

MPX PRO

Guidelines for replacing OLD (MX30*) with
New MPXPRO (SPM*)

CAREL



ENG Guidelines

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H i g h E f f i c i e n c y S o l u t i o n s

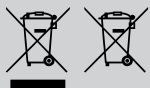
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GUIDELINES FOR REPLACING OLD (MX30*) WITH NEW MPXPRO (SPM*)

Purpose of the document

These guidelines are intended to support technical and service personnel and installers in replacing **MPXPRO controllers (MX* series)** with the **New MPXPRO (SPM* series)** in commercial refrigeration systems.

The new MPXPRO (SPM*) is in functional terms fully capable of replacing the previous MPXPRO (MX30*), however it is not a clone. It should be considered as a new platform with slightly different architecture, communications, and configuration philosophy.

By following these guidelines, replacements can be managed in a controlled, safe manner, without any operational surprises. Replacement must however be carried out in a guided manner, carefully checking the wiring, parameters and communication networks.

The topics covered in these guidelines are:

1. Replacing hardware and wiring: main differences
2. Commissioning – Wizard
3. Finalising, fine tuning
4. Replacing a faulty controller in a Main/Secondary network
5. Supervisor and plug-ins

Architectural differences

In the previous MPXPRO (MX*) system, management was based on the use of different boards (Master/Slave – later referred to as Main/Secondary) and optional layers.

On the new MPXPRO (SPM*), all these functions have been integrated into a single device.

There are no longer any differences between Main and Secondary from a hardware point of view: the role is simply defined by setting certain parameters. BMS and RTC are available on all devices.

The overall dimensions of the two solutions are equivalent (the new proposal is slightly more compact).

From a communication viewpoint:

- the old MPXPRO used tLAN for the Main/Secondary network and CAREL or Modbus protocol to the BMS,
- The new MPXPRO only **uses Modbus over RS485**, both to the BMS and for the Main/Secondary networks (the latter via an RS485 serial port).

This means that **the new unit cannot emulate** the network behaviour of the old system.

Wiring information

During the wiring operations, special attention needs to be paid to the analogue inputs, digital outputs and management of Main/Secondary networks.

Digital outputs

As regards the relay digital outputs, two important changes have been introduced in the transition to the new MPXPRO:

- the default functions of DO1 and DO2 are reversed (compressor and lights),
- the SPDT relay (R1) is no longer in position 1, but in position 4.

This means that if reusing the wiring from the previous MPXPRO without adapting it or reconfiguring the parameters, the following may occur:

- the compressor/solenoid is controlled instead of the lights,
- a load is activated on a different relay than the one intended.

For this reason, during replacements:

1. always check the wiring,
2. the functions of the digital outputs need to be reconfigured by setting the parameters.

Analogue inputs/outputs

On the previous MPXPRO, numerous inputs and outputs were “dedicated” to specific functions.

On the new MPXPRO, however, the inputs and outputs are fully configurable.

This brings two important consequences: on one hand greater flexibility, but on the other it is impossible to simply copy the configuration between the two solutions.

Example:

- the probe calibration is no longer managed based on the input number, but rather on the function,
- the min/max limits no longer depend on the type of probe, but on the physical input,
- analogue outputs need to be configured both in terms of signal type (0–10 V, PWM, etc.) and function (fan, valve, heater, etc.).

In practice, during a retrofit, first reconstruct the functional map of the unit (which probe does what, which output drives what) and then recreate it on the new MPXPRO.

Digital inputs

On the old MPXPRO, the digital inputs were configured by assigning numbers to each terminal. On the new MPXPRO, on the other hand, the configuration is based on the functions (door alarm, enable compressor, external alarm, etc.). This means that the old parameter numbers should not be copied, rather the actual function of each input or output needs to be identified and then that function assigned to the correct channel. The same goes for inverted logic: this is no longer tied to the physical channel, but rather to the function.

Alarms and supervisor commands

On the new MPXPRO:

- temperature alarms are separated based on **relative and absolute thresholds**,
- the ON/OFF command from the supervisor is no longer active by default and needs to be enabled.

Main/Secondary Networks: what’s possible and what’s not

The most important point is that the new **MPXPRO and MPXPRO cannot coexist in the same Main/Secondary subnet.**

The reason is that the old system uses tLAN, while the new one uses Modbus over RS485, and the addresses are also slightly different. When needing to replace a faulty unit in an existing network, the following options are available (depending on the specific case):

3. Use an available MPXPRO (MX30*) unit as a spare, or exploit a stand-alone unit as a “donor”: install the new MPXPRO (SPM*) on the stand-alone unit in place of the old MPXPRO (MX30*), and then install the latter in the existing network.
4. If possible, use the optional board (MX3OP48500, MX2OP48500) to transform a Secondary unit into a Main unit, and reconfigure the local Main/Secondary subnet (*).
5. Replace the entire subnet (Main + Secondary) with New MPXPRO devices.

For further details, see Chapter 4.

(*) Before starting, make sure it is possible to reconfigure the unit from Secondary to Main. For example, make sure there are no shared probes (temperature, pressure) or loads.

BMS communication

The new MPXPRO exclusively uses the Modbus protocol for connection to supervisory systems. The speed, parity and stop bits are configurable, while on the previous MPXPRO they were fixed. When the system uses devices that communicate exclusively using the CAREL protocol, a specific version of the new MPXPRO (spare part) is required.

For further details, see Chapter 5.

⚠ Caution: when replacing controllers, it is recommended to consider the protocol used at the BMS level. **If this is the CAREL proprietary protocol, the only possible P/N of the New MPXPRO that can be used in these cases** is: SPM00SUHRV030 - MPXPRO UNIVERSAL SPARE PART CAREL PROTOCOL LEGACY REPLACEMENT ELECT CONTROL(*).**

(*) The spare part version will be available by the end of Q2-2026. The last buy order for the previous MPXPRO series is set for 31 May 2026; orders confirmed before that date can be planned for delivery until the end of 2026, ensuring full operational continuity during the transition phase.

Useful materials for replacement

Below is a list of materials/tools that may be useful to have available to optimise replacements in the field.

P/N	Description	Notes
Electronic controllers		
MX30M25HO0	MPXPRO MS+EEV STEP. +0...10VDC, ULTRACAP, 8-16-8-8-2PWM, NTC/PT1000 COVER, VERT. TERM. SWITCHING	Full replacement model, stepper
MX30M24HO0	MPXPRO MS+EEV PWM+0...10VDC, 8-16-8-8-2PWM, NTC/PT1000, COVER, VERT. TERM, SWITCHING	Full replacement model, PWM
SPM00UNHRV030	MPXPRO STEPPER PWM UCAP 115-230VAC 5 RELAYS CS COMBO SERIAL NO OPTO VERT CONN ELECT. CONTROL	New MPXPRO universal model
SPM00SUHRV030*	MPXPRO UNIVERSAL SPARE PART CAREL PROTOCOL LEGACY REPLACEMENT ELECT CONTROL	New MPXPRO spare part For CAREL protocol (*)
Display and repeater		
IR00UGC300	TERMINAL (MPXPRO, GREEN LED, KEYPAD, BUZZER, COMMISSIONING, IR)	MPXPRO user terminal
IR00XGC300	DISPLAY (MPXPRO, GREEN LED, BUZZER, COMMISSIONING, IR)	MPXPRO repeater display
AX3000PS20030	FOOD RETAIL UI RS485, NFC, WHITE, KBD,BUZZ, BLE	New MPXPRO Terminale utente
AX3000PS20X10	FOOD RETAIL REPEATER RS485, WHITE, CRYSTAL FRAME	New MPXPRO repeater
AX3100PS20X10	FOOD RETAIL REPEATER RS485, WHITE, NO CRYSTAL FRAME	New MPXPRO repeater NO FRAME
S00HSA0B00S1004	TYPE-B UI FOOD RETAIL SMALL ADV NFC BT JST TERM. WHITE DIGITS BLACK FRONT 1PC	New MPXPRO User terminal
ACS00CB0027A0	AX CABLE JST/JST 0.5 MT	User terminal cable 0.5m
ACS00CB000010	AX CABLE JST/JST 3 MT	User terminal cable 3m
ACS00CB000080	AX CABLE JST/JST 6 MT	User terminal cable 6m
ACS00CB002790	AX CABLE JST/JST 10 MT	User terminal cable 10 m
Accessories		
MX30P48500	MPXPRO OPTION, RS485 + RTC MODULE	Useful to convert from Secondary to Main (OLD MPXPRO)
MX20P48500	MPXPRO OPTION, RS485 + RTC MODULE	
MX30PSWC00	SPARE PART SWITCHING POWER SUPPLY BOARD IN 115-230VAC OUT 12/24V FOR MX30	OLD MPXPRO power stage
MXOPZKEYA0	MPXPRO, CHIAVE DI PROGRAMMAZIONE, ALIMENTAZIONE 230VAC	Tool for retrieving parameter configuration on OLD MPXPRO
CVSTDUMOR0	CONVERTITORE USB-RS485 MORSETTO 3VIE	Converter for connecting to the tool from PC VPM

(*) See the previous note on the availability of new MPXPRO Spare Part model.

Among the other tools available, worth mentioning are:

- VPM – PC management software for MPXPRO (MX*)
Available at the following [link](#)
- Applica mobile - Available for download from the Google Play Store or Apple Store.
This tool can be considered a replacement for the MXOPZKEYA0, ITRMPX000 devices in the previous series.
- Applica Desktop – Laptop version of Applica for the New MPXPRO (SPM*)
Available at the following [link](#)

1. HARDWARE AND WIRING REPLACEMENT: MAIN DIFFERENCES

This chapter describes the main wiring differences between MPXPRO (MX*) and New MPXPRO (SPM*), with instructions for in-system replacement.

