



## MDHQSPC (V 3.6)



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#### **1** Introduction

MDHQSPC Driver Programmer allows creating, editing and testing configuration used by MDHQSPC Driver. It allows to design hardware configuration and perform a complete setup without hardware connection. If hardware is available it can also self detect hardware, test connection, check configuration and run it.

#### 2 Tip of the Day

When MDHQSPC Driver Programmer starts with a new configuration it starts with the Simplified Interface while for any configuration previously saved it starts with the last Interface memorised (Simplified or Complete). But before you can do anything the MDHQSPC Driver Programmer shows a panel that allows you to read the tip of the day. You can deselect the option for showing these tips at startup or if you prefer keep on reading the next tips. Closing the "Tip of the Day" panel you could go on the appropriate Interface programming layout.

MARPOSS S.p.A Digi Crown Probing Line Driver []	3.5.0] - [Configuration E	dit]		
File Options Help				
HW Configuration Synchronism Cabling	nchronism			
Networks Net 1				
Number of networks				
	)id you know		COM Devices again Marposs COM Device	
You can choose the Com			Serial Number	Statu
'Programming Layout' > 'C	complete: Graphic and	a l'aplea		Unkni Unkni
			0	Unkni Unkni
Show tips at startup	Next <u>⊺</u> ip			GINT
		K	)	>
Automatic (On-Line with Hardware self-detection)  Addressing: Start	Save and Exit	Q <u>C</u> heck	<b>A</b> bort and Exit	

The chosen about the "Show tips at startup" is saved with the configuration data and thus the MDHQSPC Driver Programmer will later automatically open with or without it. However, it is always possible to change this choice or reading other tips showing the tips by means of Help / Tip of the Day menu.

The "Simplified" Interface programming layout starts by default and works only in tabled mode, although it is always possible to enable "Complete Interface" at a later time by means of Options / Programming Layout menu. With this layout you can make configuration, addressing and operative online session all within a simplified tabled environment.

On the other hand, "Complete" Interface programming layout works only in graphic mode, although it is possible to switch between graphic mode and tabled mode at any time through corresponding menu entries or tool buttons. Choose this option if you prefer a graphic approach, quite similar to previous versions of the programming DLL.

The chosen option ("complete" or "simplified") is saved with the configuration data and thus the MDHQSPC Driver Programmer will later automatically open with the programming layout desired. As said above, it is always possible to change this choice by means of Options / Programming Layout menu.

If you are working with "Simplified" Interface programming layout, you can go directly to chapter 6.



#### 3 Quick Start Guide

This manual provide all the instructions to be able to use DigiCrown driver, in addition to the detailed explanation of each single function, you could find at the beginning e **quick start** section that will allow to **run your first DigiCrown net in 3 step.** From that point on, you can explore the driver functionality alone or run your first application.





#### 3.1 Complete Interface: Graphic and Tabled

#### 3.1.1 Configuration





T MARPOSS S.p.A.	
Eile Users Net Windows Options Help	
COM Ports Selection	
# COM Serial Number Status	
COM1 Unknown Status	
COM3 Unknown Status	
(3)	
COM4 07DN3751 😭	
DigiCrown Probing Line USB/COM	
<u>n de dag</u> pelete com4 <u>Ok</u>	
Hardware Configuration Options	
C Manual (Off-Line)	III
<u>Automatic (On-Line with Hardware self-detection)</u>	Qk

D MARPOSS S. p. A.	
File Users HW Conf Net Windows Options Help	
Net.01 - 07DN3751	
û û û р	
	N 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
Code Serial Number Sw Version Enable h	<u>a</u>
	Delete
COM         Baud         Units Baud         Group         Label           Com4         115200         208.3k         1	一一一一
Com4 • 115200 • 208.3k • 1 • • Save	Abort
2  Delete      COMI      Exit	
Net(s) Insert/Delete Unit(s) Select	
	Save and Exit



#### 3.1.2 Addressing













#### 3.1.3 On-line mode





D MARPOSS S. p. A.	
File Users Net Windows Options Help	
🗅 New Ctrl+N 🦻 🖻 🚺	
Edit Ctrl+E     Open Ctrl+O	
SaveAs Ctrl+5 8	
Close Ctrl+C	
Exit Alt+F4	
🕙 Unit.01 / Net.01 🛛 🕙 Unit.02 / Net.01 🔀 🎯 Unit.03 / Net.01 🔀	



#### 3.2 Semplified Interface: Tabled Only

#### 3.2.1 Configuration



Now it is possible to start the addressing procedure (Next paragraph); or to start the On-line mode.







#### 3.2.2 Addressing





MARPOSS S.p.A Digi Crown Probing Line Driver [3.5.0] - [Configuration Edit]			
Eile Options			
HW Configuration Sensor(s) Temporal Synchronism			
Networks Net 1			
Number of networks			
Net       Enable       Code       Serial Number       Sw Version       COM       USB       Baud       Units       Baud       Units         1       1       1       1000000000000000000000000000000000000	2 COM		
	# COM	Serial Number	Stati 木
Digi Crown Probing Line Driver	🝠 10 соми	3	Unkr
Unit(s) addressing: could addresses/data be cleared ?	411 COM19 412 COM19		Unkr
Unic(s) addressing. Could addresses/ data be tieared ?	€12 COM10 €13 COM17		Unkr Unkr
	କୃତ୍ତି 13 COM12 କୁତ୍ତୀ 14 COM18		Unkr 🔳
			Unkr
	<		>
	COM18 11DN576	57	
	DigiCrown Probing Li	ne USB-HS	
Automatic (On-Line with Hardware self-detection)	Q		
Addressing: Start	⊆heck	<u>A</u> bort an	d Exit

HARPOSS S.p.A Digi Crown Probing Line Driver [3.5.0] - [Configuration Edit]								
Eile Options								
HW Configuration Sensor(s) Temporal Synchronism								
Networks Net 1								
Unit Enable #1 Enable	#2 Type	Ide	ent. Code	Serial Number	Sw ¥ersion	Sensor Input/	Output	
	Digital LVDT-2	75 kHz 1	767X200400	08DN5745	version1.0	2/		
2	Digital LVDT	75 kHz 2	767×000010	07DN1740	version1.3	1		
		_						
Automatic (On-Line with H	lardware self-dete	ction)		H		0.		Π
Addressing: Stop	Waiting: S		Save	and Exit		Check	Abo	rt and Exit





🕒 M Eile	MARPOSS S. p.A Digi Crown Probing Line Driver [3.5.0] - [Configuration Edit]													
۱.	HW Configuration Sensor(s) remporal Synchronism													
	Channel		Unit	and the second se	5ensor Di	irection	Unit	Arm Ratio	Measure Mode	Range	Sensibility	Sensibility	7 Adjust	Pre-T
	1	Digital LVDT-2	Net.1/Unit.1		l Ba	ackward	mm	1.000000	relative	05.0000	115.000	1.00000		
	2	Digital LVDT-2	Net.1/Unit.1	2	2 Ba	ackward	mm	1.000000	relative	05.0000	115.000	1.00000		
	3	Digital LVDT	Net.1/Unit.2	3	Ba	ackward	mm	1.000000	relative	05.0000	115.000	1.00000		
	> <mark>5tart/S</mark> > DB	top Operative					Sav	/e and Exit		ି, ⊆heck			and Exit	

🗇 MARPOSS S.p.A Digi	Crown Probing Lin	e Driver [3.5.0	)] - [Configuratio	on Edit]			
Eile Options					④ Unit.01 / I	Net.01 🛛 🗙	
HW Configuration	nsor(s) 🗧 Temporal S	Synchronism			Measure Mo		
Ihannel Type	Unit Enable 9	Sensor Direction	Unit Arm Ratio	Measure Mode	Range		ıst Pre-
I: 0,4754 Digital LVDT-2	Net.1/Unit.1 🖌 1	. Backward	mm 1.000000	relative	5.000	- [mm]	
2 : 1,7276 Digital LVDT-2	Net.1/Unit.1 🖌 2	2 Backward	mm 1.000000	relative	Sensibility	_	
3: 0,6912 Digital LVDT	Net.1/Unit.2 🖌 3	Backward	mm 1.000000	relative	115.000	[mV/mm/V]	
3					Sensibility Ad 1.00000 Pre-Travel ON OFF Extra-Travel OFF Linearizal CON Retentive ON	[mm] [mm] [mm]	
Ó				(5)		Abort	>
Start/Stop Operative       DB	4		<b>S</b> ave and Exit	Ş	Q _heck	) <u>A</u> bort and E	×it

### 4 Configuration: "Complete" Interface – Graphic Mode

When MDHQSPC Driver Programmer starts with an empty configuration loaded it shows an option panel that allows you to select the mode for hardware configuration setup.

HARPOSS S.p.A Digi Crown Probing Line Driver [3.5.0]	
File Net Windows Options	
Configuration not loaded .	<u> </u>
	<b>~</b>
Hardware Configuration Options	
Manual (Off-Line)	
Automatic (On-Line with Hardware self-detection)	
I'ry to detect old hardware units	

#### Figure 1: MDHQSPC Driver Programmer, complete interface layout (Example with empty configuration loaded)

The modes for hardware configuration setup are:

• **Manual (Off-line)** - User designs hardware configuration and programs parameters manually: since configuration can be completed and saved without any request to connect hardware, this option allows user to set up a complete configuration offline.

• Automatic (On-line with Hardware self-detection) - Hardware is automatically recognised and acquired without any intervention by the side of user.



#### 4.1 Manual configuration (Off-line)

This mode allows you to perform manual design of hardware configuration: since it can be completed and saved without any request of hardware connection, manual setup is completely **off** –**line**.

#### 4.1.1 Test COM port

If hardware is available during setup you can connect it and test its connection. A panel shows available COM ports; a button allows you to test COM and identify the device connected to the COM port (leds on DigiCrown Box are turned on when test button is pressed).

After test COM status is reported.

(4) O	ОМ					×
#		COM	Serial N	umber	Status	Туре
	2 COM3		PROTY	c2	Connection Possible Impossible to Connect	
66	<b>)</b> 3	COM4	S.CRE.	0002	Impossible to Connect	DigiCrown Probing Line USB/CO
	Refresh optionally COM port list				optionally selected COM and connected Crown Interface	
•		Detect Co Detect Ma		<u>s again</u> M Device		Close

Status	Description
Unknown Status	COM port has not been tested
Connection possible	DigiCrown Probing Line Interface device is connected to the COM port and ready to use it. SERIAL NUMBER is showed.
Impossible to connect	No DigiCrown Probing Line Interface device is connected to the COM port
Not operative	Unable to open COM port



#### 4.1.2 Net(s) Insert/Delete

Insert all the DigiCrown Probing Line Interfaces (here called *Net*) you want to use in your configuration. A Net(s) Insert/Delete panel allows to insert and remove a Net (with a generic interface type):

Using a generic interface allows you to drive you want to specify by pressing top-right



type does not involve any limitation and configuration on any type of interface. If interface type, enter the *advanced mode* corner button:

Net(s) Insert/Delete	
	Inserts a COM Interface (1 Net inserted on 1 COM port, real RS232 or virtual USB one)
1+2	<b>Inserts a PCI Card</b> ( 2 Nets inserted on 2 different COM ports )
1+2	<b>Inserts a ISA Card</b> ( 2 Nets inserted on 2 different COM ports )
e B	Removes the last Net(s) inserted ( last one if COM interface, last two if PCI or ISA Card )

The maximum number of Nets supported into a single configuration is 12.



#### 4.1.3 Net Configuration

When Net insertion has been completed a net configuration panel has been created for each net; use this panel to set up net configuration:

	<b>4</b> μ) φ Γ ∞ φ	0 1 2 2 4 0	9 2 0 0	22 23	24   25   26   27	28 29 30
	Code	Serial Number	Sw Version	Enable		Ą
				-		
☐ USB				I▼ X	Insert	Delete

USB CheckBox.	
🗖 Ц5В	<b>Interface USB Flag.</b> To be checked if Interface is USB/COM type. USB flag checking let system to Play&Play Interface on its connection. Default state is <i>off</i> .
<b>Production Codes.</b>	
Code 767×000000	<b>Interface Code. (Read Only)</b> Self-acquired within Addressing session in On-Line session (see _Addressing Session).
Serial Number 05DN0718	<b>Interface Serial Number. (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Sw Version version1.0	<b>Interface Software Version. (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).

#### **Communication Parameters.**

COM	
Com1	•
Com1	•
Com2	_
Com3	
Com4	
Com5	
Com6	
Com7	
Com8	-

**COM port** related to serial line communication between Host Station and Net. Host Station always views a Net trough a standard COM port.

COM selection is possible aside from current Host Station COM port capability.

Baud	
115200	•
Default	
4800	
9600	
19200	
38400	
57600	
115200	

**Baud of RS232** communication between Host Station and Net. Baud values are standard:4800, 9600, 19200, 38400, 57600, 115200 bit/s. *Default* Baud value is 9600.

If RS232 cable length is not excessive, a high Baud (**115200** bit/s) is to be preferred.

Units Baud 208.3k Default 208.3k 625.0k 2083.3k	<ul> <li>Baud of RS485 communication of internal Network, between Interface Station and Unit(s).</li> <li>Default Baud value is 9600.</li> <li>If RS485 cable length is not excessive, "208.3k" Baud is to be preferred independently of Interface and DigiBox versions ( supported in any case ).</li> <li>If RS485 cable length is not excessive, "625.0k" Baud is to be preferred if Interface and all DigiBox versions are at least A3.x.</li> <li>If RS485 cable length is not excessive, "2083.3k" Baud is to be preferred if Interface and all DigiBox versions are at least A3.x.</li> <li>If RS485 cable length is not excessive, "2083.3k" Baud is to be preferred if Interface and all DigiBox versions are at least A4.x.</li> </ul>
Free for User parameter	*S.
Group	<b>Interface Group.</b> Interface Group programming (from 1 to 99) is free for user. It is a numeric field.
Label UserFree!!	<b>Interface Label.</b> 10 characters length string, free for user. It is a alpha-numeric field.
<b>On-Line Enable.</b>	
Enable	<b>Interface Enable.</b> Allow globally Net to start the On-Line mode. Default state is <i>enabled</i> .
Save / Abort.	
cont	ore saving your configuration you have to save changes on single Net figuration. So button enables to save changes on single Net configuration.
	s button enables to abort changes on single Net configuration, reloaded of old data.



#### 4.1.4 Unit(s) Insert/Delete

Insert all the DigiCrown Probing Line Box (here called Unit) that you want to use in each Net. To perform a unit insertion first you have to select the type of Unit station by Unit(s) Select buttons on Hardware Configuration Panel.

# Unit(s) Select $\mathbb{I}$

Selects a LVDT Unit for subsequent inserting (default).



Selects a LVDT-2 Unit for subsequent inserting



(h)

E k

Selects a I/O Unit for subsequent inserting.

Selects a Digital or Analog Incremental Encoder Unit for subsequent inserting.

After you have selected unit type, press Insert or Delete button into the Net Panel to insert or remove units.

Net.01						
t tt ()						
H N M		9 10 11 13 13 14	16 17 19	20 21 23	24 25 26 27	4 R R 3 R 3 R 8
	Code	Serial Number	Sw Version	Enable	•	æ
USB				X V	Insert	Delete
COM	Baud Units	Baud Group	Label		B	
Com1 💌	115200 💌 208.3	ik 🔽 1 💌			<u>S</u> ave	<u>M</u> ort







Insert Unit: the operation is enabled only at the first free location (see figure on the left)



Delete Unit: the operation is enabled only at the last occupied location (see figure on the left).

The maximum number of Units supported into a single Net is 31.



#### 4.1.5 LVDT Unit Configuration

Button indicates a LVDT unit. Click mouse on it to toggle on/off the LVDT Unit Form.

Unit.08 / Net.01		Unit.03 / Net
Ident. Group 8  1  Code 767X0xxxxx	Sensor	Ident.         Group           3         1           Code         767×000100
Sw Version Enable	28 J	Serial Number 07DN3493 Sw Version Enab
V #1 Label	i i I	Label
Save Abort	<b>X</b> Delete	Arm Ra

#### **Figure 2: LVDT Unit Form**

-5 ×

• Direction Backv 🔻 Unit mm •

Sensor

菌吐

1.000000

99 Delete

(example for a new unit in Off-Line mode, example for a just existing unit in Off-Line mode)

LVDT Unit Form let user to configure the LVDT Unit. A brief explanation of parameters and panel buttons is reported below.

#### **Production Codes** Unit Code. (Read Only) Code Self-acquired within Addressing session in On-Line mode 767X000000 (see Addressing Session). **Unit Serial Number (Read Only)** Serial Number Self-acquired within Addressing session in On-Line mode yyDN0001--(see Addressing Session). **Unit Software Version (Read Only)** Sw Version Self-acquired within Addressing session in On-Line mode version2.1 (see Addressing Session). Identification Number : Logic Address for communicate with Unit



**Unit Identification Number (Read Only)** Identification Number is the Unit logic Address unique in network: it is necessary for communicate with Unit. Identification Number is self-assigned and automatically downloaded into Unit by Tool itself during On-Line Addressing session.



#### Sensor Channel parameters.

Sensor	
💌	
	not assigned
	not assigned

#### Sensor Number.

Sensor Number has to be programmed or is self-assigned within On-Line Addressing session in order to define the flat mapping of measure points.

Sensor Number is null when Unit is inserted.

Sensor Number could be changed if just assigned by a previously Addressing session.



just assigned



Sensor Direction (sign convention).

in order to see this information. Move mouse on

Direction		
backv 💌		
backward		
forward		

backwar	d
forward	
Unit	

Unit	
mm	-
mm	
deg	
00	

lar

Backward (default) -

Forward \_

#### Sensor Measure Unit.

- millimeters (default) -
- degrees \_
- Celsius degrees \_
- grams

#### Sensor Arm Ratio (unsigned).

from 0.5 to 4.0 (1.0 default)

Arm Ratio	1.000000
HILLINGGO	000000



#### Free for User parameters.

Group	<b>Unit Group</b> . Unit Group programming (from 1 to 99) is free for user. It is a numeric field.
Label UserFree!!	<b>Unit Label.</b> Unit Label is 10 characters length string free for user. It is a alpha-numeric field.
<b>On-Line Enable</b>	
	Unit Enable.

