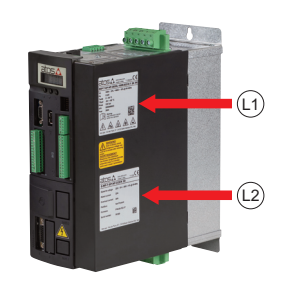


SMART SERVOPUMP - SSP

Drive model:	Pump models:	Servomotor model:
D-MP series 20 or higher	PGI PGIL PGIX2	PMM


IDENTIFICATION

SSP and drive



L1
L2


SSP label : L1



1
2
3

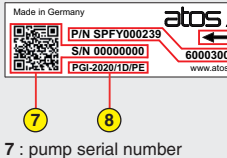
1 : SSP system code
2 : SSP system main data
3 : SSP system serial number

Pump and servomotor



N1
N2

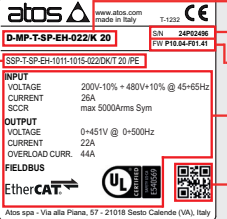
Pump label : N1



7
8
9
10

7 : pump serial number
8 : pump code
9 : pump internal code Atos
10 : pump rotation direction

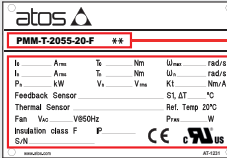
Drive label : L2



4
5
6
7

4 : drive code
5 : drive serial number
6 : factory firmware version
7 : drive main data

Servomotor plate : N2



11
12

11 : servomotor code
12 : servomotor main data

PROGRAMMING TOOLS - not included

Programming PC software

AND

RS485 adapter/cables

Sizing tool PC software



S-SW-SETUP



KIT S-A-PS-USB/DB9




S-SW-SIZING

REMARK Atos PC software are designed for Windows based operative systems - Windows 10 or later

PROGRAMMING PC SOFTWARE

S-SW-SETUP	supports	NP (Serial RS485) BC (CANopen) EH (EtherCAT)	BP (PROFIBUS DP) EP (PROFINET RT/IRT)
------------	----------	--	--

PC SOFTWARE DOWNLOAD



My Atos

WELCOME


enter your email

Password

Forgot your password?

Register

Log in



Download area
electronics

Download PC software at www.atos.com
accessing to "MyAtos -> Download area electronics"

Free registration by filling the form at www.atos.com/en-it/login

S-SW-SETUP and S-SW-SIZING are free and available in Download area

RELATED DOCUMENTATION - www.atos.com

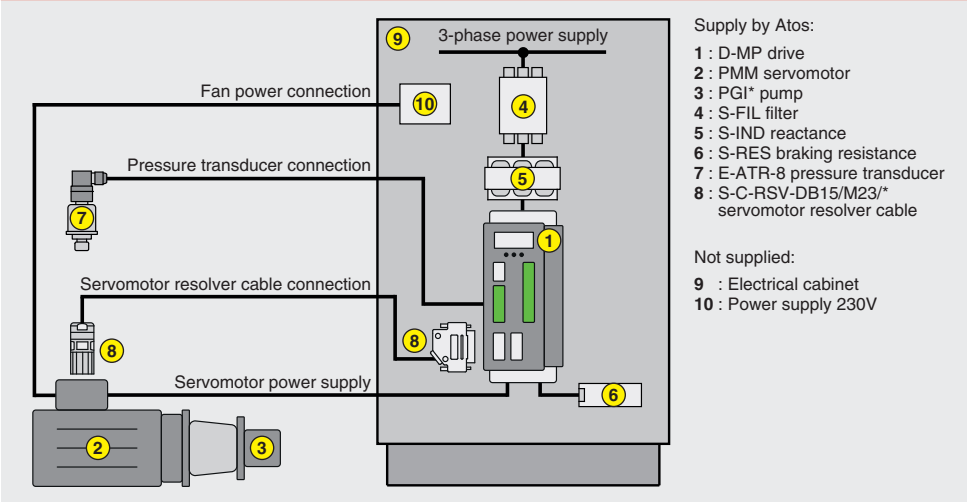
AS050	Basic for Smart servopumps - SSP - tech. table	S-MAN-SW	Programming software instructions manual
AS100	Smart servopumps - SSP - tech. table	S-MAN-HW	Installation instructions manual
AS200	Sizing criteria for servopumps - tech. table	S-MAN-S-BC	CANopen protocol programming manual
AS300	Cast iron internal gear pumps - tech. table	S-MAN-S-BP	PROFIBUS DP protocol programming manual
AS320	Cast iron double internal gear pumps - tech. table	S-MAN-S-EH	EtherCAT protocol programming manual
AS350	Aluminium internal gear pumps - tech. table	S-MAN-S-EP	PROFINET protocol programming manual
AS400	Electric motors for SSP servopumps - tech. table		
AS500	Electronic drives for SSP servopumps - tech. table		
AS800	Programming tools - tech. table		
AS810	Accessories for SSP servopumps - tech. table		
AS910	Operating and maintenance info - tech. table		

