPS491. ISFET-Sensors. (When used CPM 153-O or CPM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C

CPS401,CPS441,CPS471,CPS491. ISFET-Sensors. (When used with CPM 153-O or CPM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C C — 136620 or 136626; NI /I /2 /ABCD /T6 Ta =75°C

CTS1G-A2HDA. Temperature Probes. (When used with CPM 153-O or CPM 153-P.)
I /0 AEx ia IIC /T6 Ta =75°C — 136620 or 136626; I /2 AEx nA IIC /T6 Ta =75°C

CTS1G-A2HDA. Temperature Probes. (When used with CPM 153-O or CPM 153-P.)
IS /I /1 /ABCD /T6 Ta =75°C — 136620 or 136626; NI /2 /ABCD /T6 Ta =75°C

CPSa-bcdef. pH Digital Sensor.
IS /I /1 /ABCD / T4 Ta =70°C C — 139689-LtrA, 136620, or 136626;
NI /I /2 /ABCD / T4 Ta =70°C
I /0 AEx ia IIC / T4 Ta =70°C — 139689-LtrA, 136620, or 136626;
I /2 / IIC / T4 Ta =70°C
a = 11D, 41D, 71D, or 91D.
b = 7.
c = Working range: AA, BA, BB, BC, BO, BP, BU, or FA.
d = Shaft length: 2, 4, 5, or 6.
e = Electrolyte supply: A or B.
f = Approval type: G.

Special conditions of use:

1) pH Digital Sensor is Approved for use with Liquiline M CM42 Transmitter or MYCOM-S CPM 153-O/-P Transmitter.

CPSa-bcdef. ORP Digital Sensor.
IS /I /1 /ABCD / T4 Ta =70°C C — 139689-LtrA, 136620, or 136626;
NI /I /2 /ABCD / T4 Ta =70°C
I /0 AEx ia IIC / T4 Ta =70°C — 139689-LtrA, 136620, or 136626;
I /2 / IIC / T4 Ta =70°C
a = 12D, 42D, or 72D.
b = 7.
c = Working range: NA, PA, or PB.
d = Shaft length: 2, 4, 5 or 6.
e = Electrolyte supply: A or B.
f = Approval type: G.

Special conditions of use:

1) ORP Digital Sensor is Approved for use with Liquiline M CM42 Transmitter or MYCOM-S CPM 153-O/-P Transmitter.

CYPa-bcde. Memocheck Sensor Simulator.
IS /I /1 /ABCD / T4 Ta =70°C C — 139689-LtrA, 136620, or 136626;
NI /I /2 /ABCD / T4 Ta =70°C
I /0 AEx ia IIC / T4 Ta =70°C — 139689-LtrA, 136620, or 136626;
I /2 / IIC / T4 Ta =70°C
a = 01D or 02D.
b = Parameter: PG, PI, PP, PR, RG, or RR.

c = Working range: 1.
d = Certificate: A.
e = Approval type: G.

Special conditions of use:

1) Memocheck Sensor Simulator is Approved for use with Liquiline M CM42 Transmitter or MYCOM-S CPM 153-O/-P Transmitter.

Equipment Ratings:

For the MYCOM-S CPM 153-O and MYCOM-S CLM 153-O transmitter the rating is Nonincendive apparatus for Class I, Division 2, Groups A, B, C & D; dust-ignition proof for Class II and III, Division 1, Groups E, F & G with intrinsically safe connections to Class I, II, & III, Division 1, Group A, B, C, D, E, F & G and Class I, Zone 1, Group IIC hazardous (classified) locations in accordance with Control Drawing 136620, utilizing Type 4 enclosure and a temperature class of T4 @ Ta = 50°C.

For the MYCOM-S CPM 153-P and MYCOM-S CLM 153-P transmitters the rating is Nonincendive apparatus for Class I, Division 2, Groups A, B, C & D; Class I, Zone 2, Group IIC; and dust-ignition proof for Class II and III, Division 1, Groups E, F & G with nonincendive field wiring parameters to Class I, II, & III, Division 2, Group A, B, C, D, F & G and Class I, Zone 2, Group IIC hazardous (classified) locations in accordance with Control Drawing 136626, utilizing Type 4 enclosure and a temperature class of T4. The product was also examined for a Division 2, FISCO application, in accordance with Control Drawing 136626.

