Control drawings for installations in hazardous locations that conform to US and Canadian standards

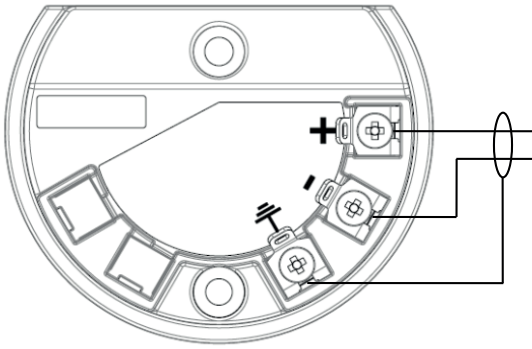
Last update: 01 April 2019

HAZARDOUS (CLASSIFIED) LOCATION

Class I/II/III, Div 1, GPS ABCDEFG
Class I, Zone 0, IIC
Zone 20, IIIC

NON HAZARDOUS (UNCLASSIFIED) LOCATION

Approved Associated Apparatus
with Entity Parameters (see Note 4)



Entity Parameters:
U_i (V_{max}) = 30 V
I_i (I_{max}) = 130 mA
P_i (P_{max}) = 1.0 W
C_i = 10 nF
L_i = 0 µH

CONNECTIONS FOR ENTITY CONCEPT
OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with ANSI / ISA-RP 12.06.01, "Installation of Intrinsically Safe Systems for Hazardous (classified) locations" and articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) To determine proper matching of I.S. equipment and the maximum cable length use the following entity parameter matching formulas:
   U_o (V_{oc}) ≤ U_i (V_{max})
   I_o (I_{oc}) ≤ I_i or (I_{max})
   P_o ≤ P_i (P_{max})
   C_o (C_a) ≥ Σ C_i + C_{cable}
   L_o (L_a) ≥ Σ L_i + L_{cable}
5) Control equipment connected to the associated apparatus must not use or generate more than 250 Vrms or Vdc.
6) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
7) For class II, III, use a dust tight seal at the conduit entry. For zones 21 and 22, use a cable gland rated IP 6X at the housing cable entry.
8) Avoid electrostatic charge of the plastic sun cover, the hygienic antenna, the drop antenna, the flange plate protection, the extension protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
9) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR54 – LR64			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +44°C	+60°C +85°C
T5	T100°C	+75°C +59°C	+75°C +100°C
T4	T130°C	+57°C +48°C	+115°C +130°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-33°C	-50°C

LR74			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +54°C	+60°C +85°C
T5	T100°C	+75°C +69°C	+75°C +100°C
T4	T135°C	+72°C +68°C	+115°C +130°C
T3	T200°C	+64°C +58°C +54°C	+150°C +180°C +200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-37°C	-50°C

The gasket and antenna material temperatures must be in the approved limits. For more data, refer to the handbook.

Functional Ratings:
$V_{nom.}$= 12-30 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA
These ratings do not supersede hazardous locations values.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

Rev	Mod	Nom	Cont	Norm	Homol.
a	EMS-009906	ATH 18/03/2019	VPI 18/03/2019		ATH 18/03/2019

Engineer		
Prod	A.THOLLET	12/17/2018
Cont	V.PICHOT	12/17/2018
Norm		
Homol.	A.THOLLET	12/17/2018

General Tolerances
Edge of parts
Surface condition Sensible Ex
Material

Ech
Folio 1/1

Schneider Electric

CONTROL DRAWING
LR54/LR64/LR74 Free Space Radar IS/Ex ia/AEx ia

Code d'article

Doc. type	Doc. key	Rev
APPR	4007400501	a

Status released

HAZARDOUS (CLASSIFIED) LOCATION

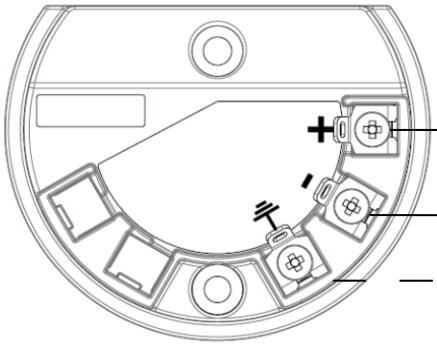
Class I/II/III, Div 1, GPS ABCDEFG
Class I, Zone 0, IIC
Zone 20, IIIC

