Multi-Function Burner Display

Burner control V3.60

Code	Model
20107665	MFBD 4.3" TOUCHSCREEN KIT - LMV3
20167984	MFBD 4.3" TOUCHSCREEN KIT - LMV5
20179829	MFBD 7" TOUCHSCREEN KIT - LMV5

DOC0214190 - 04/2024

1 Information and general warnings

1.1 General warnings

Disconnect all power supplies before attempting installation

Installation must only be conducted by qualified and skilled personnel in compliance with these instructions and all local and national codes

Ensure adequate work space before attempting installation

All accessory kits must be inspected for con-tents and integrity. If any components appear damaged DO NOT attempt installation; contact your supplier

After all operations are completed in compliance with these instructions; remount the cover and reconnect all safety devices before operating

Failure to follows these instruction could result in unsafe operation.

1.2 General information

Please note, this manual is only for burner display control. See Massimo Boiler Control manual for panel control system.

The multi-function display for LMV3x/5x is a common component for 3 systems: Solo, Piccolo and Massimo.

The **Solo** is a system that provides easy access to operators and BMS systems and burner functions. The burner is equipped with high definition 4.3" color HMI screen, delivering a modern and clean overview of the system in a snapshot.

The **Piccolo** is a 2 boiler lead/lag system that only needs the burners to be equipped with the multi-function displays and includes many functions already present in **Solo**.

The **Massimo** is a full boiler room control system and any burner equipped with a multi-function display can communicate with it and participate on the up to 8 boilers lead/lag system.

Please note that in manual contains fhe following legend to help navigate what functionality is compatible with the 4 modes of control:

Solo	●	Massimo	●
Piccolo	●	Remote Modulation	●

The Mulit-Function Burner Display Control is not a safety control. It does not interfere with any safety limitation set on the burner and boiler.

This manual may be updated without notice of change.

1.3 Other relevant documents

"Massimo System v3.60" manual
(Main control panel for Massimo).
"Riello Gateway N54 Manual"
"Riello Gateway N34 & N35 Manual"

2 System and hardware configuration

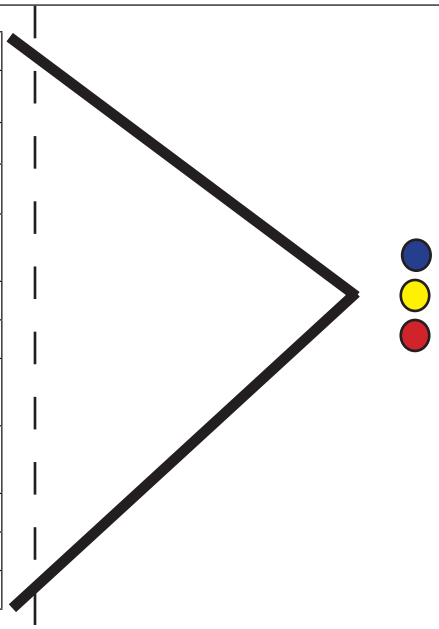
2.1 Introduction

The Multi-Function Burner Display is included in kits defined in section 2.2 that can selected as 4.3" or 7" displays with LMV3 and LMV5 controls.

2.2 Burner touch screen kits BOM

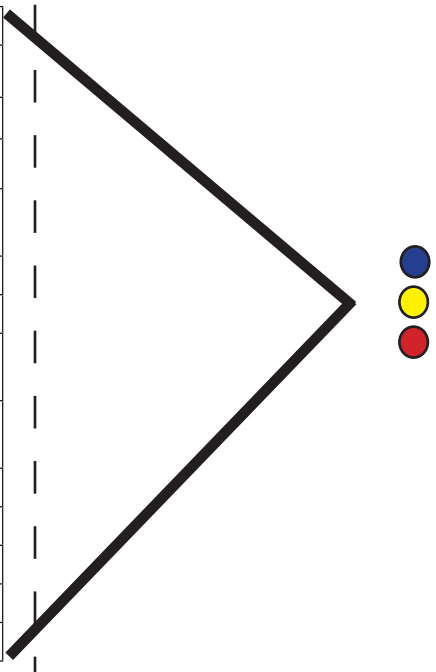
2.2.1 4.3" touch screen kit (LMV3) - 20107665

4.3" kit (20107665) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	4.3" touch screen	20180445
3	Wire (beldon,white, red , green, black)	
4	Display bracket,	20115121
5	Display bracket	20110020
6	120AC/24 VDC power supply	20138550
7	Din rail	C5311121
8	OCI412.10	C5360140
9	Light and Light button	
10	M6 Threaded rivet	20143688



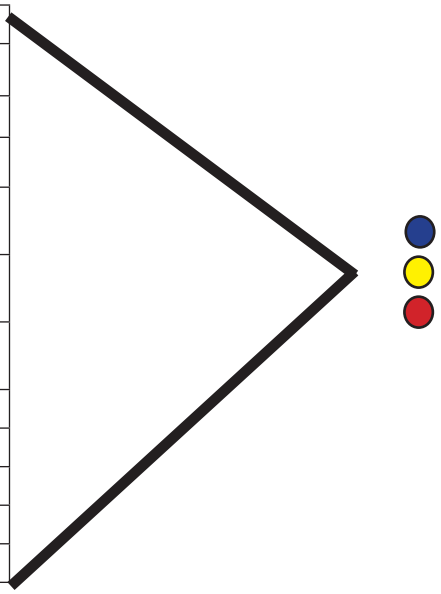
2.2.2 4.3" touch screen kit (LMV5) - 20167984

4.3" kit (20167984) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	4.3" touch screen	20180445
3	Wire (beldon,white, red , green, black)	
4	Display bracket,	20115121
5	Display bracket	20110020
6	120AC/24 VDC power supply	20138550
7	Din rail	C5311121
8	OCI412.10	C5360140
9	Light and Light button	
10	M6 Threaded rivet	20143688
11	RJ45 - RJ12 cable	20146748
12	PLC: CO-11ARE-D	20138547



2.2.3 7" touch screen kit (LMV5) - 20179829

7" kit (20179829) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	7" touch screen	20164159
3	Wire (beldon,white, red , green, black)	
4	120AC/24 VDC power supply	20138550
5	Din rail	C5311121
6	OCI412.10	C5360140
7	Light and Light button	
8	M6 Threaded rivet	20143688
9	RJ45 - RJ12 cable	20146748
10	PLC: CO-11ARE-D	20138547



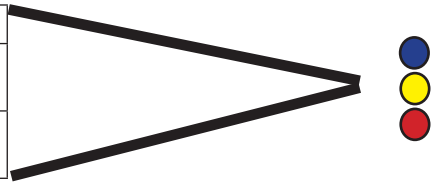
7" kit mounting case kit		
#	Description	Part Number
1	Mounting Case and components - Only to be used on larger power burners. Please contact local area representative for more details.	20076792

2.2.4 Header Supply Sensor (Piccolo Setup)

Header Supply Sensor (Piccolo System)		
#	Description	Part Number
1	Pt1000. (This PT1000 is a dual element sensor that is connected on both burners in a Piccolo setup) See Input 3 at the touchscreen for more information).	20152275

2.2.5 Optional parts

Optional parts		
9a	Gateway (5 protocol) - 1 per 8 burners	20214203
9b	Gateway (Lonworks)- 1 per 8 burners	20141214



2.3 Factory integrated components

Burner integration kit installed and tested.
► 4.3” HMI (LMV3/LMV5)
► 7.0” HMI (LMV5)

Protocol gateway (optional)

2.4 Standard features

In order to handle a wide variety of systems, the touch-screen is configurable. Please note that most of these features will not appear in certain modes. The following option are available:

System output type:
► Steam
► Hot water

Monitoring of burner/boiler & system:
► PV, status, firing rate, communication

Setpoint selection:
► Local (selectable/night/weekend setpoint)
► BMS (network/hardwire via analog signal 4-20ma or 0-10Vdc) - note this is not available for Solo or Piccolo LMV5

Night/weekend setback
► Individual days selection
► Individual time and setpoint selection

Hot Standby
► Selectable temperature/pressure target
► Choice of first lag boiler or all lag boilers

Cold start
► Individual start and stop of setpoint selection
► Maximum time selection

Pumps/Valve setup
► Boiler circulator pump off delay
► Boiler isolation valve close delay

Modbus RTU connection for BMS connection to software points.

