

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:

BA414DFa Fieldbus Indicator
BA444DFa Fieldbus Indicator
BA444DFa Fieldbus Listener
BA424DFa Fieldbus Set Point Station
IS / I, II, III / 1 / ABCDEFG / T4 Ta = 70°C - Cl410-12; Entity, FISCO IP66;
I / 0 / AEx ia IIC T4 Ta = 70°C - Cl410-12; Entity, FISCO IP66;
NI / I / 2 / ABCD / T4 Ta = 70°C - Cl410-13; NIFW, FNICO IP66;
S / II, III / EFG / T4 Ta = 70°C - Cl410-13; NIFW, FNICO IP66;
I / 2 / IIC / T4 Ta = 70°C - Cl410-13; NIFW, FNICO IP66;
a = certification or options not affecting safety

Intrinsic Safety Parameters -

	Terminals	Ui (V)	li (mA)	Pi (W)	Ci (nF)	Li (µH)
Entity	1 & 2	22	250	1.2	0	8
FISCO	1 & 2	17.5	380	5.32	0	8

Nonincendive Parameters -

	Terminals	Ui (V)	Ci (nF)	Li (µH)
NIFW	1 & 2	32	0	8
FNICO	1 & 2	17.5	0	8

Special conditions of use

1. The BA414DF, BA444DF, BA444DL and BA424DF shall be protected from direct exposure to sunlight.

BA418CFa Fieldbus Indicator
BA448CFa Fieldbus Indicator
BA448CLa Fieldbus Listener
BA428CFa Fieldbus Set Point Station
IS / I / 1 / ABCD / T4 Ta = 70°C - CI410-12; Entity, FISCO IP66
I / 0 / AEx ia IIC T4 Ta = 70°C - CI410-12; Entity, FISCO IP66
NI / I / 2 / ABCD / T4 Ta = 70°C - CI410-13; NIFW, FNICO IP66
I / 2 / IIC / T4 Ta = 70°C - CI410-13; NIFW, FNICO IP66



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a = certification or options not affecting safety

Intrinsic Safety Parameters -

	Terminals	Ui (V)	li (mA)	Pi (W)	Ci (nF)	Li (µH)
Entity	1 & 2	22	250	1.2	0	8
FISCO	1 & 2	17.5	380	5.32	0	8

Nonincendive Parameters -

	Terminals	Ui (V)	Ci (nF)	Li (µH)
NIFW	1 & 2	32	0	8
FNICO	1 & 2	17.5	0	8

Special conditions of use

- 1. To maintain the IP66 enclosure rating the BA418CF, BA448CL and BA428CF shall be installed in accordance with the mounting conditions provided on drawing numbers Cl410-12 and Cl410-13.
- 2. The BA418CF, BA448CF, BA448CL and BA428CF shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.
- 3. The BA418CF, BA448CF, BA448CL and BA428CF shall be protected from direct exposure to sunlight.

Equipment Ratings:

BA414DF, BA444DF, BA444DL and BA424DF – Intrinsically Safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Class I, Zone 0, Group IIC in accordance with the Entity and FISCO concepts and when installed in accordance with Control Drawing Cl410-12; nonincendive for Class I, Division 2, Groups A, B, C and D; Class I, Zone 2, Group IIC; in accordance with the Nonincendive Field Wiring Concept and FNICO and when installed in accordance with Control Drawing Cl410-13; hazardous (classified) locations.

BA418CF, BA448CF, BA448CL and BA428CF – Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D; Class I, Zone 0, Group IIC in accordance with the Entity and FISCO concepts and when installed in accordance with Control Drawing Cl410-12; nonincendive for Class I, Division 2, Groups A, B, C and D; Class I, Zone 2, Group IIC; in accordance with the Nonincendive Field Wiring Concept and FNICO and when installed in accordance with Control Drawing Cl410-13; hazardous (classified) locations.