ATTENTION !

The purpose of this quickstart guide is show a logical sequence of basic operations. This guide does not cover all details or variants of Atos servopumps. All operations described in this document should be performed only by qualified personnel. Operations and images could be subject to change without notice. For further information please refer to related documentation.

CONTACT US

LOGIC BLOCK DIAGRAM - SSP SYSTEM



INSTALLATION		PROGRAMMING
STEP 1	STEP 2	STEP 3
RECOVERY / REGENERATION	ELECTRICAL	SOFTWARE

STEP 1 RECOVERY / REGENERATION - PROCEDURE AFTER STORAGE

Drive cannot be used immediately after a storage period. In order to avoid faults during activation, the following procedures must be adopted (for more information please refer to S-MAN-HW manual).

RECOVERY


Leave the drive for 4 hours as indicated:

Temperature	0 ÷ 35 °C
Humidity	5 ÷ 75 %
Condensation	NO
Atmospheric pressure	61.6 ÷ 101.3 kPa
Recovery time (1)	4 h

(1) After this recovery time there must be no trace of condensation, both inside and outside (well ventilated area)

REGENERATION

Only mandatory if the time elapsed since the last regeneration of electronic capacitors is between 6 and 12 months: power on the drive through L1, L2, L3 and X3 or X1-IN terminals for 2 h, without giving run enable. Once the regeneration process is completed, the drive can work normally.




WARNING: the regeneration procedure of the power bus electrolytic capacitors given above is no more valid if:

- the time elapsed since the last regeneration is greater than 12 months
- the time elapsed since purchase is longer than 12 months and the regeneration procedure has never been carried out