Modbus TCP connection for BMS in Solo mode

Remote viewing

Piccolo
► Start and stop for lag boiler
► Start and stop delay for lag boiler
► Boiler automatic setpoint correction function
► Lead boiler rotation interval

Massimo: Touchscreens configurable to work in conjunction with Massimo Panel

2.5 Communication

2.5.1 Touch screen communication for burner control

The burner touchscreen utilizes Modbus/TCP for communications to 1 other burner (Piccolo option) or to Massimo panel (Massimo option).

The burner touchscreen utilizes Modbus RTU, RS485 for communications to the burner controls including LMV3, temperature controller.

For an LMV5, the AZL module communicates using Modbus RTU over RS232.

For remote connection to Massimo, see Massimo manual.

2.5.2 External communication

BMS communication is available via Modbus RTU for Solo and Piccolo and Modbus TCP from Solo.

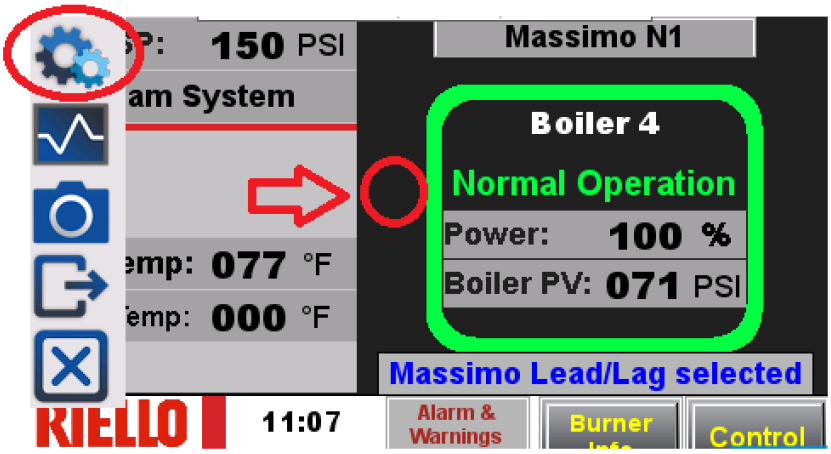
An optional gateway can be included in the burner with other protocols (BACnet IP or BACnet/MSTP, Modbus TCP, Ethernet/IP, Metasys N2, Lonworks).

Points list is protocol dependant, consult section 6.

2.5.3 Changing the COM2 address (MFBD modbus settings)

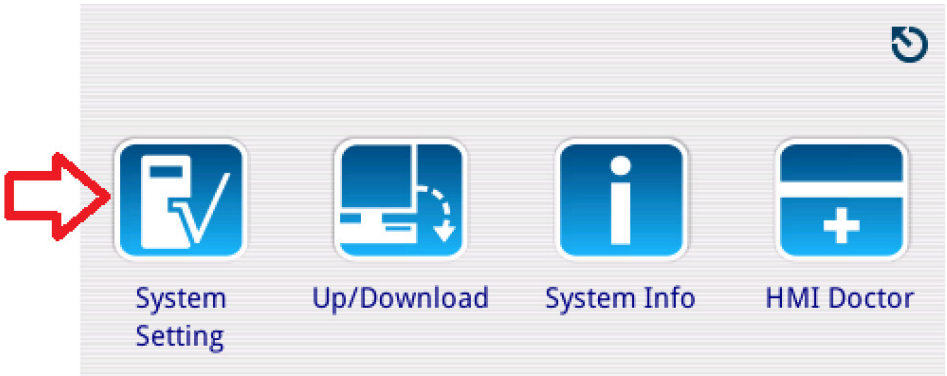
To change the COM2 address on MFBD, follow the below instructions:

1. Hold your finger anywhere in the touchscreen where there are no buttons for 2-3 seconds, until a bar on the left side of the touchscreen appears. See below:



2. Click the gear symbol and a window will pop up as "go to system menu?" then select "yes"

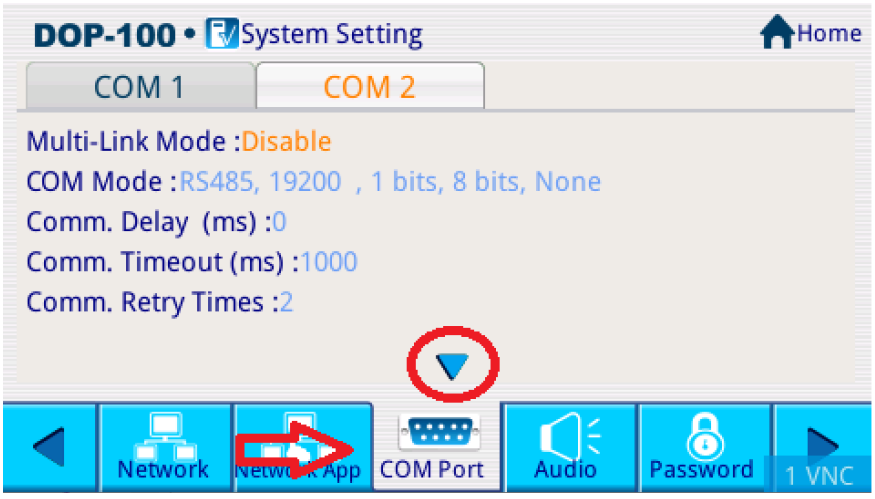
3. In the system menu, select "System Setting"



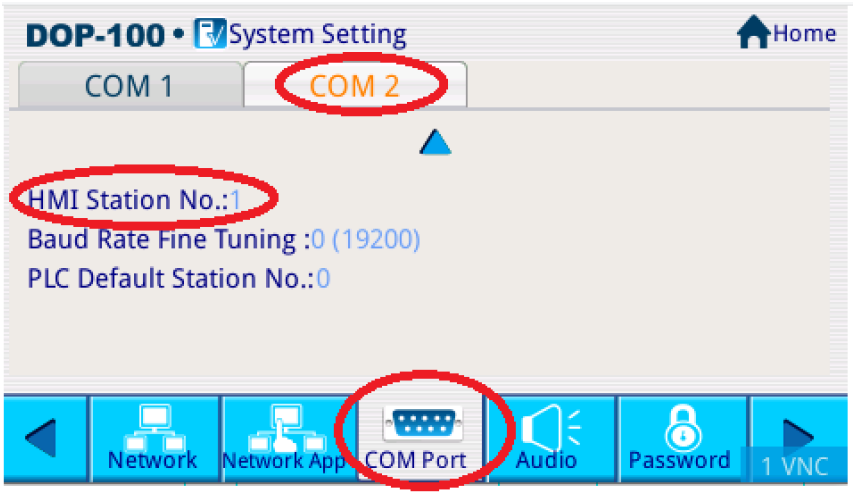
2.5 Communication

2.5.3 Changing the COM2 address (MFBD modbus settings)

4. Scroll at the bottom tabs using the arrows until you find "COM port", select the tab and click the blue arrow pointing down to access more information on COM2 port.

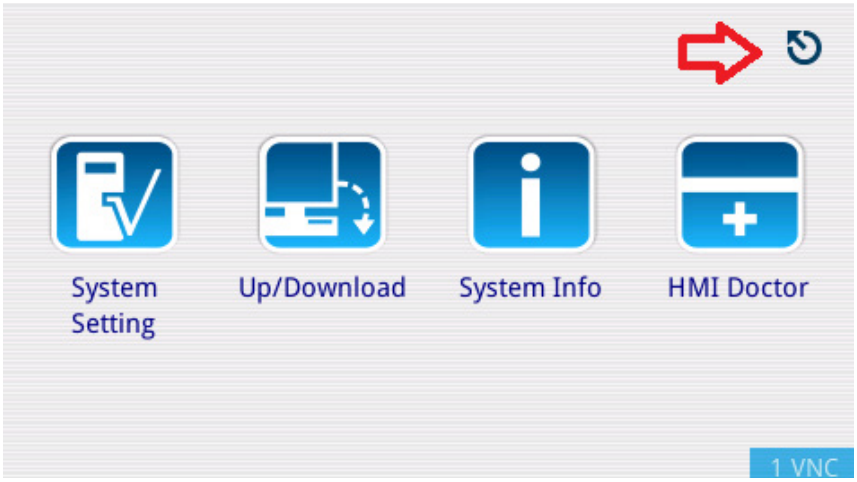


5. To change the address, it is located in COM2 tab as "HMI Station No.:"
If you are using MFBD with Piccolo or Solo system, change the address for all touchscreens. (adress 1 to 8)
For the first boot when connecting the gateway, make sure to change all the settings on the HMI Station No: 1 (COM2 address 1 "Burner 1") to load all settings.