	Unit Enable.
Enable	Enables LVDT unit to start the On-Line mode.
✓ #1	Default state is <i>enabled</i>

#### Save and Exit, Abort and Exit, Delete Data

<b>D</b> Save	
ी∰ <u>A</u> bort	

This button **Saves changes** to the current configuration. Unit is closed.

This button **Aborts changes**, with reloaded of old data. Unit is closed.



This button **Deletes relevant data:** 

- Code, Serial Number, Sw Version
- Sensor and Sensor Direction

Unit is not closed.



#### 4.1.6 LVDT-2 Unit Configuration

Button indicates a LVDT-2 unit. Click mouse on it to toggle on/off the LVDT-2 Unit Form.

Unit.09 / Net.01			Unit.0	)1 / Net.01		
Ident. Group	Sensor	Sensor	Ident.	Group	Sensor 1	Sensor 2
Code 767X2004xx			Code 767X200400	,	Direction Backward	Direction Backward
Serial Number			Serial Num prot02	ber	Unit mm	Unit mm
Sw Version Enable	🗟 Db #1	12 Db #2	Sw Version version1.0	Enable	টি Db #1	🔀 Db #2
Label 🔽 #2	Ū ⊤#1	□ T #2	Label	<ul><li>✓ #2</li><li>✓</li></ul>	Ū ⊺#1	□ T #2
				Arm Ratio	1.000000	1.000000
Save Abort	<b>a</b> Del	-	Eave	值 <u>A</u> bort		Q lete

#### Figure 3: LVDT-2 Unit Form

(example for a new unit in Off-Line mode, example for a just existing unit in Off-Line mode)

LVDT-2 Unit Form let user to configure the LVDT-2 Unit. A brief explanation of parameters and panel buttons is reported below.

<b>Production Codes</b>	
Code 767X200400	Unit Code. (Read Only) Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Serial Number yyDN0002	<b>Unit Serial Number (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Sw Version version1.0	<b>Unit Software Version (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).

#### Identification Number : Logic Address for communicate with Unit

Ident.	
1	-

**Unit Identification Number (Read Only)** Identification Number is the Unit logic Address unique in network: it is necessary for communicate with Unit. Identification Number is self-assigned and automatically downloaded into Unit by Tool itself during On-Line Addressing session.



In LVDT-2 unit form, 2 sensors are present: the one on the left is referred to channel 1 and the one on the right is referred to channel 2.

#### Sensor Channel parameters. Sensor Number. Sensor Number has to be programmed or is self-assigned within On-Line Addressing session in order to define the flat mapping of measure points. not assigned Sensor Number is null when Unit is inserted. Sensor Number could be changed if just assigned Sensor by a previously Addressing session. 1 • just assigned in order to see this Move mouse on information. Sensor Direction (sign convention). Direction Backward (default) Forward backv 🔻 backward forward Sensor Measure Unit. Unit millimeters (default) \_ degrees mm --Celsius degrees \_ mm deg grams °C <u>lgr</u> Sensor Arm Ratio (unsigned). from 0.5 to 4.0 (1.0 default) Arm Ratio 1.000000 -



<b>Unit Group</b> . Unit Group programming (from 1 to 99) is free for user. It is a numeric field.	
<b>Unit Label.</b> Unit Label is 10 characters length string free for user. It is a alpha-numeric field.	
<b>Unit Enable.</b> Enables LVDT-2 unit to start the On-Line mode. It is possible to enable only one channel per module (#1 or #2). Default state is <i>enabled</i> .	
Exit, Delete Data	
This button <b>Saves changes</b> to the current configuration. Unit is closed.	
This button <b>Aborts changes</b> , with reloaded of old data. Unit is closed.	
This button <b>Deletes relevant data:</b> <ul> <li>Code , Serial Number , Sw Version</li> <li>Sensor and Sensor Direction</li> </ul>	



#### 4.1.7 I/O Unit Configuration

Button indicates an I/O unit. Click mouse on it to toggle on/off the I/O Unit Form.



#### Figure 4: I/O Unit Form

(example for a new unit, example for a just existing unit)

#### I/O Unit Form let user to configure the I/O Unit.

A brief explanation of parameters and panel buttons is reported below.

<b>Production Codes</b>	
Code 7672000400	Unit Code. (Read Only) Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Serial Number	<b>Unit Serial Number (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Sw Version version3.0	<b>Unit Software Version (Read Only)</b> Self-acquired within Addressing session in On-Line mode (see _Addressing Session).

#### Identification Number : Logic Address for communicate with Unit

Ident.	
1	-

**Unit Identification Number (Read Only)** Identification Number is the Unit logic Address unique in network: it is necessary for communicate with Unit. Identification Number is self-assigned and automatically downloaded into Unit by Tool itself during On-Line Addressing operation.

#### Input and Output Channel parameters.

I/O Port	<b>Input/Output Channel Number.</b> Input/Output Number has to be programmed or is self-assigned within
not assigned	On-Line Addressing session in order to define the flat mapping of Input/Output Ports.
I/O Port 2 just assigned	Input/Output Ports. Input/Output Port is null when Unit is inserted. Input/Output Port could be changed if just assigned by a previously Addressing session.

Move mouse on in order to see these information.

Free for User parameter	S.
Group	<b>Unit Group</b> . Unit Group programming (from 1 to 99) is free for user. It is a numeric field.
Label UserFree!!	<b>Unit Label</b> Unit Label is 10 characters length string free for user. It is a alpha-numeric field.

	Unit Enable.
Enable	Enables I/O unit to start the On-Line mode.
✓ #1	Default state is <i>enabled</i> .

#### Save and Exit , Abort and Exit , Delete Data



**On-Line Enable.** 

This button **Saves changes** to the current configuration. Unit is closed.



This button **Aborts changes**, with reloaded of old data. Unit is closed.



This button **Deletes relevant data:** 

- Code, Serial Number, Sw Version
- Input and Output

Unit is not closed.



#### 4.1.8 Analogic Input Unit Configuration

Button indicates an Analogic Input unit.

Click mouse on it to toggle on/off the Analogic Input Unit Form.





#### Figure 5: Analogic Input Unit Form

(example for a new unit in Off-Line mode, example for a just existing unit in Off-Line mode)

Analogic Input Unit Form let user to configure the Analogic Input Unit. A brief explanation of parameters and panel buttons is reported below.



Sensor Channel parameters.







🗖 RTD



K Conv [Ohm / Ohm] 1.00000C

Offset [V] 0.000000

Offset [Ohm] 0.000000

RO	[Ohm]	100.0000
А	$[(\mathbf{^{^{C}C^{-1}}})]$	0.003908
8 (x10	<sup>6</sup> (°C <sup>-2</sup> )]	-0.57753
C [x10	<sup>12</sup> (°C <sup>-4</sup> )]	-4.18330

#### Sensor Number.

Sensor Number has to be programmed or is selfassigned within On-Line Addressing session in order to define the flat mapping of measure points.

Sensor Number is null when Unit is inserted. Sensor Number could be changed if just assigned by a previously Addressing session.



Move mouse on in order to see this information.

#### Sensor Measure Unit .

- ----
- millimeters
- degrees
- Celsius degrees
- grams
- newton
- pascal
- volt (default)
- milliampere
- ohm
- N\*m
- $mm/s^2$
- Rad/s - Rad/s<sup>2</sup>
- Kad/s
- $dm^3/s$

#### **RTD Enable (Resitor Temperature Detector)**

This option is available only when the sensor type is "Resistance". If RTD is disabled the following options are available:

Measure conversion factor ( signed ).

Depending on selected Sensor Measure Unit

- Selected Sensor Measure Unit /[V]
- Selected Sensor Measure Unit /[Ohm]
- Selected Sensor Measure Unit /[mA]

depending on applicable type

Measure offset ( signed ).

Depending on selected Sensor Measure Unit - Selected Sensor Measure Unit

If RTD option is enabled, the parameter for the RTD calculation are available (depends on sensor type).



Free for User parameters.	
Group	<b>Unit Group</b> . Unit Group programming (from 1 to 99) is free for user. It is a numeric field.
Label UserFree!!	<b>Unit Label.</b> Unit Label is 10 characters length string free for user. It is a alpha-numeric field.
<b>On-Line Enable</b>	
Enable	<b>Unit Enable.</b> Enables Analogic Input unit to start the On-Line mode. Default state is <i>enabled</i> .
Save and Exit, Abort and	Exit , Delete Data
<u>S</u> ave	This button <b>Saves changes</b> to the current configuration. Unit is closed.
面 Abort	This button <b>Aborts changes</b> , with reloaded of old data. Unit is closed.
	This button <b>Deletes relevant data</b> :

**)** Delete This button **Deletes relevant data:** 

- Code , Serial Number , Sw Version
- Sensor and Sensor Direction

Unit is not closed.



#### 4.1.9 Incremental Digital or Analog Encoder Unit Configuration

Button indicates an Incremental Digital or Analog Encoder Input unit. Click mouse on it to toggle on/off the Incremental Digital or Analog Encoder Unit Form. Unit.09 / Net.01 Unit.08 / Net.01 X × Ident. Group Ident. Group Sensor ▼ 11 - 1 - 1 9 - $\overline{\mathbf{v}}$ 8 • Code Code Direction 767E0x05xx 767E010500 Backward • Serial Number Serial Number Unit EID\_V3\_1A\_ deg • 5w Version Enable Enable 邋吵 **▼** X 🔽 X version2.0 Label Interface Type Label Interface Type -----Dig.Inc. None • Arm Ratio 1.000000 Marker[deg] 0.000000 Calibration Calibration R 🖸 Calibrate F 🖸 Calibrate C Verify C Verify C Calibrate always C Calibrate always 颲 颲 C Verify always C Verify always C Abort Reset Calibr C Abort 99 壷 壷 Abort <u>D</u>elete <u>A</u>bort Delete Save **Digital**: Unit.01 / Net.01 X Ident. Group Sensor **\_** • 1 • 1 Code Direction 6355600110 Backward • Serial Number Unit EID\_V3\_05\_ mm • Enable 圈即 **▼** X version1.0 Label Interface Type -----• Ana.Inc. Arm Ratio 1.000000 Marker[mm] 0.000000 Calibration 🖸 Calibrate Ę. C Verify C Calibrate always C Verify always 颲 <u>R</u>eset Calibr C Abort 壷 Ð H <u>A</u>bort <u>D</u>elete Analog:

**Figure 6: Incremental Digital or Analog Encoder Unit Form** (example for a new unit in Off-Line mode, example for a just existing unit in Off-Line mode) Incremental Digital or Analog Encoder Unit Form let user to configure the Incremental Digital Encoder Unit.

A brief explanation of parameters and panel buttons is reported below.

Code 767E000400	Unit Code. (Read Only) Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Serial Number	Unit Serial Number (Read Only) Self-acquired within Addressing session in On-Line mode (see _Addressing Session).
Sw Version version1.0	Unit Software Version (Read Only) Self-acquired within Addressing session in On-Line mode (see _Addressing Session).

#### Identification Number : Logic Address for communicate with Unit

Ident.	
1	$\mathbf{v}$

Unit Identification Number (Read Only) Identification Number is the Unit logic Address unique in network: it is necessary for communicate with Unit. Identification Number is self-assigned and automatically downloaded into Unit by Tool itself during On-Line Addressing session.


#### Sensor Channel parameters.



Free for	User	parameters.
----------	------	-------------



# Unit Group.

Unit Group programming (from 1 to 99) is free for user. It is a numeric field.

Label	
UserFree!!	•

Unit Label.

Unit Label is 10 characters length string free for user. It is a alpha-numeric field.



37

<b>On-Line Enable</b>	
	Unit Enable.
Enable	Enables Incremental Digital or Analog Encoder unit to start the On-
<b>₩</b> 1	Line mode.
	Default state is <i>enabled</i> .

Save and Exit, A	bort and Exit , Delete Data
<b>E</b>	This button <b>Saves changes</b> to the current configuration.
Save	Unit is closed.
會	This button <b>Aborts changes</b> , with reloaded of old data.
<u>A</u> bort	Unit is closed.
<b>P</b> elete	<ul> <li>This button Deletes relevant data:</li> <li>Code, Serial Number, Sw Version</li> <li>Sensor and Sensor Direction</li> <li>Unit is not closed.</li> </ul>



# 4.2 Automatic Configuration (On-line with Hardware self-detection)

This mode allows you to perform a complete hardware setup without any intervention by your side. A totally automatic procedure detect connected devices, acquire their parameters and perform an automatic addressing. After that you can save configuration and it is ready to use.

Only devices with <b>Protocol Version A3.0</b>	<mark>or greater</mark> can be detected.	codes used	own symbols to represent th COM Port selec	ne COM port
Hardware Configuration Options          Image: Manual (Off-Line)         Automatic (On-Line with Hardware self-detection)         Try to detect old hardware units	COM Ports Sele R5232	ISA	PCI 6355321xxx III	USB 767Y0x0xxx 🕰

If "Try to detect old hardware units" check box is selected, devices with protocol version less than A3.0 can be acquired only if just properly addressed.

If "Try to detect old hardware units" check box is not selected, only devices with protocol version greater or equal than A3.0 are acquired also if not properly addressed, with very fast timings .

# 4.2.1 COM Port selection

After devices have been connected, select COM ports (multiple selections are allowed) where self detection procedure will run; you can test port and device connection by press test button. Press Ok button to start self detection procedure.





Self detection could be a long time procedure (it depends on number of nets and units), especially if "Try to detect old hardware units" check box was selected: during procedure you can see activity on each net.

Net.01 - 04DN0468Y-COM		
	Waiting : Loading [12]	<u>s</u> d
Net.02 - 05DN2013		

When self detection has been completed you can edit or save configuration ( please , see paragraph 4.1 ) or apply it to enter to an on line session ( please , see chapter 5 ).

In any case :

- current hardware configuration was automatically self-detected
- all current parameters of all detected devices were automatically self-loaded

### 4.3 Print configuration



Format and print data. An error occurs if you don't have any printer installed.

### 4.4 Copy configuration



Copy data to clipboard. Data can be pasted into another application.

# 4.5 Check Configuration

The button signaled below perform an integrity data check on the current configuration.

Net(s) Insert/Delete		Unit(s)	Select					
<b></b>	•174	6.0	ôô.a	രപ	<u>@</u> 2	Bo	Apply	Save and Exit
<b>₩</b>	<b>9</b> 9	Vþ	Û	ŀŀ	₩.		Q	I IIII
							<u>C</u> heck	<u>A</u> bort and Exit

Check results are showed into an external report panel that lists errors for each net and unit:

Vet	Туре	Error 1	Error 2	Error 3	
1 (Com25)	COM (any)	No Error(s) .			
2 (Com? )	COM (any)	No Error(s) .			
			Net 1		
Init	Туре	Error 1	Error 2	Error 3	
]1	Digital LVDT	No Error(s) .			
]2	Digital LVDT-2	No Error(s) .			
]3	Digital I/O	No Error(s) .			
]4	Analog Input	No Error(s) .			
]5	Encoder	No Error(s) .			
				1	R
					<b>R</b>
					<u>E</u> xit

# 4.6 Save, Abort Configuration

Net(s) Insert/De	iece	Unic(s)	Select		200000000000000000000000000000000000000	s		
<b>•</b>	æ	Λ.C.	ôñ.A.	<b>a</b> n.	@1	且几	Apply	Save and Exit
<b>*</b>	94			ŀ	A B		Q	
							Check	Abort and Exit

- **Save and Exit** Saves current configuration and exits program
- **Abort and Exit** Exits program without saving current configuration.

### 4.7 Apply Configuration

Net(s) Insert/Del	lete	Unit(s)	) Select		2000			
-	all's	8.0	66.A	an	01	BO	Apply	Save and Exit
<b>*</b>	æ			ŀ			Q	
							⊆heck	Abort and Exit

Configuration can be Applied in On-Line mode in order to:

- start an Addressing session, self-acquiring Interface(s) and Unit(s) data and fixing into each Unit an unique network address (Identification Number)
- start a Check session, checking if current configuration is proper for self-detected HW
- start a **Download session**, checking if current configuration is proper for self-detected HW and programming HW to match required configuration
- start an **Operative session**, verifying proper functionality of a previously Addressed configuration
- start an Operative session, with set-up of specific parameters inside Unit(s)
- start an Operative session, with view of Unit(s) capability as measure for LVDT-1, LVDT-2, Analogic Input and Incremental Digital or Analog Encoder Units or I/O for I/O Units



On-Line Addressing session is mandatory 1<sup>st</sup> time a network is equipped or if a change on just Addressed network is operated.



# 5 Apply Configuration: "Complete" Interface – Graphic Mode

This mode is started after Apply button was pressed.

- **u** Hardware Configuration panel disappears
- □ On-Line mode is ready to be started without any communication active at now



# **Figure 7: Main Window in On-Line mode** (example for a Network with 2 Nets, communication stopped)

**The maximum number of Nets simultaneously visible is 4**: *Net(s) view toolbar buttons* let toggling between viewing on/off selected Net.



# **On-Line/Off-Line toolbar buttons** This button returns to the **Off-Line** mode. 2 This button let to see the Hardware Configuration, to modify some Sensor and/or I/O Port parameters and check hardware configuration 2 in textual chart.(see). This button starts the Addressing session. Addressing session let user to assign network address to any unit. **>** Addressing session, while assigning address, also acquires all information about unit involved.(see). This button starts the **DownLoad session**. Download session let user to force a just existing configuration to 3 network(s). Existing configuration must be correct and matching with existing hardware. Global modify on network(s) parameters is carried. This button starts the Check session. Check session acquires state of network(s) unit(s) and check it against current hardware configuration and parametrization. No modify on network(s) parameters is carried. This button starts the **Operative session**. Operative session let user to check proper on-line capability of network(s) and to have diagnosis information.

behaviour.

Operative session let user to program parameters that specialize unit

# 5.1 Net View

In this figure are represented two examples of Net Form, how them appear in On-Line mode. Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

- default "Panel with Units buttons" + "Status Bar"

- maximized "Panel with Units buttons" + "Status Bar" + "Interface Data"

- minimized "Panel with Units buttons"

Views are different depending on Addressing session was just done or not.