For each type of connection, the following are highlighted:

- wiring that can be reused
- wiring that needs to be modified or replaced
- points where attention is needed to avoid errors.

1.A - Connecting the power supply and loads

If MPXPRO used the DEFAULT configuration for the loads, the wires can be easily reconnected to the corresponding terminals on the new MPX, making sure to REVERSE the position only for the COMPRESSOR (solenoid valve) and LIGHTS, which on the new MPX are in different positions.

⚠ CAUTION: If the NC contact (4) was used for the COMPRESSOR, one of the changeover relays must be used (e.g. on nc3, nc4 or nc5), changing the output configuration parameters to any mode other than DEFAULT. As further support, refer to the PIN numbering at the bottom of the following image.

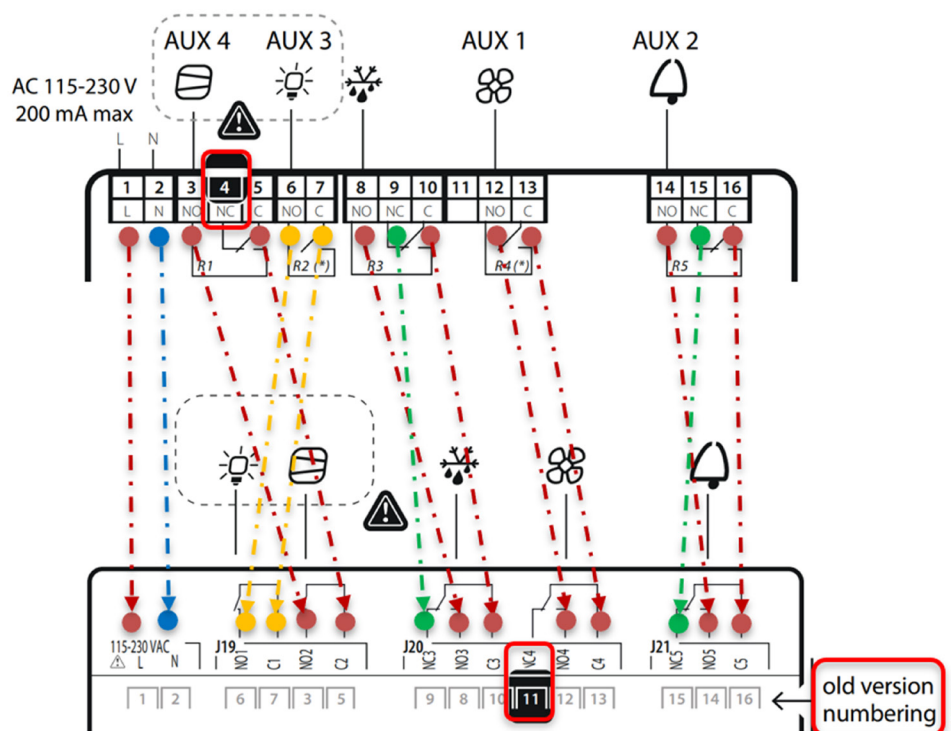


Fig. 1.a

1.B - Probe connections

The following probe assignment was used as **DEFAULT on MPXPRO (MX30*)**:

S1 - OUTLET temperature probe (Sm)

S2 - DEFROST temperature probe (Sd)

S3 - INTAKE temperature probe (Sr)

S4 - SUPERHEATED GAS temperature probe (tGS)

S6 - ratiometric pressure transducer for saturated suction temperature (PEu/tEu)

For each probe, the reference is connected to GND.

Transducer S6 also requires a 5 Vdc power supply.

In the following example, the four passive signals are shown in green, the GND references in black, the active signal in blue and the 5 Vdc power supply in red.

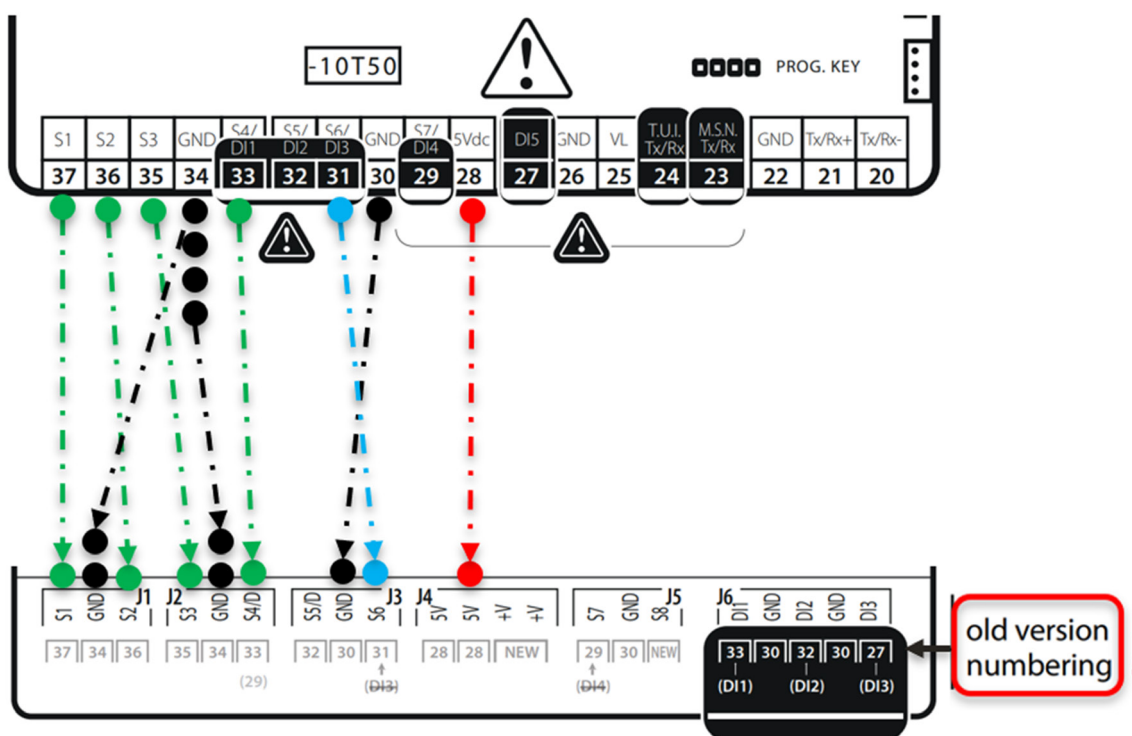


Fig. 1.b

Caution: If using 4-20 mA pressure transducers, on the new MPXPRO these can now be powered directly from the control board. In the previous series, 3-wire transducers were used, which required an external +Vdc signal, while in the new series the 2-wire transducer can be connected directly, as there is a direct +Vdc power supply and the current is read on input S*.

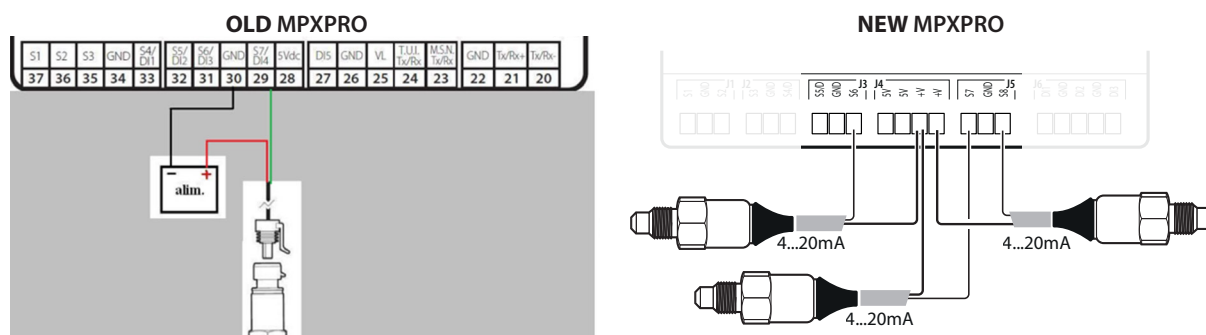


Fig. 1.c

1.C - Digital input (DI) connections

ONLY if S4/ S5/ or S6/ were used as DIs → Move the corresponding cable to connector J6 (DEDICATED)

From terminals 33 (DI1) → J6-31 (DI1)

from 32 (DI2) → J6-29 (DI2)

from 31 (DI3) → J6-27 (DI3)



Notice: the references (GND) must be moved to J6-30 (two equivalent terminals available).

Case when using DI4-DI5 for DIGITAL inputs:

Most commonly on MPXPRO, DI5 (dedicated) and S7/DI4 are used, leaving the DEFAULTS for S4 and S6.

It is therefore recommended to configure the parameters for the functions that used DI5 (and/or DI4), applying them on the new MPX to DI1 and DI2 and wiring the signals to J6 accordingly.

In the following example:

Previous MPXPRO with input S7 used as DI4 (and related GND) as "door contact".

