

51184

1 channel – I.S isolating module for 2, 3, or 4-wire transmitter

Description:

The module 51184 is used as interface between the transmitters located in the hazardous area and the control room. It provides a DC floating power supply for the 2 wire transmitters or accepts the transmitters with their own power supply, and converts or repeats with accuracy after isolation the mA signal of the input loop. With D1 option the smart transmitters with Hart protocol can communicate through the module using a terminal communicator. It must be installed on asymmetric or symmetric DIN rail, on removable socket or on a modulo 16 termination panel, in the safe area. The module 51184 must be associated to a certified IS apparatus, and this combination must be compatible regarding the intrinsic safety parameters.

Product options: codification 51184 – A – B – C – D – E – F

Main Power Supply:

A1: 24Vdc power supply
A2: 48Vdc power supply

Mounting:

BN: without socket, for panel mounting
B1: Asymmetric DIN rail mounting (up to 20 modules)
B2: Symmetric DIN rail mounting (up to 20 modules)
B4: Individual mounting on DIN rail.

Input range:

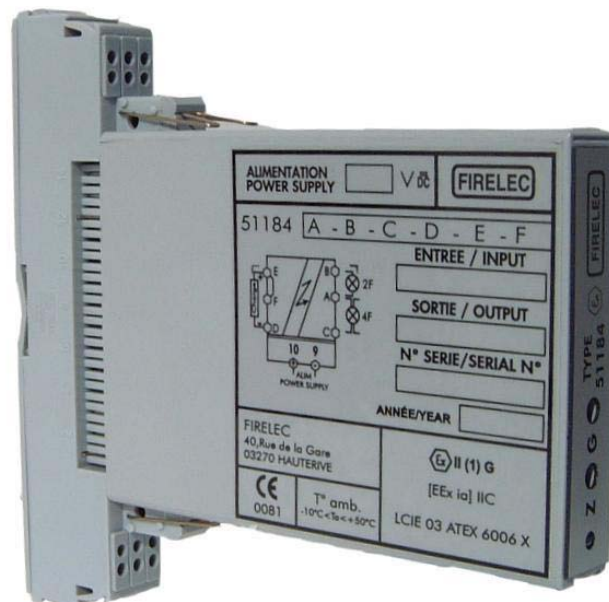
C1: 1 to 5mA
C2: 4 to 20mA
C3: 0 to 20mA

Input option:

DN: for standard transmitter
D1: Hart signal pass through

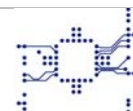
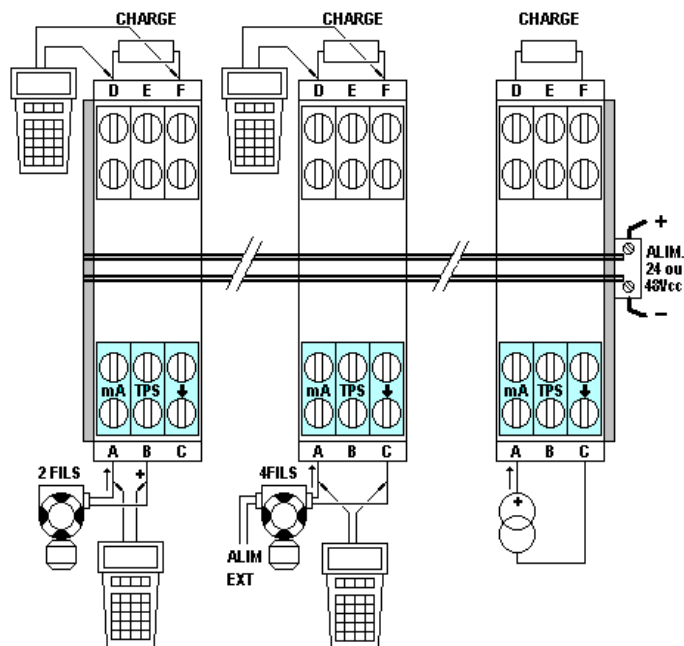
Output range:

F1: 0 to 10V
F2: 1 to 5V
F3: 4 to 20mA
F4: 0 to 20mA



Main characteristics:

- 1 input channel for 2, 3, or 4-wire transmitter
- Configurable output by jumpers
- Bi-directional Hart communication pass through
- Triple isolation between input, output and main power supply
- EN50020 [EEExia] IIC Classification
- ATEX certification LCIE 03 ATEX6006X
- DIN rail or panel modulo 16 mounting



