Configuration of D1072D Model
for Potentiometer Input
using PPC1090 and PPC1092

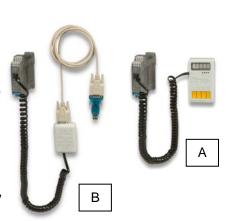## Procedure

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1 Introduction

D1072D module is an intrinsically safe isolator for temperature, voltage and resistance signals coming from sensors installed in Hazardous Location. The module is able to convert the signal to a current or voltage output.

The following pages describe the procedure for configuring a D1072D Galvanic isolator for applications using a Potentiometer input and requiring a 4-20 mA Output.

This task can be accomplished by using two different tools:

- **Tool A)** PPC1090 handheld manual configurator
  PPC1090 is a manual handheld configurator which can be plugged in the module via the dedicated RJ-11 socket. It enables the user to Read and Write parameters to the unit. PPC1090 can be used without the need for a PC or other equipment and is powered by the module.

- **Tool B)** PPC1092 serial adapter with a PC running SWC1090 software
  PPC1092 is a physical adapter used to connect D1072D module to a PC, using serial RS232 or USB port.
  SWC1090 software is needed to configure the unit.

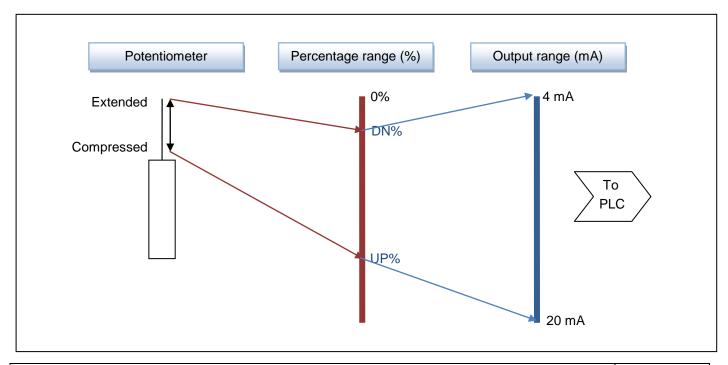The use of both tools is detailed in the next sections.

The procedure is divided in two main phases:

- **Phase I:** Initial setup of D1072D model. Done in the factory using predefined configuration file via Tool B.
- **Phase II:** Final setup of D1072D model. Done in the field via Tool A OR Tool B, with Potentiometer connected.

The reason for having to divide the job into two phases is that each Potentiometer acts differently basing on the specific application it is installed in; therefore each potentiometer needs a specific configuration on the D1072D it will work with.

The following picture summarizes the scenario. Starting from the Left we see the sensor, which incorporates a Potentiometer. Its Open and Closed states do not correspond to 0% and 100%, but to other values that need to be found out first and then configured into the D1072D module, in order to make them correspond to 4 and 20 mA output.

Phase II consists in finding these two values (**DN%** and **UP%**) which depend on the specific sensor, and writing them into the D1072D module.

	Potentiometer configuration on D1072D
GM INTERNATIONAL TECHNOLOGY FOR SAFETY	**Using PPC1090 or PPC1092 and SWC1090.**

1 Phase I: Initial factory configuration

Initial configuration can be done in the factory. In this section we will describe how to accomplish this using Tool B (PPC1092+SWC1090 software). The same steps can be done also using Tool A, but this is not covered in this document.

1.1 Requirements

The following are needed for the configuration of the D1072D:

- D1072D Model;
- 24 Vdc power supply;
- PC with SWC1090 software installed;
- USB adapter with drivers installed.
- PPC1092 serial adapter with all cables provided;
- Default configuration file.

Note: SWC1090 is freely distributed at http://www.gmintsrl.com and can also be found in the CD-ROM that comes together with the PPC1092 Adapter.

Before continuing, be sure to install all software and make test connection to module. Refer to manual ISM0084 for details on use and installation of SWC1090 software and PPC1092 adapter. Also refer to ISM0018 for instructions on how to properly connect and supply D1072D model.

1.2 Detailed procedure

1. Supply power to D1072D module.
2. Connect D1072D module to PC using PPC1092 adapter.
3. Open SWC1090 software.
4. Press "F3" and choose the prepared configuration file. Press OK and the values will be brought to screen.
5. Press "F4" to write parameters to module. Wait for the process to end successfully.
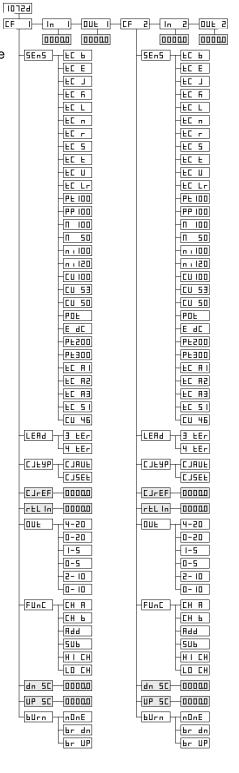
2 Phase II: Final field configuration

2.1 PPC1090 (Tool A)

The figure on the right shows the complete tree-view of all configurable options using the PPC1090 manual configurator. For more operative information, please see ISM0018.