2.5.3 Changing the COM2 address (MFBD modbus settings)

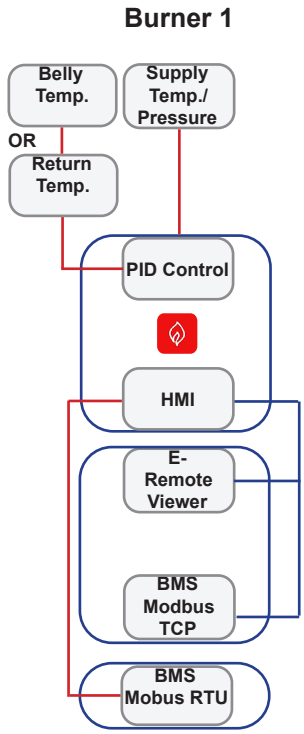
6. You are now done. To go back to the main menu touchscreen page, click the home button located in the top right side and select the icon in the reference picture below:



2.6 System overview

2.6.1 & 2.6.2 Solo & Piccolo system overview

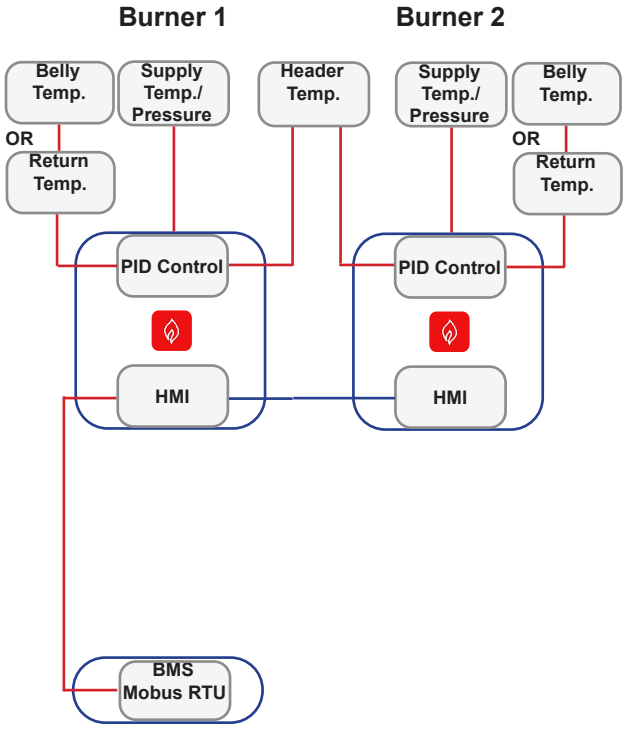
Solo - LMV3/5 (2.6.1)



For LMV5:

► PLC is added to interface between LMV5 and touch-screen

Piccolo (2.6.2)

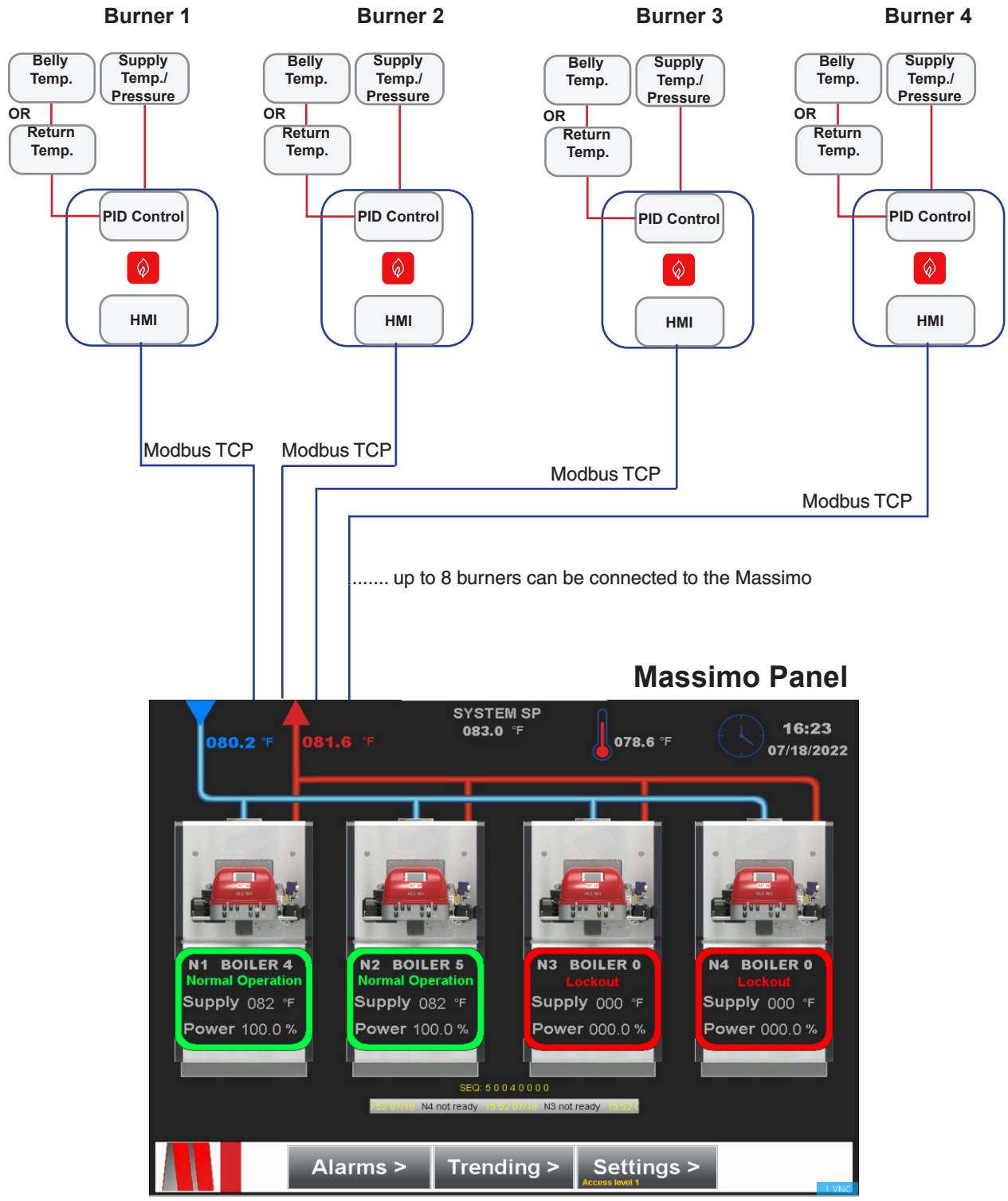


For LMV5:

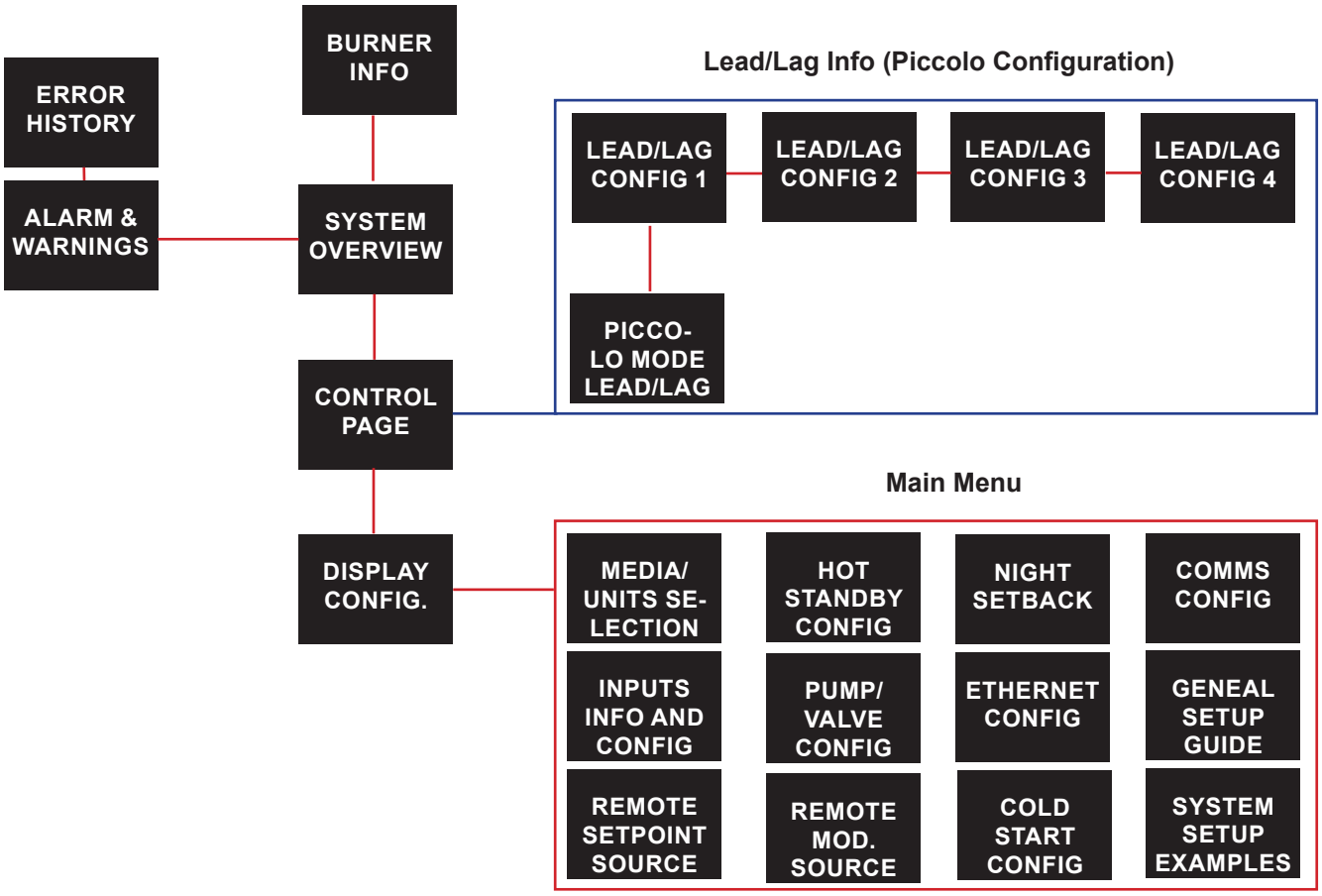
► PLC is added to interface between LMV5 and touch-screen

2.6.3 Massimo system overview

Massimo System: Burner Examples



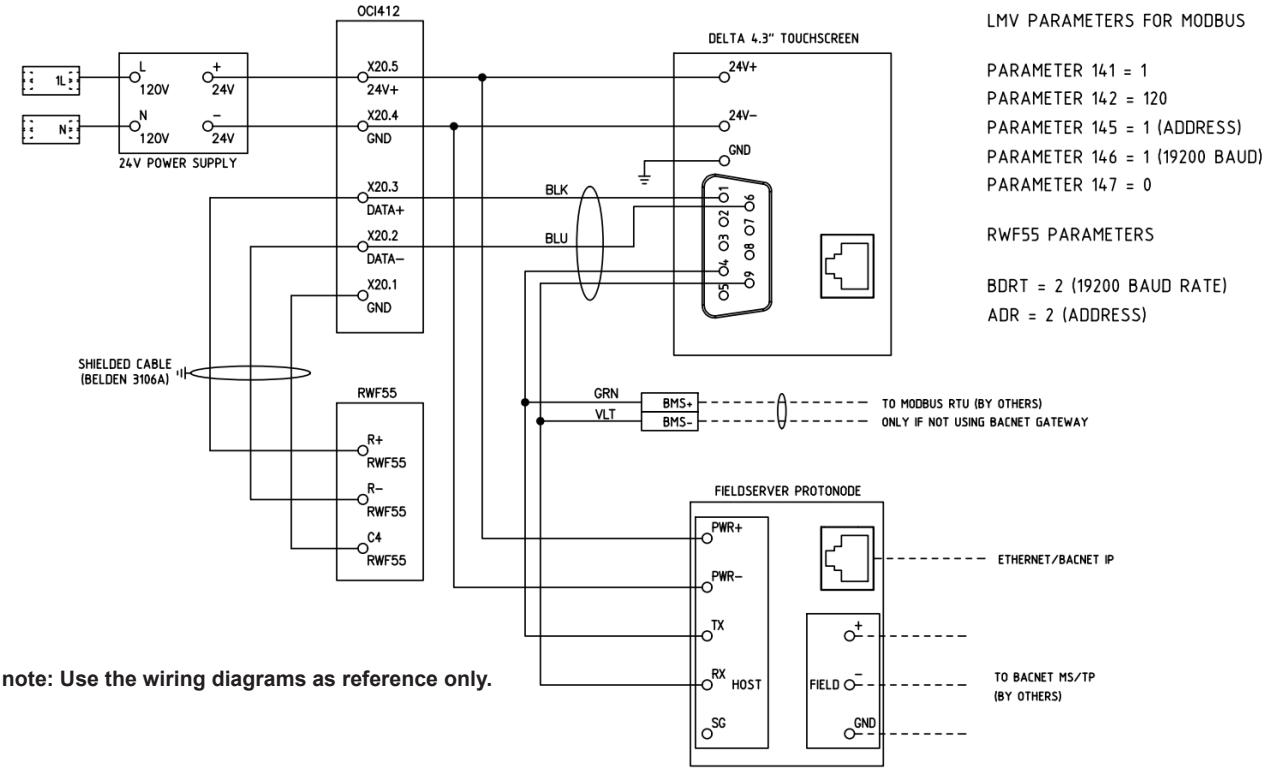
2.7 Navigation



Please note, some of the above menu options will not be available in certain modes as they may not apply. See section 3 for more details.

