600T EN Series

Pressure Transmitter

DIGITOOL - TEMPLATE INSTRUCTION MANUAL

Valid for 600T_EN_PA Profile 2.0

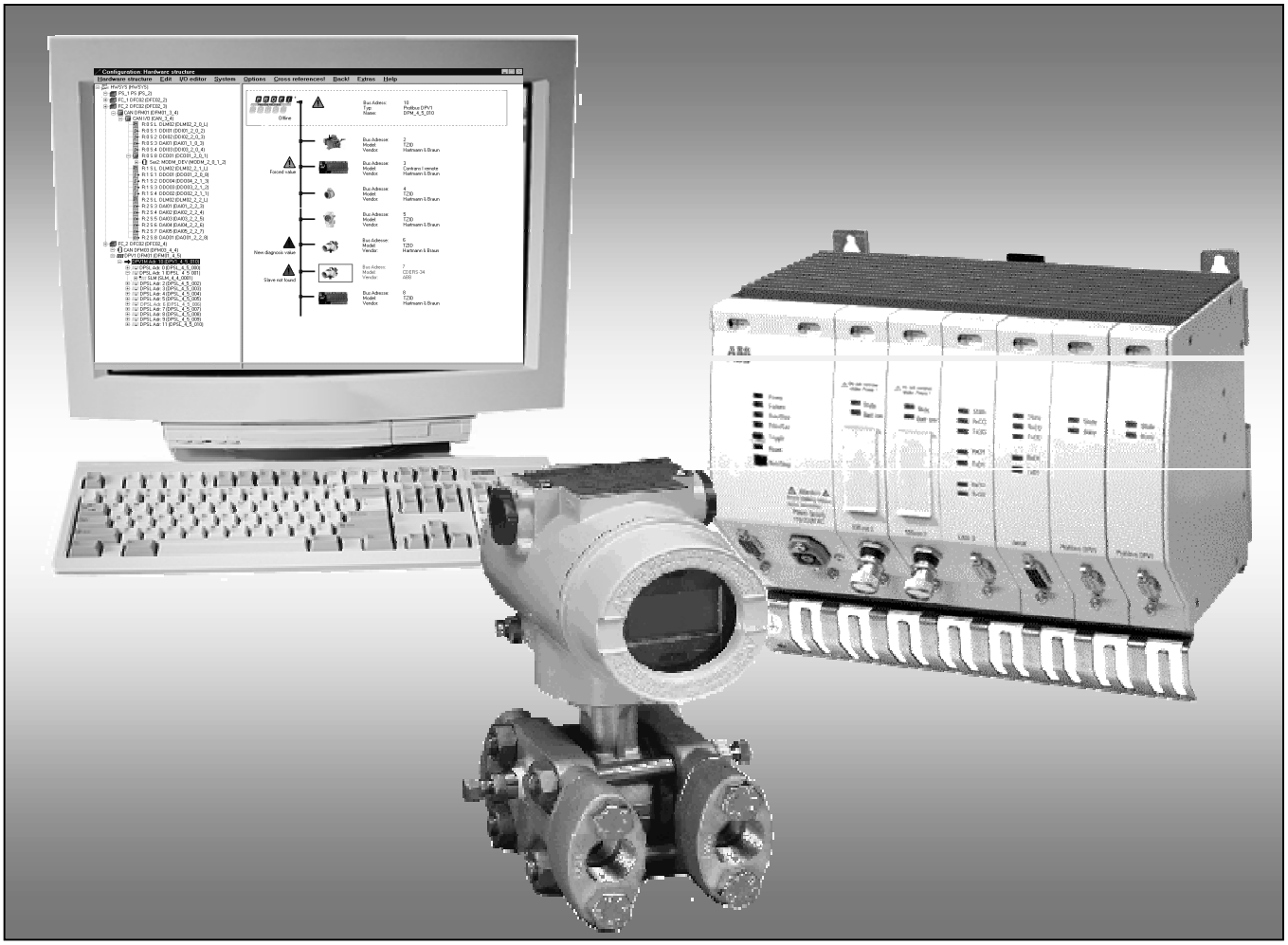


ABB Instrumentation

INDEX:

INTRODUCTION

This manual describes how the user can operate on the 600T Profibus transmitter connected to the ABB AC800F system. The Digitool application, specific of the AC800F system, allows the user to access at the field instrument parameters and variables just to perform monitoring, configuration and maintenance operations.
The Instrument parameters and variables are distributed on different pages of the Digitool application, grouped for consistency and operativity criteria in order to make easier than possible the configuration and maintenance operations of the 600T.

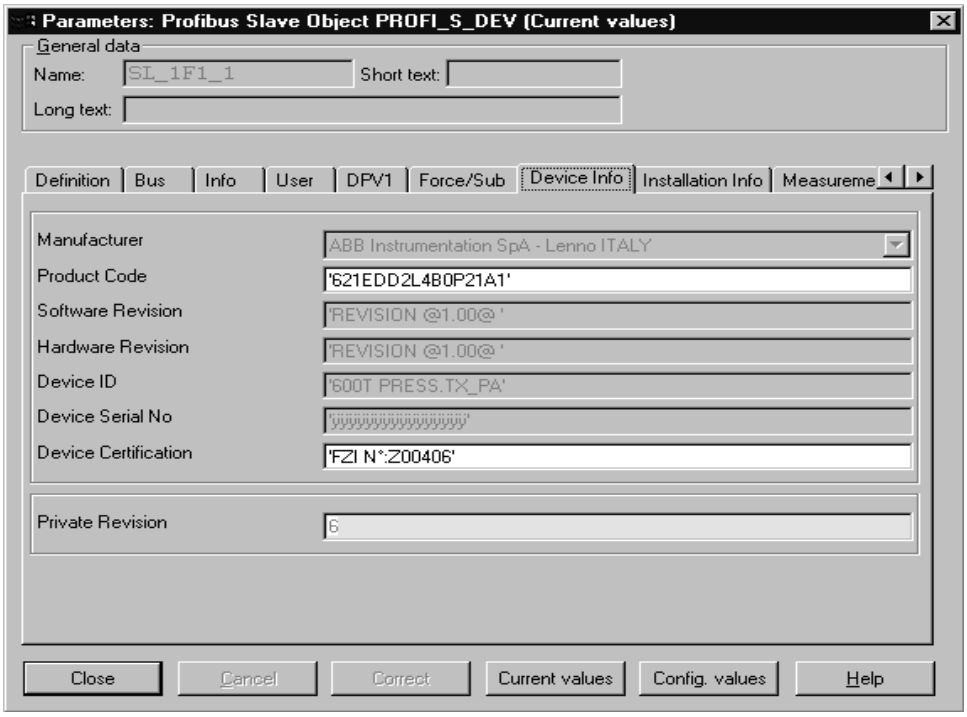
In the following pages are shown the different screens of the Digitool application for the 600T, and a brief descriptions of the available parameters and how to set/change them.

In addition an example about the setting of the 600T as Flow device is at the end of the document, describing step by step the necessary operations the user has to follow.

DEVICE INFO:

In this page are collected all the information relating the connected transmitter.

Figure 1:



Manufacturer: Information about the device manufacturer is here available

Product Code: The code here displayed must match the code printed in the on top label of the transmitter.

Note: This field can be changed by the user. When changing is made, the new string, with max.length of 32 characters, must be written between two string delimiters (i.e 'new string'). If the delimiters are not typed the new string is not accepted.

Software Revision: This is the transmitter software revision as registered at the PNO (Profibus Organisation).

Hardware Revision: This is the transmitter hardware revision as registered at the PNO (Profibus Organisation).

Device ID: This is the device type identification.

Device Serial No: The serial number here displayed must match the one printed in the on top label of the transmitter.

Device Certification: The most relevant device certifications for the point of view of the user can be here written.

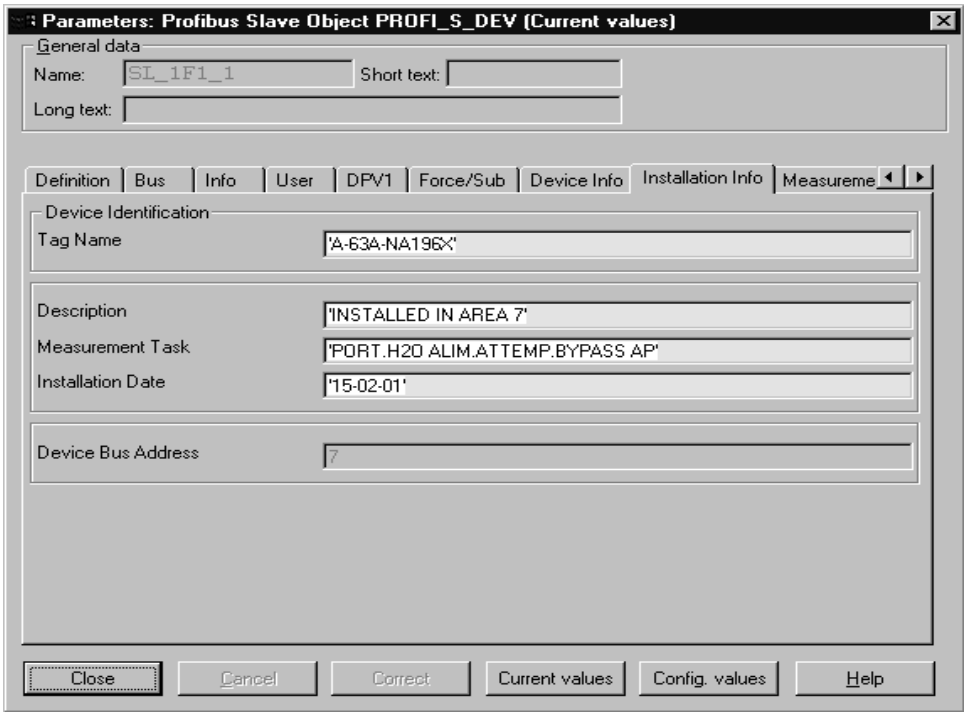
Note: This field can be changed by the user. When changing is made, the new string, with max.length of 16 characters, must be written between two string delimiters (i.e 'new string'). If the delimiters are not typed the new string is not accepted.

Private Revision: This is an additional software revision for internal use only, which identify the level of functionality implemented in the transmitter in addition at the standard.

INSTALLATION INFO:

In this page are collected all the information relating the identification of the connected transmitter for the point of view of its installation in the plant.

Figure 2:



TAG Name: This is the TAG Name of the transmitter as it has been assigned in the plant.

Note: **This field can be changed by the user. When changing is made, the new string, with max.length of 32 characters, must be written between two string delimiters (i.e 'new string'). If the delimiters are not typed the new string is not accepted.**

Description: In this field the user can type information of general interest like the measurement task that the connected transmitter has to fulfil

Note: **See the TAG Name note.**

Message: In this field the user can type information of general interest.

Note: **See the TAG Name note.**

Installation Date: In this field the user can type the date he wants.

Note: **This field can be changed by the user. When changing is made, the new string, with max.length of 8 characters, must be written between two string delimiters (i.e 'new string'). If the delimiters are not typed the new string is not accepted.**

Device Bus Address: This read only field shows the Bus Address of the connected transmitter in the Profibus Network.

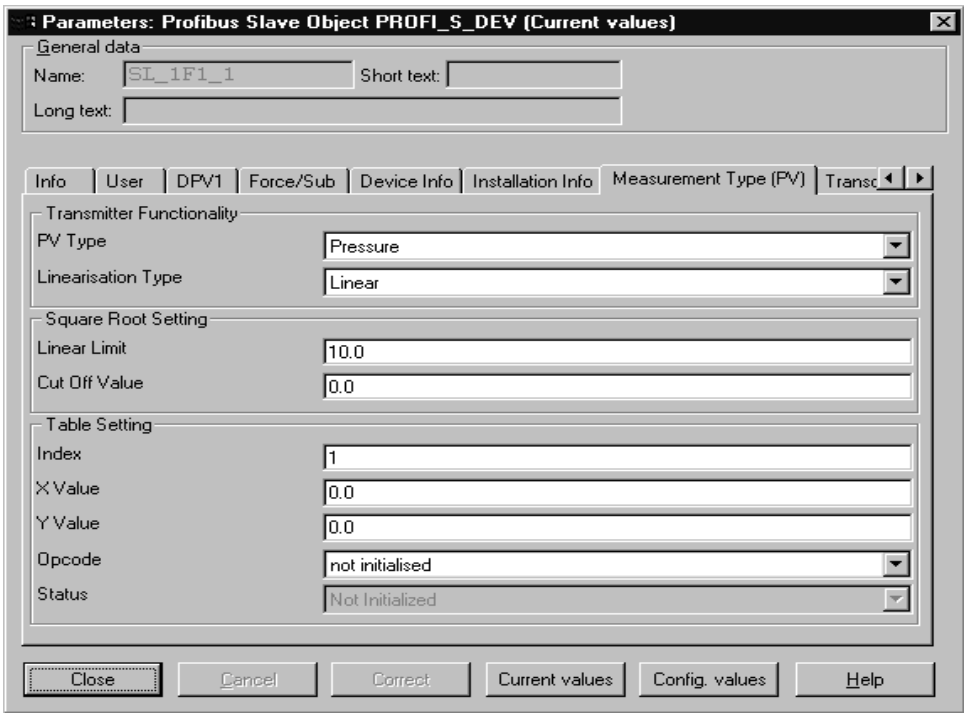
Note: The Device Bus Address can be set both via Software and Hardware operations.

- **The Software operation consist in the special Profibus Service called 'Set Slave Address', which has been specified by the Profibus Organization specifications just for this goal.**
- **The Hardware operation is executed using the Local Key 'S' under the on-top label of the transmitter. When the transmitter has the local indicator installed, it is possible rotate the 'S' key and read on the display a three digit value representing the address. Keeping the 'S' key rotate, the number on the display appear incremented of one unit every 0.5 seconds in a range between 0 to 126, until the 'S' key is released. The address selected in this way, became active, for the point of view of the communication, only after a new power down-up of the device.**

MEASUREMENT TYPE (PV):

In this page it is possible to select the functionality the transmitter is required to fulfil in term of Measurement type and the consequent transfer function to be set.

Figure 3:



Transmitter Functionality

PV Type: The default type is 'Pressure'. Opening this combo box appear the other available selections, see the Figure 4. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Note: Just after this writing, the transmitter goes in 'Out of Service' Mode (see in the 'Process Output' page the 'Target Mode' and 'Actual Mode'), and this condition is also displayed on the local indicator.
With the transmitter in Out of Service, the user can proceed to properly configure the transmitter and then switch the 'Target Mode' in 'Auto' again.

Linearisation Type: The default Type is 'Linear'. Opening this combo box appear the other available selections see the Figure 5. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Figure 4:

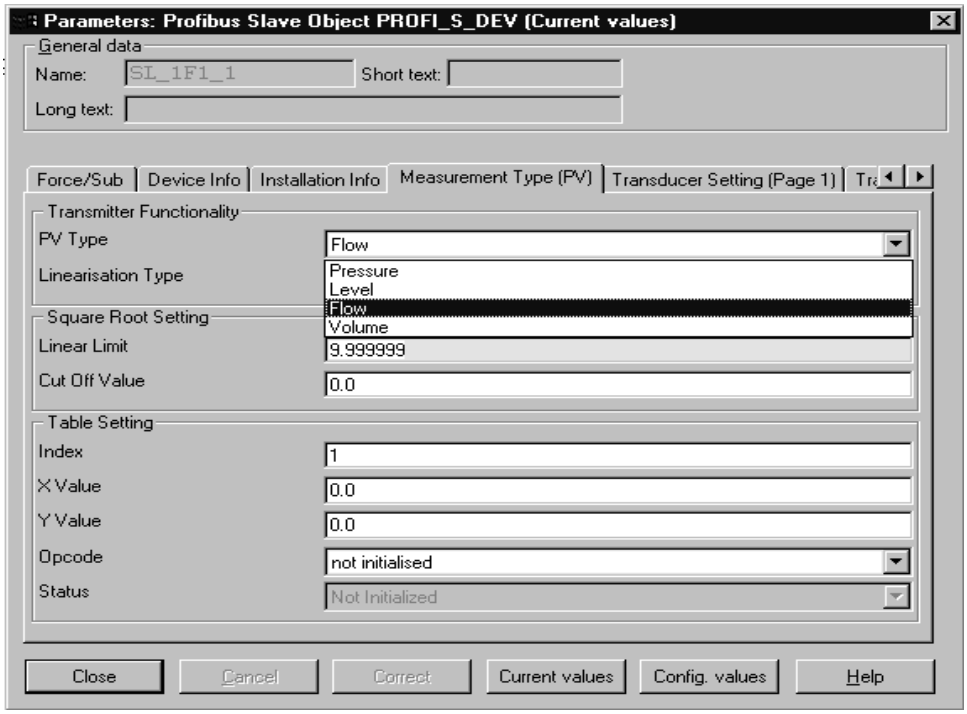
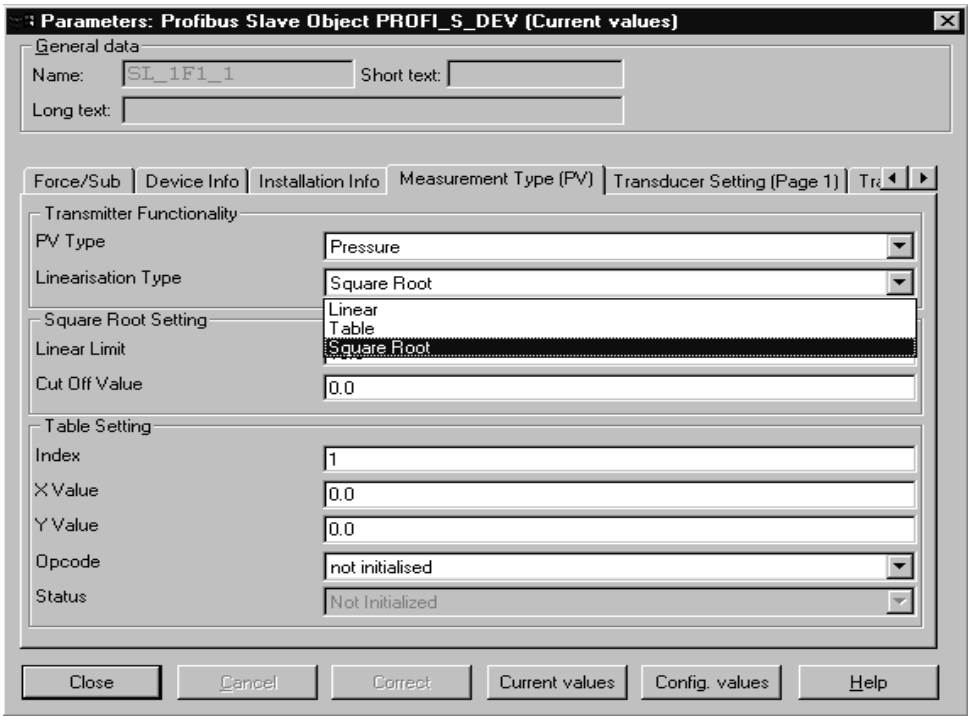


Figure 5:



Square Root Setting

When the in the 'Linearisation Type' field, has been selected the 'Square Root', the user can then set the Square Root characteristics. See the Figure 6 for understanding how to set these Items.