2.1.1 Requirements

The following are needed for the configuration of the D1072D using Tool A:

- D1072D Model;
- 24 Vdc power supply;
- PPC1090 manual handheld configurator;
- Potentiometers connected.

```
1072d
CF 1 — In 1 — OUt 1 — CF 2 — In 2 — OUt 2
     00000  00000          00000  00000

SEnS ─ tC b          SEnS ─ tC b
       tC E                 tC E
       tC J                 tC J
       tC K                 tC K
       tC L                 tC L
       tC n                 tC n
       tC r                 tC r
       tC S                 tC S
       tC t                 tC t
       tC U                 tC U
       tC Lr                tC Lr
       Pt 100               Pt 100
       PP 100               PP 100
       n 100                n 100
       n 50                 n 50
       ni100                ni100
       ni120                ni120
       CU 100               CU 100
       CU 53                CU 53
       CU 50                CU 50
       POt                  POt
       E dC                 E dC
       Pt200                Pt200
       Pt300                Pt300
       tC A1                tC A1
       tC A2                tC A2
       tC A3                tC A3
       tC S1                tC S1
       CU 46                CU 46

LEAd ─ 3 tEr         LEAd ─ 3 tEr
       4 tEr                4 tEr

CJtYP ─ CJAUt        CJtYP ─ CJAUt
        CJSEt                CJSEt

CJrEF ─ 00000        CJrEF ─ 00000

rtL In ─ 00000       rtL In ─ 00000

OUt ─ 4-20           OUt ─ 4-20
      0-20                 0-20
      1-5                  1-5
      0-5                  0-5
      2-10                 2-10
      0-10                 0-10

FUnC ─ CH A          FUnC ─ CH A
       CH b                 CH b
       Add                  Add
       SUb                  SUb
       HI CH                HI CH
       LO CH                LO CH

dn SC ─ 00000        dn SC ─ 00000

UP SC ─ 00000        UP SC ─ 00000

bUrn ─ nOnE          bUrn ─ nOnE
       br dn                br dn
       br UP                br UP
```

2.1.2 Channel 1

1) supply the module, green led is ON, red led (fault) should also be on if nothing is connected
2) connect channel 1 Pot to pins 13-16, cursor on 15. (it depends on your application which of the 2 pins of the pot represents 0% and 100%)
3) connect PPC1090 manual configurator to front panel configuration port: PPC1090 will turn on and display will show "D1072D"
4) press "Enter" and display will show "Cf 1"
5) press "Select" and display will show "In 1"
6) press "Enter" and display will show value of Input 1
7) put the Potentiometer in rest position (spring fully extended)
8) read value on display (for example "0000.4").
9) Take note of this value and name it **DN%**; it will become our "dn SC" (downscale).
10) Fully compress the spring and reach the position to the opposite side.
11) Read the value on display (for example "0088.5").
12) Take note of this value and name it **UP%**; it will become our "UP SC" (Upscale).
13) Get out of "In 1" screen by pressing "Up" key twice. Display will show "D1072D" (initial display).
14) press "Enter" twice and display will show "Sens"
15) press "Select" until display shows "dn SC" and press "Enter"
16) Insert the downscale value (**DN%**) read before at point 9; Display will show 5 digits, and one of it will be brighter than the others; this is the one currently selected for modification. Note that after 20 seconds of idle time, a timeout will occur, if this happens please get back to point 13 and start over.
17) Use "Up" and "Down" keys to change digit value and "Select" to move between digits.
18) Remember to press "Enter" to save the value to the module.
19) Get back to initial screen by clicking "Up" arrow as many times as needed. Display will show "D1072D" (initial display).
20) press "Enter" twice and display will show "Sens"
21) press "Select" until display shows "UP SC" and press "Enter"
22) Insert the Upscale value (**UP%**) read before at point 12; Display will show 5 digits, and one of it will be brighter than the others; this is the one currently selected for modification. Note that after 20 seconds of idle time, a timeout will occur, if this occurs please get back to point 19 and start over.
23) Use "Up" and "Down" keys to change digit value and "Select" to move between digits.
24) Remember to press "Enter" to save the value to the module.
25) Procedure is terminated, please proceed to Configuration of Channel 2.