- Wire to DI1 J6-33 (with GND on J6-30) and configure the "door contact" function on DI1

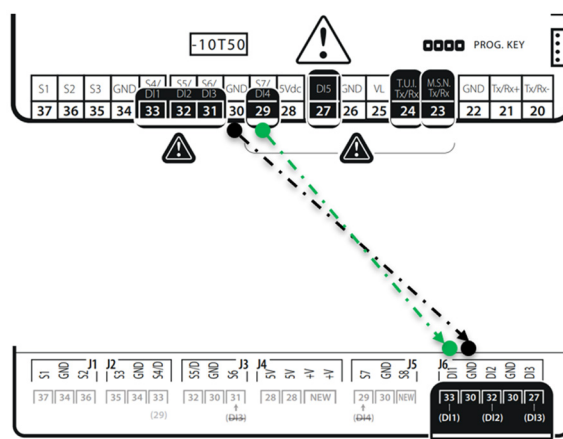


Fig. 1.d

1.D - Main/Secondary fieldbus line connection

The need to transfer a significant amount of information between the Main and Secondary devices, combined with the need to ensure high communication reliability, made it necessary to switch to the RS485 standard for the physical communication layer. The protocol has been changed to ModBus, being already predominantly used for communication with BMS systems (boss etc.). This transmission method ensures greater resistance to interference and a more stable data infrastructure.

The wiring between Main and Secondary devices now requires cables that are suitable for RS485, twisted pair plus GND (DATA B+, DATA A-, GND). Shielding makes data transmission even more reliable. The previous cable (2 wires, usually not twisted and unshielded) is NOT authorised for use.

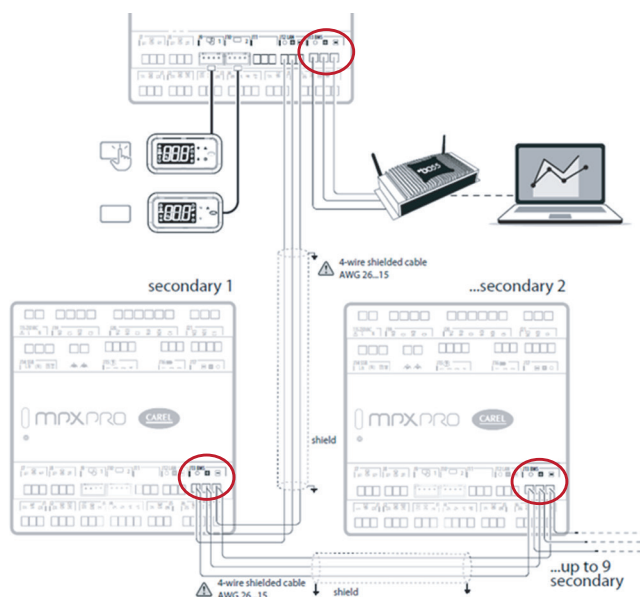


Fig. 1.e

As shown in the image above, and specified in paragraph 2.11 of the user manual (+0300160EN), the physical connection of an M/S network must meet the following requirements:

- each Main device must be connected to the BMS supervisor network via connector J13;
- the Fieldbus (LAN) port on the Main device (J12) must be connected in in/out mode to the various BMS ports (J13) on the respective Secondary devices.

1.E - User terminal and repeater display connection

The comments made for Main-Secondary communication are even more important when it comes to the connection to the HMI display, as this channel is used to quickly transfer large amounts of data (real-time Bluetooth connection, NFC transfer, FW updates, etc.).

In this case, the connection also supplies power to the displays.

Wiring is made easy and error-proof through the use of pre-wired cables available in different lengths (ACS00CB00***0 cables).

On the New MPXPRO, connect the HMI cable (main display with keys) to connector J9, while the repeater display (optional) is connected to J10.

It is therefore NOT possible to reuse either the previous cable or the old user terminal (IR00UG*300) or remote display (IR00XG*300), which must be replaced with those provided for the new range (AX* or S00*).

1.F - BMS connection

On the new MPXPRO, the RS485 connection for the BMS (boss) and its position on the device have not changed, as can be seen in the following diagram.

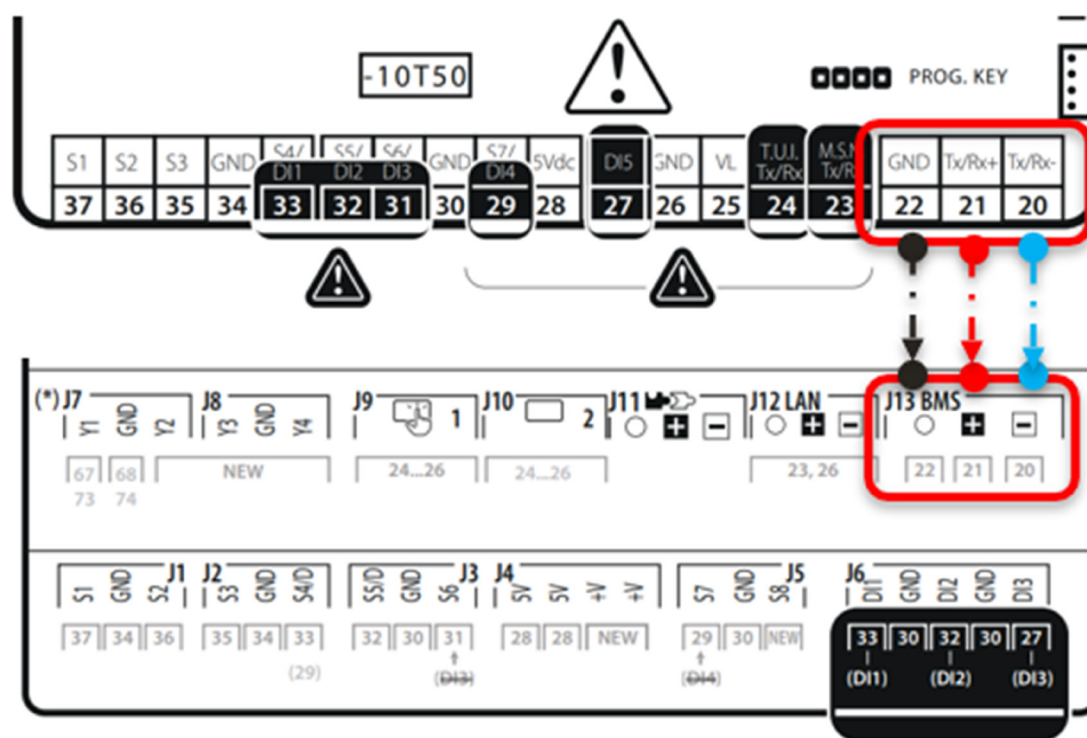


Fig. 1.f

The typical requirements always apply (shielded cable, twisted pair, avoid branches, etc.).

The new MPXPRO is also equipped with automatic polarity recognition (+ and -), so any wiring errors are automatically corrected.

As was previously the case for devices configured as SECONDARY, the BMS RS485 does not need to be connected.

For SECONDARY devices only, the serial address assignment has changed (see the specific section).

Please also remember that in order to cover the many variables to be managed and the large amount of information handled, the Carel protocol is NO LONGER available on the standard products.

2. COMMISSIONING – WIZARD

The commissioning wizard lets the user set a limited number of essential parameters required to start the unit and make basic control operational.

The wizard is not designed to cover all available features or to optimise unit operation: these tasks must be completed subsequently using dedicated tools, such as the Applica app (mobile or desktop) or via the supervisor.

Compared to MPXPRO (MX*), on the new MPXPRO (SPM*) the wizard has been extended and made available on more tools (HMI, Applica mobile/desktop), and also includes new parameters as well as some differences in the default values and the meaning of certain parameters that were present on the previous platform.

For this reason, during the initial setup/commissioning, always refer to the logic and defaults provided by the new platform. The following table shows the cross-reference between the defaults on the two solutions.

Category	OLD MPXPRO	NEW MPXPRO	Notes
Analogue inputs	Type of probe, group 2 (S4, S5) = /P2 0 = NTC [Default] 1 = PTC 2 = PT1000 3 = NTC L243	To set the probe type for channels S4 and S5 , see parameter /P1 Implementation change	Implementation change
	On the New MPXPRO all the probes S1,S2,S3,S4,S5 must be the same type. If needing to mix the type of passive probes, use universal channels S6, S7, S8.		
	Type of probe, group 3 (S6) = /P3 0 = NTC [Default] 1 = PTC 2 = PT1000 3 = NTC L243 4 = Ratiometric 0.5V	Type of probe, group 3 = /P3 0 = PT1000 1 = NTC 2 = Reserved 3 = 4-20 mA 4 = 0-10V 5 = NTC-HT 6 = 0.5 V-4.5 V [Default]	
	Assign superheated gas temperature probe (tGS) = /Fd 0 = Function disabled [Default] 1...11 = Probe 1...11	Assign superheated gas temperature probe (tGS) = /Fd 0 = Function disabled 1...8 = Probe 1...8 [Default = 4] -1 ... -4 = Serial probeS11..S14	
Digital outputs	Assign evaporation pressure probe = /FE 0 = Function disabled [Default] 1...11 = Probe 1...11	Assign evaporation pressure probe = /FE 0 = Function disabled 1...8 = Probe 1...8 [Default = 6] -1 ... -4 = Serial probeS11..S14	
	Maximum value of probe 6 = /U6 9.3 barg [Default]	Full-scale value for the evaporation pressure probe = /UE 60 bar [Default]	
	Minimum value of probe 6 = /L6 -1 barg [Default]	Minimum value for the evaporation pressure probe = /LE 0 bar [default]	
Electronic valve	Electronic valve type = P1 0 = Not present [Default] 1 = PWM valve 2 = CAREL EEV valve 3 = 0-10 V refrigerant modulation 4 = PWM refrigerant modulation 5 = CAREL EEV refrigerant modulation	Electronic valve type = P1 0 = Not configured 1 = PWM valve 2 = CAREL E2V/E3V valve [Default] 3 = 0-10 V refrigerant modulation 4 = PWM refrigerant modulation 5 = E2V/E3V refrigerant modulation 6 = CAREL E4V...E7V 7 = CAREL E4V to E7V refrigerant modulation 8 = 0-10V	
	Type of refrigerant = PH 3 (R404A) [Default]	Type of refrigerant = PH 11 (R744) [Default]	
Main / Secondary	Unit type Main / Secondary (In) In = 0 Secondary [Default]	Unit type Main / Secondary (In) In = 0 Secondary [Default]	No difference
	Number of Secondary devices in the local network = Sn 0 = No Secondary [Default] Max. 5	Number of Secondary devices in the local network = Sn 0 = No Secondary [Default] Max. 9	
	Serial or Main/Secondary network address = H0 199 [Default]	Serial or Main/Secondary network address = H0 199 [Default]	