### Figure 9: Net Form in On-Line

(example for On-Line mode, communication started, maximized format)





Figure 10: Net Form in On-Line (example for On-Line mode, communication started, minimized format)

**Note** : In On-Line mode, communication stopped, **data can not be changed** except toggling **Enable flag**. In On-Line mode, communication started, **data can not be changed**.



# State Led.

66

Indicates communication OFF

Indicates communication ON without errors or alarms

Indicates communication on with ERROR or ALARM pending

## Minimized/Default/Maximized Button.

These buttons toggle between 3 different display formats (maximized, default and minimized).

In the maximized format is possible to see all information, including Interface data. Default and maximized format foresee a Status Bar.

Button image indicates the Net interface type (COM, PCI channel, ISA channel):



Interface (any)

Interface (any), check warning

Interface ( COM/232 or COM/USB )

Interface ( COM/232 or COM/USB ), check warning

ISA Card , channel 1

ISA Card, channel 2

ISA Card , check warning

PCI Card, channel 1

PCI Card, channel 2

PCI Card , check warning



# Unit view Button.

Button image indicates the Unit type and explains some programming data, communication state, check results if available.

Button toggles Unit Form showing it or closing it.

# **Unit view Button : LVDT 1 Channel**

<u>í</u>	LVDT Off-Line, disabled
Ď	LVDT Off-Line, enabled , no check done
*	LVDT Off-Line, enabled , check failed: fatal error on unit
ť	LVDT Off-Line, enabled , check error: hardware mismatch
<b>Č</b>	LVDT Off-Line, enabled , check warning: parameter mismatch
Ũ	LVDT Off-Line, enabled , check ok
Ċ	LVDT On-Line, TRANSITORY state, sensor forward
ļ	LVDT On-Line, TRANSITORY state, sensor backward
Ċ	LVDT On-Line, OK state, transducer without retentive data, sensor forward
	LVDT On-Line, OK state, transducer without retentive data, sensor backward
<u>i</u>	LVDT On-Line, OK state, transducer with retentive data, sensor forward
Ū	LVDT On-Line, OK state, transducer with retentive data, sensor backward
<u>ů</u>	LVDT On-Line, OVER-RANGE state, transducer without retentive data, sensor forward
<b>P</b>	LVDT On-Line, OVER-RANGE state, transducer without retentive data, sensor backward
<u>ů</u>	LVDT On-Line, OVER-RANGE state, transducer with retentive data, sensor forward
<b>P</b>	LVDT On-Line, OVER-RANGE state, transducer with retentive data, sensor backward
	LVDT On-Line, WARNING state, transducer disconnected, sensor forward
0	LVDT On-Line, WARNING state, transducer disconnected, sensor backward
	LVDT On-Line, ALARM state
2	LVDT On-Line, ALARM state



LVDT On-Line, ADDRESSING state



LVDT On-Line, ADDRESSING state

LVDT On-Line, ADDRESSING state



ţ,

į,

ţ

ŐŐ

LVDT-2 Off-Line, disabled

LVDT-2 Off-Line, enabled , no check done

LVDT-2 Off-Line, enabled , check failed: fatal error on unit

LVDT-2 Off-Line, enabled , check error: hardware mismatch

LVDT-2 Off-Line, enabled , check warning: parameter mismatch

LVDT-2 Off-Line, enabled , check ok

LVDT-2 On-Line, TRANSITORY state channel 1

LVDT-2 On-Line, TRANSITORY state channel 2

LVDT-2 On-Line, OK state channel 1

LVDT-2 On-Line, OK state channel 2

LVDT-2 On-Line, OVER-RANGE. state channel 1

LVDT-2 On-Line, OVER-RANGE. state channel 2

LVDT-2 On-Line, WARNING state, transducer disconnected channel 1

LVDT-2 On-Line, WARNING state, transducer disconnected channel 2

LVDT-2 On-Line, ALARM state

LVDT-2 On-Line, ALARM state

LVDT-2 On-Line, ADDRESSING state

LVDT-2 On-Line, ADDRESSING state

LVDT-2 On-Line, ADDRESSING state



#### Unit view Button : I/O

I/O Off-Line, disabled
I/O Off-Line, enabled , not checked
I/O Off-Line, enabled , check failed: fatal error on unit
I/O Off-Line, enabled , check error: hardware mismatch
I/O Off-Line, enabled , check warning: parameter mismatch
I/O Off-Line, enabled , check ok
I/O On-Line, TRANSITORY state
I/O On-Line, OK state
I/O On-Line, ALARM state
I/O On-Line, ADDRESSING state
I/O On-Line, ADDRESSING state
I/O On-Line, ADDRESSING state



#### Unit view Button : Analogic Input

© Av

Analogic Input Off-Line, disabled

Analogic Input Off-Line, enabled, not checked

Analogic Input Off-Line, enabled , check failed: fatal error on unit

Analogic Input Off-Line, enabled , check error: hardware mismatch

Analogic Input Off-Line, enabled , check warning: parameter mismatch

Analogic Input Off-Line, enabled, check ok

Analogic Input On-Line, TRANSITORY state

Analogic Input On-Line, OK state

Analogic Input On-Line, OVER RANGE state

Analogic Input On-Line, ALARM state

Analogic Input On-Line, ALARM state

Analogic Input On-Line, ADDRESSING state

Analogic Input On-Line, ADDRESSING state

Analogic Input On-Line, ADDRESSING state



#### **Unit view Button : Encoder**



#### Status Bar with Error Clear Button.

**8 41**, ... rror specification string is showed on Status Bar.



# 5.2 Unit View

Unit(s) view can be expanded or collapsed via clicking on Unit View Buttons.

# 5.2.1 LVDT Unit View



This Button on Net Form indicates a LVDT Station Unit. Click on Button to toggle on/off the data view.

In this figure are represented two examples of LVDT Unit Form, how them appear in On-Line mode. Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

- default "Panel with Measure View" + "Status Bar"

- maximized "Panel with Measure View" + "Status Bar" + "Unit Data"
- minimized "Panel with Measure View"

Views are different depending on Addressing session was just done or not.



**Figure 11: Unit LVDT Form in On-Line mode** (example for On-Line mode, communication stopped, default format)

**Figure 12: Unit LVDT Form in On-Line mode** (example for On-Line mode, communication started, maximized format)

**Note** : In On-Line mode, communication stopped, **data can not be changed** except toggling **Enable flag**. In On-Line mode, communication started, **data can not be changed**.

State Lad	
State Led.	
	Indicates communication OFF
<b>(</b>	Indicates communication ON without errors or alarms
	Indicates communication on with ERROR or ALARM pending
Format Button.	
	This button toggles between 3 different formats (maximized, default and minimized). In the maximized format is possible to see all information, including Unit data. Default and maximized format foresee a Status Bar.
	Button image indicates the Unit type and some programming informations:
<u>l</u> p	LVDT
<b>t</b> r	LVDT, transducer without retentive data sensor forward
	LVDT, transducer without retentive data sensor backward
<b>l</b> p	LVDT, transducer with retentive data sensor forward
	LVDT, transducer with retentive data sensor backward

# Status Bar with Error Clear Button.

rror specification string is showed on Status Bar.



# 5.2.2 LVDT-2 Unit View



Off-Line

On-Line

This Button on Net Form indicates a LVDT-2 Station Unit. Click on Button to toggle on/off the data view.

In this figure are represented two examples of LVDT-2 Unit Form, how them appear in On-Line mode. Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

- default "Panel with Measure View" + "Status Bar"
- maximized "Panel with Measure View "+"Status Bar" + "Unit Data"
- minimized "Panel with Measure View"

Views are different depending on Addressing session was just done or not.



**Box Numbering** : in this case box is Addressed (blue color ), sensor number is proposed (channel 1 on the left and channel 2 on the right)

# Figure 13: Unit LVDT-2 Form in On-Line mode

(example for On-Line mode, communication stopped, default format)



#### Figure 14: Unit LVDT-2 Form in On-Line mode

(example for On-Line mode, communication started, maximized format)

Note : In On-Line mode, communication stopped, data can not be changed except toggling Enable flag. In On-Line mode, communication started, data can not be changed.

State Led.	
	Indicates communication OFF
<b>()</b>	Indicates communication ON without errors or alarms
	Indicates communication on with ERROR or ALARM pending
Format Button.	
	This button toggles between 3 different formats (maximized, default and minimized). In the maximized format is possible to see all information, including Unit data. Default and maximized format foresee a Status Bar.
	Button image indicates the Unit type and some programming informations:
	LVDT-2
	LVDT-2, channel 1, transducer without retentive data sensor forward
	LVDT-2, channel 1, transducer without retentive data sensor backward
	LVDT-2, channel 2, transducer without retentive data sensor forward
<b>U</b>	LVDT-2, channel 2, transducer without retentive data sensor backward
	LVDT-2, channel 1, transducer with retentive data sensor forward
	LVDT-2, channel 1, transducer with retentive data sensor backward
	LVDT-2, channel 2, transducer with retentive data sensor forward
Ū	LVDT-2, channel 2, transducer with retentive data sensor backward
Status Bar with F	rror Clear Rutton

# Status Bar with Error Clear Button.

, 8 41, ... rror specification string is showed on Status Bar.



# 5.2.3 I/O Unit View



Off-Line

On-Line

This Button in Net Form indicates an I/O Station Unit. Click on Button to toggle on/off the data view.

In this figure are represented two examples of I/O Unit Form, how them appear in On-Line mode. Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

- default "Panel with In Leds & Out Switches" + "Status Bar"
- maximized "Panel with In Leds & Out Switches" + "Status Bar" + "Unit Data"
- minimized "Panel with In Leds & Out Switches"
- Views are different depending on Addressing session was just done or not.

Views are different depending on I/O Box programming.



Figure 15: I/O Unit Form in On-Line mode Figure 16: I/O Unit Form in On-Line mode(example for On-Line mode,<br/>communication stopped, default format)(example for On-Line mode,<br/>communication started, maximized format)

**Note** : In On-Line mode, communication stopped, **data can not be changed** except toggling **Enable flag**. In On-Line mode, communication started, **data can not be changed**.

State Led.	
	Indicates communication OFF
<b>()</b>	Indicates communication ON without errors or alarms
<b>@</b>	Indicates communication on with ERROR or ALARM pending
Format Button.	
	This button toggles between 3 different formats (maximized, default and minimized). In the maximized format is possible to see all information, including Unit data. Default and maximized format foresee a Status Bar.
	Button image indicates the Unit type:
<b>P</b>	I/O

## Status Bar with Error Clear Button.

rror specification string is showed on Status Bar.



# 5.2.4 Analogic Input Unit View



**Off-Line** 

On-Line

This Button in Net Form indicates an Analogic Input Station Unit. Click on Button to toggle on/off the data view.

In this figure are represented two examples of Analogic Input Unit Form, how them appear in On-Line mode.

Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

"Panel with Measure View" + "Status Bar" - default

"Panel with Measure View " + "Status Bar" + "Unit Data" - maximized

"Panel with Measure View" - minimized

Views are different depending on Addressing session was just done or not.



Figure 17: Analogic Input Form in On-Line mode Figure 18: Analogic Input Form in On-Line mode (example for On-Line mode, (example for On-Line mode,

communication stopped, default format)

communication started, maximized format)

Note : In On-Line mode, communication stopped, data can not be changed except toggling Enable flag. In On-Line mode, communication started, data can not be changed.

State Led.	
	Indicates communication OFF
<b>()</b>	Indicates communication ON without errors or alarms
	Indicates communication on with ERROR or ALARM pending
Format Button.	
	This button toggles between 3 different formats (maximized, default and minimized). In the maximized format is possible to see all information, including Unit data. Default and maximized format foresee a Status Bar.
	Button image indicates the Unit type:
	Analogic Input

#### Status Bar with Error Clear Button.

rror specification string is showed on Status Bar.



# 5.2.5 Incremental Digital or Analog Encoder Unit View



This Button in Net Form indicates an Incremental Digital or Analog Encoder Station Unit. Click on Button to toggle on/off the data view.

In this figure are represented two examples of Incremental Digital or Analog Encoder Unit Form, how them appear in On-Line mode.

Views are different in On-Line mode if communication is started or stopped.

Views are different depending on selected format mode:

- default "Panel with Measure View" + "Status Bar"
- maximized "Panel with Measure View" + "Status Bar" + "Unit Data"
- minimized "Panel with Measure View"

Views are different depending on Addressing session was just done or not.



# Figure 19: Encoder Form in On-Line mode Figure 20: Encoder Form in On-Line mode

(example for On-Line mode, communication stopped, default format) (example for On-Line mode, communication started, maximized format)



Note : In On-Line mode, communication stopped, data can not be changed except toggling Enable flag. In On-Line mode, communication started, data can not be changed.

<b>C</b> + <b>T T</b>	
State Led.	
00	Indicates communication OFF
	Indicates communication ON without errors or alarms
	Indicates communication on with ERROR or ALARM pending
Format Button.	
	This button toggles between 3 different formats (maximized, default and minimized). In the maximized format is possible to see all information, including Unit data. Default and maximized format foresee a Status Bar.
	Button image indicates the Unit type:
	Incremental Digital or Analog Encoder

## Status Bar with Error Clear Button.

rror specification string is showed on Status Bar.



# 5.3 Edit Configuration

2	1	3	<b>D</b>	
---	---	---	----------	--

Configuration Edit let user to have a textual chart of current configuration, print and to check it globally. **Changes to HW configuration are not admitted**. For an explanation of pages and commands see chapter **6**.

4	HW Configuration 🕅 Sensor(s) 🚺 I/O Port(s) 🗧 Synchronism Cabling 🔄 Temporal Synchronism 📳 Spatial Synchronism 🗐 Input Syncl													
Net	works	Net 1	Net 2	Nel	t3									
Nu	mber	of networ	rks	3	Ŧ									
	Net	Enable	COM	USB	Baud	Units Baud	Units	Code	Serial Number	Sw ¥ersion		Detect CC	OM Devices again	
$\mathbf{\mathbb{P}}$	1	1	Com3		115200	208.3k	4	inter.pci-	INTERPCIJ1	version2.0	COM1	Detect Ma	arposs COM Device	
	2	1	Com6	V	115200	625.0k	6	767Y0105xx	YUSB-HSS-4	version2.0	#	СОМ	Serial Number	Statu
	3		Com12		115200	2083.3k	5	767Y0105xx	YUSB-HSS-5	version2.0		COM1 COM3 COM4 COM6 COM9 COM18	YUSB-HSS-4	Unkni Unkni Unkni Unkni Unkni
	Automatic (On-Line with Hardware self-detection)     Image: Constant in the self-detection in the self-det													



#### 5.4 Addressing Session

Addressing On-Line Session lets to:

**ToolButtons : Addressing On-Line Session.** Starts Communication Session.

- Assign a Sensor Number to each Station Unit associated to a measure point
- Assign an Input Number to each Station Unit associated to a input port
- Assign an Output Number to each Station Unit associated to an output port
- Assign a Logical Identification Number (short) to each active Station Unit: Logic Identification Number is Unit Address in Net, necessary to communicate with Unit
- Assign optionally programmed Group and Label to Interface and to Addressed Station Units
- Self-Acquire Code, Serial Number, Software Version of Interface and Addressed Station Units

🗆 Ade	Iressing Options	c : lu l
Ľ	Start (current data will be cleared)	Serial Number
	<u>R</u> esume	Advanced 📭
	Replace Unit	

# 5.4.1 Start

Clear current addressing data and start new addressing session.

### 5.4.2 Resume

Continue an addressing session.

# 5.4.3 Replace Unit

Allows to replace unit

⊢ Add	ressing Options		Carial Number	
1	Start (current data will be cleared)			Serial Number
	Resume	<u>A</u> dvanced 📭		07DN3496
4	Replace Unit	Close	$\langle \rangle$	xxxxxxxxx

In order to perform a replacement of a Unit:

- 1. Remove unit from line
- 2. Insert new unit
- 3. Input serial number of removed unit into the upper field
- 4. Input serial number of inserted unit into the lower field
- 5. Press "Replace Unit" button

# 5.4.4 Advanced Addressing

# 5.4.4.1 Addressing Mode with Selection: Manual

Addressing Options : <u>A</u> dvanced	Clear Data		
<ul> <li>Manual</li> </ul>	Clear Addresses	T)	<u>क</u>
O Automatic	Skip unit if just Addressed	<u>o</u> k	Ignore

User can define **Sensor Number** for each station involving measure. One addressing method is supported:

• selection of destination unit is requested after transducer move

User can define **Input and/or Output Number** for each station involving I/O port. Two addressing methods are supported for unit with Input capability:

- selection of destination unit and proper SerialNumber editing is requested
- selection of destination unit is requested after Input port change

One addressing method is supported for unit with Output capability only:

• selection of destination unit and proper SerialNumber editing is requested

Options				
Clear Data	Clear all acquired data (serial number, code, software version)			
Clear Addresses	Clear all Channel Id			
Skip Unit if just Addressed	Skip programming if Unit was just Addressed, in order to avoid erroneous			
	assignments			

### 5.4.4.2 Addressing Mode with Selection: Automatic

Addressing Options : <u>A</u> dvanced	Clear Data		
O Manual	Clear Addresses	U)	<u>n</u>
<ul> <li>Automatic</li> </ul>	Skip unit if just Addressed	<u>Q</u> k	Ignore

Sensor Number is automatically defined with incremental numbering.

- selection of destination unit is automatic after transducer move
- Input/Output Number is automatically defined with incremental numbering.
- selection of destination unit is automatic after Input port change

Unit with Output capability only can not be addressed in automatic mode.

# 5.4.5 Start Addressing Operation

After Addressing mode is selected Driver tries to establish communication.

During the establishment Status Bar of all enabled Nets points out the current operation progress and Minimized/Default/Maximized Button is not operative.

	Opening COM .
	Ļ
	Getting Net Error(s).
	Ļ
	Setting Net Baud .
	Setting Unit(s) Baud .
	Ļ
	Getting Interface Informations .
	Storing [ Group ]
	Ļ
ī	Clearing

The establishment operations takes some time; if the communication is not established, a message box appears reporting error specification.

😵 Net.1 - COM Error: baud set not possible .	~	1
	~	

### 5.4.6 Termination of Addressing operation



Addressing session can be stopped by User at any time .