Approved for:

Endress+Hauser Conducta
Dieselstrasse 24
D-70839 Gerlingen,
Germany

FM Approvals℠

Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following FM Approval Standards and other documents:

Class 3600	1998
Class 3810	1989
Class 3611	1999
Class 3610	1999

Original Project ID: 3015684 FM Approval Granted: May 13, 2003

Subsequent Revision Reports / Date FM Approval Amended

Report Number	Date	Report Number	Date
3024026	MAY 16, 2006		

FM Global Technologies LLC

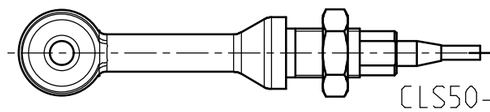
Roger L. Allard
Assistant Vice President

May 16, 2006
Date

HAZARDOUS LOCATION

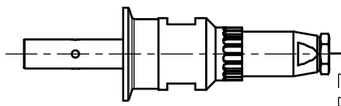
Class I, Division 1, GroupsA,B,C,D.
Class I, Zone 1, Groups IIC T4

Maximum Parameters Cable including probe	
Maxium external capacity Co	50nF
Maxium external inductivity Lo	100 µH



CLS50-0...
max. cable length
60m / 196 ft

CLS12/13
CLS15
CLS16
CLS21
or
other
simple apparatus
approved
by FM

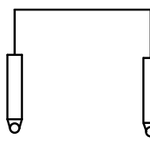


max. cable length
50m / 164 ft

CTSI
CPS11/12/13
CPS41/42
CPS64
CPS71/72
CPF81-...A.
CPF81-...C.
CPF82-...A.
or other simple apparatus approved by FM

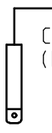
Maximum Parameters Cable including probe	
Maxium external capacity Co	50nF
Maxium external inductivity Lo	100 µH

max. cable length 50m / 164 ft



Maximum Parameters Cable including probe	
Maxium external capacity Co	150nF
Maxium external inductivity Lo	100 µH

max. cable length
100m / 328 ft

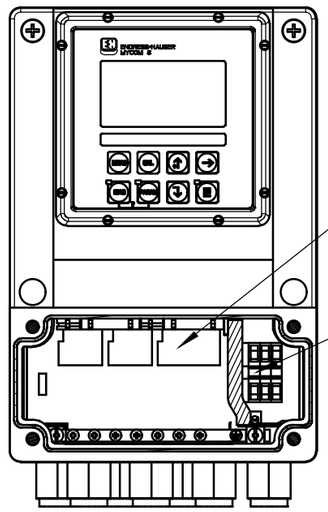


CPS 401/441/471/491
(ISFET-pH-Sensor)

HAZARDOUS LOCATION

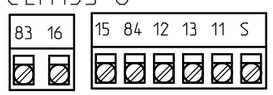
NI Class I, Division 2, Groups A,B,C,D.
DIP Class II,III, Division 1, Groups E,F,G.
Class I, Zone 2, Groups IIC T4
Ta = -10°C..+50°C

CPM153-0.....
CLM153-0.....

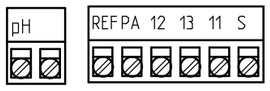


IS connections for
Cl..I, II, III, Div.1
Groups A,B,C,D,E,F,G

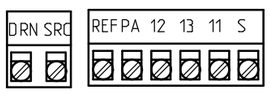
Sensor connection
CLM153-0



Sensor connection
CPM153-01 (-02)

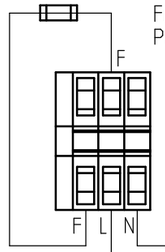


Sensor connection
CPM153-02 (-04)



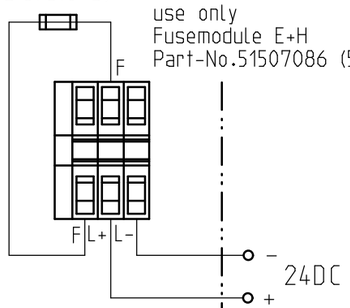
NON HAZARDOUS LOCATION

Detail 2)



