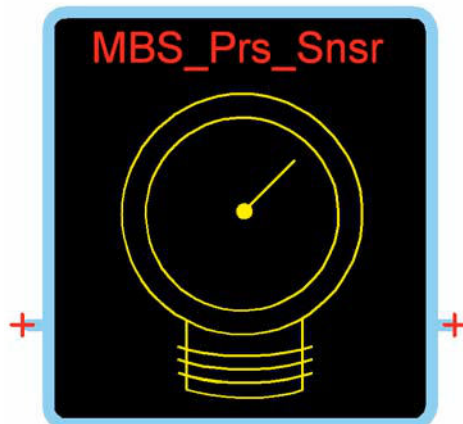


User Manual

# PLUS+1<sup>®</sup> Compliant

## MBS 1250 Pressure Sensor Function Blocks



**Revision history**

*Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
March 2018	Added Prs_Snsr550b and Prs_Snsr_Gen function block.	0401
April 2016		CA
November 2011		BA

**Contents**

**Prs\_Snsr40b Function Block**

Inputs..... 5

Outputs..... 5

Status and Fault Logic..... 6

    Status Logic..... 6

    Fault Logic..... 6

Relationship Between Function Block Input and Output Signals..... 7

Function Block Connections..... 8

MC Controller—Input Configuration..... 8

    Configure the MFln..... 9

    Configure the DigAn..... 9

SC Controller—Input Configuration..... 10

    Configure the MFln..... 10

    Configure the DigAn..... 11

**Prs\_Snsr160b Function Block**

Inputs..... 12

Outputs..... 13

Status and Fault Logic..... 13

    Status Logic..... 13

    Fault Logic..... 14

Relationship Between Function Block Input and Output Signals..... 14

Function Block Connections..... 15

MC Controller—Input Configuration..... 15

    Configure the MFln..... 16

    Configure the DigAn..... 16

SC Controller—Input Configuration..... 17

    Configure the MFln..... 17

    Configure the DigAn..... 18

**Prs\_Snsr250b Function Block**

Inputs..... 19

Outputs..... 20

Status and Fault Logic..... 20

    Status Logic..... 20

    Fault Logic..... 21

Relationship Between Function Block Input and Output Signals..... 21

Function Block Connections..... 22

MC Controller—Input Configuration..... 22

    Configure the MFln..... 23

    Configure the DigAn..... 23

SC Controller—Input Configuration..... 24

    Configure the MFln..... 24

    Configure the DigAn..... 25

**Prs\_Snsr400b Function Block**

Inputs..... 26

Outputs..... 27

Status and Fault Logic..... 27

    Status Logic..... 27

    Fault Logic..... 28

Relationship Between Function Block Input and Output Signals..... 28

Function Block Connections..... 29

MC Controller—Input Configuration..... 29

    Configure the MFln..... 30

    Configure the DigAn..... 30

SC Controller—Input Configuration..... 31

    Configure the MFln..... 31

    Configure the DigAn..... 32

**Prs\_Snsr500b Function Block**

**Contents**

Inputs.....	33
Outputs.....	34
Status and Fault Logic.....	34
Status Logic.....	34
Fault Logic.....	35
Relationship Between Function Block Input and Output Signals.....	35
Function Block Connections.....	36
MC Controller—Input Configuration.....	36
Configure the MFIn.....	37
Configure the DigAn.....	37
SC Controller—Input Configuration.....	38
Configure the MFIn.....	38
Configure the DigAn.....	39

**Prs\_Snsr550b Function Block**

Inputs.....	40
Outputs.....	41
Status and Fault Logic.....	41
Status Logic.....	41
Fault Logic.....	42
Relationship Between Function Block Input and Output Signals.....	42
Function Block Connections.....	43
MC Controller—Input Configuration.....	43
Configure the MFIn.....	44
Configure the DigAn.....	44
SC Controller—Input Configuration.....	45
Configure the MFIn.....	45
Configure the DigAn.....	46

**Prs\_Snsr600b Function Block**

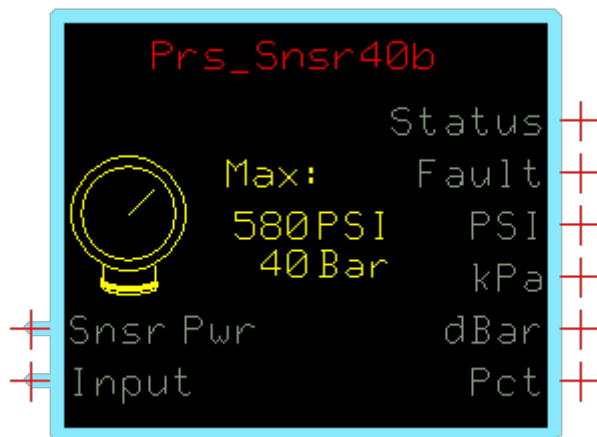
Inputs.....	47
Outputs.....	48
Status and Fault Logic.....	48
Status Logic.....	48
Fault Logic.....	49
Relationship Between Function Block Input and Output Signals.....	49
Function Block Connections.....	50
MC Controller—Input Configuration.....	50
Configure the MFIn.....	51
Configure the DigAn.....	51
SC Controller—Input Configuration.....	52
Configure the MFIn.....	52
Configure the DigAn.....	53

**Prs\_Snsr\_Gen Function Block**

Inputs.....	54
Outputs.....	54
Status and Fault Logic.....	55
Status Logic.....	55
Fault Logic.....	55
Relationship Between Function Block Input and Output Signals.....	56
Function Block Connections.....	57
MC Controller—Input Configuration.....	57
Configure the MFIn.....	58
Configure the DigAn.....	58
SC Controller—Input Configuration.....	59
Configure the MFIn.....	59
Configure the DigAn.....	60

### Prs\_Snsr40b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–40 bar [4000 kPa/580 PSI] range.



### Inputs

Find out how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	U16	0–5250 mV	Inputs a reference voltage that the PLUS+1® controller also applies to the Pin 1 (+ Supply) on the pressure transmitter.
<b>Input</b>	U16	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar</b> and <b>Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of PSI and kPa. The maximum nominal output is specified by <b>Bar</b> and is limited to 2200.</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of PSI and kPa at 112.50% of the output defined by <b>Bar</b>.</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. The generic function block allows you to specify the pressure range allowed.</p>

### Outputs

Learn how the outputs of the general function block work.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	—	<p>Indicates if the <b>Flt Pct</b> value is within range or is set too high.</p> <p>The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition.</p> <p>You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block.</p> <p>The <b>Status</b> output uses the bitwise scheme.</p> <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>

## Prs\_Snsr40b Function Block

### Function Block Outputs (continued)

<b>Fault</b>	U16	---	<p>Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high.</p> <p>The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition.</p> <p>You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block.</p> <p>The <b>Fault</b> output uses the bitwise scheme.</p> <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–35896	<p>Indicates pressure in pounds per square inch (PSI).</p> <p>1 = 1 PSI.</p>
<b>kPa</b>	U16	0–247500	<p>Indicates pressure in kilopascals (kPa).</p> <p>1 = 1 kPa.</p>
<b>dBar</b>	U16	0–24750	<p>Indicates pressure in decibars (dBar).</p> <p>1 = 1 dBar.</p>
<b>Pct</b>	U16	0–11250	<p>Indicates pressure as a percent of the function block's operating range.</p> <p>10000 = 100.00%.</p>

## Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

### Fault Logic

Learn how fault logic can indicate problems, causes of problems, and solutions.

#### Fault logic

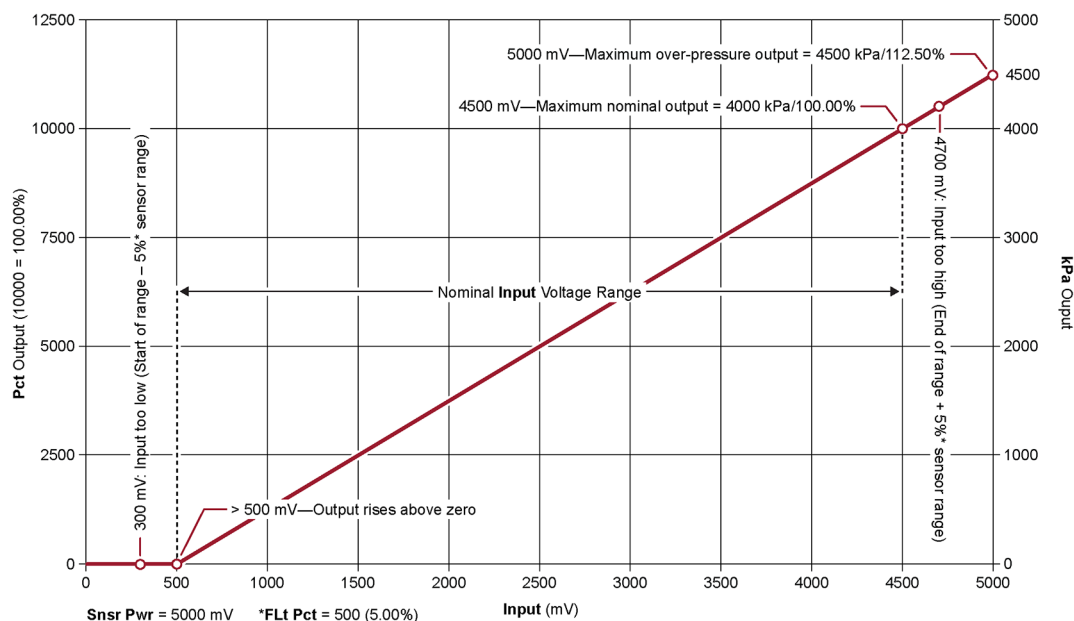
Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>• Inspect for short circuit in wire connections to sensor.</li> <li>• Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.		<b>Output</b> = 0.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

### Prs\_Snsr40b Function Block

#### Relationship Between Function Block Input and Output Signals

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 4000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 4500 kPa with the **Input** voltage at 5000 mV. (4000 maximum nominal pressure x 112.50% = 4500 kPa maximum over-pressure)

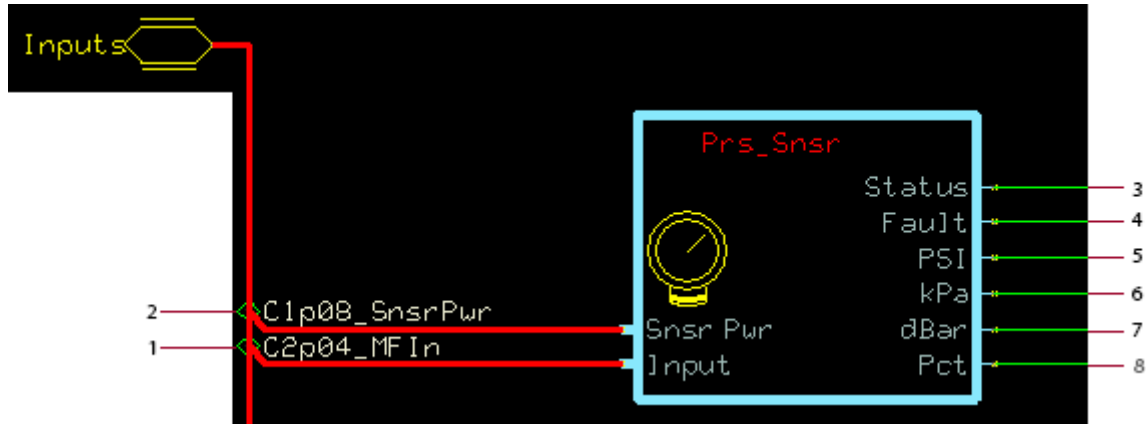
When the **Input** voltage:

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

### Prs\_Snsr40b Function Block

#### Function Block Connections

Connections you can make with the function block are described.