# **Note :** In Automatic Mode, Addressing Operation terminates automatically when all units are addressed.

ſ	2.	1	Addressing :Completed with success .	^	1
	Qk			~	
E				0.00	

# 5.4.7 Manual Addressing

After the establishment of communication Status Bar points out the request of Unit Addressing.

Net.01 - USBHS02A		
Waiting	Serial Number	<u> </u>

#### Figure 21: Net Form in On-Line mode

(example for On-Line Manual Addressing mode, waiting a change in a Unit state)

#### In Manual Addressing mode with Unit input change :

- LVDT transducer motion
- I/O input bit level change
- Analogic Input
- Encoder encoder movement

is necessary to select the required Unit under identification without the need of other programming. Tool will propose automatically :

input signal change

- proper Identification Number
- proper Sensor or I/O Port Number

Ident. Group	<b>Identification Number</b> (Logic Address for communicate with Unit) is self-assigned by tool.
767X000000	
Serial Number	
yyDN0001	<b>Group</b> can be optionally programmed with numerical value 00÷99
Sw Version Enable	Group can be optionally programmed with numerical value 00+99
version2.1 🕅 🕺	
Label	
<u>M</u>	Label can be optionally programmed with free 10 characters string

#### In Manual Addressing mode with Serial Number entering :

is necessary to select the required Unit under identification and program the unique Serial Number. Tool will propose automatically :

- proper Identification Number
- proper Sensor or I/O Port Number

Ident. Group	Identification Number (Logic Address for communicate with Unit) is self-assigned by tool.
Serial Number	<b>Group</b> can be optionally programmed with numerical value 00÷99
Sw Version Enable	Serial Number must be programmed with 10 characters string xxDNxxxx as available in Unit docket
Label	Label can be optionally programmed with free 10 characters string



#### Both in <u>Manual Addressing mode with Unit input change</u> and <u>Manual Addressing mode with Serial</u> <u>Number entering</u>, tool will self-propose :

**Sensor Number:** 

- LVDT 1-Channel 1 sensor
- LVDT 2-Channels 2 sensors
- Analogic Input 1 sensor
- Encoder 1 sensor

*First available Sensor is proposed: it can be changed, if desired, choosing between available ones. Sensor can be also cleared, with "--- "choose.* 

#### I/O Port Number: • I/O

1 Input port, 1 Output port

*First available I/O Port is proposed: it can be changed, if desired, choosing between available ones. I/O Port can be also cleared, with "---" choose.* 



# LVDT Unit Addressing, transducer motion required.

A transducer motion is required: only a transducer has to pressed or released at a time.

After it, Status Bar points out information about Unit involved in transducer movement, and user is asked to select the desired location for Unit.

"Minimized/Default/Maximized Button" of Net involved in selection changes temporarily image appearance showing a question mark.



### Figure 22: Net Form in On-Line

(example for On-Line Manual Addressing mode, waiting a LVDT Unit selection)

Net Form Buttons suggest addressing state of each LVDT Unit. However any Location associated to a LVDT Unit can be selected.

Helping with Button Image.		
<b>į</b>	No suggest	
<b>į</b> :	Applicant Location	
Ĩ	Just assigned Location	

A Button in Net Form has to be selected: click on chosen Location.

Note : manually inserting of the production serial number is necessary if thermal probe is connected.



After selection of Location, a programming window appears.



# Figure 23: LVDT Unit Addressing Form

 $(1^{st} selection)$ 

Typically, only <u>Save button has to be clicked</u>.

Relevant Data.	
Sensor Number	Select Sensor Number from a list of available numbers only,
	Select "" item to clear current number.
Direction	Backward/Forward.
Unit	Millimetres, Degrees, Celsius Degrees, Grams can be chosen .
Arm Ratio	Values between 0.5 and 4.0 can be chosen.
Group	Free for User.
Label	Free for User.

Save, Ab	ort Buttons.	
<b>S</b> ave		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<b>借</b> <u>A</u> bort		This button closes window without any saving and restarts addressing operations.



# **LVDT-2** Unit Addressing , transducer motion required.

A transducer motion is required: only a transducer has to pressed or released at a time.

After it, Status Bar points out information about Unit involved in transducer movement, and user is asked to select the desired location for Unit.

"Minimized/Default/Maximized Button" of Net involved in selection changes temporarily image appearance showing a question mark.



### Figure 24: Net Form in On-Line

(example for On-Line Manual Addressing mode, waiting a LVDT-2 Unit selection)

Net Form Buttons suggest addressing state of each LVDT-2 Unit. However any Location associated to a LVDT-2 Unit can be selected.

Helping with Bu	Helping with Button Image.		
t	No suggest		
tt	Applicant Location		
t	Just assigned Location		

A Button in Net Form has to be selected: click on chosen Location.

Note : manually inserting of the production serial number is necessary if thermal probe is connected.


After selection of Location, a programming window appears.

Ident.	Group	Sensor	Sensor
2 -	1 💌	2	• 3
Code		Direction	Direction
		backward	🔹 backward 💽 👻
Serial Num	iber	Unit	Unit
		mm	• mm •
Sw Version Enable		透Db	图 Db
Label		ĹΙ	Ĺ
	Arm Ratio	1.000000	1.000000
<b>S</b> ave	Abort		<b>AQ</b> Delete

**Figure 25: LVDT-2 Unit Addressing Form** (1<sup>st</sup> selection)

Typically, only <u>Save button has to be clicked</u>.

Sensor Number let User to define a flat map for Measure Point enumeration. Sensor Number will be used by QSPC software to address Transducer channels, and its value must match with programmed one in QSPC Gauge Programming. The column on the left is referred to channel 1 and the column on the right is referred to channel 2. *First available Sensor is proposed for channel* 1 and the second available is proposed for channel 2: they can be changed, if desired, choosing between available ones. Sensor can be also cleared, with "---" choose.

Backward **Direction** is proposed: Forward Direction can be optionally chosen. [mm] **Unit** is proposed: it can be optionally changed.

Relevant Data.		
Sensor Number	Select Sensor Number from a list of available numbers only,	
	Select "" item to clear current number.	
Direction	Backward/Forward.	
Unit	Millimetres, Degrees, Celsius Degrees, Grams can be chosen .	
Arm Ratio	Values between 0.5 and 4.0 can be chosen.	
Group	Free for User.	
Label	Free for User.	

Save, Ab	ort Buttons.	
<b>S</b> ave		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<b>借</b> <u>A</u> bort		This button closes window without any saving and restarts addressing operations.



#### **I/O** Unit Addressing , input bit level change required.

A Input bit Level Change is required: only a bit level has to be changed at a time.

After it, Status Bar points out information about Unit involved in bit level change, and user is asked to select the desired location for Unit.

"Minimized/Default/Maximized Button" of Net involved in selection changes temporarily image appearance showing a question mark.



#### Figure 26: Net Form in On-Line

(example for On-Line Manual Addressing mode, waiting a I/O Unit selection)

Net Form Buttons suggest addressing state of each I/O Unit. However any Location associated to a I/O Unit can be selected.

Helping with Button Image.		
	No suggest	
	Applicant Location	
	Just assigned Location	

A Button in Net Form has to be selected: click on chosen Location.



After selection of Location, a programming window appears.



Input/Output Port Number let User to define a flat map for Input and Output Ports enumeration. Input and Output Port Number will be used by QSPC software to address Input and Output Port channels, and its value must match with programmed one in QSPC Programming. *First available I/O Port is proposed: it can be changed, if desired, choosing between available ones. I/O Port can be also cleared, with "---" choose.* 

### Figure 27: I/O Unit Addressing Form

 $(1^{st} selection)$ 

Typically, only <u>Save button has to be clicked</u>.

Relevant Data.	
Input/Output Port Number Select Input/Output Port Number from a list of available numbers	
	Select "" item to clear current number.
Direction	Backward/Forward.
Group	Free for User.
Label	Free for User.

Save, Ab	ort Buttons.	
<b>S</b> ave		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<u>A</u> bort		This button closes window without any saving and restarts addressing operations.



#### **D** Analogic Input Unit Addressing , input value change required.

The input value variation is required: only an Analogic Input has to be changed at a time.

After it, Status Bar points out information about Unit involved in the Analogic Input variation, and user is asked to select the desired location for Unit.

"Minimized/Default/Maximized Button" of Net involved in selection changes temporarily image appearance showing a question mark.



#### Figure 28: Net Form in On-Line

(example for On-Line Manual Addressing mode, waiting an Analogic Input Unit selection)

Net Form Buttons suggest addressing state of each Analogic Input Unit. However any Location associated to an Analogic Input Unit can be selected.

Helping with Bu	Helping with Button Image.		
	No suggest		
	Applicant Location		
	Just assigned Location		

A **<u>Button in Net Form has to be selected</u>**: click on chosen Location.



After selection of Location, a programming window appears.



# **Figure 29: Analogic Input Unit Addressing Form** (1<sup>st</sup> selection)

Typically, only Save button has to be clicked.

Relevant Data.		
Sensor Number	Select Sensor Number from a list of available numbers only,	
	Select "" item to clear current number.	
Unit	Millimeters, Degrees, Celsius Degrees, Grams, Newton, Pascal, Volt,	
	Milliampere, Ohm, N*m, mm/s <sup>2</sup> , rad/s, rad/s <sup>2</sup> , dm <sup>3</sup> /s can be chosen .	
K Conv	Input value conversion factor.	
Offset	Input value offset.	
Group	Free for User.	
Label	Free for User.	

Save, Ab	ort Buttons.	
<b>L</b> Save		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<u>A</u> bort		This button closes window without any saving and restarts addressing operations.



#### **D** Incremental Digital or Analog Encoder Unit Addressing , encoder motion required.

The input value variation is required: only an Incremental Digital or Analog Encoder has to be changed at a time.

After it, Status Bar points out information about Unit involved in the Incremental Digital or Analog Encoder variation, and user is asked to select the desired location for Unit.

"Minimized/Default/Maximized Button" of Net involved in selection changes temporarily image appearance showing a question mark.

# Unit Choose. Please, choose desired Incremental Digital Encoder Unit pressing proper Button. Net.01 - USBHSU Abort and Restart. Click here to undo selection restart Addressing mode.

#### Figure 30: Net Form in On-Line

1

Serial Number yyDN0

窗 [0]

(example for On-Line Manual Addressing mode, waiting an Analogic Input Unit selection)

Net Form Buttons suggest addressing state of each Analogic Input Unit. However any Location associated to an Analogic Input Unit can be selected.

Waiting [ Encoder

Helping with Bu	Helping with Button Image.		
	No suggest		
	Applicant Location		
	Just assigned Location		

A Button in Net Form has to be selected: click on chosen Location.



After selection of Location, a programming window appears.

Dunit.05 / Net.01		Sensor Number let User to define a flat map for Measure
Ident. Group 5 1 Code Code Certal Number Certal Number Sw Version Enable	Sensor 5 Direction backward • Unit mm	Point enumeration. Sensor Number will be used by QSPC software to address Transducer channels, and its value must match with programmed one in QSPC Gauge Programming. First available Sensor is proposed: it can be changed, if desired, choosing between available ones. Sensor can be also cleared, with "" choose.
M X Label	Db Interface Type Dig.Inc.	Backward Direction is proposed: Forward Direction can be optionally chosen. [mm] Unit is proposed: it can be optionally changed.
Arm Ratio Marker [mm]	1.000000	
Calibration Calibrate Verify Calibrate always Verify always Abort	Calibrate	
Lave Abort	Delete	

**Figure 31: Analogic Input Unit Addressing Form** (1<sup>st</sup> selection)

Typically, only <u>Save button has to be clicked</u>.

Relevant Data.		
Sensor Number	Select Sensor Number from a list of available numbers only,	
	Select "" item to clear current number.	
Direction	Backward/Forward.	
Unit	Millimeters, Degrees can be chosen.	
Marker	Measure Offset.	
Arm Ratio	Values between 0.5 and 4.0 can be chosen.	
Group	Free for User.	
Label	Free for User.	

Save, Ab	ort Buttons.	
<b>L</b> Save		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
值 <u>A</u> bort		This button closes window without any saving and restarts addressing operations.



#### **LVDT** Unit Addressing, manual Serial Number enter.

Click on LVDT Unit button and insert Unit production Serial Number into the programming field.

Ident. Group     I   I     I   I       Code       Formula   Serial Number	Sensor 1 Direction backy 💌 Unit	Insert here the required Sensor Number.	Ident. Group Code 767X000000 Serial Number	Sensor 1 Direction backy
Sw Version He	mm 💌		yyDN0001 Sw Version Enable version2,1 X	mm 💌
Label	1.00000C	Insert here the production Serial Number	Label 💌 Arm Ratio	Ū I 1.000000
E ave Abort	<b>AC</b> Delete	(read it on box).	E Transmission	elete

**Figure 32: LVDT Unit Addressing Form** (1<sup>st</sup> selection)

**Figure 33: LVDT Unit Addressing Form** (selection of Unit just Addressed)

Typically, only <u>Save</u> button has to be clicked after having specified proper Serial Number.

Relevant Parameters.		
Sensor Number	Select Sensor Number from a list of available numbers only, Select "" item to clear current number.	
Direction	Backward/Forward.	
Unit	Millimetres, Degrees, Celsius Degrees, Grams can be chosen .	
Arm Ratio	Values between 0.5 and 4.0 can be chosen.	
Group	Free for User.	
Label	Free for User.	

Save, Ab	ort , <u>D</u> elete Buttons.	
<b>E</b> Save		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
∰ <u>A</u> bort		This button closes window without any saving and restarts addressing operations.
<b>P</b> elete		This button closes window with data clear ( Code, Serial Number, SW Version ) and clears Unit Identification Number.



#### **LVDT-2** Unit Addressing, manual Serial Number enter.

Click on LVDT-2 Unit button and insert Unit production Serial Number into the programming field.



#### Figure 34: LVDT-2 Unit Addressing Form

 $(1^{st} selection)$ 

Typically, only <u>Save button has to be clicked after having specified proper Serial Number</u>.

Relevant Parameters.		
Sensor Number	Select Sensor Number from a list of available numbers only, Select "" item to clear current number.	
Direction	Backward/Forward.	
Unit	Millimetres, Degrees, Celsius Degrees, Grams can be chosen .	
Arm Ratio	Values between 0.5 and 4.0 can be chosen.	
Group	Free for User.	
Label	Free for User.	

Save, Ab	ort , <u>D</u> elete Buttons.	
<b>S</b> ave		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<b>一</b> <u>A</u> bort		This button closes window without any saving and restarts addressing operations.
<b>)</b> Delete		This button closes window with data clear ( Code, Serial Number, SW Version ) and clears Unit Identification Number.



#### **I/O Unit Addressing, manual Serial Number enter.**

Click on I/O Unit button and insert Unit production Serial Number into the programming field.



# **Figure 35: I/O Unit Addressing Form** (1<sup>st</sup> selection)

**Figure 36: I/O Unit Addressing Form** (selection of Unit just Addressed)

Typically, only Save button has to be clicked after having specified proper Serial Number.

Relevant Parameters.		
Input/Output	Select Input/Output Port Number from a list of available numbers only, Select "" item to clear current number.	
Group	Free for User.	
Label	Free for User.	

Save, Al	oort , <u>D</u> elete Buttons.	
<b>S</b> ave		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
值 <u>A</u> bort		This button closes window without any saving and restarts addressing operations.
<b>e</b> lete		This button closes window with data clear ( Code, Serial Number, SW Version ) and clears Unit Identification Number.



#### **D** Analogic Input Unit Addressing, manual Serial Number enter.

6

Click on Analogic Input Unit button and insert Unit production **Serial Number** into the programming field.



Figure 37: Analogic Input Unit Addressing Form<br/>(1<sup>st</sup> selection)Figure 38: Analogic Input Unit Addressing Form<br/>(selection of Unit just Addressed)

Typically, only <u>Save</u> button has to be clicked after having specified proper Serial Number.

<b>Relevant Parameters.</b>	
Sensor Number	Select Sensor Number from a list of available numbers only, Select "" item to clear current number.
Unit	Millimetres, Degrees, Celsius Degrees, Grams can be chosen .
K Conv	Input conversion factor.
Offset	Input offset.
Group	Free for User.
Label	Free for User.



Save, Ab	oort , <u>D</u> elete Buttons.	
<b>D</b> Save		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<b>孻</b> Abort		This button closes window without any saving and restarts addressing operations.
<b>e</b> lete		This button closes window with data clear ( Code, Serial Number, SW Version ) and clears Unit Identification Number.



#### **Incremental Digital or Analog Encoder Unit Addressing, manual Serial Number enter.**

Click on Incremental Digital or Analog Encoder Input Unit button and insert Unit production Serial Number into the programming field.



**Figure 39: Encoder Unit Addressing Form** (1<sup>st</sup> selection)

**Figure 40: Encoder Unit Addressing Form** (selection of Unit just Addressed)

Typically, only <u>Save</u> button has to be clicked after having specified proper Serial Number.

<b>Relevant Parameters.</b>	
Sensor Number	Select Sensor Number from a list of available numbers only,
	Select "" item to clear current number.
Direction	Backward/Forward.
Unit	Millimeters, Degrees can be chosen .
Marker	Measure Offset.
Arm Ratio	Values between 0.5 and 4.0 can be chosen.
Group	Free for User.
Label	Free for User.



Save, Ab	oort , <u>D</u> elete Buttons.	
<b>D</b> Save		This button closes window with data save and starts download of data (Group, Label and Identification Number) to Unit.
<b>孻</b> Abort		This button closes window without any saving and restarts addressing operations.
<b>e</b> lete		This button closes window with data clear ( Code, Serial Number, SW Version ) and clears Unit Identification Number.



#### 5.4.8 Automatic Addressing

Automatic Addressing allows to identify LVDT-1-Channel, LVDT-2-Channels, Analogic Input, Encoder Units, and also I/O Units with Input capability.

#### **D** Request of Unit Selection.

After the establishment of communication, request of Unit Selection is proposed in a dedicated Addressing Mode Panel.

