



# User Guide DAT11188PN

## **PROFINET IO SLAVE – 8 DIGITAL INPUTS AND 8 PNP OUTPUTS**

**GENERAL INFORMATION** 

Vendor Name: Datexel S.r.l. Vendor ID: 0x078B Device Name: DAT11188PN Device ID: 0x000B Product family: Datexel DAT11000 series Main Family: I/O

**Protocol implemented:** PROFINET IO **PN\_IO version:** v 2.44 **Requires Engineering Tool which supports at least GSDML version**: v 2.25

Supported RT Classes: RT CLASS 1 Conformance Class: B Netload Class : III

Address assignment: Profinet DCP

**I&M records supported**: 1,2,3,5

Additional protocols supported: SNMP, LLDP, MRP (as Client) Web Server supported: yes on Port 80 with HTTP protocol

Ethernet ports number: 2 Mautype: 16 (100BaseTXFD)

Number of slots: 3 Slot IDs: 0 (DAP),1 (Input Objects), 2 (Output Objects)

Cyclic data: Number of Input bytes: 32 Number of Output bytes: 4

Parameters Number of bytes: 6

Factory default state Station Name: "" (empty string – not name assigned) IP Address: 0.0.0.0 Subnet Mask: 0.0.0.0 Gateway Mask: 0.0.0.0

## **INPUT / OUTPUT DATA OBJECT STRUCTURE**

The Input / Output objects are represented in Unsigned Integer 16 bit format.

For Unsigned Integer 16 bit format, the values are composed of 2 bytes ordered as represented in the Structure 1 below.

The range of value is between 0 and 65535. If the value of a data is used to represent a number for which it is foreseen the sign (i.e. analogue input measure) it is necessary subtract 65536 from

the read value to obtain the true signed value. Refer to the description of the single object to know the number of decimal digits. Structure 1: Unsigned Integer 16 bit structure :

| Bit   | 15  | 14          | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4     | 3     | 2 | 1 | 0   |
|-------|-----|-------------|----|----|----|----|---|---|---|---|---|-------|-------|---|---|-----|
| Descr | MSB | -           | -  | -  | -  | -  | - | - | - | - | - | -     | -     | - | - | LSB |
| Byte  |     | HB (1 byte) |    |    |    |    |   |   |   |   |   | LB (1 | byte) |   |   |     |

 $\begin{array}{l} \mbox{Meaning:} \\ \mbox{MSB} \rightarrow \mbox{Most Significant Bit} \\ \mbox{LSB} \rightarrow \mbox{Least Significant Bit} \\ \mbox{HB} \rightarrow \mbox{High Byte} \\ \mbox{LB} \rightarrow \mbox{Low Byte} \end{array}$ 

## **DEVICE LEDs FUNCTION**

Front LEDs layout



## List of LEDs

| LED name | LED state        | Condition                  | Description   |
|----------|------------------|----------------------------|---|
|          | Off              | Device not powered         | - No Power supply voltage applied to the device                                     |
| PWR      | Green            | Device powered             | - Power supply voltage applied to the device  |
|          | Green, blinking  | Device in Watchdog         | - Refer to Watchdog chapter   |
| 979      | Off              | Outputs correctly working  | - Correct working   |
|          | Yellow, blinking | Short circuit alarm active | - Short circuit on output detected  |
|          | Off              | Offline                    | - With PWR Off : device not power<br>- With PWR Green: no connection with IOC       |
|          | Green            | Online (RUN)               | - Connection with IOC established<br>- IO Controller in RUN state                   |
|          | Green, 1 flash   | Online (STOP)              | - Connection with IOC established<br>- IOC in STOP or IO data bad                   |
| NS       | Green, blinking  | Blink                      | Used by engineering tool to identify the node on the network                        |
|          | Red              | Fatal event                | Major internal error (combined with MS led red)                                     |
|          | Red, 1 flash     | Station Name error         | Station Name not set  |
|          | Red, 2 flashes   | IP address error           | IP address not set  |
|          | Red, 3 flashes   | Configuration error        | - IP address conflict<br>- Expected Identification differs from Real Identification |
|          | Off              | Not Initialized            | - With PWR Off : device not power<br>- With PWR Green : module is initializing      |
|          | Green            | Normal operation           | Correct working   |
| MS       | Green, 1 flash   | Diagnostic Event           | Diagnostic event present  |
|          | Red              | Fatal event                | Major internal error (combined with NS led red)                                     |
|          |                  | Exception error            | Device in exception   |
| 10       | Off              | Digital Input 0 OFF        | State of Digital Input 0  |
|          | Red              | Digital Input 0 ON         |   |
| 11       | Off              | Digital Input 1 OFF        | State of Digital Input 1  |
|          | Red              | Digital Input 1 ON         |   |
| 12       | Off              | Digital Input 2 OFF        | State of Digital Input 2  |
|          | Red              | Digital Input 2 ON         |   |
| 13       | Off              | Digital Input 3 OFF        | State of Digital Input 3  |
| -        | Red              | Digital Input 3 ON         |   |
| 14       | Off              | Digital Input 4 OFF        | State of Digital Input 4  |
|          | Red              | Digital Input 4 ON         |   |
| 15       | Off              | Digital Input 5 OFF        | State of Digital Input 5  |
|          | Red              | Digital Input 5 ON         |   |
| 16       | Off              | Digital Input 6 OFF        | State of Digital Input 6  |
|          | Red              | Digital Input 6 ON         |   |
| 17       | Off              | Digital Input 7 OFF        | State of Digital Input 7  |
|          | Red              | Digital Input 7 ON         |   |

| LED name | LED state | Condition            | Description               |
|----------|-----------|----------------------|---------------------------|
| 00       | Off       | Digital Output 0 OFF | State of Digital Output 0 |
| 00       | Red       | Digital Output 0 ON  |                           |
| 01       | Off       | Digital Output 1 OFF | State of Divided Output 1 |
| 01       | Red       | Digital Output 1 ON  |                           |
| 03       | Off       | Digital Output 2 OFF | State of Divided Output 2 |
| 02       | Red       | Digital Output 2 ON  |                           |
| 03       | Off       | Digital Output 3 OFF | Otata of Divital Output 2 |
| 03       | Red       | Digital Output 3 ON  |                           |
| 04       | Off       | Digital Output 4 OFF | State of Divided Output 4 |
| 04       | Red       | Digital Output 4 ON  |                           |
| 05       | Off       | Digital Output 5 OFF | State of Dividal Output 5 |
| 05       | Red       | Digital Output 5 ON  |                           |
| 00       | Off       | Digital Output 6 OFF |                           |
| 06       | Red       | Digital Output 6 ON  | State of Digital Output 6 |
| 07       | Off       | Digital Output 7 OFF | State of Divided Output 7 |
| 07       | Red       | Digital Output 7 ON  |                           |

## DEVICE LEDs FUNCTION



## List of LEDs

| LED name | LED state        | Condition                      | Description  |
|----------|------------------|--------------------------------|--|
| LED1     | Off              | Default                        | Not used; always in default state  |
|          | Off              | Link not sensed<br>on Port 1   | - Ethernet not connected<br>- Ethernet MAU Type different from 100 Mbps<br>Full duplex |
| LED2     | Green , blinking | Link / Act sensed<br>on Port 1 | Correct working  |
| LED3     | Off              | Default                        | Not used; always in default state  |
| LED4     | Off              | Link not sensed<br>on Port 2   | - Ethernet not connected<br>- Ethernet MAU Type different from 100 Mbps<br>Full duplex |
|          | Green / Blinking | Link / Act sensed<br>on Port 2 | Correct working  |

#### NETWORK PARAMETERS ASSIGNMENT

The network parameters such as the Station Name, the IP Address, the Subnet Mask and the Gateway Mask are set using the Discovery and Basic Configuration Protocol (DCP), that is the protocol for PROFINET used for name and address resolution.

The data can be saved Temporally or Permanently.

If the data are saved Temporally they will be lost when the device is powered off. If the data are saved Permanently they will be kept when the device is powered off.

All of the data are set to factory default if a command of Reset takes place. For the description see the next chapter.

#### **RESET TYPES SUPPORTED**

A factory reset command from the network is done using the Discovery and Basic Configuration Protocol (DCP). The device supports the reset modes 2 and 8 described below. Behavior of the device:

#### Reset To Factory mode 2

IP Address = "0.0.0.0" Subnet Mask = "0.0.0.0" Gateway Address = "0.0.0.0" DNS1 = "0.0.0.0" DNS2 = "0.0.0.0" Host name = NULL Domain name = NULL Station Name = "" - SNMP MIB-II variables: • sysName = empty string • sysContact = empty string • sysLocation = empty string

- All PDev parameters set to default values.

#### Reset To Factory mode 8 and (legacy) FactoryReset

IP Address = "0.0.0.0" Subnet Mask = "0.0.0.0" Gateway Address = "0.0.0.0" DNS1 = "0.0.0.0" DNS2 = "0.0.0.0" Host name = NULL Domain name = NULL Station Name = "" - SNMP MIB-II variables: • sysName = empty string

- sysContact = empty string
- sysLocation = empty string
- All PDev parameters set to default values.
- I&M1-3 set to default values.

## PARAMETERS MAPPING

| Byte<br>Position | Description  | Register Type/Format | Access |
|------------------|--|----------------------|--------|
| 0 - 1            | Bit 0 to 7 - Powerup value /<br>Bit 8 to 15 Safe value | 16-bit, Unsigned     | WO     |
| 2 - 3            | Debouncing Time as ms                                  | 16-bit, Unsigned     | WO     |
| 4 - 5            | Watchdog Time as sec                                   | 16-bit, Unsigned     | WO     |

## CYCLIC INPUT DATA MAPPING

| Byte<br>Position | Description                | Register Type/Format | Access |
|------------------|----------------------------|----------------------|--------|
| 0 - 1            | System Flags               | 16-bit, Unsigned     | RO     |
| 2 - 3            | Digital Outputs readback   | 16-bit, Unsigned     | RO     |
| 4 - 5            | Digital Inputs             | 16-bit, Unsigned     | RO     |
| 6 - 7            | Digital Input Rise Latch   | 16-bit, Unsigned     | RO     |
| 8 - 9            | Digital Input Fall Latch   | 16-bit, Unsigned     | RO     |
| 10 - 11          | Low part 32 bit Counter 0  | 16-bit, Unsigned     | RO     |
| 12 - 13          | High part 32 bit Counter 0 | 16-bit, Unsigned     | RO     |
| 14 - 15          | Low part 32 bit Counter 1  | 16-bit, Unsigned     | RO     |
| 16 - 17          | High part 32 bit Counter 1 | 16-bit, Unsigned     | RO     |
| 18 - 19          | Low part 32 bit Counter 2  | 16-bit, Unsigned     | RO     |
| 20 - 21          | High part 32 bit Counter 2 | 16-bit, Unsigned     | RO     |
| 22 - 23          | Low part 32 bit Counter 3  | 16-bit, Unsigned     | RO     |
| 24 - 25          | High part 32 bit Counter 3 | 16-bit, Unsigned     | RO     |
| 26 - 27          | Power up / Safe readback   | 16-bit, Unsigned     | RO     |
| 28 - 29          | Debouncing Time readback   | 16-bit, Unsigned     | RO     |
| 30 - 31          | Watchdog Timeout readback  | 16-bit, Unsigned     | RO     |

## CYCLIC OUTPUT DATA MAPPING

| Byte<br>Position | Description        | Register Type/Format | Access |
|------------------|--------------------|----------------------|--------|
| 0 - 1            | Digital Outputs    | 16-bit, Unsigned     | WO     |
| 2 - 3            | Reset/Enable flags | 16-bit, Unsigned     | WO     |

### PARAMETERS

#### Definitions:

IOC = Controller IO;

AR = Application Relation: connection established between one or more IOC and the slave devices during the startup of a communication process.

It is possible to set the following parameters each time the IOC establishes an AR. Each parameter can be read back in the cyclic input data in order to check, if desired, the value of the parameters.

Parameter's bytes 0(L)/1(H) "Bit 0 to 7 - Powerup value / Bit 8 to 15 Safe value" - Values allowed from 0 up to 65535

Parameter's bytes 2(L)/3(H) : "Debouncing Time as ms" – Values allowed from 1 up to 255

Parameter's bytes 4(L)/5(H) : "Watchdog Time as sec" – Values allowed from 0 up to 255

#### PARAMETERS: POWER-UP / SAFE / WATCHDOG

The Power-Up (Bit 0÷7) condition sets the outputs of the device to a predefined value each time the device is powered-up.

The Safe (Bit 0÷15) condition sets the outputs of the device to a predefined value if the IOC has established an AR with the device performing a cyclic communication and the link state of the Ethernet is not sensed <u>on both</u> the ports for the time specified in the Parameter "Watchdog Time as sec" or if the IOC release the AR ,goes in debug and the link state of the Ethernet is not sensed <u>on both</u> the ports for the time specified in the Parameter "Watchdog Time as sec".

The value of the Power-up and Safe can be read cyclically in bytes 26/27 "Power up / Safe read back" of the Input Cyclic Data.

The value of the Power-up and Safe can be set in the Parameter "Bit 0 to 7 - Powerup value / Bit 8 to 15 Safe value". See table below for the association of bits to the digital outputs.

The Watchdog timer is disabled and doesn't work if the Parameter "Watchdog Time as sec" is set to 0 (default)

The Watchdog timer works if the Parameter "Watchdog Time as sec" is different from 0. The parameter is written each time the IOC establishes an AR with the device and it is expressed as seconds. The Watchdog bit will be set to 1 (see the description of "System Flags").

The value of the Watchdog time can be read cyclically in bytes 30/31 "Watchdog Timeout Read Back" of the Input Cyclic Data.

| Bit   | 15       | 14       | 13       | 12       | 11       | 10       | 9        | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Out # | Out<br>7 | Out<br>6 | Out<br>5 | Out<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 | Out<br>7 | Out<br>6 | Out<br>5 | Out<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 |
| Descr |          | Safe     |          |          |          |          |          |          |          |          |          | Powe     | er-Up    |          |          |          |

#### PARAMETERS: DEBOUNCING TIME (MINIMUM DURATION PULSE)

The *Minimum Acceptable Pulse Duration* is set in this parameter so that the change of state or the counting of the counters is detected.

This function is applied to all of the digital inputs.

By setting this parameter, all pulses or spikes with a duration shorter than this value are *"filtered"/ ignored*. This allows, for example, to filter the spikes during the opening or closing of a mechanical contact (flow meters, litre counters, etc.) and therefore to get a *"clean"* counting in the pulse counter.

The value is expressed as milliseconds (ms).

The values must be between 1 and 254 ms.

The value 255 forces the minimum pulse duration to 50 ms.

The value of the Debouncing time can be read cyclically in bytes 28/29 "Debouncing Time readback" of the Input Cyclic Data.

EXAMPLE:

If the value written is 10, all pulses with duration shorter than 10 ms are filtered / ignored.