Category	OLD MPXPRO	NEW MPXPRO	Notes
Additional parameters	-	BMS serial baud rate = H2 0 = 1200 bit/s 1 = 2400 bit/s 2 = 4800 bit/s 3 = 9600 bit/s 4 = 19200 bit/s [Default] 5 = 38400 bit/s 6 = 57600 bit/s 7 = 115200 bit/s	
	Not included in the wizard	Type of probe, group 1 = S1,S2,S3,S4,S5 /P1 0 = PT1000 1 = NTC [Default] 2..4 = Reserved 5 = NTC-HT	
	Not included in the wizard	Type of probe, S7 = /P4 0 = PT1000 1 = NTC [Default] 2 = Reserved 3 = 4-20 mA 4 = 0-10V 5 = NTC-HT 6 = 0.5 V-4.5 V	
	Not included in the wizard	Type of probe, S8 = /P5 0 = PT1000 1 = NTC [Default] 2 = Reserved 3 = 4-20 mA 4 = 0-10V 5 = NTC-HT 6 = 0.5 V-4.5 V	
	Not included in the wizard	Control set point = St 50°C [Default]	
	Not included in the wizard	Superheat set point = P3 10K [Default]	
	Not included in the wizard	Unit ON/OFF command OFF [Default]	

Tab. 2.a

 **Notice:** when using the Mobile app wizard additional parameters can be added, such as alarm configuration, defrost, etc. For further details, see the user manual +0300160EN.

3. FINALISING, FINE TUNING

The initial configuration set via the wizard defines the fundamental parameters required to start the unit and activate basic control. Once this first level of configuration has been completed, it is strongly recommended to check and where necessary adapt the parameter settings based on the additional functions available, which are not always included in the wizard but may significantly affect the behaviour of the unit.

This paragraph examines the main differences between MPXPRO (MX*) and New MPXPRO (SPM*) in relation to certain features, such as:

- configuration of digital and analogue inputs/outputs,
- alarm management thresholds and logic,
- RTC configuration and use,
- defrost management,
- evaporator fan control,
- advanced features such as VLSH.

The following table shows only the differences and cross-references between the defaults on the two solutions.

Category	OLD MPXPRO	NEW MPXPRO	Notes
Analogue inputs	Probe group settings parameters /P1 Group 1 (S1,S2,S3) [Default 0 = NTC] /P2 Group 2 (S4,S5) [Default 0 = NTC]	Probe group settings parameters /P1 Group 1 (S1,S2,S3,S4,S5) [Default 0 = NTC]	Changed association
	On the New MPXPRO all the probes S1,S2,S3,S4,S5 must be the same type. If needing to mix the type of passive probes, use universal channels S6, S7, S8.		
	Minimum and maximum pressure probe values /U6 (maximum value) [Default 9.3] /L6 (manimum value) [Default -1]	Minimum and maximum pressure probe values /UE (maximum value) [Default 60] /LE (manimum value) [Default 0]	Changed association
	Probe calibration parameters /c1 = probe 1 calibration /c2 = probe 2 calibration /c3 = probe 3 calibration /c4 = probe 4 calibration /c5 = probe 5 calibration /c6 = probe 6 calibration /c7 = probe 7 calibration	Probe calibration parameters /cA.../cO Calibration must be set based on the specific function	Changed association. Paragr. 6.1.1, user manual cod. +0300160EN
Digital outputs	Digital output setting parameters H13,H7,H5,H1	DO* Digital output setting parameters	Changed association Paragr. 6.1.4, user manual cod. +0300160EN
	0 = No function 1 = Normally de-energised alarm 2 = Normally energised alarm 3 = Auxiliary 4 = Auxiliary serving the Main on Secondary devices 5 = Light 6 = Light serving the Main on Secondary devices 7 = Auxiliary evaporator defrost 8 = Evaporator fans 9 = Anti-sweat heaters 10 = Suction valve 11 = Equalising valve 12 = Liquid solenoid valve 13 = Timed output 14 = Condensate drain heaters	0 = No function DOA = Solenoid/compressor DOb = Alarm DOE = Light DOG = Defrost DOI = Evaporator fans	
	Assign DO direct/inverse logic parameters H10 = Compressor logic [Default 0 direct] H11 = Fan logic [Default 0 direct]	Assign DO direct/inverse logic parameters rOA [Default 0 direct] rOI [Default 0 direct]	
	Assign DI logic parameters A4, A5, A10, A11,A12	Assign DI logic parameters DI*	Changed association Par. 6.1.2, user manual cod. +0300160EN
Digital inputs	0 = Disabled 1 = Immediate external alarm 2 = Delayed external alarm 3 = Enable defrost 4 = Defrost request 5 = Door switch 6 = remote ON/OFF 7 = Curtain/light switch 8 = Start/stop continuous cycle 9 = Digital input monitoring 10 = Timed digital input 11 = Standby status switch 12 = Clean status switch 13 = Change active set 14 = Door switch without control stop	0 = Disabled DIA DIb DIc DI d DIE DIF DIG DIH DII DIL DIM DIn DIo DIp	Parameter DI* on the New MPXPRO must be assigned to the required channel

Category	OLD MPXPRO	NEW MPXPRO	Notes
Digital inputs	New MPXPRO features three dedicated channels for digital inputs. If two additional channels are required, these can be assigned to channels S4/DI and S5/DI, via parameter /P2.		
	DI direct/inverse logic parameters Hr1, Hr2, Hr3, Hr4, Hr5	DI direct/inverse logic parameters rl*	
	0 = Disabled 1 = Immediate external alarm 2 = Delayed external alarm 3 = Enable defrost 4 = Defrost request 5 = Door switch 6 = remote ON/OFF 7 = Curtain/light switch 8 = Start/stop continuous cycle 9 = Digital input monitoring 10 = Timed digital input 11 = Standby status switch 12 = Clean status switch 13 = Change active set 14 = Door switch without control stop	0 = Disabled rlA rlb rlc rld rlE rlF rlG rlH rlI rlL rlM rlN rlo rlp	Parameter rl* on the New MPXPRO must be assigned to the required channel
	Virtual digital input parameters A8, A9	Virtual digital input parameters DI*, A9	Changed association Paragr. 6.1.2, user manual cod. +0300160EN
	A8 = Virtual DI configuration 0 = Input not active 1 = immediate external alarm 2 = external alarm with activation delay 3 = enable defrost 4 = start defrost 5 = door switch with control stop 6 = remote ON/OFF 7 = curtain switch 8 = start/stop continuous cycle	Assign DI function to channel 0 = Disabled DIA = immediate external alarm Dlb = external alarm with delay Dlc = enable defrost Dld = start defrost DIE = door switch with control stop DIF = remote ON/OFF DIG = curtain switch DIH = start/stop continuous cycle	
Analogue outputs	Two dedicated analogue outputs	/P6, /P7 to define type /A* to assign channel function	Changed association Paragr. 6.1.3, user manual cod. +0300160EN
	PWM 1 = Evaporator fans	/AA = 1 (evaporator fans)	
	PWM 2 = Anti-sweat heaters	/Ac = 2 (anti-sweat heaters)	
	On the New MPXPRO the analogue outputs can be configured and used independently with regards to the type of output (/P6, /P7, /P8, /P9) and channel (/A*).		
Alarms	A1 0 = Relative to St [Default 0] 1 = Absolute A1 = 0, AL/AH Relative alarm thresholds	A1 0 = Relative to St [Default 0] 1 = Absolute A1 = 0 AL = RELATIVE low temperature alarm threshold AH = RELATIVE high temperature alarm threshold	Changed association Paragr. 5.4.1 user manual cod. +0300160EN
	A1 = 1, AL/AH Absolute alarm thresholds	A1 = 1 ALA = ABSOLUTE low temperature alarm threshold AHA = ABSOLUTE high temperature alarm threshold	
	On the New MPXPRO, once the mode has been set as absolute or relative, it is important to leave the default values for the mode that is not used.		
RTC	Internal clock setting y__ = year M__ = month d__ = day of the month u__ = day of the week h__ = hours n__ = minutes	Internal clock setting y__ = year M__ = month d__ = day of the month u__ = day of the week h__ = hours n__ = minutes	The RTC parameters are the same. On the New MPXPRO, these parameters are exclusively used for setting the date and time (not the display).
	On the New MPXPRO, the RTC can be configured and displayed via the Applica mobile/Desktop app, Spark, or the boss supervisor.		
Scheduling Defrosts	Parameter td1 to td8 settings d_ = day h_ = hours n_ = minutes p_ = power defrost	Configuration via Mobile app td1 to 8-d = day td1 to 8-time = time td1 to 8-P = power defrost	
	The scheduling of defrosts via HMI or supervisor is the same for both solutions.		
BMS	CAREL/Modbus auto detection	Modbus (CAREL protocol on Spare Part model only)	Changed settings. Paragr. 5.4.1, user manual cod. +0300160EN
	Communication baud rate fixed at 19200 bps	Configurable baud rate H2 [Default 0 = 19200bps]	
	Fixed stop bits and parity (8N2)	Configurable stop bits and parity H1 [Default 0 = 8N2]	
	Secondary address setting: H0 (first secondary) = 1 H0 (second secondary) = 2	Secondary address setting: H0 (first secondary) = H0 (main) +1 H0 (second secondary) = H0 (main) +2	

