Troubleshooting service

ERROR LIST OF POSSIBLE ERRORS WITH RELATIVE CAUSES AND POSSIBLE SOLUTIONS

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Valid for Low Voltage firmware ≥ V. 4.0

CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
E0	Internal error	LV I.E. 0 Stack Overflow		Firmware problem LV	Firmware update LV (Report to the electronic R&D)
E1	Internal error	LV I.E. 1 Overrun_50uS		Firmware problem LV	Firmware update LV (Report to the electronic R&D)
E2	Internal error	LV I.E. 2 Overrun _200us		Firmware problem LV	Firmware update LV (Report to the electronic R&D)
E3	Internal error	LV I.E. 3 Overrun_5ms		Firmware problem LV	Firmware update LV (Report to the electronic R&D)
E4	Internal error	LV I.E. 4 Bad_Protocol_Version		Incompatibility between HV ed LV firmware	Check the installed LV firmware version. Verfy the proper functioning of the HV part and the version of the software
E5	Internal error	LV I.E. 5 Bad_Setup_Mismatch		1) Hardware not supported by low voltage firmware	1) Install the correct LV firmware related to the hardware
				2) HV firmware compiled for a different hardware from the low voltage firmware	2) Install the correct HV and LV firmware related to the hardware
E6	Internal error	HV I.E. 0 Stack Overrun		Firmware problem LV	Firmware update HV (Report to the electronic R&D)
E7	Internal error	HV I.E. 1 Int_PWMTimer_Overrun		Firmware problem LV	Firmware update HV (Report to the electronic R&D)
E8	Internal error	HV I.E. 2 Int_250us_Overrun		Firmware problem LV	Firmware update HV (Report to the electronic R&D)
E9	Internal error	HV I.E. 3 Int_5ms_Overrun		Firmware problem LV	Firmware update HV (Report to the electronic R&D)
E10	Internal error	HV I.E. 4 Synchronization Lost		1) uP HV with test firmware	1) HV firmware update
				2) Firmware problem LV	2) HV firmware update
				3) Problem with the syncronism generation system	3) Check the weldings, the electronic tracks and the syncronism generation system components
E11	Internal error	HV I.E. 5 BadRx_LV		1) HV or LV firmware system	1) HW and/or LW firmware update
				2) uP HV with test firmware	2) HV firmware update
				3) hardware problem between HV-LV comunication	3) Test of the PCB
E12	Internal error	HV I.E. 6 Invalid_HV_LV_Config		Different version between HV-LV firmware	HW and/or LW firmware update

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CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
E13	Internal error	HV I.E. 7 Setup_Mismatch		HV firmware compiled for a different hardware from the low voltage firmware	Check the compatibility between LV - HW firmware and the mounted hardware
E14	Errore int.	HV I.E. 8 Proto_mismatch		Incompatibility between HV ed LV software	HW and/or LW firmware update
E15	Internal error	LV I.E. 6 BadRx_HV		1) uP HV not programmed or faulty	1) Check the red high power supply led: if anyone is blinking try to reprogram the HVP
				2) uP HV programmed with test software	2) Try to reprogram the HVP.
				3) HV and/or LV firmware problem	3) HW and/or LW firmware update
E16	Internal error	HV I.E. 9 Security_Internal Error		Faulty onl uP HV	Sostituire il uP HV
ERR.	wrong match Sw LV:x.xx - HV: x.xx	Wrong match between HV e LV		1) I uP HV and LV are not able to communicate	1) Test of the PCB
				2)HV firmware have a different firmware version from what expected by the LV firmware	2) Check the firmware version
SC	Short circuit	Short circuit between output phases		1) Real short circuit	1) Remove the short circuit
				2) Two phases short circuit on the motor	2) Replace the motor
				3) Faulty short circuit detecting system	3) Test of the PCB
				4) Sizing problem of the short circuit detecting system	4) Report to electronic R&D
E17	Internal error	HV I.E. 10 HV_EEprom_Error		1) Impossible read or write to eeprom HV	1) Replace the eeprom HV
				2) Hardware fault on the reading circuit of HV of the EEPROM	2) Check the weldings, the electronic tracks and the components mounted on the eeprom HV circuit
E18	Internal error	HV I.E. 11 HV Internal error		Routine safety intervention in progress	The recovery automatically occurs after 15 minutes
				1) Blocked motor	1) Unblock the motor
				2) HV PCB with driving problem of the IGBT bridge	2) Possible fault on the drivinng part of the IGBT or the final stage
				3) HV Firmware problem	3) Install a latest firmware, if not possible report the situation to the electronic R&D
					4) Check the weldings, the electronic tracks and the components mounted on the output current reading circuits