#### **CYCLIC INPUT DATA MAPPING**

#### SLOT ASSIGNMENT: USED IN SLOT 1 , FIXED IN SUB-SLOT 1

#### BYTES 0 – 1: SYSTEM FLAGS

This object allows to retrieve the system events of the device. The following parameters are implemented.

**Supervising Bits (bits 0,1,2)**: the combination of the values given by these 3 bits indicates the status of the device. Bit 0 = 0;Bit 1 = 1; Bit 2 = 0; status "WAIT PROCESS": the device is waiting for being supervised by an IOC Bit 0 = 1;Bit 1 = 1; Bit 2 = 0; status "IDLE" :the device has been supervised by an IOC but now the IOC is in STOP Bit 0 = 0;Bit 1 = 0; Bit 2 = 1; status "PROCESS ACTIVE" :the device is supervised by an IOC Bit 0 = 1;Bit 1 = 0; Bit 2 = 1; status "ERROR" :the device has detected an error condition Bit 0 = 1;Bit 1 = 1; Bit 2 = 1; status "EXCEPTION" :the device is in exception state

**Watchdog Event Enable (bit 8)**: this bit shows if the Watchdog event is disabled (0) or enabled (1). If enabled and the IOC has established an AR with the device performing a cyclic communication and the link state of the Ethernet is not sensed <u>on both</u> the ports for the time specified in the Parameter "Watchdog Time as sec" or if the IOC has realeased an AR and is in debug state and the link state of the Ethernet is not sensed <u>on both</u> the ports for the time specified in the Parameter "Watchdog Time as sec" or if the IOC has realeased an AR and is in debug state and the link state of the Ethernet is not sensed <u>on both</u> the ports for the time specified in the Parameter "Watchdog Time as sec", the PWR led flashes and the status of the outputs is automatically set as defined in the high byte of the "Bit 0 to 7 - Powerup value / Bit 8 to 15 Safe value" parameter. The "Watchdog Event Enable" bit resides in Eeprom therefore, in case of power failure, it maintains its status.

Watchdog Event (bit 9): if this bit is set to 1 indicates that the Watchdog condition has occurred (0 = Normal condition; 1 = alarm condition)

When the Watchdog event has occurred, this bit can be reset setting to 1 the bit 9 of the object "Reset/Enable Flags" of the Cyclic Output Data

**Power-Up Event (bit 10)**: this bit is forced to 1 at each power on and indicates that the device has been switched off. With the setting of this bit to 0 and checking its state, it is possible to monitor if an unexpected power-off of the device has occurred (0 = power-off not occurred; 1 = power-off occurred).

This bit can be reset setting to 1 the bit 10 of the object "Reset/Enable Flags" of the Cyclic Output Data .

**Short circuit Event (bit 12)**: the device is equipped with a sensor to detected short-circuits (protection against the over-currents) on digital outputs. In case of short-circuit on output, this bit is forced to 1. If this alarm is active the device must be reset and the connections checked (0 = over-currents protection not activated ; 1 = over-currents protection activated).

This bit can be reset setting to 1 the bit 12 of the object "Reset/Enable Flags" of the Cyclic Output Data .

| Bit   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7                            | 6  | 5                                | 4           | 3                | 2 | 1 | 0 |
|-------|----|----|----|----|----|----|---|---|------------------------------|--|----------------------------------|-------------|------------------|---|---|---|
| Descr |    |    |    |    |    |    |   |   | Wato<br>Wato<br>Powe<br>Shor | chdog Eve<br>chdog Eve<br>er-up Eve<br>t circuit E | ent Enable<br>ent<br>ent<br>vent | e Su<br>Bit | ipervising<br>ts |   |   |   |

#### BYTES 2 – 3: DIGITAL OUTPUTS READ BACK

This object allows to monitor the state of the output relays driven in the object "Digital Outputs" of the Cyclic Output Data (0 = OFF ; 1 = ON).

| Bit   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
|-------|----|----|----|----|----|----|---|---|----------|----------|----------|----------|----------|----------|----------|----------|
| Out # | -  | -  | -  | -  | -  | -  | - | - | Out<br>7 | Out<br>6 | Out<br>5 | Out<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 |

#### BYTES 4 – 5: DIGITAL INPUTS

This object shows the condition of the digital inputs (0 = OFF; 1 = ON).

| Bit  | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7    | 6    | 5    | 4    | 3    | 2    | 1    | 0    |
|------|----|----|----|----|----|----|---|---|------|------|------|------|------|------|------|------|
| In # | -  | -  | -  | -  | -  | -  | - | - | In 7 | In 6 | In 5 | In 4 | In 3 | In 2 | In 1 | In 0 |

#### BYTES 6 - 7: DIGITAL INPUTS RISE LATCH

The bits of this object are used to indicate that an event of change of logic state of digital input from 0 to 1 (rise latch) has occurred. The latch event shows for each digital input the single change of state and is not updated by the system. It is possible to reset the whole object setting to 1 the bit 4 of "Reset/Enable Flags" of the Cyclic Output Data.

| Bit   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7    | 6    | 5    | 4    | 3    | 2    | 1    | 0    |
|-------|----|----|----|----|----|----|---|---|------|------|------|------|------|------|------|------|
| Latch | -  | -  | -  | -  | -  | -  | - | - | In 7 | In 6 | In 5 | In 4 | In 3 | In 2 | In 1 | In 0 |

#### BYTES 8 - 9: DIGITAL INPUTS FALL LATCH

The bits of this object are used to indicate that an event of change of logic state of digital input from 1 to 0 (fall latch) has occurred. The latch event shows for each digital input the single change of state and is not updated by the system. It is possible to reset the whole object setting to 1 the bit 5 of "Reset/Enable Flags" of the Cyclic Output Data.

| Bit   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7    | 6    | 5    | 4    | 3    | 2    | 1    | 0    |
|-------|----|----|----|----|----|----|---|---|------|------|------|------|------|------|------|------|
| Latch | -  | -  | -  | -  | -  | -  | - | - | In 7 | In 6 | In 5 | In 4 | In 3 | In 2 | In 1 | In 0 |

#### BYTES 10 - 11 (LOW) / BYTES 12 - 13: 32 BIT COUNTER DIGITAL INPUT 0

These four bytes contains the measure of the digital counter related to the input channel 0. The value is incremented at each change of state from 0 to 1 of the input channel 0. The type of data created is an *Unsigned Long 32 bit*. It is possible to reset the value of the counter setting to 1 the bit 0 of the object "Reset/Enable Flags" of the Cyclic Output Data.

<u>Note:</u> The counter is <u>not</u> retentive. When the device is switched off, the value contained in these bytes is lost.

#### BYTES 14 – 15 (LOW) / BYTES 16 – 17: 32 BIT COUNTER DIGITAL INPUT 1

These four bytes contains the measure of the digital counter related to the input channel 1. The value is incremented at each change of state from 0 to 1 of the input channel 1. The type of data created is an *Unsigned Long 32 bit*. It is possible to reset the value of the counter setting to 1 the bit 1 of the object "Reset/Enable Flags" of the Cyclic Output Data.

Note: The counter is not retentive. When the device is switched off, the value contained in these bytes is lost.

## BYTES 18 - 19 (LOW) / BYTES 20 - 21: 32 BIT COUNTER DIGITAL INPUT 2

These four bytes contains the measure of the digital counter related to the input channel 2. The value is incremented at each change of state from 0 to 1 of the input channel 2. The type of data created is an *Unsigned Long 32 bit*. It is possible to reset the value of the counter setting to 1 the bit 2 of the object "Reset/Enable Flags" of the Cyclic Output Data. **Note:** The counter is **not** retentive. When the device is switched off, the value contained in these bytes is lost.

#### BYTES 22 - 23 (LOW) / BYTES 24 - 25: 32 BIT COUNTER DIGITAL INPUT 3

These four bytes contains the measure of the digital counter related to the input channel 3. The value is incremented at each change of state from 0 to 1 of the input channel 3. The type of data created is an *Unsigned Long 32 bit*.

It is possible to reset the value of the counter setting to 1 the bit 3 of the object "Reset/Enable Flags" of the Cyclic Output Data. **Note:** The counter is **not** retentive. When the device is switched off, the value contained in these bytes is lost.

#### BYTES 26 - 27: POWER-UP / SAFE READ BACK

This object allows to read the value set in Parameter "Bit 0 to 7 - Power-Up value / Bit 8 to 15 Safe value" (0 = bit not enabled; 1 = bit enabled).

| Bit   | 15       | 14       | 13       | 12       | 11       | 10       | 9        | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Out # | Out<br>7 | Out<br>6 | Out<br>5 | Out<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 | Out<br>7 | Out<br>6 | Out<br>5 | Out<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 |
| Descr |          | Safe     |          |          |          |          |          |          |          |          | Powe     | er-Up    |          |          |          |          |

#### BYTES 28 – 29: DEBOUNCING TIME READ BACK

This object allows to read the value set in Parameter "Digital Input Debouncing Time as milliseconds"

#### BYTES 30 - 31: WATCHDOG TIMEOUT READ BACK

This object allows to read the value set in Parameter ""Watchdog Time as sec""

### **CYCLIC OUTPUT DATA MAPPING**

## SLOT ASSIGNMENT: USED IN SLOT 2 , FIXED IN SUB-SLOT 1

#### **BYTES 0 – 1: DIGITAL OUTPUTS**

This object allows to drive the state of the output relays (0 = OFF; 1 = ON).

The value of this object can be read cyclically in bytes 2/3 "Digital Outputs Read Back" of the Input Cyclic Data

| Bit   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7        | 6        | 5        | 4         | 3        | 2        | 1        | 0        |
|-------|----|----|----|----|----|----|---|---|----------|----------|----------|-----------|----------|----------|----------|----------|
| Out # | -  | -  | -  | -  | -  | -  | - | - | Out<br>7 | Out<br>6 | Out<br>5 | Out_<br>4 | Out<br>3 | Out<br>2 | Out<br>1 | Out<br>0 |

#### BYTES 2 - 3: RESET / ENABLE FLAGS

The set to 1 of the bits of this object allow to do the following system operations:

- Reset counter digital input 0 (Bit 0): the value of 32 bit Counter Digital Input 0 (Cyclic Input bytes 10 - 11 - 12 - 13) will be set to 0

- Reset counter digital input 1 (Bit 1): the value of 32 bit Counter Digital Input 1 (Cyclic Input bytes 14 - 15 - 16 - 17) will be set to 0

- Reset counter digital input 2 (Bit 2): the value of 32 bit Counter Digital Input 2 (Cyclic Input bytes 18 - 19 - 20 - 21) will be set to 0

- Reset counter digital input 3 (Bit 3): the value of 32 bit Counter Digital Input 3 (Cyclic Input bytes 22 - 23 - 24 - 25) will be set to 0 - Reset Rise Latch object (Bit 4): the value of Digital Input Rise Latch (Cyclic Input bytes 6 - 7) will be set to 0

- Reset Fall Latch object (Bit 5): the value of Digital Input Fall Latch (Cyclic Input bytes 8 - 9) will be set to 0

- Reset Watchdog event bit (Bit 9): the value of Watchdog Event in System Flags (bit 9 Cyclic Input bytes 0 - 1) will be set to 0

- Reset Power-Up bit (Bit 10): the value of Power-Up Event in System Flags (bit 9 Cyclic Input bytes 0 - 1) will be set to 0

- Reset Short circuit alarm bit (Bit 12): the value of Short circuit alarm Event in System Flags (bit 12 Cyclic Input bytes 0 - 1) will be

set to 0

| Bit   | 15                            | 14                                | 13                          | 12 | 11 | 10 | 9 | 8   | 7   | 6   | 5 | 4 | 3 | 2 | 1 | 0 |
|-------|-------------------------------|-----------------------------------|-----------------------------|----|----|----|---|---|---|---|---|---|---|---|---|---|
| Descr | Reset S<br>Reset P<br>Reset W | hort circu<br>ower-Up<br>/atchdog | uit bit<br>bit<br>event bit |    |    |    |   | Reset Fa<br>Reset Ris<br>Reset co<br>Reset co<br>Reset co<br>Reset co | II Latch ol<br>se Latch c<br>unter digit<br>unter digit<br>unter digit<br>unter digit | bject<br>bbject<br>tal input 3<br>tal input 2<br>tal input 1<br>tal input 0 |   |   |   |   |   |   |

#### **IMPORTING THE DEVICE IN TIA PORTAL**

The following example has the purpose to show how to insert the GSDML file of the device in SIEMENS TIA PORTAL. It has been done using SIEMENS TIA PORTAL V17 and a PLC S7-1200; the example includes the creation of a new project using ladder. Run TIA PORTAL and wait for the application to be executed.

Step 1: create a new project. Click Start (A)  $\rightarrow$  Create New Project (A1)  $\rightarrow$  Set the name and path of the project (A2)  $\rightarrow$  Click Create (A3)



#### Wait for the creation of the project. Click "Configure a device" (A4)

| roject: "TEST | r_DAT11188PN" was ( | opened suc      | ccessfully. Please select the next st | ep: |
|---------------|---------------------|-----------------|---------------------------------------|-----|
|               |                     |                 |                                       |     |
|               |                     |                 |                                       |     |
| →             |                     | \$ <sup>9</sup> | Configure a device                    |     |
| →             |                     | ٢               | Write PLC program                     | A4  |
| H             |                     | -               | Configure<br>technology objects       |     |
| H             |                     | Ń               | Configure an HMI screen               |     |
|               |                     |                 |                                       | 1   |
|               |                     |                 |                                       |     |

#### Step 2: Add the PLC.

Be sure that the PLC has been powered on and connected to the network. Click Add new device (A5)  $\rightarrow$  Click Controllers (A6)  $\rightarrow$ Select the Controller from the menus (A7)







Follow the wizard to define the security settings editing them as required from the project. When the procedure is completed click "Finish" (A9)



The PLC is added to the project.

#### Step 3: Set PLC Network.

In the project tree click the branch of PLC (B) and after double click on "Device configuration" (B1) Double click on PLC in the Device view of the project (B2).



The properties section appears below the project window.