In these cases request the procedure to be used at Atos

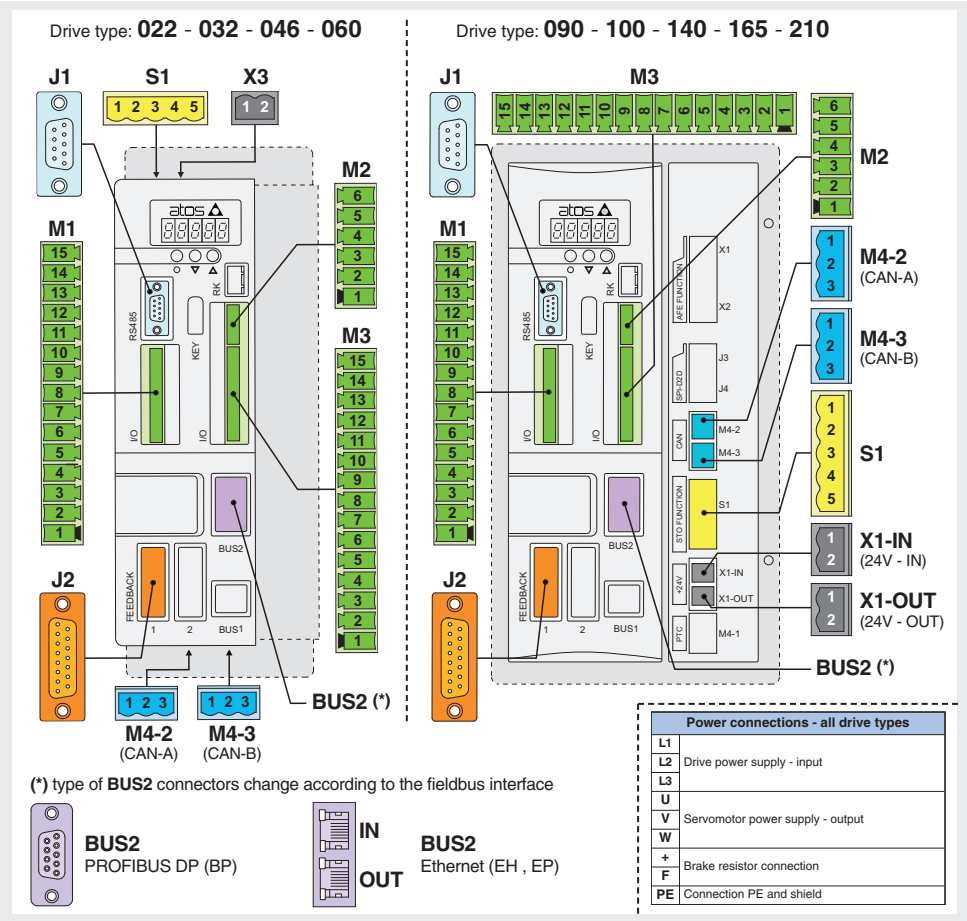
STEP 2 ELECTRICAL

This section considers the different SSP models, illustrating the multiple variants of the available electrical connections. The electrical connections have to be wired according to the selected SSP code.



WARNING: remove power supply before any electrical or wiring operations

2.1 MAIN CONNECTIONS - DRIVE



2.2 CONNECTORS - DRIVE

Recommended LiYCY shielded max conductor size 1,5 mm²
1,5 mm² max 30 m - for 24VDC power supply - 0,5 mm² max 30 m - for logic

IN/OUT digital and analog signals

1	DI1	(Enable 24Voc or disable 0Voc) - digital input
2	DI2	(Multiple axis selection IN0) - digital input
3	DI3	(Multiple axis selection IN1) - digital input
4	DI4	(Alarm reset) - digital input
5	DGND	(Common gnd for digital input)
6	DO1 (1)	(Fault 24Voc or normal working 0Voc) - digital output
7	DO1-24V	(DO1 power supply 24Voc) - input power supply
M1	DO2 (2)	(For SSP with single pump execution without /D option) STO test suggested 24Voc or not 0Voc) - digital output
	DO2 (2)	(For SSP with single pump execution with /D option) (Smart cooling active 24Voc or not 0Voc) - digital output
	DO2 (2)	(For SSP with double pump execution) (Single pump active 24Voc or not 0Voc) - digital output
	DO2-24V	(DO2 power supply 24Voc) - input power supply
10	Q_INPUT-	(±10Voc or 4 ÷ 20mA) - analog input
11	Q_INPUT+ (5)	Default is 0 ÷ 10Voc
12	AGND	(Common gnd for Q_MONITOR)
13	+10V	(power supply +10Voc) - output power supply
14	-10V	(power supply -10Voc) - output power supply
15	Q_MONITOR	(±10Voc / 10V = 3276,7 rpm) - analog output

CANopen (BC) - main - always present (not use for NP, BP, EH, EP)

M4-2	1	CAN_HA	(Bus line - high)
(3)	2	CAN_LA	(Bus line - low)
	3	CAN_GND	(signal zero data line)

