

По вопросам продаж и поддержки обращайтесь: [btn@nt-rt.ru](mailto:btn@nt-rt.ru)

[www.bently.nt-rt.ru](http://www.bently.nt-rt.ru)

Архангельск (8182)63-90-72,  
Астана+7(7172)727-132,  
Белгород(4722)40-23-64,  
Брянск(4832)59-03-52,  
Владивосток(423)249-28-31,  
Волгоград(844)278-03-48,  
Вологда(8172)26-41-59,  
Воронеж(473)204-51-73,  
Екатеринбург(343)384-55-89,  
Иваново(4932)77-34-06,  
Ижевск(3412)26-03-58,  
Казань(843)206-01-48,  
Калининград(4012)72-03-81,  
Калуга(4842)92-23-67,  
Кемерово(3842)65-04-62,  
Киров(8332)68-02-04,

Краснодар(861)203-40-90,  
Красноярск(391)204-63-61,  
Курск(4712)77-13-04,  
Липецк(4742)52-20-81,  
Магнитогорск(3519)55-03-13,  
Москва(495)268-04-70,  
Мурманск(8152)59-64-93,  
Набережные Челны(8552)20-53-41,  
Нижний Новгород(831)429-08-12,  
Новокузнецк(3843)20-46-81,  
Новосибирск(383)227-86-73,  
Орел(4862)44-53-42,  
Оренбург(3532)37-68-04,  
Пенза(8412)22-31-16,  
Пермь(342)205-81-47,  
Ростов-на-Дону(863)308-18-15,

Рязань(4912)46-61-64,  
Самара(846)206-03-16,  
Санкт-Петербург(812)309-46-40,  
Саратов(845)249-38-78,  
Смоленск(4812)29-41-54,  
Сочи(862)225-72-31,  
Ставрополь(8652)20-65-13,  
Тверь(4822)63-31-35,  
Томск(3822)98-41-53,  
Тула(4872)74-02-29,  
Тюмень(3452)66-21-18,  
Ульяновск(8422)24-23-59,  
Уфа(347)229-48-12,  
Челябинск(351)202-03-61,  
Череповец(8202)49-02-64,  
Ярославль(4852)69-52-93

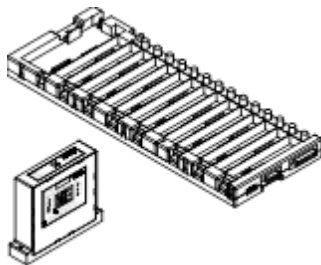
## Описание на защиты для опасных зон. Модель 1701/06



**BENTLY**  
Nevada

# FieldMonitor\* Hazardous Area Solutions

## Description



The 1701/06 Isolator Terminal Base (ITB) and 170190 Dual Galvanic Isolator are the FieldMonitor\* hazardous area solutions that support intrinsically safe transducer installations without external safety barriers. You must locate the FieldMonitor ITB and its associated modules in non-hazardous, Division 2, or Zone 2 areas while the connected transducers may be located in Division 1, Zone 1, or Zone 0 areas.

The 170190 Dual Galvanic Isolator installs directly into the ITB. This module eliminates the need to specify, install, and wire external safety barriers, or establish and maintain an intrinsically safe ground that zener safety barriers require. Two Galvanic Isolator versions are available:

- The 170190-01 is compatible with the 170133 and 170172 Internal Dual Proximitor\* sensors. It also works with most of our standard Bently Nevada\* external Proximitor sensors, velocity transducers, Velomitor\* sensors, and accelerometers that use the 170180 transducer I/O modules.
- The 170190-02 was especially designed to be used with the CEC 4-131 and equivalent Velocity Transducers.

**Note:** An optional cable assembly (p/n 138925) is available when buffered dynamic outputs need to be routed to an external patch panel, or any other device requiring dynamic signals.