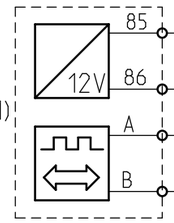
Order code	Version
C.M153-0...1....	100 ... 230 VAC

Detail 3)



Order code	Version
C.M153-0...8....	24 AC/DC

Detail 1)



Intrinsically safe "Entity" Parameter	
Terminals 85/86	
Maximum output voltage Uo	15.8V
Maximum output current Io	71mA
Maximum output power Po	1.13W
Maxium external capacity Co	50nF
Maxium external inductivity Lo	100 µH

supply and communication output CPG30/300 (12V / RS485)	
Terminals l+/L-, A/B	
Maximum output voltage Uo	18.5V
Maximum output current Io	100mA
Maximum output power Po	1.53W
Maxium external capacity Co	150nF
Maxium external inductivity Lo	150 µH

NOTES

1. Install per the National Electrical Code (NEC) and ANSI/ISA RP12.06.01
2. WARNING: Substitution of components may impair intrinsic safety
3. Maximum safe area voltage =250Vrms
4. FMRC controlled drawing. No changes without prior FMRC Approval
5. For further information see page 2 and 3

FM APPROVED

Ind.	Änderung	Datum	Bearb.	Gepr.
B	FM request	09.04.03	Si	Ha

Kantenverrundung R 0.2 — USED FORMAT: 0414 - 3B

	Datum	Name
Bearb.	27.08.02	Si
Geprüft	09.10.02	Koen

Freimaßtoleranz: DIN ISO 2768 - mittel

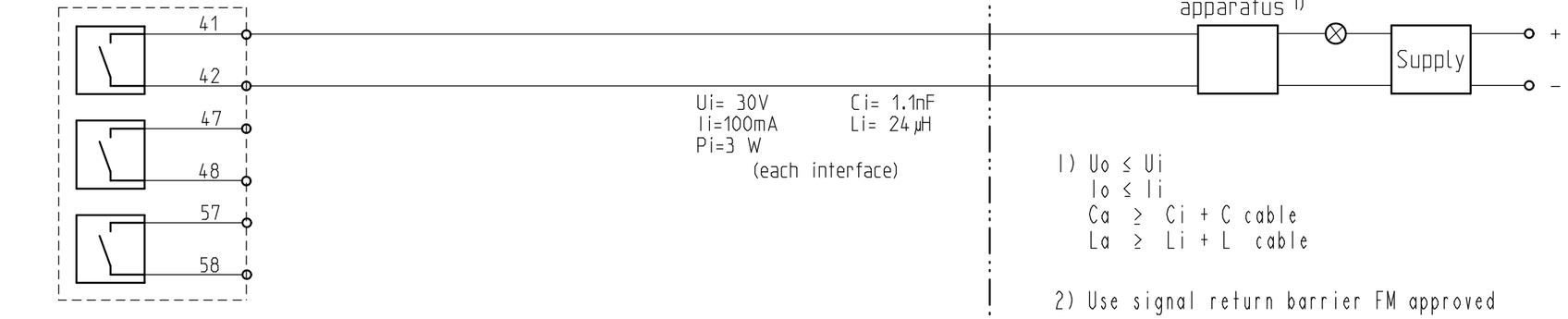
ENDRESS+HAUSER CONDUCTA GmbH+Co
Dieselstraße 24
Postfach 10 01 54
D-70839 Gerlingen
Telefon 07156/209-0
Telefax 07156/28158

Werkstoff: — Halbzeug:
Oberfläche: — Teilegewicht:
Maßstab: — Zng.-Nr. 136620
Benennung: Control drawing Mycom 153-0
Verwendung: CXM153 FM

HAZARDOUS LOCATION

NI Class I, Division 2, Groups A,B,C,D.
DIP Class II,III,Division 1, Groups E,F,G.
Class I, Zone 2, Groups IIC T4
Ta = -10°C..+50°C