CANopen (BC) - always present (not use for NP, BP, EH, EP)

M4-3	1	CAN_HB	(Bus line - high)
(3)	2	CAN_LB	(Bus line - low)
	3	CAN_GND	(signal zero data line)

PROFIBUS DP (BP)

BUS2	1	SHIELD	(do not connect)
	2	NC	(do not connect)
	3	LINE_B	(Bus line B)
	4	DE	(control's signal for repeater)
	5	DGND	(Data line and terminator signal zero)
	6	+5V	(Termination supply signal)
	7	NC	(do not connect)
	8	LINE_A	(Bus line A)
	9	NC	(do not connect)

Ethernet (EH , EP) - IN/OUT

BUS2	1	TX+	(Transmitter) - white/orange
(4)	2	RX+	(Receiver) - orange
	3	TX-	(Transmitter) - white/green
	4	NC	(do not connect)
	5	NC	(do not connect)
	6	RX-	(Receiver) - green
	7	NC	(do not connect)
	8	NC	(do not connect)

24VDC input power supply - only for drives type 022 ÷ 060

X3	1	V+_IN	(Power supply 24Voc) - input power supply
	2	V0_IN	(Power supply 0Voc) - gnd power supply

24VDC input power supply - only for drives type 090 ÷ 210

X1-IN	1	V+_IN	(Power supply 24Voc) - input power supply
	2	V0_IN	(Power supply 0Voc) - gnd power supply

24VDC output power supply - only for drives type 090 ÷ 210

X1-OUT	1	V+_OUT	(Power supply 24Voc) - input power supply
	2	V0_OUT	(Power supply 0Voc) - gnd power supply

M2

Not used - only for GND and SHIELD connection

1	NC	(do not connect)
2	NC	(do not connect)
3	NC	(do not connect)
4	NC	(do not connect)
5	GND	(Common gnd)
6	SHIELD	(Shield)


(1) DO1 and DO3 digital output with fast contact
(2) DO2 and DO4 digital output with relay contact

(5) **WARNING:** input signals can be reconfigured between voltage and current using specific dip-switch present inside the drive; set the dip-switch with the drive powered off and before making the electrical connections as it would not be possible to remove the cover with connectors wired (see S-MAN-HW installation manual)

S1

Safe Torque Off (STO)

1	+24V_STO1	(Power supply STO1 - 24Voc) - input power supply
2	0V_STO1	(first safety system channel)
3	NC	(do not connect)
4	+24V_STO2	(Power supply STO2 - 24Voc) - input power supply
5	0V_STO2	(second safety system channel)




WARNING:

- the STO function must be tested periodically as indicated in the S-MAN-HW manual to avoid the servomotor control is automatically disabled
- if the STO function is not used, both channels +24V_STO1 and +24V_STO2 must be permanently connected to the 24V voltage
- even if the STO function is not used, it is still necessary to periodically test the STO function
- the STO1 and STO2 inputs must have a dedicated +24VDC feed line and given with a delay respect the auxiliary +24VDC voltage of X3 (consider for example a time of 1s); is not possible to connect together in parallel the STO1 and STO2 inputs with the X3 feed line: this kind of wiring could cause failures on STO operations

(1) DO1 and DO3 digital output with fast contact
(2) DO2 and DO4 digital output with relay contact

(5) **WARNING:** input signals can be reconfigured between voltage and current using specific dip-switch present inside the drive; set the dip-switch with the drive powered off and before making the electrical connections as it would not be possible to remove the cover with connectors wired (see S-MAN-HW installation manual)

Safe Torque Off (STO)	
1	+24V_STO1 (Power supply STO1 - 24Voc) - input power supply
2	0V_STO1 (first safety system channel)
3	NC (do not connect)
4	+24V_STO2 (Power supply STO2 - 24Voc) - input power supply
5	0V_STO2 (second safety system channel)