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Valid for Low Voltage firmware ≥ V. 4.0

CODE	**DISPLAYED EXPLANATION**	**FAULT TYPE**	**HYDRAULIC SYSTEM CONDITIONS**	**CAUSE**	**DIAGNOSIS/SOLUTION**
E19	Internal error	HV I.E. 12 Security ref HV IE11		Previous E18 safety intervention still not resetted	This error occur due to a restart after a shut off with an ongoing E18 error. The recovery automatically occurs after 15 minutes
E20	Internal error	HV I.E. 13 HV Internal error		Safety intervention for a not expected power consumption	The recovery automatically occurs after 15 minutes
				1) Damaged impeller	1) Check the impellers status
				2) Blocked sunction	2) Check the sunction
				3) Air in the sunction	3A) Ensure that no water can enter in the sunction pipe
					3B) Move the foot valve in a place where it can't suck air
				4 HV firmware problem	4) Install a latest firmware, if not possible report the situation to the electronic R&D
E21	Internal error	HV I.E. 14 Security ref HV IE13		Previous E20 safety intervention still not resetted	This error occur due to a restart after a shut off with an ongoing E20 error. The recovery automatically occurs after 15 minutes
VD	Power supply error	VDC_Overvoltage		1) Faulty Overtemperature detecting circuit	1) Test the PCB
				2) HV PCB with sizing problems of over-voltage detect circuit on the electrolytic	2) Report to the electronic R&D
PD	Internal error	Power_Down (low absolute voltage)		1) Excessive lowering of nthe power supply	1A) Bad delivery of the power supply
					1B) Wrong sizing of the powersupply line
			No click noise from any relee after the switch on	2) The soft start relee is not closing	2) Test the PCB
				3) Fault on the short circuit of the electrolytic detecting sytem	3) Test the PCB
V0	Power supply error	HV_V18		1) Problem on the regulator wich generate V18	1) Test the PCB
				2) High resistance	2) Test the PCB
				3) Overload on the V18	3) Test the PCB
				4) Fault on the measuring circuit of V18	4) Test the PCB

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Valid for Low Voltage firmware ≥ V. 4.0

CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
V1	Power supply error	LV_7V5		1) Error on the circuit which generate power supply S_+7V5FLB or +7V5FLB	1) Test the PCB
				2) Overload of S_+7V5FLB o +7V5FLB	2) Test the PCB
				3) Fault on the measuring circuit of power supply S_+7V5FLB or +7V5FLB	3) Test the PCB
V2	Power supply error	LV_5V		1) Error on the circuit which generate power supply S_+V5 or +5V	1) Test the PCB
				2) Overload of S_+V5 o +5V	2) Test the PCB
				3) Fault on the measuring circuit of power supply S_+V5 o +5V	3) Test the PCB
V4	Power supply error	Vaux1		1) Error on the circuit which generate power supply S_+V5_HV or +5V_HV	1) Test the PCB
				2) Overload of S_+V5_HV or +5V_HV	2) Test the PCB
				3) Fault on the measuring circuit of power supply S_+V5_HV or +5V_HV	3) Test the PCB
V5	Power supply error	Vaux2 (Power supply overload on the sensors V5_S)		1) 5V of the low voltage PCB out of the acceptable range	1) Fault on the 5V generation circuit - Test the PCB
				2) 5V power supply not correctly readed	2) Fault on the 5V reading circuit 5V - Test the PCB
				3) Firmware with acceptable tolerances are not adequate	3) Report to the electronic R&D
				4) Faulty pressure sensor	4) Replace the pressure sensor
				5) Faulty flow sensor	5) Replace the flow sensor
				6) Faulty cable of pressure sensor	6) Replace the pressure sensor cable
				7) Overload of power supply 5V_S	7) Test the PCB
				8) Fault on the measure circuit of 5V_S	8) Test the PCB
OT	Overtemperature	Heatsink Overtemp		Overtemperature on the dissipator	
				1) Bad thermal contact between the dissipator and the final	1) Dismantle and check the thermical contact
				2) Operation in excessively unfavorable environmental conditions	2) Check water and air temperature
				3) Fault on the thermical detecting circuit of the dissipator	3) Test the PCB