NON HAZARDOUS (UNCLASSIFIED) LOCATION

Approved Associated Apparatus
with Entity Parameters (see Note 4)

+
–

Entity Parameters:
U_i (V_{max}) = 30 V
I_i (I_{max}) = 130 mA
P_i (P_{max}) = 1.0 W
C_i = 10 nF
L_i = 0 µH



CONNECTIONS FOR ENTITY CONCEPT
OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with ANSI / ISA-RP 12.06.01, "Installation of Intrinsically Safe Systems for Hazardous (classified) locations" and articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) To determine proper matching of I.S. equipment and the maximum cable length use the following entity parameter matching formulas:
   U_o (V_{oc}) ≤ U_i (V_{max})
   I_o (I_{oc}) ≤ I_i or (I_{max})
   P_o ≤ P_i (P_{max})
   C_o (C_a) ≥ Σ C_i + C_{cable}
   L_o (L_a) ≥ Σ L_i + L_{cable}
5) Control equipment connected to the associated apparatus must not use or generate more than 250 Vrms or Vdc.
6) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
7) For class II, III, use a dust tight seal at the conduit entry. For zones 21 and 22, use a cable gland rated IP 6X at the housing cable entry.
8) Avoid electrostatic charge of the plastic sun cover, the lens antenna, the flange plate protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
9) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR65/LR75 without distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +48°C	+60°C +85°C
T5	T100°C	+75°C +63°C	+75°C +100°C
T4	T130°C	+64°C +55°C	+115°C +135°C
T3	T150°C	+49°C	+150°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-35°C	-50°C

LR65/LR75 with distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	60°C 53°C	60°C 85°C
T5	T100°C	75°C 68°C	75°C 100°C
T4	T135°C	70°C 65°C	115°C 135°C
T3	T200°C	61°C 53°C 48°C	150°C 180°C 200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C

The gasket temperatures must be in the approved limits. For more data, refer to the handbook.

Functional Ratings:
$V_{nom.}$= 12-30 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA
These ratings do not supersede hazardous locations values.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

Rev	Mod	Nom	Cont	Norm	Homol.
	EMS-009638				

Engineer			General Tolerances	
Prod	A.THOLLET	12/17/2018	Edge of parts	
Cont	V.PICHOT	12/17/2018	Surface condition	Sensible Ex
Norm			Material	Ech
Homol.	A.THOLLET	12/17/2018		Folio 1/1

Schneider Electric

CONTROL DRAWING
LR65/LR75 Free Space Radar
IS/Ex ia/AEx ia

Code d'article

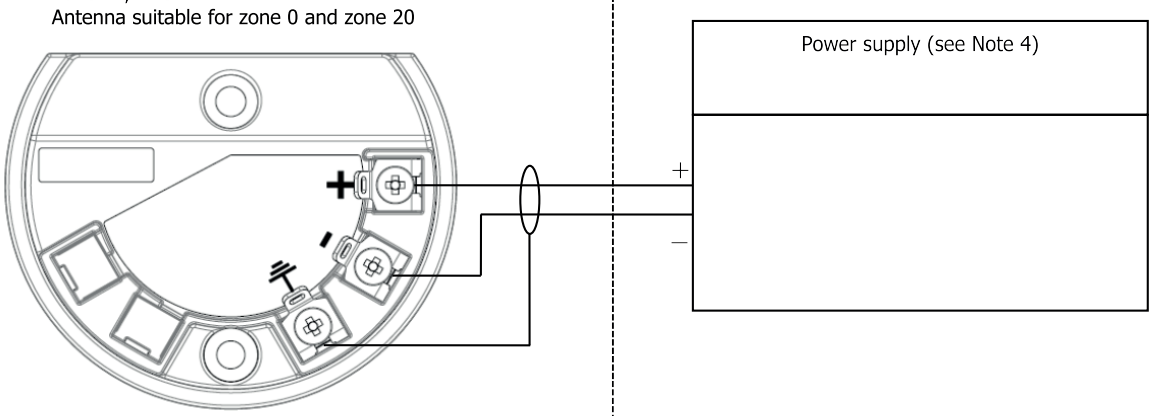
Doc. type	Doc. key	Rev
APPR	4007400601	–