WARNING:

- the STO function must be tested periodically as indicated in the S-MAN-HW manual to avoid the servomotor control is automatically disabled
- if the STO function is not used, both channels +24V_STO1 and +24V_STO2 must be permanently connected to the 24V voltage
- even if the STO function is not used, it is still necessary to periodically test the STO function
- the STO1 and STO2 inputs must have a dedicated +24VDC feed line and given with a delay respect the auxiliary +24VDC voltage of X3 (consider for example a time of 1s); is not possible to connect together in parallel the STO1 and STO2 inputs with the X3 feed line: this kind of wiring could cause failures on STO operations

2.3 MAIN CONNECTIONS - MOTOR

Power connection - 4 phases

C1	W	Phase W	Input - power supply
	V	Phase V	Input - power supply
	U	Phase U	Input - power supply
	GND	Gnd	power supply

Fan power connection

C2	1	Fan	Input - power supply
	2		230 V @ 50 ÷ 60 Hz

SERVOMOTOR RESOLVER CABLE CONNECTION

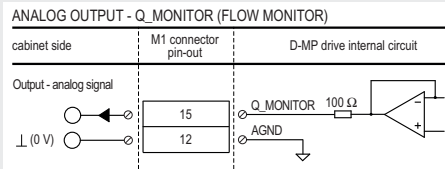
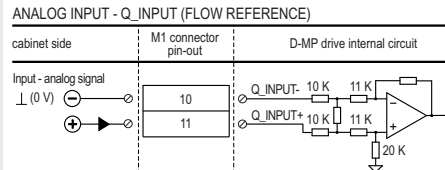
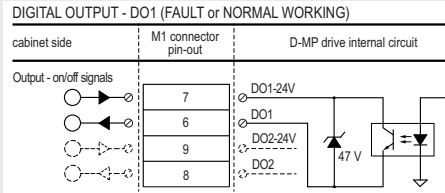
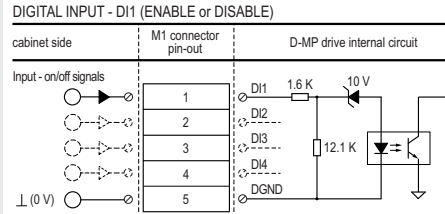
S-C-RSV-DB15/M23/* 20 cable

J2

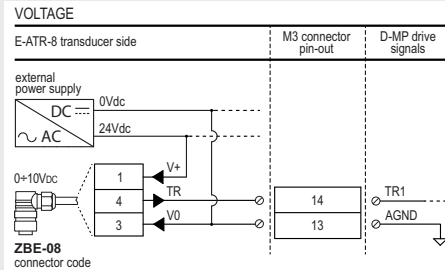
M23

ELECTRICAL WIRING EXAMPLES

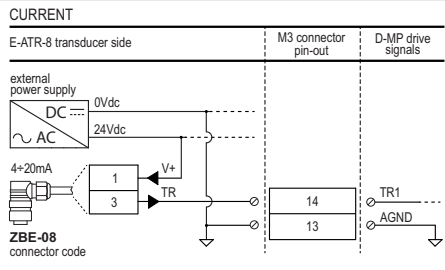
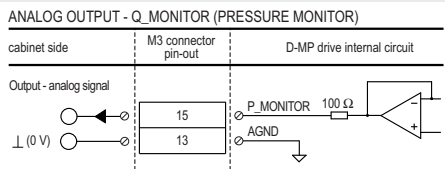
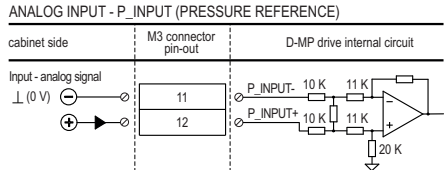
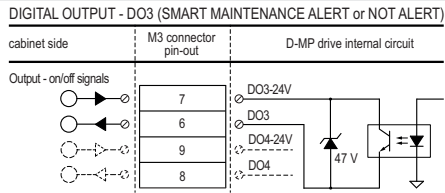
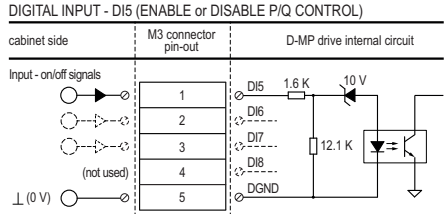
M1 CONNECTOR - DIGITAL / ANALOG SIGNALS