ERROR LIST OF POSSIBLE ERRORS WITH RELATIVE CAUSES AND POSSIBLE SOLUTIONS

Valid for Low Voltage firmware ≥ V. 4.0

CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
PB	Power supply	Bad Power Supply		Poer supplly out of range	
			Power supply < 185 VAC	1) Too low power supply	
			Power supply >270 VAC	2) Too high power supply	1) Check the power supply
			Power supply with pump off >185 VAC e <270VAC. After the starting of the motor become <185 VAC	3) Too long electrical line or undersized conductors	2) Check the power supply
				4) Fault on the reading circuit of the input voltage	3) Check the sizing of the electrical line and the voltage drop
LP	Low voltage	LOW Voltage		Low power supply on the DC bus	4) Test of the PCB
			Power supply >177 VAC	1) Fault on the soft start circuit or on the rectifier bridge	
			Power supply with pump off >177 VAC. After the starting of the motor become <177 VAC	2) High line resistance	1) Test of the PCB
			Input power supply < 177 VAC	3) Too low power supply	2) Check the sizing of the electrical line and the voltage drop
			Power supply >177 VAC e <275VAC.	4) Fault on power supply reading circuit of DC bus	3) Check the power supply distribution
HP	High voltage	High Voltage		High power supply on the DC bus	4) Test of the PCB
			Power supply >275 VAC	1) Too high power supply	
				2) Fault on the reading circuit of DC bus power supply	1) Check the power supply distribution

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Valid for Low Voltage firmware ≥ V. 4.0

CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
OC	Overcurrent	OC	Blocked motor or impeller	1) Too high power absorption from the motor	1) Check and replace the damaged components
				2) Hardware problem on the output circuit reading	2) Test of the PCB
PH	Hot pump	Hot pump		Overheating of the pump. Alarm displayed when the pump run for more than 5 minutes without any flow. Not necessary due to a overheating of the windings.	Wait for the automatical reset (check the addendum). Avoid the working in manual mode without flow
BL	Dry running	BL	Lack of water in the impellers	1) Dry running	1) Prime the pump
			Flow = 0 l/min. Different system pressure from what displayed from e.sybox	2) Faulty pressure sensor	2) Check the pressure sensor
			Flow >2 l/min. Measured flow= 0 l/min. Measured pressure < (setpoint-RP)	3) Faulty flow sensor	3) Check the flow sensor
				4) Hardware problem on the pressure or flow reading circuit	4) Test of the PCB
BP1	Press. Sens.	BP1 Pressure sensor 1		1) Real missing pressure sensor	1) Connect the sensor
				2) Faulty pressure sensor	2) Check the pressure sensor
				3) Problem with the reading of the pressure sensor signal	3) Test of the PCB
				4) Problem on the pressure sensor power supply	4) Test of the PCB

ERROR LIST OF POSSIBLE ERRORS WITH RELATIVE CAUSES AND POSSIBLE SOLUTIONS

Valid for Low Voltage firmware ≥ V. 4.0

CODE	DISPLAYED EXPLANATION	FAULT TYPE	HYDRAULIC SYSTEM CONDITIONS	CAUSE	DIAGNOSIS/SOLUTION
NC	No current	No Current		1) Missing wiring of one or more output conductor to the motor	1) Connect all the conductors of the motor
				2) HV hardware problem	2) Test of the PCB
HL	Hot liquid	Hot liquid		1) Too high fluid temperature	1A) Check the temperature of the inlet water
					1B) Check the ambient temperature
EY	Anticycling	Error detected from Anti Cycling algorythm	Ciclycal startings of the pump (40 consecutive starting with the fol-lowing characteristics of periodicity: Ton<60 sec; Toff<300 sec; tollerances between cycles5 sec).	Protection intervention of the cyclical pro-tection on the starting of the pump	It may be caused from leakages in the system. Check the tight of the hydraulic connections and the proper work of the check valve.The anti cycling mode can be used in smart mode or disabled