Status released

HAZARDOUS (CLASSIFIED) LOCATION

Class I/II/III, Div 1, GPS ABCDEFG
Class I, Zone 1, IIC
Zone 21, IIIC
Antenna suitable for zone 0 and zone 20

NON HAZARDOUS (UNCLASSIFIED) LOCATION



CONNECTIONS OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) Power supply must not use or generate more than 250 Vrms or Vdc.
5) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
6) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
7) For class II, III, use a dust tight seal at the conduit entry. For zones 21 and 22, use a cable gland rated IP 6X at the housing cable entry.
8) Avoid electrostatic charge of the plastic sun cover, the hygienic antenna, the drop antenna, the flange plate protection, the extension protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
9) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR54 – LR64			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +44°C	+60°C +85°C
T5	T100°C	+75°C +59°C	+75°C +100°C
T4	T130°C	+57°C +48°C	+115°C +130°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-33°C	-50°C

LR74			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +54°C	+60°C +85°C
T5	T100°C	+75°C +69°C	+75°C +100°C
T4	T135°C	+72°C +68°C	+115°C +130°C
T3	T200°C	+64°C +58°C +54°C	+150°C +180°C +200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-37°C	-50°C

The gasket and antenna material temperatures must be in the approved limits. For more data, refer to the handbook.

Functional Ratings:
$V_{nom.}$= 16-36 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA
These ratings do not supersede hazardous locations values.

Rev	Mod	Nom	Cont	Norm	Homol.
a	EMS-009906	ATH 18/03/2019	VPI 18/03/2019		ATH 18/03/2019

Engineer			General Tolerances	
Prod	A.THOLLET	12/17/2018	Edge of parts	
Cont	V.PICHOT	12/17/2018	Surface condition	Sensible Ex
Norm			Material	Ech
Homol.	A.THOLLET	12/17/2018		Folio 1/1

Schneider Electric

CONTROL DRAWING
LR54/LR64/LR74 Free Space Radar XP-IS/DIP/Ex db ia/Ex ia tb/ AEx db ia/AEx ia tb

Code d'article

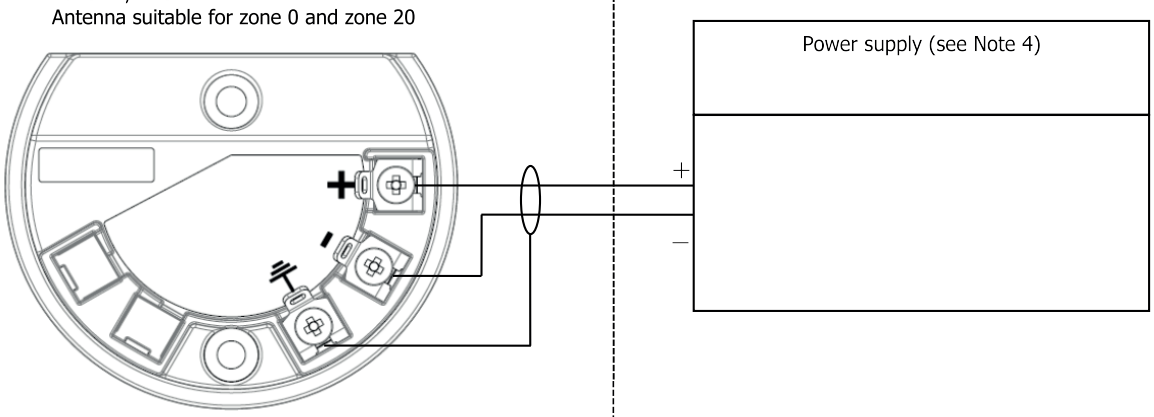
Doc. type Doc. key Rev
APPR 4007400701 a