M3 CONNECTOR - PRESSURE TRANSDUCER



M3 CONNECTOR - DIGITAL / ANALOG SIGNALS



STEP 3 SOFTWARE

REMARK D-MP drives are factory preset with default parameters, only few programming operations are mandatory:

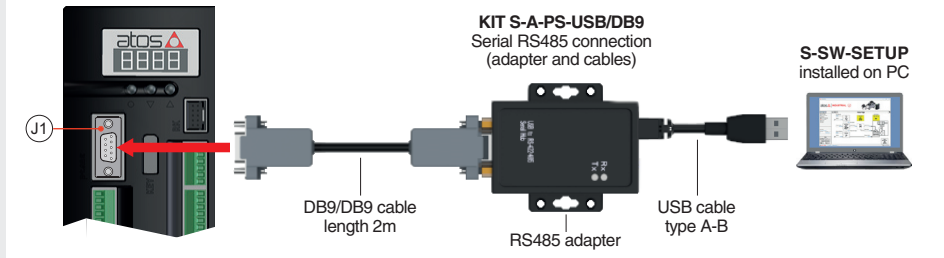
- perform the **Smart Start-up** procedure (highly suggested)
- only for drives with fieldbus interface (**BC, BP, EH, EP**) setup the network parameters and the source of reference signals

Drive programming can be performed through S-SW-SETUP software or via fieldbus (not for **NP**)

3.1 CONNECTION

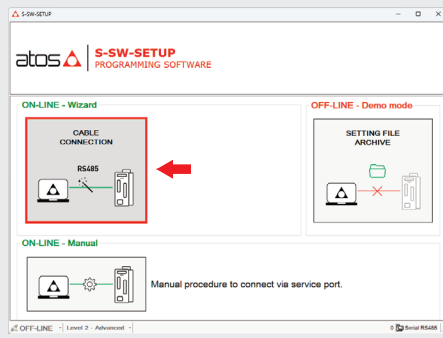
- 1 In order to access SSP parameterization:
- Install S-SW-SETUP software on PC
 - Connect drive and power on with 24Vdc input power supply

- 2 Connect drive to the PC as shown below via serial port RS485

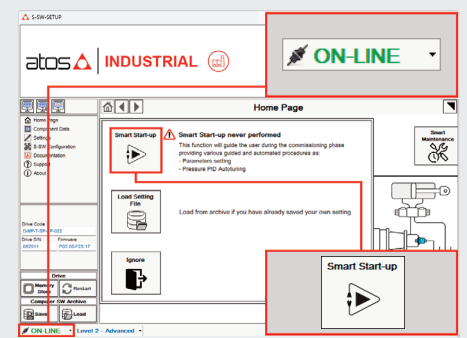


- 3 Launch the software using S-SW icon:
- software does NOT detect valid connection communication is not established, please follow wizard procedure
 - software detects valid connection communication automatically established - SSP is ON-LINE see

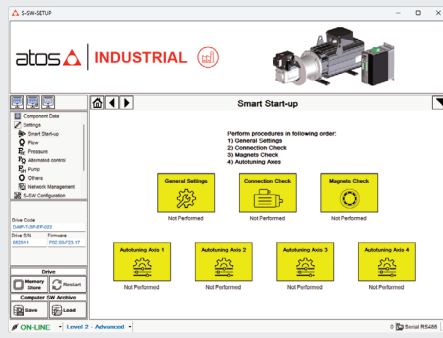
- 4 In ON-LINE - Wizard press button **CABLE CONNECTION**



- 5 Communication established and SSP is ON-LINE Press button **Smart Start-up**



- 6 The Smart Start-up procedure is highly suggested in order to easily optimize the SSP systems.