RESOLUTION OF OTHER PROBLEMS

RESOLUTION OF OTHER PROBLEMS

Valid for Low Voltage firmware ≥ V. 4.0

Type of problem	Description	Condition of the system	Possible causes	Solutions	Sol N°
Unusual Start-Stop of a single pump	The pump try to stop while the flow delivering and restart right after	The pump is not able to read the flow because the flow is to small (<2 l/min)	The pressure sensor is not able to read a flow data lower than 2 l/min	No corrective action possible	1
		The pump is not able to read the flow, even if the flow is solid(>2 l/min)	Mechanical obstacle of the pressure sensor	Clean the sensor	2
			Faulty pressure sensor	Replace the sensor	3
			Faulty pressure reading circuit	Test the PCB	4
			Flow sensor not connected	Check the connection of the sensor	5
	The pump don't start		Absent power supply	Check the power supply	6
		Red led on	Some blocking fault are present	Remove the cause of the error and reset the E.sybox	7
		We are in manual menu	Regulate the functioning in manual setting	Press SET to exit from the menu	8
		Blinking white led	Manual disabling anabled (keys [+] and [-])	Enable the pump by pressing keys [+] and [-] together	9
		System with e.sylink. Red led on. On the display appeare the symbol of a blocking function(Float, F3, F4)	Enabled blocking functions related to the inputs	Check the right functioning of the e.sylink and the inputs	10
		System with e.sylink. Red led on. On the display appeare the safety sign	E.sylink not detected	Check the power supply of the e.sylink	11
			E.sylink in error status	Check the manual of the e.sylink	12
		Not attended readed pressure	Blocked sunction	Check the cause of the block on the sunction (mud, inverted check valve,...	13

RESOLUTION OF OTHER PROBLEMS

Valid for Low Voltage firmware ≥ V. 4.0

Type of problem	Description	Condition of the system	Possible causes	Solutions	Sol N°
Unusual Start-Stop of a single pump	The pump don't stop	Oscillating pressure on the water system	GP and GI are too big for the actual hydraulic system	Lower GP e GI (see addendum)	14
		The pump try to stop and then restart	Leakage in the system	Remove the leakage	15
			Malfunction of the check valve	Check, clean and eventually unblock the check valve	16
			Entry of air ion the pipes	Verifify the integrity of the sunction pipe and eventually remore the entry of air	17
	The pump restart without water demand		Leakage in the system	Remove the leakage	18
			Malfunction of the check valve	Check, clean and eventually unblock the check valve	19
			Expansion tank broken, too high or too loo charged	Check the expansion vessel	20
			Faulty pressure sensor	Verify the pressure sensor	21
	After the opening of a water demand the pressure suddenly drop and then it return on the regime		Expansion tank broken, too high or too loo charged	Check the expansion vessel	22
			The inluded expansion vessel is too small	Install a further expansion vessel	23
			GP and GI are too big for the actual hydraulic system	Increase GI e GP compatibly with the carathristics of the system	24

RESOLUTION OF OTHER PROBLEMS

Valid for Low Voltage firmware ≥ V. 4.0

Type of problem	Description	Condition of the system	Possible causes	Solutions	Sol N°
Unusual Start-Stop od a booster set	The pump don't start	Appear an "E" instead of the pmp adress	Not aligned parameter	Aligne the parameters by pressing [+] when requested	25
		Apper an "alignment setting" pop up	Different firmware versions in the systems	Update all the firmware (see the firmware update section)	26
		Appeare an "not aligned firmware versions" pop up	Ongoing blocking faults	Remove the cause of the error and reset the E.sybox	27
		Red led on	Regulate the functioning in manual setting	Press SET to exit from the menu	28
		We are in manual menu	Manual disabling anabled (keys [+] and [-])	Enable the pump by pressing keys [+] and [-] together	29
		Blinking white led	Enabled blocking functions related to the inputs	Check the right functioning of the e.sylink and the inputs	30
		System with e.sylink. Red led on. On the display appeare the symbol of a blocking function(Float, F3, F4)	E.sylink not detected	Check the power supply of the e.sylink	31
		System with e.sylink. Red led on. On the display appeare the safety sign	E.sylink in error status	Check the manual of the e.sylink	32
				Consultare il manuale della centralina e.sylink	33