#### Function block connections

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

#### MC Controller—Input Configuration

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block's **Input** through an **MFIn** or a **DigAn**.

You must change the **MFIn** and **DigAn** default configurations to accept this input.

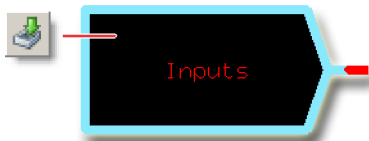


### Prs\_Snsr40b Function Block

#### Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

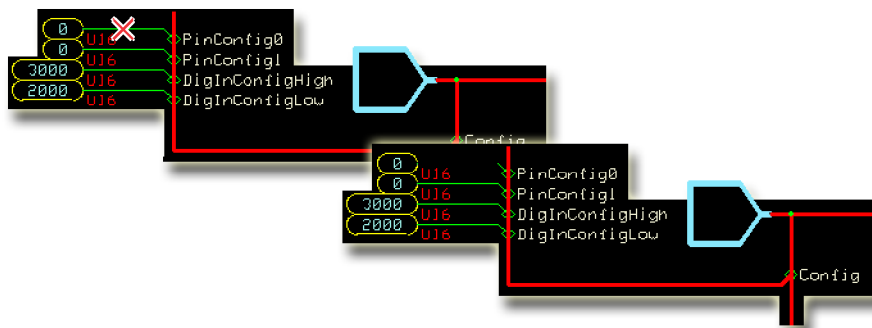
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



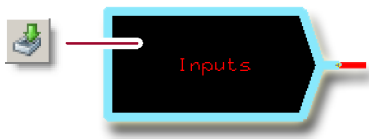
3. Make the changes that are shown in this figure.



#### Configure the DigAn

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

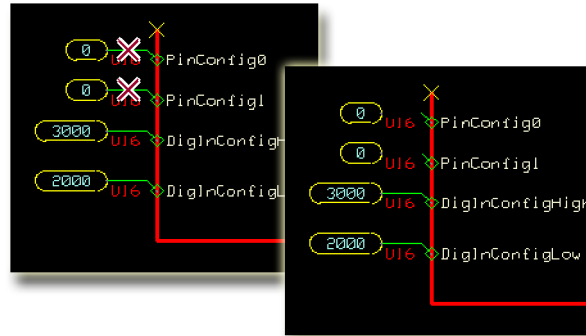


2. Enter the page that receives the input.



### Prs\_Snsr40b Function Block

3. Make the changes that are shown in the following figure.



### SC Controller—Input Configuration

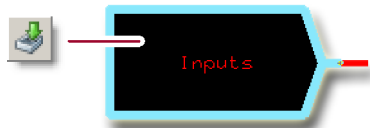
Configure **MFI**n and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFI**n or a **DigAn**. You must change the **MFI**n and **DigAn** default configurations to accept this input.

#### Configure the MFI

Learn how to configure MFI to accept input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

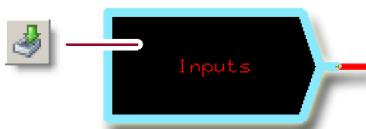


### Prs\_Snsr40b Function Block

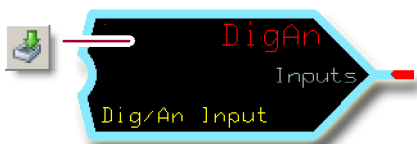
#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

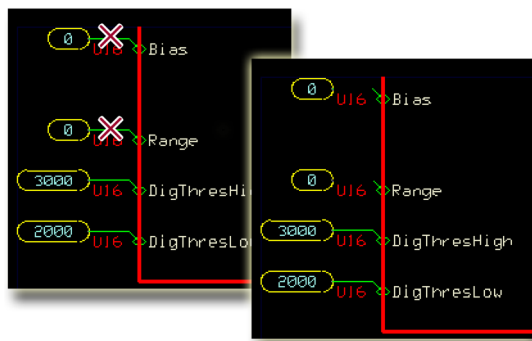
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

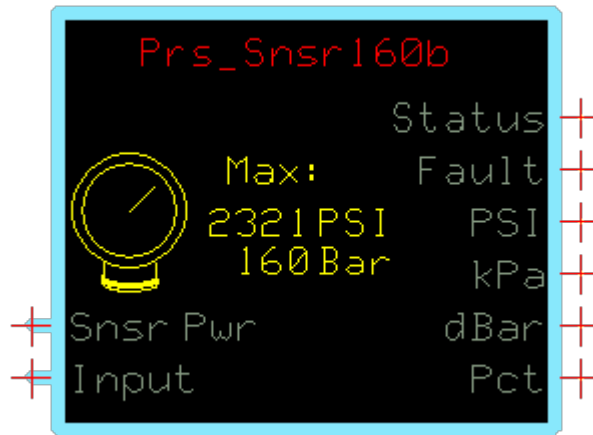


3. Make the changes that are shown in the following figure.



**Prs\_Snsr160b Function Block**

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–160 bar [16000 kPa/2320 PSI] range.



**Inputs**

Find out how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

*Function Block Inputs*

Input	Type	Range	Description
<b>Snsr Pwr</b>	---	0–5250 mV	Inputs a reference voltage that the PLUS+1 controller also applies to the Pin 1 (+ Supply) on the Pressure Transmitter.
<b>Input</b>	---	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar, and Pct</b> outputs. The function block’s nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage. When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block’s output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 2320 PSI/16000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 2610 PSI/18000 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output (16000 kPa x 112.50% = 18000 kPa).</p>

## Prs\_Snsr160b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr160b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	---	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	---	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–2610	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U16	0–18000	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–1800	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–11250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

Prs\_Snsr160b Function Block

**Fault Logic**

Learn how fault logic can indicate problems, causes of problems, and solutions.

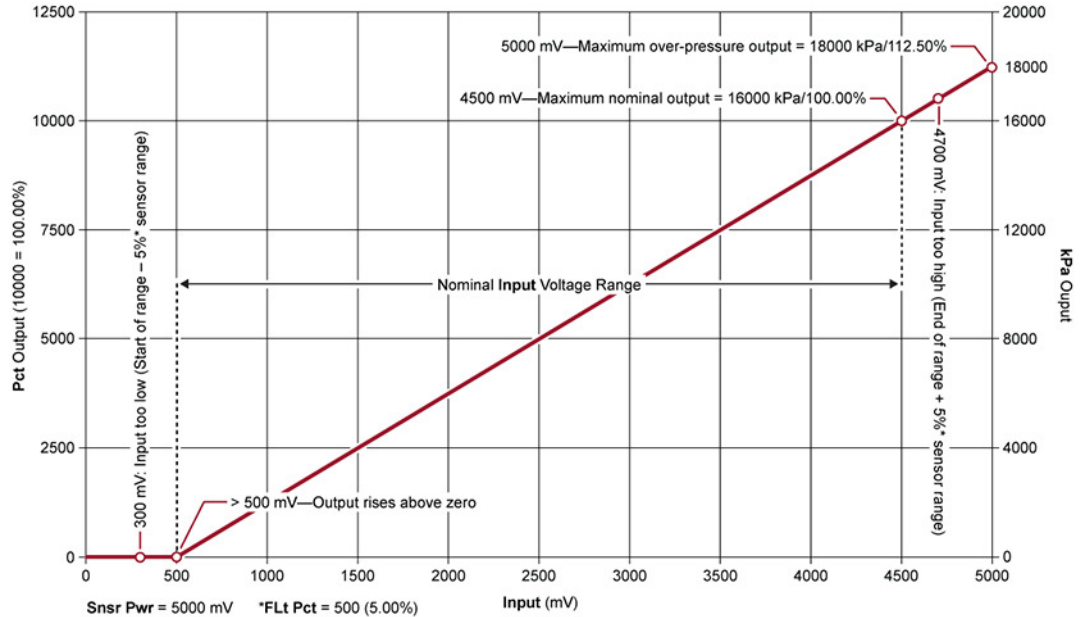
*Fault logic*

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

**Relationship Between Function Block Input and Output Signals**

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 16000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 18000 kPa with the **Input** voltage at 5000 mV. (16000 maximum nominal pressure x 112.50% = 18000 kPa maximum over-pressure)

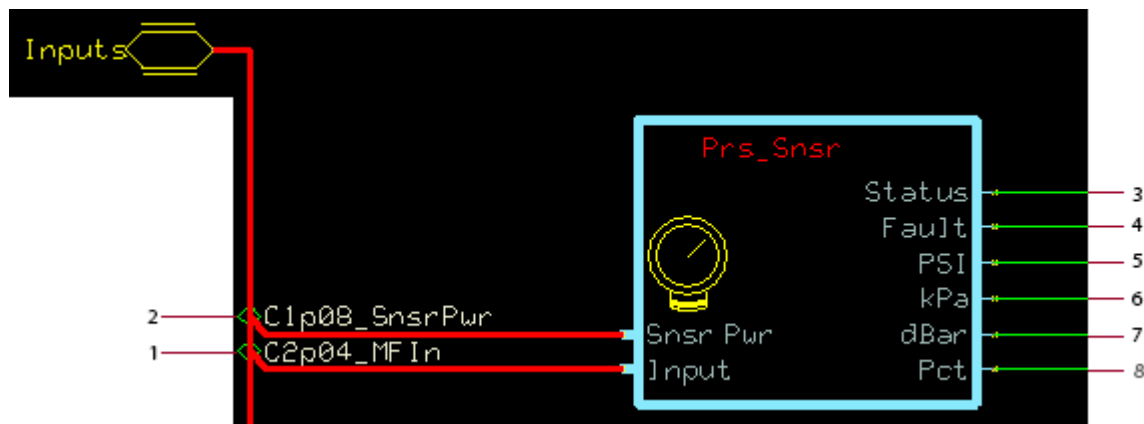
When the **Input** voltage:

### Prs\_Snsr160b Function Block

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

### Function Block Connections

Connections you can make with the function block are described.



Function block connections

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

### MC Controller—Input Configuration

Configure **MFin** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block’s **Input** through an **MFin** or a **DigAn**.

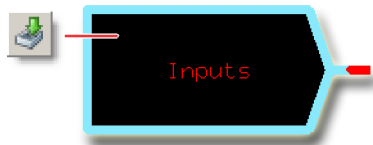
You must change the **MFin** and **DigAn** default configurations to accept this input.

Prs\_Snsr160b Function Block

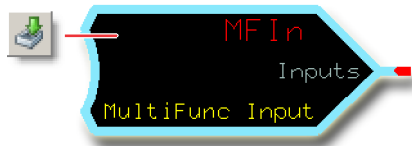
**Configure the MFIn**

Learn how to configure MFIn to accept input from the function block.