Linear Limit: The default value is the 10% of the output. the user can change this value between 0% to 20%.

Note: This value has always to be greater than the 'Cut Off Value' When 'Linear Limit' value smaller than 'Cut Off Limit' is written, the 'Cut Off Value' is forced to 0%.

Cut Off Value: The default value is the 0% of the output. The user can change this value between 0% to 15%.

Note: This value has always to be smaller than the 'Linear Limit' value When 'Cut Off Value' greater than 'Linear Limit' value is written, the 'Linear Limit' value is forced to 20%.

Figure 6:

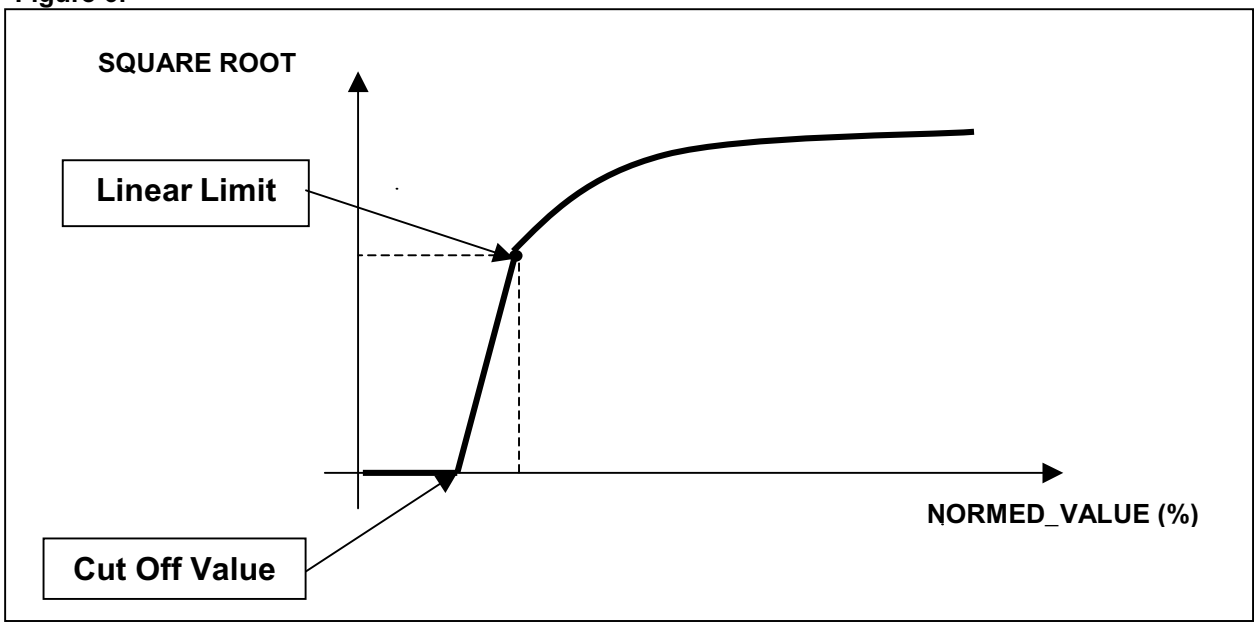


Table Setting

When the in the 'Linearisation Type' field has been selected the 'Table' the user can then configure or modify the linearisation table. The table contains up to 21 X, Y values in order to satisfy the Volume measurement.

Table Index: This parameter represents the position of the X, Y couple of values in the Linearisation Table. The Table Index is previously set in a range between 1 to 21 as pointer of the X, Y couple of values in the Table that the user needs to read or write.

Note: Table Index values outside the range 1, 21 are refused by the transmitter and an error box will appear on the screen.

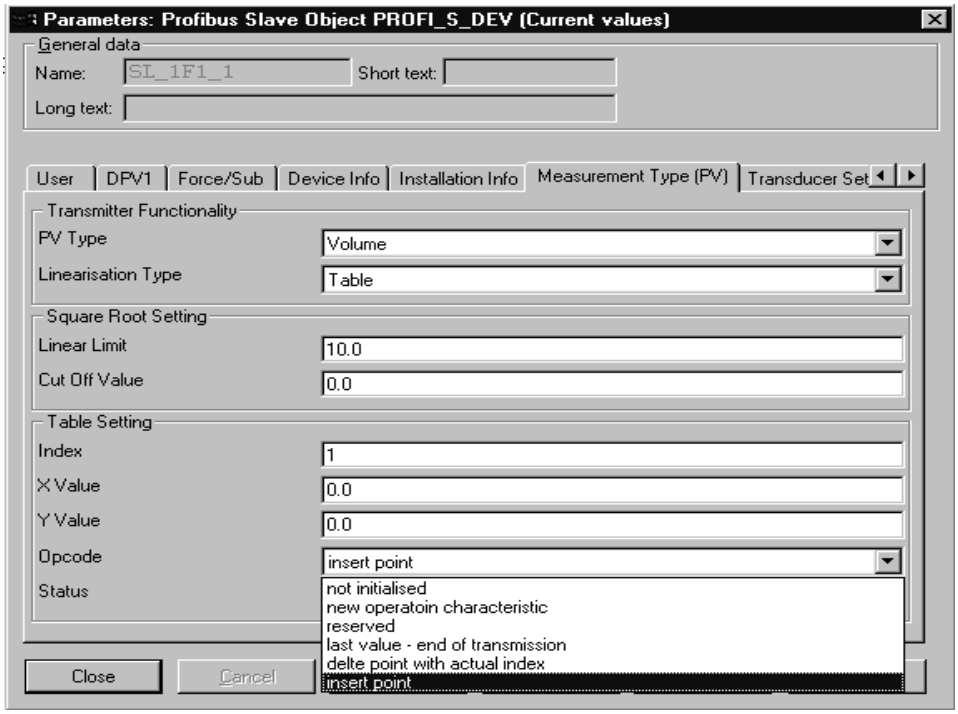
X Value: In this field the user writes the X values to be stored in the Table position identified by the Table Index.

Y Value: In this field the user writes the Y values to be stored in the Table position identified by the Table Index

Opcode: In this field the user has to select the type of operation to be executed relating the Table management**.** Opening the combo box as in Figure 7, the user can chose the relevant item

Status: After the Table has been configured, and the 'Opcode' for make it valid has been executed ('last value-end of transmission'), in this field appears the feed-back with information relating the acceptance of the new table or the reason because it cannot be accepted.

Figure 7:



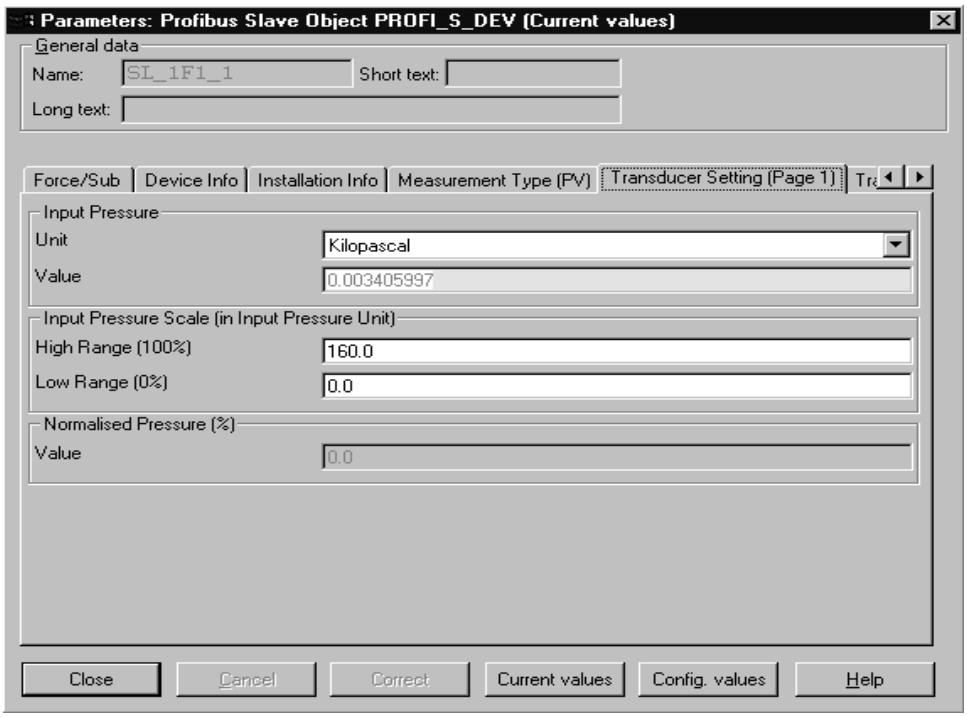
The following procedure for writing a linearisation table is only an example just to describe the method:

1. In the field 'Opcode' select the 'new operation characteristic' and click the 'Write' button.
2. In the field 'Index' set 1 and click the 'Write' button.
3. In the field 'X Value' and 'Y value' set the values correspondent to the 'Index' 1 and click the 'Write' button, for this example X Value = 0.0 and Y Value = 0.0
4. In the field 'Index' set 2 and click the 'Write' button.
5. In the field 'X Value' and 'Y value' set the values correspondent to the 'Index' 2 and click the 'Write' button, for this example X Value = 0.25 and Y Value = 0.4
6. In the field 'Index' set 3 and click the 'Write' button.
7. In the field 'X Value' and 'Y value' set the values correspondent to the 'Index' 3 and click the 'Write' button, for this example X Value = 0.5 and Y Value = 0.75
8. In the field 'Index' set 4 and click the 'Write' button.
9. In the field 'X Value' and 'Y value' set the values correspondent to the 'Index' 4 and click the 'Write' button, for this example X Value = 1.0 and Y Value = 1.0
10. In the field 'Opcode' select the 'last value-end of transmission' and click the 'Write' button, in this example only 4 points have been considered.
11. If the table can be accepted in the field 'Status' appear the string 'GOOD (new table is valid)'

TRANSDUCER SETTING (PAGE 1):

This page has to be considered only when the selected 'PV Type' in the Measurement Type (PV) page is different by Pressure (i.e. Flow, Level, Volume).

Figure 8:



Input Pressure:

This value represents the Pressure the transmitter is measuring with the relating unit code. This indication could be useful for the user offering the possibility to read the applied Pressure, althoug the transmitter has been selected for measurement type 'PV Type' different by Pressure.

Unit: The default unit is 'Kilopascal'. Opening this combo box appear the other available unit code for displaying this value, see the Figure 9. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Value: This value represents the Pressure the Transmitter is measuring, expressed in the above selected 'Unit'. This information is relevant when the transmitter has been selected for measurement type 'PV Type' different by Pressure.

Input Pressure Scale:

These values represent the Range of Pressure in input to be then converted in output as Flow or Level or Volume depending by the 'PV Type' selection.

High Range (100%): The user writes in this field the 100% point of the input pressure producing the 100% of the converted output (Flow, Level or Volume). This value is expressed in 'Input Pressure Unit'.

Note: Values lower than the 'Minimum Span' are refused and an error bax will apper on the screen, see the Figure 13. The 'Minimum Span' is visible in the 'Sensor Info' page see Figure 24.

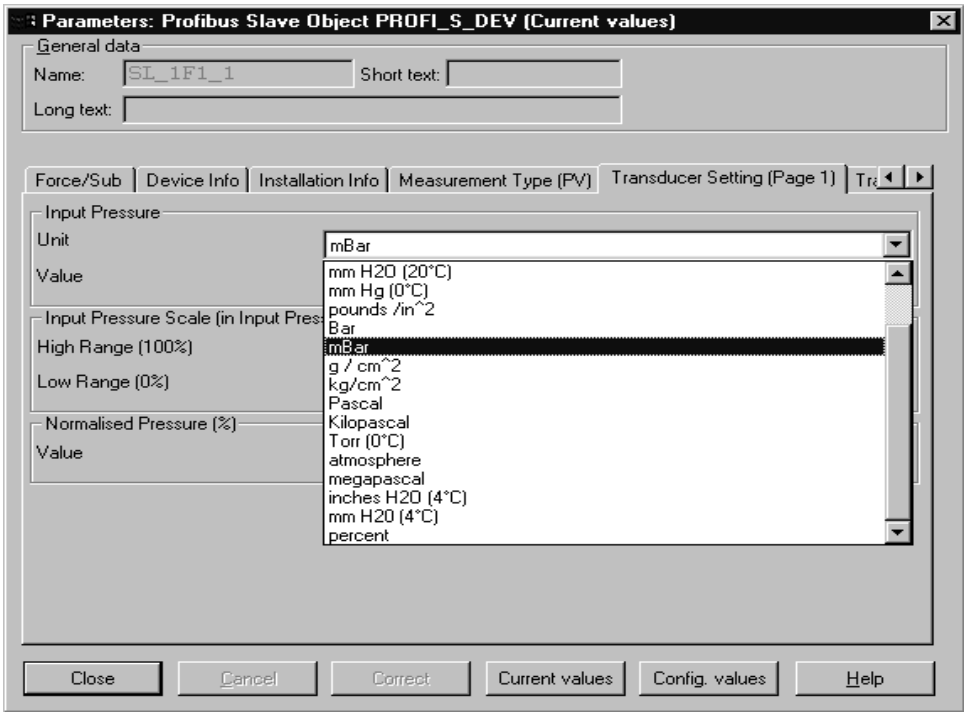
Low Range (0%): The user writes in this field the 0% point of the input pressure producing the 0% of the converted output (Flow, Level or Volume). This value is expressed in 'Input Pressure Unit'

Note: Values lower than the 'Minimum Span' are refused and an error bax will apper on the screen, see the Figure 13. The 'Minimum Span' is visible in the 'Sensor Info' page see Figure 24.

Normalised Pressure:
This value is relevant when the 'PV Type' selected is Volume.

Value: This value is always expressed as percentage of the 'Input Pressure Scale'

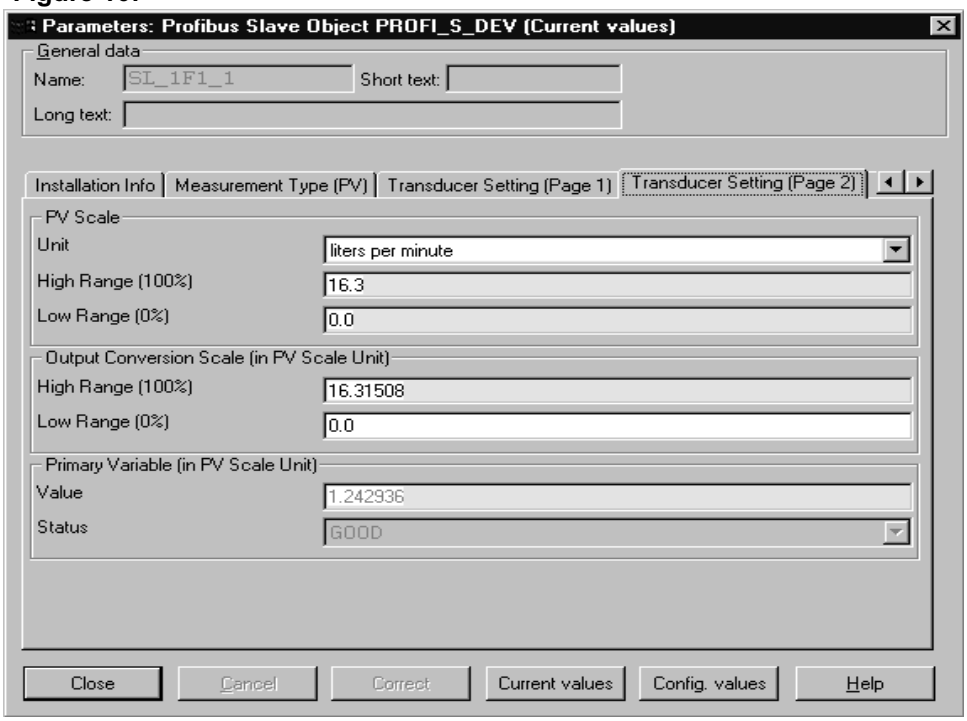
Figure 9:



TRANSDUCER SETTING (PAGE 2):

In this page the user set the 'PV Scale' the 'Output Conversion Scale', and can read the Primary Variable as value produced by the transducer before that any additional scaling of filtering is applied in order to satisfy the Process requirements.
The 'Output Conversion Scale' is relevant only when the selected 'PV Type' in the Measurement Type (PV) page is different by Pressure (i.e. Flow, Level, or Volume).