## Specifications

All Specifications are at 23°C ± 2°C, (73.4°F ± 3.6°F)

### Electrical

#### Primary Power Input Range:

+19 Vdc to + 33 Vdc

#### Power Dissipation:

36 Watts at +24 V, typical for a complete system (4 monitors, 5 isolators, 5 Transducer I/O Modules or Internal Proximitors Modules)

### Installation

Install per Control Drawing 141265 in a safe area, CSA Zone 2 IIC and Class 1 Division 2, Group A, B, C, D, or Cenelec Zone 2 IIC

### 1701/06 Isolator Terminal Base

Inputs/Outputs	Quantity
16-pin female Flexbus connector for connection directly to another Flex module	1
16-pin male Flexbus connector for connection directly to Flexbus using Flex extender cable	1
25-pin DSUB. Buffered dynamic output signals	1
Coaxial connectors for Buffered dynamic output signals	8
Coaxial connector for Buffered Keyphasor* output signal	1
2 conductor Euro terminal for Buffered Keyphasor output signal	1
2 conductor Euro terminal for primary power input, + and - connections, 14 to 18 AWG.	1
8 conductor Euro terminals for transducer field wiring for 8 monitor channels, 16 to 18 AWG. These connections are intrinsically safe when galvanic isolators are installed.	4

Inputs/Outputs	Quantity
8 conductor Euro terminal for Keyphasor field wiring for one channel, 16 to 18 AWG. This connection is intrinsically safe when a galvanic isolator is installed	1
Wiring stud for hazardous area earth connection	1
Wiring stud for instrument earth connection	1

### Module Capacity

FieldMonitor Module	1701/06 Capacity
Power Supply	1
2-channel Transducer I/O Module for Keyphasor input  <b>Note:</b> A separate terminal base is needed for each shaft rotative speed as each terminal base can accommodate only one Keyphasor transducer.	1
170190-01 Dual Galvanic Isolator for Keyphasor module	1
1701/22 FieldMonitor Management Interface Module	1
2-channel monitor module	Up to 4
170190-XX Dual Galvanic Isolators (one per monitor)	Up to 4
2-channel Transducer I/O Modules (one per monitor)	Up to 4

### Physical

#### 1701/06

#### Dimensions: (HxWxD) (modules installed)

12.7 cm x 20.32 cm x 50.80 cm (5 in x 8.0 in x 20.00 in). See figures 1 and 2.

#### Weight: (no modules installed)

1.6 kg (3.5 LB)

### Mounting:

Bulkhead. 6 #10 bolts. Can mount over top of 35 mm low profile DIN rails.

### Environmental Limits

1701/06

#### Operating

##### Temperature:

-20°C to +70°C (-4°F to +158°F)

ambient air temperature next to modules

#### Storage

##### Temperature:

-40°C to + 85°C (-40°F to +185°F)

#### Operating and

##### Storage Humidity:

5% to 95% relative non-condensing

### Hazardous Area Approvals

#### CSA/NRTL/C

Ex ia IIC : Class I, Zone 0:

Class I, Div 1, Groups A, B, C, D


Ex nA IIC Class I, Zone 2

Class I, Div 2, Groups A, B, C, D


T4 @ Ta = 70 °C max

When installed per drawing number 141265

#### ATEX

 II 3G Ex nA[L] IIC T4 Gc

-30°C ≤ Ta ≤ 70°C

 II 1/3 G Ex nA [ia] ia IIC T4 Ga

-30°C ≤ Ta ≤ 70°C

When installed per drawing number 141265

#### Brazil

DNV 12.0020X

Class I, Division 1, Groups A, B, C, D

Ex ia [ia Ga] nA IIC T4 Gc

### 170190 Dual Galvanic Isolator Specifications

All Specifications are at 23° ±2°C, (73.4°F ±3.6° F)

### Signal Inputs

#### 170190

The 170190 isolator interfaces to two transducers and works with either internal or external transducers. When an external transducer is used a Transducer I/O Module is installed in the terminal base.

Transducers that are not listed can be used with the isolator if they are approved and their entity parameters are within the isolator's specification. See the Safety and Entity Parameters section below. Refer to transducer specifications and ordering information sheets for exact ordering information.