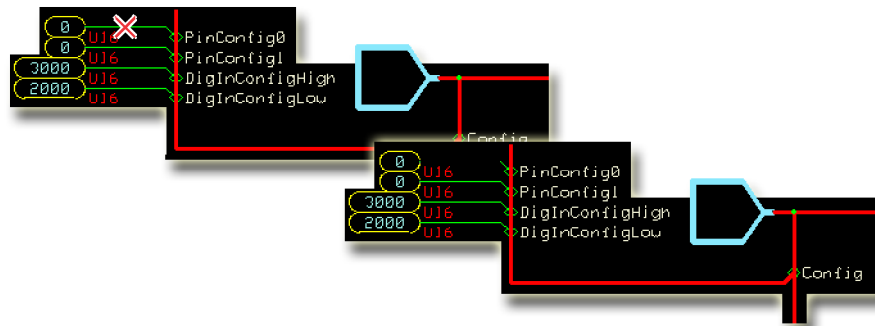
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



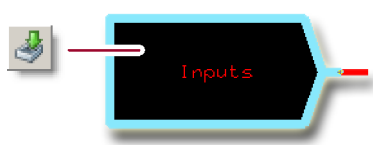
3. Make the changes that are shown in this figure.



**Configure the DigAn**

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.



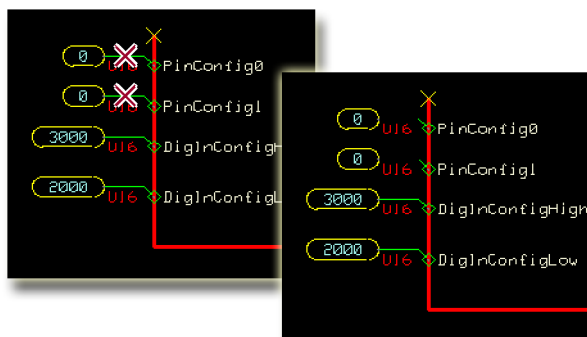
2. Enter the page that receives the input.





### Prs\_Snsr160b Function Block

3. Make the changes that are shown in the following figure.



### SC Controller—Input Configuration

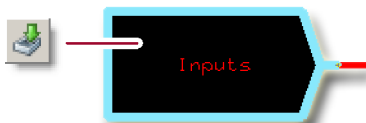
Configure **MFin** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFin** or a **DigAn**. You must change the **MFin** and **DigAn** default configurations to accept this input.

#### Configure the MFin

Learn how to configure MFin to accept input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

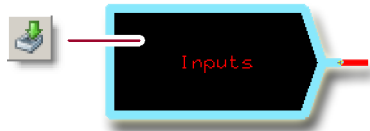


### Prs\_Snsr160b Function Block

#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

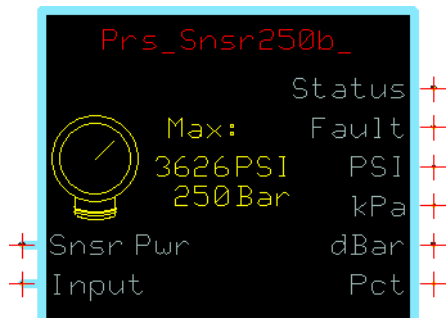


3. Make the changes that are shown in the following figure.



### Prs\_Snsr250b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–250 bar [25000 kPa/3626 PSI] range.



### Inputs

Learn how the function block uses a reference voltage and a changing input voltage to produce PSI, Kpa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	---	0–5250 mV	Inputs a reference voltage that the PLUS+1 controller also applies to the Pin 1 (+ Supply) on the Pressure Transmitter.
<b>Input</b>	---	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar</b>, and <b>Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 3626 PSI/25000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 4080 PSI/ 28125 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. (25000 kPa x 112.50% = 28125 kPa)</p>

## Prs\_Snsr250b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr250b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	---	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	---	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–4080	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U16	0–28125	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–2812	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–11250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

### Prs\_Snsr250b Function Block

#### Fault Logic

Learn how fault logic can indicate problems, causes of problems, and solutions.

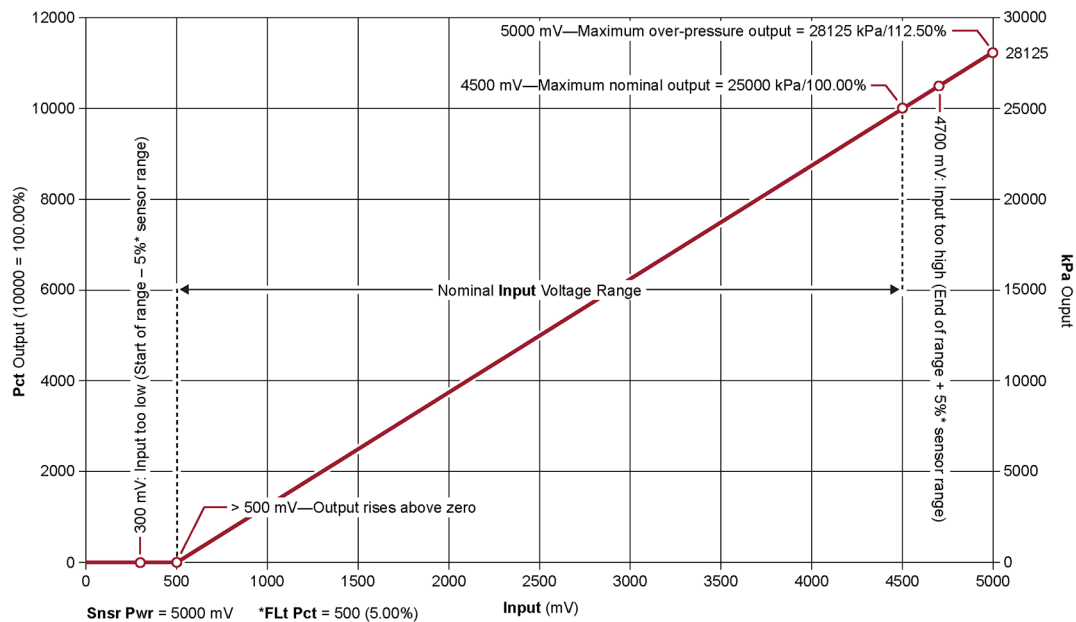
#### Fault logic

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> - [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> + [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

#### Relationship Between Function Block Input and Output Signals

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 25000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 28125 kPa with the **Input** voltage at 5000 mV. (25000 maximum nominal pressure x 112.50% = 28125 kPa maximum over-pressure)

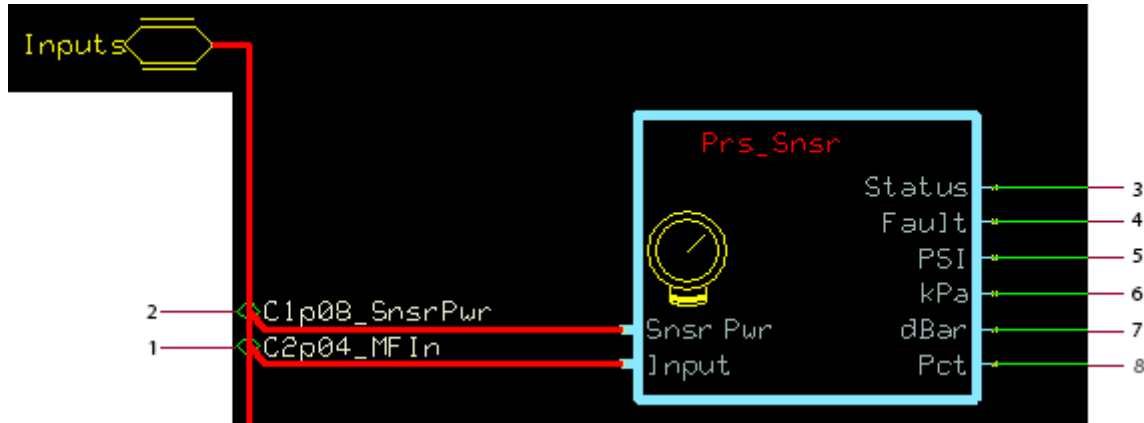
When the **Input** voltage:

**Prs\_Snsr250b Function Block**

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

**Function Block Connections**

Connections you can make with the function block are described.



*Function block connections*

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

**MC Controller—Input Configuration**

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block's **Input** through an **MFIn** or a **DigAn**.

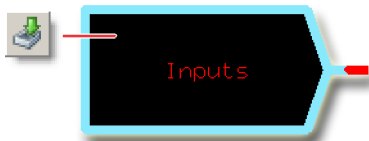
You must change the **MFIn** and **DigAn** default configurations to accept this input.

### Prs\_Snsr250b Function Block

#### Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

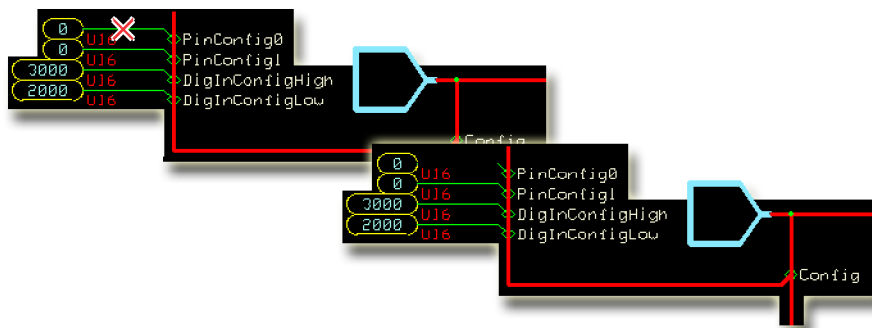
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



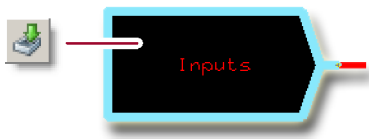
3. Make the changes that are shown in this figure.



#### Configure the DigAn

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

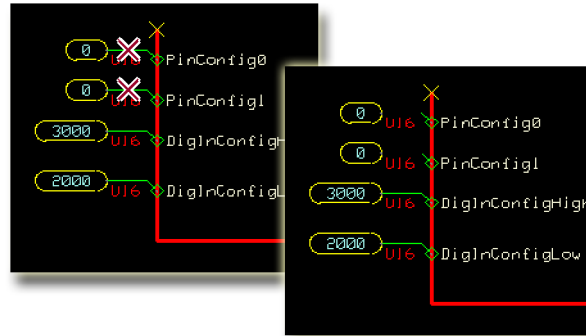


2. Enter the page that receives the input.



Prs\_Snsr250b Function Block

3. Make the changes that are shown in the following figure.



SC Controller—Input Configuration

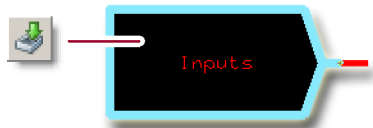
Configure **MFIn** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFIn** or a **DigAn**. You must change the **MFIn** and **DigAn** default configurations to accept this input.

Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

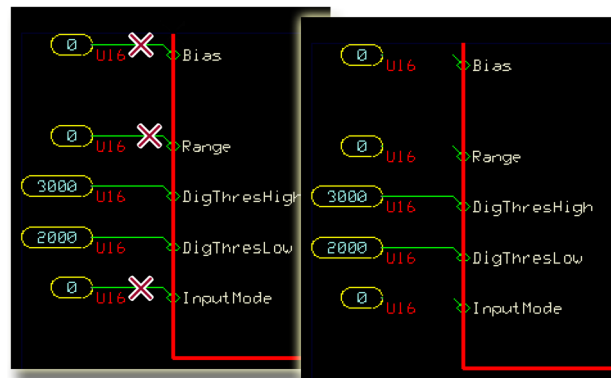
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.