Figure 10:



PV Scale:

The PV Scale represents the Process Range in the desired Unit code. These fields have always to be set by the user without dependencies by the selected 'PV Type'.

Unit: Just after the selection of the 'PV Type', the unit is set at the default: 'Kilopascal' for Pressure, 'Cubic Meter per Hour' for Flow, 'Meters' for Level, 'Cubic Meters' for Volume. Opening this combo box appear all the other available unit code for the representation of these scaling see Figure 11. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Note: When new Unit is selected, the High Range and Low Range values are not automatically converted for the new Unit.
Before to proceed with the click on the 'Write' button, the user should write in the High Range and Low Range fields the new values to be written in the device as Process Range.

Note: Setting of Unit of different nature respect the selected 'PV Type' are refused, and on the screen appear an error box as in figure 13.
i.e.: If PV Type = Pressure, Unit = liter per minute is not accepted. Only Pressure units are accepted for 'PV Type' = Pressure or Flow units are accepted for 'PV Type' = Flow and so on.

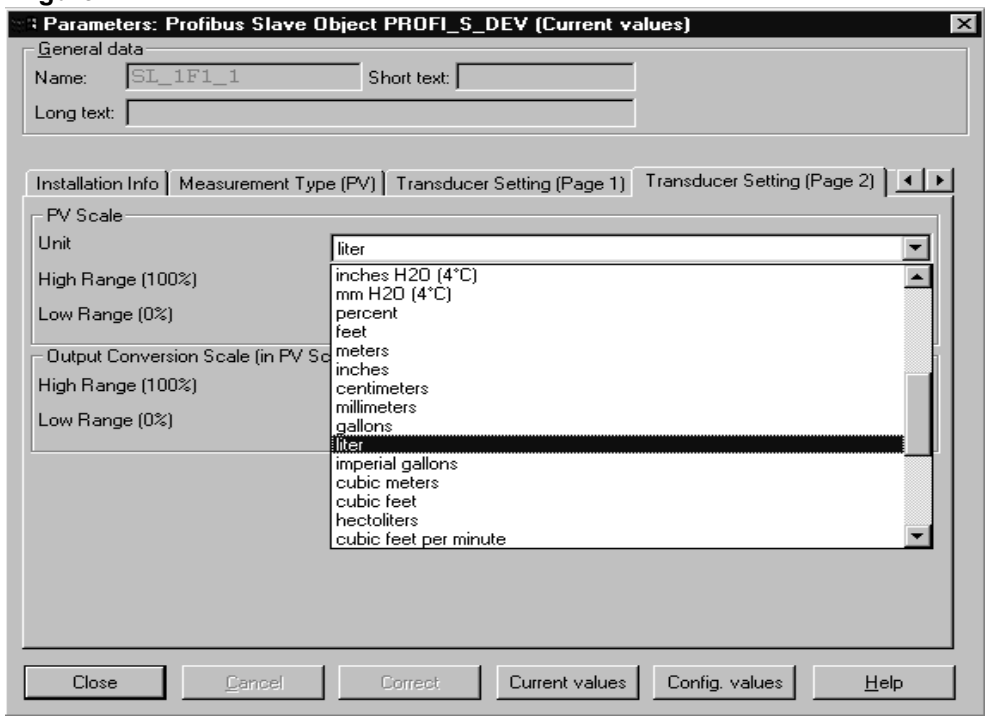
High Range (100%): The user writes in this field the 100% point of the Process Range. The value here written has always represented in the Unit above selected.

Note: When the selected 'PV Type' is Pressure, values greater than the 'Upper Sensor Limit' or lower than the 'Minimum Span' are refused, see the Figure 12 and 13. These limits are visible in the 'Sensor Info' page see Figure 24.

Low Range (0%): The user writes in this field the 0% point of the Process Range. The value here written has always to be represented in the Unit above selected.

Note: When the selected 'PV Type' is Pressure, values lower than the 'Upper Sensor Limit' or lower than the 'Minimum Span' are refused, see the Figure 12 and 13. These limits are visible in the 'Sensor Info' page see Figure 24.

Figure 11:



Output Conversion Scale:

When the selected 'PV Type' in the Measurement Type (PV) page is different by Pressure (i.e. Flow, Level, or Volume), this Scaling became active and has to be set by the User.

This scaling represents which is the Output Range after the 'Linearisation Type' has been applied, in correspondence at the 'Input Pressure Scale' set in the page 'Transducer Setting (page 1)'.

High Range (100%): The user writes in this field the 100% point of the Output Conversion Range. The value here written has always represented in the PV Scale Unit.

Note: This value usually has to match the PV Scale High Range. Changing of PV Scale Unit convert automatically this value.

Note: In this field all the values are accepted.

Low Range (0%): The user writes in this field the 0% point of the Output Conversion Range. The value here written has always to be represented in the PV Scale Unit.

Note: This value usually has to match the PV Scale Low Range. Changing of PV Scale Unit convert automatically this value.

Note: In this field all the values are accepted.

Figure 12:
The Upper Sensor Limit is 160.0 Kpa. If the user tries to set 161.0 Kpa as High Range and click on the 'Write' button, the setting is refused and on the screen appear the error box as in Figure 13.

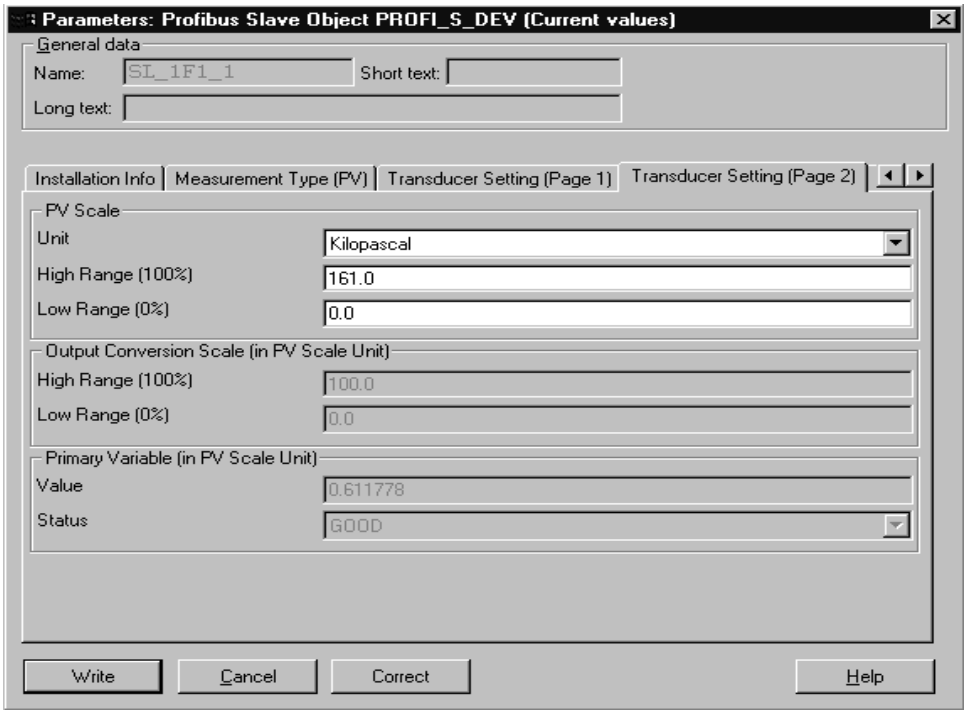


Figure 13:

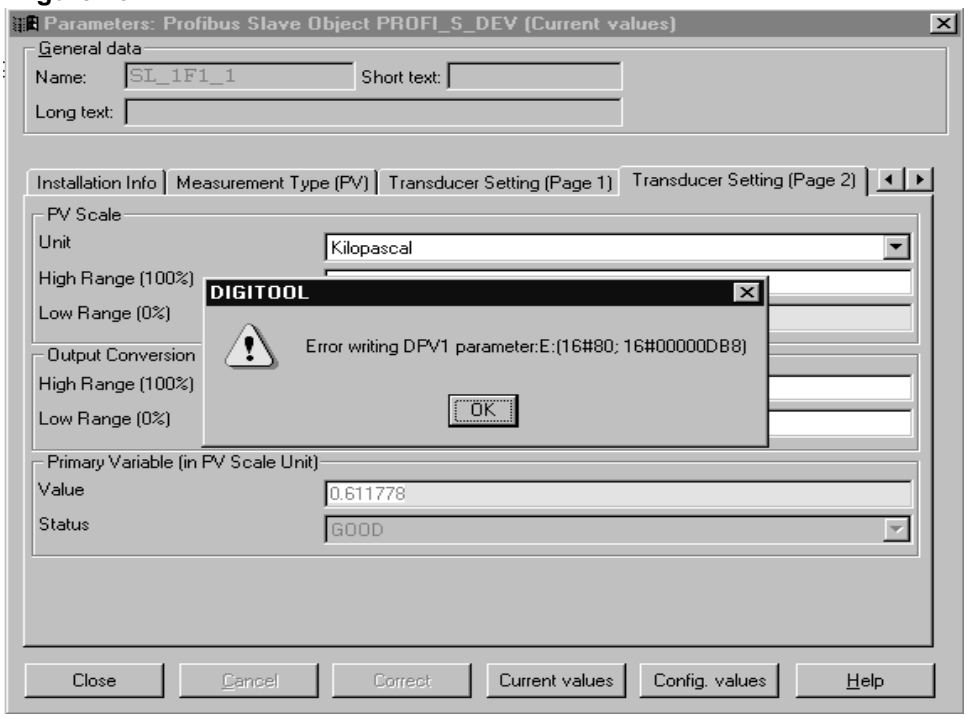
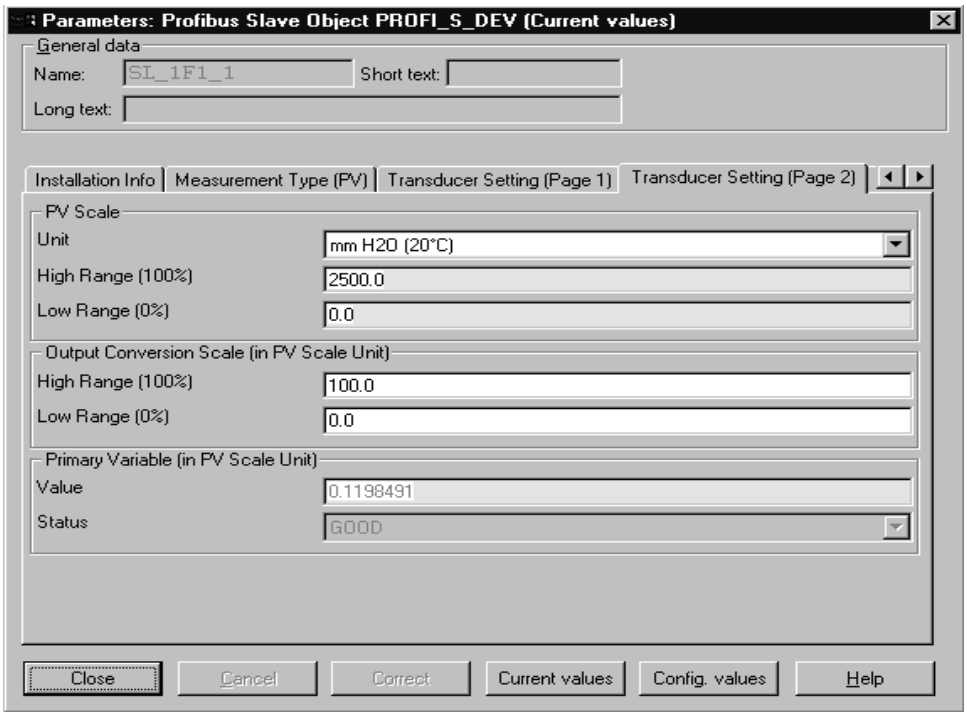


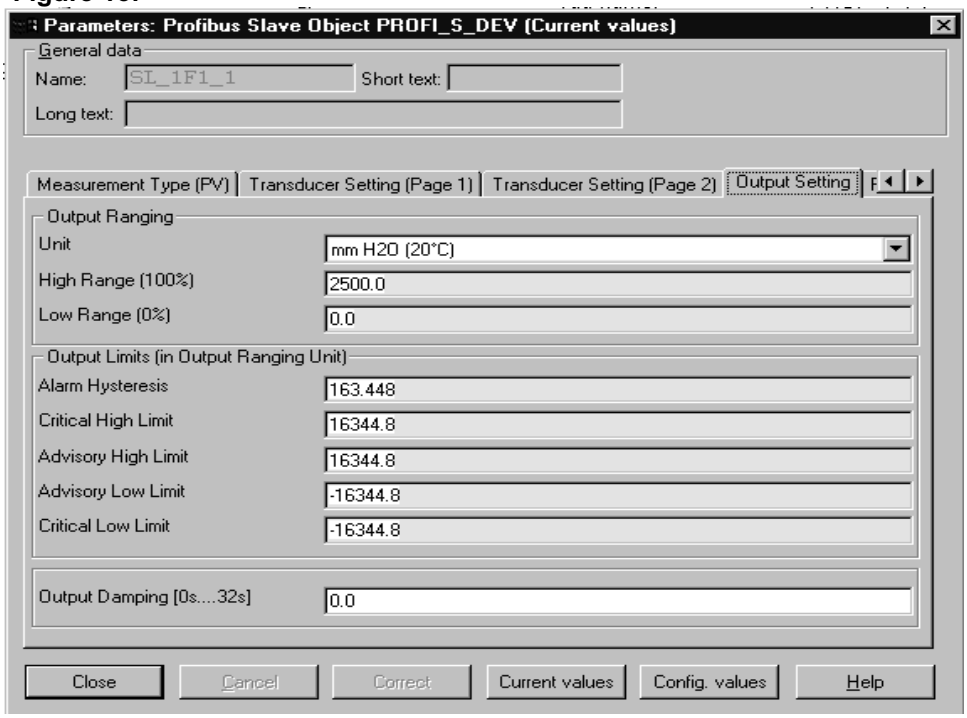
Figure 14:
In this figure we start to consider an example of setting of transmitter working as Pressure measurement.
The Process Range is set from 0-160.0 Kpa, to 0-2500 mmH2O(20°C).
The 'Output Converion Scale' has not meaning because the 'selected 'PV Type' is Pressure.
The 'Primary Variable' is updated with the Value expressed in mmH2O(20°C) and the Status



OUTPUT SETTING:

In this page the user set all the variables relevant for the Process to be controlled. The 'Output Ranging' as real scaling and unit for the Process Output Value, the 'Output Limits' and the 'Output Damping'.

Figure 15:



Output Ranging:

The user set in these fields the real working Range and the Unit to be used for representing the OUTPUT produced by the Transmitter and read as cyclic variable by the System (DCS/PLC). The Unit here selected is also the unit used by the local display.

Unit: The user selects the unit to be used for representing the cyclic Process OUTPUT produced by the transmitter and the indication on the local display. Opening this combo box appear all available unit code. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Note: When new Unit is selected, the High Range and Low Range values are not automatically converted for the new Unit.
Before to proceed with the click on the 'Write' button, the user should write in the High Range and Low Range fields the new values to be written in the device as Output Range.

Note: Respect the Process Ranging, setting of Unit of different nature respect the selected 'PV Type' are always accepted

High Range (100%): The user writes in this field the 100% point of the Output Range. The value here written has always represented in the Unit above selected.

Note: In this field all the values are accepted.

Low Range (0%): The user writes in this field the 0% point of the Output Range. The value here written has always to be represented in the Unit above selected.

Note: In this field all the values are accepted.

Output Limits:
The user set in these fields all the limits relating the Process to be controlled. All these values are represented in the same unit selected for the 'Output Range'

Alarm Hysteresis: The default value as hysteresis is the 0.5% of the Outpur Range. The user can set different values of hysteresis depending by the process requirements.
Note: Changing of Output Range Unit converts automatically this value.

Critical High Limit: The default value match the 'Upper Sensor Limit' see the 'Sensor Info' page Figure 24. The user can set the critical high limit depending by the process requirements.
Note: Changing of Output Range Unit converts automatically this value.

Advisory High Limit: The default value match the 'Upper Sensor Limit' see the 'Sensor Info' page Figure 24. The user can set the advisory high limit depending by the process requirements.
Note: Changing of Output Range Unit converts automatically this value.

Advisory Low Limit: The default value match the 'Lower Sensor Limit' see the 'Sensor Info' page Figure 24. The user can set the critical high limit depending by the process requirements.
Note: Changing of Output Range Unit converts automatically this value.

Critical Low Limit: The default value match the 'Lower Sensor Limit' see the 'Sensor Info' page Figure 24. The user can set the critical low limit depending by the process requirements.
Note: Changing of Output Range Unit converts automatically this value.