Input Type	Transducer I/O Module or Internal Transducer	Transducer
Two external -24 Volt Proximitor sensors	170180-01-05	-24 Volt Proximitor transducers: 330100 330800 330801 330900 7200 5 mm, 8 mm 7200 14 mm
Internal Dual Proximitor (2-channels) transducer	170133-050-05 170133-090-05 170133-140-05 170172-050-05 170172-090-05	Not applicable
Two Acceleration sensors	170180-01-05	-24 Volt Acceleration sensors: 330400 330425 23733 49578 24145
Two Velocity sensors	170180-02-05	9200 74712
Two Velocity sensors	170180-02-05 used with 170190-02	CEC 4-131 and equivalent
Two Velomitor sensors	170180-03-05	330500 330525 330750 330752

Input Type	Transducer I/O Module or Internal Transducer	Transducer
Velomitor sensor on channel A and a Velocity sensor on channel B.	170180-04-05	Channel A: 330500 330525 330750  Channel B: 9200 74712

## Environmental Limits

### 170190

#### Operating Temperature:

-20°C to +70°C (-4°F to +158°F)  
ambient air temperature next to modules

#### Storage Temperature:

-40°C to +85°C (-40°F to +185°F)

#### Operating and Storage Humidity:

5% to 95% relative non-condensing

#### Weight:

200g (0.44 LB) typical

## Power Input

### 170190

#### +24 Volt dc input from terminal base:

+18 to +32 Vdc at input to isolator

#### +24 Volt Power:

97 mA at +24 V

#### -Vt Power with no transducers connected:

29 mA per channel. (this is power drawn by the isolator from the system)

## ac Performance

### 170190

#### ac Amplitude:

Specification is input to output of isolator in percent of the monitors full scale range.

Frequency Range	Full Scale Ranges less than 200 mV peak		Full Scale Ranges greater than 200 mV peak	
	Pk or pk-pk signal processing	rms signal processing	Pk or pk-pk signal processing	rms signal processing
<b>1 Hz to 5 kHz:</b>	+4 to +2%	+1 to -2%	+1 to -2%	+1 to -2%
<b>5 kHz to 10 kHz:</b>	+3 to +1%	0 to -2%	-1 to -4%	-1 to -3%
<b>10 kHz to 20 kHz:</b>	+3 to -2%	0 to -4%	-3 to -10%	-2 to -7%

#### ac Ripple:

14 mV rms, 20 kHz bandwidth

#### ac Phase:

(Delay is equal to or less than 12.5 microseconds)

#### 0 Hz to 200 Hz:

Less than or equal to 0.86 degrees

#### 200 Hz to 600 Hz:

Less than or equal to 2.6 degrees

#### 600 Hz to 1 kHz:

Less than or equal to 4.3 degrees

#### 1 kHz to 10 kHz:

Less than or equal to 43.2 degrees

#### 10 kHz to 20 kHz:

Less than or equal to 90 degrees

## dc Performance

### 170190

Specification is for inputs to the isolator between -2.0 Vdc and -20 Vdc to output of isolator

#### dc error:

±100 mVdc

## Hazardous Area Approvals

### 170190



The system, including the isolator, transducer I/O modules, and internal Proximity sensors must install in a safe area or Div 2 / Zone 2. The interface to external transducers and the proximity probe connectors on the internal Proximity sensors are intrinsically safe and have the approvals shown.

#### 170190-01 and 170190-02 Dual Galvanic Isolators:

#### CSA/NRTL/C

Ex ia IIC : Class I, Zone 0  
Class I, Division 1, Groups A, B, C, D  
Ex nA IIC Class I, Zone 2  
Class I Division 2, Groups A, B, C, D  
T4 at Ta=70°C

#### ATEX

CE<sub>1180</sub>  
 II 3G Ex nA[L] IIC T4 Gc  
-30°C ≤ Ta ≤ 70°C  
 II 1/3 G Ex nA [ia] ia IIC T4 Ga  
-30°C ≤ Ta ≤ 70°C

## Safety Parameters: maximum output voltage and current per channel

(The safety parameters are the maximum output voltage and current into the hazardous area.)

This specification gives U<sub>o</sub> and I<sub>o</sub>, the maximum voltage and current at the intrinsically safe field wiring terminals on the terminal base when the 170190 isolator is used with the Transducer I/O Modules indicated. These two parameters are derived from the

combination of the signal and power interface to a single transducer.