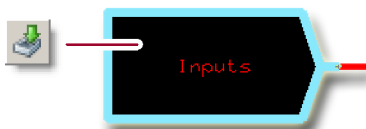


### Prs\_Snsr250b Function Block

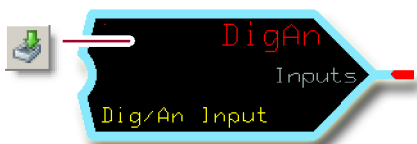
#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

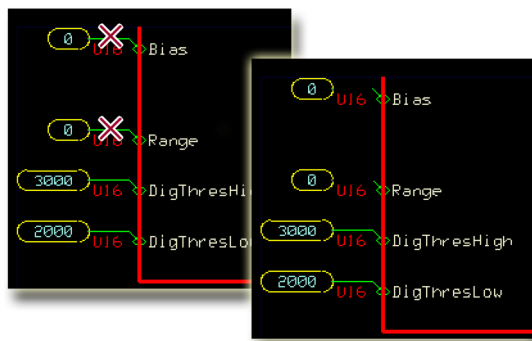
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

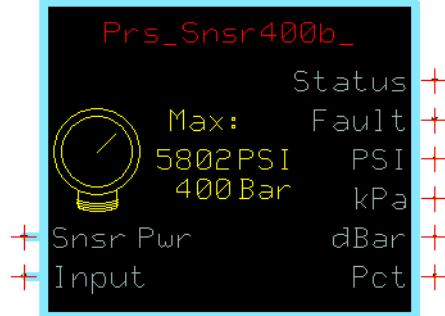


3. Make the changes that are shown in the following figure.



### Prs\_Snsr400b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–400 bar [40000 kPa/5800 PSI] range.



### Inputs

Learn how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	---	0–5250 mV	Inputs a reference voltage that the PLUS+1 controller also applies to the Pin 1 (+ Supply) on the Pressure Transmitter.
<b>Input</b>	---	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar</b>, and <b>Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 5800 PSI/40000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 6525 PSI/ 45000 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. (40000 kPa x 112.50% = 45000 kPa)</p>

## Prs\_Snsr400b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr400b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	—	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	—	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–6525	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U16	0–45000	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–4500	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–111250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

Prs\_Snsr400b Function Block

**Fault Logic**

Learn how fault logic can indicate problems, causes of problems, and solutions.

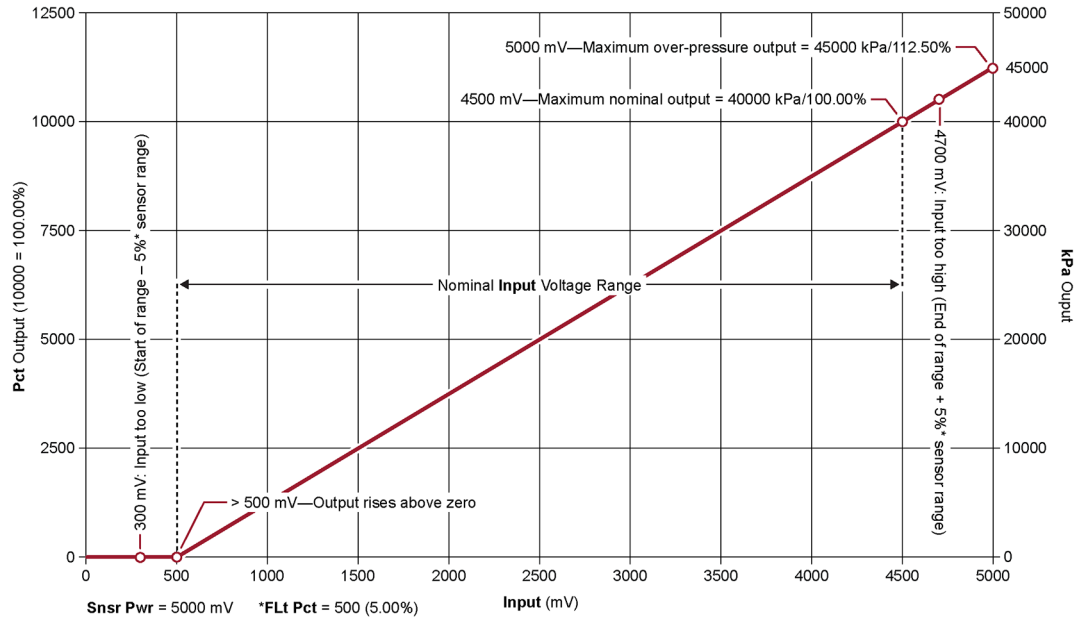
*Fault logic*

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

**Relationship Between Function Block Input and Output Signals**

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 40000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 45000 kPa with the **Input** voltage at 5000 mV. (40000 maximum nominal pressure x 112.50% = 45000 kPa maximum over-pressure)

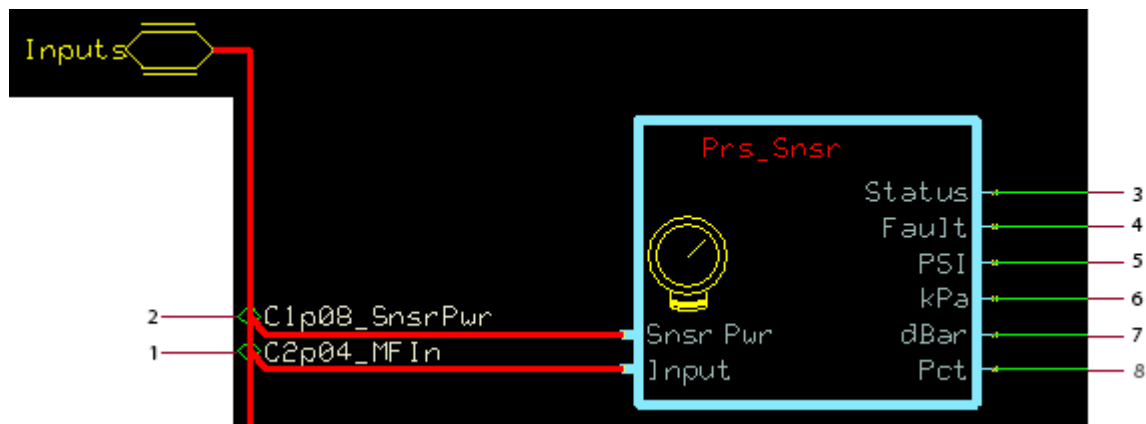
When the **Input** voltage:

### Prs\_Snsr400b Function Block

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

### Function Block Connections

Connections you can make with the function block are described.



Function block connections

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

### MC Controller—Input Configuration

Configure **MFin** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block’s **Input** through an **MFin** or a **DigAn**.

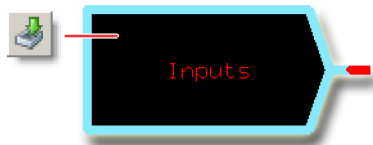
You must change the **MFin** and **DigAn** default configurations to accept this input.

Prs\_Snsr400b Function Block

**Configure the MFIn**

Learn how to configure MFIn to accept input from the function block.

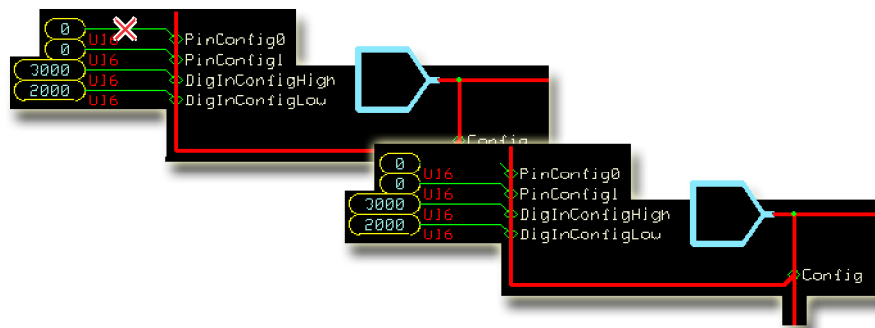
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



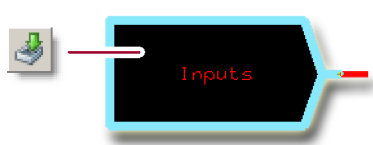
3. Make the changes that are shown in this figure.



**Configure the DigAn**

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

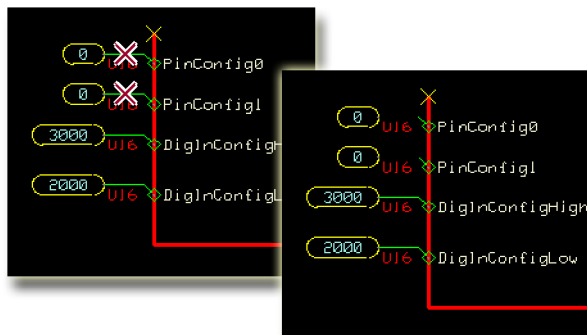


2. Enter the page that receives the input.



### Prs\_Snsr400b Function Block

3. Make the changes that are shown in the following figure.



### SC Controller—Input Configuration

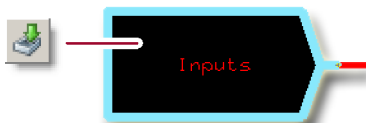
Configure **MFin** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFin** or a **DigAn**. You must change the **MFin** and **DigAn** default configurations to accept this input.

#### Configure the MFin

Learn how to configure MFin to accept input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

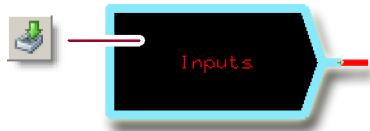


### Prs\_Snsr400b Function Block

#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



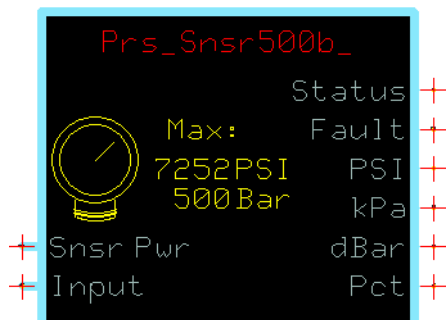
3. Make the changes that are shown in the following figure.





### Prs\_Snsr500b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–500 bar [50000 kPa/7250 PSI] range.



### Inputs

Learn how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	—	0–5250 mV	Inputs a reference voltage that the PLUS+1® controller also applies to the Pin 1 (+ Supply) on the pressure transmitter.
<b>Input</b>	—	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar</b> and <b>Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 7250 PSI/50000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 8156 PSI/56250 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. (50000 kPa x 112.50% = 56250 kPa)</p>

## Prs\_Snsr500b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr500b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	---	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	---	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–8156	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U16	0–56250	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–5625	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–11250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

### Prs\_Snsr500b Function Block

#### Fault Logic

Learn how fault logic can indicate problems, causes of problems, and solutions.