Click the frame "General" (B3)

Click the branch "PROFINET Interface [X1]" (B4)

Click the branch "Ethernet addresses" (B5)

Scroll the scroll bar on the right down until you reach the section "Internet protocol version 4 (IPv4)" (B6)

Set the value of the IP address (B7) and press Enter. In this example the IP address of PLC is set to 192.168.1.88

| General IO tags Syste      | m constants Texts                                 |
|----------------------------|---|
| General B3                 | Add new subnet                                    |
| ▼ PROFINET interface [X1]  |   |
| General                    | Internet protocol version 4 (IPv4)                |
| Ethernet addresses 🚤 📕 🛱   |   |
| Time synchronization       | <ul> <li>Set IP address in the project</li> </ul> |
| Operating mode             | IP address: 192 168 1 33                          |
| Advanced options           | B7  |
| Web server access          | Subnet mask: 255 . 255 . 0                        |
| ► DI 14/DQ 10              | Use router  |
| ▶ AI 2                     | Router address: 0 , 0 , 0 , 0                     |
| High speed counters (HSC)  | IP address is set directly at the device          |
| Pulse generators (PTO/PWM) |   |
| Startup V                  | PROFINET  |

#### Step 4: Import the GSD file of the device in the project

Download the GSDML file of the device from the website www.datexel.it to a folder in your PC. On the menu bar click "Options"  $\rightarrow$  "Manage general station description file (GSD)" (C)



The window that allow to import the GSDML file will be opened (next page)

## Click the button "..." (C1)

Select the path where the GSDML file has been downloaded

| Manage genera | al station descripti | on files<br>e project |                  |                | ×      |      |
|---------------|----------------------|-----------------------|------------------|----------------|--------|------|
| Source path:  | C:\Program Files\Si  | emens\Autom           | ation\Portal V17 | Bin            |        | - C1 |
| Content of in | ported path          |                       |                  |                |        |      |
| File          |                      | Version               | Language         | Status         | Info   |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
|               |                      |                       |                  |                |        |      |
| <             |                      |                       |                  |                | >      |      |
|               |                      |                       |                  | Delete Install | Cancel |      |

In the folder selected there may be more than one GSDML file; in this case all of the files corresponding to GSDML extension in the folder will be listed. Select the file about the device from the list (C2) Click "Install" (C3)

| Aanage general statio | n description 1   | files          |            |                   | ×       |
|-----------------------|-------------------|----------------|------------|-------------------|---------|
| Installed GSDs        | GSDs in the pr    | oject          |            |                   |         |
| Source path: C:\Use   | rs\lab\Desktop\Pr | ofinet\Upgrade | GSDML_2.44 | DAT11188PN        |         |
| Content of imported   | path              |                |            |                   |         |
| File                  |                   | Version        | Language   | Status            | Info    |
| GSDML-V2.44-Datexe    | ISrl-DAT11188     | V2.44          | English    | Not yet installed | DAT1118 |
|                       |                   |                |            |                   | C2      |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
| 1                     |                   |                |            |                   |         |
|                       |                   |                |            |                   |         |
|                       |                   |                |            | Delete            | Cancal  |
|                       |                   |                |            | Delete            | Cancel  |

The system will take some time to complete the installation of the GSDML file and add it to the "Hardware catalog".

<u>Step 5: Add the device to the project</u> In the Project tree double click on the branch "Devices and networks" (D).

| Project tree  |     |
|---|-----|
| Devices Plant objects   |     |
| 1 Bin |     |
|   |     |
| TEST_DAT11188PN   |     |
| 🌁 Add new device  |     |
| 🛱 Devices & networks 🔫  | ┞╴┏ |
| ▼ 1 [CPU 1214C DC/DC/DC]  | - T |
| III Device configuration  |     |
| 😨 Online & diagnostics  |     |
| 🕨 🔙 Program blocks  |     |
| 🕨 🙀 Technology objects  |     |
| External source files   |     |
| PLC tags  |     |

On the right of the software window some side menus will appear.

| Click on "Hardware<br>Click "Other field de<br>Click "PROFINET I<br>Click "I/O" (D4)<br>Click "Datexel S.r.I.<br>Click "Datexel DAT<br>Click "dat11188pn" | catalog" (D1)<br>evices" (D2)<br>O" (D3)<br>" (D5)<br>11000 series" (D6)<br>(D7) and drag and | dro      | op it to | the project. |
|---|---|----------|----------|--------------|
| Hardware catalog  | <b>a</b> 🗉 🕨  |          |          |              |
| Options   |   |          |          |              |
|   |   | -        |          |              |
| At Catalan  |   | Į.       | ⊢ D1     |              |
| ✓ Catalog   |   | are      |          |              |
| <pre>&lt;&gt;earcn&gt;</pre>  |   | 8        |          |              |
| Filter Profile: <all></all>   | ·   | 盲        |          |              |
| Controllers   |   | ē        |          |              |
| HM     RC systems   |   | _        |          |              |
| Drives & starters   |   | 6        |          |              |
| Network components  |   | 2        |          |              |
| Detecting & Monitoring  | 1   | ine      |          |              |
| Distributed I/O   |   | đ        |          |              |
| Power supply and distr  | ibution   | Se       |          |              |
| Field devices   |   |          |          |              |
| 👻 🛅 Other field devices 🔫   | - D2  | <b>.</b> |          |              |
| 🕨 🕨 🕅 Additional Ethernet   | devices   | 5        |          |              |
| PROFINET IO   | D3  | sks      |          |              |
| Drives  | -   |          |          |              |
| Encoders  |   |          |          |              |
| Gateway   |   | 5        |          |              |
| ▼ 10 < D4   |   | bra      |          |              |
| ▼ Datexel S.r.l.◄   | - D5  | ries     |          |              |
| ▼ Datexel DA  | 111000 series <b>— D6</b>   |          |          |              |
|   | supn  | _        |          |              |
|   |   | dd       |          |              |
| Sensors   |   | 5        |          |              |
| PROFIBUS DP   |   | S        |          |              |
| PROFIBUS PA   |   |          |          |              |
|   |   |          |          |              |

The device will be added to the project.

#### Step 6: Link the device to PLC and configure it.

In "Devices and networks" → "Network view" right click of the mouse on the device's symbol, label "Not assigned" (E). Click "Assign to new IO controller" (E1)





A window that let to select the controller will appear (next page)



Select the controller (E2).

Click OK (E3). The device will be linked to PLC and its network.





Double click on the device (E4), click the image of the device it appears (E4A).

The properties section appears below the project window. Click the frame "General" (E5)

Click the branch "PROFINET Interface [X1]" (E6)

Click the branch "Ethernet addresses" (E7)

Scroll the scroll bar on the right down until you reach the section "Internet protocol version 4 (IPv4)" (E8) Set the value of the IP address (E9) and press Enter. In this example the IP address of the device is set to 192.168.1.18 Doing this, the IP parameter will be assigned in the project.

| dat11188pn [dat11188pn]      | Roperties                                      |
|------------------------------|--|
| General IO tags Syste        | m constants Texts                              |
| General     E5               | Add new subnet                                 |
| ▼ PROFINET interface [X1]    |  |
| General                      | Internet protocol version 4 (IPv4)             |
| Ethernet addresses 🚤 📮       |  |
| Advanced options             | Set IP address in the project                  |
| Identification & Maintenance | IP address: 192 168 1 18                       |
| Module parameters            | 192 100 1 10 E9                                |
|                              | Subnet mask: 255 . 255 . 0                     |
|                              | Synchronize router settings with IO controller |
|                              |  |

To establish a connection in PROFINET it is mandatory to assign a specific Station Name to the device otherwise it will result in a communication error. Scroll the scroll bar on the right down until you reach the section "PROFINET" (E10).

| PROFINET <b>E10</b>   | E11   |
|-----------------------|---|
|                       | Generate PROFINET device name automatically |
| PROFINET device name: | dat11188pn < E12                            |
| Converted name:       | dat11188pn                                  |
| Device number:        | 1   |

If the flag "Generate PROFINET device name automatically" (E11) is checked, the default Station Name in GSDML file will be assigned. In PROFINET there can't be different devices with the same Stations name. If the flag is unchecked, it is possible to assign the name manually (E12). When PROFINET device name is modified the software will update automatically the field "Converted Name".

After the name has been set, it is necessary to assign the name to the device.

Look for the devices connected.

In the tool bar click the icon for Accessible devices (E13)



| Before to procee   | ed be sure that th        | e device has b         | een powered or          | and connec                  | ted to the net       | work.                       |             |
|--------------------|---------------------------|------------------------|-------------------------|-----------------------------|----------------------|-----------------------------|-------------|
| Select the interfa | ace (E14) and ne          | twork (E15)            |                         |                             |                      |                             |             |
| Click Start search | ch (E16)                  | ()                     |                         |                             |                      |                             |             |
|                    | ···· (=···)               |                        |                         |                             |                      |                             |             |
|                    | Accessible devices        |                        |                         |                             |                      |                             | ×           |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        | Type of the PG/PC inter | face: <mark>V</mark> _PN/IE |                      |                             | - E14       |
|                    |                           |                        | PG/PC inter             | face: Realtek I             | PCIe GBE Family Cont | roller 🔽 🗑                  | ଣ           |
|                    |                           |                        |                         | - Hebreit                   | cic ober only cont   |                             | E15         |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           | Accessible nodes of    | the selected interface: |                             |                      |                             |             |
|                    |                           | Accessible nodes of    | the selected intenace.  |                             |                      |                             |             |
|                    |                           | Device                 | Device type             | Interface type              | Address              | MAC address                 |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    | L 🛄                       |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    | Elash I ED                |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           | -                      |                         |                             |                      | Start coarch                | <b>E</b> 16 |
|                    | Online status information | n:                     |                         |                             | Display only         | error messages              |             |
|                    |                           |                        |                         |                             |                      |                             |             |
| 1                  |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      | Sho <u>w</u> <u>C</u> ancel |             |
|                    |                           |                        |                         |                             |                      |                             |             |
| When the searc     | h for the devices         | connected is ov        | ver, the devices        | will be listed              | l and our devi       | ce is included in i         | t (E17)     |
|                    | Accessible devices        |                        |                         |                             |                      |                             | ×           |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        | Type of the PG/PC inter | face: PN/IE                 |                      |                             | -           |
|                    |                           |                        | PG/PC inter             | face: 🛛 🔛 Realtek F         | Cle GBE Family Contr | oller 💌 💌 💆                 | 3           |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           | Accessible nodes of t  | the selected interface: |                             |                      |                             |             |
|                    |                           | Device                 | Device type             | Interface type              | Address              | MAC address                 |             |
|                    |                           | dat11188pn             | dat11188pn              | ISO                         | 00-30-11-68-D9       | . 00-30-11-68-D9-B3         | <b>E</b> 17 |
|                    |                           | dat10188pn             | dat11188pn              | PN/IE                       | 192.168.1.14         | 00-30-11-34-45-70           | •           |
|                    |                           | la bora torios         | SIMAIIC-PC              | FINITE                      | 192.166.1.55         | 0C-5B-E5-21-D6-A4           |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    | Elsch I ED                |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      | Start search                |             |
|                    | Online status information | 1:                     |                         |                             | Display only         | error messages              |             |
|                    | Found accessible de       | vice dat10188pn        |                         |                             |                      |                             |             |
|                    | 🚹 Scan completed. 3 d     | levices found.         |                         |                             |                      |                             |             |
|                    | Retrieving device inf     | ormation               |                         |                             |                      |                             |             |
|                    | Scan and informatio       | n retrieval completed. |                         |                             |                      |                             | -           |
| 1                  |                           |                        |                         |                             |                      |                             |             |
|                    |                           |                        |                         |                             |                      | Show <u>C</u> ancel         |             |

Click "Cancel", go back to "Device overview", double click on the device dat11188pn and click on button "Assign device name" (E18)



|           | ce name.      |                           |                       |                       |               |
|-----------|---------------|---------------------------|-----------------------|-----------------------|---------------|
|           |               |                           |                       |                       |               |
|           |               | Configured PROFINE        | T device              |                       |               |
|           |               | PROFINET device nar       | ne: dat11188pn        |                       | -             |
|           |               | Device ty                 | pe: dat11188pn        |                       |               |
|           |               | Online access             |                       |                       |               |
|           |               | Type of the PG/PC interfa | ce: PN/IE             |                       |               |
|           |               | PG/PC interfa             | ce: Realtek PCIe (    | SBE Family Controller |               |
|           |               |                           |                       | ,,                    |               |
|           |               | Device filter             |                       |                       |               |
|           |               | 🔽 Ophyshow dovis          | os of the same time   |                       |               |
|           |               |                           | es or trie same type  |                       |               |
|           |               | Only show devic           | es with bad parameter | settings              |               |
|           |               | Only show device          | es without names      |                       |               |
|           | Accessible de | vices in the network:     |                       |                       |               |
|           | IP address    | MAC address Devi          | ce PROFINET devid     | e name Status         |               |
|           |               |                           |                       |                       |               |
|           |               |                           |                       |                       |               |
|           |               |                           |                       |                       |               |
|           |               |                           |                       |                       |               |
|           |               |                           |                       |                       |               |
| Flash LED |               |                           |                       |                       |               |
| Flash LED | <             |                           | 1111                  |                       |               |
| Flash LED | <             |                           | III                   | Update list           | Assign name   |
| Flash LED | <             |                           | III                   | Update list           | ] Assign name |
| Flash LED | <             |                           | 101                   | Update list           | Assign name   |
| Flash LED | <             |                           |                       | Update list           | Assign name   |
| Flash LED | on:           |                           | m                     | Update list           | E19           |
| Flash LED | on:           |                           | 10                    | Update list           | E19           |
| Flash LED | on:           |                           | 10                    | Update list           | Assign name   |
| Flash LED | on:           |                           | 10                    | Update list           | Assign name   |
| Flash LED | pn:           |                           | 10                    | Update list           | Assign name   |