FM Approved for:

BEKA associates Hitchin, Hertfordshire SG5 2DA, United Kingdom



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

Class 3600			1998
Class 3610)	2010
Class 3611			2004
Class 3810			2005
ANSI/IEC 60529	1		2004

Original Project ID: 3027031

Approval Granted: November 22, 2006

Date

Report Number

Subsequent Revision Reports / Date Approval Amended

Report Number Date 070103 January 15, 2007 101217 March 16, 2011 re-issued June 1, 2011

FM Approvals LLC

Timothy & Adam

Technical Team Manager

Appd.					
			HAZARDOUS (CLASSI	FIED) LOCATION	UNCLASSIFIED LOCATION
Ckd.			BA414DF LOCATIONS:		
			Class I, Division 1, Groups A, B,C, I Class II, Division 1, Groups E, F & G		
			Class III Class I, Zone 0, Group IIC	SEE	
			BA418CF LOCATIONS:	NOTE 9	SEE
			Class I, Division 1, Groups A, B,C, I Class I, Zone 0, Group IIC		NOTE 1
uc				sit	
Modification			BA414DF and BA418CF	BA414DF or BA418CF SEE NOTE 5 & 6	NON HAZARDOUS
Modi			Terminals 1 & 2	SEE NOTE 5 & 6	SEE NOTE 4 LOCATION EQUIPMENT
Date			These terminals comply with the Intrinsically Safe	1 2	SEE NOTE 2
_			Concept (FISCO) defined by IEC 60079-27		SLE NOTE 2
lss.			Ui = 17.5V Uo = 0 Ii = 380mA dc Io = 0	SEE NOTE 8	
	10		Pi = 5.32W Po = 0 Ci = 0		
	3	reserved	Li = 8µH	*****	********
	associal Frolond	res	and have the following Entity Parameters	* Note:	dification to be made $\overset{\$}{\overset{*}{\overset{*}{\overset{*}{\overset{*}{\overset{*}{\overset{*}{\overset{*}{$
	֓֞֞֝֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	copyright	Ui = 22Vdc Uo = 0 Ii = 250mA Io = 0	🦹 without	reference/approval 🖫
	Ŋ L	cop	Pi = 1.2W Po = 0		M Approvals and * Associates Design *
(Ü	ntial,		‡ Departr	nent.
) - = 2	confidential,	Notes:		
		any co	1. The associated in	trinsically safe barriers and fieldbu	us power supply must be FM
	\prec	compa	approved and the installing this equi	manufacturers' installation drawir pment.	ngs shall be followed when
		ŏ			ully safe barriers and fieldbus power nufacturers' installation drawings shall
H				installing the equipment.	
Appd.	•	B		ocation equipment connected to thus power supply shall not use or	
Ckd.			or 250V dc.	us power supply shall flot use or t	gonorate more than 2004 mile
Ď				e in accordance with ANSI/ISA R	
			Electrical Code A		
		d.	Installations in Ca	nada shall be in accordance with	the Canadian Electrical Code C22.2
		alternative Ies added.		upply with FISCO compliant outpu parameters complying with the fo	
		r alte itles	.Uo or Vt	equal to or less than	Ui
tion	release	n fo ent t	lo or It Po	equal to or less than equal to or less than	li Pi
Modification	st re	Provision for alteinstrument titles	La Ca	equal to or greater than equal to or greater than	Lcable + Li Ccable + Ci cont:
					COIL.
Date	28.0.	15.09 2009	Title FM Approvals Control D	rawing for Intrinsically Safe	Drawn Checked Scale RC NTS
lss.		2	BA414DF & BA418CF F	-	Drawing No. Sheet 1 of 3 CI410-12
<u> </u>	<u> </u>	1			File: Cl410-12s1.dwg 15.09.09