#### A number indicates the next required :



#### - Sensor Number

( please, move Transducer related to required Sensor Number )

1	Undo	ه <mark>ریستا</mark> ه Waiting

#### - Input Port Number

( please, change an Input Bit level related to required Input Port Number )

#### **D** After Unit Selection with Transducer move or Input level change.

After a Transducer move, Unit is Addressed and current Sensor number is assigned to the Unit involved in Transducer Move or Input Level Change.



#### **I/O Manual Unit Selection for I/O box.**

It is possible to manually address an I/O via programming its box Serial Number, as previously described.



#### **Undo: Clear Sensor Number / Input Port Number**



Undo Button allows user to clear a Sensor Number or an Input Port Number.

After <u>Undo</u> Button click, selection of Sensor Number or an Input Port Number is proposed and a confirm is required.



- **Ok** to clear the specified Sensor Number or an Input Port Number :
- Sensor Number or Input Port Number is declared free
- Related Network Unit Identification Number is cleared
- Automatic Addressing Mode is restarted again
- **Ignore** to abort
- Automatic Addressing Mode is restarted again



#### 5.5 DownLoad On-Line Session

**ToolButtons : DownLoad On-Line Session.** Starts Communication Session.

DownLoad On-Line Session lets user to:

- check if connected HW is able to support loaded configuration
- download loaded configuration in connected HW
- check if stored data matches exactly with loaded one

DownLoad terminates immediately if connected HW is not able to support loaded configuration, without operating any change in Network participants.

	Download: could all da	ata be cleared and rep	rogrammed ?	
Net.01 - USBHS02A				
			<u>_</u> ¢	
Net.02 · · · · · · · Y · COM				
Qk	ownload :Completed with su	ccess .		<u>^</u> 1

#### Figure 41: Main Window in Download Mode

Establishment of communication takes some time. If the establish is not possible a message box appears.

Net.1 - COM Error: baud set not possible .	^	1

#### 5.5.1.1.1 Termination of communication.

Communication self-terminates when all Unit(s) of all Network(s) were re-programmed .



#### 5.6 Check On-Line Session



Check On-Line Session lets user to:

• check if loaded configuration matches exactly with connected HW



#### Figure 42: Main Window in Check Mode

(example for On-Line Check mode, 2 Nets, 2nd Net not properly operative)

Establishment of communication takes some time. If the establish is not possible a message box appears.



#### 5.6.1.1.1 Termination of communication.

Communication self-terminates when all Unit(s) of all Network(s) were checked .

# 5.7 Operative On-Line Session



**ToolButtons : Operative On-Line Session.** Starts Communication Session.

Operative On-Line Session lets user to:

- check functionality of Network globally
- view detailed information about each Net
- view detailed information about each Unit
- view detailed information about error(s) eventually pending
- program Unit parameters



Figure 43: Main Window in Operative Mode (example for On-Line Operative mode)



#### 5.7.1.1 Establishment of communication.

Establishment of communication takes some time.

Minimized/Default/Maximized Button will be operative when establishment terminates. Status Bar of all Enabled Nets points out current operation progress.



If the establish is not possible a message box appears.



#### 5.7.1.1.1 Termination of communication.



Status Bar of all enabled Nets points out communication close message.

	Closing COM .	
--	---------------	--



### 5.7.1.2 Net Form.

Net.01 - U	SBHS02A		Network and mnen		Detected HW
لمبين المبين المبين معاد المبين ال	Code 767Y010400	Serial Numb	er	Sw Version	E E
COM Com25	Baud         Units Baud           115200 <ul> <li>625.0k</li> <li>625.0k</li> <li>625.0k</li> <li>625.0k</li> </ul>	Grou	p	Label	

**Figure 44: Net Form in On-Line mode** (example for On-Line Operative mode, maximized format)

# 5.7.1.2.1 Detailed description about Unit Button Image meaning, communication started.

### LVDT Unit.

â l	Unit is not enabled to start communication.
4	Measure not acquired.
	Enable
	To enable again Unit, please check Enable box:
E fi	Unit is in transitory state.
	Colour of ring on Transducer explains Unit Programming:
<b>_</b> , <b>_</b> ,	- "red" means that Retentive data on Transducer must not be used
A M	<ul> <li>"yellow" means that Retentive data on Transducer must not be used</li> </ul>
U V	
<b>_</b> , <b>_</b>	Up or down direction on Transducer explains Unit Programming:
	- up means "forward" direction
	- down means "backward" direction
	Measure in transitory state, not jet properly acquired.
	Unit is programmed to acquire measure in forward direction without accessing Transducer
	data: Range and Nominal Sensibility have to be properly programmed.
_	Measure properly acquired with Transducer in-range.
n	Unit is programmed to acquire measure in backward direction without accessing Transducer
<b>H</b>	data: Range and Nominal Sensibility have to be properly programmed.
_	Measure properly acquired with Transducer in-range.
	Unit is programmed to acquire measure in forward direction accessing Transducer data:
	Range and Nominal Sensibility were self-acquired.
	Measure properly acquired with Transducer in-range.
6	Unit is programmed to acquire measure in backward direction accessing Transducer data:
	Range and Nominal Sensibility were self-acquired.
	Measure properly acquired with Transducer in-range.

0	Unit is programmed to acquire measure in forward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed.
,	Measure properly acquired but with Transducer over-range, released or pressed.
0	Unit is programmed to acquire measure in backward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed.
<u> </u>	
	Measure properly acquired but with Transducer over-range, released or pressed
<u>a</u>	Unit is programmed to acquire measure in forward direction accessing Transducer data:
U U	Range and Nominal Sensibility were self-acquired.
,	Measure properly acquired but with Transducer over-range, released or pressed.
៣ ៣	Unit is programmed to acquire measure in backward direction accessing Transducer data:
및 무	Range and Nominal Sensibility were self-acquired.
,	Measure properly acquired but with Transducer over-range, released or pressed.

į	Unit is programmed to acquire measure in forward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed. Measure Invalid.
Į	Unit is programmed to acquire measure in backward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed. Measure Invalid.
į	Unit is programmed to acquire measure in forward direction accessing Transducer data: Range and Nominal Sensibility were self-acquired. Measure Invalid.
Į	Unit is programmed to acquire measure in backward direction accessing Transducer data: Range and Nominal Sensibility were self-acquired. Measure Invalid.

Í

Measure not properly acquired, because Transducer is disconnected. Please, connect Transducer.



Unit is not properly running, alarm(s) pending. <u>Measure could not be properly acquired</u>.

Please, open related Unit Form and verify alarm explanation on Status Bar.

Impossible to communicate with Unit. <u>Measure not acquired</u>. Please, verify if Unit was correctly addressed and if Hardware cabling is correct.



#### LVDT-2 Unit.

In on-line mode, the button image for the LVDT-2 unit is the combination of 2 images: the left side shows the state of channel 1 and the right side shows the state of channel 2.

	Unit is not enabled to start communication.
<b>AA</b>	Measure not acquired.
ЩЩ	Enable
	To enable again Unit, please check Enable box:
	To chaole again onit, please check Endole box.
	Unit in transitary state
Ö Ö	Unit in transitory state.
<u><u>u</u> <u>u</u></u>	<u>Measure in transitory</u> state, not jet properly acquired.
2	
	Unit is properly running without alarms.
<u>i</u> i	Measure properly acquired with Transducer in-range.
<b>_</b> , <b>_</b>	<u>Areasure property acquirea with fransacci in funce</u> .
<u>.</u>	Unit is properly running without alarms.
Û   Ŭ	Measure properly acquired but with Transducer over-range, released or pressed.
,	
	Massure not menorily acquired because Transducer is disconnected
	<u>Measure not properly acquired</u> , because Transducer is disconnected.
	Please, connect Transducer.
	Unit is not properly running, alarm(s) pending.
<b>FIFI</b>	Measure could not be properly acquired.
	Please, open related Unit Form and verify alarm explanation on Status Bar.
	rease, open related onit i onit and verify diarin explanation on Status Dar.
	Impossible to communicate with Unit.
8	Measure not acquired.
	Please, verify if Unit was correctly addressed and if Hardware cabling is correct.

Digi Crown

#### I/O Unit.

Unit is not enabled to start communication.
Input bits not acquired, Output bits not writable.
Enable
To enable again Unit, please check Enable box:

Unit is in transitory state. **Input bits not jet acquired , Output bits not jet writable**.

<b>a</b>	Unit is properly running without I/O alarms.
	Input bits properly acquired, Output bits writable.

	Unit is not properly running, alarm(s) pending. Input bits acquired but their state is dubious, Output bits probably not writable.
_	Please, open related Unit Form and verify alarm explanation on Status Bar.

	Impossible to communicate with Unit.
<b>2</b>	Input bits not acquired, Output bits not writable.
	Please, verify if Unit was correctly addressed and if Hardware cabling is correct.

# Analogic Input Unit.

	Unit is not enabled to start communication.
	Measure not acquired.
<del>ħv</del> .	Enable
	To enable again Unit, please check Enable box:
	Unit is in transitory state.
$\sim$	Measure in transitory state, not jet properly acquired.
	Unit is properly running without alarms.
<mark>₽</mark>	Measure properly acquired.
	Unit is properly running with warning.
Po-	Measure properly acquired but in over-range.
	Unit is not properly running, alarm(s) pending.
<b>8</b>	Measure could not be properly acquired.
	Please, open related Unit Form and verify alarm explanation on Status Bar.
	Impossible to communicate with Unit.

Impossible to communicate with Unit.
Measure not acquired.
Please, verify if Unit was correctly addressed and if Hardware cabling is correct.



# Incremental Digital or Analog Encoder Unit.

	Unit is not enabled to start communication.
	Measure not acquired.
Ē	Enable
(dead)	To enable again Unit, please check Enable box:
	To chable again onit, please check Enable box.
	Unit is in transitory state.
	•
	Measure in transitory state, not jet properly acquired.
	Unit is properly running without alarms.
E	Measure properly acquired.
E	Unit is properly running with warning.
	Measure properly acquired but in over-range.
	riousare property wegan ou bar nange.
	Massure not menories assured harmon Encodencia discomposited
	Measure not properly acquired, because Encoder is disconnected.
	Please, connect Encoder.
E	Measure not properly acquired, because Encoder is in alarm or uncalibrated.
	Please, check Encoder cabling and calibrate it.
	At boot time, Encoder measure is declared as not calibrated.
	On alarm condition, Encoder measure is declared as not calibrated and alarm code is latched until:
	an Unit hardware or software reset
	• a request of error get and clear
E	Unit is not properly running, alarm(s) pending.
	Measure could not be properly acquired.
	Please, open related Unit Form and verify alarm explanation on Status Bar.
E	Impossible to communicate with Unit.
	Measure not acquired.
	Please, verify if Unit was correctly addressed and if Hardware cabling is correct.



# 5.7.1.3 LVDT Unit Form.

Measure Panel.	Unit.01 / Net.01     1		
	Ident. Group 1 T I T Code 767X000000 Serial Number	Sensor 1 Direction backy Unit	Db Button: Read/Write LVDT Unit Parameters.
Unit Data View	yyDN0001 Sw Version Enable version2.1 ☑ ⊻ Label		<u><b>T</b></u> Button: Read Transducer Information.
ArmRatio parameter, from 0.5 to 4 [ not stored in Unit ]	Arm Ratio	<b>u</b> -	Status Bar with error view and clear button

**Figure 45: LVDT Unit Form in On-Line mode** (example for On-Line Operative mode, maximized format)



#### 5.7.1.3.1 Measure Panel.

Measure Panel image explanation.	
±88,8888	Unit in transitory state or Unit programming not appropriate for connected Transducer. <b>Transducer not jet acquired</b> .
<u> </u>	Unit is properly working without alarms. <b>Transducer in range</b> .
	Unit is programmed to acquire measure in forward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed. <b>Transducer over range, released or pressed</b> .
±88,8888 <u>±88,88888</u>	Unit is programmed to acquire measure in backward direction without accessing Transducer data: Range and Nominal Sensibility have to be properly programmed. <b>Transducer over range, released or pressed</b> .
±88,8888 <mark>±88,8888</mark>	Unit is programmed to acquire measure in forward direction accessing Transducer data: Range and Nominal Sensibility were self- acquired. <b>Transducer over range, released or pressed</b> .
±88,8888 ±88,88888	Unit is programmed to acquire measure in backward direction accessing Transducer data: Range and Nominal Sensibility were self- acquired. <b>Transducer over range, released or pressed</b> .
±88,8888	Unit in alarm. <b>Transducer not operative</b> .

#### 5.7.1.3.2 Read/Write LVDT Unit Parameters.



This button opens a dedicated new form for reading or writing the Unit parameters. All data are uploaded directly from Unit and, on modify, downloaded directly into Unit.

🕙 Unit.01[01] / Net.01 🛛 🔀				
Measure Mode				
relative				
Range				
5,000	-	[mm]		
Sensibilit	y			
115,000	- [rr	W/mm/V]		
Sensibilit	y Adjust			
1.00000				
Pre-Trav	el			
C ON C OFF		[mm]		
Extra-Tra	avel			
C ON [mm]				
Linearization				
Retentive Data				
	<b>帝</b>	5		
Save	Abort	Qk		

**Figure 46: LVDT Unit Parameters Form** (example accessing Transducer Data).

Measure N	1ode	
relative	*	
Range		
5.000	-	[mm]
Sensibility	22 	
115.000	<b>▼</b> [n	nV/mm/V]
Sensibility	Adjust	
1.00000	T h	
Pre-Trave	l ———	
OFF F		[mm]
Extra-Tra	vel	
C ON C OFF		[mm]
Lineari	and the second	OFF
Retent	ive Data (•	OFF
<b>n</b> 1	衞	5
	<b>III</b>	1 Ur

# **Figure 47: LVDT Unit Parameters Form** (example without accessing Transducer Data).

Parameter	Meaning	
Measure Mode	Measure <b>Mode</b> (relative or absolute).	
Range	Range       5.000     [mm]       10.000	
	Transducer Range :	
	- self-acquired if accessing Transducer Data (read-only)	
	- to be <u>properly programmed</u> if accessing Transducer Data is disabled,	
	choosing between standard values or entering required one	
Sensibility	Sensibility           115.000         ▼           230.000         Transducer Nominal Sensibility :	
	- self-acquired if accessing Transducer Data (read-only)	
	- to be <u>properly programmed</u> if accessing Transducer Data is disabled	
	disabled, choosing between standard values or entering required one Sensibility Adjust	
Sensibility Adjust	1.00000	
	Transducer Sensibility Adjust :	
	- little adjust on sensibility (1.0000 +/-5%)	

Parameter	Meaning
Pre-Travel	• ON         • 0.050         [mm]
	Transducer <b>Pre-Travel</b> for applying negative limit different from Range



	limit ( -OverRange limit override ).
Retentive Data and Linearization	Linearization ON COFF Retentive Data CON COFF
	Transducer Retentive Data Enable :
	- ON (default) if retentive chip on Transducer connector must be accessed
	- OFF if retentive chip on Transducer connector must not be accessed,
	and Transducer Range and Nominal Sensibility is manually supplied.
	Transducer Linearization Data Enable :
	- ON (default) if Linearization has to be activated
	- OFF if pure transducer signal without Linearization has to be acquired

Ok, Save, Abort Buttons.		
<b>₽</b> <u>0</u> k	Closes window without saving changes.	
<b>D</b> Save	Saves changes to Unit parameters. All data are downloaded directly to Unit. All data are uploaded directly from Unit again	
<b>小</b> <u>A</u> bort	Aborts changes to Unit parameters. All data are uploaded from Network Unit again.	

**Note :** MDHQspc and MDHQspcP drivers force at communication establishment following settings.

System	metric
Measure Mode	relative



#### 5.7.1.3.3 Read LVDT Transducer Information.



This button opens a dedicated new form for reading Transducer Information. All data are uploaded directly from Unit.



Figure 48: LVDT Unit Transducer Form (example).



### 5.7.1.4 LVDT-2 Unit Form.





#### 5.7.1.4.1 Measure Panel.

In the LVDT-2 unit form, 2 measure panels are present: the panel on the left side is referred to channel 1 and the panel on the right side is referred to channel 2.



#### 5.7.1.4.2 Read/Write LVDT-2 Unit Parameters.

🚴 ор

This button opens a dedicated new form for reading or writing the Unit parameters. All data are uploaded directly from Unit and, on modify, downloaded directly into Unit.

🕀 Unit.02[02] / Net.01 🛛 🔀		
Measure Mode		
relative	w.	
Range		
5.000	Y	[mm]
Sensibilit	y	53 23
115.000 v [mV/mm/V]		
Sensibilit	y Adjust	20 10
1.00000		
Pre-Trav	el	1
C ON OFF		[mm]
Extra-Tra	wel	1
C ON		[mm]
Linearization		
Retentive Data		
R	衞	5
Save	Abort	<u> </u>

**Figure 50: LVDT-2 Unit Parameters Form** (example accessing Transducer Data).

Measure N	Mode		
relative	-		
Range			
5.000	-	[mm]	
Sensibility			
115.000	<b>-</b> [r	nV/mm/V]	
Sensibility	Adjust		
1.00000			
Pre-Trave	1		
ON OFF		[mm]	
Extra-Tra	vel		
C ON C OFF		[mm]	
Lineari	C ON C OFF		
Retentive Data			
	壷	5	

# **Figure 51: LVDT-2 Unit Parameters Form** (example without accessing Transducer Data).

Parameter	Meaning	
Measure Mode	Measure <b>Mode</b> (relative or absolute).	
Range	Range         5.000       [mm]         10.000	
	<ul> <li>self-acquired if accessing Transducer Data (read-only)</li> <li>to be <u>properly programmed</u> if accessing Transducer Data is disabled, choosing between standard values or entering required one</li> </ul>	
Sensibility	Sensibility           115.000         ▼           230.000           115.000           23.000	
	<ul> <li>Transducer Nominal Sensibility :</li> <li>self-acquired if accessing Transducer Data (read-only)</li> <li>to be <u>properly programmed</u> if accessing Transducer Data is disabled, choosing between standard values or entering required one</li> </ul>	
Sensibility Adjust	Sensibility Adjust         I.00000         Transducer Sensibility Adjust :         -       little adjust on sensibility (1.0000 +/-5%)	
Parameter	Meaning	
Extra-Travel	ON     OFF     OF	
	Transducer Extra-Travel for applying positive limit different from Range	

	limit ( +OverRange limit override ).	
Pre-Travel	Pre-Travel         ON         OFF         Fo.050         Imm         Transducer Pre-Travel for applying negative limit different from Range limit ( -OverRange limit override ).	
Retentive Data and Linearization	<ul> <li>Linearization         <ul> <li>ON OFF</li> <li>Retentive Data</li> <li>ON OFF</li> </ul> </li> <li>Transducer Retentive Data Enable :         <ul> <li>ON (default) if retentive chip on Transducer connector must be accessed</li> <li>OFF if retentive chip on Transducer connector must not be accessed, and Transducer Range and Nominal Sensibility is manually supplied.</li> </ul> </li> <li>Transducer Linearization Data Enable :         <ul> <li>ON (default) if Linearization has to be activated</li> <li>OFF if pure transducer signal without Linearization has to be acquired</li> </ul> </li> </ul>	

Ok, Save, Abort Buttons.	
<mark>₽</mark> <u>0</u> k	Closes window without saving changes.
<b>L</b> Save	Saves changes to Unit parameters. All data are downloaded directly to Unit. All data are uploaded directly from Unit again
<u>A</u> bort	Aborts changes to Unit parameters. All data are uploaded from Network Unit again.