Valid for Low Voltage firmware ≥ V. 4.0

Type of problem	Description	Condition of the system	Possible causes	Solutions	Sol N°
Pressure regulation	The pressure fluctuates	The hydraulic load is costant or null	GP and GI are too big for the actual hydraulic system	Lower GP e GI (see addendum)	34
		The malfunction appear due to a small variation of the hydraulic load		Lower GP e GI (see addendum)	35
	The pressure readed on the gauge near to the pump is bigger than the set point	System with e.sylink. On the display appear a remote pressure sensor symbol	Regulate the functioning for the compenb-sation of the friction loss	No corrective action possible	36
Insufficient pressure/ flow	The pump don't deliver any flow	First start	Not primed pump	Prime the pump	37
		Pressurized system	Blocked delivery	Remove the obstruction	38
		Not pressurized	Blocked sunction	Remove the obstruction	39
		Primed pump	Wrong hydraulic connections	Connect sunction and delivery as explained on the manual	40
	The pump give a lower pressure than the set point	Displayed speed = 3050 rpm	The pump flow request is too big, the pump is working out of its curve	No corrective action possible. If necessary install further pump unit	41
		Displayed speed lower than 3050 rpm and egual to RM	Maximum speed limit setted is too low	Increase RM up to requested performance	42
			Too big priming heights	No corrective action possible	43
			Blocked sunction	Rimuovere le occlusioni	44
			Too small sunction pipe	Adottare un tubo di aspirazione di diametro maggiore (comunque mai inferiore ad 1")	45
			Obstructed impellers or hydraulic part	Remove the cause of the blockage	46
			Brocken impeller	Check the integrity of the components	47
	The pump deliver the set point pressure, but the pressure on the tap is lower	The hydraulic delivery is on a very different heights istead of the pump	Pressur loss due to the different heights	If possible, set up a set point that can compensate the difference of height	48
			Friction loss on the delivery	Increase the size of the pipe	49
				Set up a lower Set point pressure, allowing the e.sybox to keep constant the flow	50
				Insert a remote pressure sensore for compensate the different friction losses	51
	The pump don't deliver the declared flow		Fault on the self priming valve	Check the self priming valve	52

Valid for Low Voltage firmware ≥ V. 4.0

Type of problem	Description	Condition of the system	Possible causes	Solutions	Sol N°
Problem on the power supply line	Differential circuit breaker intervention		Wrong class of the circuit breaker	Install a CLASS A differential circuit breaker	53
			Faulty circuit breaker	Install a new differentil circuit breaker	54
			Earth fault present on the pump	Test the PCB and check the electrical leakage of the motor	55
			Water in the motor	Check that the priming of the pump has not beel done from the shaft plug	56
	Differential circuit breaker intervention while the pump start to work		Fault or mechanical block on the motor	Check the motor	57
			Water in the motor	Check that the priming of the pump has not beel done from the shaft plug	58
	Single phase magneto-termic circuit breaker intervention		Too small circuit breaker	Use a circuit breaker with adequate nominal current	59
			Faulty circuit breaker	Replace the circuit breaker	60
	Three phases magneto-termic circuit breaker intervention	Three pump distriuited on the three phases	Current on the common wire. With inverter devices the sum of the current on the common wire is not 0, but the sum of the three current (see the addendum)	Use single phases line for every single pump	61

E.SYBOX FIRMWARE UPDATE

News of V. firmware 4.0

COMMUNICATION COMPATIBILITY BETWEEN DIFFERENT FIRMWARE VERSIONS

Version	1.11	2.7	3.11	4.0
1.11	OK	NO	NO	OK
2.7		OK	NO	OK
3.11			OK	OK
4.0				OK

News of V. firmware 4.0

PARTICULARITY 4.0V AND SUCCEEDING

- Unable to update other e.Sybox

- Requires the firmware update of all the e.Sybox which are communicating

- Re-charge user informations and settings, also from previous firmware versions

News of V. firmware 4.0

FIRMWARE MANUAL UPDATE

Requirements:
- Master with FW ≥ 4.0
- Slave with FW ≤ Master

Step 1

e.Sybox Master with FW ≥ 4.0	e.sybox Slave
Enter the menu TECHNICAL ASSISTANCE Press the [+] key.	Shut off the the e.Sybox Slave and wait for the display shutdown.