Output Damping:
The user set in these fields the damping value expressed in seconds.

Output Damping: The default value is 0 seconds. The user can set different damping values depending by the process requirements.
Note: Values outside the brange between 0 to 32 seconds are refused and an error box will appear on the screen, see Figure 16 and 17.

Figure 16:
If the user select 33 seconds as damping value, and click on the 'Write' button, the setting is refused and on the screen appear the error box as in Figure 17.

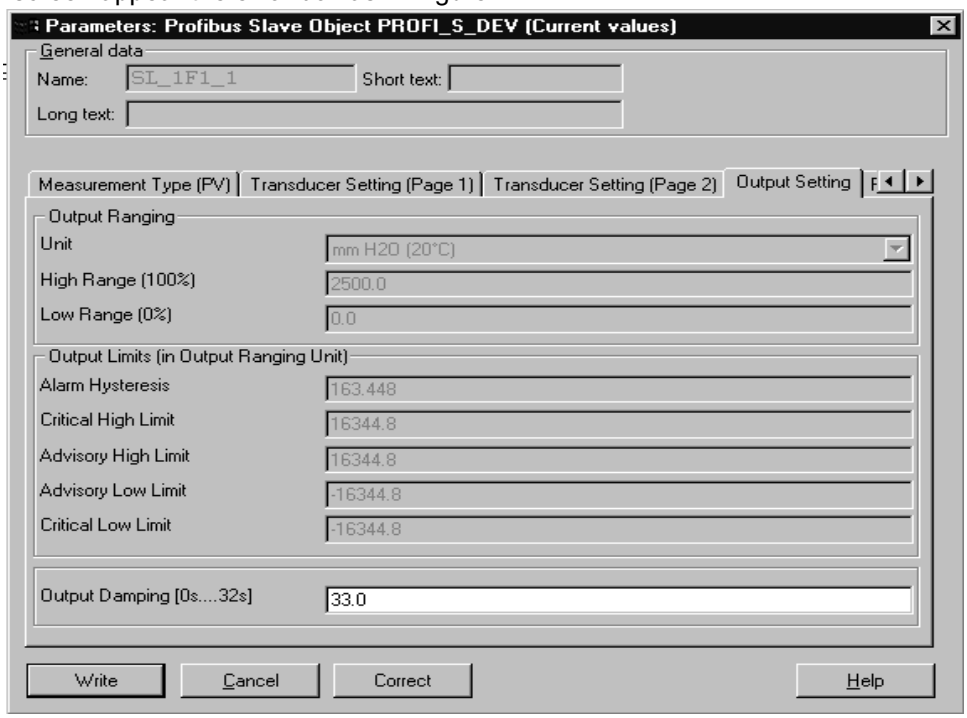
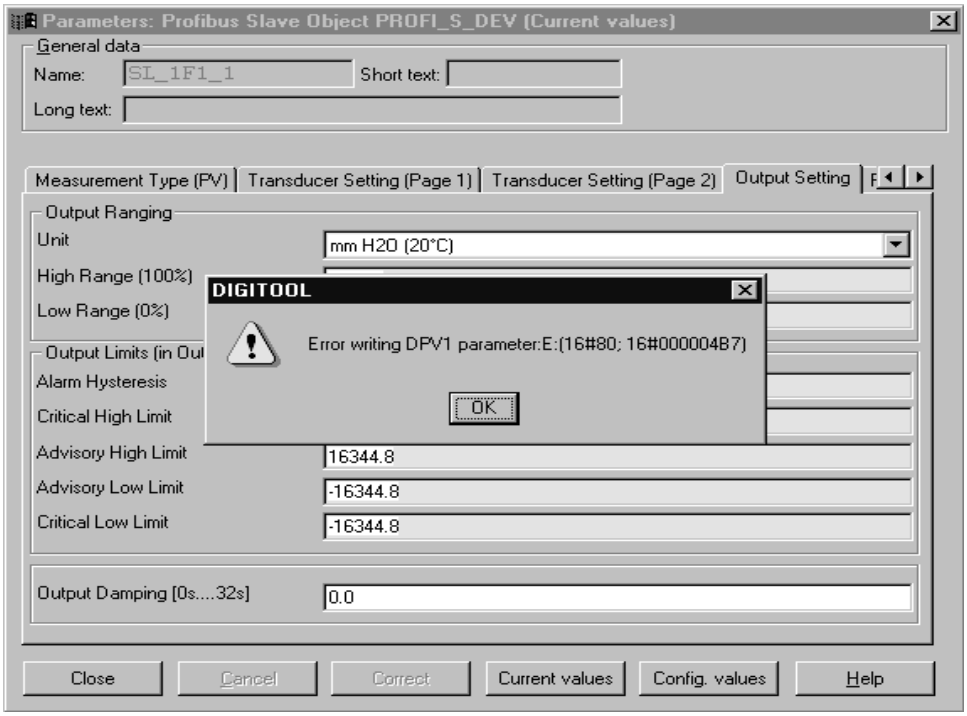


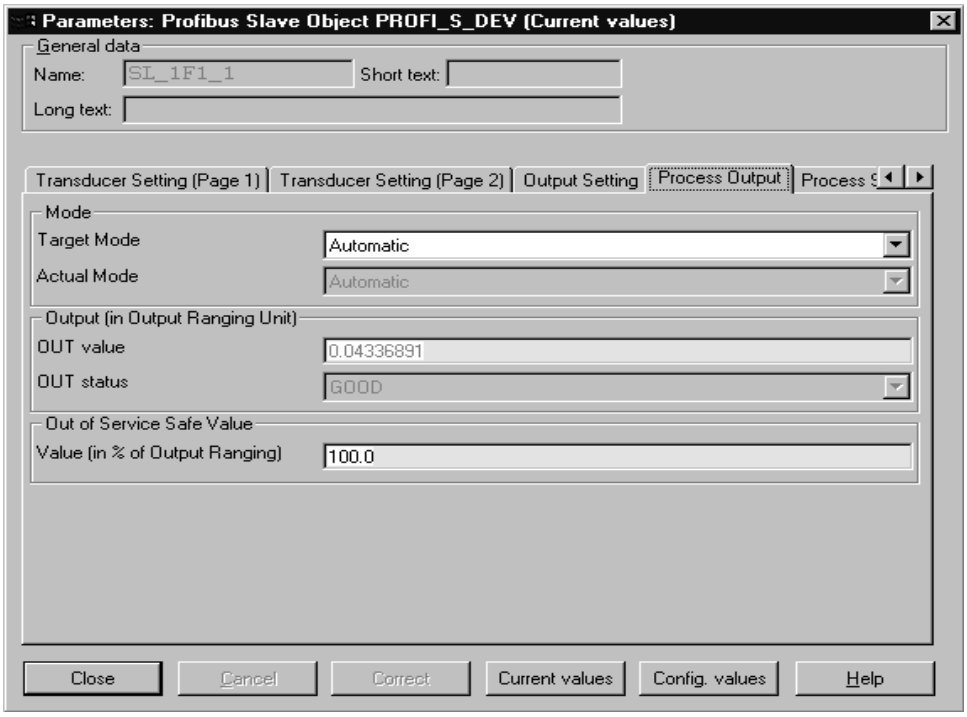
Figure 17:



PROCESS OUTPUT:

In this page the user can read the Output produced by the transmitter as combination of Value and Status. This is the same value/status available for the cyclic communication and read by the system (DCS/PLC) for the Process Control purpose. The user can also set the value to be produced in output when the transmitter goes in Out Of Service Operating Mode. Additionally in this page the user can set and then verify the Operating Mode of the transmitter.

Figure 18:



Mode:

In these field the user can set and check the operating mode of the transmitter.

Target Mode: In this field the user selects the transmitter's Operating Mode. Opening this combo box appear the available operating mode, see the Figure 19. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Actual Mode: In this field the user can verify in which operating Mode the transmitter is working. When the 'Actual Mode' is in 'Out of Service', this condition is displayed on the local indicator.

Output:

In these fields the user reads the Output Value and Status.

OUT value: The value here displayed is expressed in the 'Output Range Unit'. This value is the same available on the local indicator and transmitted via the cyclic communications.

OUT status: The status here displayed reèresent the quality of the 'OUT value' assuming different meaning depending by the device or process conditions. This status is the same transmitted via the cyclic communications.

Out of Service Safe Value:

The user set in this field the value the transmitter has to produce in output when it goes in 'Out of Service Mode'.

Value: This value is represented as percentage of the 'Output Range', see the Figure 19 and 20.

Figure 19:
In this example the 'Out of Service' mode is selected and written in the transmitter, then the transmitter switches its condition as in Figure 20.

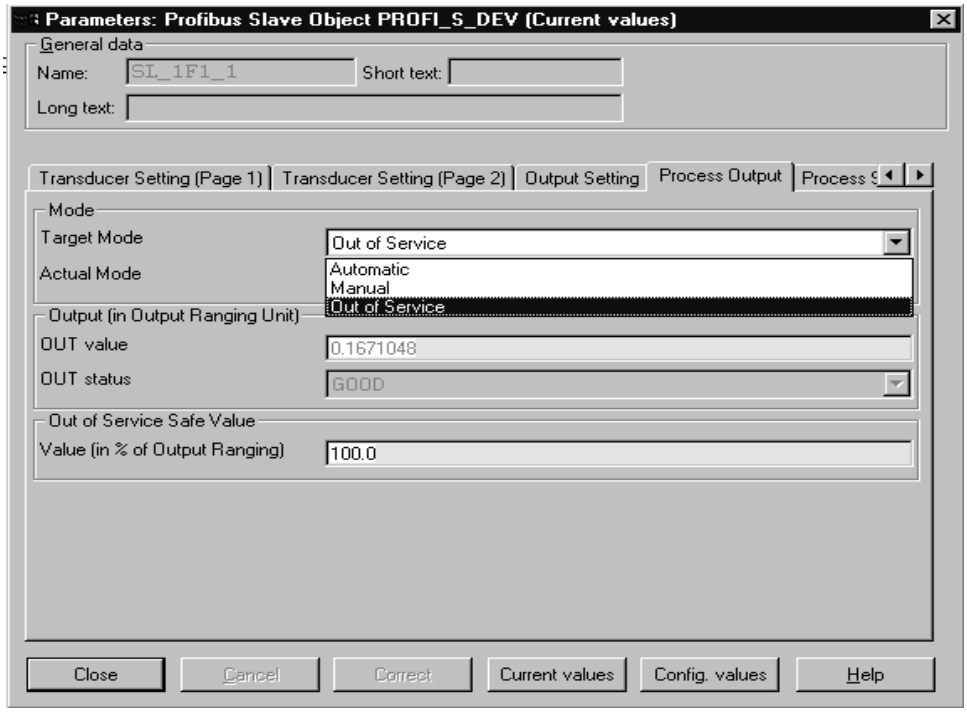
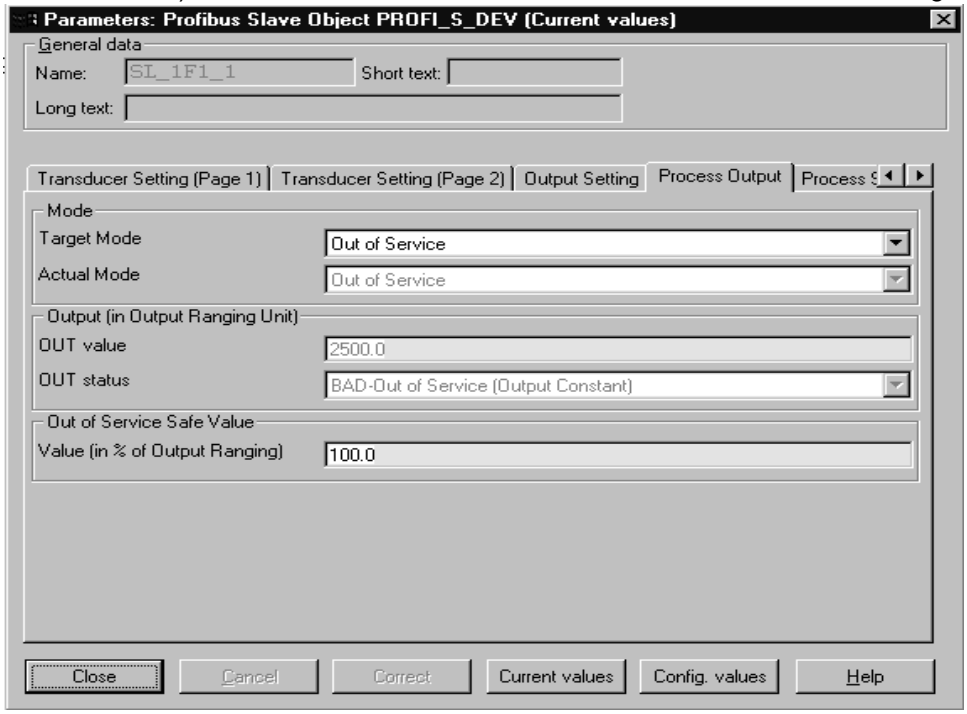


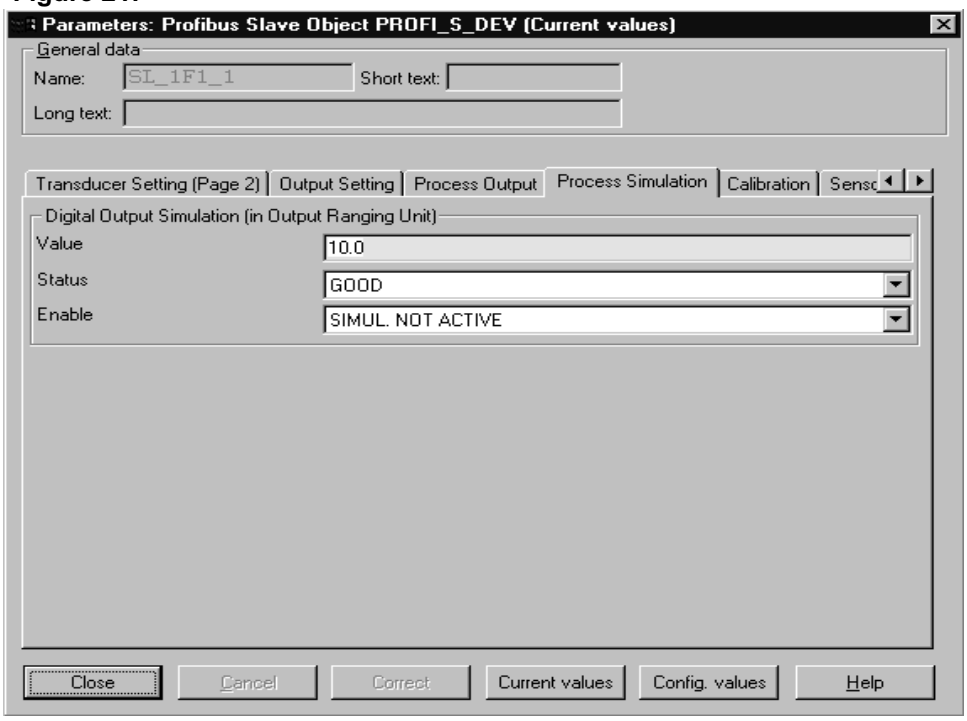
Figure 20:
The 'Actual Mode' goes in 'Out of Service' as requested, the Output is forced at the 100% of the Output Range (0-2500 mmH2O), as selected in the 'Out of Service Safe Value', and the Status gives the proper indication



PROCESS SIMULATION:

In this page the user can enable the simulation condition in the field 'Enable', and then set the value and status to be simulated. These Value and Status replace what produced by the 'Primary Variable', see the Transducer Setting (Page 2) in the Figure 10.

Figure 21:



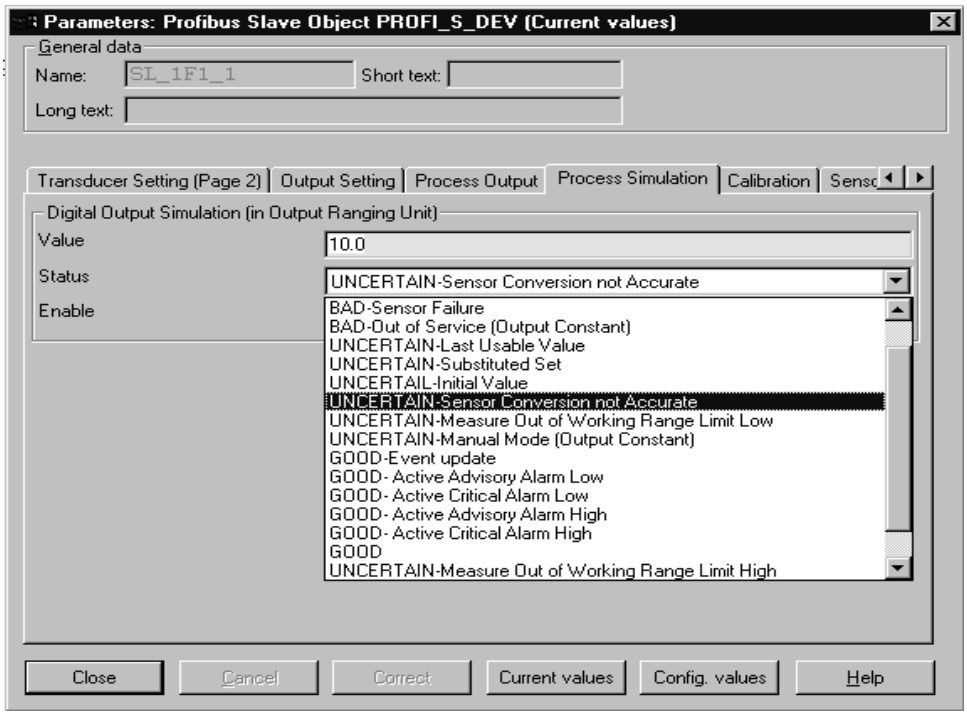
Digital Output Simulation:

Value: The user can write in this field the value to be simulated.