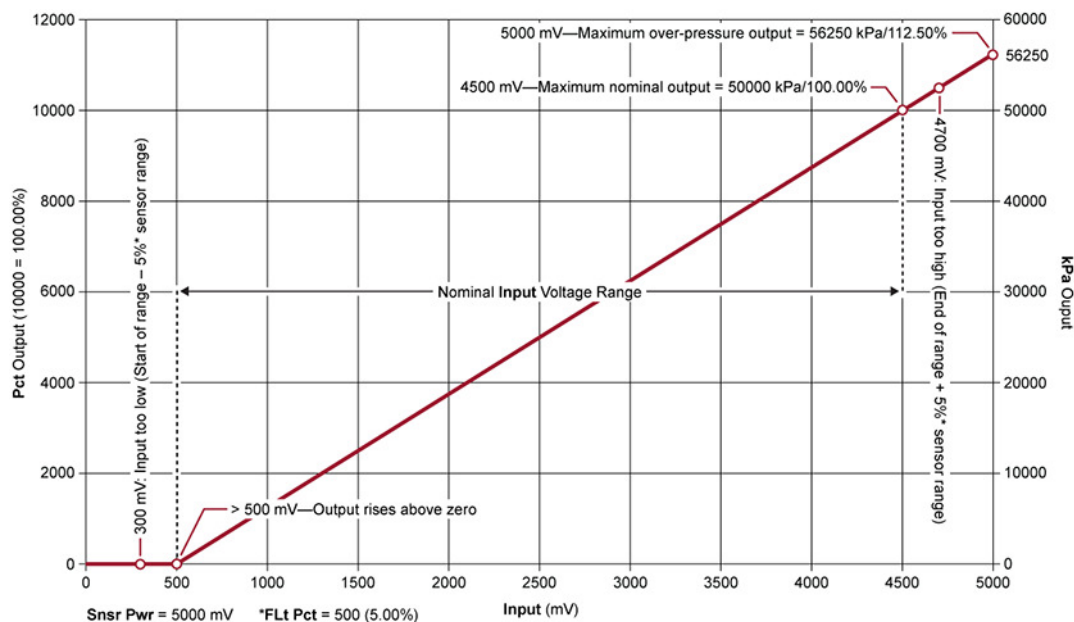
#### Fault logic

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

#### Relationship Between Function Block Input and Output Signals

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 50000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 56250 kPa with the **Input** voltage at 5000 mV. (50000 maximum nominal pressure x 112.50% = 56250 kPa maximum over-pressure)

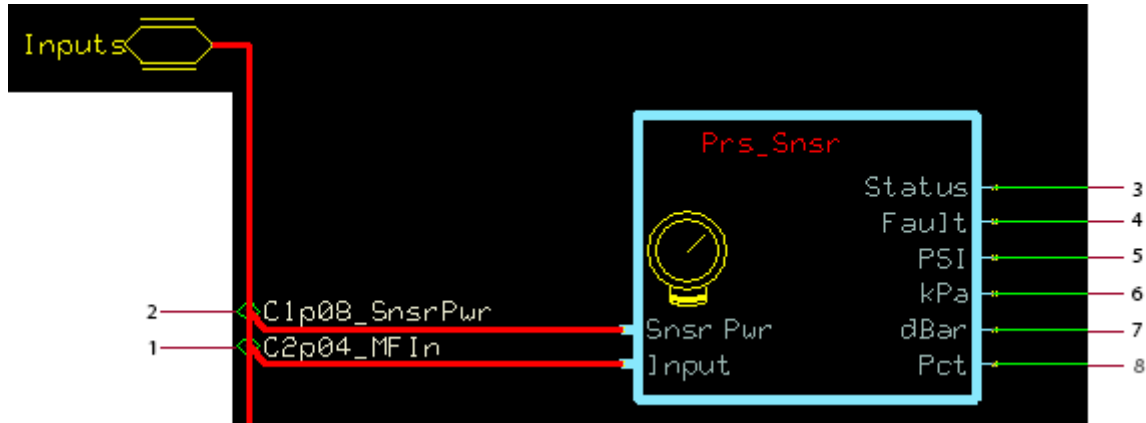
When the **Input** voltage:

**Prs\_Snsr500b Function Block**

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

**Function Block Connections**

Connections you can make with the function block are described.



*Function block connections*

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

**MC Controller—Input Configuration**

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block's **Input** through an **MFIn** or a **DigAn**.

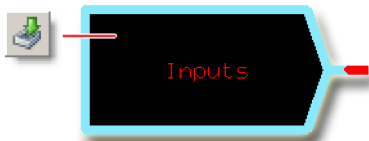
You must change the **MFIn** and **DigAn** default configurations to accept this input.

### Prs\_Snsr500b Function Block

#### Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

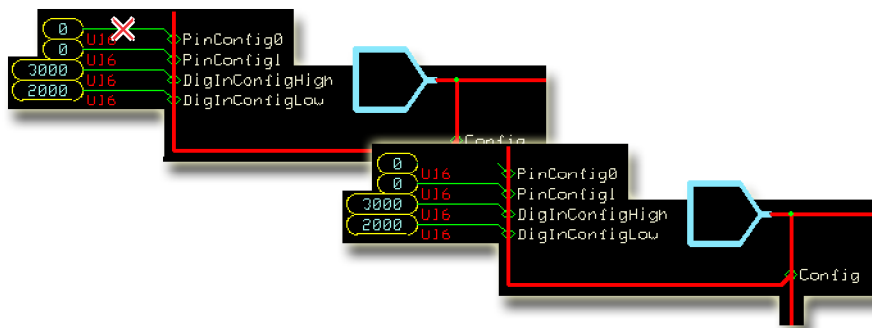
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



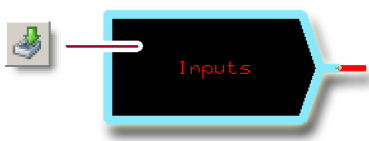
3. Make the changes that are shown in this figure.



#### Configure the DigAn

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

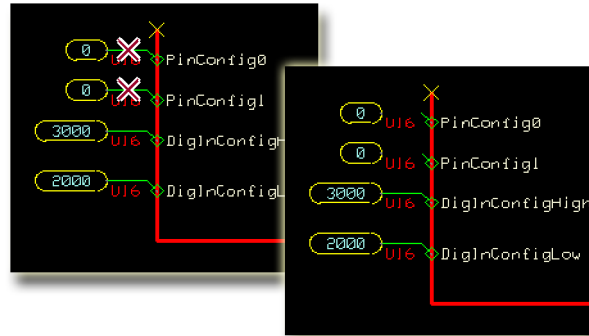


2. Enter the page that receives the input.



Prs\_Snsr500b Function Block

3. Make the changes that are shown in the following figure.



SC Controller—Input Configuration

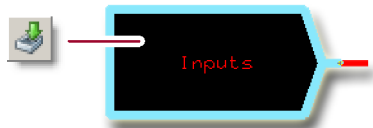
Configure **MFIn** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFIn** or a **DigAn**. You must change the **MFIn** and **DigAn** default configurations to accept this input.

Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

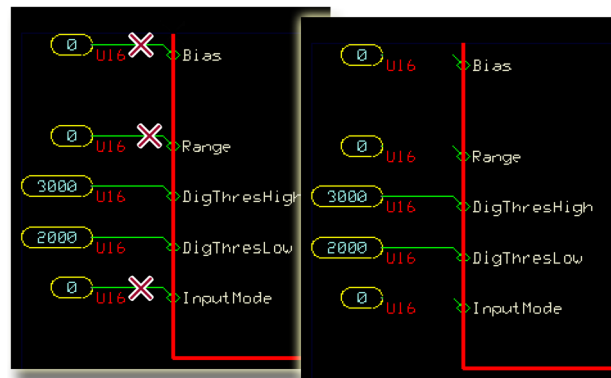
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

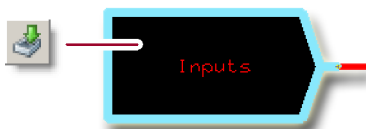


### Prs\_Snsr500b Function Block

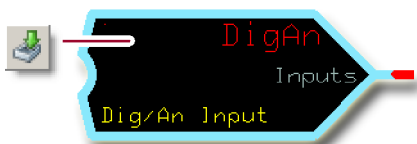
#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

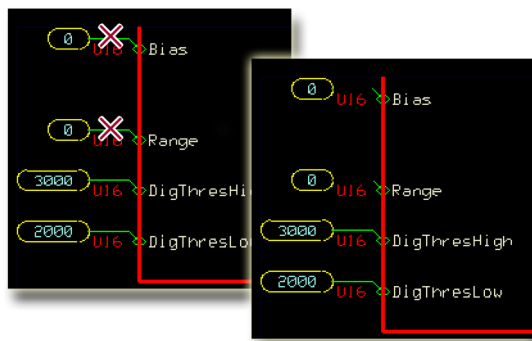
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

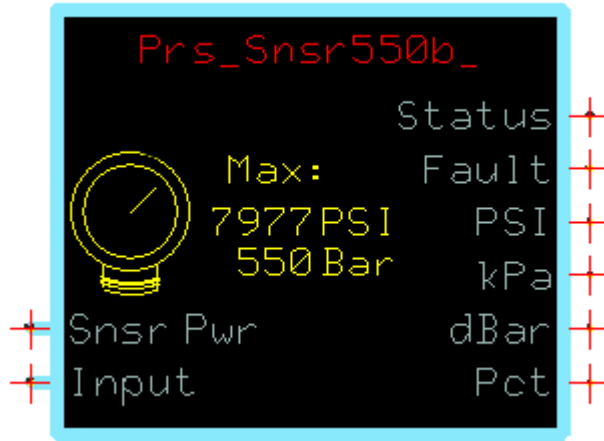


3. Make the changes that are shown in the following figure.



### Prs\_Snsr550b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–550 bar [55000 kPa/7977 PSI] range.



### Inputs

Learn how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	—	0–5250 mV	Inputs a reference voltage that the PLUS+1® controller also applies to the Pin 1 (+ Supply) on the pressure transmitter.
<b>Input</b>	—	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar</b> and <b>Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 7250 PSI/50000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 8156 PSI/56250 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. (50000 kPa x 112.50% = 56250 kPa)</p>



## Prs\_Snsr550b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr550b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	—	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	—	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–8156	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U16	0–56250	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–5625	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–11250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

Prs\_Snsr550b Function Block

**Fault Logic**

Learn how fault logic can indicate problems, causes of problems, and solutions.