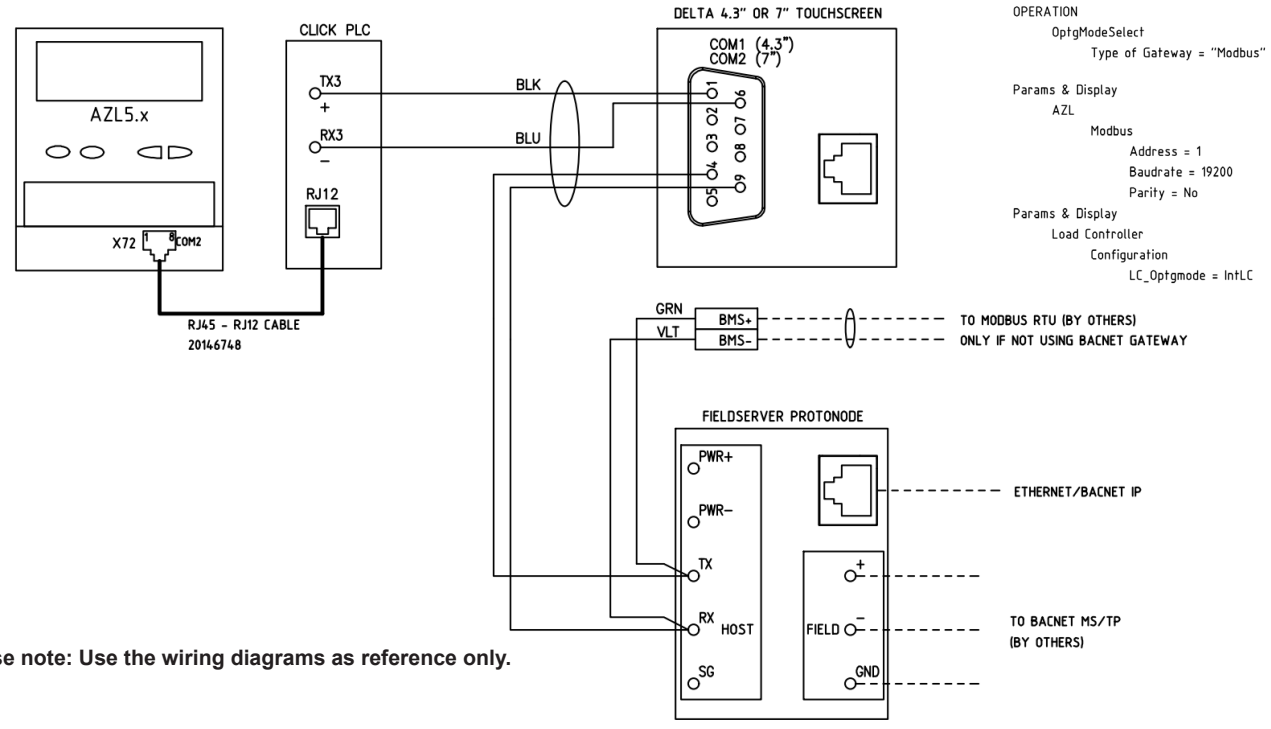
2.7 Navigation

2.7.1 Solo wiring: LMV3x, 4.3" touchscreen



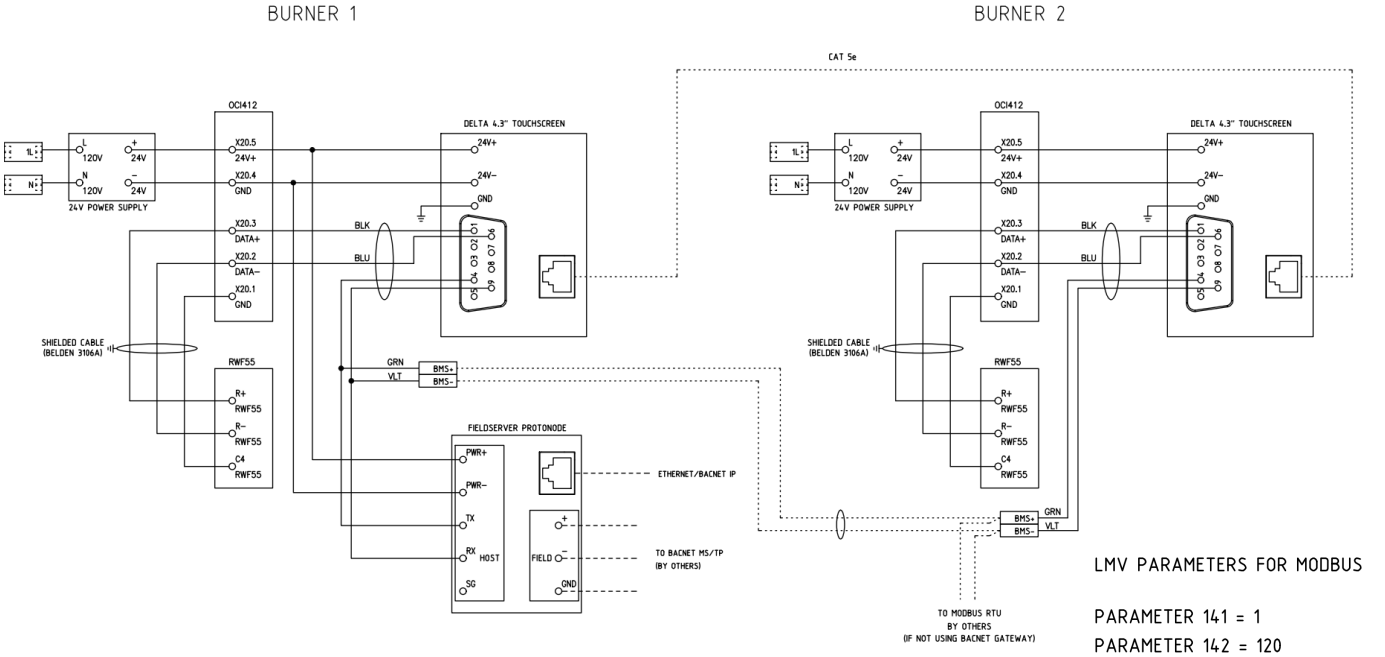
Please note: Use the wiring diagrams as reference only.

2.7.2 Solo wiring: LMV5x, 4.3"/ 7" touchscreen



Please note: Use the wiring diagrams as reference only.

2.7.3 Piccolo wiring: LMV3x, 4.3" touchscreen



LMV PARAMETERS FOR MODBUS

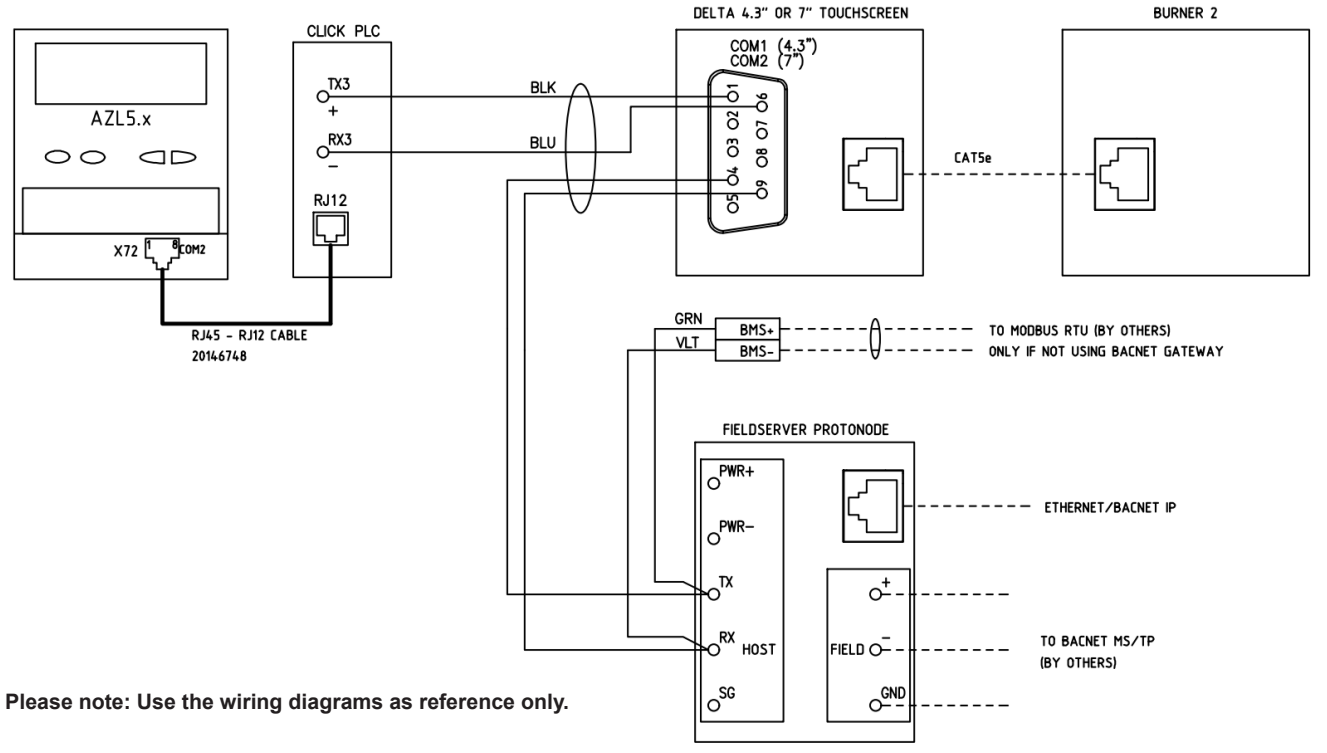
PARAMETER 141 = 1
PARAMETER 142 = 120
PARAMETER 145 = 1 (ADDRESS)
PARAMETER 146 = 1 (19200 BAUD)
PARAMETER 147 = 0