Status: The user can select in this field the status condition to be simulated. Opening this combo box appear all the available status condition, see the Figure 22. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.

Enable: In this combo box the user selects the Simulation Active or Not Active. When the simulation is Active, this condition is displayed on the local indicator too.

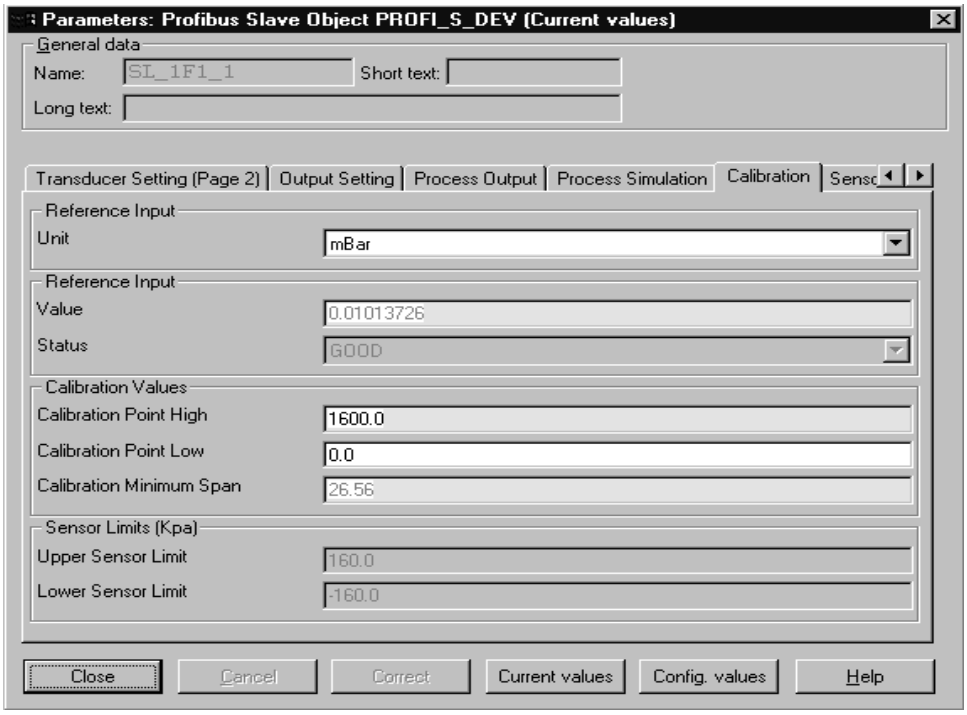
Figure 22:


Parameters: Profibus Slave Object PROFI_S_DEV (Current values)
General data
Name:
SL_1F1_1
Short text:
Long text:
Transducer Setting (Page 2)
Output Setting
Process Output
Process Simulation
Calibration
Digital Output Simulation (in Output Ranging Unit)
Value
10.0
Status
UNCERTAIN-Sensor Conversion not Accurate
Enable
BAD-Sensor Failure
BAD-Out of Service (Output Constant)
UNCERTAIN-Last Usable Value
UNCERTAIN-Substituted Set
UNCERTAIL-Initial Value
UNCERTAIN-Sensor Conversion not Accurate
UNCERTAIN-Measure Out of Working Range Limit Low
UNCERTAIN-Manual Mode (Output Constant)
GOOD-Event update
GOOD- Active Advisory Alarm Low
GOOD- Active Critical Alarm Low
GOOD- Active Advisory Alarm High
GOOD- Active Critical Alarm High
GOOD
UNCERTAIN-Measure Out of Working Range Limit High
Close
Cancel
Correct
Current values
Config. values
Help

CALIBRATION:

Working in this page the user can to perform the Calibration of the instrument. The Calibration procedure means that the user has to apply in input at the transducer a known reference pressure using a pressure generator, and then he has to check whether the value produced in output match what applied in input.

Figure 23:



Reference Input:

Unit: In this field the user selects the unit to be used for the Calibration operation. When, for example, the user has a reference pressure generator of mbar, it is more confortable to work using the mbar as calibration unit. Opening this combo box appear the available units for the calibration. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.
Note: Only Pressure units are available.

Reference Input:

Value: In this field the user can read the reference value produced in output by the transducer and evaluate if it matches or not the value of pressure applied in input at the sensor.
Note: This value is represented in 'Reference Input Unit'.

Status: This status represent the quality of the reference value.

Calibration Values:
When the 'Reference Input Value' doesn't match the applied reference pressure, the user can perform the transmitter calibration writing the real value in the following fields.

Calibration Point High: When the reference pressure applied in input at the sensor doesn't match the value read in the 'Reference Input Value', the user writes the ideal value in this field, and click on the 'Write' button for the execution of the calibration. Just after the operation, the Value read in the 'Reference Input Value' is adjusted in order to match the value of the applied pressure.

Note: In the 'Calibration Point High' the user write the high value of the scale to be calibrated.

Note: If the user applies in input pressure values greater than the 'Upper Sensor Limit', or tries to write in this field values lower than the 'Calibration Point Low' or tries to perform calibration with values lower than the 'Minimum Span', the operation is not executed and an error box appear on the screen.

Note: Changing of 'Reference Input Unit' converts automatically this value

Calibration Point Low: When the reference pressure applied in input at the sensor doesn't match the value read in the 'Reference Input Value', the user writes the ideal value in this field, and click on the 'Write' button for the execution of the calibration. Just after the operation, the Value read in the 'Reference Input Value' is adjusted in order to match the value of the applied pressure.

Note: The 'ZERO KEY' under the ON-TOP label performs this operation as 'Local Operation'.

Note: In the 'Calibration Point Low' the user write the low value of the scale to be calibrated.

Note: If the user applies in input pressure values lower than the 'lower Sensor Limit', or tries to write in this field values greater than the 'Calibration Point High' or tries to perform calibration with values lower than the 'Minimum Span', the operation is not executed aand an error box appear on the screen.

Note: Changing of 'Reference Input Unit' converts automatically this value

Minimum Span: The user can use this value as reference when calibration has to be done. Calibration of ranges lower than this value are not accepted.

Note: Changing of 'Reference Input Unit' converts automatically this value

Sensor Limits:
The following read only fields display the Sensor Limits of the tranducer always represented in Kpa.

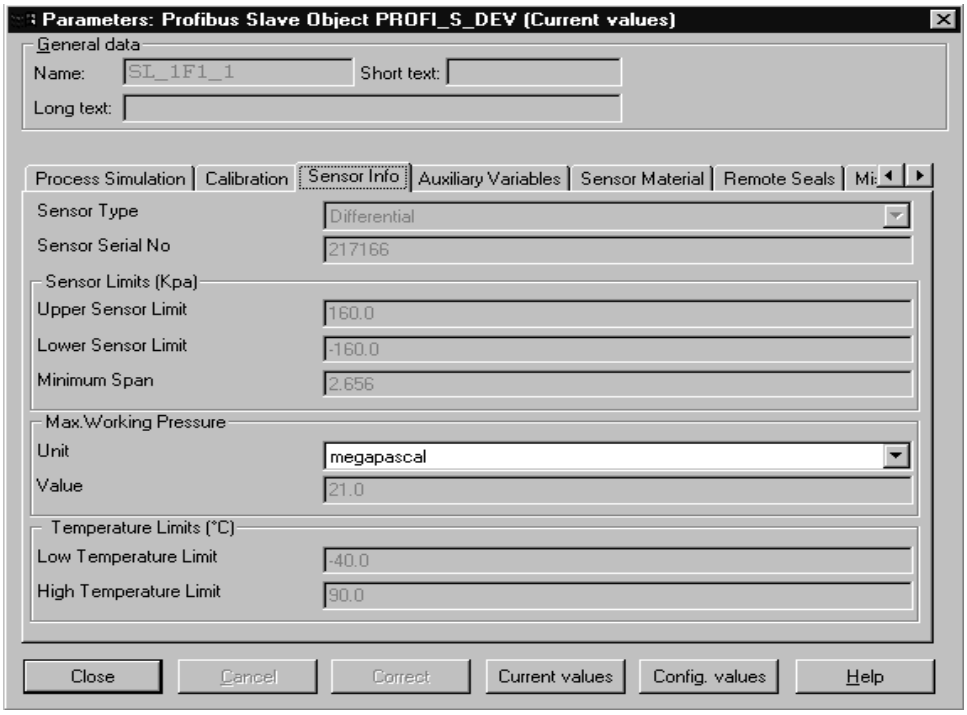
Upper Sensor Limit: During the calibration operations, this value represents the maximum pressure accepted as reference in input. Values of pressure greater than this value cannot be calibrated.

Lower Sensor Limit: During the calibration operations, this value represents the minimum pressure accepted as reference in input. Values of pressure greater than this value cannot be calibrated.

SENSOR INFO:

In this page the user can read general information relating the sensor of the connected transmiter.

Figure 24:



Sensor Type: In this field the type of sensor is displayed like 'Differential', 'Gauge' or 'Absolute' when the transmitter is working as Pressure measurement, otherwise indication of Flow, Level or Volume are available.

Sensor Serial No: Here is dispalyed the Sensor Serial Number as printed on the Sensor label.

Sensor Limits:

The following read only fields display the Sensor Limits and Minimum Span of the tranducer. These values are represented in Kpa.

Upper Sensor Limit: This is the Sensor Limit High of the transducer in Kpa.

Lower Sensor Limit: This is the Sensor Limit Low of the transducer in Kpa.

Minimum Span: This is the Minimum Span allowed by the transducer in Kpa.

Max Working Pressure:

The following fields display the Maximum Static Pressure at which the transducer can work.

Unit: The default unit is 'Megapascal'. Opening this combo box appear the other available unit code for displaying the 'Maximum Working Pressure' value. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.
Note: Only Pressure units are available.

Value: In this field the user reads the the 'Maximum Working Pressure' value represented in the above unit.

Temperature Limits:
The following fields display the temperature limits of the transmitter as defined in the specifications.

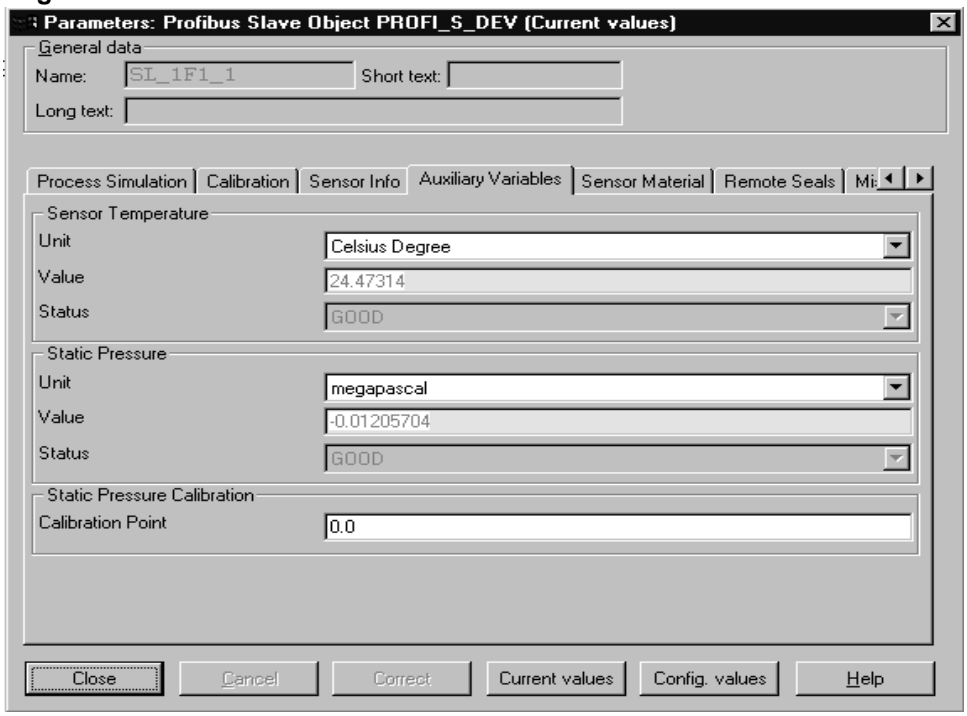
Low Temperature Limit: This value is always expresed in °C

High Temperature Limit: This value is always expresed in °C

AUXILIARY VARIABLES:

In this page the user can read the values and status of the compensation/auxiliary variables. In addition the user can here adjust the value of the static pressure when it doesn't match the known applied value.

Figure 25:



Sensor Temperature:

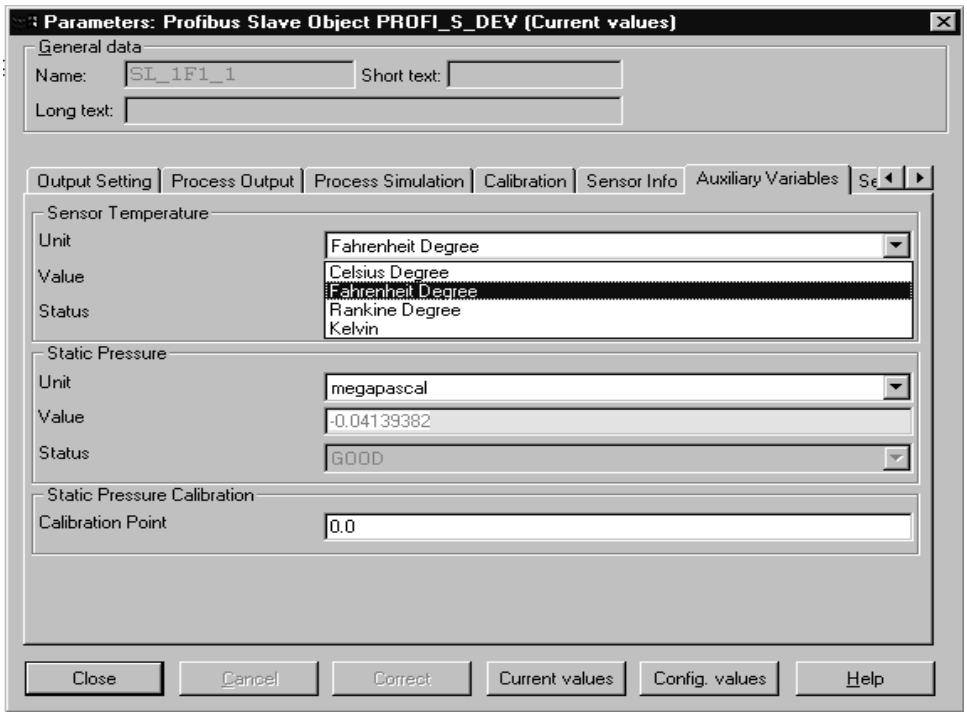
In these field the user can monitor the 'Sensor Temperature' used for the compensation of the 'Primary Variable'.

Unit: The default unit is 'Celsius Degree'. Opening this combo box appear the other available unit code for displaying the 'Sensor Temperature' value, see Figure 26. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.
Note: Only Temperature units are available.

Value: In this field the user can read the 'Sensor Temperature' value.

Status: This status represent the quality of the 'Sensor Temperature' value.

Figure 26:



Static Pressure:

In these field the user can monitor the 'Static Pressure' used for the compensation of the 'Primary Variable'.

Unit: The default unit is 'Megapascal'. Opening this combo box appear the other available unit code for displaying the 'Static Pressure' value, see the Figure 27. The user can here select one of these items and click on the 'Write' button for writing it in the transmitter.
Note: Only Pressure units are available.

Value: In this field the user can read the 'Static Pressure' value.

Status: This status represent the quality of the 'Static Pressure' value.

Static Pressure Calibration:

In this field the user can write the real known value of the 'Static Pressure' in order to adjust it.

Calibration Point: Writing the wanted 'Static Pressure' value in this field, force this variable to display the selected value.

Note: This value is represented in 'Static Pressure Unit'.

Note: Negative values or values greater than the 'Maximum Working Pressure' are not accepted.

Note: Corrections greater than 5.0 Mpa are not accepted see the Figure 28 and 29, but the user can performs more corrections smaller than 5.0 Mpa each.