Status released

HAZARDOUS (CLASSIFIED) LOCATION

Class I/II/III, Div 1, GPS ABCDEFG
Class I, Zone 1, IIC
Zone 21, IIIC
Antenna suitable for zone 0 and zone 20

NON HAZARDOUS (UNCLASSIFIED) LOCATION



CONNECTIONS OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) Power supply must not use or generate more than 250 Vrms or Vdc.
5) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
6) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
7) For class II, III, use a dust tight seal at the conduit entry. For zones 21 and 22, use a cable gland rated IP 6X at the housing cable entry.
8) Avoid electrostatic charge of the plastic sun cover, the hygienic antenna, the drop antenna, the flange plate protection, the extension protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
9) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR65/LR75 without distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +48°C	+60°C +85°C
T5	T100°C	+75°C +63°C	+75°C +100°C
T4	T130°C	+64°C +55°C	+115°C +135°C
T3	T150°C	+49°C	+150°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-35°C	-50°C

LR65/LR75 with distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	60°C 53°C	60°C 85°C
T5	T100°C	75°C 68°C	75°C 100°C
T4	T135°C	70°C 65°C	115°C 135°C
T3	T200°C	61°C 53°C 48°C	150°C 180°C 200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C

The gasket and antenna material temperatures must be in the approved limits. For more data, refer to the handbook.

Functional Ratings:
$V_{nom.}$= 16-36 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA
These ratings do not supersede hazardous locations values.

Rev	Mod	Nom	Cont	Norm	Homol.
	EMS-009638				

Engineer			General Tolerances	
Prod	A.THOLLET	12/17/2018	Edge of parts	
Cont	V.PICHOT	12/17/2018	Surface condition	Sensible Ex
Norm			Material	Ech
Homol.	A.THOLLET	12/17/2018		Folio 1/1

Schneider Electric

CONTROL DRAWING
LR65/LR75 Free Space Radar
XP-IS/DIP/Ex db ia/Ex ia tb/
AEx db ia/AEx ia tb

Code d'article

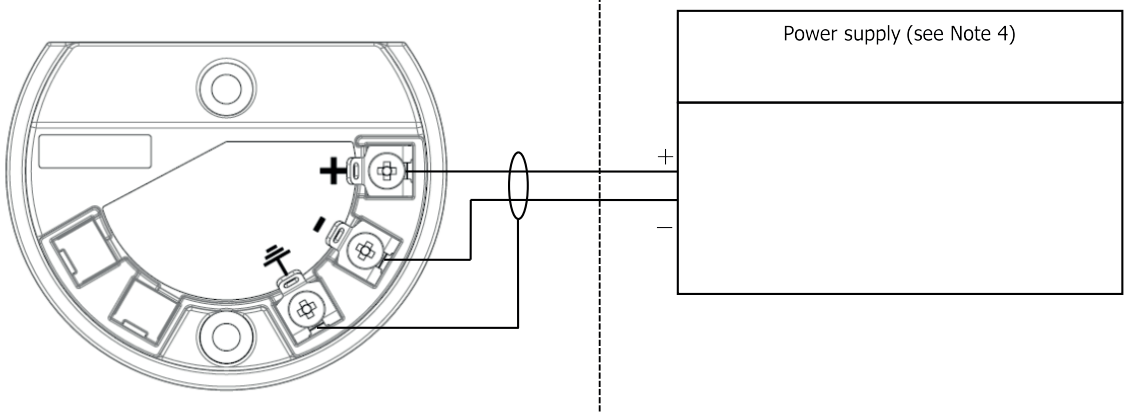
Doc. type	Doc. key	Rev
APPR	4007400801	–