		 	***		•					
Appd.				_	=					
				5.	To maintain IP66 protection between the BA418CF and the mounting panel:					
Ckd.					Four panel mounting clips should be used Minimum panel thickness should be 2mm (0.08inches) Steel				el .	
					·		3mm (0.12	2inches) Alun	ninium	
					Outside par build-up are	nel finish should be smooth, ound cut-out.	free from pa	rticle inclusio	ns, runs or	
					Panel cut-o	ut should be		6.0mm -0.0 + 35 inches0.		
					Edges of pa	anel cut-out should be debu	rred, and clea	n		
ation					Each panel tightened to	mounting clip should be between:	20 and 22	cNm (1.77 to	1.95 inLb)	
Modification	<u>.</u>			6.		a hazardous (classified) loo e fitted with cable glands / c				ı table
Date					Metallic glands a	nd hubs must be grounded -	- see note 7.			
lss.					Class	Permitted	gland or co	nduit hub		
	Š)	.d.			Class I	Any metallic or plastic cab the required environmenta		onduit hub tha	at provides	
	Sociate Foolond	nd reserved.			Class II and III	Crouse – Hinds Myler h SSTG-1 STG-1 ST/ MHUB-1	u bs AG-1			
	associa Fralog	copyright				O-Z / Gedrey Hubs CHMG-50DT				
	38					REMKE hub WH-1-G				
	\ \ ! !	confidential,				Killark Glands CMCXAA050 MCR050	MCX050			
		company		7.	hubs are fitted to	supplied bonding plate, who a BA414DF Fieldbus Indictor or conduit hubs must be co	ors,			
L,		r			_					
Ckd. Appd.		B		8.	manufactured fro	BA414DF and BA418CF Fi m conductive plastic per Art ures shall be grounded using	icle 250 of th	e National El	ectrical	
Э				9.	The terminator o CSA Approved.	n the Fieldbus must be FM o	or for Canadi	an installatior	ns CFM or	
		alternative les added.		10.	The BA414DF ar direct sunlight.	nd BA418CF should be mou	nted where t	hey are shield	ded from	
	e e	լբ∌	İ	11.	BA444DF Fieldb					
sation	release	Provision for instrument			BA444DL Fieldb BA424DF Fieldb	us Listener us Set Point Station				
Modification	First	Provi: instru							cont:	
)te	3.03	15.09 2009	Title	•			_	Drawn RC	Checked	Scale NTS
۲	2 2				• •	Drawing for Intrinsically S Fieldbus Indicators	afe	Drawing No.	0144	
lss.		2		ואאנו	אסו אלו אלו אלו ועד	LIGIUDUS IIIUICUIOIS		Sheet 2	CI41	0-12

File: Cl410-12s2.dwg 15.09.09

Appd.	12. The BA418CF may alternatively be titled:					
Ckd.	BA448CF Fieldbus Indicator BA448CL Fieldbus Listener					
	BA428CF Fieldbus Set Point Station					
	FISCO Rules					
Iss. Date Modification	The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (Vmax), the current (Imax) and the power (Pmax) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo, Voc or Vt), the current (Io, Isc or It) and the power (Po) which can be provided by the associated apparatus (supply unit). In addition the maximum unprotected residual capacitance (Ci) and inductance (Li) of each apparatus (other than terminators) connected to the Fieldbus must be less than or equal to 5nF and 10uH respectively. In each I.S. Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (Uo, Voc or Vt) of the associated apparatus used to supply the bus cable must be limited to the range 14Vdc to 24Vdc. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except a leakage current of 50µA for					
(A)	each connected device. Separately powered equipment needs galvanic isolation to ensure the					
\$ -	intrinsically safety Fieldbus circuit remains passive. The cable used to interconnect the devices needs to comply with the following parameters: Loop resistance R': 15150Ω/km					
Social England	Inductance per unit length L':0.41mH/km					
associa England	Capacitance per unit length L':0.41mH/km Capacitance per unit length C': 80200nF/km C' = C' line/line+0.5 C' line/screen, if both lines are floating					
BIEMA A	or $C' = C'$ line/line + C' line/screen, if the screen is connected to one line. Length of spur cable: max. 30m Length of trunk cable: max. 1km Length of splice: max = 1m Terminators At the end of each trunk cable an FM Approved line terminator with the following parameters is suitable: $R = 90100\Omega$					
Appd.	C = 02.2µF					
Ckd. A	System evaluation The number of passive devices like transmitters, actuators, connected to a single bus segment is not limited due to I.S. reasons. Furthermore, if the above rules are respected, the inductance and the capacitance of the cable need not be considered and will not impair the intrinsic safety of the installation.					
Modification First release	 Notes. 1. The intrinsic safety FISCO concept allows the interconnection of FM Approved Intrinsically Safe devices with FISCO parameters not specifically examined in combination as a system when: Uo or Voc or Vt ≤ Vmax, Io, Isc or It ≤ Imax, Po ≤ Pi. For Canadian installations the intrinsic safety FISCO concept allows the interconnection of CFM or CSA Approved Intrinsically Safe devices with FISCO parameters not specifically examined in combination as a system when: Uo or Voc or Vt ≤ Vmax, Io, Isc or It ≤ Imax, Po ≤ Pi. 					
Date 28.03 2006	Title FM Approvals Control Drawing for Intrinsically Safe Drawn Checked Scale RC NTS					
lss.	BA414DF & BA418CF Fieldbus Indicators Drawing No. Sheet 3 CI410-12					
	File: CI410-12s3.dwg 15.09.09					