Figure 27:

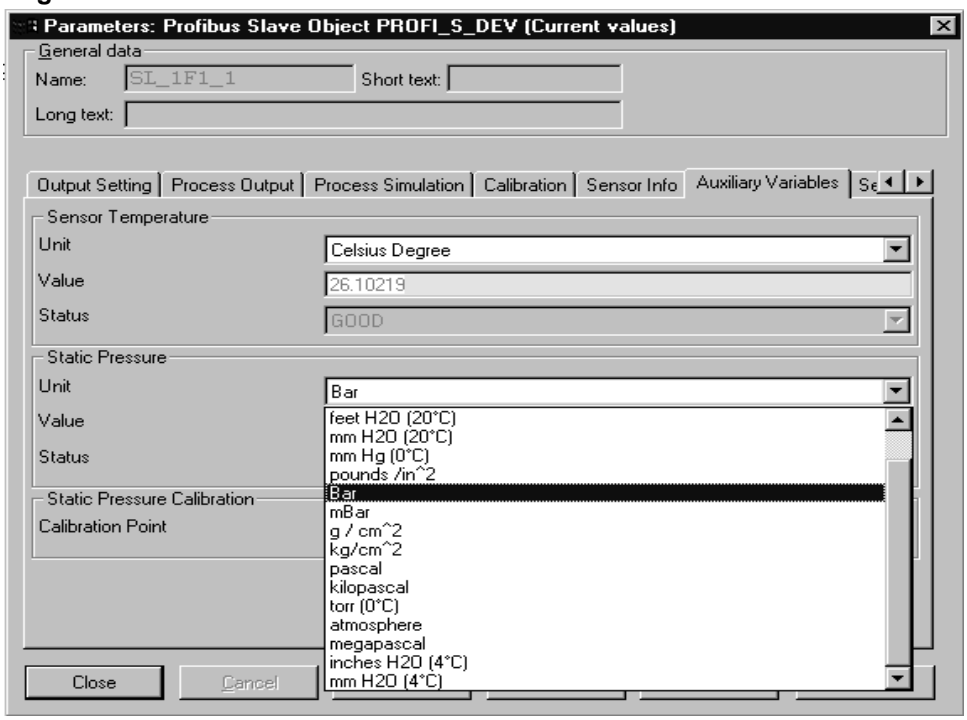

Parameters: Profibus Slave Object PROFI_S_DEV (Current values)
General data
Name:
SL_1F1_1
Short text:
Long text:
Output Setting
Process Output
Process Simulation
Calibration
Sensor Info
Auxiliary Variables
Sensor Temperature
Unit
Celsius Degree
Value
26.10219
Status
GOOD
Static Pressure
Unit
Bar
Value
Status
feet H2O (20°C)
mm H2O (20°C)
mm Hg (0°C)
pounds /in^2
Bar
mBar
g / cm^2
kg/cm^2
pascal
kilopascal
torr (0°C)
atmosphere
megapascal
inches H2O (4°C)
mm H2O (4°C)
Static Pressure Calibration
Calibration Point
Close
Cancel

Figure 28:
The attempt to set the 'Static Pressure Value' to 5.1 Mpa, the error box as in Figure 29 appear on the screen

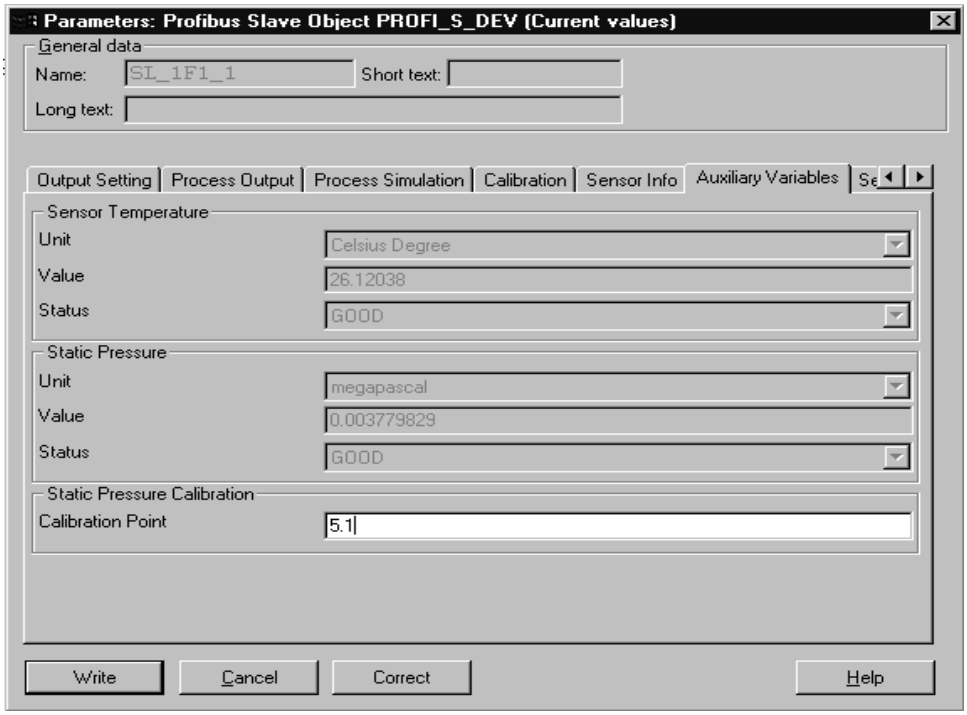
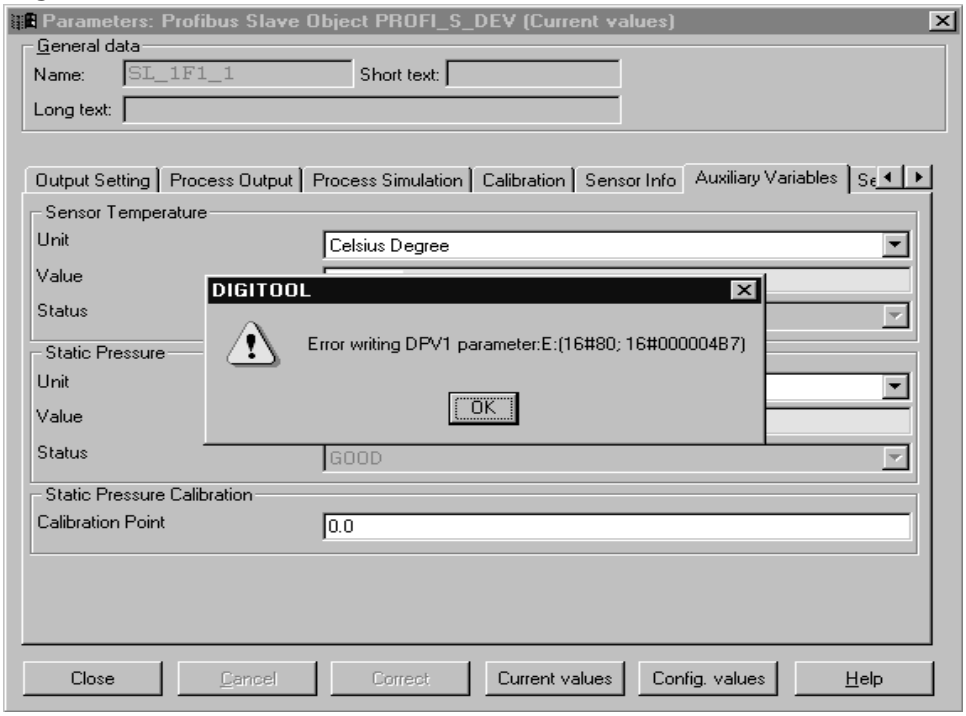


Figure 29:



SENSOR MATERIAL:

Information about the Sensor construction are available in this page. The white fields can be modified by the user opening the combo box and selecting the correct item.

Figure 30:

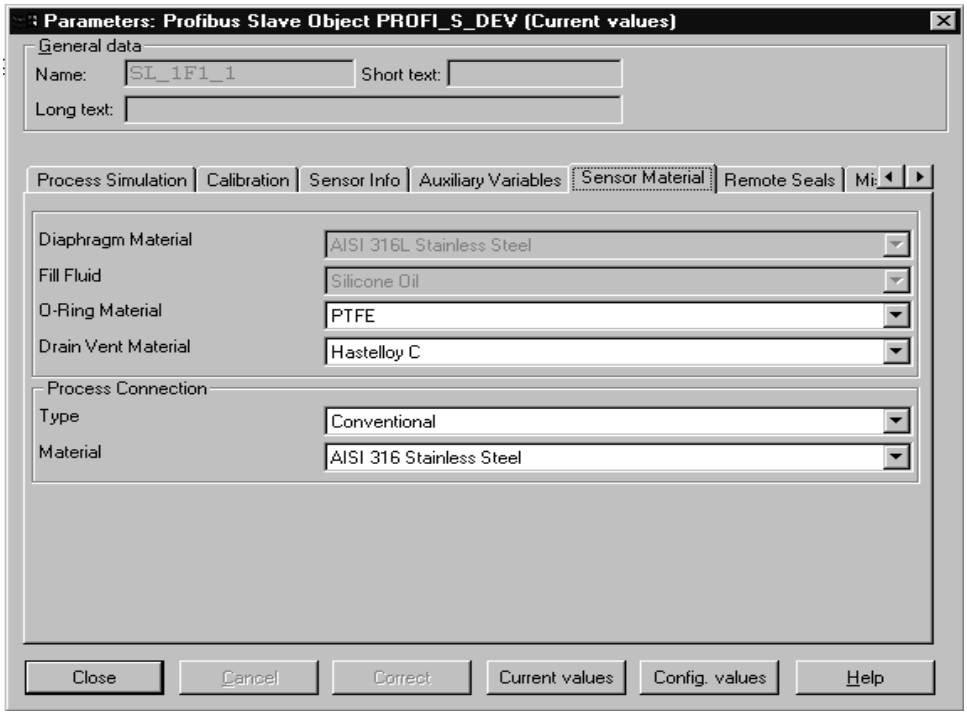
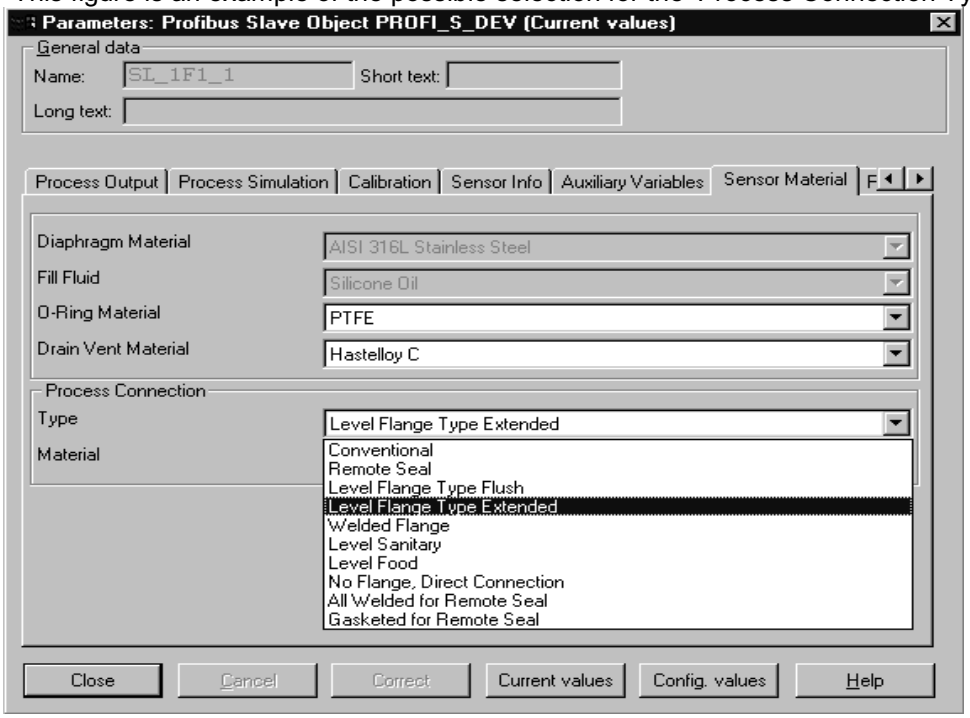


Figure 31:

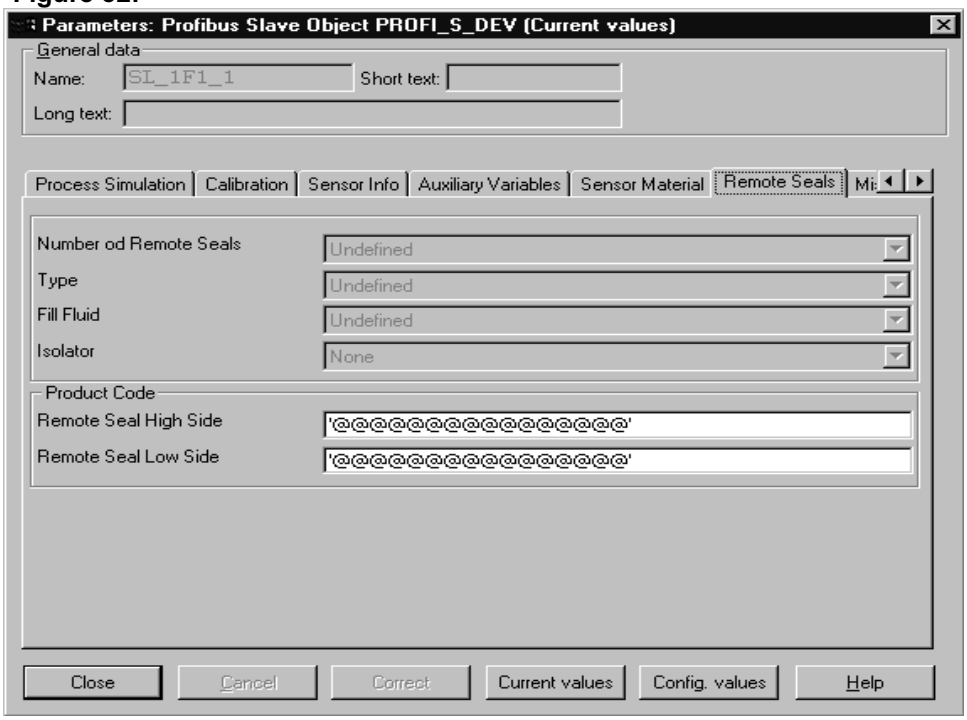
This figure is an example of the possible selection for the 'Process Connection Type'



REMOTE SEALS:

When installation with Remote Seals are used, In this page the user can get all the Remote Seals information

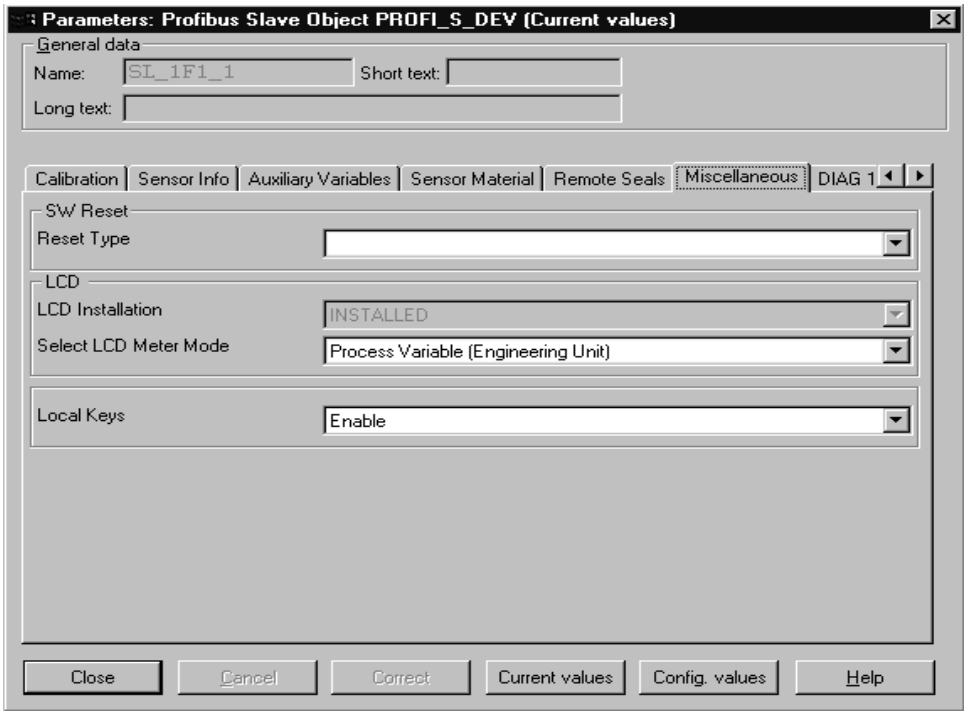
Figure 32:



MISCELLANEOUS:

In this page the user can performs some selections relating the transmitter features. He can execute Software reset operations, or change the variable to be displayed on the local indicator, or enable/disable the Local keys under the on-top label.

Figure 33:



SW Reset:

In this field the user can performs some Software reset commands.

Reset Type: Opening this combo box appear the available reset type to perform see the Figure 34. The user can here select one of these two items and click on the 'Write' button for the execution of such reset.

Note: The 'Load Default Parameters' when executed initialise all the transmitter variables with the default values.
The 'Reset to Factory Sensor Calibration Points' when executed force the calibration as originally performed in the factory.

LCD:

In this field the user has information relating the local indicator.

LCD Installation: The user can know if the Local Indicator is installed on the connected transmitter.

Select LCD Meter Mode:

The user can chose which indication to be displayed on the local indicator. Opening this combo box appear the available selections between the 'Process Variable in engineering unit' or the 'Percent of Range' see the Figure 35. The user can here select one of these two items and click on the 'Write' button in order to make the selection active.

Local Keys: The user can here if enable or disable the local keys operations. Opening this combo box appear the two available, and click on the 'Write' button in order to make the selection active.