When the list is filled, click on the row of the device (E20); click "Assign name" (E21)

| Device type: dat11188pn  Durine access  Type of the PGIPC interface: PNUE  Device filter  Outine face: Realtek PCIe GBE Family Controller  Device filter  Outine devices of the same type  Outine of the same type  Outine devices with bad parameter settings Outine devices with bad parameter settings Outine devices in the network:  Paddress MAC address Device PROFINET device name assigned  192.168.1.14 00-30-11-34-45-70 dat11188. dat10188pn  Device name is different  Durine diffe |                              | PROFINET devic      | e name:       | dat11188pn        |                        | -          |
|--|------------------------------|---------------------|---------------|-------------------|------------------------|------------|
| Online access Type of the PGIPC interface: PGIPC interfac |                              | Dev                 | vice type:    | dat11188pn        |                        |            |
| Type of the PGIPC interface: PNIPE<br>PGIPC interface: PReliek PCIe GBE Family Controller<br>PGIPC interface: PReliek PCIe GBE Family Controller<br>POINt show devices of the same type<br>Only show devices with bad parameter settings<br>Only show devices without names<br>Accessible devices in the network:<br>PROFINET device name Status<br>0.0.0.0 00-30-11-68-09-83 dat1188 det10188pn<br>192.168.1.14 00-30-11-34-45-70 dat11188 det10188pn<br>Device name assigned<br>192.168.1.14 00-30-11-34-45-70 dat11188 det10188pn<br>Device name is different<br>information:<br>h completed. 2 of 3 devices were found.  |                              | Online access       |               |                   |                        |            |
| PGIPC interface:  PGIPC inter  |                              | Type of the PG/PC i | nterface:     | PN/IE             |                        | -          |
| Device filter  |                              | PG/PC i             | nterface:     | Realtek PCIe GBE  | Family Controller      | - 🕫 🖪      |
|  |                              | Device filter       |               |                   |                        |            |
| Only show devices with bad parameter settings     Only show devices with bad parameters settings     Only show devices with bad parameters settings     Only show devices with bad parameters settings     Only show devices were found.   |                              | Only show           | devices of th | e same type       |                        |            |
| Consysteme devices without names  Accessible devices in the network:  Paddress MACaddress Device PROFINET device name Status  0.00.0 003011-8-09-83 dat11188. — 1, No device name assigned  192168.1.14 0030-11-34-5-70 dat11188. dat10188pn Device name is different  2 Update list Assign nam  information: t completed. 2 of 3 devices were found.  |                              | Only show           | devices with  | had parameter set | ttings                 |            |
|  |                              |                     | devices with  | bau parameter set | ungs                   |            |
| Accessible devices in the network:<br>IP address MAC address Device PROFINET device name Status<br>IP address MAC address Device PROFINET device name Status<br>IP address MAC address Device PROFINET device name is different<br>IP address MAC address datilises  |                              | Only show           | devices with  | outnames          |                        |            |
| IP address MAC address Device PROFINET device name Status     0.0.0.0     00-30-11-68-D9-83 dat11188     192.168.1.14     00-30-11-34-45-70     dat11188     dat10188pn     Device name is different     (<  | Accessible devic             | es in the network:  |               |                   |                        |            |
| 0.0.0     00-30-11-68-09-83     dat11188     -      No device name assigned       192.168.1.14     00-30-11-34-45-70     dat11188     dat10188pn      Device name is different       Image: Completed and the second sec  | IP address                   | MAC address         | Device        | PROFINET device n | ame Status             |            |
| 192.168.1.14 00-30-11-34-45-70 dat11188 dat10188pn Device name is different Compared to the second data and the second data    | 0.0.0.0                      | 00-30-11-68-D9-B3   | dat11188      |                   | 🚹 No device name ass   | igned      |
| formation:<br>ompleted. 2 of 3 devices were found.   | 192.168.1.14                 | 00-30-11-34-45-70   | dat11188      | dat10188pn        | L Device name is diffe | rent 🗸     |
| nformation:<br>completed. 2 of 3 devices were found.   |                              |                     |               |                   |                        |            |
| DUpdate list Assign nam  |                              |                     |               |                   |                        |            |
| Image: Control of a devices were found.  | 2                            |                     |               |                   |                        |            |
| Update list Assign nam   | <                            |                     |               | 111               |                        |            |
| nformation:<br>completed. 2 of 3 devices were found.   |                              |                     |               |                   | Update list A          | ssign name |
| information:<br>completed. 2 of 3 devices were found.  |                              |                     |               |                   |                        |            |
| information:<br>1 completed. 2 of 3 devices were found.  |                              |                     |               |                   |                        |            |
| completed. 2 of 3 devices were found.  | information:                 |                     |               |                   |                        |            |
|  | completed. 2 of 3 devices we | re found.           |               |                   |                        |            |
|  |                              |                     |               |                   |                        |            |
|  |                              |                     |               |                   |                        |            |
| III.   |                              |                     |               |                   |                        |            |

When the name is assigned, the status OK appears on the row of the device (E22)

| PROFINET device name: det11188pn ♥<br>Device type: dat11188pn<br>det11188pn<br>Online access<br>Type of the PCIRC interface: ►PNIE<br>PCIRC interface: ►PROFINET device GBE Pamily Controller ♥ ♥<br>Device filter<br>● Only show devices of the same type<br>● Only show devices without names<br>Accessible devices in the network:<br>Paddress MAC address Device PROFINET device name Status<br>192.168.1.14 00-30-1134-45-70 dat11188_ dat11188pn ♥ Dev_mame is different<br>E22   | •          |   |
|---|------------|---|
| Provine tradine       with thought         Device type:       dit11188gn         Online access       Type of the PC/PC interface:         PGIPC interface:       PROLE         With the PC/PC interface:       PROLE         Only show devices of the same type       Only show devices of the same type         Only show devices of the same type       Only show devices with bad parameter settings         Only show devices without names       Accessible devices in the network:         Prodress       Device TROFINET device name Status         IP address       Device TROFINET device name Status         IP address       Device Att1188  | ۲          |   |
| Controller ye: Bart Hospin      Controller      Type of the PG/PC interface:     PG/PC interface:     PG/PC interface:     PG/PC interface:     Only show devices of the same type     Only show devices with bad parameter settings     Only show devices without names      Accessible devices in the network:     Padress     MAC address     Device     PROFINET device name     Status     O 00-30-11-34-45-70     dat11188     dat10188pn     Dev     Page      Pach LED  | •          |   |
| Online access         Type of the PGIPC interface:         PMIE         POIDE interface:         Point End with a parameter settings         Only show devices with bad parameter settings         Only show devices without names         Accessible devices in the network:         IP address         Device         PROFINET device name         Status         0 00-30-11-16-50-83         Device         PROFINET device name         Device         PROFINET device name         Device         PROFINET device name         Device <td colspan<="" th=""><th>•</th></td>   | <th>•</th> | • |
| Type of the POIPC interface:       ▲ PANE         PGIPC interface:       ■ Realtek PCIe GBE Pamily Controller         ● Only show devices of the same type         ● Only show devices of the same type         ● Only show devices with bad parameter settings         ● Only show devices without names         Accessible devices in the network:         IP address       Device PROFINET device name Status         0.0.0       00-30-11-68-09-83         192.168.1.14       00-30-11-34-45-70         Heach LED       ■   | ۲          |   |
| PGIPC interface: PGIPC | •          |   |
| Device filter         Image: Constraint of the same type         Image: Constraint of the same type<   |            |   |
| Only show devices of the same type     Only show devices with bad parameter settings     Only show devices without names  Accessible devices in the network:     Paddress MAC address Device PROFINET device name Status     00-30-11-38-09-83 dat11188 dat11188pn     Ork     parame is different     Plash LED  |            |   |
| Ohly show devices with bad parameter settings     Ohly show devices without names  Accessible devices in the network:      Padress     MAC address     Device     PROFINET device name     Status     0.0.0-00-11-134-05-70     dat11188     dat10188pn     Dev     name is different     E22   |            |   |
| Ohyshow devices without names  Accessible devices in the network:      Padfess     MAC address     Device     PROFINET device name     Status     00-30-11-34-45-70     dat11188     dat10188pn     OK     name is different     E22  |            |   |
| Accessible devices in the network:<br>IP address MAC address Device PROFINET device name Status<br>0.0.0 00-30-11-86-09-83 dat11188, dat11188pn OK<br>192.168.1.14 00-30-11-34-45-70 dat11188, dat10188pn Device name is different<br>E22   |            |   |
| Accessible devices in the network:<br>IPaddress MACaddress Device PROFINET device name Status<br>0.0.0.0 00-30-11-68-D9-83 dat11188 dat11188pn  |            |   |
| Plash LED     MAC address     Device     PROFINET device name     Status       Plash LED     0.30-01-134-45-70     dat11188     dat10188pn     OK     OK  |            |   |
| 192.168.1.14     00-30-11-34-45-70     dat11188     dat10188pn     A     Dev     name is different       Flash LED     192.168.1.14     00-30-11-34-45-70     dat11188     dat10188pn     A     Dev     name is different   |            |   |
| Flash LED   |            |   |
| Flash LED   |            |   |
| Flash LED   |            |   |
|   |            |   |
|   |            |   |
|   |            |   |
| Update list Assign na   | n name     |   |

#### Step 7: Creation of variables and mapping to the objects.

This example is about how to map the "Digital Inputs" and "Digital Outputs" variables.

Note: for the position of the variables you want to map always refer to the previous chapters of this document.

Select the device in "Devices and Network".

On the top right corner select "Device view" (F)

Select the row of Input Objects (F1)

|           |                                |      |      | Topology  | view      | Network view   | 🛯 🔐 Device view | -         |
|-----------|--------------------------------|------|------|-----------|-----------|----------------|-----------------|-----------|
| Device    | overview                       |      |      |           |           |                |                 | - E       |
| <b>**</b> | Module                         | Rack | Slot | I address | Q address | Туре           | Article no.     |           |
|           | <ul> <li>dat11188pn</li> </ul> | 0    | 0    |           |           | dat11188pn     | DAT11188PN      |           |
|           | Interface                      | 0    | 0 X1 |           |           | dat11188pn     |                 |           |
|           | Input Objects_1                | 0    | 1    | 6899      |           | Input Objects  |                 | L         |
|           | Output Objects_1               | 0    | 2    |           | 6467      | Output Objects |                 | <b>F1</b> |
|           |                                |      |      |           |           |                |                 |           |

The "Digital Inputs" are mapped to the bytes 4 and 5 of the Cyclic Input Data (third position in the array). In the properties of Input Objects, frame IO tags (F2) in the column "Name" write the name of the variable that you want to be mapped in the third position of the array (F3); in the column "Tag table" select "Default tag table" (F4).

| Input Objects_1 [Inp | nput Objects_1 [Input Objects] |           |                   |         |  |  | 🗓 Info 🔒 🗓 Diagnostics |   |
|----------------------|--------------------------------|-----------|-------------------|---------|--|--|------------------------|---|
| General IO ta        | ngs 🥠 S                        | ystem con | stants Texts      |         |  |  |                        |   |
| Name                 | Туре                           | Address   | Tag table         | Comment |  |  |                        |   |
|                      | Int                            | %IW68     |                   |         |  |  |                        | ~ |
|                      | Int                            | %IW70     |                   |         |  |  |                        |   |
| 🕘 Digital Inputs     | Int                            | %IW72     | Default tag table |         |  |  |                        | _ |
|                      | Int                            | %IW74     | EA                | •       |  |  |                        |   |
| <b>`F3</b>           | Int                            | %IW76     | F4                |         |  |  |                        |   |
|                      | Int                            | %IW78     |                   |         |  |  |                        |   |
|                      | Int                            | %IW80     |                   |         |  |  |                        |   |
|                      | Int                            | %IW82     |                   |         |  |  |                        |   |
|                      | Int                            | %IW84     |                   |         |  |  |                        |   |
|                      | Int                            | %IW86     |                   |         |  |  |                        |   |
|                      | Int                            | %IW88     |                   |         |  |  |                        |   |
|                      | Int                            | %IW90     |                   |         |  |  |                        | ~ |

#### In "Device view" (F), select the row of Output Objects (F5)

|           |                                |      | ·    | Topology  | view      | Network view   | Device view |
|-----------|--------------------------------|------|------|-----------|-----------|----------------|-------------|
| Device    | overview                       |      |      |           |           |                |             |
| · *** ··· | Module                         | Rack | Slot | I address | Q address | Туре           | Article no. |
|           | <ul> <li>dat11188pn</li> </ul> | 0    | 0    |           |           | dat11188pn     | DAT11188PN  |
|           | Interface                      | 0    | 0 X1 |           |           | dat11188pn     |             |
|           | Input Objects_1                | 0    | 1    | 6899      |           | Input Objects  |             |
|           | Output Objects_1               | 0    | 2    |           | 6467      | Output Objects |             |
|           |                                |      |      |           |           |                | F5          |

The "Digital Outputs" are mapped to the bytes 0 and 1 of the Cyclic Output Data (first position). In the properties of Output Objects, frame IO tags (F6) in the column "Name" write the name of the variable that you want to be mapped in the third position of the array (F7); in the column "Tag table" select "Default tag table" (F8).

|                              | <b>,</b> , ,            | <i></i> | <b>0</b> ( |                                 |
|------------------------------|-------------------------|---------|------------|---------------------------------|
| Output Objects_1 [Output Obj | jects] F6               |         | 🖳 Pr       | operties 🚺 Info 😧 🖫 Diagnostics |
| General IO tags              | stem constants Texts    |         |            |                                 |
| Name Type                    | Address Tag table       | Comment |            |                                 |
| 💷 Digital Outputs 👔 Int      | %QW64 Default tag table |         |            |                                 |
| Int Int                      | %QW66                   | F8      |            |                                 |
| V                            |                         |         |            |                                 |
| F7                           |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |
|                              |                         |         |            |                                 |

In the Project tree select the PLC, select PLC tags (F9), double click on Default tag table (F10).



| <b>9</b>          | ø [ | ) 🖓 🕆 🗘            |           |  |         |   |        |          |   |         |         |
|-------------------|-----|--------------------|-----------|--|---------|---|--------|----------|---|---------|---------|
| Default tag table |     |                    |           |  |         |   |        |          |   |         |         |
|                   | N   | lame               | Data type |  | Address |   | Retain | Acces    | Writa   | Visibl  | Comment |
| 1                 | -00 | Digital Inputs     | Int       |  | %IW72   | - |        | <b></b>  | <b>~</b>  | <b></b> |         |
| 2                 | -00 | Digital Outputs    | Int       |  | %QW64   |   |        | <b></b>  | <b>~</b>  | <b></b> |         |
| 3                 |     | <add new=""></add> |           |  |         |   |        | <b>V</b> | <ul> <li>Image: A start of the start of</li></ul> |         |         |
|                   |     |                    |           |  |         |   |        |          |   |         |         |
|                   |     |                    |           |  |         |   |        |          |   |         |         |

### Step 8: Creation of the project.

In this example it will be show a very simple project composed of a "Move" function with the purpose of moving the value on the inputs of the device to the outputs. Moreover, this example has also the purpose of show how to set the module parameters. In the Project tree under the branch of PLC select "Program blocks" (G), right click on it and select "Add new block" (G1)



Select "Program cycle" (G2) from "Organization block" (G3) and click OK (G4).

| d new                  | Add new block  |                                |                  |                        |            |
|------------------------|----------------|--------------------------------|------------------|------------------------|------------|
| block                  |                |                                |                  |                        |            |
| manization blocks (OB) | Name:          |                                |                  |                        |            |
| ganzadon biocks (ob)   | Main_1         |                                |                  |                        |            |
| <b>2</b> -             |                | AND DESCRIPTION OF A           | Language:        | LAD                    |            |
| Main                   |                | AD Startup                     |                  |                        |            |
|                        | OB             | Time delay interrupt           | Number:          |                        | 0          |
|                        | Organization   | G2                             |                  | () Manual              |            |
|                        | block          | Hardware interrupt             |                  | Automatic              |            |
|                        |                | Time error interrupt           |                  | 0                      |            |
|                        | 6              | 3 🖶 Diagnostic error interrupt |                  |                        |            |
|                        |                | Pull or plug of modules        | Description:     |                        |            |
|                        |                | E-Rack or station failure      | 4 *Provence and  |                        | - Conthe   |
|                        | Function block | 💶 Time of day                  | and is the main  | block of the program   | m. This is |
|                        |                | 👺 Status                       | where you plac   | e the instructions th  | at control |
|                        |                | 🖀 Update                       | your application | n, and call additional | Luser      |
|                        |                | Profile                        | 220000           |                        |            |
|                        | FC             | MC-Interpolator                |                  |                        |            |
|                        | European       | MC-Servo                       |                  |                        |            |
|                        | runcuon        | MC-PreServo                    |                  |                        |            |
|                        |                | MC-PostServo                   |                  |                        |            |
|                        |                |                                |                  |                        |            |
|                        |                |                                |                  |                        |            |
|                        | . ■DB          |                                |                  |                        |            |
|                        | Data block     |                                |                  |                        | C1         |
| eneral                 |                |                                | more             | 1                      | 04         |
| reneral                |                |                                |                  |                        |            |

It will be created an empty project.

| <ul> <li>Block title: "Main Program Sweep (Cycle)"</li> </ul> |  |
|---|--|
| Comment   |  |
| Network 1:  |  |
| Comment   |  |
|   |  |
|   |  |
|   |  |
|   |  |
|   |  |

In the Project tree, double click on the block "Main" (G5).