Appd.	HAZARDOUS (CLASSIFIED) LOCATION	UNCLASSIFIED LOCATION				
Ckd.	BA414DF LOCATIONS: Class I, Division 2, Groups A, B,C, D Class II, Division 2, Groups E, F & G Class III Class I, Zone 2, Groups IIC					
	BA418CF LOCATIONS: Class I, Division 2, Groups A, B,C, D Class I, Zone 2, Groups IIC					
Modification	BA414DF and BA418CF Maximum input and output parameters BA414DF or BA418CF SEE NOTE 4 & 5	NON HAZARDOUS				
Date	Terminals 1 & 2 These terminals comply with	3A and 3B LOCATION EQUIPMENT				
lss.	The Fieldbus Nonincendive Cincept (FNICO) defined by IEC60079-27	SEE NOTE 1				
B실기계 associates Hitchin England company confidential, copyright reserved.	* Note: * No me * withou * from * BEKA * Depar	* ************************************				
cation Ckd. Appd. release sion for alternative ment titles added.	field wiring apparatus must not use or generate more than 250V rms or 250V dc. 2. Nonincendive field wiring installations shall be in accordance with the National Electrical Code ANSI/NFPA 70. The Nonincendive Field Wiring concept allows interconnection of Nonincendive Field Wiring Apparatus with Associated Nonincendive Field Wiring Apparatus using any of the wiring methods permitted for unclassified locations. Canadian installations shall be in accordance with the Canadian Electrical Code C22.2 3A. Linear power supply A linear fieldbus power supply shall be: FM Approved Associated Nonincendive Field Wiring Apparatus installed in the unclassified location with parameters complying with the following requirements: For Canadian Installations apparatus shall be CFM or CSA approved. OR FM Approved Nonincendive Field Wiring Apparatus installed in the classified location with parameters complying with the following requirements: For Canadian Installations apparatus shall be CFM or CSA approved. Voc equal to or less than Vmax La equal to or greater than Lcable + Li					
lss. Date Modifii 28.03 First 2006 Provi	Title FM Approvals Control Drawing for Nonincendive BA414DF & BA418CF Fieldbus Indicators	Ccable Cont. Drawn Checked Scale RC NTS Drawing No. Sheet 1 of 4 CI410-13s1.dwg 15.09.09				