Category	OLD MPXPRO	NEW MPXPRO	Notes
EEV	Valve type parameter setting = P1 0 = Not configured 1 = PWM 2 = CAREL E2V 3 = 0-10V for refrigerant flow control 4 = PWM for refrigerant flow control 5 = E2V for refrigerant flow control	Valve type parameter setting = P1 0 = Not configured 1 = PWM 2 = CAREL E2V/E3V 3 = 0-10V liq. 4 = PWM 5 = E2V/E3V liquid 6 = E4V to E7V exp. Direct 7 = E4V to E7V liq 8 = 0-10V	
	Refrigerant type parameter setting PH [Default R404A]	Refrigerant type parameter setting PH [Default R744]	Already included in the wizard
	PSb valve position in standby [steps]	PSb valve position in standby [%]	
	PMu manual valve position [steps]	PMu manual valve position [%]	
HMI and repeater	Disable keypad function = H2	Disable keypad function = H6 0 = Disabled, 1 = Enabled [Default]	Reduced functions
	Button lock configuration = H6 0...15 = the functions linked to the individual buttons can be enabled/disabled.		
	Disable the buzzer = H4 0 = Enabled [Default]; 1 = Disabled	Disable the buzzer = Hb 0 = Disabled; 1 = Enabled [Default]	Changed reference parameter
	Display on user terminal = /t1 0 = Terminal disabled 1...11 = Probe 1...11 12 = Control probe [Default] 13 = Virtual probe 14 = Set point	Visualizzazione su terminale = /t1 0 = Terminal disabled 1...8 = Probe 1...8 9 = Control probe [Default] 10 = Virtual probe (Sv) 11...14 = Serial probe 1 to 4 15 = Control set point 16 = Superheat	
	Display on repeater = /t2 - See /t1	Display on repeater = /t2 - See /t1	

Tab. 3.b

Very Low SuperHeat (VLSH) function: differences between MPXPRO and New MPXPRO

The VLSH (Very Low SuperHeat) function has been implemented in a similar way on the MPXPRO (MX*) and the New MPXPRO (SPM*) platforms, however there are some differences in the variables used and in the interaction with the supervisor or the compressor rack.

On the MPXPRO, VLSH management is available exclusively on dedicated models (MXTW**), which compared to the standard models have specific firmware.

On the new MPXPRO, VLSH implementation has been aligned with the function on the MPXone Advanced, and is more structured. For further details, see document +030220615.

Category	OLD MPXPRO	NEW MPXPRO	Notes
VLSH	S_VLSH_MODE = Enable/disable VLSH	P3E = Enable dynamic VLSH	
	S_VLSH_SH_SET = Superheat set point in VLSH mode	P3A = SH set point in VLSH mode	
	P7E = Low SH threshold in VLSH mode	P7d = Low SH threshold in VLSH mode	
	SAF = Maximum time to detect BMS offline	SOT = Heart beat timeout	

Tab. 3.c

Please see the document specified above for correct management of boss supervisor variables via the dedicated plug-in. Specifically, the following additional variables need to be considered: SOn (supervisor online heartbeat), P3E (enable dynamic VLSH set point), Sor (supervisor status) and P3r (VLSH function status). For the supervisor configuration, please see chapter 5 of this document

4. REPLACE A FAULTY CONTROLLER IN THE M/S NETWORK

When a Main * controller in an existing network fails, the replacement method depends on the system configuration and the availability of stand-alone controllers (not part of M/S networks). **It is important to consider that the new MPXPRO (SPM*) cannot be installed directly in a tLAN network made up of MPXPRO (MX*) devices: the subnet must have the same devices.**

(*) the following scenarios can be easily adapted should the fault arise on a Secondary unit.

The scenarios described below apply in the absence of spare parts of the previous MPXPRO (MX*) series. Having an equivalent device from the same series is the ideal solution, as it allows direct replacement without changes to the network architecture.

Notice – CAREL Protocol

The procedures described refer to systems with Modbus communication. If the CAREL protocol is used, the new MPXPRO SPM* series controllers are currently not compatible; replacements must therefore be managed using MPXPRO (MX*) units available in stock. Replacement with the new MPXPRO will be possible with the Spare Part model, expected to be available approximately by the end of Q2-2026.

4.1 Network made up of only Main controllers (stand-alone)

Se tutti i controllori sono configurati come unità indipendenti (solo comunicazione Modbus/RS-485, la procedura risulta: If all the controllers are configured as stand-alone units (Modbus/RS485 communication only), the procedure is as follows:

- Remove the faulty controller;
- Install the new MPXPRO (SPM*);
- Configure:
BMS address (H0)
Unit type (In = 1, Main)
Application parameters (these depend on the intrinsic configuration of the unit)



Notice: in this case there are no local network constraints and direct replacement is possible.

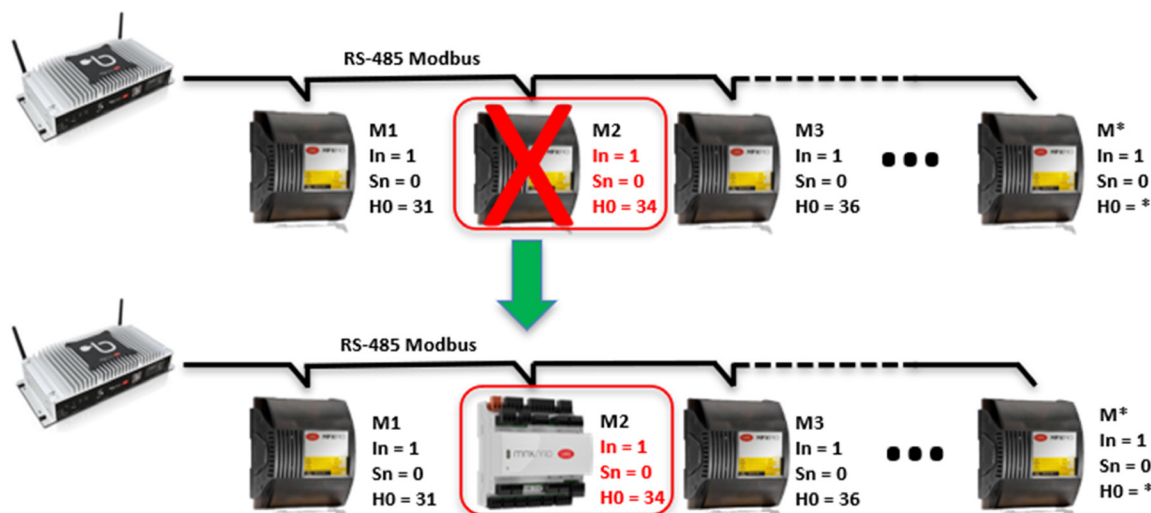


Fig. 4.g

4.2 M/S network with stand-alone Main available

If the fault is on a Main device in an M/S network and in the system there is at least one identical controller used in stand-alone mode (i.e. independent operation, without M/S network), the procedure is as follows:

6. Identify the stand-alone controller;
7. Install it in place of the faulty Main in the M/S network;
8. Configure the correct address and unit parameters;
9. Replace the removed stand-alone control with a new MPXPRO.

Advantage: the existing tLAN network remains unchanged.

The new MPXPRO can only be installed on a stand-alone unit.