On the right it will appear the menu "Instructions".

| Click "Basic Instruc | s" (G7) →                | "MOVE" (G8) |   |   |  |  |  |  |  |
|----------------------|--------------------------|-------------|---|---|--|--|--|--|--|
| ✓ Basic instruct     | Basic instructions       |             |   |   |  |  |  |  |  |
| Name                 |                          | Description |   |   |  |  |  |  |  |
| 🕨 主 Math functio     | ons                      |             | ^ | 1 |  |  |  |  |  |
| ▼ 🔁 Move opera       | 🔻 🔁 Move operations ┥ G7 |             |   |   |  |  |  |  |  |
| 🗐 MOVE 🚽             |                          | Move value  |   |   |  |  |  |  |  |
| 🗐 Deseriali          | ize G8                   | Deserialize |   |   |  |  |  |  |  |
| Move value           |                          | Serialize   |   |   |  |  |  |  |  |
| MOVE_B               | LK                       | Move block  | ~ |   |  |  |  |  |  |

The instruction will be added to the project.

| Network 1:             |          |      |  |
|------------------------|----------|------|--|
| Nove Inputs to Outputs |          |      |  |
|                        |          |      |  |
|                        | MOVE     |      |  |
| EN                     | ENO      |      |  |
| ?? — IN                | 🚸 OUTI · | - ?? |  |

Click <???> IN to define the input variable (G9) Select the variable (G10). In this example the variable is "Digital Inputs"

|          | MOVE                      |                  |       |      |
|----------|---------------------------|------------------|-------|------|
| $\vdash$ | G9 EN - EN                | 0                |       | <br> |
|          | TUO 🍀 N                   | n — <i><???></i> |       |      |
| Ţ        | dat11188pn Output_Objects | Hw_SubModule     |       | ^    |
| æ        | dat11188pn Proxy"         | Hw_SubModule     |       |      |
| -        | "Digital Inputs"          | Int              | %IW72 | =    |
| -        | "Digital Outputs" G10     | Int              | %QW64 |      |
| æ        | "Local"                   | Hw_SubModule     |       |      |
| P        | "Local~AI_2_1"            | Hw_SubModule     |       |      |
| æ        | "Local-Common"            | Hw_SubModule     |       |      |
| æ        | "Local~Configuration"     | Hw_SubModule     |       | ~    |

Click <???> OUT to define the output variable (G11) Select the variable (G12). In this example the variable is "Digital Outputs"

| EN<br>%////2          | MOVE<br>ENO<br> |                  |     |       |   |
|-----------------------|-----------------|------------------|-----|-------|---|
| "Digital Inputs" — IN |                 | "Digital Inputs" | Int | %IW72 | * |
|                       |                 | "Digital Outputs | Int | %QW64 |   |
|                       |                 | <b>G12</b>       |     |       |   |
| -                     |                 |                  |     |       |   |
|                       |                 |                  |     |       |   |
|                       |                 |                  |     |       |   |
|                       |                 |                  |     |       |   |
|                       |                 |                  |     |       | ~ |

The Move instruction needs an enable bit. It can be set using any available boolean. In this example a User constant defined in the "Default tag table" is used.

|            |     |                    |           |       | •       | Tags | User constants | × |
|------------|-----|--------------------|-----------|-------|---------|------|----------------|---|
| <b>9</b> ; | ø   |                    |           |       |         |      |                |   |
| D          | efa | ult tag table      |           |       |         |      |                |   |
|            |     | Name 🔺             | Data type | Value | Comment |      |                |   |
| 1          | Ξ   | En_bit             | Bool 🔳    | TRUE  |         |      |                |   |
| 2          |     | <add new=""></add> |           |       |         |      |                |   |
|            |     |                    |           |       |         |      |                |   |

## Insert an open contact in the "EN" branch and click on <??.?> to assign the variable (G13).



#### The simple project is complete.



#### Step 9: Set the module parameters

The parameters allow the setting of the system functions for the device when the PLC establishes the connection with it. All of these parameters can be monitored by means of Read back objects in Cyclic Input Data.

To set the parameters go to "Network view", select the dat11188pn, go to "Device view", double click on the device image. In properties under frame "General" click "Module parameters" (H).

Set the values as desired between the limits shown (H1) and press Enter.

| General                          | IO tags         | Sys | stem constants Texts               |   |
|----------------------------------|-----------------|-----|------------------------------------|---|
| General                          |                 |     |                                    |   |
| <ul> <li>PROFINET int</li> </ul> | terface [X1]    |     | would parameters                   | - |
| General                          |                 |     | Parameters                         |   |
| Ethernet                         | addresses       |     |                                    |   |
| Advanced                         | d options       |     | Bit 0 to 7 - Powerup value / Bit 8 |   |
| Identification                   | n & Maintenance |     | to 15 Safe value: 0                |   |
| Module para                      | ameters         | -   | Debouncing Time as ms: 1 H1        |   |
|                                  |                 | •   | Watchdog Time as sec: 10           |   |
|                                  | `H              |     |                                    |   |
|                                  |                 |     |                                    |   |

## Step 10: Compile the project, download it to PLC and monitor the variables

In the Project tree select the branch of PLC.

In the Toolbar click "Compile" (I)

14

When the project is compiled, in the Toolbar click Download to device (I1) and follow the procedure to end the download correctly. When the download is complete, in the Toolbar click "Start CPU" (I2) and when asked by the system go in RUN mode. In the Toolbar click "Go online" (I3).

If there are not errors all the fields related with PLC communication are marked in green.



To monitor the variables go to PLC tag  $\rightarrow$  Default tag table. Click "Monitor all" (I4)

|   |          |                    |           |   |         |   |        |  |          |          |               | 🕣 Tags | User constants | 🔎 System cons | tants |
|---|----------|--------------------|-----------|---|---------|---|--------|--|----------|----------|---------------|--------|----------------|---------------|-------|
|   | <b>2</b> | 🖻 🛃 😨 🛍            |           |   |         |   |        |  |          |          |               |        |                |               | -     |
| [ | )efau    | ilt tag table      |           |   |         |   |        |  |          |          |               |        |                |               |       |
|   |          | Name               | Data type | • | Address |   | Retain | Acces  | Writa    | Visibl   | Monitor value | Comm   | ent            |               |       |
| 1 |          | Digital Inputs     | Int       |   | %IW72   | - |        |  | <b></b>  |          | 1             |        | ~ 15           |               |       |
| 2 | -        | Digital Outputs    | Int       |   | %QW64   |   |        | Image: A start and a start | <b></b>  |          | 1             |        |                |               |       |
| з |          | <add new=""></add> |           |   |         |   |        | <b>V</b>   | <b>V</b> | <b>V</b> |               |        |                |               |       |
|   |          |                    |           |   |         |   |        |  |          |          |               |        |                |               |       |
|   |          |                    |           |   |         |   |        |  |          |          |               |        |                |               |       |
|   |          |                    |           |   |         |   |        |  |          |          |               |        |                |               |       |
|   |          |                    |           |   |         |   |        |  |          |          |               |        |                |               |       |
| _ |          |                    |           |   |         |   |        |  |          |          |               |        |                |               |       |

In the column "Monitor value" (I5) is it possible to see the variables changing.

#### **IMPORTING THE DEVICE IN CODESYS**

The following example has the purpose to show how to insert the GSDML file of the device and it has been done using CODESYS 3.5 SP19 Patch 6 Soft PLC that includes the creation of a new project using a standard project template with PLC\_PRG in standard text. Run Codesys and wait for the application to be executed.

## Step 1: create a new project.

Click File  $\rightarrow$  New Project.

| Categories           |                           | Templates             |                |                     |                       |
|----------------------|---------------------------|-----------------------|----------------|---------------------|-----------------------|
| Lib                  | raries<br>ojects          | Empty project         | HMI project    | Standard<br>project | Standard<br>project w |
| A project co<br>Name | ontaining one device, one | application, and an e | empty implemen | tation for PLC_P    | RG                    |
| Location             | C:\Users\\ab\Desktop\P    | rofinet\Codesys       |                |                     | ×                     |
|                      | Ì                         |                       |                | ок                  | Cancel                |

Select icon "Standard project" (A). Edit the name of the project (A1). Click OK (A2). Edit the project as follows and click OK (A3).

| · · · · ·  |   |  | ~      |
|------------|---|--|--------|
| Standard F | Project   |  | ×      |
|            | You are abou<br>objects withi<br>- One program<br>- A program I<br>- A cyclic tasi<br>- A reference | t to create a new standard project. This wizard will create the following<br>n this project:<br>mmable device as specified below<br>2.C_PRG in the language specified below<br>which calls PLC_PRG<br>to the newest version of the Standard library currently installed. |        |
|            | Device  | CODESYS Control Win V3 (3S - Smart Software Solutions GmbH)  | $\sim$ |
|            | PLC_PRG in  | Structured Text (ST)   | $\sim$ |
|            |   | A3<br>OK Cancel  |        |

The following screen with the basic project functions will appear.

| Devices  | - * × |  |                     |                     |                       |       |                         |                |
|--|-------|--|---------------------|---------------------|-----------------------|-------|-------------------------|----------------|
| Denem<br>= ∰ dec_ATTAIN<br>= ∰ dec_ATTAIN<br>= ∰ Rectops<br>= ⑦ Apploates<br># ⑦ Apploates<br>= ⑦ Rc_Rec<br>® ⑦ Rc_Rec<br># ⑧ Rc_Rec<br># 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | - • x |  |                     |                     |                       |       |                         |                |
|  |       |  |                     |                     |                       |       |                         |                |
|  |       | Messages - Total O error(s), O warner<br>Devices | ng(s), 0 message(s) | • 0 0 emor(s) • 0 w | amino(s) 0 message(s) | ××    |                         |                |
|  | ć     | Description                                      |                     |                     | and a surgery         | 1. 10 |                         | Project Object |
|  |       |  |                     |                     |                       |       |                         |                |
| Services Poula   |       |  |                     |                     |                       |       |                         |                |
|  |       |  |                     |                     |                       |       | <br>Last build: 🧿 0 😗 0 | Precomple 🗸    |

Step 2: Connect to PLC This step may change in function of the PLC used. Activate the PLC.

Double click on "Device" in the tree-view of the project, click Communication Settings (B), insert the credential to access the PLC if required and click Scan Network (B1). Select the PLC and connect to it to obtain the following window with green marks.

| Communication Settings    | Scan Network Gateway - Device -                      |
|---------------------------|--|
| Applications              | B B1   |
| Backup and Restore        |  |
| Files                     |  |
| Log                       | Gateway  |
|                           | Gateway-1 V [0301.3036] (active) V                   |
| PLC Settings              | IP-Address: Device Name:<br>localhost LABORATORIO9   |
| PLC Shell                 | Port: Device Address:                                |
| Users and Groups          | 1217 0301.3036                                       |
| Access Rights             | 0000 0004  |
| Symbol Rights             | Target Type:<br>4096                                 |
| Licensed Software Metrics | Target Vendor:<br>3S - Smart Software Solutions GmbH |
| IEC Objects               | Target Version:<br>3.5.19.60                         |
| Task Deployment           |  |
| Status                    |  |
| Information               |  |
|                           |  |
|                           |  |
|                           |  |
|                           |  |

#### Step 3: insert an Ethernet Interface.

In the tree-view of the project select and right click of the mouse on "Device (Codesys Control Win V3)" (C) .



Select Add Device; the following window will appear.

| 🖞 Add Device                      |   | ×        |
|-----------------------------------|---|----------|
| Name Ethernet                     |   |          |
| Action                            |   |          |
| Append device      Insert device  | O Plug device O Update device                           |          |
| String for a full text search     | Vendor <all vendors=""></all>                           | ~        |
| Name                              | Vendor Version Rescription                              |          |
|                                   | vendor vesion beschption                                |          |
| CAN CANbus                        |   |          |
| 🗉 🔐 🔐 EtherCAT                    |   |          |
| 🖹 🕮 Ethernet Adapter 🚽            | - D1  |          |
| Ethernet                          | CODESYS 4.2.0.0 Ethernet Link.                          | - D2 🛛 📗 |
| therNet/IP                        |   |          |
| Im Home&Building Automation       | 1   |          |
| B PROFIBUS                        |   |          |
| PROFINET IO                       |   |          |
| 🗉 🕮 Ethernet Adapter              |   |          |
| PROFINET IO Device                |   |          |
| PROFINET IO Master                |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
| Group by category Display al      | I versions (for experts only) Display outdated versions | \$       |
| Mame: Ethernet                    |   |          |
| Categories: Ethernet Adapter      | r, Ethernet Adapter, Ethernet Adapter,                  |          |
| Home&Building Automation          |   |          |
| Order Number: -                   |   | ~        |
| Description: Ethernet Link.       |   |          |
|                                   |   |          |
|                                   |   |          |
|                                   |   |          |
| Append selected device as last ch | ild of  |          |
| Device                            |   |          |
| (You can select another target r  | node in the navigator while this window is open.)       |          |
|                                   | Add Davica  | Close    |
|                                   | Add Device  | ciose    |

Select "Fieldbuses" (D)  $\rightarrow$  select "Ethernet Adapter" (D1)  $\rightarrow$  Select "Ethernet" (D2). Click button "Add Device" (D3). The branch Interface "Ethernet" will be added to the tree-view of the project (D4)



Double click on "Ethernet" (D4). The following window appears. Click button "Browse" (D5). Select the network interface and click button "OK" (D6).