Figure 34:

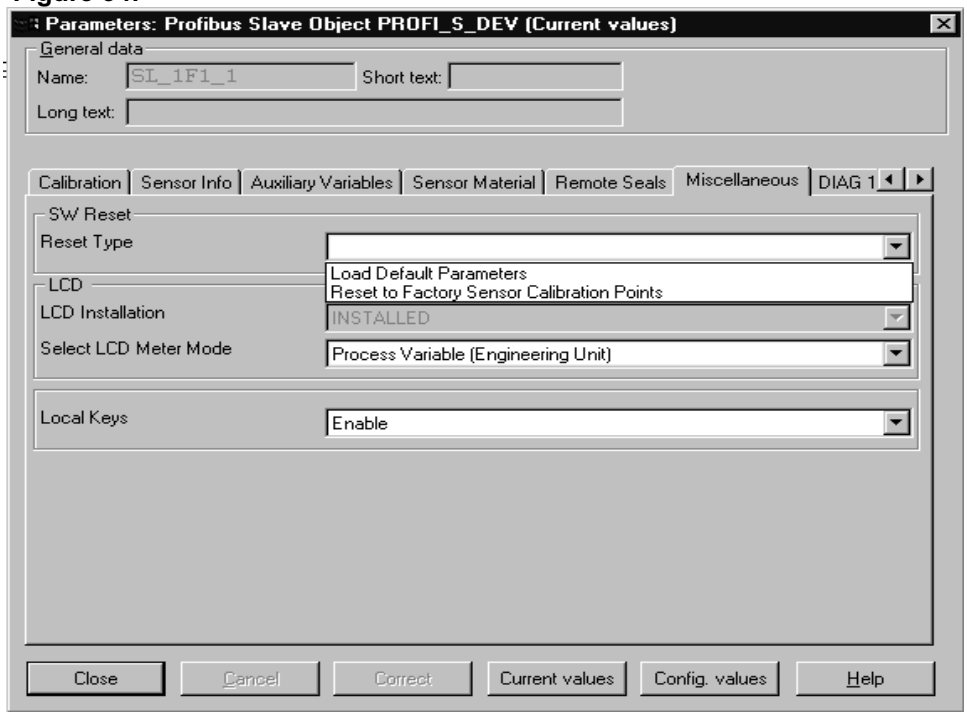
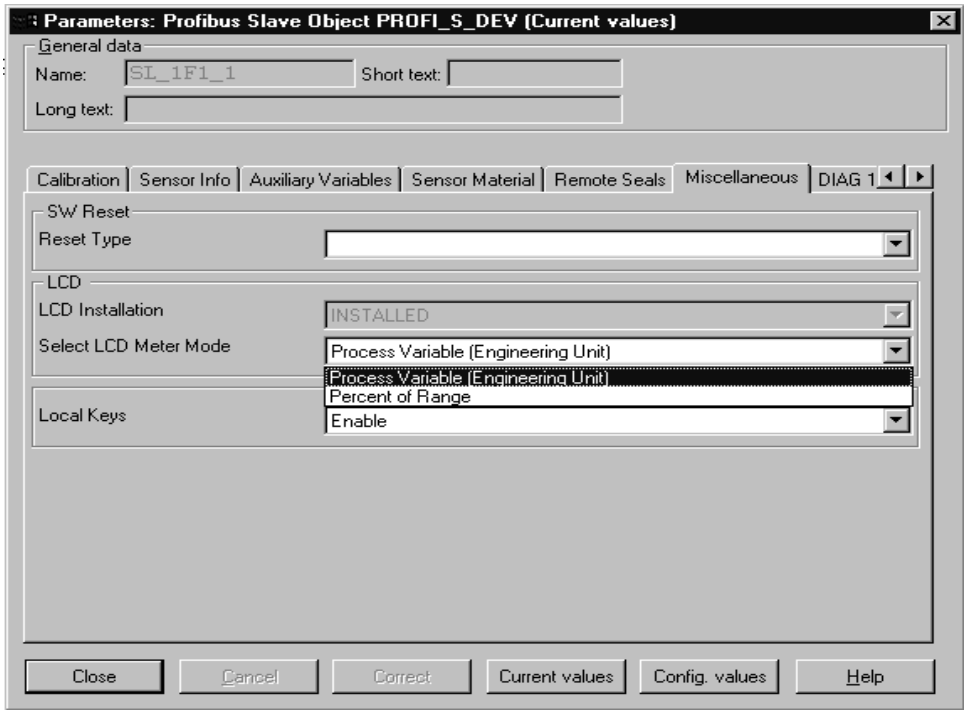


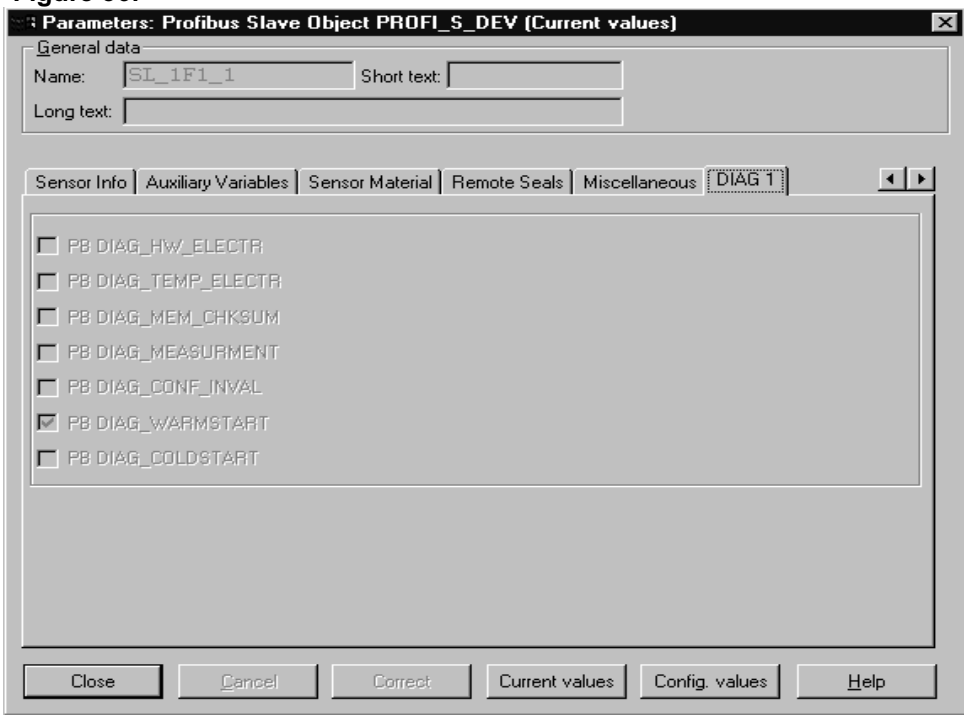
Figure 35:



DIAG 1:

In this page the user can monitor some diagnostic indication which can be useful for evaluate the status of the transmitter and maybe proceed with mainenace operations

Figure 36:



PB DIAG_HW_ELECTR This indication became set whenever the electronic failure has been detected

PB DIAG_TEMP_ELECTR This indication became set whenever the Sensor temperature failure has been detected

PB DIAG_MEM_CHKSUM This indication became set whenever the memory checksum failure has been detected

PB DIAG_MEASUREMENT This indication became set whenever the sensor failure has been detected

PB DIAG_CONF_INVAL This indication became set whenever the transmitter has been not correct configured for measuring Flow or Level or Volume. This indication is not relevant when the transmitter measure pressure.

PB DIAG_WARMSTART This indication became set after each power on which doesn't require default setting of the parameters.

PB DIAG_COLDSTART This indication became set after each power on requiring the default setup of the parameters.

APPENDIX A

EXAMPLE FOR SETTING THE TRANSMITTER FROM THE PRESSURE TYPE TO FLOW TYPE

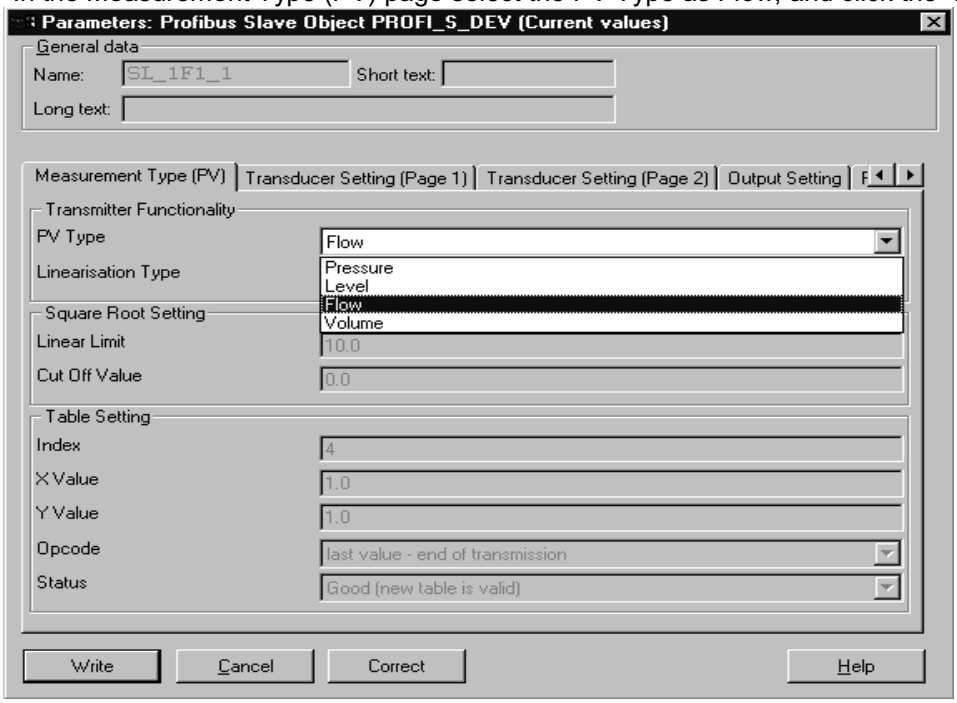
In this addendum is described the procedure for setting the transmitter as FLOW type listing step by step all the required operations.

Suppose to have a differential Pressure transmitter having the sensor limit of +160, -160 Kpa, to be connected on an Orifice with these specification data:

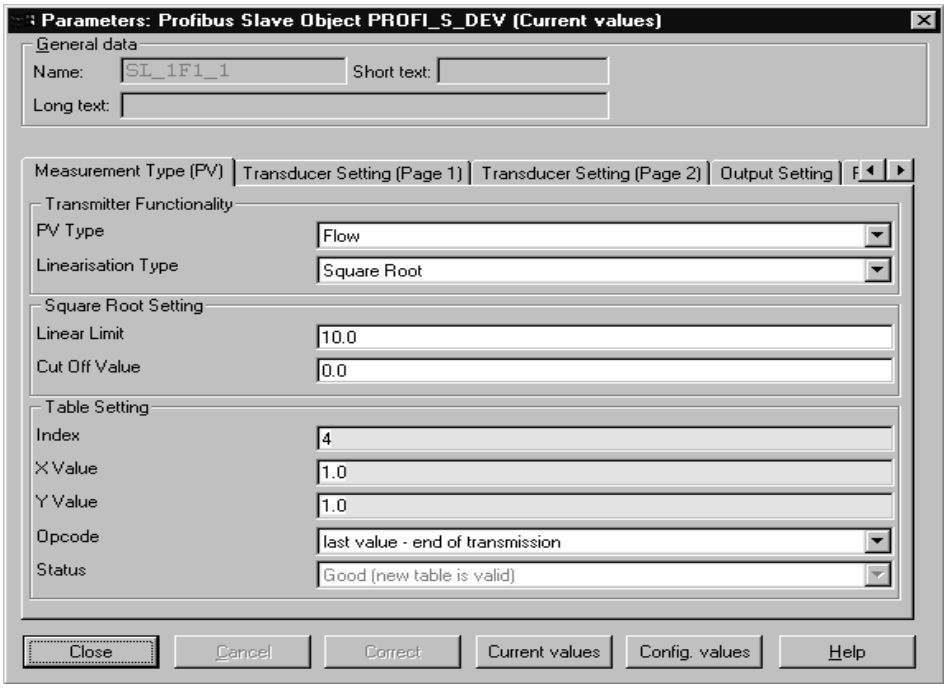
- **Range of pressure in Input = 0-1150 mBar**
- **Range in Output after the Square Root = 0-64 Liter per seconds.**

STEP 1:

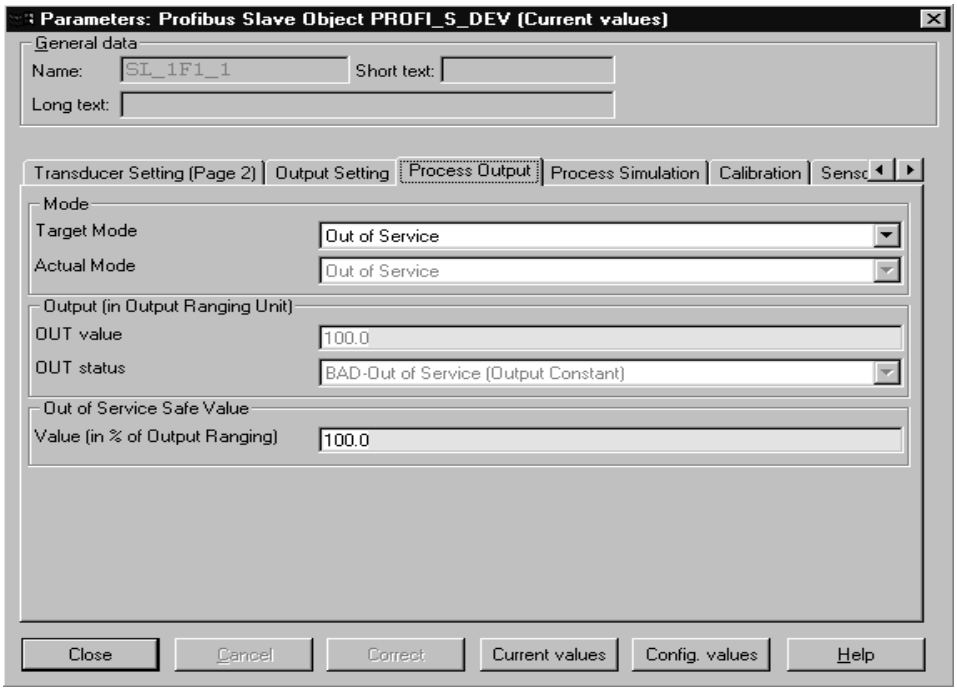
In the Measurement Type (PV) page select the PV Type as Flow, and click the 'Write' Button.



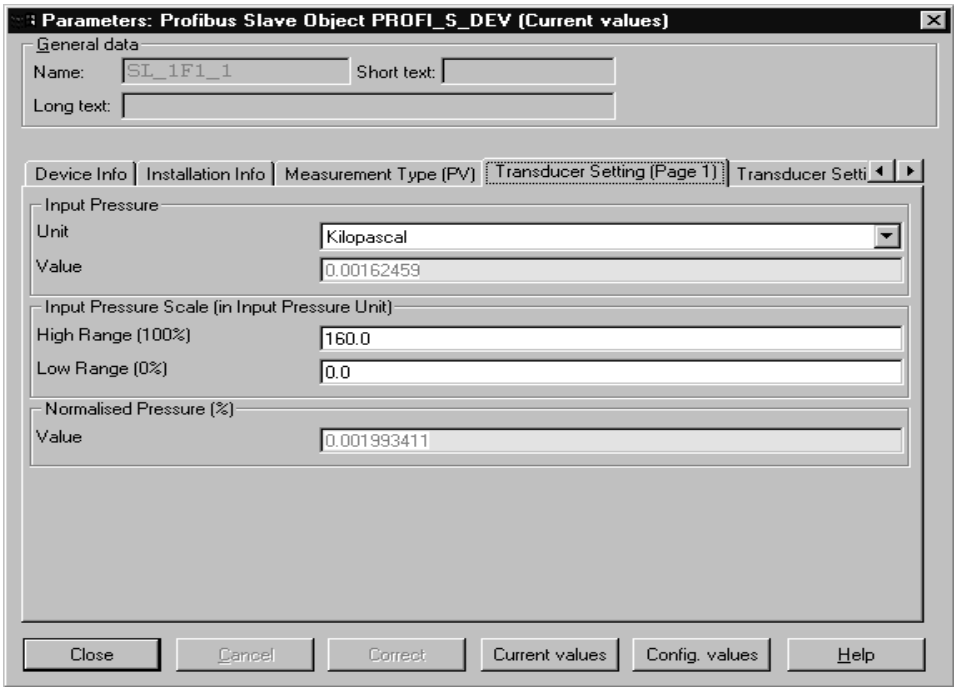
STEP 2:
The 'Linearisation Type' is automatically set to 'Square Root' with the 'Linear limit' at 10% and the 'Cut Off Value' at 0.0%