News of V. firmware 4.0

FIRMWARE MANUAL UPDATE

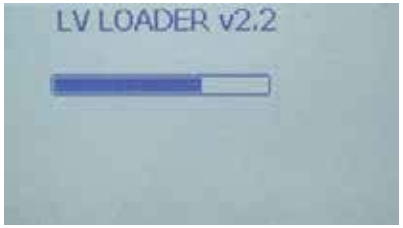
Step 2

The Master starts to search a Slave.	Turn on the power supply holding at the same time the keys [MODE] and [-] as long as this update screen doesn't appear.

News of V. firmware 4.0

FIRMWARE MANUAL UPDATE

Step 3



The programming starts. Wait until the end of the process and for the pumps' restart.

FIRMWARE AUTOMATIC UPDATE

News of V. firmware 4.0

AUTOMATIC UPDATE

Requirements:
- Master with FW ≥ 4.0
- Slave with FW ≥ 4.0 and FW ≤ Master

Step 1

e.Sybox Master with FW ≥ 4.0	e.Sybox Slave with FW ≥ 4.0 and < Master
Perform the association between the devices.	
Hold the [+] key	Hold the [+] key

News of V. firmware 4.0

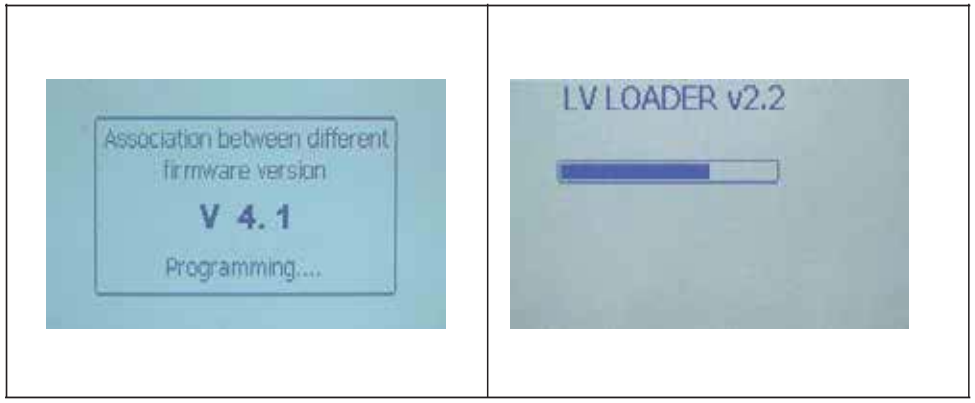
AUTOMATIC UPDATE

Step 2

News of V. firmware 4.0

AUTOMATIC UPDATE

Step 3



The programming starts. Wait until the end of the process and for the pumps' restart.

News of V. firmware 4.0

SEMI-AUTOMATIC UPDATE

Requirements:
- Master with FW ≥ 4.0
- Slave with FW < 4.0

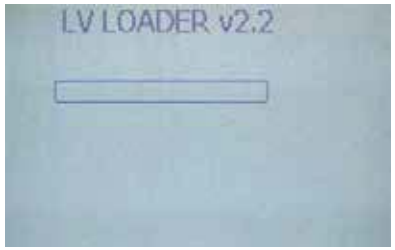
Step 1

e.Sybox Master with FW ≥ 4.0	e.sybox Slave
Perform the association between the devices.	
Hold the [+] key.	

News of V. firmware 4.0

SEMI-AUTOMATIC UPDATE

Step 2

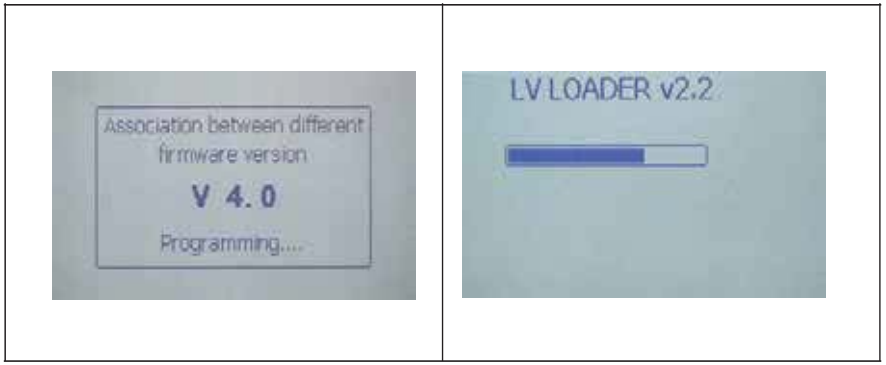
	Shut off the e.Sqybox and wait for the display shutdown. Turn on the pump holding the keys [MODE] and [-] at the same as long as this update screen doesn't appear. 