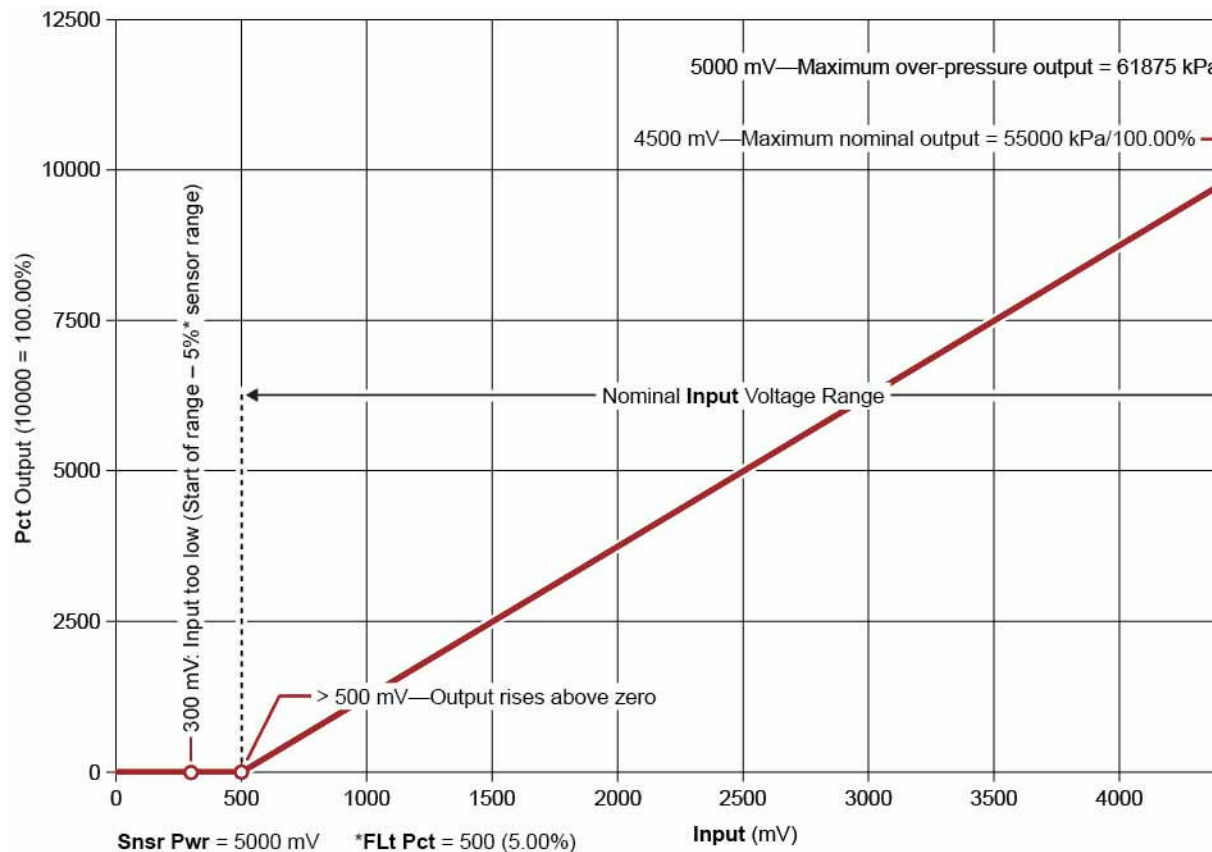
*Fault logic*

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [Flt Pct of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

**Relationship Between Function Block Input and Output Signals**

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

### Prs\_Snsr550b Function Block

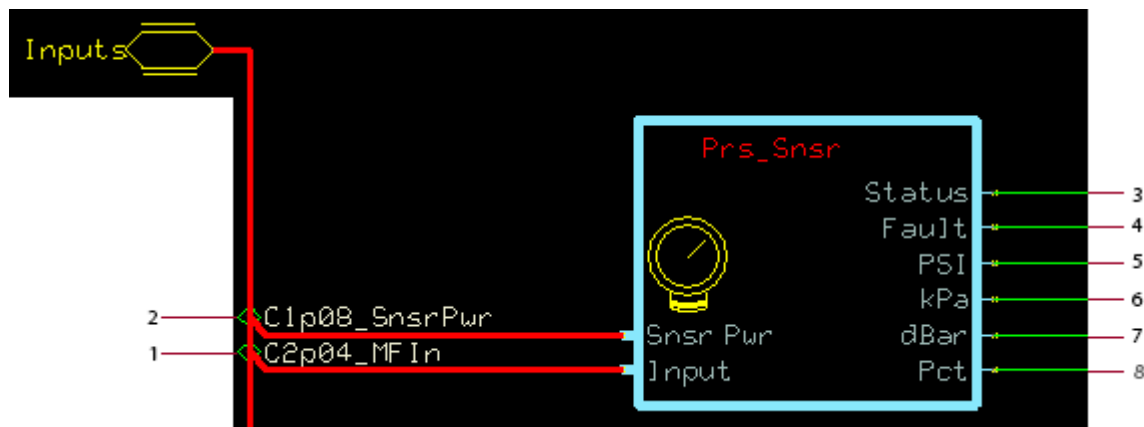
- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 50000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 50000 kPa with the **Input** voltage at 5000 mV. (61875 maximum nominal pressure x 112.50% = 18000 kPa maximum over-pressure)

When the **Input** voltage:

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

### Function Block Connections

Connections you can make with the function block are described.



#### Function block connections

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

### MC Controller—Input Configuration

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block’s **Input** through an **MFIn** or a **DigAn**.

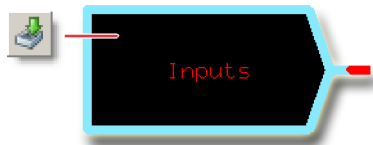
You must change the **MFIn** and **DigAn** default configurations to accept this input.

Prs\_Snsr550b Function Block

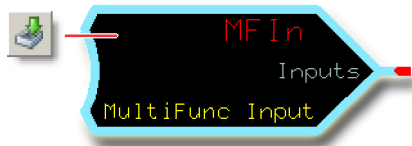
**Configure the MFIn**

Learn how to configure MFIn to accept input from the function block.

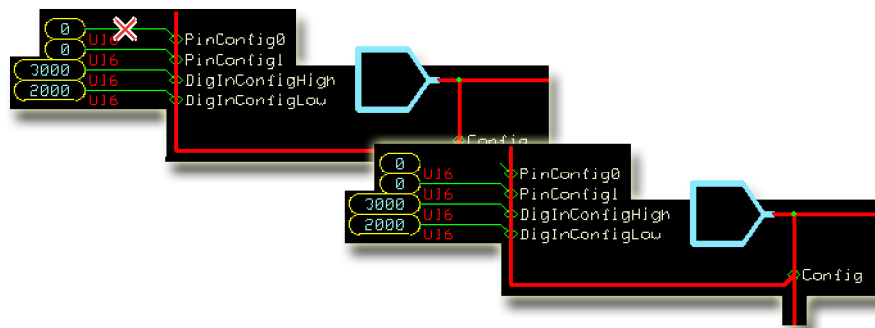
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



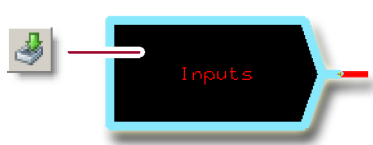
3. Make the changes that are shown in this figure.



**Configure the DigAn**

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

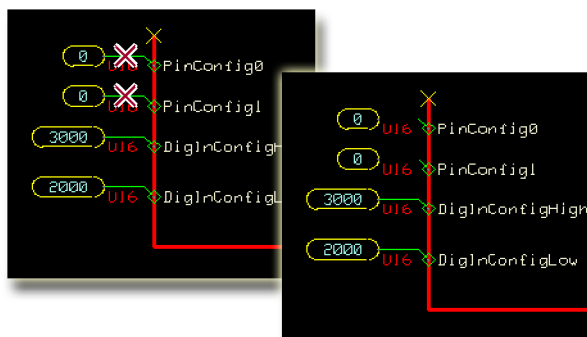


2. Enter the page that receives the input.



### Prs\_Snsr550b Function Block

3. Make the changes that are shown in the following figure.



### SC Controller—Input Configuration

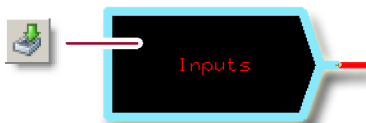
Configure **MFin** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFin** or a **DigAn**. You must change the **MFin** and **DigAn** default configurations to accept this input.

#### Configure the MFin

Learn how to configure MFin to accept input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

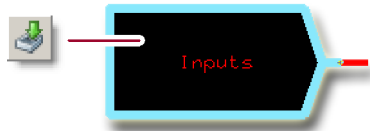


Prs\_Snsr550b Function Block

**Configure the DigAn**

Learn how to configure DigAn to receive input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

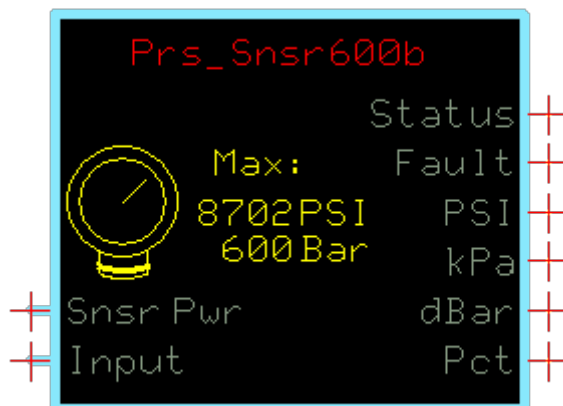


3. Make the changes that are shown in the following figure.



### Prs\_Snsr600b Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal 0–600 bar [60000 kPa/8700 PSI] range.



### Inputs

Learn how the function block uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	---	0–5250 mV	Inputs a reference voltage that the PLUS+1 controller also applies to the Pin 1 (+ Supply) on the Pressure Transmitter.
<b>Input</b>	---	0–5250 mV	<p>The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI, kPa, dBar, and Pct</b> outputs.</p> <p>The function block's nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage.</p> <p>When the <b>Input</b> voltage reaches:</p> <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block's output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of 8700 PSI/60000 kPa/10000 (100.00%).</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of 9788 PSI/ 67500 kPa/11250 (112.50%).</li> </ul> <p>The maximum over-pressure output equals 112.50% of the maximum nominal output. (8700 PSI x 112.50% = 9788 PSI)</p>

## Prs\_Snsr600b Function Block

### Outputs

Learn about the outputs of the Prs\_Snsr600b function block.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	---	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>
<b>Fault</b>	U16	---	Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–9788	Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.
<b>kPa</b>	U32	0–67500	Indicates pressure in kilopascals (kPa). 1 = 1 kPa.
<b>dBar</b>	U16	0–6750	Indicates pressure in decibars (dBar). 1 = 1 dBar.
<b>Pct</b>	U16	0–11250	Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.

### Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

#### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.



### Prs\_Snsr600b Function Block

#### Fault Logic

Learn how fault logic can indicate problems, causes of problems, and solutions.

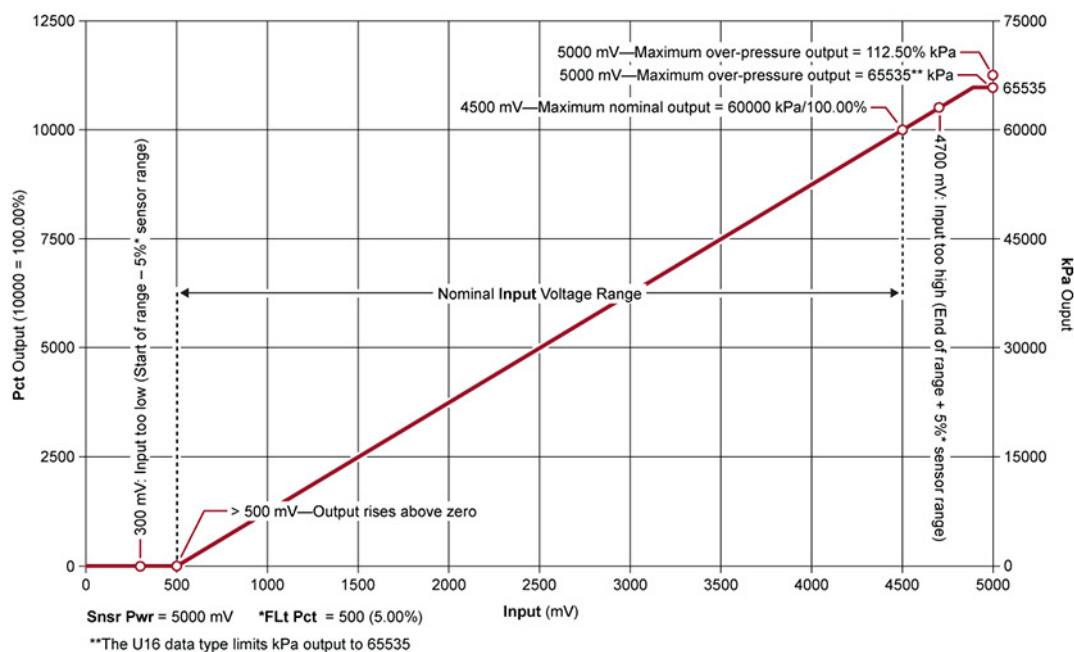
#### Fault logic

Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> - [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> + [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>Inspect for short circuit in wire connections to sensor.</li> <li>Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

#### Relationship Between Function Block Input and Output Signals

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 60000 kPa/100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output = 65535 kPa with the **Input** voltage at 5000 mV. (The U16 data type limits the kPa output to 65535; other outputs are not limited.)