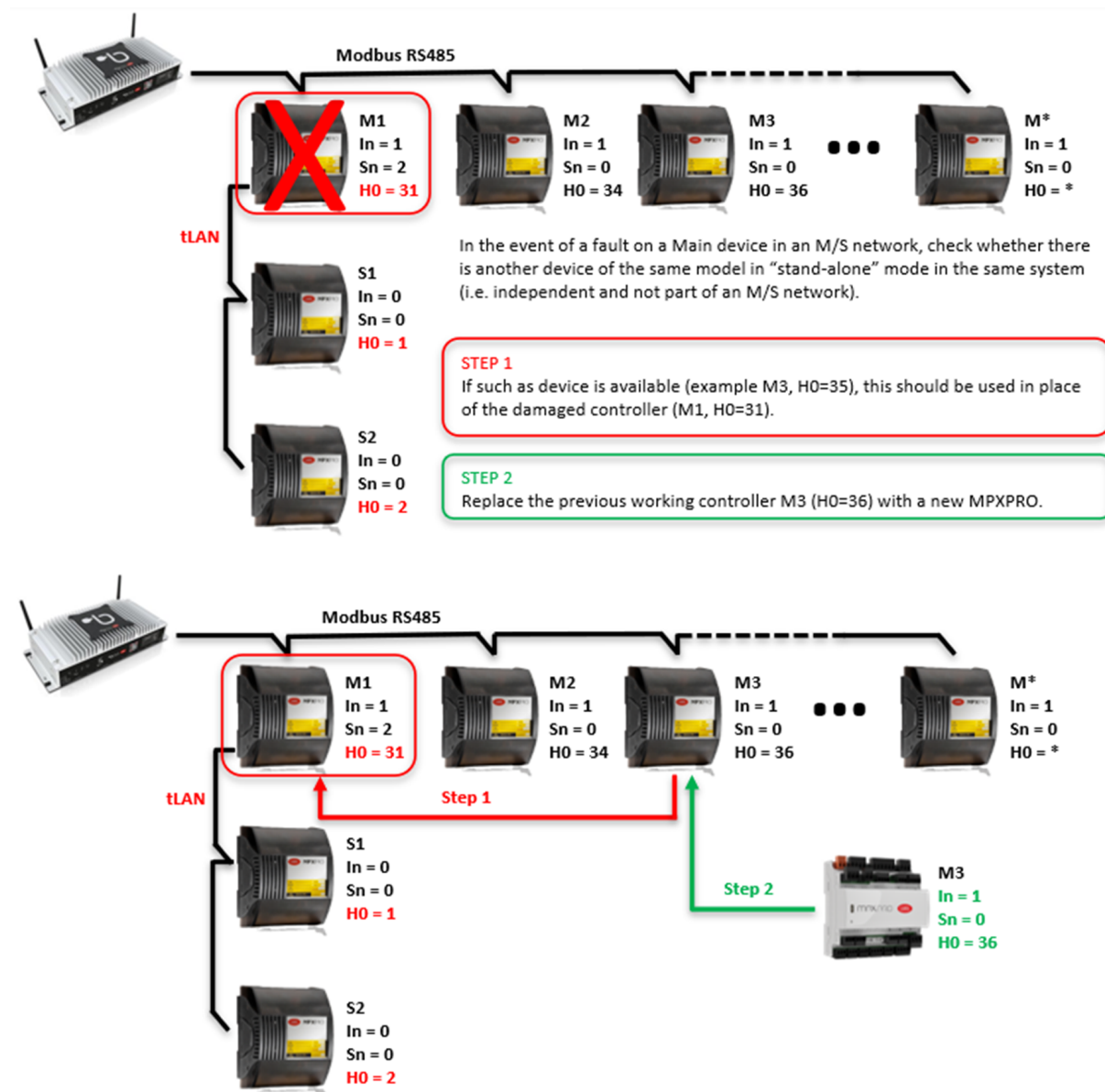


Fig. 4.h

4.3 M/S network with no stand-alone controllers available

If all the controllers are connected to the M/S network and no stand-alone units are available, proceed as follows:

1. Identify a Secondary controller;
2. Convert it to Main by setting the appropriate parameters (H0, In, Sn – for MX*0M* part numbers) or by installing the optional board (MX3OP48500 or MX2OP48500 – for MX*0S* part numbers);
3. Disconnect the tLAN upstream, leaving downstream Secondary units connected;
4. Connect the new device to the supervisor BMS line;
5. Install the new MPXPRO to replace the faulty Main.

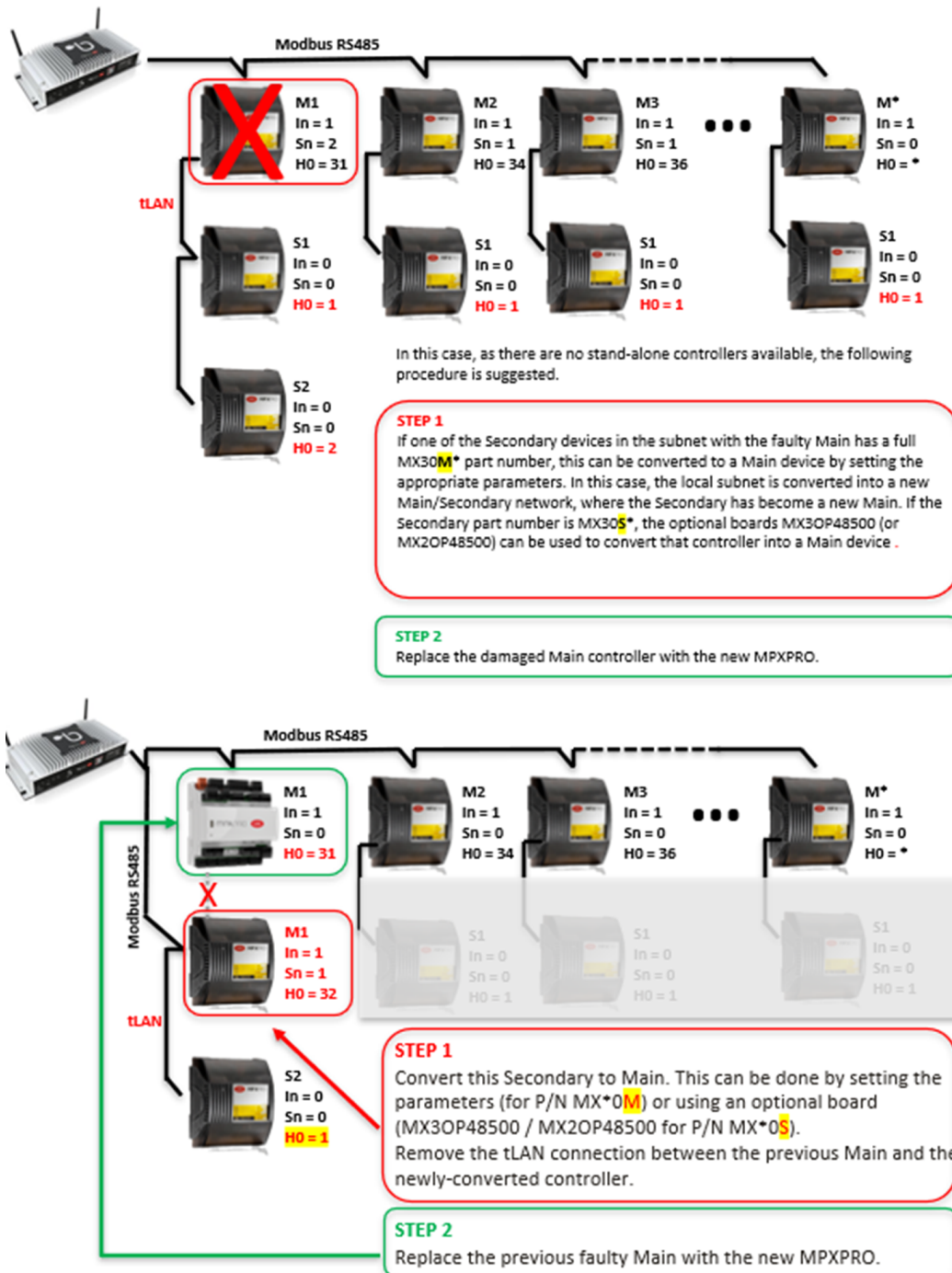


Fig. 4.i

5. SUPERVISOR AND PLUG-INS

After having completed the physical connections and correctly set parameter H0 (serial address) on the new controller, the controller then needs to be configured on the serial line connected to the supervisor.

There are two possible cases:

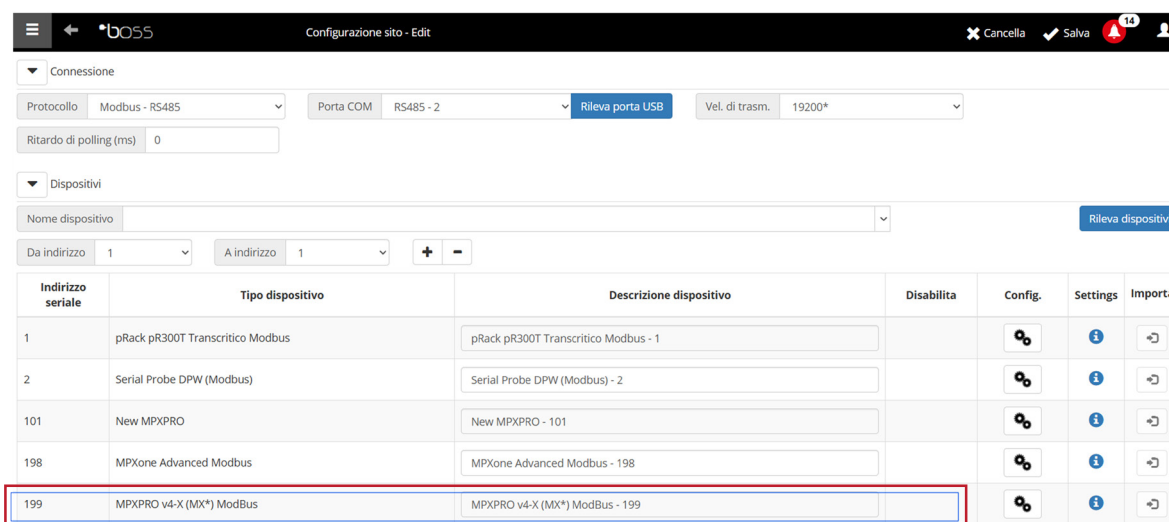
1. H0 [new MPXPRO] coincides with H0 [old MPXPRO]
2. H0 [new MPXPRO] is different from H0 [old MPXPRO]

 **Notice:** the new MPXPRO model is available from boss version SP1.14; for previous versions, the XML file needs to be added manually.

The following examples refer exclusively to systems with Modbus communication protocol. As already described in the previous sections, if the CAREL protocol is used, only spares from the previous MPXPRO (MX*) series can be used. The new MPXPRO in this context can be used with the Spare Part model, specifically for replacements with support for the CAREL protocol. These models are expected to be available by the end of Q2-2026.