Note: MDHQspc and MDHQspcP drivers force at communication establishment following settings.

System	metric
Measure Mode	relative



#### 5.7.1.4.3 Read LVDT-2 Transducer Information.



This button opens a dedicated new form for reading Transducer Information. All data are uploaded directly from Unit.



Figure 52: LVDT-2 Unit Transducer Form (example).



#### 5.7.1.5 I/O Unit Form.



**Figure 53: I/O Unit Form in On-Line mode** (example for On-Line Operative mode, maximized format)

#### 5.7.1.5.1 I/O Panel.

I/O Panel behaviour depends on I/O programming.

I/O Panel image explanation .		
	Unit not operative or in transitory state. Input bits not acquired, Output bits not writable.	
	Unit operative. Input bits acquired, Output bits writable.	
	Unit not operative, alarm pending. Input bits not acquired, Output bits not writable.	
#### 5.7.1.5.2 Read/Write I/O Unit Parameters.



This button opens a dedicated new form for reading or writing the Unit parameters. All data are uploaded directly from Unit and, on modify, downloaded directly into Unit.

Dunit.03	[03] / Ne	et.0'	)					×
Bit	8	7	6	5	4	3	2	1
Unused	(•	0	C	C	C	C	C	C
Input/Outpu	it 🤇	•	C	C	c	C	œ	œ
Input	C	C	G	G	c	C	c	C
-Input	C	C	C	C	c	C	c	C
Output	C	C	C	C	œ	c	C	C
-Output		0	C	C	C	e.	C	e
Filter Tim	e			15			[m:	5]
Watch Do	g Time			4		Ĩ	[5]	i l
<b>S</b> ave	借 <u>A</u> bort			<mark>₽</mark> ⊇k		₽	efau	lt

Figure 54: I/O Unit Parameters Form

(example with mixed bits programming).

Parameter	Meaning
Unused	Bit unused.
Input/Output	Bit can be used as input or output.
Input	Bit can be used as input only
-Input	Bit can be used as negative input only.
Output	Bit can be used as output only
-Output	Bit can be used as negative output only



Parameter	Meaning
Filter Time	Filter Time [ms]
	Input Filter Time [ms].
Watch Dog	Watch Dog Time
	Output <b>Watch Dog Time</b> [s], default 0 [s]. If no communication is detected in this time, all Output bit are cleared. If 0 [s] is programmed, Watch Dog is disabled.

Ok, Save	<u>Ok</u> , <u>Save</u> , <u>Abort</u> , <u>D</u> efault Buttons.			
7		Close window without saving changes.		
<u>O</u> k				
		Saves changes to Unit parameters.		
Save		All data are downloaded directly to Unit.		
2446		All data are uploaded directly from Unit again		
壷		Aborts changes to Unit parameters.		
Abort		All data are uploaded from Network Unit again.		
Abort				
		Restores Default parameters.		
<u>D</u> efault				



#### 5.7.1.6 Analogic Input Unit Form.



**Figure 55: Analogic Input Unit Form in On-Line mode** (example for On-Line Operative mode, maximized format)

#### 5.7.1.6.1 Measure Panel.

Measure Panel image explanation.				
+ 0 0 0 0 0 0 0 0 0	Unit in transitory. <b>Input not jet acquired</b> .			
+00000000	Unit is properly working without alarms. Input in range.			
- 0 0 0 0 0 0 0 0 0	Unit is properly working with warning. Input out of range.			
+ 0 0 0 0 0 0 0 0 - 0 0 0,0 0 0 0 0	Unit in alarm.			



#### 5.7.1.6.2 Read/Write Analogic Input Unit Parameters.



•

This button opens a dedicated new form for reading or writing the Unit parameters. All data are uploaded directly from Unit and, on modify, downloaded directly into Unit.

Sensor Type Parameter let choose between 4 available acquisition modes:

- Voltage [V] with capability of programmable output Voltage Reference
- Resistance [Ohm]
- Current [mA]
- Current loop [4mA 20mA]

Parameter Form behaviour depends on Sensor Type Parameter programmed value .

🕀 Unit.0	4[04] / N	et.01 🔀
Sensor T	уре	
Voltage		•
Range		
- 5/+	5 👱	[V]
Filter Fre ON OFF	<b>quency</b> 75.0	[Hz]
Voltage I C ON OFF	Reference	
<b>D</b> Save	<u>A</u> bort	<mark>₽</mark> Ok

Figure 56: Analogic Input Unit Voltage [V] Parameters Form

🕀 Unit.0	4[04] / Ne	et.01 🔀
Sensor T	уре	
Current		<u>•</u>
Range		
- 20/+ 2	.0 🔽	[mA]
Filter Fre ON OFF	<b>quency</b> 75.0	[Hz]
Voltage F C ON © OFF	Reference	
<b>S</b> ave	值 <u>A</u> bort	<mark>р</mark> <u>О</u> к

Figure 58: Analogic Input Unit Current [mA] Parameters Form

🕀 Unit.0	4[04] / N	let.01 🔀
Sensor T	уре	
Resistance	•	-
Range		1
+ 50/+3	000	· [Ohm]
Filter Fre	quency	-
OFF	75.0	[Hz]
Yoltage I C ON C OFF	Reference	
	畲	<b>7</b>
<u>S</u> ave	Abort	Qk

Figure 571: Analogic Input Unit Resistance [Ohm] Parameters Form

🕀 Unit.0	4[04] / Ne	et.01 🔀
Sensor T	уре	
Current 4-	20 mA	<u> </u>
Range		(
+ 4/+ 2	20 👱	[mA]
Filter Fre	quency	2
C OFF	[Hz]	
-2.2000 00000000000000000000000000000000	Reference	
C ON C OFF		
	畲	5
<u>S</u> ave	Abort	Qk

Figure 591: Analogic Input Unit Current loop [4÷20mA] Parameters Form

Parameter	Meaning



Sensor Type	Sensor Type
	Voltage
	Voltage
	Resistance Current Current 4-20 mA
	Sensor Type
	- Voltage [V] with output Voltage Reference
	- Resistance[Ohm]
	- Current [mA]
	- Current loop [4÷20mA]
Range	Range
( except in Current loop mode )	- 5/+ 5 ▼ [V] Range + 50/+3000 ▼ [Ohm]
	-10/+10 0/+10 +50/+500 +50/+3000
	Input Range
Filter Frequency	Input Filter Frequency [Hz]
Voltage Reference	Output Voltage Reference [V]
(only in Voltage mode)	

Ok, Save	<u>Ok</u> , <u>Save</u> , <u>A</u> bort Buttons.				
<b>©</b> k <u>O</u> k	Closes window without saving changes.				
<b>D</b> Save	Saves changes to Unit parameters. All data are downloaded directly to Unit. All data are uploaded directly from Unit again				
會 <u>A</u> bort	Aborts changes to Unit parameters. All data are uploaded from Network Unit again.				



#### 5.7.1.6.3 Changing final Measure Unit.



following measure unit can be selected.

#### 5.7.1.6.3.1 Voltage case .



#### 5.7.1.6.3.2 Current case .



5.7.1.6.3.3 Resistance case ( no RTD [Resistor Temperature Detection] choose ) .





5.7.1.6.3.4 Resistance case (RTD [Resistor Temperature Detection] choose).





#### 5.7.1.7 Incremental Digital or Analog Encoder Unit Form.



Figure 60a: Incremental Digital Encoder Unit Form in On-Line mode (example for On-Line Operative mode, maximized format)

**Calibration/Verify/Abort choose Box** let select a Calibration/Verify cycle for further start or select the Abort for further stop.

**Calibration/Verify Start/Stop/Abort Button** let starting a calibration or verify cycle or stopping it. Calibration/Verify Cycle can be:

- single (1<sup>st</sup> Marker signal detection calibrates/verifies Unit ), and must be stopped or aborted
- never-ending ( all Markers signal detection calibrate/verify Unit ), and can be aborted if required

Calibration Reset Button let erase immediately zeroings on Unit, forcing its state to not calibrated.

If Marker signal is programmed OFF (not provided):

- single calibration and verify are immediate
- never-ending calibration and verify are not supported

While for the Incremental Analog Encoder there is only a different string on the "Interface Type" detected, however the figure is:



Figure 60b: Incremental Analog Encoder Unit Form in On-Line mode (example for On-Line Operative mode, maximized format)

The meaning of every box is the same described before on the Digital.



#### 5.7.1.7.1 Measure Panel.

Measure Panel image explanation.	
	Unit in transitory. Input not jet acquired. Encoder not calibrated.
<u>+888888888888888888888888888888888888</u>	Unit in transitory. Input not jet acquired. Encoder calibrated.
±888888888888888888888888888888888888	Unit in alarm. Encoder not connected. Encoder Phase-A, Phase-B, Marker signal wrongly connected. Encoder Alarm or Over-Speed.
+ 000000000000000000000000000000000000	Unit is properly working in not calibrated state. Encoder not calibrated.
	Unit is properly working in not calibrated state. Encoder not calibrated , calibration cycle pending.
+ 22222222222222 - 22222222222222 - 22222222	Unit is properly working in calibrated state. Encoder calibrated, calibration done with success. Measure in range.
+ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Unit is properly working in calibrated state. Encoder calibrated, verify cycle pending. Measure in range.
	Unit is properly working in calibrated state. Encoder calibrated, calibration verify done with success (match). Measure in range.
	Unit is properly working in calibrated state. Encoder calibrated, calibration verify done with error (unmatch). Measure in range.
<u>+000000000000000000000000000000000000</u>	Unit is properly working in calibrated state. Encoder calibrated, no verify information available. Measure in range.
- 88888888888888888 - 88888888888888888	Unit is working with over-range warning. Encoder calibrated . Measure out of range.
	Unit is working with over-range warning. Encoder not calibrated . Measure out of range.



#### 5.7.1.7.2 Read/Write Incremental Digital or Analog Encoder Unit Parameters.



This button opens a dedicated new form for reading or writing the Unit parameters. All data are uploaded directly from Unit and, on modify, downloaded directly into Unit.

Sensor Type Parameter let choose between 4 available acquisition modes:

- Linear [mm]
- Rotary [degrees]
- Periodic [degrees with 360° module]
- Counter [no unit as default, unit programmable as required]

Parameter Form behaviour depends on **Sensor Type** Parameter programmed value (These figures are referred to a Digital unit for an Analog unit see after these figures).

🕀 Unit.0	5[05] / Ne	et.01 🔀
Sensor T	уре	
Linear		<u> </u>
Connecti	on Type 🚽	
Quadratur	e	-
	C x2	C x4
Differentia	I TTL	•
Step	1.000 [µ	m]
Frequence ON OFF Max Speed Step [µm]	[k	Hz]
Marker	Ala	
HW-Direc		•
Save	<mark>借</mark> Abort	<u>ok</u>

Figure 61: Digital Encoder Unit Linear Parameters Form

🕀 Unit.0	5[05] / Ne	et.01 🔀
Sensor T	уре	
Rotary		
Connecti	on Type	
Quadratur	e	•
. ← ×1	C x2	C x4
Differentia	I TTL	•
Line Cou	nt 3600	
Frequence ON OFF Max Speed Line Count	-	H2] )00 *
Marker	Ala	n 💌
HW-Dire	575.735 ·	•
<b>S</b> ave	<u>A</u> bort	<mark>₽</mark> <u>O</u> k

Figure 62: Digital Encoder Unit Rotary [degrees] Parameters Form



倒 Unit.0	5[05] / Ne	et.01 🔀
Sensor T	уре	
Periodic		<b>_</b>
Connecti	ion Type	
Quadratur	e	•
(● ×1	C x2	C x4
Differentia	I TTL	<b>_</b>
Line Cou	nt 3600	
Frequence     ON     ON     OFF     Max Speece     Line Count     Marker		
On 💌	Γ	n 💌
<b>HW-Dire</b> forwar		•
<b>S</b> ave	值 Abort	<b>p</b> <u>o</u> k

Figure 63: Digital Encoder Unit Periodic [degrees] Parameters Form

	5[05] / Ne	et.01 🔀
Sensor T		
Counter		
Connecti	on Type	
Quadratur	в	•
	C x2	C x4
Differentia	I TTL	•
• OFF		
On 💌	Ala	n 💌
HW-Dire	tion	
forwar	4	-
	畲	<b>7</b>
Save	Abort	<u>o</u> k

Figure 64: Digital Encoder Unit Counter Parameters Form

For the Analog unit there is showing few differences from the Digital :

🕘 Unit.(	04 / Net.01	1 📉 🗙
Sensor	Туре	
Linear		~
Connect	tion Type	
Quadratu	re	~
	() x2	
Current		~
Step		
	10.000 [µ	m]
Frequen	icy Max	
OFF :	1000 [k	Hz]
Max Spee	d [mm/s] /	
Step [µm]	-	
Off V		ff 🔽
HW-Dire	ection	
forwa	rd	~
	御	
Save	Abort	Close

#### Figure 65b: Analog Encoder Unit Linear Parameters Form

All parameters are described below for both Digital and Analog unit type. In the Analog type there is only one different parameter with different conditions and behaviour, the "Connection Type":

Meaning



Sensor Type	Sensor Type
	Counter
	Linear
	Rotary
	Periodic Counter
	Linear Signed measure [mm],
	based on Step parameter
	Applies to Linear Encoder
	and produces a measure with dimensional attribute, that can overflow.
	<b>Rotary</b> Signed angular measure [degrees], as $\pm 360^{\circ}$ *Round,
	based on Line-Count parameter.
	Applies to <u>Rotary Encoder</u>
	and produces a $\pm 360^{\circ}$ Round measure with degree attribute, that can overflow.
	<b>Periodic</b> Signed angular measure [degrees], module(360°),
	based on Line-Count parameter.
	Applies to <u>Rotary Encoder</u>
	and produces a <u>module(360°)</u> measure with degree attribute, that never overflows.
	Counter Signed counting.
	Applies to Linear Encoder, Rotary Encoder or any kind of other Incremental Digital
	Devices,
	and produces a measure with no attribute, that can overflow.



Parameter	Meaning		
<b>Connection Type Digital Unit</b>	Connection Type		
	Quadrature	-	
	Quadrature		
	Phase A+		
	Phase B- Phase A+ Phase B-		
	Phase A+/- Phase B Dir		
	Quadrature	Phase-A and Phase-B	
		in quadrature	
	Phase A+	Phase-A only incrementing counting	
		Phase-B not cared	
	Phase B+	Phase-B only decrementing counting	
		Phase-A not cared	
	Phase A+ Phase B-	Phase-A incrementing counting	
		Phase-B decrementing counting	
	Phase A+/- Phase B Dir	Phase-A incrementing/decrementing	
counting function of Phase-B level			
	Connection Type           • x1         • x2         • x4		
	x1	Division none	
	x2	Division half step	
	x4	Division quarter step	
	Connection Type	-	
	Differential TTL		
	Differential TTL		
	Single Ended TTL Complementary HTL		
	Single Ended HTL		
	Differential TTL	Differential signals with TTL levels	
	Single Ended TTL	Single Ended signals with TTL levels	
	Complementary HTL	Complementary signals with HTL levels	
	Single Ended HTL Connection Type	Single Ended signals with HTL levels	
<b>Connection Type Analog Unit</b>	provide the second of the seco		
	Quadrature	14 1	
	@x2	Fixed Values for every Sensor Type	
	Quadrature	Phase-A and Phase-B in quadrature	
	x2	Division half step	
	Current		
	Voltage Current		
		nt signal 11 μApp	
		ge signal 1Vpp	
Step	Step		
(Linear mode only)	1.000 [µm]		
	Encoder Step [µm], default	1 [μm] :	
		justed by Unit elaborating this value	
Line Count	Line Count		
(Rotary and Perioduc modes	3600		
only)	Encoder Impulses/Round,	default 3600 :	
		justed by Unit elaborating this value	

Parameter	neter Meaning				
Frequency Max	Frequency Max	Frequency Max			
	C ON [kHz]	C ON [kHz]			
	(• OFF Max Speed [mm/s] /	OFF     Max Speed [RPM] / 60000 *			
	Step [µm]	Line Count			
	Encoder / Counter Maximum Fre				
		Signal parameter optionally specifies			
		f Incremental Digital Encoder or other			
	Incremental Digital Device :				
	<u>Maximum Speed [mm/s] / Ste</u> Lincor Encoder matrix sustain	*			
	Linear Encoder, metric system				
	<u>Maximum Speed [inch/s] / Ste</u> Linear Encoder , imperial syst				
	<u>Maximum Speed [RPM] / 600</u> Rotary Encoder	100 · Step [Impulses/Round] 101			
		cy of Input Signal parameter restricts			
	allowed input frequencies :	ey of input Signal parameter resulters			
	· ·	ls , transitions above programmed			
	frequency are filtered				
	1 5	lls , concurrent transitions above			
	programmed frequency are detected and notified via < Over Speed >				
	alarm.	ľ			
	So Maximum Frequency of Inpu	at Signal parameter optionally let filter			
	spikes on single phase and detect of				
		-			
Marker	Marker signal present.				
	- ON Phase-M	provided			
	- OFF Phase-M	not provided			
		as present, test on its proper connection			
	is enabled .				
		d as present, it will be used for Marker			
		cycles in order to calibrate and apply zeroing to system.			
Alarm	Alarm signal present.				
	- ON Alarm	provided			
	- OFF Alarm	not provided			
		test on its level is enabled : on error ,			
HW-Direction	alarm < Transducer Not Operative	5 ~ 15 asserted .			
n w-Direction	<b>Direction</b> of counting. - forward	incrementing counting			
	- backward	decrementing counting			
	- Uackwaru	uccrementing counting			

Ok, Save	, <u>A</u> bort Buttons.
7	Closes window without saving changes.
<u>o</u> k	
	Saves changes to Unit parameters.
Save	All data are downloaded directly to Unit.
	All data are uploaded directly from Unit again
壷	Aborts changes to Unit parameters.
	All data are uploaded from Network Unit again.
<u>A</u> bort	

# 6 Configuration and On-Line: "Complete" or "Simplified" Interface – Tabled Mode



When MDHQSPC Driver Programmer starts with an empty configuration loaded it shows a window like this:

File Users Options Help				
Networks Net 1				
Number of networks         1            Net Enable         COM         USB         Baud         Units         Baud         Units         Code           1         Com1         115200         208.3k         0	e Serial Number Sw Version	■	Detect COM Devices ac Detect Marposs COM D	
		#	COM Serial Numb	er Stati
		ップ 1 ■ 2 そそい 3	COM1 COM3 COM4 S.CRE.000;	Unkr Unkr 2 Unkr
Automatic (On-Line with Hardware self-detection)     Addressing: Start	Save and Exit	Check	Abort an	

#### Figure 66: MDHQSPC Driver Programmer, simplified interface layout (Example with empty configuration loaded)

Hardware configuration can be set up in two modes:

- Automatic (On-line with Hardware self-detection) Hardware is automatically recognized and acquired without any intervention by the side of user.
- Manual (Off-line) User designs hardware configuration adding manually nets and units.