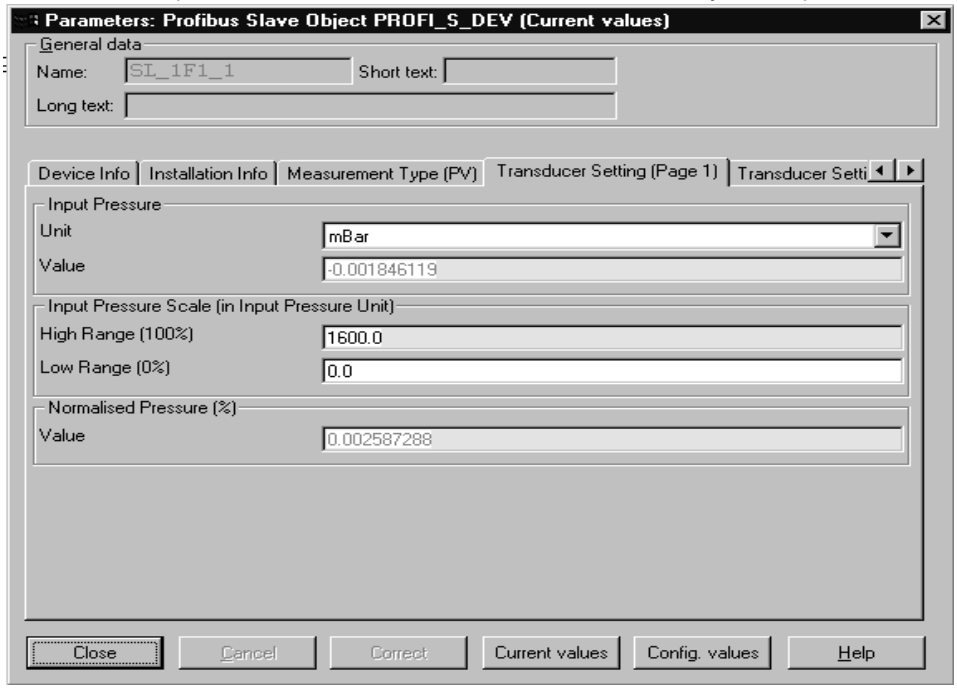
STEP 3:
In the 'Process Output' page, the 'Target Mode' and 'Actual Mode' are automatically switched to 'Out of Service', the OUT Value is fixed at the 100% of the 'Output Range' and the OUT Status reflect this condition



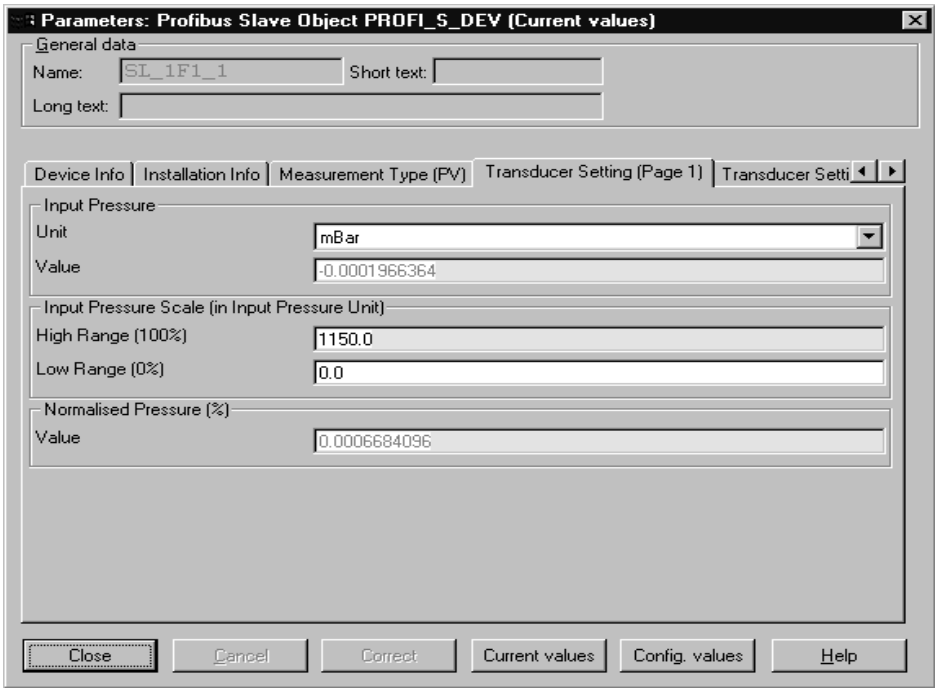
STEP 4:
In the 'Transducer Setting (Page 1)' it is necessary to set the 'Input Pressure Scale' as defined in the Orifice Data Specifications



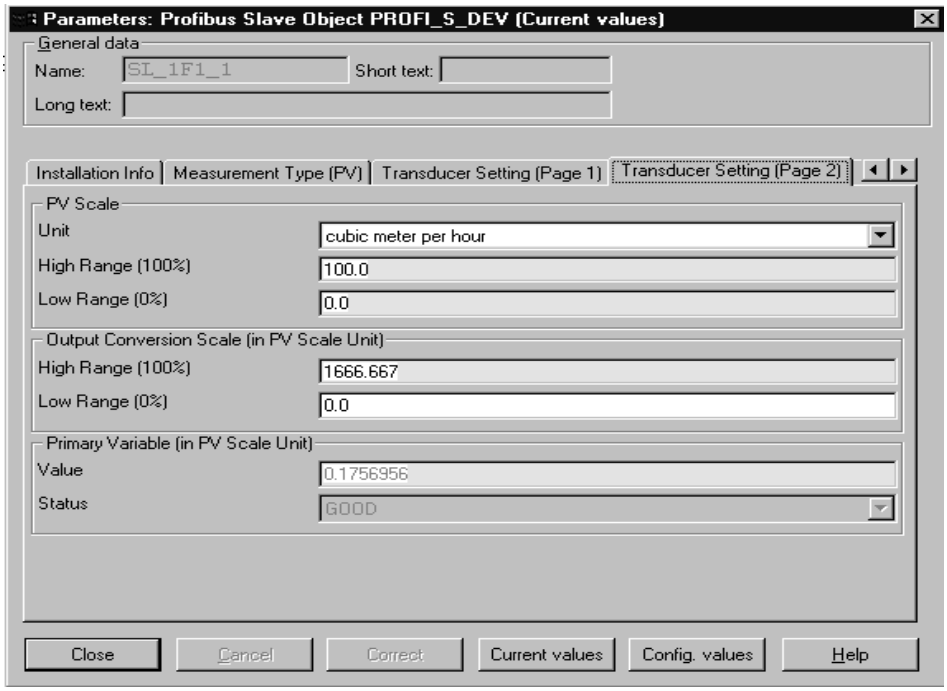
STEP 5:
We set the 'Input Pressure Unit' to 'mBar', and automatically the 'Input Pressure Scale' is converted to 'mBar'.



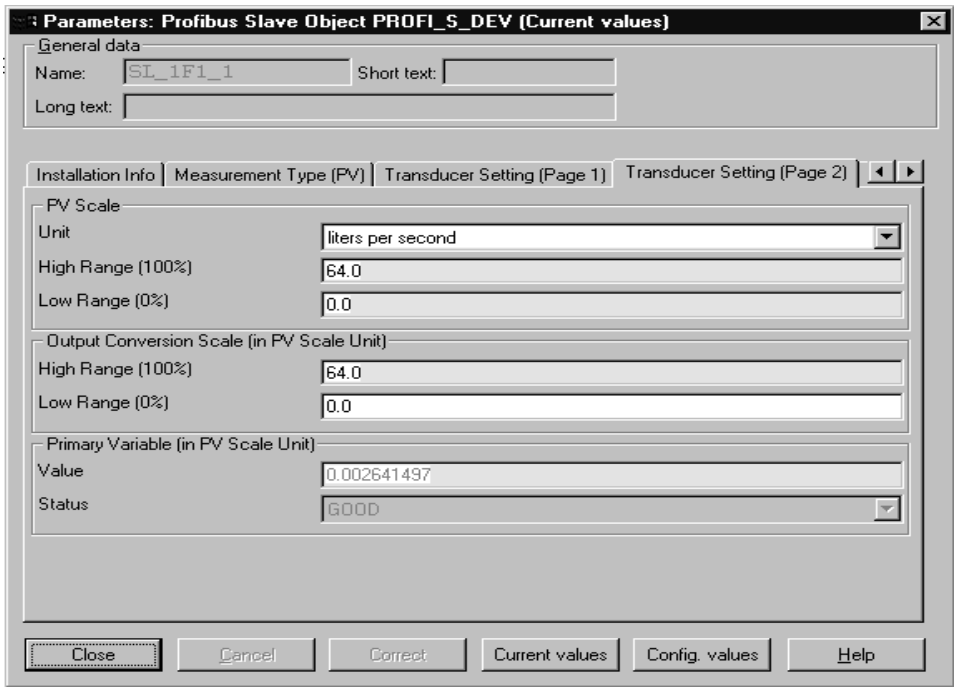
STEP 6:
Then the 'Input Pressure Scale High Range' is set to 1150 mBar and the 'Input Pressure Scale Low Range' to 0.0 mBar



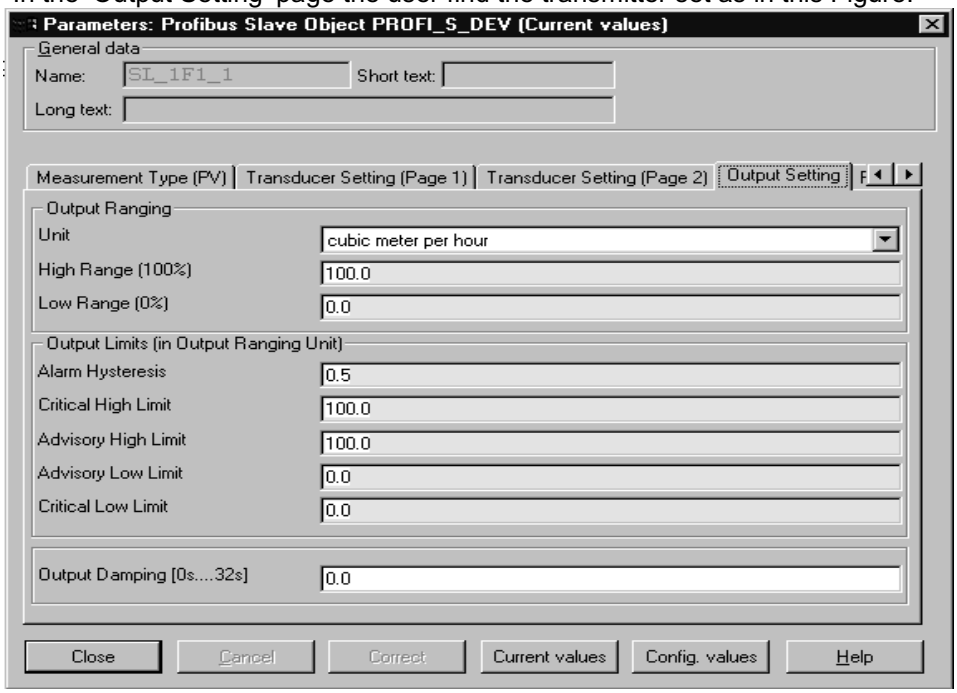
STEP 7:
In the 'Transducer Setting (Page 2)' the user find the transmitter set as in this Figure.



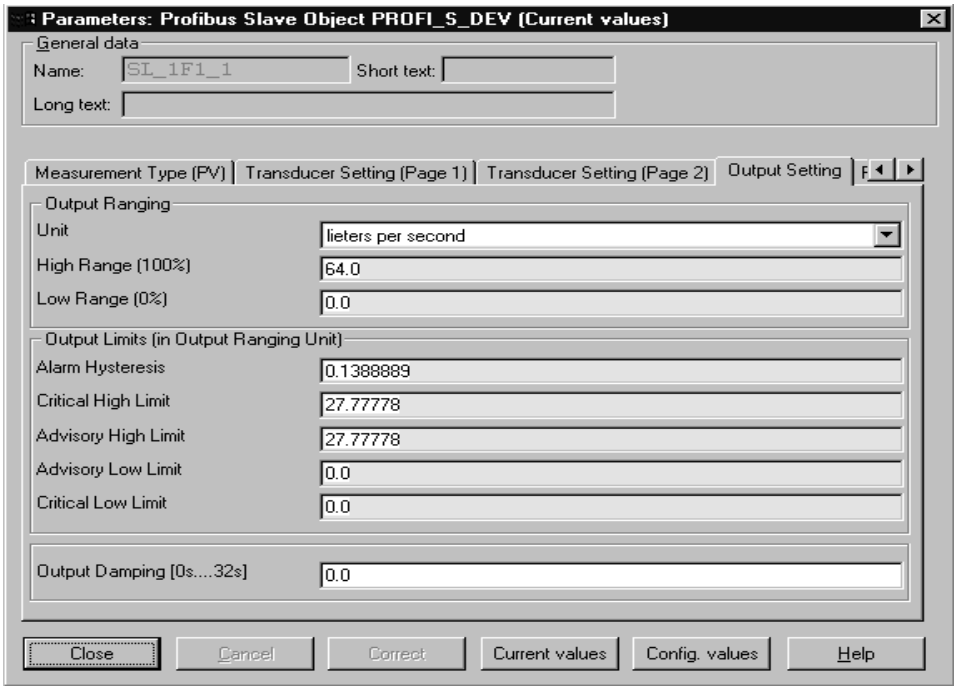
STEP 8:
As in the Orifice specs. the 'Output Conversion Scale' is set to 0.0, 64.0 liter per seconds. The 'PV Scale' is set first, then the same values are set for 'Output Conversion Scale'



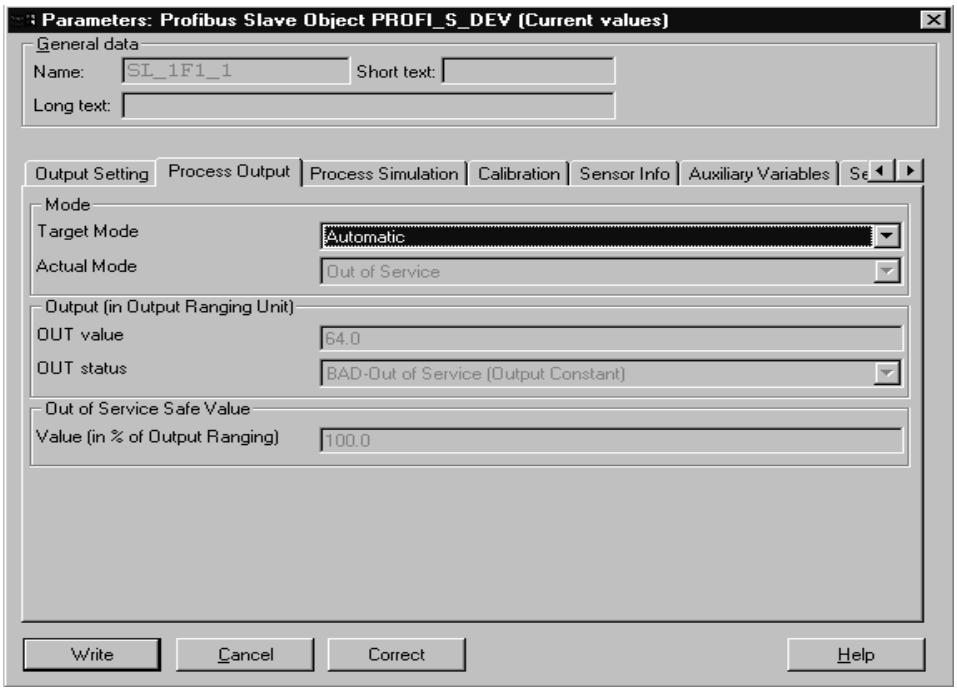
STEP 9:
In the 'Output Setting' page the user find the transmitter set as in this Figure.



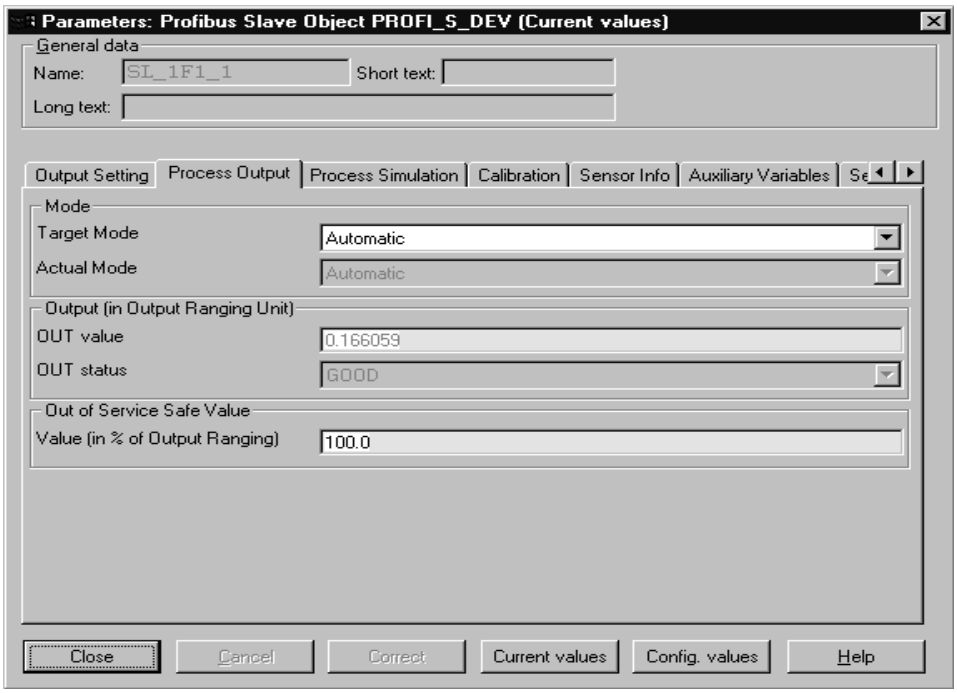
STEP 10:
The 'Output Range' has to be set to 0.0, 64.0 liter per seconds. The limits can be then set as the user prefer.



STEP 11:
Finally in the 'Process Output' page, the user has to switch the 'Target Mode' in 'Auto', and click on the 'Write button.



STEP 12:
The Transmitter is now configured as Flow Type and the 'OUT Value' is expressed in liter per seconds.



IM/TEM_PA_2

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.

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