Technical specifications

Power Supply

Voltage range (option A1)	21Vdc to 28Vdc, nominal 24Vdc
Voltage range (option A2)	42Vdc to 56Vdc, nominal 48 Vdc
Consumption (option A1):	125mA at 20mA output
Consumption (option A2):	65mA at 20mA output
Replaceable fuse:	160 mA 250V quick action (5x20)
Protection:	Reverse polarity and over voltage picks
Power ON indication:	By green Led on front plate

Input specifications

Input Impedance for DC signal:	About 120 Ω
HART input impedance (option D1):	>250 Ω
Transmitter Power Supply (at 20mA):	17Vdc minimum
Current limitation:	25mA+/- 1mA

Output specifications

Voltage (option F1 or F2):	0-10v or 1-5V , max current allowed 2mA
Current (option F3 or F4):	4-20mA or 0-20mA
Low limit:	<0,1mA (open loop)
Max load at 20mA output:	700 Ω at nominal main power supply

Transfer characteristics

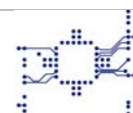
Accuracy at 20°C	Better than 0.15%
Response time	90% of the final value in 150ms.

Mechanical and environment characteristics

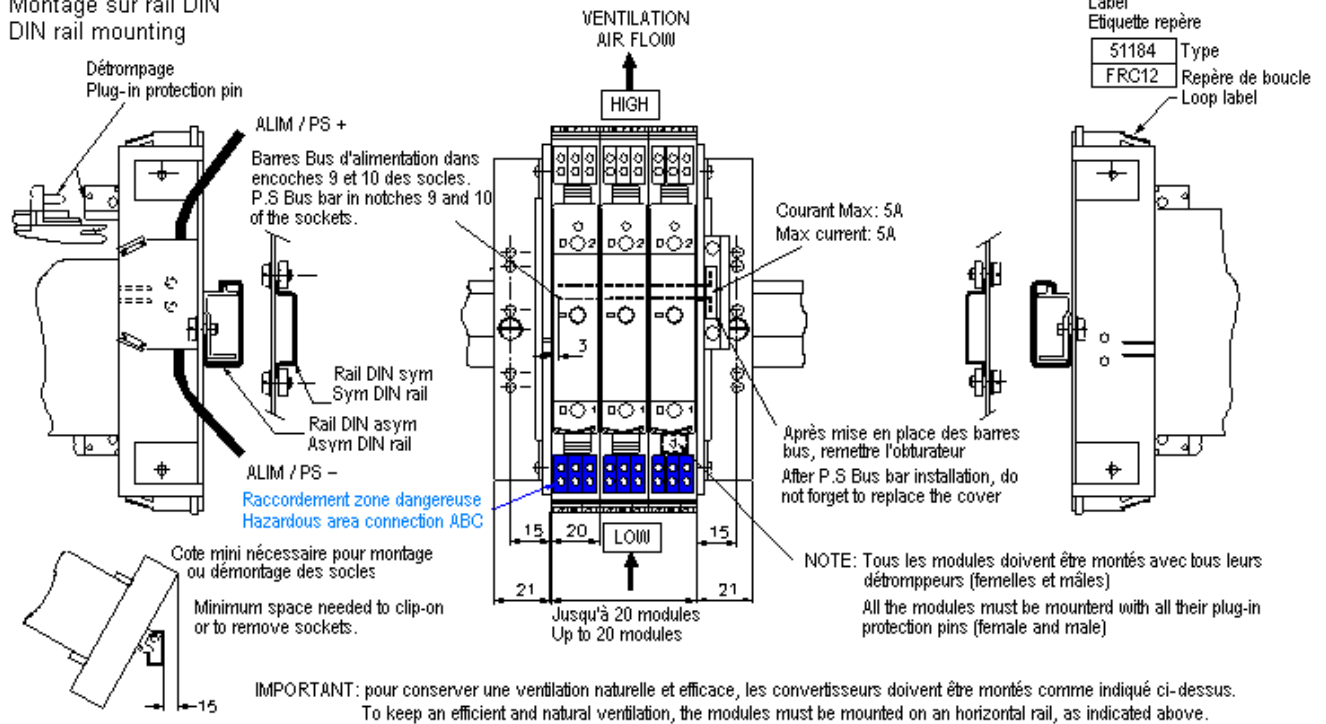
Isolation Voltage (input1 / output / P.S):	1500Vdc
Drift:	0.01%/°C
Common mode rejection	DC: without measurable effect. AC(50Hz): 120dB
Protection:	IP20
Wiring conductor section:	24 to 12 AWG (0.2 to 2.5 mm ²)
Weight:	100g
Size:	H=147mm W=17mm D=160mm with socket
Operating temperature:	-10°C to 50°C
Storage temperature:	-20°C to 60°C
Relative humidity:	10 to 90% (no condensation)
Mounting:	<u>DIN rail</u> : on socket , by group up to 20, or individually <u>Rack 19"</u> : on panel modulo 16 type CL6321-2