38. FNICO non-linear power supply A FNICO non-linear power supply A FNICO non-linear fieldous power supply shall be: FM Approved Ascolated Nonincendrive Field Wiring Apparatus installed in the unclassified location complying with the following table: For Canadain Installations apparatus shall be CFM or CSA approved. OR FM Approved Nonincendrive Field Wiring Apparatus installed in the classified location complying with the following table: For Canadain Installations apparatus shall be CFM or CSA approved. Voc Maximum current for Groups AB [IIC] For Groups CD [IIB, IA] MAXIMUM current 15 199 16 154 17.5 121 380 4. To maintain IP86 protection between the BA418CF and the mounting panel: Four panel mounting clips should be used Minimum panel thickness should be warm (0.08inchres) Steel 3mm (0.12inches) Aluminium Outside panel finish should be emooth, free from particle inclusions, runs or build-up around out-out. Panel cut-out should be (2.00 v 3.5 inches -0.00 +0.05) (2.00 v 3.									
Second Part	Appd.								
Voc Maximum current for Groups AB [IIC] for Groups CD [IIB, IIA] mAximum current for Groups AB [IIC] for Groups CD [IIB, IIA] mAximum current for Groups CD [IIB, IIIA] mAximum current for Groups CD [IIIA] mAximum current for Groups CD [I				3В.	A FNICO non-linear fieldbus power supply FM Approved Associated Nonincendive unclassified location complying with the For Canadian Installations apparatus s OR FM Approved Nonincendive Field Wirin location complying with the following ta	e Field Wiring and the following tabe and the CFM or and Apparatus in the case and the field with the field wit	le: r CSA approv	/ed. e classified	
4. To maintain IP66 protection between the BA418CF and the mounting panel: Four panel mounting clips should be used Minimum panel thickness should be 2mm (0.08inches) Steel 3mm (0.12inches) Aluminium Outside panel finish should be smooth, free from particle inclusions, runs or build-up around cut-out. Panel cut-out should be deburred and clean Each panel mounting clips should be (2.60 x 5.35 inches -0.00 +0.02) Edges of panel cut-out should be deburred and clean Each panel mounting clips should be tightened to between: 20 and 22cNm (1.77 to 1.95 inLb) Cont. Cont. Title FM Approvals Control Drawing for Nonincendive BA4140F & BA418CF Fieldbus Indicators Drawing No. Sheet 2 Cl410-13	\vdash				Voc Maximum current for Groups AB [IIC] V mA 14 274 15 199 16 154	Max	imum current oups CD [IIB, mA 570 531 432	t	
Four panel mounting clips should be used Minimum panel thickness should be 2mm (0.08inches) Steel 3mm (0.12inches) Aluminium Outside panel finish should be smooth, free from particle inclusions, runs or build-up around cut-out. Panel cut-out should be 68.2 x 136.0mm -0.0 +0.5 (2.60 x 5.35 inches -0.00 +0.02) Edges of panel cut-out should be deburred and clean Each panel mounting clip should be tightened to between: 20 and 22cNm (1.77 to 1.95 inLb) Title FM Approvals Control Drawing for Nonincendive BA4140F & BA418CF Fieldbus Indicators FM Approvals Control Drawing for Nonincendive BA4140F & BA418CF Fieldbus Indicators Four panel mounting clips should be 2mm (0.08inches) Steel 3mm (0.12inches) Aluminium 0.01side panel finish should be smooth, free from particle inclusions, runs or build-up around cut-out. Panel cut-out should be deburred and clean Each panel mounting clips should be 2mm (0.12inches) Aluminium 0.01side panel finish should be smooth, free from particle inclusions, runs or build-up around cut-out. Panel cut-out should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel cut-out should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each panel mounting clip should be deburred and clean Each p	lss.			4	To maintain IP66 protection between the B	A418CF and ti	ne mountina :	panel:	
Cont. Cont. Cont. Cont. Cont. Prowing to Nonincerdive BA414DF & BA418CF Fieldbus Indicators Cont. Co			confidential,		Minimum panel thickness should be Outside panel finish should be smooth build-up around cut-out. Panel cut-out should be Edges of panel cut-out should be debuted by the build be should be	2mm (0.08i 3mm (0.12i , free from part 66.2 x 136. (2.60 x 5.38 rred and clean	nches) Alum ticle inclusion 0mm -0.0 +0 5 inches –0.0	inium s, runs or).5 0 +0.02)	
Cont. Secondary Content	Appd.		B						
Title FM Approvals Control Drawing for Nonincendive BA414DF & BA418CF Fieldbus Indicators Cont. Cont. Cont. Drawn Checked Scale NTS Prawing No. Sheet 2 Cont.	Ckd.								
FM Approvals Control Drawing for Nonincendive BA414DF & BA418CF Fieldbus Indicators FM Approvals Control Drawing for Nonincendive BA414DF & BA418CF Fieldbus Indicators CI410-13	Modification		for It titl					·	Cont.
	Γ.	1 28.03			••	ve	RC Drawing No.	D	NTS