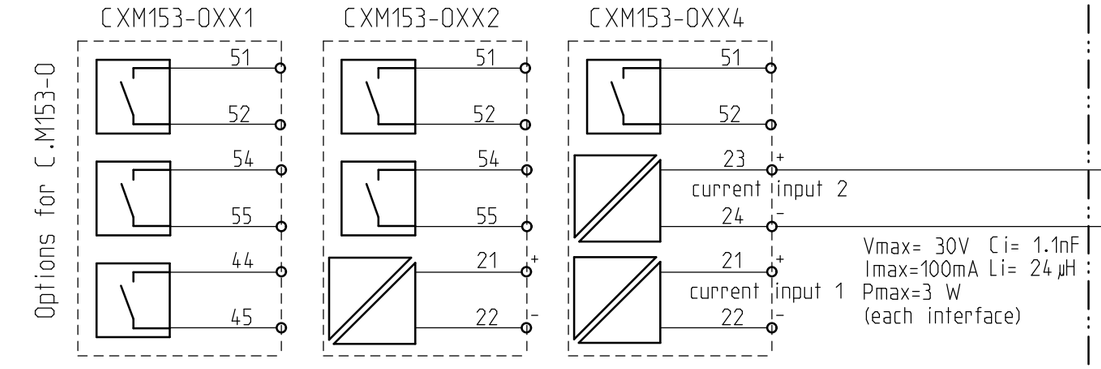
NON HAZARDOUS LOCATION



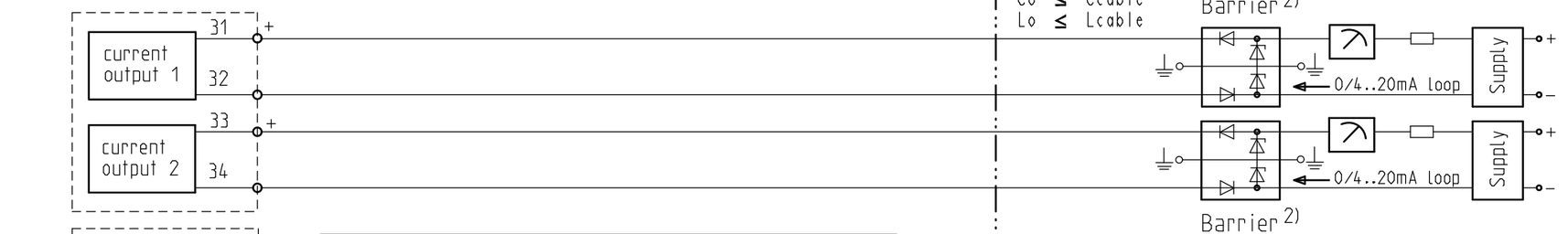
1) Uo ≤ Ui
Io ≤ Ii
Ca ≥ Ci + C cable
La ≥ Li + L cable

2) Use signal return barrier FM approved

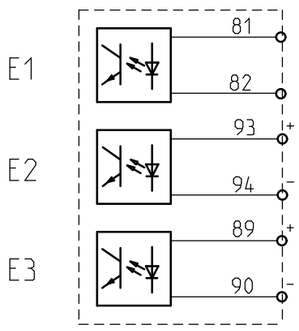
Connection data for relay contacts	
Terminals 41/42, 47/48, 57/58 51/52, 54/55, 44/45	
Maximum input voltage Ui	30V
Maximum input current Ii	100mA
Maximum input power Pi	3W
Maxium internal capacity Ci	1.1nF
Maxium internal inductivity Li	24 µH



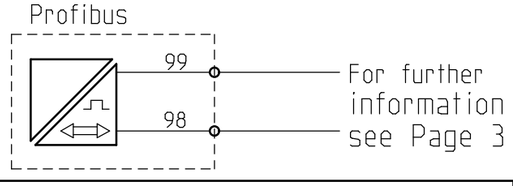
Connection data for current inputs	
Terminals 21/22, 23/24	
Maximum input voltage Ui	30V
Maximum input current Ii	100mA
Maximum input power Pi	3W
Maxium internal capacity Ci	1.1nF
Maxium internal inductivity Li	24 µH