5.1 Scenario where H0 [new MPXPRO] coincides with H0 [old MPXPRO]

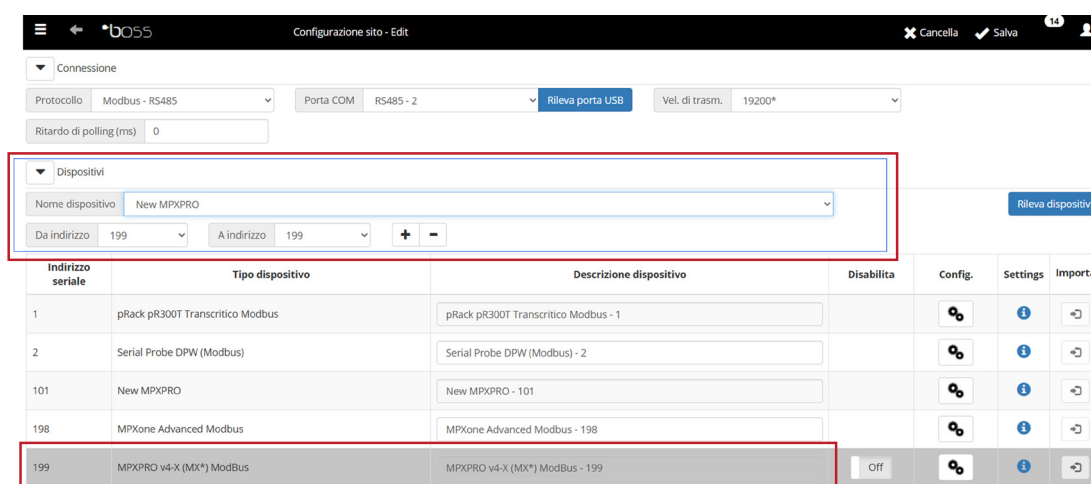
Existing serial line, configured with the previous MX* series (H0=199).



Indirizzo seriale	Tipo dispositivo	Descrizione dispositivo	Disabilita	Config.	Settings	Importa
1	pRack pR300T Transcritico Modbus	pRack pR300T Transcritico Modbus - 1				
2	Serial Probe DPW (Modbus)	Serial Probe DPW (Modbus) - 2				
101	New MPXPRO	New MPXPRO - 101				
198	MPXone Advanced Modbus	MPXone Advanced Modbus - 198				
199	MPXPRO v4-X (MX*) ModBus	MPXPRO v4-X (MX*) ModBus - 199				

Fig. 5.a

Add the "New MPXPRO" device with the same serial address (H0=199).



Indirizzo seriale	Tipo dispositivo	Descrizione dispositivo	Disabilita	Config.	Settings	Importa
1	pRack pR300T Transcritico Modbus	pRack pR300T Transcritico Modbus - 1				
2	Serial Probe DPW (Modbus)	Serial Probe DPW (Modbus) - 2				
101	New MPXPRO	New MPXPRO - 101				
198	MPXone Advanced Modbus	MPXone Advanced Modbus - 198				
199	MPXPRO v4-X (MX*) ModBus	MPXPRO v4-X (MX*) ModBus - 199	Off			

Fig. 5.b

 **Notice:** in this case the new controller will overwrite the previous one and all logged data will be erased. It is recommended to backup the boss supervisor before making the changes.

5.2 Scenario where H0 [new MPXPRO] is different from H0 [old MPXPRO]

Existing serial line, configured with the previous MX* series (H0=199)

Configurazione sito - Edit

Protocollo: Modbus - RS485 | Porta COM: RS485 - 2 | Rileva porta USB | Vel. di trasm.: 19200* | Ritardo di polling (ms): 0

Dispositivi

Nome dispositivo: New MPXPRO | Da indirizzo: 200 | A indirizzo: 200

Rileva dispositivi

Indirizzo seriale	Tipo dispositivo	Descrizione dispositivo	Disabilita	Config.	Settings	Importa
1	pRack pR300T Transcritico Modbus	pRack pR300T Transcritico Modbus - 1				
2	Serial Probe DPW (Modbus)	Serial Probe DPW (Modbus) - 2				
101	New MPXPRO	New MPXPRO - 101				
198	MPXone Advanced Modbus	MPXone Advanced Modbus - 198				
199	MPXPRO v4-X (MX*) ModBus	MPXPRO v4-X (MX*) ModBus - 199				

Fig. 5.c

Add the "New MPXPRO" device with the new serial address (H0=200).

Configurazione sito - Edit

Protocollo: Modbus - RS485 | Porta COM: RS485 - 2 | Rileva porta USB | Vel. di trasm.: 19200* | Ritardo di polling (ms): 0

Dispositivi

Nome dispositivo: New MPXPRO | Da indirizzo: 201 | A indirizzo: 201

Rileva dispositivi

Info
New MPXPRO
Aggiunto/i all'indirizzo: 200

Indirizzo seriale	Tipo dispositivo	Descrizione dispositivo	Disabilita	Config.	Settings	Importa
1	pRack pR300T Transcritico Modbus	pRack pR300T Transcritico Modbus - 1				
2	Serial Probe DPW (Modbus)	Serial Probe DPW (Modbus) - 2				
101	New MPXPRO	New MPXPRO - 101				
198	MPXone Advanced Modbus	MPXone Advanced Modbus - 198				
199	MPXPRO v4-X (MX*) ModBus	MPXPRO v4-X (MX*) ModBus - 199	On			
200	New MPXPRO	New MPXPRO - 200				

Fig. 5.d

Notice: disable the old controller (but do not delete it) in the serial line configuration to avoid offline alarms and to retain the logs.

5.3 Rules and plug-ins

Once the controller has been replaced and added to the supervisor line, it is important to also take into account any supervisor rules and plug-in configurations. Below are some examples of the procedure for adapting the main plug-ins to the newly-added controller.

Plant Calendar

The scheduler setup for the new controller is identical to the previous one. In the "Defrost" Group, the previous MPXPRO (MX*) with serial address 199 was configured as the Main for the broadcast command:



Fig. 5.e

The new MPXPRO has been added to the serial line with address 200 (H0=200).

It is therefore necessary to adapt the Group, correctly setting the new device as the coordinator:

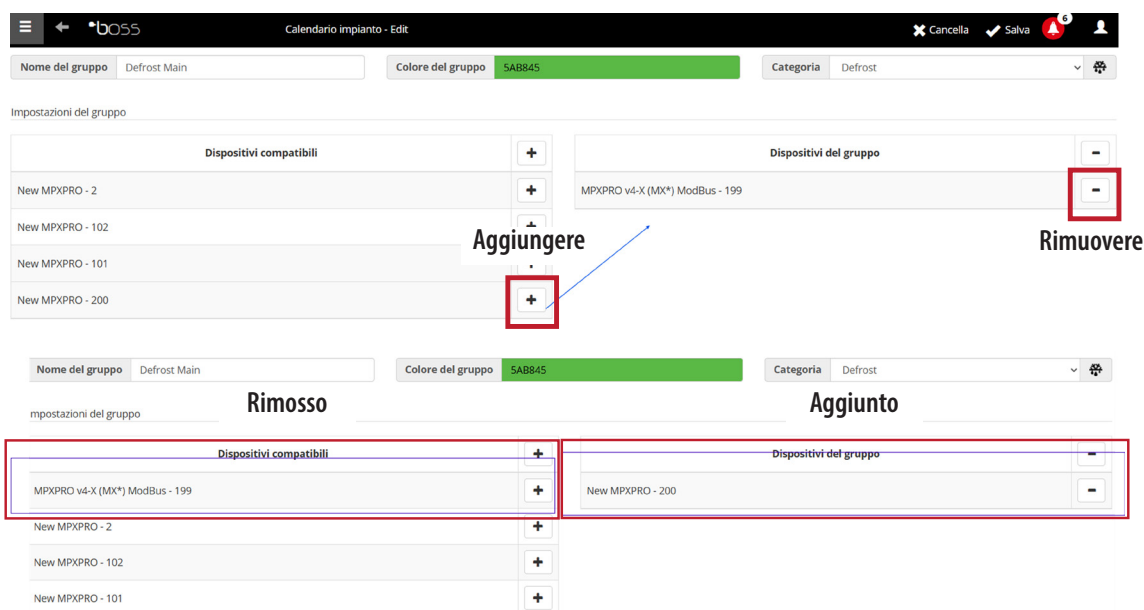


Fig. 5.f

Floating suction pressure optimisation plug-in

The faulty "old MPXPRO" controller (with serial address H0=199) was part of the group of controllers associated with the pRack for suction pressure optimisation. Having replaced it with the new controller, this setting needs to be changed, making the new MPXPRO (H0=200) appear in the same group and removing the old one.

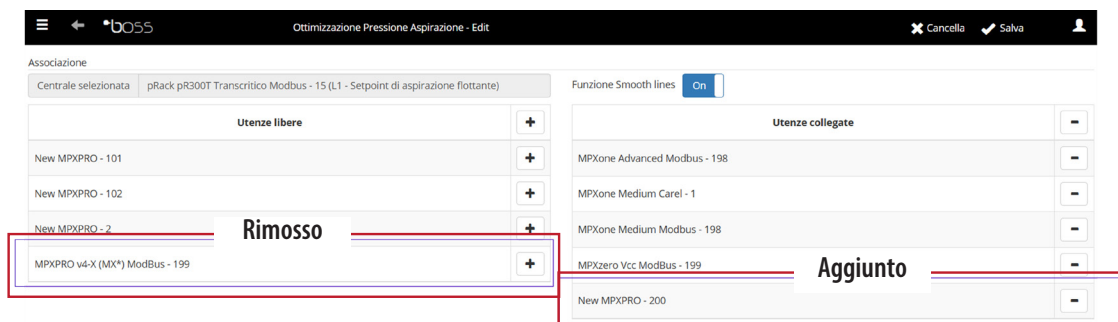


Fig. 5.g



Notice: if the old MPXPRO had the Smooth lines function active, this also needs to be enabled on the new MPXPRO (verify that PSM=1 (Enabled)).