| General  |  | Network interface                |                     |   | Browse |        |
|--|--|----------------------------------|---------------------|---|--------|--------|
| thernet Device I   | I/O Mapping  | IP address                       | 192 . 168 . 0 . 1   |   |        | _      |
| thernet Device I   | IEC Objects  | Subnet mask                      | 255 . 255 . 255 . 0 |   |        |        |
|  |  | Default gateway                  | 0.0.0.0             | 1 |        |        |
| og   |  | Adjust operating                 | system settings     |   |        |        |
| tatus  |  |                                  |                     |   |        |        |
| nformation   |  |                                  |                     |   |        |        |
|  |  |                                  |                     |   |        |        |
|  |  |                                  |                     |   |        |        |
|  |  |                                  |                     |   |        |        |
|  |  |                                  |                     |   |        |        |
| etwork Adapters  |  |                                  |                     |   | ×      | <      |
| etwork Adapters  |  |                                  |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Descr   | iption   | IP address                       |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Descr<br>Ehemet Realte  | iption<br>k PCle GBE Family Contr  | IP address<br>oller 192.168.1.54 |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Descr<br>Ethemet Realte   | iption<br>k PCIe GBE Family Contr  | IP address<br>oller 192.168.1.54 |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Desci<br>Ethemet Realte   | iption<br>k PCIe GBE Family Contr  | IP address<br>oller 192.168.1.54 |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Descr<br>Ethemet Realte   | iption<br>k. PCIe GBE Family Contr   | IP address<br>oller 192.168.1.54 | _                   |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Descr<br>Ethernet Realte  | iption<br>k. PCIe GBE Family Cont  | IP address<br>oller 192 168 1 54 |                     |   | ×      | <      |
| etwork Adapters<br>nterfsces<br>Name Descr<br>Ethernet Realte  | tption<br>k, PCIe GBE Family Contr<br>192 . 168 . 1                                    | IP address<br>oller 192.168.1.54 |                     |   | ×      | <      |
| etwork Adapters<br>nterfaces<br>Name Desce<br>Bhemet Realte<br>P address<br>Subnet mask                    | tption<br>k PCIe GBE Family Contr<br>192 168 1<br>255 255 255                          | IP address<br>oller 192.168.1.54 |                     |   | ×      | <<br>l |
| etwork Adapters<br>nterfaces<br>Name Desc<br>Ethemet Realte<br>P address<br>Subnet mask<br>Default gateway | tplion<br>k PCIe GBE Family Contr<br>192 - 168 - 1<br>255 - 255 - 255<br>192 - 168 - 1 | IP address<br>oller 192.168.1.54 |                     |   | ×      |        |

Page 24 of 38

#### Step 4: Insert PN Controller.

In the tree-view of the project select and right click of the mouse on "Ethernet" (E)



Select "Add Device"; the following window will appear

| PN_Controller  |                           |                        |                 |  |         |
|--|---------------------------|------------------------|-----------------|--|---------|
| ı<br>  |                           |                        |                 |  |         |
| ppend device 🔘 Insert device                         | OPlug device OI           | Jpdate device          |                 |  |         |
| g for a full text search                             | Vendor                    | <all vendors=""></all> |                 |  | ~       |
| me   | Vendor                    |                        | Version         | Description  |         |
| 👔 Fieldbuses 🚽 🗕 🗖 🖬                                 |                           |                        |                 |  |         |
| 🗉 👄 EtherNet/IP                                      |                           |                        |                 |  |         |
| Modbus   | -0                        |                        |                 |  |         |
| PROFINET IO  | =2                        |                        |                 |  |         |
| PROFINET IO Master                                   | <b>E</b> 3                |                        |                 |  |         |
| PN-Controller  | 3S - Smart Softwar        | e Solutions GmbH       | H 4.4.0.0       | PROFINET IO  | Control |
|  | E4                        |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 | _  |         |
| roup by catagony . 🔲 Display al                      | luoraiona (for ava arta r | alu) 🔲 Disali          | would stad you  | niana  | /       |
|  | iversions (for experts t  |                        | ay outdated ver | SIUTIS   |         |
| Name: PN-Controller<br>Vendor: 35 - Smart Software 5 | Solutions GmbH            |                        |                 |  |         |
| Categories: PROFINET IO Ma                           | ster                      |                        |                 |  |         |
| Order Number: 1                                      |                           |                        |                 | - Sector - S |         |
| Description: PROFINET IO Co                          | ontroller                 |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
|  |                           |                        |                 |  |         |
| and colocted device as 1-t-t                         | ild of                    |                        |                 |  |         |
| ernet  |                           |                        |                 |  |         |
| (You can select another target r                     | node in the navigator v   | hile this window       | v is open.)     |  | /       |
|  |                           |                        |                 |  |         |
|  |                           |                        | Add Devi        | ce Cl  | ose     |

Select "Fieldbuses" (E1)  $\rightarrow$  select "PROFINET IO" (E2)  $\rightarrow$  Select "PROFINET IO Master" (E3)  $\rightarrow$  "Select PN Controller" (E4). Click button "Add Device" (E5).

The element "PN Controller" will be added under the branch "Ethernet" to the tree-view of the project (E6)





## Step 5: Install the GSDML file of the device into Device Repository of Codesys.

Download the GSDML file of the device from the website www.datexel.it to a folder in your PC. In the Menu bar of Codesys click "Tools"  $\rightarrow$  "Device Repository..." The following window appears.

|                                       |                           |          |                            |                    |   |   | -              |
|---------------------------------------|---------------------------|----------|----------------------------|--------------------|---|---|----------------|
| tion Syst                             | tem Repository            | >        |                            |                    |   | ~ | Edit Locations |
| (C:\F                                 | ProgramData\CODESYS\Devic | es)      |                            |                    |   |   |                |
| alled Device                          | Descriptions              |          |                            |                    |   |   |                |
| ng for a full t                       | ext search                | Vendor   | <all vendors=""></all>     |                    |   | ~ | Install        |
| ame                                   |                           | Vendor   |                            | Version            | Description   |   | Uninstall      |
| Miscellar                             | neous                     |          |                            |                    |   |   | Export         |
| Fieldbus                              | ses                       |          |                            |                    |   |   |                |
|                                       | Vopen                     |          |                            |                    |   |   |                |
| 🗄 🔐 Bedi Ethe                         | erCAT                     |          |                            |                    |   |   |                |
| 🗄 - 🂵 Ethe                            | ernet Adapter             |          |                            |                    |   |   |                |
| 🗷 👄 Ethe                              | erNet/IP                  |          |                            |                    |   |   |                |
| Hom                                   | ne&Building Automation    |          |                            |                    |   |   |                |
| E - SK 119                            | 39                        |          |                            |                    |   |   |                |
|                                       | fbus                      |          |                            |                    |   |   | Details        |
| B- ## PRC                             | OFIBUS                    | - 1      |                            |                    |   |   | 53220500       |
| B M PRC                               | DFINET IO                 | 1        |                            |                    |   |   |                |
| 王 田野                                  | Ethernet Adapter          |          |                            |                    |   |   |                |
| · · · · · · · · · · · · · · · · · · · | PROFINET IO Device        |          | F2                         |                    |   |   |                |
| B                                     | PROFINET IO Slave         | 1        |                            |                    |   |   |                |
|                                       | 🗀 I/O                     |          |                            |                    |   |   |                |
|                                       | CIFX PROFINET Device      | 3S - Sma | rt Software Solutions GmbH | SW=V3.x, HW=2      | CODESYS PLC running as PROFINET Device (CIFX based) |   |                |
| L                                     | EL6631-0010 V2.0          | Beckhoff |                            | SW=V1.00, HW=V1.00 | PROFINET I/O device - EtherCAT slave terminal, V2.0 |   |                |
| sero                                  | tos                       |          |                            |                    |   |   |                |
| PICs                                  | nces                      |          |                            |                    |   |   |                |
| SoftMot                               | ion drives                |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |
|                                       |                           |          |                            |                    |   |   |                |

Select "Fieldbuses" (F)  $\rightarrow$  select "PROFINET IO" (F1)  $\rightarrow$  Select "PROFINET IO Slave" (F2)  $\rightarrow$  Click button "Install" (F3). The window "Install Device Description" will appear; recall the path of the folder wherein you downloaded the GSDML file of the device, select it and click "Open" (F4) (next page).

| Install Device Description  |   |                  |            |                     | ×   |
|---|---|------------------|------------|---------------------|-----|
| $\leftarrow$ $\rightarrow$ $\checkmark$ $\uparrow$ $\frown$ $\checkmark$ Users $\rightarrow$ lab $\rightarrow$ Deskte | op > Profinet > UpgradeGSDML_2.44 > DAT11 | 188PN            | ✓ Ö Search | DAT11188PN          | ,c  |
| Organize 🔻 New folder   |   |                  |            | == -                | ?   |
| Progressivo PFC   | Name                                      | Date modified    | Туре       | Size                |     |
| Screenshot Errori programmi di tarat  | GSDML-V2.44-DatexelSrl-DAT11188PN-2       | 7/5/2024 2:13 PM | XML File   | 15 KB               |     |
| STDV Realizzati   |   |                  |            |                     |     |
| OneDrive - Personal   |   |                  |            |                     |     |
| 💻 This PC   |   |                  |            |                     |     |
| 🗊 3D Objects  |   |                  |            |                     |     |
| Desktop   |   |                  |            |                     |     |
| Documents   |   |                  |            |                     |     |
| 🕂 Downloads   |   |                  |            |                     |     |
| Music   |   |                  |            |                     |     |
| E Pictures  |   |                  |            |                     |     |
| Videos  |   |                  |            |                     |     |
| 🟪 Local Disk (C:)   |   |                  |            |                     |     |
| File name: GSDML-V2.44  | DatexelSrl-DAT11188PN-20240705            |                  | ~ PROFI    | NET GSDML (GSDML*.x | m ~ |
|   |   |                  | Ор         | en 🚽 Cance          | 4   |

The file will be installed under the folder "I/O" (Main family of the device). If it is the first time that a Datexel's device is installed, Codesys will create the folder "Datexel DAT11000" (F5), otherwise the device's GSDML will be added inside it. Select the file installed (F6) and click "Close" (see previous page - F7) on Device Repository window.

| I/O      ODESYS PLC      Datexel DAT11000 series | F5             |                   |  |  |
|--|----------------|-------------------|--|--|
| 🗝 📶 dat11018pn                                   | Datexel S.r.l. | SW=1.0.0, HW=1    | Supports RT and non-cyclic communications. |  |
| 🚽 🕕 dat11130pn                                   | Datexel S.r.l. | F6 SW=1.0.0, HW=1 | Supports RT and non-cyclic communications. |  |
| 🚽 🗹 dat11188pn                                   | Datexel S.r.l. | SW=1.0.0, HW=1    | Supports RT and non-cyclic communications. |  |
|  |                |                   |  |  |

#### Step 6: Scan the network for the device and add it to the project.

In the Menu bar of Codesys click "Build"  $\rightarrow$  "Clean" and after click "Build"  $\rightarrow$  "Generate Code". Once the project has been compiled in the Menu bar of Codesys click "Online"  $\rightarrow$  "Login" to login to the PLC. In the tree-view of the project right click of the mouse on the element "PN Controller". Check that the device has been powered-on and that the Ethernet cable is connected to Port1 or Port2. Select "Scan for Devices". The below window will appear, the system takes some seconds and the device will be listed.

| Device name   | Device type                          | Station Name   | ID number                      | MAC Address       | IP Address   | Subnet Mask          | Gateway      |
|---|--------------------------------------|----------------|--------------------------------|-------------------|--------------|----------------------|--------------|
|   | dat11188pn                           | dat10188pn     | 16#80010000                    | 00:30:11:34:45:70 | 192.168.1.14 | 255.255.255.0        |              |
| dat10188pn_1  | Input Objects                        |                | 16#0000001                     |                   |              |                      |              |
| dat10188pn_2  | Output Objects                       |                | 16#0000002                     |                   |              |                      |              |
| The identification data is not available. Check the IP address. | Vendor-ID: 0x078B, Device-ID: 0x0009 |                | Error: A valid IP is required. | 00:30:11:68:1E:49 | 0.0.0.0      | 0.0.0.0              |              |
| The identification data is not available. Check the IP address. | Vendor-ID: 0x078B, Device-ID: 0x000B |                | Error: A valid IP is required. | 00:30:11:68:D9:B3 | 0.0.0.0      | 0.0.0.0              | _            |
| The identification data is not available. Check the IP address  | Vendor-ID: 0x002A, Device-ID: 0x0202 | laboratorio6 🚩 | error: RPC Aborted: 0x16C9A049 | 6C:3B:E5:21:D8:A4 | 192.1.8 1.55 | 255255.255.0         | 19.168.1     |
| 9   |                                      |                |                                |                   |              | $\sim$ $\sim$ $\sim$ |              |
| 9   |                                      |                | `GI                            |                   |              | G2                   |              |
| M Auto-IP <> Reset Blink LED Set Name and IF                    | P │ Show only unnamed stations       |                |                                |                   |              | G2                   | nces to proj |

Being provided as Factory default the device is supplied with communication parameters not set.

To import the device in the project it is necessary set them as follows.

Select the row of the device (G)

Edit the Station Name in the proper column (G1); example: "dat11188pn"

Edit the Network Parameters in the proper columns (G2); example: IP Address:"192.168.1.18" Subnet Mask: "255.255.255.0" Gateway Mask:"192.168.1.1"

Click "Set Name and IP" (G3) and wait for the end of operation.

Click "Scan Devices" (G4). The below window will appear and after some seconds the device will be listed and updated.

Page 27 of 38

|  | Device type  | Station Name | ID number                                     | MAC Address             | ID Address   | Subnet Mack   | Gateway                  |
|--|--|--------------|---|-------------------------|--------------|---------------|--------------------------|
| - dat10199ap   | dat11100pp   | dat10100ap   | 16#90010000                                   | 00-20-11-24-45-70       | 102 100 1 14 | 255 255 255 0 | Gateway                  |
| dat10188pp 1   | Input Objects  | datioiooph   | 16#0000001                                    | 00.30.11.34.43.70       | 132.100.1.14 | 200.200.200.0 |                          |
| dat10188pn 2   | Output Objects   |              | 16#00000001                                   |                         |              |               |                          |
| • The identification data is not available. Check the IP addres  | s. Vendor-ID: 0x078B. Device-ID: 0x0009  |              | Error: A valid IP is required.                | 00:30:11:68:1E:49       | 0.0.0.0      | 0.0.0.0       |                          |
| dat11188pn   | dat11188pn   | dat11188pn   | 16#80010000                                   | 00:30:11:68:D9:B3       | 192.168.1.18 | 255.255.255.0 |                          |
|  |  |              | 16#0000001                                    | 05                      |              |               |                          |
| dat11188pn_1   | Input Objects  |              | 10#0000001                                    | 1(45                    |              |               |                          |
| dat11188pn_1<br>dat11188pn_2   | Input Objects<br>Output Objects  |              | 16#00000002                                   | G5                      |              |               |                          |
| - dat11188pn_1<br>dat11188pn_2<br>- The identification data is not available. Check the IP addres  | Input Objects<br>Output Objects<br>s. Vendor-ID: 0x002A, Device-ID: 0x0202                         | laboratorio6 | 16#00000002<br>error: RPC Aborted: 0x16C9A049 | GC:3B:E5:21:D8:A4       | 192.168.1.55 | 255.255.255.0 | 192.168.                 |
| dat11188pn_1<br>dat11188pn_2<br>The identification data is not available. Check the IP addres<br>A Auto-IP <> Reset Blink LED Set Name and                                   | Input Objects<br>Output Objects<br>s. Vendor-ID: 0x002A, Device-ID: 0x0202                         | laboratorio6 | 16#00000002<br>error: RPC Aborted: 0x16C9A049 | G5<br>6C:3B:E5:21:D8:A4 | 192.168.1.55 | 255.255.255.0 | 192.168.<br>ences to pro |
| dat11188pn_1     dat11188pn_2     The identification data is not available. Check the IP addres     A Auto-IP <> Reset Blink LED Set Name and                                | Input Objects<br>Output Objects<br>s. Vendor-ID: 0x002A, Device-ID: 0x0202                         | laboratorio6 | 16#0000002<br>error: RPC Aborted: 0x16C9A049  | 6C:3B:E5:21:D8:A4       | 192.168.1.55 | 255.255.255.0 | 192.168.                 |
| dat11188pn_1     dat11188pn_2     The identification data is not available. Check the IP addres     M Auto-IP <> Reset Blink LED Set Name and     oduct: dat11188pn (0x000B) | Input Objects Output Objects s. Vendor-ID: 0x002A, Device-ID: 0x0202 IP Show only unnamed stations | laboratorio6 | 16#00000002<br>error: RPC Aborted: 0x16C9A049 | 6C:38:E5:21:08:A4       | 192.168.1.55 | 255.255.255.0 | 192.168<br>ences to pr   |

To import the device in the project select the row of the device (G5) and click "Copy to project" (G6). The device will be added to the tree-view of the project as a branch of the element "PN Controller". In the Menu bar of Codesys click "Online" $\rightarrow$  "Logout".