REMARK: even if a setting file is loaded from the archive, the drive cannot be enabled until **Connection Check** and **Magnets Check** are performed

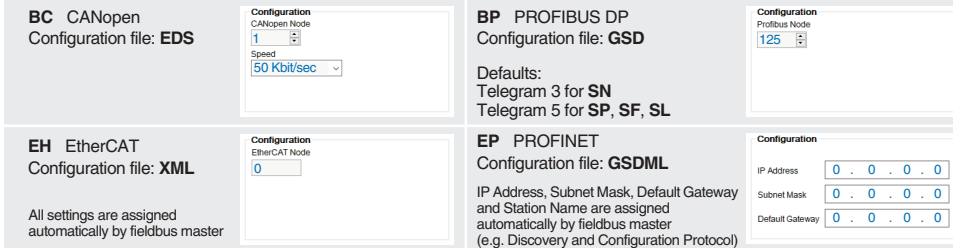
NOTE: Smart Start-up allows to optimize parameters for up to 4 axes

	Setting File not loaded from archive	Setting File loaded from archive
General Settings	RECOMMENDED	DO NOT PERFORM
Connection Check	MANDATORY <ul style="list-style-type: none">STO digital inputs high (24V)Enable signal low (0V)Vent the pump delivery line	MANDATORY <ul style="list-style-type: none">STO digital inputs high (24V)Enable signal low (0V)Vent the pump delivery line
Magnets Check	MANDATORY <ul style="list-style-type: none">STO digital inputs high (24V)Enable signal low (0V)Vent the pump delivery line	MANDATORY <ul style="list-style-type: none">STO digital inputs high (24V)Enable signal low (0V)Vent the pump delivery line
Autotuning Axis 1	NOT MANDATORY <ul style="list-style-type: none">STO digital inputs high (24V)Enable signal low (0V)	DO NOT PERFORM

3.2 FIELDBUS - Network Management - only for BC, BP, EH, EP

Node, Station Alias, IP Address, Baudrate, etc... can be set through:

- Machine central unit (master)** - please refer to S-MAN-S-** fieldbus protocol programming manual
- S-SW-SETUP software**
 - switch to **Level 2 - Advanced** and browse to **Network Management - Configuration** to change below default settings:



- press **Memory Store** button and in **Fieldbus Parameters** press **Store User** button to save new setting into the drive (see 3.3)
 - network configuration settings will be applied at next drive power-on or pressing the **Restart** button
- NOTE:** configuration files are available in MyAtos area - www.atos.com

3.3 STORE

Parameters modifications will be stored into drive permanent memory:

- press **Memory Store** button to access **Drive - Memory Store** window
- press **Store User** buttons to store **Drive Parameters**

WARNING: during drive parameters storing operations, never switch-off the main power stage to the drive: permanent drive parameters stored into the drive may result invalid!

3.4 BACK UP

Parameter modifications will be saved into PC memory:

- press **Save** button to access **Computer SW Archive - Setting Files** page, **Setting File Name** pop-up appears
- input a valid name into **Description** field and press **Ok** button

TROUBLESHOOTING

Pump noise

- presence of air; allow the SSP to run at low speed (<300rpm) flushing the oil through a relief valve present in the system and set at the lowest possible pressure; the pressure reference signal to the SSP should be higher than the relief valve pressure set