Connection data for current outputs HART (measurement output version A,C)	
Terminals 31/32, 33/34	
Maximum input voltage Ui	30V
Maximum input current Ii	100mA
Maximum input power Pi	750mW
Maxium internal capacity Ci	0
Maxium internal inductivity Li	0



Connection data for digital inputs	
Terminals 81/82, 93/94, 89/90	
Maximum input voltage Ui	30V
Maximum input current Ii	85mA
Maximum input power Pi	1.5W
Maxium internal capacity Ci	0
Maxium internal inductivity Li	0



For further information see Page 3

FM CONTROLLED DRAWING, NO CHANGES WITHOUT PRIOR APPROVAL!

Ind.	Änderung	Datum	Bearb.	Gepr.
B	FM request	09.04.03	Si	Ha

Kantenverrundung R 0.2 — USED FORMAT: 0414 - 3B

	Datum	Name
Bearb.	27.08.02	Si
Geprüft	09.10.02	Koen

Freimaßtoleranz: DIN ISO 2768 - mittel

Werkstoff: Halbzeug:

Oberfläche: Teilegewicht:

Maßstab: —— Zng.-Nr. 136620

Benennung: Control drawing Mycom 153-O

ENDRESS+HAUSER CONDUCTA GmbH+Co
Dieselstraße 24
Postfach 10 01 54
D-70839 Gerlingen
Telefon 07156/209-0
Telefax 07156/28158

Verwendung: CXM153 FM

FISCO-Concept
The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination.
The criteria for interconnection is that the voltage (Ui or Vmax), the current (Ii or Imax) and the power (Pi or Pmax) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo or Voc or Vt), the current (Io or Isc or It) and the power (Po or Pmax) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitances (Ci) and inductance (Li) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 µH respectively.

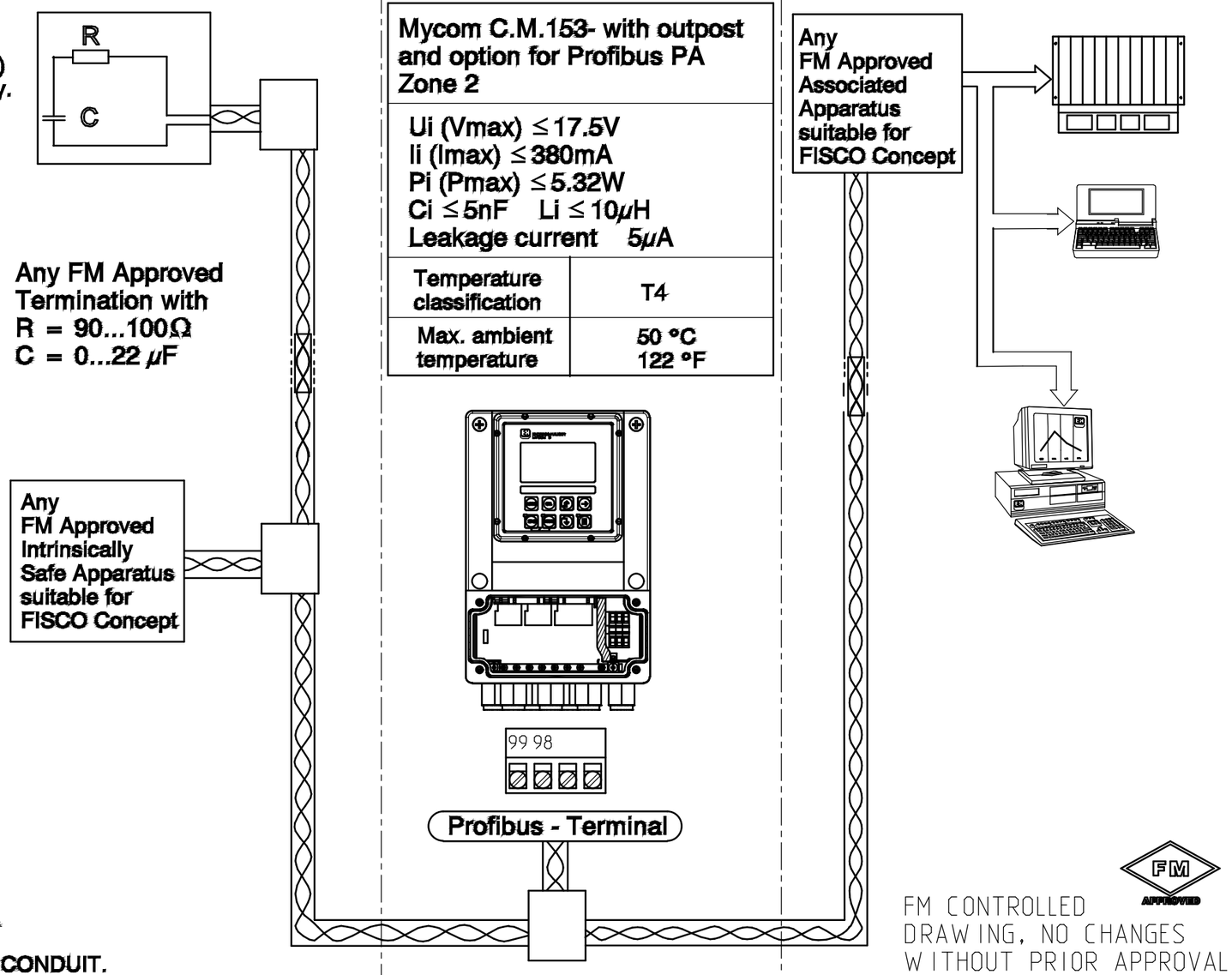
In each segment only one active device, normally the associated apparatus, is allowed to provide the necessary energy for the fieldbus system.
The voltage Uo (or Voc or Vt) of the associated apparatus has to be limited to the range of 14V to 24V DC. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except to a leakage current of 50 µA for each connected device. Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.