Status released

HAZARDOUS (CLASSIFIED) LOCATION

Class I/II/III, Div 2, GPS ABCDFG

NON HAZARDOUS (UNCLASSIFIED) LOCATION



CONNECTIONS FOR NON INCENDIVE CONCEPT
OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) Intrinsic safety barrier not required. See functional ratings.
5) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
6) For class II, III, use a dust tight seal at the conduit entry.
7) Avoid electrostatic charge of the plastic sun cover, the hygienic antenna, the drop antenna, the flange plate protection, the extension protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
8) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

Functional Ratings:

$V_{nom.}$= 12-30 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR54 – LR64			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +44°C	+60°C +85°C
T5	T100°C	+75°C +59°C	+75°C +100°C
T4	T130°C	+57°C +48°C	+115°C +130°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-33°C	-50°C

LR74			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +54°C	+60°C +85°C
T5	T100°C	+75°C +69°C	+75°C +100°C
T4	T135°C	+72°C +68°C	+115°C +130°C
T3	T200°C	+64°C +58°C +54°C	+150°C +180°C +200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-37°C	-50°C

The gasket and antenna material temperatures must be in the approved limits. For more data, refer to the handbook.

WARNING: EXPLOSIVE HAZARD. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS. SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN DIV. 2
AVERTISSEMENT: RISQUE D'EXPLOSION. AVANT DE DEBRANCHER L'EQUIPEMENT COUPEZ LE COURANT OU ASSUREZ-VOUS QUE L'EMPLACEMENT EST NON DANGEREUX. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LA DIV 2

Rev	Mod	Nom	Cont	Norm	Homol.
a	EMS-009906	ATH 18/03/2019	VPI 18/03/2019		ATH 18/03/2019

Engineer			General Tolerances	
Prod	A.THOLLET	12/17/2018	Edge of parts	
Cont	V.PICHOT	12/17/2018	Surface condition	Sensible Ex
Norm			Material	Ech
Homol.	A.THOLLET	12/17/2018		Folio 1/1

Schneider Electric

CONTROL DRAWING
LR54/LR64/LR74 Free Space Radar
NON INCENDIVE

Code d'article

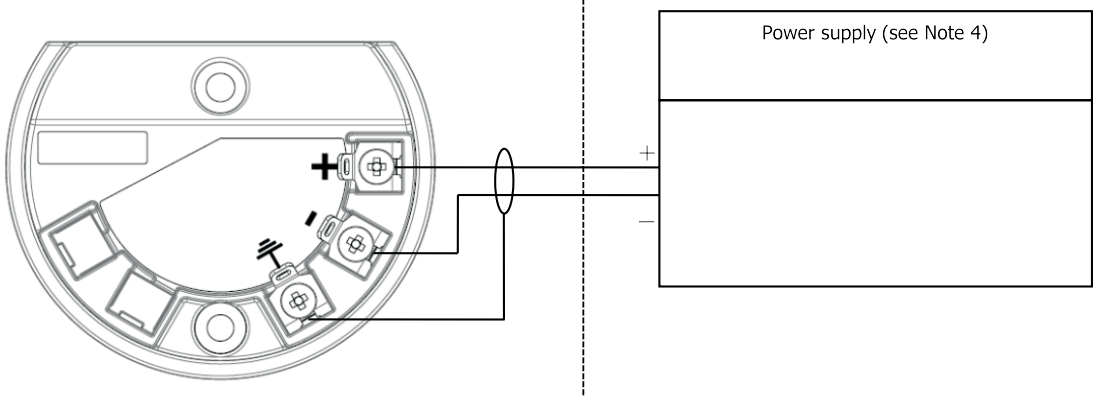
Doc. type Doc. key Rev
APPR 4007400901 a