RWF55 PARAMETERS

BDRT = 2 (19200 BAUD RATE)
ADR = 2 (ADDRESS)

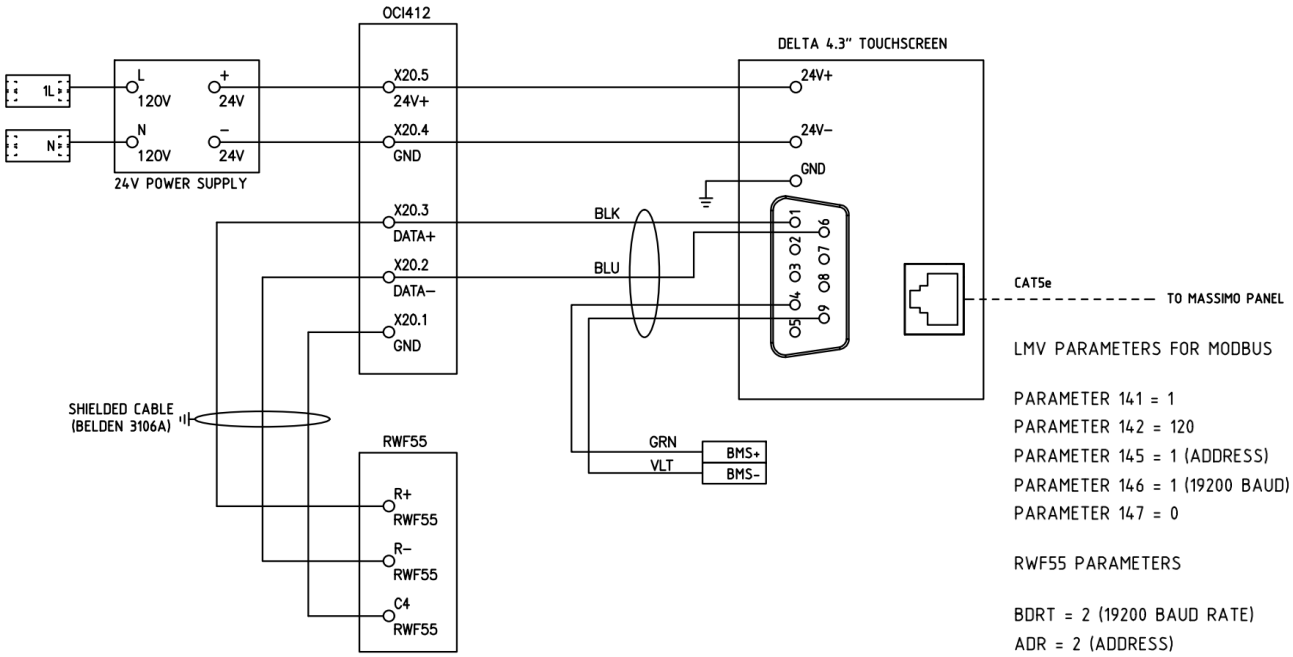
Please note: Use the wiring diagrams as reference only.

2.7.4 Piccolo wiring: LMV5x, 4.3"/7" touchscreen

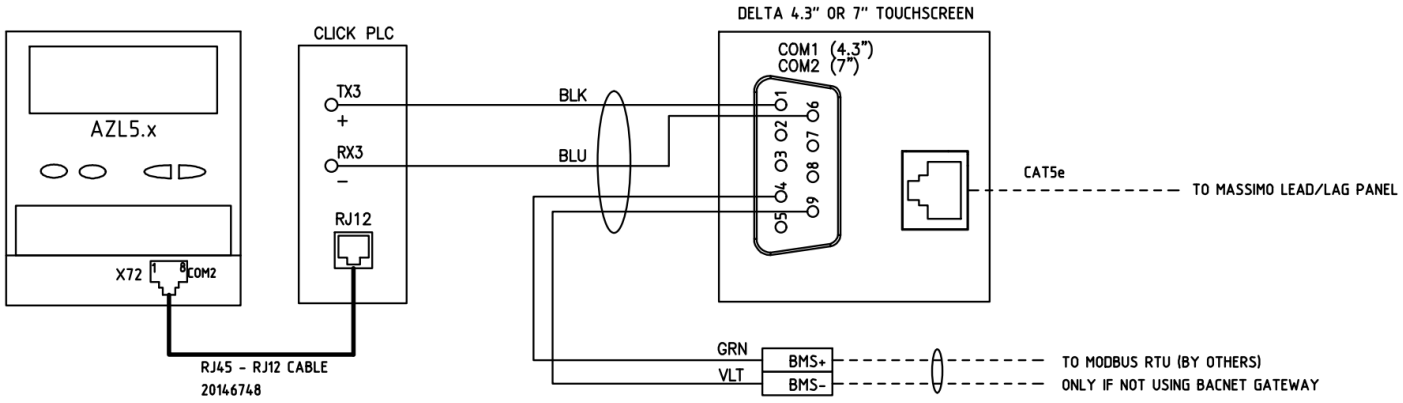


Please note: Use the wiring diagrams as reference only.

2.7.5 Massimo wiring: LMV3x, 4.3"/7" touchscreen



2.7.6 Massimo wiring: LMV5x, 4.3"/ 7" touchscreen

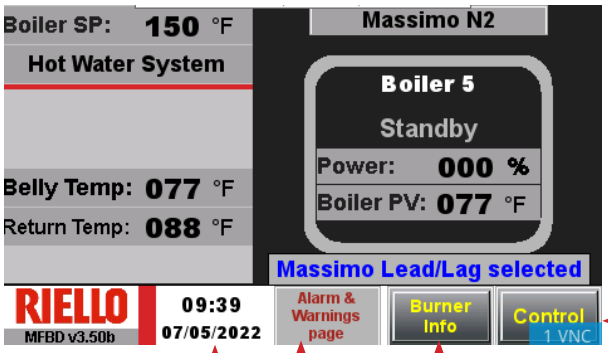


3 User interface

The MFBD has features common to different modes. To keep it simple please use the following legend, as it applies to relevant functionality:

3.1 Burner view

The following will be displayed depending on the mode selected:
Solo - Custom IP option for connection to Modbus TCP
Piccolo - Boiler1/2
Massimo - Boiler 1/2/3/4/5/6/7/8

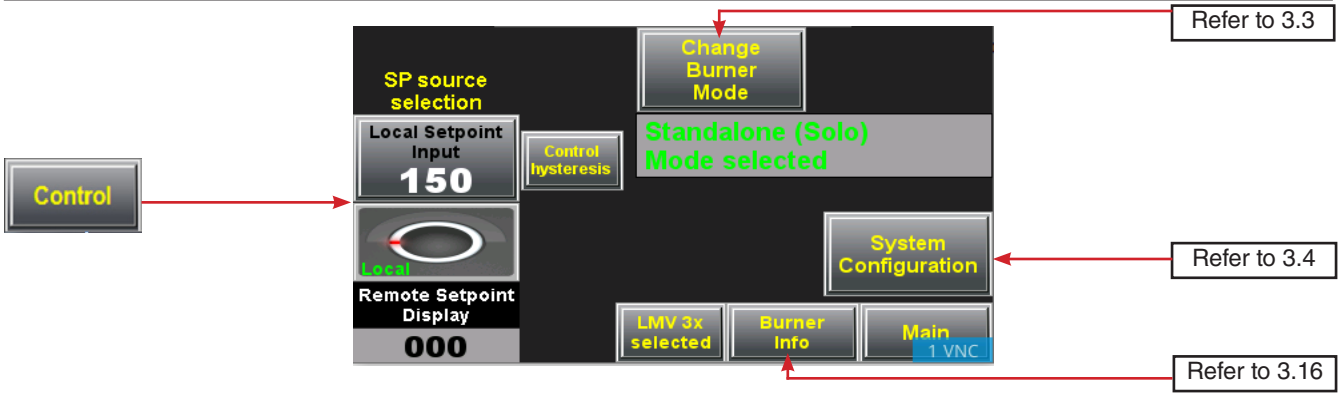


Adjust date/time by touching
Refer to 3.2
Refer to 3.17
Refer to 3.16

The burner screen gives an overall picture of what is happening with the burner.