The cable used to interconnect the devices needs to have the parameters in the following range:
- loop resistance R': 15 ... 150 Ω /km
- inductance per unit length L': 0,4 ... 1 mH/km
- capacitance per unit length C': 80 ... 200 nF/km
- C' = C' line/line + 0,5C' line/screen, if both lines are floating or
- C' = C' line/line + C' line/screen, if the screen is connected to one line
- length of spur cable: ≤ 30 m
- length of trunk cable: ≤ 1 km
- length of splice: ≤ 1 m

At the end of the trunk cable an approved infallible line termination with the following parameters is suitable:
- R = 90 ... 100Ω
- C = 0 ... 2.2 µF.

One of the allowed terminations might already be integrated in the associated apparatus.
The number of passive devices connected to the bus segment is not limited due to I.S. reasons. If the above rules are respected, up to a total length of 1000 m (sum of the length of trunk cable and all spur cables), the inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

Notes:
NONINCENDIVE CLASS 1, DIV.2, GROUP A.B.C.D AND DIP for CLASS II AND III, DIV.1, GROUP E, F, G HAZARDOUS LOCATION INSTALLATION.
1. INSTALL PER NATIONAL ELECTRIC CODE (NEC) USING THREADED METAL CONDUIT. Intrinsic safety barrier not required. Max. supply voltage 30V. For T-code see table.
2. A dust tight seal must be used at the conduit entry when the transmitter is used in a CLASS II & III Location.
3. WARNING: Explosion Hazard - do not disconnect equipment unless power has been switched off or the area is known to be Non Hazardous.
   WARNING: Substitution of components may impair suitability for CLASS I, Division 2.



FM CONTROLLED DRAWING, NO CHANGES WITHOUT PRIOR APPROVAL!

USED FORMAT: 0414 - 3B

Ind.	Änderung	Datum	Bearb.	Gepr.
B	FM request	09.04.03	Si	Ha

Bearb. 27.08.02 Si
Gepr üft 09.10.02 Koen
Freimaßtoleranz: DIN ISO 2768 - mittel
Oberfläche: Teilegewicht:
Maßstab: ——— Zng.-Nr. 136620
Benennung: Control drawing Mycom 153-0

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Verwendung: CXM153 FM