Double click on the line of the DAP icon of the device (H3).

In the window that will appear it is possible to set the parameters of the device that are not included in the cyclic Process Data Objects. These parameters will be set each the PLC establishes an AR See next page.

| Click "General" (H6) |   |                              |              |                 |                |             |   |
|----------------------|---|------------------------------|--------------|-----------------|----------------|-------------|---|
| General HG           | Station name dat11188<br>Station status | 8pn                          |              |                 |                |             |   |
| Port data            |   |                              |              |                 |                |             |   |
| IOxS                 | IP Parameter                            |                              |              |                 |                |             |   |
| Log                  | IP address 193                          | 2 . 168 . 1 . 18             |              |                 |                |             |   |
| PNIO I/O Mapping     | Subnet mask 255                         | 5 . 255 . 255 . 0            |              |                 |                |             |   |
| PNIO IEC Objects     | Default gateway 0                       | . 0 . 0 . 0                  |              |                 |                |             |   |
| Status               | Communication                           |                              |              |                 |                |             |   |
| Information          | Send clock (ms) 1                       | ✓ Data ho                    | old time (ms | ) 1             | 2 🔹            |             |   |
| Included             | Reduction ratio 4                       | VLAN I                       | D            |                 | 0              |             |   |
|                      | Phase -                                 | $\sim$                       |              |                 |                |             |   |
|                      | RT class RT                             | T Class 1                    | ``           | /               |                |             |   |
|                      | Options                                 |                              |              |                 |                |             |   |
|                      | Fast Startup                            |                              |              |                 |                |             |   |
|                      | Shared device                           |                              |              |                 |                |             |   |
|                      | Settings                                |                              |              |                 |                |             |   |
|                      | Set All Default Values                  | s Read All Va                | lues         | <b>∼</b> ∰Write | All Values     |             |   |
|                      | Parameters                              |                              | Value        | Data Type       | Allowed Values | Description |   |
|                      | Parameters                              |                              |              |                 |                |             | - |
|                      | Bit 0 to 7 - Powerup val                | lue / Bit 8 to 15 Safe value | 0            | Unsigned 16     | 065535         |             |   |
|                      | Watchdog Time as sec                    | >                            | 10           | Unsigned 16     | 0255           |             |   |
|                      |   |                              |              | H7              |                |             |   |

Edit the desired values of the parameters writing them within limits in the column "Value" of each row (H7). To map the "Digital Inputs" object double click on the line dat11188pn\_1 (Input Objects) - (H4) in the tree-view of the project. Click "PNIO Module I/O Mapping" (H8). Double click on the line of the object to map, in this example "Digital Inputs" (H9). The window Input Assistant appears. Click on the variable to be mapped (H10). Click "OK" (H11). The object will be associated to the variable

|  | Find   |                            | Filter Show all            |         | •       | 🕂 Add FB for IO Cha                              | nnel 🎽 Go to | Instance           |                    |                 |                     |
|--|--|----------------------------|----------------------------|---------|---------|--|--------------|--------------------|--------------------|-----------------|---------------------|
| PNIO Module I/O Mapping                            | Variable                                     | Mapping                    | Channel                    | Address | Туре    | Unit   | Description  |                    |                    |                 |                     |
| PNIO Module IEC Objects                            |  |                            | System Flags               | %IW2    | UINT    |  |              |                    |                    |                 |                     |
|  | ·  |                            | Digital Outputs ReadBack   | %IW3    | UINT [  |  |              |                    |                    |                 |                     |
| Status   | 8 3  |                            | Digital Inputs             | %IW4    | UINT    | Input Assistant                                  |              |                    |                    |                 |                     |
|  | -*   | _                          | Digital Inputs Rise Latch  | %IW5    | UINT    |  | and an       |                    |                    |                 |                     |
| Information  | - *  |                            | Digital Inputs Fall Latch  | %IW6    | UINT    | Text Search Categ                                | lories       |                    |                    |                 |                     |
|  | 1  |                            | Low part 32 bit Counter 0  | %IW7    | UINT    | Variables  |              | Name               | Type               | Address         | Origin              |
| H9   | - *  |                            | High part 32 bit Counter 0 | %IW8    | UINT    |  |              | =- 🛱 Application   | Application        |                 | -                   |
|  | *>   |                            | Low part 32 bit Counter 1  | %IW9    | UINT    |  |              |                    | PROGRAM            |                 |                     |
|  | - *  |                            | High part 32 bit Counter 1 | %IW10   | UINT    |  |              | @ In0              |                    |                 |                     |
|  | -*   |                            | Low part 32 bit Counter 2  | %IW11   | UINT    |  |              | Ø Out              | UINT               |                 |                     |
|  | - *>   |                            | High part 32 bit Counter 2 | %IW12   | UINT    |  |              | B- 🚳 IoConfig Glob | VAR GLOBAL         |                 |                     |
|  | -*   |                            | Low part 32 bit Counter 3  | %IW13   | UINT    |  |              |                    | Library            | Ic              | DrvEthernet, 4.2    |
|  | - 🍫  |                            | High part 32 bit Counter 3 | %IW14   | UINT    |  |              |                    |                    |                 |                     |
|  | -*   |                            | Power Up / Safe ReadBack   | %IW15   | UINT    |  |              |                    |                    |                 |                     |
|  | - *>   |                            | Debouncing Time ReadBack   | %IW16   | UINT    |  |              | H.                 | 10                 |                 |                     |
|  | L <b>₩</b>                                   |                            | Watchdog Timeout ReadBack  | %IW17   | UINT    |  |              |                    |                    |                 |                     |
|  | L 🇤  |                            | Inputs PS                  | %IB36   | Enumera |  |              |                    |                    |                 |                     |
|  |  |                            |                            |         |         | Structured view                                  |              |                    |                    | Filter Non      | 2                   |
|  |  |                            |                            |         |         |  |              |                    | Z to and with some | uments Insert w | th namespace prefix |
|  |  |                            |                            |         |         | Desamentation                                    |              |                    | ✓ Insert with arg  |                 |                     |
|  |  |                            |                            |         |         | Documentation                                    |              |                    | ☑ Insert with arg  |                 |                     |
|  |  |                            |                            |         |         | Documentation<br>In0: UINT(VAR)                  |              |                    | ✓ Insert with arg  |                 |                     |
|  |  |                            |                            |         |         | Documentation<br>In0: UINT(VAR)<br>digital input |              |                    | ⊻ insert with arg  |                 |                     |
|  |  |                            |                            |         |         | Documentation<br>In0: UINT(VAR)<br>digital input |              |                    | insert with arg    |                 |                     |
|  | Ky = Create new variable                     | ~ <b>∳</b> = Ma            | p to existing variable     |         |         | Documentation<br>In0: UINT(VAR)<br>digital input |              |                    | ⊻ insert with arg  |                 |                     |
| essages - Total 1 error(s), 0 warning(             | Ky = Create new variable                     | ~ <b>@</b> = Ma            | p to existing variable     |         |         | Documentation<br>In0: UINT(VAR)<br>digital input |              |                    | ⊻ insert with arg  |                 |                     |
| sssages - Total 1 error(s), 0 warning(<br>ecompile | Ky = Create new variable<br>ky, 8 message(s) | °∲ = Ma<br>error(s) ● 0 wa | p to existing variable     | < ¥     |         | Documentation<br>Ino: UINT(VAR)<br>digital input |              |                    | ≥ µsert win arg    |                 | OK Canc             |

#### Input mapped.

| Variable                | Mapping  | Channel                   | Address         | Туре |
|-------------------------|----------|---------------------------|-----------------|------|
|                         |          | Inputs                    | %IW2            |      |
|                         |          | System Flags              | %IW2            | UINT |
| ···· *                  |          | Digital Outputs ReadBack  | %IW3            | UINT |
| Application.PLC_PRG.In0 | <b>`</b> | Digital Inputs            | <del>%IW4</del> | UINT |
| ···· **                 |          | Digital Inputs Rise Latch | %IW5            | UINT |
| 🍫                       |          | Digital Inputs Fall Latch | %IW6            | UINT |

To map the output object double click on the line dat11188pn\_2 (Output Objects) - (H5) in the tree-view of the project. Click "PNIO Module I/O Mapping" (H12). Double click on the line of the object to map, in this example "Digital Outputs" (H13). The window Input Assistant appears. Click on the variable to be mapped (H14). Click "OK" (H15). The object will be associated to the variable

| General  | Find   |  | Filter Show all   |  | - + A   | dd FB fo | r 10 Channel | → Go to Instance  |  |                      |   |
|--|--|--|---|--|---|----------|--------------|---|--|----------------------|---|
| PNIO Module I/O Mapping<br>PNIO Module IEC Objects<br>Status       | H12 1  | Mapping  | Channel<br>Outputs<br>Digital Outputs<br>Reset / Enable Flags<br>Outputs CS | Address<br>%QW0<br>%QW0<br>%QW1<br>%IB37 | Type<br>UINT<br>UINT  | Unit     | Description  |   |  |                      |   |
| Information  | H13  | 3  |   |  | Text Search Cate(<br>Variables  | ories    |              | Name<br>Application<br>Polication<br>PLC_PRG<br>PLC_PRG<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out<br>Out | Type<br>Application<br>PROGRAM<br>UINT<br>Varry<br>VAR & Codau<br>Land 4 | Address              | Origin<br>CAA Device Diagnosi<br>IoDrvEthernet, 4.2 |
|  |  |  |   |  |   |          |              |   |  |                      |   |
|  |  |  |   |  | Structured view   |          |              |   | ⊡ Insert with a  | Filte<br>rguments Ir | r None  |
|  |  | ble 🍅 = Ma                                     | ap to existing variable   |  | Documentation<br>Out: UINT(VAR)<br>digital outputs                    |          |              |   | ⊡ Insert with a  | Filte<br>rguments Ir | r None  |
| essages - Total 1 error(s), 0 warning                              | K→ = Create new variab<br>g(s), 8 message(s)         | ble <sup>™</sup> ⊕ = Ma                        | ap to existing variable   |  | Structured view<br>Documentation<br>Out: UINT(VAR)<br>digital outputs |          |              |   | Insert with a  | Filte<br>rguments Ir | IT None   |
| lessages - Total 1 error(s), 0 warning<br>recompile<br>Description | <pre>% = Create new variab g(s), 8 message(s) </pre> | ble <sup>™</sup> • = Ma<br>• 1 error(s) ● 0 wa | ap to existing variable   | ye(s) × ¥                                | Structured view Documentation Out: UINT(VAR) digital outputs          | 1        |              |   | ∑ Insert with a  | Filte                | rr None sert with namespace prefix                  |

#### Output mapped.

| Find                                  | Filter Sho | ow all               |                 | - 🕂 Add FB for      | IO Chann | el → Go to Inst |
|---------------------------------------|------------|----------------------|-----------------|---------------------|----------|-----------------|
| Variable                              | Mapping    | Channel              | Address         | Туре                | Unit     | Description     |
|                                       |            | Outputs              | %QW0            |                     |          |                 |
| Application.PLC_PRG.Out               | <b>~</b>   | Digital Outputs      | <del>%QW0</del> | UINT                |          |                 |
| <b>*</b>                              |            | Reset / Enable Flags | %QW1            | UINT                |          |                 |
| · · · · · · · · · · · · · · · · · · · |            | Outputs CS           | %IB37           | Enumeration of BYTE |          |                 |

#### Step 8: run the project.

After the mapping of variables is complete, it is necessary to define the communication cycle time. In the tree-view of the project double click on the element "Profinet Communication Task" (I) Define the interval of execution as milliseconds (I1)

| Devices 🗸 🕂 🗙  |
|--|
| □ - 10 test_DAT11188   |
| i i i i i i i i i i i i i i i i i i i  |
| - int PLC Logic  |
| a Application  |
|  |
|  |
| aaa<br>iiii → ∰ MainTask (IEC-Tasks)   |
| B PLC_PRG  |
| 🖙 🥸 Profinet_CommunicationTask (IEC-Tasks)   |
| - ④ PN_Controller.CommCycle  |
| Profinet_IOTask (IEC-Tasks)  |
| ⇒ [j] Ethernet (Ethernet)  |
| PR_Controller (PN-Controller)  |
| - m difficient (definition)  |
| i datti 1880n 2 (Output Objects)   |
|  |
|  |
| / III PLC_PRG / III Device / III Ethernet / III PN_Controller / Se Profinet_ToTask / Se Profinet_CommunicationTask X / Se MainTask   |
| Conguiston   |
| The second s |
| Phonty ( U31 ): 14 Hask group IEC-Hasks V  |
| Type   |
| ( Cyclic v Interval (e.g. t=200ms) 1   |
| and the  |
|  |
|  |
| Time (e.g. t#200ms)  |
| Sensitivity  |
|  |
|  |
| 💠 Add Call 🔀 Remove Call 🖄 Change Call   🕆 Move Up 🔿 Move Down   Gpen POU  |
|  |
| POU Comment  |

in the Menu bar of Codesys click "Build" $\rightarrow$  "Clean" and after click "Build" $\rightarrow$  "Generate Code". When the project has been compiled in the Menu bar of Codesys click "Online" $\rightarrow$  "Login" to login to the PLC. Click "Debug" $\rightarrow$  "Start". If the communication ends correctly the project tree looks like as follows with all green marks.