Appd.								
Ckd.			5.	When installed in	a hazardous (classified) location the BA fitted with cable glands / conduit hubs s	414DF Field	bus the following	table.
					nd hubs must be grounded – see note 6.			
				Class	Permitted gland or co	onduit hub		
				Class I	Any metallic or plastic cable gland or countries the required environmental protection.	onduit hub th	at provides	
Modification				Class II and III	Crouse – Hinds Myler hubs SSTG-1 STG-1 STAG-1 MHUB-1			
-					O-Z / Gedrey hub CHMG-50DT			
. Date					REMKE hub WH-1-G			
lss.					Killark Glands CMCXAA050 MCR050 MCX050			
	. es	reserved.	6.	hubs are fitted to	supplied bonding plate, when 3 metallic BA414DF Fieldbus Indicators, s or conduit hubs must be connected tog			
	associat Findland	copyright res	7.	CAUTION: The lare manufactured	BA414DF and BA418CF Fieldbus Indica I from conductive plastic per Article 250 Ires shall be grounded using the 'E' term	tor enclosure of the Nation	s al Electrical	
	a S	- 1	8.	The terminator of CFM or CSA App	n the Fieldbus must be FM Approved or proved	for Canadian	Installations	
	·):=	confidential,	9.	* *	nd the BA418CF should be mounted whe	ere they are s	hielded from	
		company o	10.	BA444DF Fieldbu BA444DL Fieldbu				
Appd.		Ø	11.	BA448CF Fieldbu BA448CL Fieldbu				
Ckd.								
		rnative added.						
		alte es	!				·	
tion	release	n for ent titl				,		
Modification	First re	Provision finstrument						Cont.
Date	28.03 2006	15.09 2009		Approvals Contro	I Drawing for Nonincendive	Drawn RC	Checked	Scale NTS
lss.	-	2		• •	Fieldbus Indicators	Drawing No. Sheet 3	ČI41	0-13
					W		CI410-13s3.	dwg 15.09.09

Аррд.							
Ckd.	FNICO Rules						
Iss. Date Modification	FNICO Rules The FNICO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (Vmax), the current (Imax) and the power (Pmax) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo, Voc or Vt), the current (lo, Isc or It) and the power (Po) which can be provided by the associated apparatus (supply unit). In addition the maximum unprotected residual capacitance (Ci) and inductance (Li) of each apparatus (other than terminators) connected to the Fieldbus must be less than or equal to 5nF and 20uH respectively. In each I.S. Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (Uo, Voc or Vt) of the associated apparatus used to supply the bus cable must be limited to the range 14Vdc to 17.5Vdc. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except a leakage current of 50μA for each connected device. Separately powered equipment needs galvanic isolation to ensure the intrinsically safety Fieldbus circuit remains passive. The cable used to interconnect the devices needs to comply with the following parameters: Loop resistance R': 15150Ω/km						
(B) 三人仏 associates Hitchin England company confidential, copyright reserved.	Inductance per unit length L':0.41mH/km Capacitance per unit length C': 80200nF/km C' = C' line/line+0.5 C' 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: max. 30m Length of trunk cable: max. 1km Length of splice: max = 1m Terminators At the end of each trunk cable an FM Approved line terminator with the following parameters is suitable: R = 90100Ω C = 02.μF System evaluation The number of passive devices like transmitters, actuators, connected to a single bus segment is not limited due to nonincendive reasons. Furthermore, if the above rules are respected, the inductance and the capacitance of the cable need not be considered and will not impair the						
Ckd. Appd.	intrinsic safety of the installation. Notes. 1. The FNICO concept allows the interconnection of FM Approved nonincendive devices with FNICO parameters not specifically examined in combination as a system when: Uo or Voc or Vt ≤ Vmax.						
Modification First release Provision for alternative instrument titles added.	For Canadian installations the FNICO concept allows the interconnection of CFM or CSA Approved nonincendive devices with FNICO parameters not specifically examined in combination as a system when: Uo or Voc or Vt ≤ Vmax.						
lss. Date 1 28.03 2 15.09 2 2009	FM Approvals Control Drawing for Nonincendive BA414DF & BA418CF Fieldbus Indicators Drawn Checked Scale RC NTS Drawing No. CI410—13						