Status released

HAZARDOUS (CLASSIFIED) LOCATION

Class I/II/III, Div 2, GPS ABCDFG

NON HAZARDOUS (UNCLASSIFIED) LOCATION



CONNECTIONS FOR NON INCENDIVE CONCEPT
OF 2 WIRES / 4...20 mA HART VERSION

Notes:

1) Installation shall be in accordance with articles 500 to 510 of the National Electric Code ANSI / NFPA 70 for the U.S. and section 18 of the Canadian electrical code CSA 22.1 part 1 for Canada.
2) No revision to this drawing without prior agency approval.
3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
4) Intrinsic safety barrier not required. See functional ratings.
5) Connect the earth terminal (internal or external) with a min. cable cross-section 4mm². The resistance between intrinsically safe ground and earth ground must be less than 1.0 Ω.
6) For class II, III, use a dust tight seal at the conduit entry.
7) Avoid electrostatic charge of the plastic sun cover, the lens antenna, the flange plate protection and the slanted flange (e.g. do not install in a location where the electrostatic charge can increase, do not rub with dry cloth).
8) Temperature Classes as a function of ambient temperature and process temperature (or process connection temperature) - see tables

Functional Ratings:

$V_{nom.}$= 12-30 V; $I_{nom.}$= 4-20 mA or 3.8-20.5mA, error 3.5 mA or 21.5 mA

FOR FURTHER LIMITATIONS SEE INSTRUCTION MANUAL

LR65/LR75 without distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	+60°C +48°C	+60°C +85°C
T5	T100°C	+75°C +63°C	+75°C +100°C
T4	T130°C	+64°C +55°C	+115°C +135°C
T3	T150°C	+49°C	+150°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C
		-35°C	-50°C

LR65/LR75 with distance piece			
Temperature class	Max. surface temperature	Max. ambient temperature	Max. process temperature
T6	T85°C	60°C 53°C	60°C 85°C
T5	T100°C	75°C 68°C	75°C 100°C
T4	T135°C	70°C 65°C	115°C 135°C
T3	T200°C	61°C 53°C 48°C	150°C 180°C 200°C

Temperature class	Max. surface temperature	Min. ambient temperature	Min. process temperature
All classes	All surface temperatures	-40°C	-40°C

The gasket and antenna material temperatures must be in the approved limits. For more data, refer to the handbook.

WARNING: EXPLOSIVE HAZARD. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS. SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN DIV. 2
AVERTISSEMENT: RISQUE D'EXPLOSION. AVANT DE DEBRANCHER L'EQUIPEMENT COUPEZ LE COURANT OU ASSUREZ-VOUS QUE L'EMPLACEMENT EST NON DANGEREUX. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LA DIV 2

Rev	Mod	Nom	Cont	Norm	Homol.
	EMS-009638				

Engineer			General Tolerances	
Prod	A.THOLLET	12/17/2018	Edge of parts	
Cont	V.PICHOT	12/17/2018	Surface condition	Sensible Ex
Norm			Material	Ech
Homol.	A.THOLLET	12/17/2018		Folio 1/1

Schneider Electric

CONTROL DRAWING
LR65/LR75 Free Space Radar
NON INCENDIVE

Code d'article

Doc. type	Doc. key	Rev
APPR	4007401001	–

Status released

Schneider Electric Systems USA, Inc.
38 Neponset Avenue
Foxboro, MA 02035
United States of America
http://www.schneider-electric.com

Global Customer Support
Inside U.S.: 1-866-746-6477
Outside U.S.: 1-508-549-2424
https://pasupport.schneider-electric.com