Summary:
- ► Viewable mode selection: ("Manual On", "Manual Off", "Remote Modulation", "Solo", "Picollo", "Massimo")
- ► Date/time
- ► Steam/ hot water
- ► Return temperature (if required - Solo or Massimo)
- ► Alarm indication
- ► Process value
- ► Setpoint
- ► Firing Rate (Power)
- ► Boiler number (Only in Piccolo and Massimo)
- ► Communication failure

3.2 Control



Refer to 3.3
Refer to 3.4
Refer to 3.16

►Selectable setpoint source (local/remote)

Remote setpoints include:
- ► Bus
- ► 0 - 10 VDC, 4-20ma

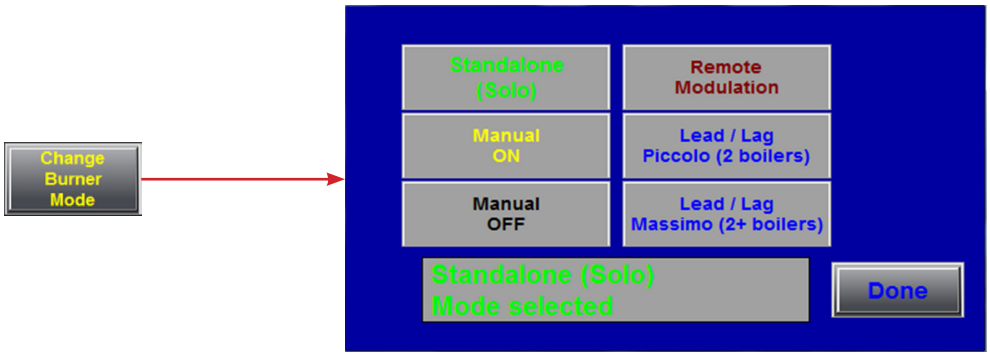
LMV3/LMV5 flamesafeguard selection

Control mode selection: ("Manual On", "Manual Off", "Remote Modulation", "Solo", "Picollo", "Massimo") (Ref. 3.3)

Burner information (Ref. 3.17)

System Configuration (Ref. 3.4)

3.3 Burner Mode



Standalone (Solo): The burner will use local or remote setpoint to modulate and maintain the process value (PV), without any external intervention. When the selected media is steam and hot standby is active, sending a setpoint of 0 PSI will shut down the burner, however the boiler will be kept warm within the limits of the hot standby routine.

Manual ON: Starts the burner and runs at the specified manual load for an undetermined period of time. The temperature or pressure limit control will still shut down the system.

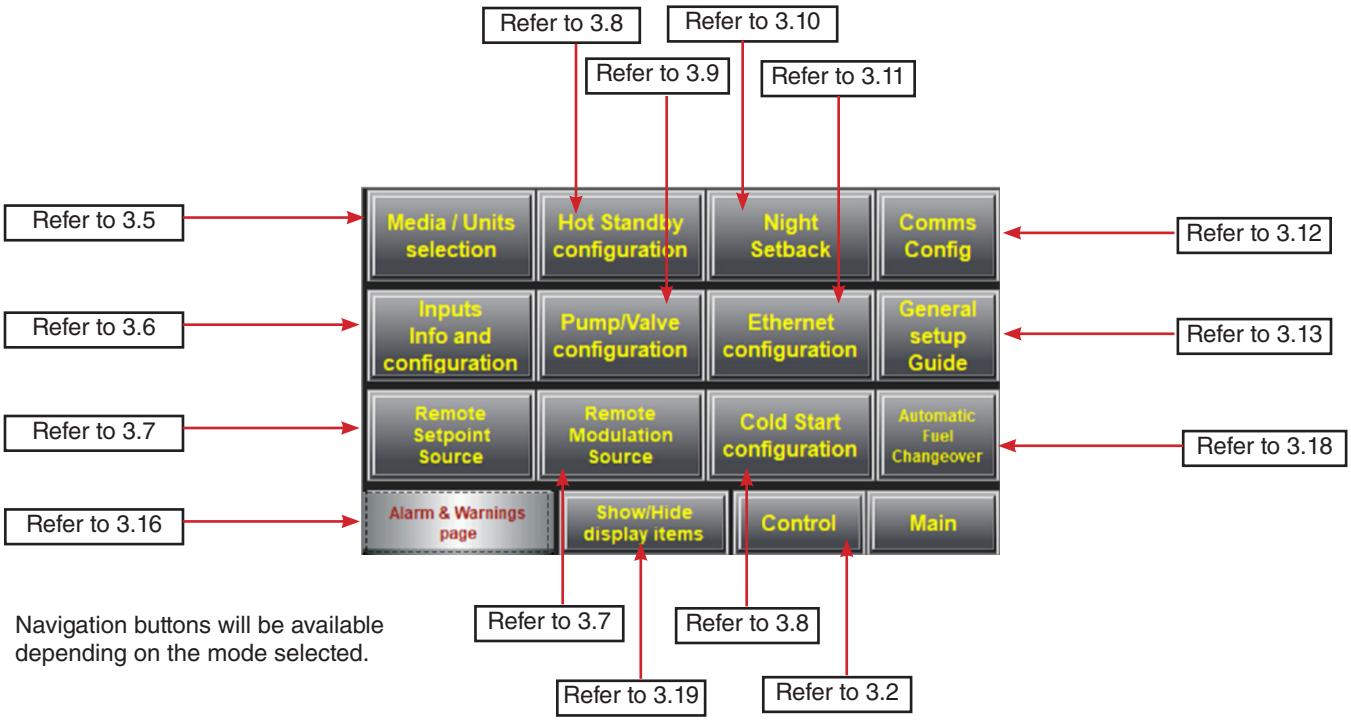
Manual OFF: Stops the burner for an undetermined period of time regardless any existing call for heat.

Remote Modulation: The burner will run at the specified load received from the BMS system. Load requests from the BMS with value below 20% will shut down the burner.

Lead/Lag Piccolo mode: Enables communication and control for the 2 boilers Lead/Lag system.

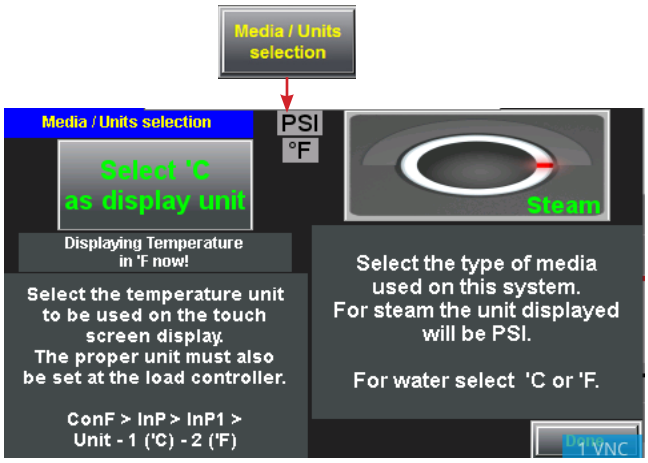
Lead/Lag Massimo mode: Enables communication and control for the 2+ boilers Lead/Lag system.