2.1.3 Channel 2

26) Supply the module, green led is ON, red led (fault) should also be on if nothing is connected
27) Connect channel 2 Pot to pins 9-12, cursor on 10. (it depends on your application which of the 2 pins of the pot represents 0% and 100%)
28) Connect PPC1090 manual configurator to front panel configuration port: PPC1090 will turn on and display will show "D1072D"
29) Press "Enter" and display will show "Cf 1"
30) Press "Select" and display will show "In 1"
31) press "Enter" and display will show value of Input 1
32) put the Potentiometer in rest position (spring fully extended)
33) read value on display (for example "0000.4").
34) Take note of this value and name it **DN%**; it will become our "dn SC" (downscale).
35) Fully compress the spring and reach the position to the opposite side.
36) Read the value on display (for example "0088.5").
37) Take note of this value and name it **UP%**; it will become our "UP SC" (Upscale).

38) Get out of "In 1" screen by pressing "Up" key twice. Display will show "D1072D" (initial display).

39) press "Enter" twice and display will show "Sens"

40) press "Select" until display shows "dn SC" and press "Enter"

41) Insert the downscale value (**DN%**) read before at point 34; Display will show 5 digits, and one of it will be brighter than the others; this is the one currently selected for modification. Note that after 20 seconds of idle time, a timeout will occur, if this happens please get back to point 38 and start over.

42) Use "Up" and "Down" keys to change digit value and "Select" to move between digits.

43) Remember to press "Enter" to save the value to the module.

44) Get back to initial screen by clicking "Up" arrow as many times as needed. Display will show "D1072D" (initial display).

45) press "Enter" twice and display will show "Sens"

46) press "Select" until display shows "UP SC" and press "Enter"

47) Insert the Upscale value (**UP%**) read before at point 37; Display will show 5 digits, and one of it will be brighter than the others; this is the one currently selected for modification. Note that after 20 seconds of idle time, a timeout will occur, if this occurs please get back to point 44 and start over.

48) Use "Up" and "Down" keys to change digit value and "Select" to move between digits.

49) Remember to press "Enter" to save the value to the module.

50) Procedure is terminated; please proceed to section "System Test".

2.2   PPC1092 (Tool B)

1) Supply power to D1072D module.

2) Connect D1072D module to PC using PPC1092 adapter.

3) Open SWC1090 software.

4) Check that correct COM Port is selected in the "Settings" Tab. For troubles on this point see ISM0084.

5) Go to "Values" tab; if module is correctly connected screen will automatically adjust for showing Channel 1.

6) Press "Start" (lower right).

7) Put the Potentiometer connected to channel 1 in rest position (spring fully extended)

8) Read the "Current Value" on the right and take note of it as "DN% channel 1"

9) Put the Potentiometer in compressed position (spring fully compressed)

10) Read the "Current Value" on the right and take note of it as "UP% channel 1"

11) Press "Stop" (lower right).

12) Now select the "Channel 2" Tab in the "Values" Tab

13) Press "Start" (lower right).

14) Put the Potentiometer connected to channel 2 in rest position (spring fully extended)

15) Read the "Current Value" on the right and take note of it as "DN% channel 2"

16) Put the Potentiometer in compressed position (spring fully compressed)

17) Read the "Current Value" on the right and take note of it as "UP% channel 2"

18) Press "Stop" (lower right).

19) Leave the "Values" Tab and move to "Configuration" Tab (upper left)

20) Press "F1" to Load parameters from module. Press OK when prompted and values will be shown on screen.

21) Under "Channel 1": change the value of "Downscale" to "DN% channel 1".

22) Under "Channel 1": change the value of "Upscale" to "UP% channel 1".

23) Under "Channel 2": change the value of "Downscale" to "DN% channel 2".

24) Under "Channel 2": change the value of "Upscale" to "UP% channel 2".

25) Press "F2" to write parameters to module. Press OK when prompted.

26) Procedure is terminated; please proceed to section "System Test".

3 System test

After Phase II is terminated, it is possible to check the correct operation of the system.

1) Make sure that the D1072D is connected to PLC and to both input channels (Potentiometers) and correctly powered ON.
2) Put Potentiometer 1 at rest (not compressed).
3) Read the Percentage value of Channel 1 on the PLC screen, it should read 0%.
4) Put Potentiometer 1 in fully compressed position.
5) Read the Percentage value of Channel 1 on the PLC screen, it should read 100%.
6) Please repeat steps with Channel 2.

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