Transducer I/O Module or Internal Transducer	U <sub>o</sub> , Volts	I <sub>o</sub> , mA
170180-01-05	26.8	119.8
170180-02-05 with 170190-01	26.8	19
170180-02-05 with 170190-02	23.7	13.85
170180-03-05	26.8	119.8
170180-04-05, Channel A	26.8	119.8
170180-04-05, Channel B	26.8	19
170133-xxx-05	26.8	119.8
170172-xxx-05	26.8	119.8

## Entity Parameters: maximum external capacitance and inductance per channel

(Entity parameters are used to determine if a system composed of individual approved components, such as a sensor, cabling, signal conditioning, and isolator, is within safe limits when it is connected as a system.)

This specification gives the limits for combined cable/sensor capacitance and inductance when the 170190 isolator is used with the Transducer I/O Modules indicated.

**Note:** Entity parameters apply to all I/Os with a 170190-01 isolator except for the 170180-02-05 I/O that can be used with the 170190-01 or the 170190-02 isolators.

Transducer I/O Module	IIC		IIB		IIA	
	C <sub>o</sub> , nF	L <sub>o</sub> , mH	C <sub>o</sub> , nF	L <sub>o</sub> , mH	C <sub>o</sub> , nF	L <sub>o</sub> , mH
170180-01-05 170180-03-05	74	2.73	680	11.10	2,330	22.25
170180-02-05 w/ 170190-01	70	110	698	443	2348	886
170180-02-05 w/ 170190-02	10 6	207	938	833	3438	1667
170180-04-05, Channel A	52	2.73	680	11.10	2,330	22.25
170180-04-05, Channel B	70	110	698	443	2348	886

## Null Input Offset Error

(Null Input Offset Error [NIOE] is the signal reading when there is no dynamic vibration from the connected sensor.)

This specification gives the typical values of NIOE measured using the digital scaled value returned by the vibration monitor connected to the Isolator. The effect of Null Input Offset Error on the displayed reading can be reduced by decreasing channel bandwidth and by selecting rms full-scale ranges when using velocity or acceleration sensors.

The following table shows NOIE as a function of full-scale range type and transducer type.

Full Scale Range Type	Transducer Type	Null Input Offset Error
Peak-to-Peak Displacement	200 mV/mil (7.87 mV/um) Proximitor Sensor	0.03 mil peak-to-peak (pp) (0.8 micrometer pp)
Peak Velocity	100 mV/in/s pk (3.93 mV/mm/s pk) Velomitor transducer	0.04 in/s pk (1.0 mm/s pk)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velomitor transducer	0.048 in/s pk (1.2 mm/s pk)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velocity transducer	0.04 in/s pk (1.0 mm/s pk)
	500 mV/in/s pk (19.68 mV/mm/s pk) Seismoprobe* transducer	0.01 in/s pk (0.25 mm/s pk)
RMS Velocity	100 mV/in/s pk (3.93 mV/mm/s pk) Velomitor transducer	0.01 in/s rms (0.25 mm/s rms)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velomitor transducer	0.01 in/s rms (0.25 mm/s rms)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velocity transducer	0.005 in/s rms (0.13 mm/s rms)

Full Scale Range Type	Transducer Type	Null Input Offset Error
	500 mV/in/s pk (19.68 mV/mm/s pk) Seismoprobe transducer	0.002 in/s rms (0.05 mm/s rms)
Peak-to-Peak Displacement (Integrated Velocity)	100 mV/in/s pk (3.93 mV/mm/s pk) Velomitor transducer	0.10 mil peak-to-peak (pp) (2.5 micrometer pp)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velomitor transducer	0.08 mil pp (2.0 micrometer pp)
	145 mV/in/s pk (5.71 mV/mm/s pk) Velocity sensors	0.10 mil pp (2.5 micrometer pp)
	500 mV/in/s pk (19.68 mV/mm/s pk) Seismoprobe transducer	0.02 mil pp (0.5 micrometer pp)
Peak Acceleration	100 mV/g Accelerometers	0.10 g pk (1.0 m/s <sup>2</sup> pk)
	25 mV/g Accelerometers	0.50 g pk (4.9 m/s <sup>2</sup> pk)
RMS Acceleration	100 mV/g Accelerometers	0.02 g rms (0.20 m/s <sup>2</sup> rms)
	25 mV/g Accelerometers	0.10 g rms (1.00 m/s <sup>2</sup> rms)
Peak Velocity (Integrated Acceleration)	100 mV/g Accelerometers	0.009 in/s pk (0.23 mm/s pk)
	25 mV/g Accelerometers	0.043 in/s pk (1.10 mm/s pk)
RMS Velocity (Integrated Acceleration)	100 mV/g Accelerometers	0.003 in/s rms (0.08 mm/s rms)
	25 mV/g Accelerometers	0.012 in/s rms (0.3 mm/s rms)