#### 6.1 Automatic Configuration (On-line with Hardware self-detection)

This mode allows you to perform a complete hardware setup without any intervention by your side. A totally automatic procedure detect connected devices, acquire their parameters and perform an automatic addressing. After that you can save configuration and it is ready to use.

To perform an automatic configuration:

- select the number of nets present in the current configuration: Number of networks
- for each net, select the proper COM port. It is possible to test port and device connection by pressing the



2 👻



test button <u>COM31</u> and reading the result in the Status column <u>Unknown Status</u>. There are many values to understand the status of the COM port: Unknow Staus, No Operative, Impossible to Connect and Connection Possible.





#### Only devices with **Protocol Version A3.0** or greater can be detected.

Self detection could be a long time procedure (it depends on number of nets and units). When self detection has been completed you can edit or save configuration.

In any case:

- current hardware configuration is automatically self-detected;
- all current parameters of all detected devices are automatically self-loaded.

## 6.2 Manual configuration (Off-line)

To perform a manual configuration:

- select the number of nets present in the current configuration:
- for each net, select the proper COM port.
- for each net, select the number of units connected.



• for each net select the corresponding folder and select the unit types (default is Digital LVDT-2):

Networks Net 1 Net 2								
Unit Enable #1 Enable #2	Туре		Ident.	Code	Serial Number	Sw ¥ersion	Sensor	Input/Output
	Digital LVDT-2	75 kHz	1	767X2004xx			/	
2	Digital LVDT	75 kHz	2	767X0xxxxx				
3	Encode	None	3	767E0x05xx				
4		None	4	767I0×05××				
5	Analo jut	None	5	767A0x04xx				
Enable for online	Select unit ty	ype						

• press "Addressing: Start" Addressing: Start. This operation will set the communication IDs according to the unit number column, as chosen by the user. The starting window look like in the following page.

On the bottom of the window, the expected sensor number (LVDT transducer, Analog Input or Encoder)

is displayed: Waiting: Sensor 1 displayed in place of "Sensor": Waiting: Input 1

The green color on the bottom bar means that the driver is online, i.e. it is communicating with the network interface and units.

Once addressing is complete, the "Sensor" and "Input/Output" columns are fully compiled. A new row is

Sensor(s) I/O Port(s)

added to the or tables for each addressed sensor or I/O. See images on the next pages.

Digi Crown



Enable #1         Fnable #2         Type         Ident.         Ident.         Odd         Serial Number         Sensor         Input/Output           Image: Serial Number #1         Digital LVDT         75 Hrz         1         757000000         05000256-         version1.3         1         Image: Serial Number #1         1           Image: Serial Number #1         Digital LVDT         75 Hrz         1         757000000         07000732         version1.3         3         Image: Serial Number #1         1         Serial Number #1         1	2						-			
Image: Second								Input/Uutput		
Image: Constraint of the constraint										
Image: Constraint of the constrated of the constraint of the constraint of the constraint of the										
Image: Constraint LVDT       75 kHz       5       767X000010       07DN0716       version1.3       4       with addressing, see it on Sensor table next.         Image: Constraint Constr									Company mumbers 4 and	
Digital LVDT         75 kHz         6         767x000010         07DN0731         version1.3         5         On Sensor table next.           Digital LVDT         75 kHz         7         767x00010         07DN0731         version2.1         6         6         0           Digital LVDT         75 kHz         8         767x00010         07DN3497         version2.1         6         6           Digital LVDT         75 kHz         8         767x00000         05DN1282         version1.3         13           Digital LVDT         Input Sk         9         101SKPROT-         AI05         version2.0         1/1										
Opical LVDT         75 kHz         7         767X00010         07DN3497         version2.1         6         On Sensor table next.           Opical LVDT         75 kHz         8         767X00000         05DN1282         version1.3         13           Opical LVDT         To kHz         9         1015K/PROT-         Alto         version2.0         1/1										
Digital LVDT         75 kHz         8         767X000000         05DN1282         version1.3         13           Digital LVDT         Digital LVDT         75 kHz         8         767X000000         05DN1282         version1.3         13           Digital LVDT         Digital LVDT         Nput 5k         9         IOISKPROT-         AI05         version2.0         1/1									on Sensor table nex	ĸt.
Digital I/O Input Sk 9 IOISKPROT- AI05 version2.0 1/ 1										
								1/1		
	Digital LVDT-2	75 kHz	10	767X200400	07DN0987	version2.0	11/12			



Channel Ty	/pe	Unit	Enabl	e Sensor	Direction	Unit	Arm Ratio	Measure Mode	Range	Sensibility	Sensibility Adjust	Pre-Travel	Extra-Travel	Retentive Data	Linearization	Code
1 Dig	gital LVDT	Net.1/Unit.1	4	1	backward	mm	1.000000	relative	2.50000	115.000	1.00000					767X00000
2 Dig	gital LVDT	Net.1/Unit.2	1	2	backward	mm	1.000000	relative	5.00000	115.000	1.00000			<b>1</b>	1	767X00001
3 Dig	gital LVDT	Net.1/Unit.3	1	3	backward	mm	1.000000	relative	5.00000	115.000	1.00000			1	<b>1</b>	767X00001
4 Dig	gital LVDT	Net.1/Unit.5		4	backward	mm	1.000000	relative	1.20000	115.000	1.00000					767X00001
5 Dig	gital LVDT	Net.1/Unit.6	1	5	backward	mm	1.000000	relative	5.00000	115.000	1.00000					767X00001
6 Dig	gital LVDT	Net.1/Unit.7		6	ackward	mm	1.000000	relative	5.00000	115.000	1.00000			✓	4	767X00010
7 Dig	gital LVDT-2	Net.1/Unit.4	1	7	b ward	mm	1.000000	relative	05.0000	115.000	1.00000			•		767X
8 Dig	gital LVDT-2	Net.1/Unit.4	1	8	back 🗸	mm	1.000000	relative	05.0000	115.000	1.00023			<b>1</b>		767X
9 Dig	gital LVDT-2	Net.2/Unit.1	4	9	backwa	<b>S</b>	1.000000	relative	05.0000	115.000	1.00000			<b>1</b>	6	767X20040
-	-	Net.2/Unit.1	1	10	backward		1.000000	relative	05.0000	115.000	1.00000			<b>\$</b>		767X20040
11 Dig	gital LVDT-2	Net.1/Unit.10	1	11	backward		1.000000	relative	05.0000	115.000	1.00010	-00.0500	+00.0500	•		767X20040
12 Dig	gital LVDT-2	Net.1/Unit.10	1	12	backward	mm	00000	relative	05.0000	115.000	1.00000			6		767X20040
13 Dig	gital LVDT	Net.1/Unit.8	~	13	backward	mm 🔪	00	relative	5.00000	115.000	1.00000			•	1	767X00000
							$\sum$									
							with Netw The s used	or number addressing ork table a sensor num by QSPC, anged here ed.	, see bove ber, a can s	it on 15						

If the "Stop" button is pressed before the Addressing Session is complete, it will be possible to finish it at a later time by pressing the "Resume" button. Note that a file with incomplete addressing can be saved.



It is always possible to restart addressing from the beginning, cleaning all sensor and I/O numbers, by selecting "Addressing > Start" in the popup menu:



Fill Column	
📕 Addressing 🔹 🕨	🧐 Automatic (On-Line with Hardware self-detection)
Print Configuration	📂 Start
🔁 Copy to Clipboard	Kesume
	i 🎸 Replace Unit

#### 6.3 Replacing an unit

If you want to substitute a broken unit, or anyway replace it with another one, select "Replace Unit" in the popup menu, while the mouse is pointed over the "Serial Number" cell of the unit to be replaced:

:wo	rks	Net 1 Ne	t 2									
l	Jnit	Enable #1	Enable #2	Туре		Ident.	Code	Serial Number	Sw Version	Sensor 1	(nput/Output	
T	1	<b>1</b>		Digital LVDT	75 kHz	1	767X000100	07DN3497	version2.1	3		Right-click of the mouse
2	2	1		Digital LVDT	75 kHz	2	767X000010	07DN0731	version1.3	4		within the serial number
	}	1		Digital LVDT	75 kHz	3	767X000000	05DN0256	version1.3	5		cell
4	1	1		Digital LVDT-2	75 kHz	4	767X	yyDN0002	version1.0	6/ 7		1
	5	1		Digital LVDT	75 kHz	5	767X000000	05DN1282	version	0		
l	;	1		Digital LVDT-2	75 kHz	6	767X200400		lversion2 0	Q/ 10		
T	1	1		Digital LVDT	75 kHz	7	767X000010		Column dressing		🙆 Automatic ((	n-Line with Hardware self-detection)
1	3	1		Digital LVDT	75 kHz	8	767X000010	07DN073	nt Configuratio	on	Start	an Eine Mannia aware seil "detection"
1	)	1		Digital LVDT	75 kHz	9	767X000010	07DN073 🔁 Co	py to Clipboar	d	Kesume	
T		1		Digital I/O	Input Sk		IOISKPROT-		version2.0		1 🐇 Replace Unit	

Once "Replace Unit" is selected, the "Serial Number" cell will become editable:

_										
	6		Digital LVDT-2	75 kHz	6	767X200400	07DN0987	version2.0	9/ 10	

Replace at the moment the physical unit in the network, before inserting the serial number of the new unit and confirming it with the "Enter" button:

6		Digital LVDT-2	75 kHz	6	767X200400	06DN3	version2.0	9/ 10	

#### 6.4 Off-line configuration editing

Some parameters are set off-line and saved within the configuration file. See next subsections.

#### 6.4.1 Sensor channel(s) Configuration Edit



This page allows to enable/disable a sensor channel and edit its configuration: you can edit only these parameters:

Enable	Enable DigiBox rela	ated to sensor chanr	nel to go in OnLine mod	e				
Sensor	From 1 to 9999 (not	t yet assigned in cur	rent QSPC fixture)					
Direction	LVDT LVDT-2	Backward/Forward	d					
	Incremental Digital or Analog Encoder	Backward/Forward	d					
Unit	LVDT LVDT-2	mm, deg, °C, gr						
	Analog Input	mm, deg, °C, gr,	t <u>ance[Ohm], Current[mu</u> m, N*m, mm/s <sup>2</sup> , Rad/s, I					
	Incremental Digital or Analog Encoder	<u>Linear mode</u> mm, deg, °C, gr	<u>Rotary/Periodic mode</u> deg	<u>Counter mode</u> mm, deg, °C, gr, N, Pa, V, mA, Ohm, N*m, mm/s <sup>2</sup> , Rad/s, Rad/s <sup>2</sup> , dm <sup>3</sup> /s				
Arm Ratio	LVDT LVDT-2	From 0.5 to 4.0						
	Incremental Digital or Analog Encoder	From 0.5 to 4.0						
K Conv (1)	Analog Input	Measure Conversi	on Factor					
Offset (1)	Analog Input	Measure Offset						
	Incremental Digital or Analog Encoder	Measure Marker						
Resistance	Analog Input	RTD Enable						
Temperature		R0 coefficient						
Detector (1)		A coefficient						
		B coefficient						
		C coefficient						

#### Notes:

(1): In case of Analog Input, the **Resistance Temperature Detector** parameters are used as an alternative to **K Conv / Offset** parameters, when on-line "Sensor Type" parameter is set to "Resistance". In the latter case, "Unit" parameter can be set to something different from "°C" only if RTD is disabled.

See also the next figure:



HW Config	HW Configuration Sensor(s) I I/O Port(s)													
Channel	Туре	Unit	Enable	Sensor	Direction	Unit	Arm Ratio	RTD	R0 /	A B C	K Conv	Offset	Measure Mode	Range
▶ 1	Digital LVDT	Net.1/Unit.1	4	1	backward	mm	1.000000						relative	05.0000
2	Encoder	Net.1/Unit.2	1	2	backward	deg	1.000000					0.000000		
3	Digital LVDT-2	Net.1/Unit.3	•	3	backward	mm	1.000000						relative	05.0000
4	Digital LVDT-2	Net.1/Unit.3	K	4	backward	mm	1.000000						relative	05.0000
5	Digital LVDT-2	Net.1/Unit.4		5	backward	mm	1.000000						relative	05.0000
6	Digital LVDT-2	Net.1/Unit.4		6	backward	mm	1.000000	$\mathbf{i}$					relative	05.0000
7	Digital LVDT	Net.1/Unit.5	•		backward	mm	1.000000						absolute	0.19685
8	Analog Input	Net.1/Unit.6	6			٧					000000	0.000000		- 5/+ 5
												、 、		
Sensor Index.	Sensor Channel Index.Editable Enable to Onl programmable in off-line						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					<b>ameter</b> e in off	<b>s</b> , -line mode	
														>
Start Operative       Image: DB						<u>5</u> av	re and Exit				_ ⊆heck		<u>A</u> bort and	l Exit

Figure 67: Sensor(s) configuration Edit



#### 6.4.2 I/O port(s) configuration Edit

This page allows to enable/disable a Port channel:

**Enable** Enable DigiBox related to Port to go in OnLine mode

See also this figure:

HW Configuration Sensor(s) I I/O Port(s)								
I/O Port Type Unit Enable	Bit	Filter Time [s]	Watch Dog Time [s]	Code	Serial Number			
▶ 1 Input Net.1/Unit.7	8.I 7.I 6.I 5.I 4.I 3.I 2.I 1.I	000.100		7671020000	SOLOINPUT1			
2 Input Net.1/Unit.8	8.I 7.I 6.I 5 4.I 3.I 2.I 1.I	000.000		7671000500	yyDNHSS3			
1 Output Net.1/Unit.7	8 7 6 5 4 3 2 1		000.000	7671020000	SOLOINPUT1			
2 Output Net.1/Unit.8	8.0 7 6 5 4.0 3.0 2.0 1.0		060.000	7671000500	yyDNHSS3			
Port Channel Index.       Editable Enable to OnLine , programmable in off-line mode								
Start Operative     Image: Constraint of the character of the cha								

Figure 68: I/O channel(s) configuration Edit

#### 6.5 Synchronisms configuration

When hardware configuration is completed it is possible to configure synchronisms management. Three kinds of synchronisation are available: Temporal, Spatial and Input.

Depending on hardware capabilities of configured units and interfaces, four new folders may be available:



#### 6.5.1 Synchronism cabling

It is possible to link more nets together through a specific cable in order to have the same synchronism source for more networks (both temporal, spatial and input).

In this section it is possible to define the hardware connections between nets for synchronisms propagation.

Net         Code         Serial Number         External Bus         Internal Bus         Connection           1         767Y0105xx         YU5B-HSS-4         Image: Connection in the second	
2 767Y0105xx YUSB-H55-5 No external cable between Interfaces 3rd external cable between Interfaces 3rd external cable between Interfaces	



The following parameter are available:

Synchronism Cabling Pa	arameters
Net	Index of the selected Net (from #1 to #12).(Read Only)
Code 767Y0105xx	Product code of the interface in the net. It is self-acquired within addressing session ( <b>Read Only</b> )
Serial Number YUSB-HSS-4	Serial number of the interface in the net. It is self-acquired within addressing session ( <b>Read Only</b> )
External Bus	This option is checked if the interface has the hardware capability to export synchronism to other networks through a specific output. It is self-acquired within addressing session ( <b>Read Only</b> )
Internal Bus	This option is checked if the interface has the hardware capability to generate temporal synchronism. It is self-acquired within addressing session ( <b>Read Only</b> )
Connection         No external cable         No external cable         1st external cable between Interfaces         2nd external cable between Interfaces         3rd external cable between Interfaces	It is possible to select between six different external cabling (so it is possible to define up to six "synchronism" networks). If the net is not connected to others, "No External cable" option must be selected. If the net is connected to an external source of synchronism, "External cable from other device" option must be selected.

Note: this folder is visible only if at least one interface in the network does support synchronism. With old hardware interfaces or with interfaces that do not support "External Bus" capability, the "Connection" option will not be available.

## 6.5.2 Temporal Synchronism

In this section it is possible to define the temporal synchronism period to be used as default.