News of V. firmware 4.0

SEMI-AUTOMATIC UPDATE

Requirements:
- Master with FW ≥ 4.0
- Slave with FW < 4.0

Step 3



The programming starts. Wait until the end of the process and for the pumps' restart.

ADDENDUM

ADDENDUM

In the following addendum you can find a set of instructions, warning and notions in separed squares with non-related contens that are references for previous pages.

BLOCKING ERRORS' RESET		
ERR	TYPE	UNLOCK
E0:E17	Internal error	Automatic, when the causes disappear
E18:E21	Internal error	Automatic, 15 mins after the event
SC	Short circuit detected between the output phases	Only manual recovery
Vi	Internal tensions out of range	Automatic, when the causes disappear
OT	Block due to overtemperature of power terminals (TE >85°C)	It's restored when the temperature of the power terminals goes again under 75°C
PB	Supply voltage out of range: Vin < 185V; Vin > 270V	Automatic, when the causes disappear (when Vin goes up to 190V or under 265V) with a break of at least 1 min
LP	Block due to low DC bus's voltage (lower than 200VDC)	It's restored when the voltage goes up to 250VDC
HP	Block due to high DC bus's voltage (higher than 390VDC)	It's restored when the voltage goes under 250VDC
OC	Block due to overcurrent in the electropump's motor	Manual or automatic, with the following timing:
		- 1 attempt every 10 mins, a total of 6 attempts
		- 1 attempt every hour, a total of 24 attempts
		- 1 attempt every 24 hours, a total of 30 attempts
PH	Pump's overtemperature	Automatically restored after 15 mins. If the pump was in running status the recovery will reset the lock and it will bring the pump in running status again, but not in manual mode. The user will decide the restat.

ADDENDUM

In the following addendum you can find a set of instructions, warning and notions in separed squares with non-related contens that are references for previous pages.

BLOCKING ERRORS' RESET		
ERR	TYPE	UNLOCK
BL	Bock due to a lack of water	Manual or automatic, with the following timing:
		- 1 attempt every 10 mins, a total of 6 attempts
		- 1 attempt every hour, a total of 24 attempts
		- 1 attempt every 24 hours, a total of 30 attempts
BP1	Unexpected value on the pressure sensor	It will be restored when it reads a consistent vaue
NC	No current detected to the motor	Only manual recovery
HL	Block due to an high water temperature (Twater > 65°C)	Restored when Twater < 60°C
EY*	Anti-cycling's protection intervention (40 consecutive ignitions with the following caratteristics of periodicity: Ton < 60 sec; Toff < 300 sec; tolleranza tra i cicli 5 sec).	Only manual recovery
* The anti-cycling protection, can be disabled or set in Smart mode (not blocking mode, with automatic RP lowering)		

PROCEDURE FOR THE SET OF GP AND GI GAINS

Lead GP to the minimum
Open a small levy and give it small perturbations. While checking a manometer, increase GI as long as the first oscillations, due to the perturbations, start.
The GI gain to set is ¼ of the value that you have found at the previous step.
After have set GI, increase GP as long as the first oscillations start, and set GP at ¼ of the value that you have found during the first oscillations.

SINGLE-PHASE INVERTER WIRED ON A THREE-PHASE INE

An inverter without PFC* absorb an impulsive current in correspondene of the AC voltage's picks. If more than one inverter are wired on a three-phase line distributing them on the three phases to balance the load, it creates a current imbalance on the neutral wire: the sum of the three currents doesn't vanish because of the non-sinusoidal nature of the absorbtion, and the currents close themselves to the neutral. The result is that you can find on the neutral the sum of the three phase currents.

***PFC: Power Factor Correction, it's an active or passive electronic system inserted between the electrical distribution and an eletric/electhronic device. Normally it's on the input stage, inside the device. It serves to see to the distribution a resistive sinusoidal current consumption by the device. It corrects the non-linear absorption (impulsive absorption or armonics' presence).**