SSP does not follow the reference signal

- 3-phase power supply not correctly connected – verify the 3-phase power supply
- drive is powered off – check that the 24V power supply is present on X3 connector (only for size 022, 032, 046, 060)
- Connection Check and/or Magnets Check procedure not performed – see STEP 3, section 3.1 (point 6)
- STO function not enabled – check that the 24V supply is present on STO pins (S1 connector)
- drive is disabled – check that the 24V supply is present on enable pin (M1 connector)
- wrong connection of the pressure transducer to the drive – check wiring connection
- system relief valves wrong setting – verify relief valves setting
- suction line wrongly connected – verify suction pipe

PC software parameters modifications are lost when drive is switched off

- parameter store operation was not performed, check store procedure – see STEP 3, section 3.3

PC software parameters modifications have no effect on the drive

- drive is OFF LINE, check connection procedure – see STEP 3, section 3.1

Maintenance request

- maintenance of the pump and/or motor is required; these information are accessible via digital signals (DO3 - M3 connector) and/or fieldbus – follow Smart Maintenance instruction via the S-SW-SETUP software and the S-MAN-SW manual

HINT! - The alarms code are shown on the drive display (see the table below for typical alarms and corrective actions)

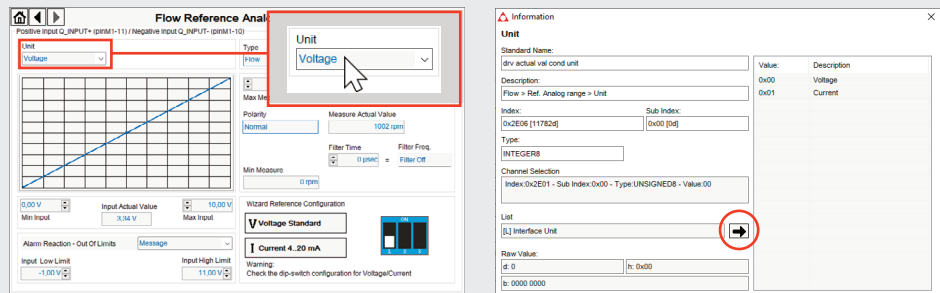
Code	Description	Corrective Actions
A10.0 plus A13.1	DC Bus Voltage too Low	If the start-up sequence is not correctly executed each time the SSP is switched on, alarms A10.0 and A13.1 will be activated simultaneously. 1) Turn on the 3-phase power supply and give 24Vdc input power supply 2) Wait a minimum of 200 ms and give the 2 STO digital inputs (S1 connector). Attention: the 2 inputs must be given with a delay <50ms 3) Give the enable signal (M1 connector) 4) Give the reference signals (M1 and M3 connectors)
A3.0	Drive Output Current Value too High	1) Reduce the speed reference signal <2000 rpm during the phase of the machine cycle where the alarm is generated 2) Check motor cables conditions and verify motor insulation 3) If the problem persists contact Atos service Center NOTE: A3.0 alarm cannot be reset either by logic input, or via serial or via fieldbus - it is necessary to restart the drive
A10.0 A11.1 A11.2 A11.3	DC Bus Voltage too High	1) Check the 3-phase power supply 2) Verify the Start-up sequence – see STEP 3 3) If the problem is still present add / increase the ramp time on the increasing speed reference signal 4) If the problem persists contact Atos service Center
A12.1	Run without Power Soft Start	Introduce a delay from the PLC between power on and command enable
A13.2	DC Bus Ripple too High	1) Reduce the speed reference signal 2) Check the load 3) In extreme cases check speed loop 4) If the problem persists contact Atos service Center
AT2	Pressure Transducer Out of Limits	Check the pressure transducer connection

HINT ! - Wizard objects dictionary - only for BC, BP, EH, EP

Press **CTRL + H** on the PC keyboard to open the context help form

Move arrow on parameter (e.g. **Unit**) to display the objects dictionary information to access the parameter via fieldbus

If present **List**, press **→** to display values accepted by the parameter



NOTE: alternatively right click on any parameter