Plug-in Safe Restore

The old MPXPRO (serial address H0=199) had been added to the group of controllers associated with the pRack for managing the Safe Restore plug-in. In this case too, as in the previous ones, the new MPXPRO controller has been added with serial address H0=200, and for this reason it is recommended to remove the previous device and add the new one.

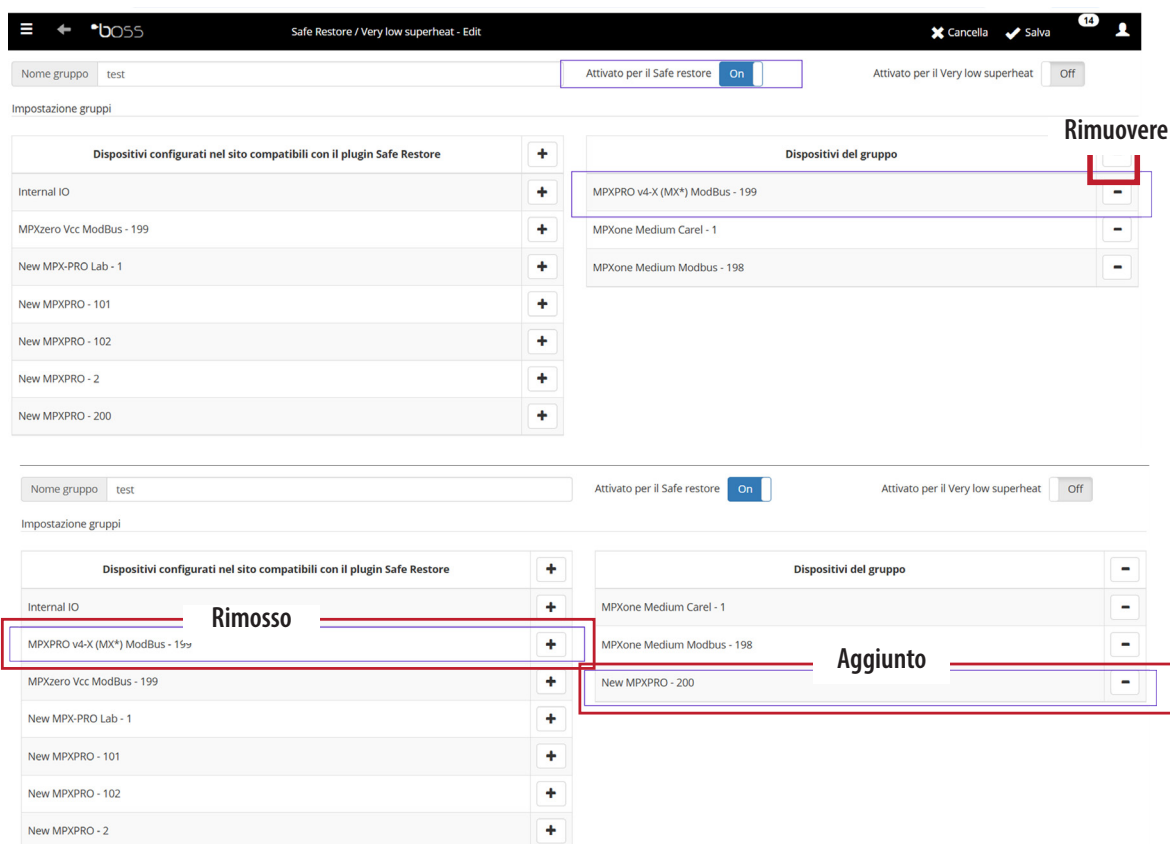


Fig. 5.h

VLSH Plugin

The old MPXPRO (serial address H0=199) had been added to the group of controllers associated with the pRack for managing the VLSH (Very Low SuperHeat) plug-in. In this case too, as in the previous ones, the new MPXPRO controller has been added with serial address H0=200, and for this reason it is recommended to remove the previous device and add the new one.

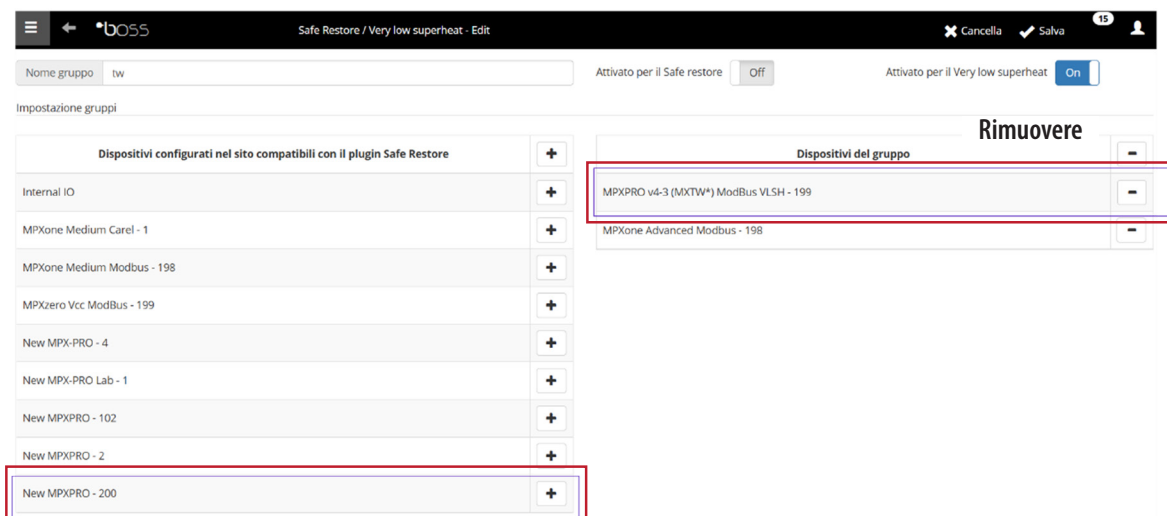


Fig. 5.i

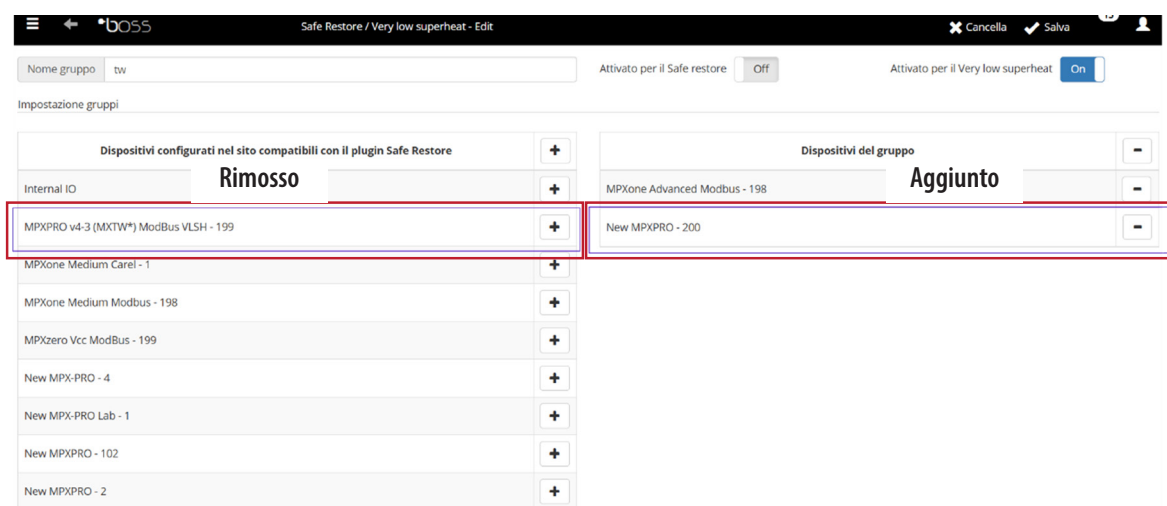


Fig. 5.j

Please also note that the plug-in settings also need to be changed on the corresponding "Device Configuration" page. Below are the images for the two series..

Very low superheat

Azione da eseguire quando il dispositivo principale è offline: Low superheat

Frequenza di heartbeat: 1 min

Centrale	Variabile principale (monitorata)	Valore LSH	Variabile di stato ON/OFF
Dispositivi secondari	Variabile principale (impostata)	Valore LSH	Valore VLSH
MPXone Advanced Modbus	Very low SH - Activation command	0.0	1.0
	Heart Beat variable:		
	Supervisor online heartbeat		1.0
MPXPRO v4-3 (MXTW*) ModBus VLSH	Modalità VLSH attiva	0.0	1.0
	Heart Beat variable:		
	Modalità VLSH attiva		1.0

▼ Very low superheat

Azione da eseguire quando il dispositivo principale è offline:

Frequenza di heartbeat: min

Centrale	Variabile principale (monitorata)	Valore LSH	Variabile di stato ON/OFF
Dispositivi secondari	Variabile principale (impostata)	Valore LSH	Valore VLSH
MPXone Advanced Modbus	Very low SH - Activation command	0.0	1.0
	Heart Beat variable:		1.0
	Supervisor online heartbeat		
New MPXPRO	Very low SH - Comando di attivazione	0.0	1.0
	Heart Beat variable:		1.0
	Supervisor online heartbeat		



Notice:

the Heart beat variable on the new MPXPRO is different from that on the old MPXPRO.
 The VLSH plug-in only works with new MPXPRO devices starting from boss SP version 1.14 with hotfix or higher.
 For further details please see the VLSH user manual: +030220615.



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