---

## dc Output with Input Open

This specification gives the minimum dc output voltage from the isolator with the input signal connected to common or open circuit when using an external or internal Proximitor transducer.

### Transducer I/O Module or Internal Proximitor Module

Equal to or more positive than –  
1.00 Vdc

---

## Ordering Information

### 1701/06-01

Isolator Terminal Base

### 170190-01

Dual Galvanic Isolator

### 170190-02

Dual Galvanic Isolator (used only  
with CEC 4-131 transducer or  
equivalent)

### 170180-xx-05

Transducer I/O Modules. Use the  
B=05, Multi Agency Approval Option

### 170133-xxx-05

3300 Series Dual Internal  
Proximitor module. Use the B=05,  
Multi Agency Approval Option

### 170172-xxx-05

7200 Series Dual Internal Proximitor  
module. Use the B=05, Multi Agency  
Approval Option

---

## Accessories

### 139193-01

Blank Slot Cover Kit. Used to cover  
unused monitor, transducer I/O, or  
isolator slots in the terminal base.

---

### FieldMonitor Buffered Dynamic Cable

#### 138925-AAA-BB

#### Option Description

##### A: Cable Length

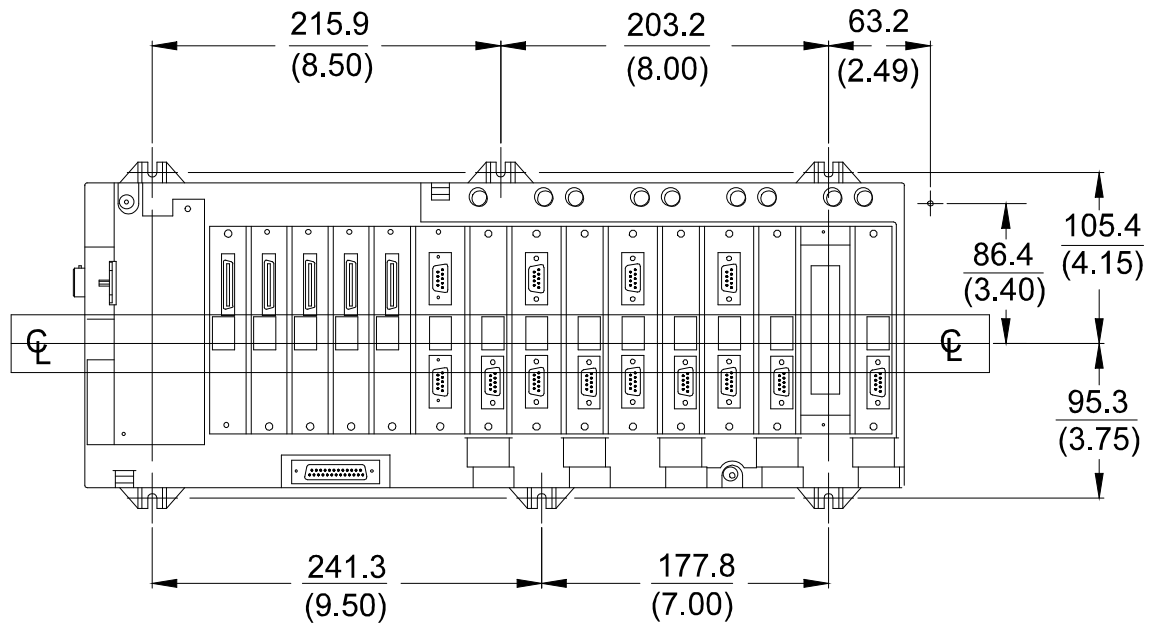
<b>005</b>	5 ft (1.5 m)
<b>007</b>	7 ft (2.1 m)
<b>010</b>	10 ft (3 m)
<b>025</b>	25 ft (7.6 m)
<b>050</b>	50 ft (15.2 m)
<b>100</b>	100 ft (30.5 m)