Intrinsic safety parameters

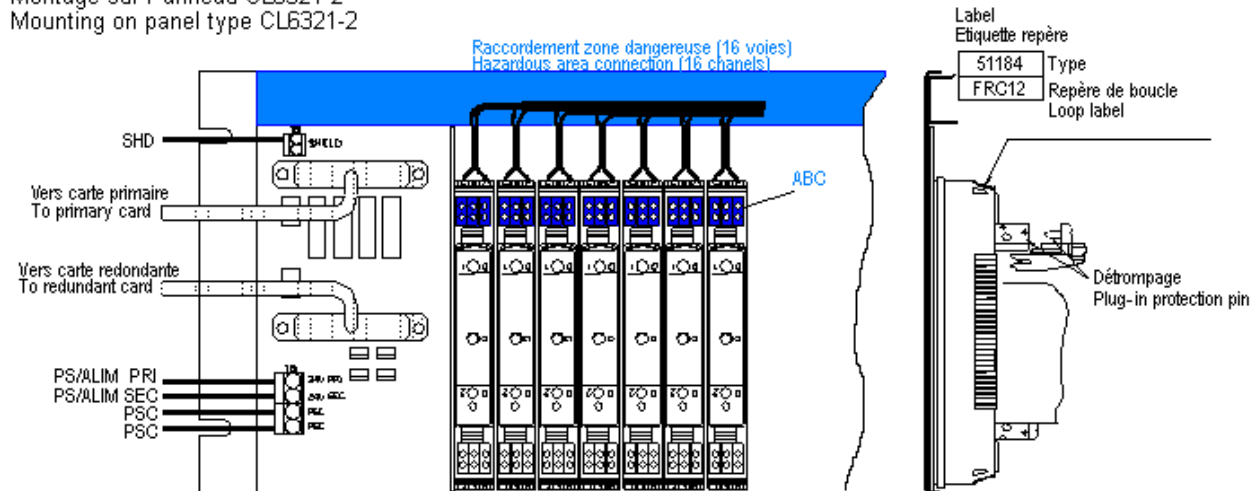
ATEX certificate:	LCIE03 ATEX6006X		
For 2-wire transmitters: terminals B & A			
Uo max (V)	Io max (mA)	27.8V	80mA
Co max (μ F)	Lo max (mH)	0.084 μ F	6mH
For 4-wire transmitters: terminals A & C			
Uo max (V)	Io max (V)	6.2V	1mA
Co max (μ F)	Lo max (mH)	34 μ F	1000mH



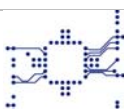
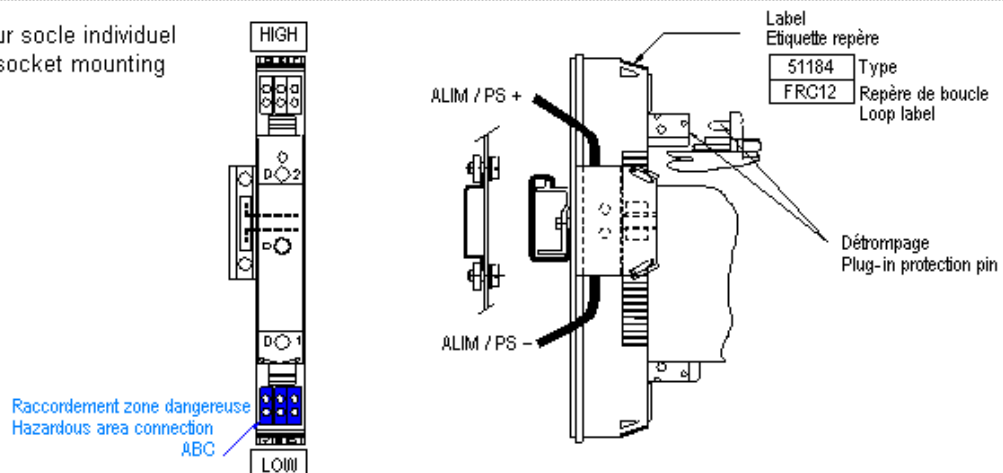
Montage sur rail DIN
DIN rail mounting