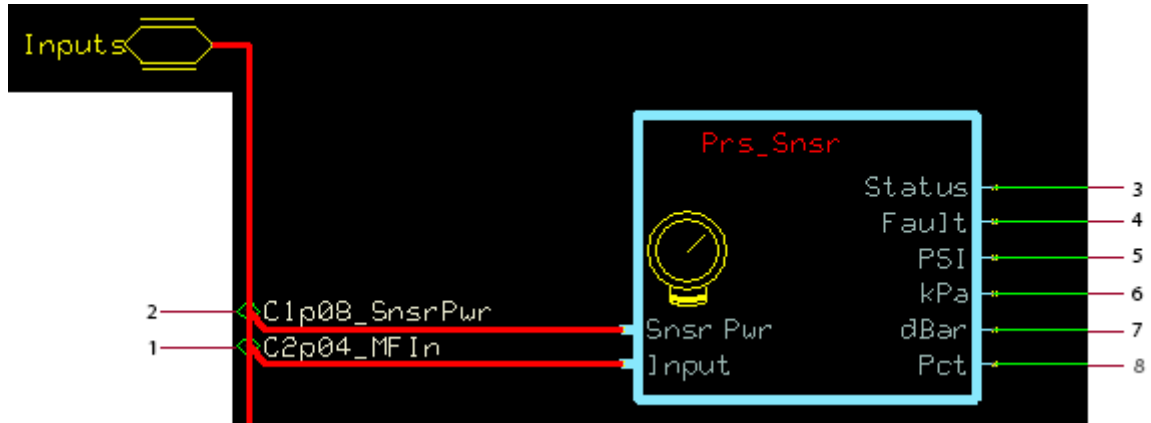
When the **Input** voltage:

**Prs\_Snsr600b Function Block**

- Drops below 300 mV, the function block outputs an input too low fault. (500 mV – 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)

**Function Block Connections**

Connections you can make with the function block are described.



*Function block connections*

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

**MC Controller—Input Configuration**

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block’s **Input** through an **MFIn** or a **DigAn**.

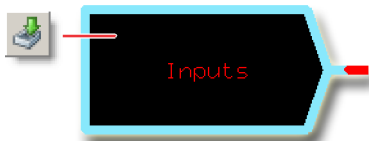
You must change the **MFIn** and **DigAn** default configurations to accept this input.

### Prs\_Snsr600b Function Block

#### Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

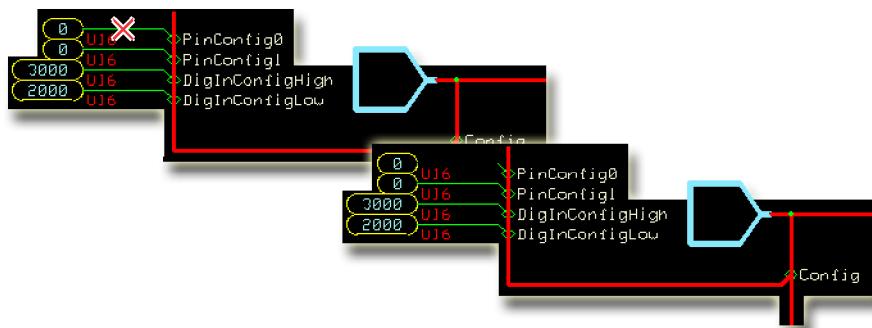
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



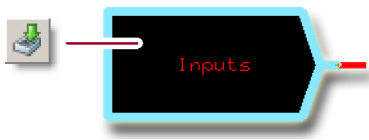
3. Make the changes that are shown in this figure.



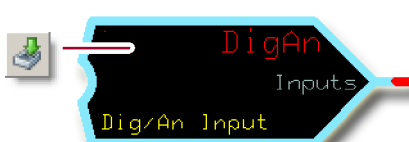
#### Configure the DigAn

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

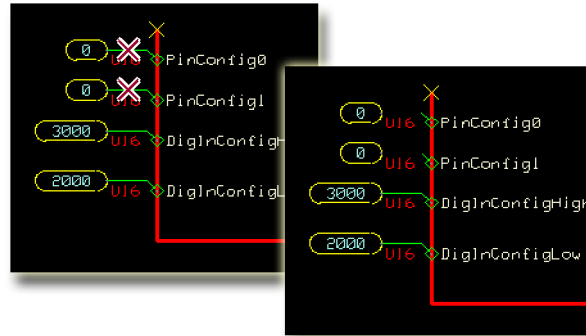


2. Enter the page that receives the input.



Prs\_Snsr600b Function Block

3. Make the changes that are shown in the following figure.



SC Controller—Input Configuration

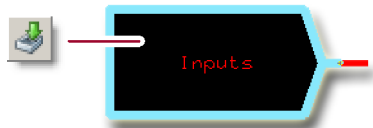
Configure **MFI**n and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFI**n or a **DigAn**. You must change the **MFI**n and **DigAn** default configurations to accept this input.

Configure the MFI

Learn how to configure MFI to accept input from the function block.

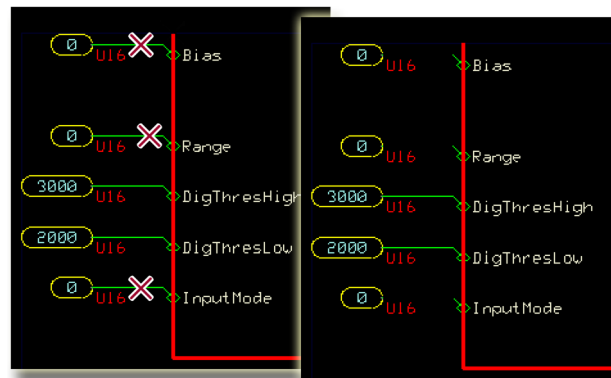
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

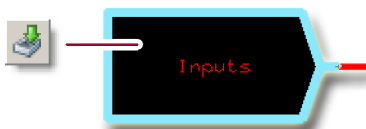


### Prs\_Snsr600b Function Block

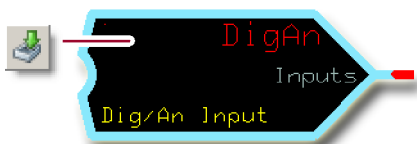
#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

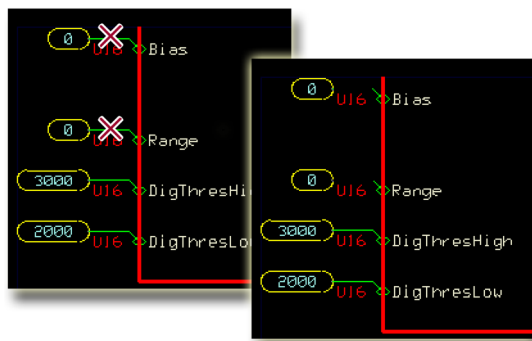
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.

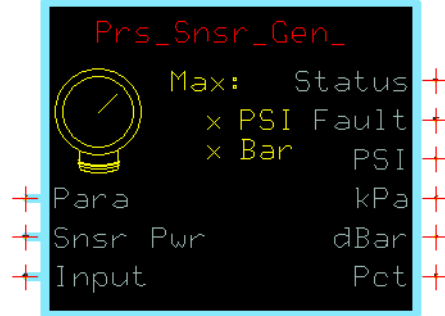


3. Make the changes that are shown in the following figure.



### Prs\_Snsr\_Gen Function Block

This function block configures the output of MBS 1250 pressure sensors with a nominal bar range specified by a parameter to scale the output.



### Inputs

Learn how the function block uses a parameter to customize the scaling values for output and how it uses a reference voltage and a changing input voltage to produce PSI, kPa, dBar and Pct outputs.

#### Function Block Inputs

Input	Type	Range	Description
<b>Snsr Pwr</b>	U16	0–5250 mV	Inputs a reference voltage that the PLUS+1® controller also applies to the Pin 1 (+ Supply) on the pressure transmitter.
<b>Input</b>	U16	0–5250 mV	The function block compares the changing <b>Input</b> voltage with the constant <b>Snsr Pwr</b> reference voltage to produce <b>PSI</b> , <b>kPa</b> , <b>dBar</b> and <b>Pct</b> outputs. The function block’s nominal operating range is between 10.00% and 90.00% of <b>Snsr Pwr</b> voltage. When the <b>Input</b> voltage reaches: <ul style="list-style-type: none"> <li>• 10.00% of the <b>Snsr Pwr</b> voltage, the function block’s output starts rising above zero.</li> <li>• 90.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum nominal outputs of PSI and kPa. The maximum nominal output is specified by <b>Bar</b> and is limited to 2200.</li> <li>• 100.00% of the <b>Snsr Pwr</b> voltage, the function block outputs its maximum over-pressure outputs of PSI and kPa at 112.50% of the output defined by <b>Bar</b>.</li> </ul> The maximum over-pressure output equals 112.50% of the maximum nominal output. The generic function block allows you to specify the pressure range allowed.
<b>Para-Bar</b>	U16	User defined range, 0-2200.	The function block uses <b>Bar</b> to rescale the output of the pressure sensor for OEM products. The output of the function block is expressed in <b>Bar</b> , and has a range that can be defined from 0 to 2200.

### Outputs

Learn how the outputs of the general function block work.

#### Function Block Outputs

Output	Type	Range	Description
<b>Status</b>	U16	—	Indicates if the <b>Flt Pct</b> value is within range or is set too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block’s operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Status</b> output uses the bitwise scheme. <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8008 = <b>Flt Pct</b> value is too high.</li> </ul>

## Prs\_Snsr\_Gen Function Block

### Function Block Outputs (continued)

<b>Fault</b>	U16	---	<p>Indicates if the voltage on the function block's <b>Input</b> pin is too low or too high. The <b>Flt Pct</b> sets the percentage that the <b>Input</b> voltage can rise above or fall below the function block's operating range without setting a fault condition. You can change the <b>Flt Pct</b> value (1000 = 10.00%) on the inner page of the <b>Prs_Snsr</b> function block. The <b>Fault</b> output uses the bitwise scheme.</p> <ul style="list-style-type: none"> <li>• 0x0000 = Block is OK.</li> <li>• 0x8001 = <b>Input</b> value is too low.</li> <li>• 0x8002 = <b>Input</b> value is too high.</li> </ul>
<b>PSI</b>	U16	0–35896	<p>Indicates pressure in pounds per square inch (PSI). 1 = 1 PSI.</p>
<b>kPa</b>	U16	0–247500	<p>Indicates pressure in kilopascals (kPa). 1 = 1 kPa.</p>
<b>dBar</b>	U16	0–24750	<p>Indicates pressure in decibars (dBar). 1 = 1 dBar.</p>
<b>Pct</b>	U16	0–11250	<p>Indicates pressure as a percent of the function block's operating range. 10000 = 100.00%.</p>

## Status and Fault Logic

This topic describes how status logic and fault logic are indicated for the function block.