đ	Рм	ARPOSS S.p.A	Digi Crov	vn Probing	Line Driv	er [3.5.0] - [Con	figuration Edit]		
Fi	le	Options							
	ŀ	W Configuration	Sensor(s	)	rt(s)	Synchronism Cabling	E Temporal Synchronism	🗐 Spatial Synchronism	Input Synchronism
		Synchronism #	Туре	Period [ms]	Out				
	•	1	Buffered	0.250000	None				
		2	Synchronized	0.250000	Bus 1 Ext.				
		3	Synchronized	0.250000	None				

The following parameter are available:

#### **Temporal Synchronism Parameters**

Synchronism #

Index of temporal synchronism (from #1 to #3). (Read Only)

Type Buffered Synchronized Synchronized	<ul> <li>Only):</li> <li>1. Buffered: the synchronism is generated inside each single module. This is a low performance synchronisation, but is compatible with old hardware interfaces.</li> <li>2. Synchronized: the synchronism source is the same for all units in the network. This is a high performance synchronisation but is available only with new hardware interfaces.</li> </ul>
Period [ms] 0.250000	Temporal synchronism period to be used as default unless otherwise specified (default value is 0.25 ms).
Out None Bus 1 Ext. None	This parameter defines if the synchronism is propagated from one net to others. Synchronisms #1 and #3 do not propagate synchronism to other nets (out is set to "None"). Synchronism #2 does propagate synchronism to other nets (out is set to "Bus 1 Ext.") if a connection cable is present: the system automatically configures nets as "master" or as "slave". (Read Only)

Two different types of temporal synchronism are available (Read

Note: this folder is visible only if at least one interface in the network does support synchronisms #2 or #3.

#### 6.5.3 Spatial Synchronism

In this section it is possible to configure all parameters used for a spatial synchronism management.

٩	MARPOSS S.p.A	Digi	Сгомп	Probing	g Line Driv	er [3.5.0] ·	Configu	ration Edit	i]		
File	Options	ana ina ina ana									
A	HW Configuration	Ser	nsor(s)	<b>[]</b> 1/0 P	Port(s)	Synchronism C	abling E	Temporal Sy	nchronisn	m 📳 Spatial Synchronism	Input Synchronism
	Synchronism #	Sensor	Unit	Channel	First ¥alue	Base ¥alue	Direction	Increment	Out		
	4	5	deg	5	Base	0.000000	Increment	0.000000	None		
	5			None							

The following parametrs are available:

Spatial Synchronism Pa	Spatial Synchronism Parameters						
Synchronism # 4	Index of spatial synchronism (from #4 to #28) (Read Only)						
Sensor 5	Sensor number used by QSPC of the unit Encoder selected for spatial synchronism generation. (Read Only)						
Unit deg	Measure unit of the unit Encoder selected for spatial synchronism generation. (Read Only)						
Channel 5 None 5	Select the channel index of the Encoder unit for spatial synchronism generation. In the list will be proposed only Encoders with synchronism generation capability.						



Current	+
Base	
Current First Multiple Marker	
Base Value	
Direction	3
Increment	
Increment	
Decrement	122
Increment 0.000000	

Four different modes for spatial synchronism generation are available:

- **Base:** 1<sup>st</sup> synchronisation event is produced if counter/position value reaches programmed absolute counter/position value
- **Current:** 1<sup>st</sup> synchronisation event is produced if counter/position value reaches current counter/position plus programmed offset value
- **First Multiple:** 1<sup>st</sup> synchronisation event is produced if counter/position value reaches programmed absolute counter/position value or its multiple
- Marker: 1<sup>st</sup> synchronisation event is produced if Marker signal is detected and than counter/position value reaches programmed offset value

Offset/Absolute value used for the 1<sup>st</sup> synchronisation event triggering.

Direction of period/increment for synchronisation event triggering.

Period/Increment value used for synchronisation event triggering after  $1^{st}$  one, programming the amount of required period/increment between events.

If synchronism must be propagated to other nets then set out to "Bus 1 Ext." or "None" otherwise.

Note: this folder is visible only if at least one Encoder with synchronism generation capability is present in one of the networks.

## 6.5.4 Input Synchornism

None None Bus 1 Ext

In this section it is possible to configure all parameters used for Input Synchronism management.

۲	MARPOSS S.p.A	Digi C	rown Probing L	ine D	Driver [3.5.0] - [Configuration Edit]	
File	Options					
	HW Configuration	D Sens	or(s)	t(s) (	Synchronism Cabling 🔁 Temporal Synchronism 📲 Spatial Synchronism 🗃 Provide Alexandre Synchronism	onism
	Synchronism #	I/O Port	Filter time [ms]	Out		
►	29	1 🔻	0.240000	None		
	30	None				
	31	None				

The following parametrs are available:

#### **Input Synchronism Parameters**

Synchronism # 29	
29	

Index of input synchronism (from #29 to #31) (Read Only)



1/0 Pc	ort
None	•
None 1	

Input/Output port number of the unit selected for input synchronism generation. In the list will be proposed only modules with synchronism generation capability.





Length of the filter time to avoid glitches on generated synchronism signal.

If synchronism must be propagated to other nets then set Out to "Bus 1 Ext." or "None" otherwise

Note: this folder is visible only if at least one I/O module with synchronism generation capability is present in one of the networks.

## 6.6 Print/Copy configuration

Use the popup menu to print configuration or copy it to clipboard.



An error occurs if you don't have any printer installed.



Copy data to clipboard. Data can be pasted into another application (for example a text editor).



#### 6.7 Check Configuration

The button signaled below perform an integrity data check on the current configuration. This is an offline check (no communication with network).



Check results are showed into an external report panel that lists errors for each net and unit.

Net	Туре	Error 1	Error 2	#	COM	Serial Number	Status
🖌 1 (Com3 )	COM (any)	No Error(s) .		2	1 COM1		Unknow
				i i i i i i i i i i i i i i i i i i i	2 COM2		Unknow
				94 194	з сомз		Unknow
<				>			
Unit	Туре	Error 1	Error 2				
1	Digital LVDT	No Error(s) .					
<b>1</b> 2	Encoder	No Error(s) .					
<b>√</b> 3	Digital LVDT-2	No Error(s) .					
✔4 ✔5	Digital LVDT-2	No Error(s) .					
<b>√</b> 5	Digital LVDT	No Error(s) .					
✔6 ✔7	Analog Input	No Error(s) .					
7	Digital I/O	No Error(s) .					
✔8	Digital I/O	No Error(s) .					
							_
				<	III		>
					Q Detec	t COM Devices ag	<u>ain</u>
						t Marposs COM De	evice.
15						<b>I</b> .	
<				>		⊆lose	

Figure 69: Configuration Check Form

#### 6.8 Operative On-Line Session

At the bottom of the or I/O Port(s) or L/O Port(s) tables, once addressing has been completed, this button will be enabled:



That button starts the **Operative session**.

Operative session let user check proper on-line capability of network(s) and to have diagnosis information, including measurements. Operative session let user program parameters that specialize unit behaviour.



While online, the bottom bar has a green background:



While online, the "DB" button opens a DataBase window to set specialized unit parameters directly into the units. These DataBase windows (different for each unit type) and corresponding parameters are described in section 5.7. "DB" button opens a window referenced by the black arrow on the leftmost column.

Mea	suren	nents ar	Double-click a line or use "DB" button to							
	HW Co	onfiguratio		open a DataBase form						
	Chan	nel	Туре	Unit	Enable	Sensor	Direction	Unit	Arm Ratio	RTD
	1:1,	749 🦯	Digital LVDT-2	Net.2/Unit.1	1	1	backward	mn	1.000000	
	2:0,734		Digital LVDT-2	Net.2/Unit.1		2	backward	mm	1.000000	
	3 : Unlinked		Digital LVDT	Net.1/Unit.1	1	3	backward	mm	1.000000	
	4 : Ur	nlinked	Digital LVDT	Net.1/Unit.2		4	backward	mm	1.000000	
	5 : O¥R -		Digital LVDT-2	Net.1/Unit.3	1	5	backward	mm	1.000000	
	6:-0	,0014	Digital LVDT-2	Net.1/Unit.3		6	backward	mm	1.000000	
	7:1,	37	Digital LVDT-2	Net.1/Unit.4	1	7	backward	mm	1.000000	
	8:2	068	Digital LVDT-2	Net.1/Unit.4		8	backward	mm	1.000000	
	9 : U	inked	Digital LVDT	Net.1/Unit.5	1	9	backward	mm	1.000000	
	10:	9104	Digital LVDT	Net.1/Unit.6		10	backward	mm	1.000000	
	11:	linked	Analog Input	Net.1/Unit.7	1	11		Ohm		
	12:	linked	Dr. HallVDT	Net.1/Unit.8		12	backward	mm	1.000000	
			Sensor	not connect	ed					
	Un	der-ran	ge							



I/O values are shown near to the I/O port indexes:



Online DataBase parameter changes are reflected in the gray cells of the "Sensors" or "I/O Ports" tables. Offline parameters (white and blue cells) cannot be modified while online.

	Besides readings, the "Channel" or "I/O port" can show the following messages:
--	--

Unlinked	Transducer not connected
OVR +	Measurement over-range
OVR -	Measurement under-range
HW Error	Hardware error
Not Calibrated	Calibration not performed (for Encoders)
Calibrating	Calibration cycle is pending (for Encoders)
	Could not communicate or measurement not yet available

#### 6.8.1 Encoder Calibration

When an operative On-Line session is running, it is possible to perform a calibration/uncalibration of Encoder modules.

	HW Configuration	sor(s) 🚺 I/C	) Port(:	5)									
	Channel	Туре	Unit	Enable	Sensor	Directior	ı Unit	Arm Ratio	RTD RO	ABC	K Con <del>v</del>	Offset	Measure M
	1 : 4.3724	Digital LVDT	Net.1,	/Unit.1 🖌	1	backward	mm	1.000000					relative
	2 : 0.05 (Not Calibrated)	Encoder	Net.1		2	backward	deg	1.000000				0.000000	
	3 : 2.9452	Digital LVDT-2	Net.1	Fill Column Apply to all :	Diaital Ly	/dt ▶	mm	1.000000					relative
	4 : Unlinked	Digital LVDT-2	Net.1	Apply to all	-		mm	1.000000					relative
	5 : 1.5268	Digital LVDT-2	Net.1	Hide read-only columns		ns d	mm	1.000000					relative
	6 : 1.0704	Digital LVDT-2	Net.1	_	Reset Calibr.	ł	mm	1.000000					relative
	7:0.26431	Digital LVDT	Net.1			đ	mm	1.000000					absolute
	8 : 0.00468	Analog Input	Net.1				۷				1.000000	0.000000	
				Print Config Copy to Cli P									
<													>
	Stop Operative       P				Sa	<b>F</b> ve and Exi	t		 <u>⊆</u> heck			[] <u>A</u> bort and	d Exit

To perform a calibration (or reset the calibration status), just select the row corresponding to the Encoder module that must be calibrated/uncalibrated, press the right mouse button and select the command inside the popoup menu.

# **7 APPENDIX**

7.1 Keyboard use



ALT	Activates Menu: use pointers to navigate menu items
CTRL + F6 CRTL + pointers	Activates a Form (Net or Unit Form) inside the main window: only one Form can be active at the same time Moves the active Form inside the main window
ALT+ pointers	Moves unit cursor on the active Net Form
	ALT+ UPMoves unit cursor on a the first locationALT+ RIGHTMoves unit cursor on a the next locationALT+ LEFTMoves unit cursor on a the previous location
ALT+ CR ALT+ X	Open Unit Form on the current location           Toggles between enabled/disabled state on Net or Unit Form

ТАВ	Use TAB to select a control into a Form. Only enabled controls cane be selected
Save	Buttons use Button by selection or keyboard shortcut: by selection: select it by TAB and then Press CR by shortcut : ALT + <i>underlined character on it's caption</i> (ALT+S in the example)
Sensibility Adjust	Text box Write into
Range 5.000  [mm]	List box Use pointers (up/down) to select the list item or write into (if possible)
Retentive Data O ON OFF	Options box Use pointers to select option



#### 7.2 Drivers for WIN32 platforms



Interface RS232.

Interface Station supports the RS232 serial communication driver with host via COM Port . No additional driver is required .

Support :

Support Manual for DigiCrown Probing Line 232/USB : document D4340032GF.pdf http://www.marposs.com/ftp/library/D4340032GF.pdf



# 7.2.2 Interface ( 2 ports ) Board ISA .

Interface Station supports the serial communication driver with host via COM Port . Interface Station supplies all units on RS485 bus with 7.5V.

System BIOS must be adjusted in order to properly install COM Ports: assigned COM Port can be selected as required.

No additional driver is required .

Support : Support Manual for DigiCrown Probing Line ISA : document D4340034GF.pdf http://www.marposs.com/ftp/library/D4340034GF.pdf





## 7.2.3 Interface ( 2 ports ) Board PCI .

Interface Station supports the serial communication driver with host via COM Port .

Interface Station supplies all units on RS485 bus with 7.5V.

Driver Package is self-installed : please, install PCI board only if Driver Package was just properly self-installed.

Driver Package includes **OXSER.INF** file .

Following proprietary drivers are used :

• OXSER.SYS version 4.09

Assigned COM Port can be changed if required .

1.  $\xrightarrow{\text{System}} \rightarrow \text{"Settings"} \rightarrow \text{"ControlPanel"} \rightarrow \text{"System"} \rightarrow \text{"Hardware"} \rightarrow \text{"Device Manager"}$ 

- 2. Select proper COM Port
- 3. Select "Property" option with right mouse click
- 4. Select "Settings" folder
- 5. Press "Advanced" button
- 6. Chose the required new COM Port between available ones

vanced Settings	for COM7		?
COM Port Number:	СОМ7 💌	ОК	
	COM1 (in use) COM2 COM3 (in use) COM4 (in use)	Cancel	16C952 (E)
	COM5 COM6		
Hardware config	COM7		
• RS232	COM8 (in use)		
© RS422/485	COM10	<sup>e</sup> Normal	*
	Data bits Parity	/ None	-
	Stop bits	· 1	<u> </u>
	Flow control	None	•
	Advanced.	Resto	re Defaults

Support :

Support Manual for DigiCrown Probing Line PCI : document D4340035GF.pdf http://www.marposs.com/ftp/library/D4340035GF.pdf



Interface Station supports the serial communication driver with host via Virtual COM Port .



The connection of a FullSpeed USB Interface device reserves a COM port permanently in the system . Driver Package is self-installed : please, connect USB device only if Driver Package was just properly self-installed .

Following proprietary drivers are used :

- SLABBUS.SYS version 4.40
- SLABSER.SYS version 4.40

Driver Package can be checked or uninstalled in Control Panel -> Application Installation as "MARPOSS USB/COM Interface".

If Driver Package is uninstalled, all COM Ports that were reserved because some previous Interface connections will be released and return free for the system.

Assigned COM Port can be changed if required .

1.  $\underbrace{\texttt{Start}}_{\texttt{Start}} \rightarrow \texttt{``Settings''} \rightarrow \texttt{``ControlPanel''} \rightarrow \texttt{``System''} \rightarrow \texttt{``Hardware''} \rightarrow \texttt{``Device Manager''}$ 

2. Select proper COM Port Arross DigiCrown Probing Line USB/COM Interface (COM15)

- 3. Select "Property" option with right mouse click
- 4. Select "Settings" folder
- 5. Press "Advanced" button
- 6. Chose the required new COM Port between available ones

COM Port Number:	COM26	-
	COM15	~
	COM16	
	COM17	-
	COM18	
	COM19	
	COM20	
	COM21	
	COM22	
	COM23	
	COM24	$\mathbf{\mathbf{v}}$

Support : Support Manual for DigiCrown Probing Line 232/USB : document D4340032GF.pdf http://www.marposs.com/ftp/library/D4340032GF.pdf





# 7.2.5 Interface HighSpeed / FullSpeed USB [ 480Mbps / 12Mbps ].

Interface Station supports the serial communication driver with host via Virtual COM Port .

The connection of a HighSpeed/FullSpeed USB Interface device reserves a COM port permanently in the system .

Driver Package is self-installed : please, connect USB device only if Driver Package was just properly self-installed.

Standard Windows drivers are used :

- SERENUM.SYS
- USBSER.SYS
- USBEHCI.SYS version  $\geq 5.1.2600.2783$  for optimal working  $\binom{1}{2}$
- USBPORT.SYS version  $\geq 5.1.2600.2783$  for optimal working (<sup>1</sup>)

Driver Package can be checked or uninstalled in Control Panel -> Application Installation as

"MARPOSS S.p.A. USB DigiCrown Probing Line port (09/23/2008 1.00.0)".

If Driver Package is uninstalled, all COM Ports that were reserved because some previous Interface connections will be released and return free for the system.

(<sup>1</sup>) <u>Information Note</u>.

Is know a problem when connecting a device to a USB 2.0 hub in Microsoft Windows XP, only if system file USBEHCI.SYS and USBEHCI.SYS have version minor than 5.1.2600.2783.

Symptoms :

USB device may stop working.

Cause :

*High traffic on USB 2.0 hub when low-speed or full-speed USB device are in use or connected/disconnected . Related file information :* 

- USBEHCI.SYS version < 5.1.2600.2783
- USBPORT.SYS version < 5.1.2600.2783

Support :

http://support.microsoft.com/kb/908673-en-us

Assigned COM Port can be changed if required .

1.  $\underbrace{\texttt{Start}}_{\texttt{Start}} \rightarrow \texttt{``Settings''}_{\texttt{Start}} \rightarrow \texttt{``ControlPanel''}_{\texttt{System''}} \rightarrow \texttt{``Hardware''}_{\texttt{System''}} \rightarrow \texttt{``Device Manager''}$ 

2. Select proper COM Port Marposs DigiCrown Probing Line USB Device (COM25)

- 3. Select "Property" option with right mouse click
- 4. Select "Settings" folder
- 5. Press "Advanced" button
- 6. Chose the required new COM Port between available ones

COM Port Number:	СОМ26 💌	
	COM24	
	COM25 (in use) 💳	
	СОМ26 —	
	COM27	
	COM28	
	COM29	
	COM30	
	COM31	
	СОМ32	
	СОМЗЗ 🛛 💌	

Support : Support Manual for DigiCrown Probing Line 232/USB : document D4340032GF.pdf http://www.marposs.com/ftp/library/D4340032GF.pdf





#### For a full list of address locations, please consult the Marposs official website: www.marposs.com

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