Montage sur Panneau CL6321-2
Mounting on panel type CL6321-2



Montage rail DIN sur socle individuel
DIN rail individual socket mounting



Instruction note

Intrinsic safety specifications:

The 51184 intrinsic safety module complies with the European standards EN50014 and EN50020. Its classification is [EExia]IIC. It must be mounted in the safety area and connected only to an intrinsic safety certified material (terminals A,B,C) and this association must be compatible regarding the I.S parameters.

The Intrinsic safety electric parameters are as follow

Option (HART)	Terminals	Uo max (V)	Io max (mA)	Po max (mW)	Co max (nF)	Lo max (mH)
DN	ABC	26	80	520	99	6
D1	BC	26	80	520	99	6
	CA	6.2	1	2	34x10 ³	1000
	ABC	27.8	80	560	84	6

The isolated output of the module must be connected to equipment powered on no more than 250Vac.

Mounting:

To ensure good reliable operation, the module must be installed in a dry and clean place, with an ambient temperature constantly kept between 10 and 30°C. The ambient temperature limits for continuous working are -10°C to 50°C.

The module is protected by an IP20 polyamide enclosure (CTI>300). It is plugged in a socket made of the same material than the enclosure, with a dual connecting protection (plug-in direction and module type). The socket itself is mounted on DIN rail, or installed on a termination panel modulo 16 type CL6321-2.

IMPORTANT

To be in conformity with the intrinsic safety standards, when the system is on operation, all the sockets must be occupied simultaneously, either with modules or with a substitute cards type 41013.

Input signal connexion:

The signals coming from the hazardous area are connected on the socket, on screw terminals labelled A,B,C (blue terminals). The conductor section is between 24 and 12 AWG (0.2 to 2.5 mm²). Take care of the compatibility of the I.S instrument connected.
See figure 1 below.

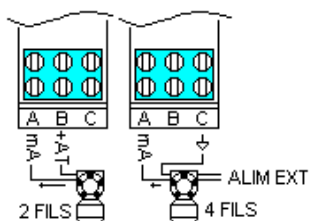


FIGURE 1

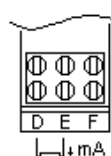


FIGURE 2

Output signal connexion:

The signals going to the non hazardous area are connected on the socket, on screw terminals (E and D). The conductor section is between 24 to 12 AWG (0.2 to 2.5 mm²). See figure 2.

In case of panel mounting, the output signals are connected to the non hazardous area via a SUBD37 female connector.

Power Supply connexion:

DIN rail mounting (up to 20 modules):

The power supply 24Vdc or 48 Vdc is distributed by bus bars (pin 9 (-) and 10 (+) on the module socket. The power supply is connected on the side terminal block (conductor section 0.5mm² to 4mm²). See the label for the polarity before connecting.

DIN rail mounting on individual socket:

The 24Vdc or 48Vdc power supply is connected on the side terminal block (conductor section 0.5mm² to 4mm²). See the label for the polarity.

Mounting on panel modulo 16, type CL6321-2

The 24Vdc power supply is connected on the green terminal block (conductor section 0.5mm² to 4mm²). There is the possibility of connecting a primary and a redundant 24Vdc power supply.

IMPORTANT

Cables routed to the hazardous area must be properly SEGREGATED from other cables by routing through separate cable tray. See I.S electric parameters for max Co and Lo

Start-up

Never plug-in the module which is not protected by its enclosure.

Each module has an identification label on the enclosure, which provides the following informations:

- The type of the barrier
- The power supply value
- The serial number
- The value of the input and output signals

The module is protected against reverse polarity. A green LED in the front side of the module indicate Power ON, when the module is under power. If the LED stay OFF, extract the module, remove the enclosure. Check the fuses F1 (160mA) et F2 (100mA) and replace them if necessary.

Be careful the fuses must have the same value and a breaking capacity of 60A min.

If the failure remains, send back the module to FIRELEC which is the only one entitled to repair it.