### Status Logic

The status code indicates the calibration state of the function block.

#### Status logic

Condition	Hex*	Binary	Cause	Response	Correction
Invalid setup.	0x8008	1000	<b>Flt Pct</b> > 1000 (10.00%).	<b>Output</b> = 0.	Reduce <b>Flt Pct</b> .

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

### Fault Logic

Learn how fault logic can indicate problems, causes of problems, and solutions.

#### Fault logic

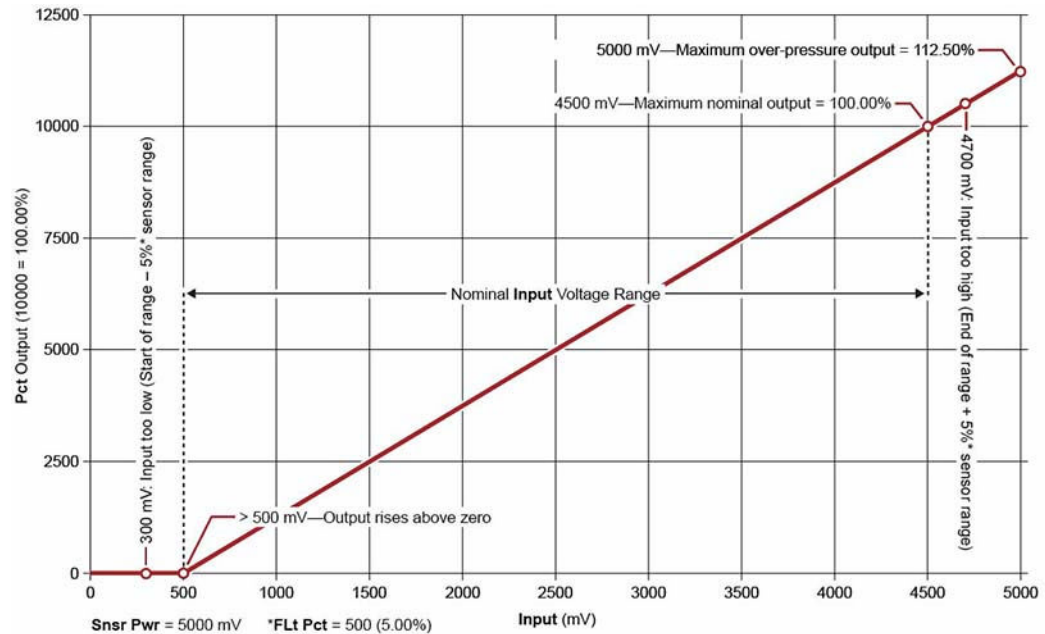
Condition	Hex*	Binary	Cause	Response	Correction
Input value is too low.	0x8001	0001	<b>Volt(age)</b> is less than [10% of <b>Snsr Pwr</b> ] - [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> = 0.	Inspect for open circuit in wire connections to sensor.
			<b>Snsr Pwr</b> less than 0.		Ensure correct software input is made in the application.
Input value is too high.	0x8002	0010	<b>Volt(age)</b> is greater than [90% of <b>Snsr Pwr</b> ] + [ <b>Flt Pct</b> of nominal signal range (which is 80% of <b>Snsr Pwr</b> )].	<b>Output</b> is extrapolated beyond the maximum value up to 11250 (112.50%).	<ul style="list-style-type: none"> <li>• Inspect for short circuit in wire connections to sensor.</li> <li>• Verify the correct pressure sensor is used for the application.</li> </ul>
			<b>Snsr Pwr</b> greater than 5250.	<b>Output</b> = 0.	Ensure correct software input is made in the application.

\* Bit 16 set to 1 identifies a standard Danfoss status or fault code.

Prs\_Snsr\_Gen Function Block

Relationship Between Function Block Input and Output Signals

Use the plot to find out the relationships between the function block's **Input** voltages and its **kPa** and **Pct** outputs.



This function block's:

- **Flt Pct** value = 500 (5.00%) and its **Snsr Pwr** value = 5000 mV.
- Nominal **Input** voltage ranges between 10.00% (500 mV) and 90.00% (4500 mV) of the **Snsr Pwr** voltage.
- Nominal pressure output ranges between zero with the **Input** voltage at 500 mV and a maximum nominal 100.00% with the **Input** voltage at 4500 mV.
- Maximum over-pressure output with the **Input** voltage at 5000 mV. (maximum nominal pressure x 112.50% = maximum over-pressure)

When the **Input** voltage:

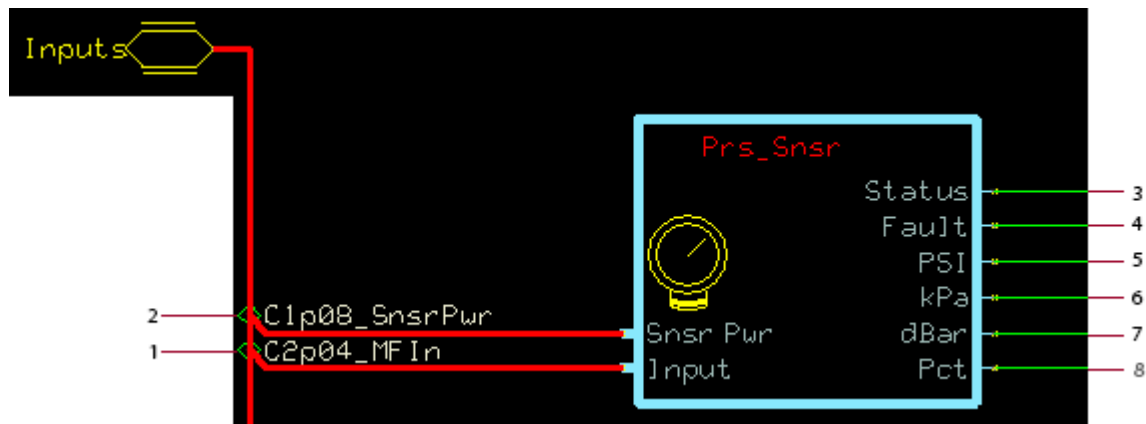
- Drops below 300 mV, the function block outputs an input too low fault. (500 mV - 5% of the 4000 mV nominal input voltage range = fault at 300 mV)
- Rises above 4700 mV, the function block outputs an input too high fault. (4500 mV + 5% of the 4000 mV nominal input voltage range = fault at 4700 mV)



### Prs\_Snsr\_Gen Function Block

#### Function Block Connections

Connections you can make with the function block are described.



#### Function block connections

Item	Description
1	Sensor voltage (varies with pressure).
2	Sensor reference power voltage.
3	Function block status.
4	Function block faults.
5	Pressure in PSI.
6	Pressure in kPa.
7	Pressure in decibar (dBar)
8	Pressure in % of range.

#### MC Controller—Input Configuration

Configure **MFIn** and **DigAn** to accept the input of the function block.

For MC Controllers, you route the function block's **Input** through an **MFIn** or a **DigAn**.

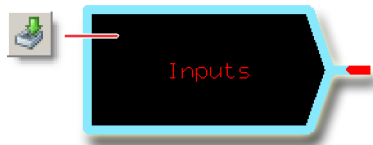
You must change the **MFIn** and **DigAn** default configurations to accept this input.

### Prs\_Snsr\_Gen Function Block

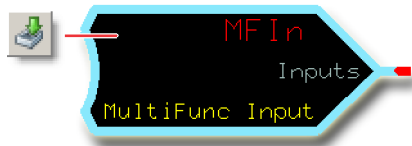
#### Configure the MFIn

Learn how to configure MFIn to accept input from the function block.

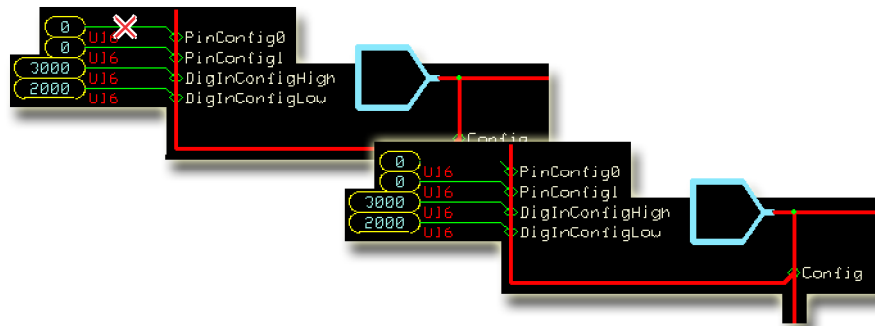
1. In the GUIDE template, enter the **Inputs** page.



2. Enter the **MFIn** that receives the input.



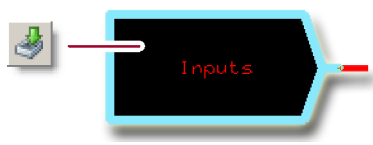
3. Make the changes that are shown in this figure.



#### Configure the DigAn

Learn how to configure DigAn to accept input.

1. In the GUIDE template, enter the **Inputs** page.

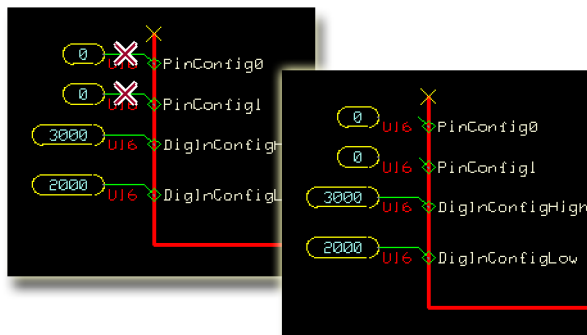


2. Enter the page that receives the input.



### Prs\_Snsr\_Gen Function Block

3. Make the changes that are shown in the following figure.



### SC Controller—Input Configuration

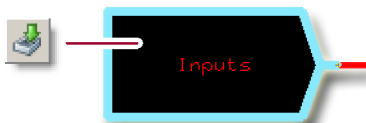
Configure **MFin** and **DigAn** to accept the input of the function block.

You route the function block's **Input** through an **MFin** or a **DigAn**. You must change the **MFin** and **DigAn** default configurations to accept this input.

#### Configure the MFin

Learn how to configure MFin to accept input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.

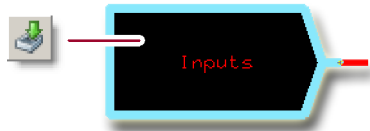


### Prs\_Snsr\_Gen Function Block

#### Configure the DigAn

Learn how to configure DigAn to receive input from the function block.

1. In the GUIDE template, enter the **Inputs** page.



2. Enter the page that receives the input.



3. Make the changes that are shown in the following figure.









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