##### B: Cable Assembly

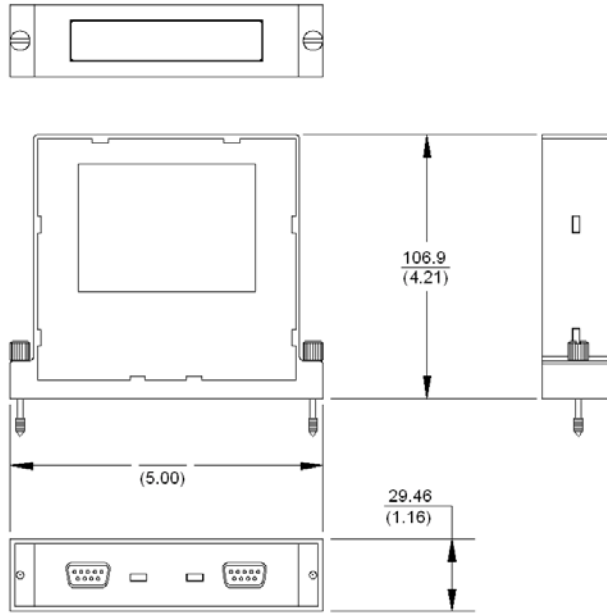
<b>00</b>	Unassembled
<b>02</b>	Assembled



## Dimensional Drawings



**Figure 1: 1701/06 FieldMonitor Isolator Terminal Base**  
Dimensions are in millimetres (inches)



**Figure 2: 170190 Dual Galvanic Isolator**

Dimensions are in millimetres (inches)

По вопросам продаж и поддержки обращайтесь: [btn@nt-rt.ru](mailto:btn@nt-rt.ru)

[www.bently.nt-rt.ru](http://www.bently.nt-rt.ru)

Архангельск (8182)63-90-72,  
Астана+7(7172)727-132,  
Белгород(4722)40-23-64,  
Брянск(4832)59-03-52,  
Владивосток(423)249-28-31,  
Волгоград(844)278-03-48,  
Вологда(8172)26-41-59,  
Воронеж(473)204-51-73,  
Екатеринбург(343)384-55-89  
, Иваново(4932)77-34-06,  
Ижевск(3412)26-03-58,  
Казань(843)206-01-48,  
Калининград(4012)72-03-81,  
Калуга(4842)92-23-67,  
Кемерово(3842)65-04-62,  
Киров(8332)68-02-04,

Краснодар(861)203-40-90,  
Красноярск(391)204-63-61,  
Курск(4712)77-13-04,  
Липецк(4742)52-20-81,  
Магнитогорск(3519)55-03-13,  
Москва(495)268-04-70,  
Мурманск(8152)59-64-93,  
Набережные Челны(8552)20-53-41  
, Нижний Новгород(831)429-08-12,  
Новокузнецк(3843)20-46-81,  
Новосибирск(383)227-86-73,  
Орел(4862)44-53-42,  
Оренбург(3532)37-68-04,  
Пенза(8412)22-31-16,  
Пермь(342)205-81-47,  
Ростов-на-Дону(863)308-18-15,

Рязань(4912)46-61-64,  
Самара(846)206-03-16,  
Санкт-Петербург(812)309-46-40,  
Саратов(845)249-38-78,  
Смоленск(4812)29-41-54,  
Сочи(862)225-72-31,  
Ставрополь(8652)20-65-13,  
Тверь(4822)63-31-35,  
Томск(3822)98-41-53,  
Тула(4872)74-02-29,  
Тюмень(3452)66-21-18,  
Ульяновск(8422)24-23-59,  
Уфа(347)229-48-12,  
Челябинск(351)202-03-61,  
Череповец(8202)49-02-64,  
Ярославль(4852)69-52-93



**BENTLY**  
Nevada