#### Clicking on PLC\_PRG, it will be possible to see the variables changing.

| Device Application.PLC_PRG |      |       |        |         |            |
|----------------------------|------|-------|--------|---------|------------|
| Expression                 | Туре | Value | Prepar | Address | Comm       |
| Ø INO                      | UINT | 1     |        |         | digital in |
| Ø Out                      | UINT | 1     |        |         | digital o  |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
|                            |      |       |        |         |            |
| 1 Out 1:=In0 1;            |      |       |        |         |            |
| 2 💿 RETURN;                |      |       |        |         |            |
| 3 RETURN                   |      |       |        |         |            |

#### **WEB-SERVER**

The device is supplied by default with the IP address set to 0.0.0.0. Therefore it is not possible to access the web-server with an "out of the box" device. It is necessary to assign to the device a valid IP address. To do it, before to run the web browser:

- assign via PROFINET DCP a valid IP address and Subnet Mask

- tip in the address bar of the web browser the device's IP address. It will appear the Home page

For the devices using PROFINET the web server is intended for visualization only.

Due to this there won't be required any credentials to access it.

Depending on the Web browser in use some icons and/or graphics may appear with little variation in shape and colour. The supported web browsers are: Chrome, Firefox, Opera and Edge.

| Home page          |                    |
|--------------------|--------------------|
|                    |                    |
| DAT11000 SERIES    |                    |
| Language Selection |                    |
|                    |                    |
| Italiano A         |                    |
| Français           |                    |
|                    | Follow us:         |
|                    | in Linkedin A1     |
|                    | Instagram Facebook |
|                    |                    |
| www.datexel.it A2  |                    |
|                    |                    |

The "Home page" is composed of:

- Language selection to access the page with the menus of the device selected (A). Once the language has been selected the Network Parameters page will appear

- Link to the Datexel social media (A1)

- Link to the Datexel web site "www.datexel.it" (A2) .

#### **Network Parameters**



The "Network Parameters page" is composed of:

- Indication of the device connected (B).

- Menu selection (B1)

- List of Network Parameters (B2)

Indication of the device connected (B)

This label indicates the Order Number of the device connected. It is a parameter common for all of the pages available with the exception of the Home Page therefore it will be described only here.

This parameter doesn't correspond to the Station Name of the device.

### Menu Selection (B1)

These buttons are common for all of the pages available with the exception of the Home Page therefore they will be described only here.

The green background on the button shows which is the page currently visualized. Mouse click on a button recalls a specific menu. The list of the menu is the following:

- Network Parameters: it shows the main network settings of the device
- Module Information: it shows the main information about the device
- Digital Inputs: it shows the status of digital inputs, the value of debouncing time and the value of the input counters.
- Digital Outputs: it shows the status of digital outputs, Power-up, safe and Watchdog.
- Home: allows to go back to the Home Page.

#### Network Parameters (B2)

The list of Parameters shown is the following

- IP Address: visualizes the unique IP address value assigned to the device.
- Subnet Mask: visualizes the Subnet Mask value assigned to the device.
- Gateway Mask: visualizes the Gateway Mask value assigned to the device.

- Ethernet Port 1 / Ethernet Port 2 : visualize the status of connection for Ethernet Port 1 and Ethernet Port 2. The status shown are: No link: it means there is not a connection sensed on the port indicated.

100 Mbit: it means there is a connection sensed on the port indicated.

- MAC address: visualizes the unique MAC address value of the device

#### **Module Information**

| DAT11188PN         | Module         | e information        |         |   |
|--------------------|----------------|----------------------|---------|---|
|                    | Module Name:   | dat11188pn           |         |   |
|                    | Vendor ID:     | 0x078B               |         |   |
| Network Parameters | FW Version:    | 1.00.00              |         |   |
|                    | Web Version:   | 041024               |         |   |
| Module Information | Vendor Name:   | Datexel S.r.I.       |         |   |
| Digital Inputs     | Module Status: | WAIT PROCESS         |         |   |
| Digital Outputs    | Protocol:      | PROFINET IO          |         |   |
| Home               | PowerUp Event: |                      |         |   |
|                    | Uptime:        | 0 Days , 00h:23m:32s |         |   |
|                    |                |                      | Refresh | С |
|                    |                |                      |         |   |

The "Module Information page" is composed of:

- Indication of the device connected (C).
- Menu selection (C1)
- Overview of the Device main information (C2)
- Button Refresh (C3).

Information (C2)

- Module Name: shows the device name of the device connected. This parameter doesn't correspond to the Station Name of the device.

- Vendor ID: shows the unique Vendor ID assigned to Datexel S.r.I. by PI association
- FW version: shows the firmware version of the device
- Web version: shows the version of the web server
- Vendor Name: shows the vendor name (Datexel S.r.l.)
- Module Status: shows the current status of the device; refer to section CYCLIC INPUT DATA MAPPING Bytes 0/1 System Flags
- Supervising Bits for the description of values.
- Protocol: shows the communication protocol (PROFINET IO)
- PowerUp Event: shows the status of PowerUp bit (red: PowerUp event detected gray: PowerUp event reset )
- Uptime: shows the time elapsed since the moment the device was powered up.

#### Refresh (C3)

The button allows to refresh the parameters of this page reading them from the device.

#### **Digital Inputs**



The "Digital Inputs page" is composed of:

- Indication of the device connected (D).
- Menu selection (D1)
- Column of Digital Inputs (D2)
- Column of Digital Inputs State (D3)
- Column of Digital Inputs Rise Latches (D4)
- Column of Digital Inputs Fall Latches (D5)
- Column of Digital Inputs Counters (D6)
- Debouncing Time (D7)
- Functional buttons (D8)

#### Column of Digital Inputs (D2)

Divided by rows per each input shows the status of the digital input channel.

Column of Digital Inputs State (D3)

Divided by rows per each input shows the status of the digital input (red: Input state 1 - gray: Input state 0).

#### Column of Digital Inputs Rise Latches (D4)

Divided by rows per each input shows if a rise latch event for the specific digital input has occurred (checked: event occurred – unchecked: event not occurred ).

#### Column of Digital Inputs Fall Latches (D5)

Divided by rows per each input shows if a fall latch event for the specific digital input has occurred (checked: event occurred – unchecked: event not occurred ).

#### Column of Digital Inputs Counters (D6)

Divided by rows per each input shows the value of the counter associated to the specific digital input.

Debouncing Time (D7)

Shows the value in ms of the Debouncing Time.

#### Functional buttons (D8)

Contains the buttons to perform the communication;

Read: single read command sent to the device.

Continuous reading: continuos read command sent to the device.

Stop: stop the reading from the device if a continuos read command has been previously sent.

#### **Digital Outputs** DATEX PROFI NET DAT11188PN E **Digital Output E1** rk Parar l Out 4 dule Information Out ital Out 6 gital Inpu tal Out 7 Digital Outputs ec (0 = disabled) www.datexel.it

The "Digital Outputs page" is composed of:

- Indication of the device connected (E).
- Menu selection (E1)
- Column of Digital Outputs (E2)
- Column of Digital Outputs State (E3)
- Column of Digital Outputs PowerUp (E4)
- Column of Digital Outputs Safe (E5)
- Short Circuit Alarm (E6)
- Watchdog Alarm (E7)
- Watchdog Timeout (É8)
- Refresh button (E9)

Column of Digital Outputs (E2)

Divided by rows per each output shows the status of the digital output channel.

Column of Digital Outputs State (E3)

Divided by rows per each output shows the status of the digital output (red: output activated - gray: output not activated ).

#### Column of Digital Outputs PowerUp (E4)

Divided by rows per each output shows the setting to which the specific digital output will be forced to when a Powerup event occurs (checked: output will be set to state 1 – unchecked: output will be set to state 0).

Column of Digital Outputs Safe (E5)

Divided by rows per each output shows the setting to which the specific digital output will be forced to when a Safe event occurs (checked: output will be set to state 1 – unchecked: output will be set to state 0).

Short Circuit Alarm (E6)

Shows if a Short circuit alarm has occurred (checked: event occurred – unchecked: event not occurred ).

Watchdog Alarm (E7)

Shows if a Watchdog alarm has occurred (checked: event occurred - unchecked: event not occurred ).

Watchdog Timeout (E8)

Shows the value in seconds of the Watchdog Timeout; a value of 0 means that the functionality is disabled.

## Refresh (E9)

The button allows to refresh the parameters of this page reading them from the device.

#### ADDITIONAL COMMANDS TO IDENTIFY THE NETWORK IN USE

The following additional commands can be used to identify which network the PC is connected to. <u>To use the following commands, run the Command Prompt (cmd.exe) as Administrator (Pict.1).</u>

#### "Ipconfig" command

It is possible to display the networks available on the PC by typing this command and pressing Enter.

The system will return a list of all the PC networks (Pict.2). Before trying to establish a communication with the device, the user must be sure that he is in the correct subnet and network parameters have already been assigned via PROFINET DCP.

#### "Ping" command

Once the IP Address has been set, to verify if a device is connected to the network, you can use the "ping" command which is an administration utility for computer networks used to measure the time expressed in milliseconds of one or more packets to reach a network device and return origin. To use the command type the command "ping" followed by the IP address of the device and press Enter. Example:

ping 192.168.1.100

If the device is connected, the system will return the response from the device with the IP address used (Pict.3).

If the system returns the "Destination host unreachable" message, the device is not connected to the network in use.

In this case, it is suggested to check the assignment of the network parameters.

| Pict. 1  |   | Pict. 2  |   |
|--|---|--|---|
|  |   | 🔤 Administrator: Command Prompt 📃  | × |
| All Apps Documents Setting:  | s Web More 🔻  | Microsoft Windows [Version 10.0.18362.418]<br>(c) 2019 Microsoft Corporation. All rights reserved.   | ^ |
| Best match   |   | C:\WINDOWS\system32>ipconfig   |   |
| Command Prompt   |   | Windows IP Configuration   |   |
| Anne   | G Run as administrator  | Ethernet adapter Ethernet:   |   |
| <ul> <li>Node.js command prompt</li> <li>Prompt dei comandi degli strumo<br/>nativi di VS2015 x64</li> </ul> | Run as different user       I Open file location       -t= Pin to Start | Connection-specific DNS Suffix .:<br>Link-local IPv6 Address : fe80::9c67:4c59:b502:f8c7%7<br>IPv4 Address : 192.168.1.163<br>Subnet Mask : 255.255.255.0<br>Default Gateway : 192.168.1.1 |   |
| <ul> <li>Prompt dei comandi degli strume<br/>ARM di VS2015 x86</li> </ul>                                    |   | C:\WINDOWS\system32>_  |   |
| Search the web C cmd - See web results   | Run<br>▷ Ope<br>-⊐ Pint   |  |   |
| Settings (1)   | -🛱 Pin t  |  | ~ |

#### Pict. 3

| 🔤 Administrator: Command Prompt  | _ | ×      |
|--|---|--------|
| C:\WINDOWS\system32>ping 192.168.1.100   |   | ^      |
| Pinging 192.168.1.100 with 32 bytes of data:<br>Reply from 192.168.1.100: bytes=32 time<1ms TTL=100<br>Reply from 192.168.1.100: bytes=32 time=1ms TTL=100<br>Reply from 192.168.1.100: bytes=32 time=1ms TTL=100<br>Reply from 192.168.1.100: bytes=32 time=1ms TTL=100                 |   |        |
| Ping statistics for 192.168.1.100:<br>Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),<br>Approximate round trip times in milli-seconds:<br>Minimum = 0ms, Maximum = 1ms, Average = 0ms  |   |        |
| C:\WINDOWS\system32>ping 192.168.1.123   |   |        |
| Pinging 192.168.1.123 with 32 bytes of data:<br>Reply from 192.168.1.163: Destination host unreachable.<br>Reply from 192.168.1.163: Destination host unreachable.<br>Reply from 192.168.1.163: Destination host unreachable.<br>Reply from 192.168.1.163: Destination host unreachable. |   |        |
| Ping statistics for 192.168.1.123:<br>Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),   |   |        |
| C:\WINDOWS\system32>   |   | $\sim$ |

## **EXAMPLE TO CHECK WINDOWS ® CONFIGURATION**

This example shows how to change the IP of the Personal Computer (the graphics and the procedure change in relation to the operating system in use) in order to allow the search for the device on the network. To do this a valid IP address must have been assigned to the device via PROFINET DCP.

1) Access to Control Panel -> Network and Sharing Center

| Control Panel\All Control Panel Items |          |                               |   |                                   |                      |                             |              | -          |  | × |
|---------------------------------------|----------|-------------------------------|---|-----------------------------------|----------------------|-----------------------------|--------------|------------|--|---|
| +                                     |          |                               |   |                                   | Search Control Panel |                             |              | P          |  |   |
| File Edit View Tools                  |          |                               |   |                                   |                      |                             |              |            |  |   |
| Adjust your computer's settings       |          |                               |   |                                   |                      |                             | View by: Lar | ge icons * |  |   |
| Administrative Tools                  |          | AutoPlay                      | * | Backup and Restore<br>(Windows 7) | 1                    | Color Manage                | ment         |            |  |   |
| Credential Manager                    | <b>P</b> | Date and Time                 | 6 | Default Programs                  |                      | Device Manag                | er           |            |  |   |
| Devices and Printers                  | 0        | DTS Audio Control Panel       | C | Ease of Access Center             |                      | File Explorer C             | ptions       |            |  |   |
| File History                          | ۶        | Flash Player (32-bit)         | A | Fonts                             | R                    | Indexing Optic              | ons          |            |  |   |
| Internet Options                      | 0        | IObit Uninstaller             | - | Java                              | ~                    | Keyboard                    |              |            |  |   |
| Mouse                                 |          | Network and Sharing<br>Center | 3 | Phone and Modem                   | 1                    | Power Options               | 6.           |            |  |   |
| Programs and Features                 |          | Recovery                      | 8 | Region                            | 1                    | RemoteApp ar<br>Connections | nd Desktop   |            |  |   |
| Y Security and Maintenance            | ۲        | Sound                         | Ş | Speech Recognition                | (F)                  | Storage Space               | 5            |            |  |   |
| Sync Center                           | 9        | System                        | 8 | Taskbar and Navigation            |                      | Troubleshooti               | ng           |            |  |   |
| See Accounts                          | -        | Windows Defender<br>Firewall  |   | Work Folders                      |                      |                             |              |            |  |   |

#### 2) Network and Sharing Center $\rightarrow$ *Change Adapter Settings*

# 3) Change Adapter Settings → select the interested network → right click → Properties

Properties



4) Properties  $\rightarrow$  Internet Protocol version 4  $\rightarrow$  Properties



5) Change parameters and click OK.

Datexel s.r.l. reserves its right to modify the characteristics of its products totally or in part without warning at any time.

Page 38 of 38