3.4 System Configuration (main menu)



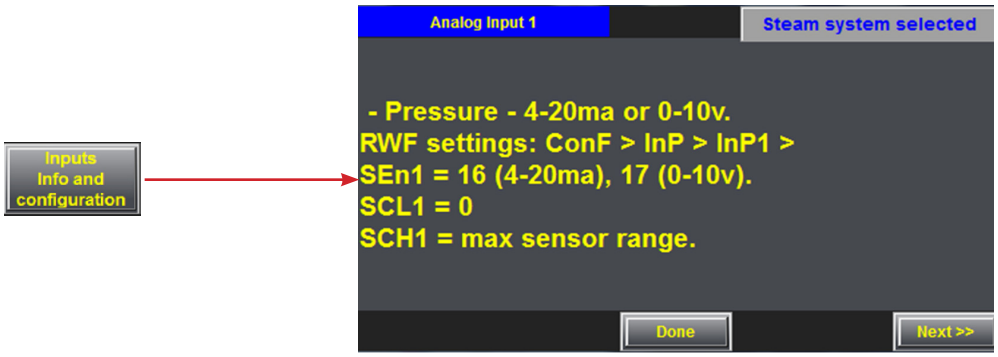
Navigation buttons will be available depending on the mode selected.

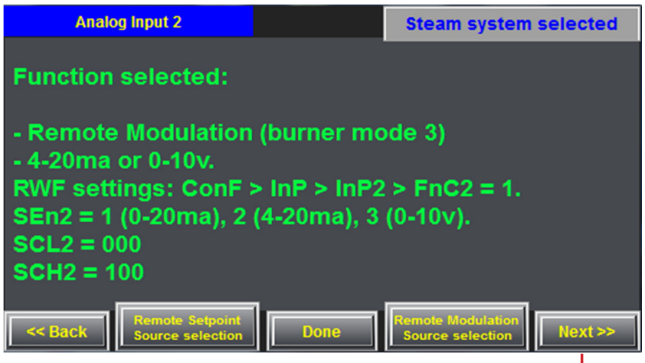
3.5 Media/ Units selection

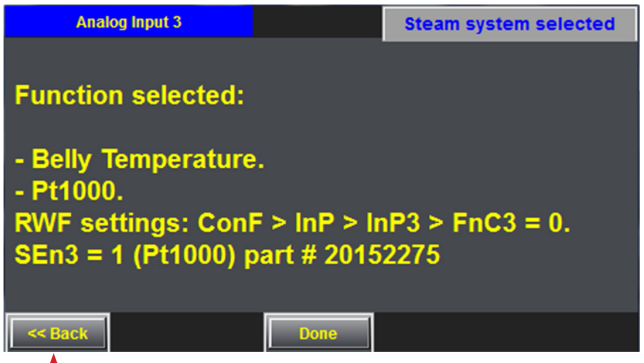


Specific Parameters	Default Value	Range
Type of Media - Choose between Steam or Hot Water.	Steam	Steam - Water
Unit display - Select proper temperature unit to be displayed.	°F	°F - °C

3.6 Inputs info and configuration

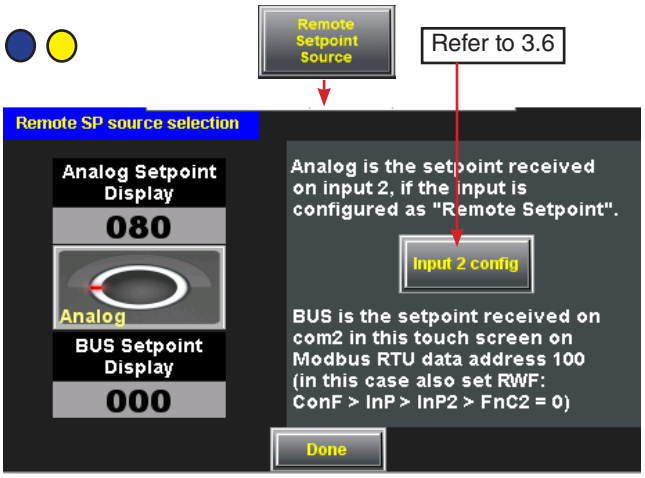






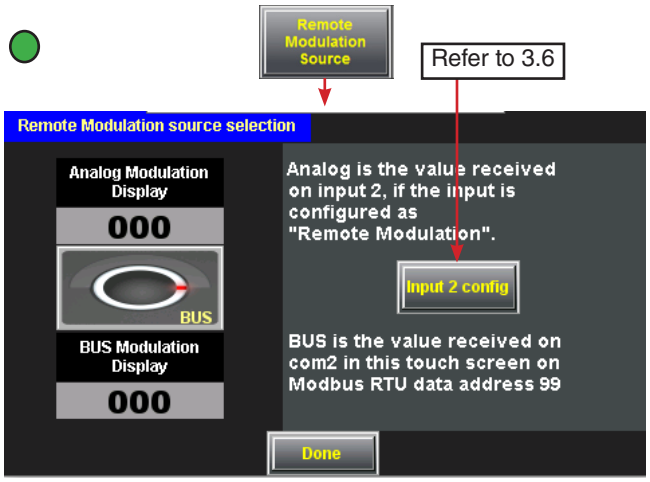
When using Burner with LMV3 and RWF55 Help screens are available to assist the technican properly set up the RWF55 to work with the touchscreen.

3.7 Remote Setpoint Source & Remote Modulation Source



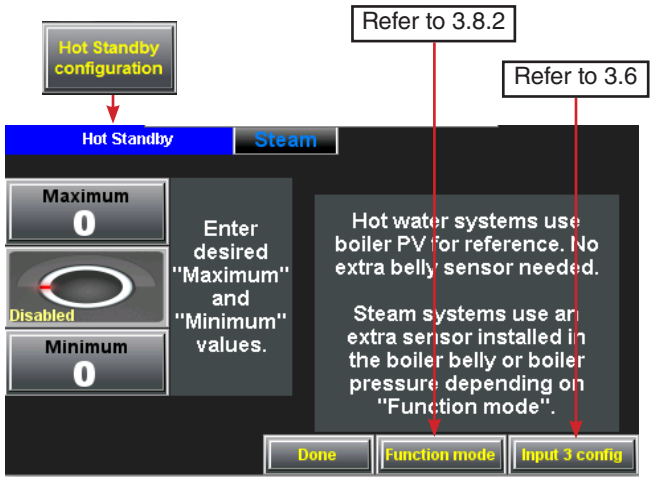
A remote setpoint can be sent to the burner via 0-20ma/4-20ma/0-10vd hardwired or bus signal.

For Piccolo, signal only needs to be sent to one burner.



A remote modulation signal can be sent to the burner via 0-20ma/4-20ma/0-10vd hardwired or bus signal.

3.8 Hot Standby Configuration



Boiler "Hot Standby" will be activated if the water temperature drops below the “Minimum” value. The burner will start and enter "Hot Standby" even if there is no call for heat.

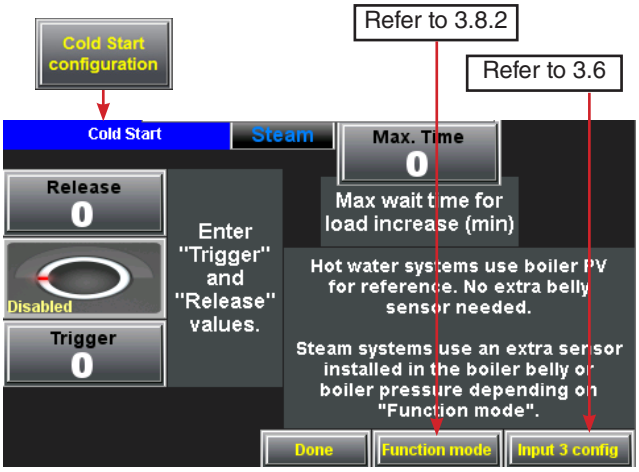
Hot water systems use boiler PV for reference. No extra belly sensor needed.

Steam systems use an extra sensor installed in the boiler belly or boiler pressure depending on "Function mode".

► Do NOT set “Maximum” value over 80% of the “steam temperature” at the system setpoint or the setpoint for the hot water supply.

Specific Parameters	Default Value	Range
Hot Standby - Enable/Disable the hot stand-by routine.	Disabled	Enabled Disabled
Maximum - Target temperature/pressure for the hot standby.	Dependent on system setpoint and media	1 - 400 °F/°C 1 - 400 PSI
Minimum - Trigger value for initiation of hot standby.	Dependent on system setpoint and media	2 - 400 °F/°C 2 - 400 PSI

3.8.1 Cold Start Configuration



Specific Parameters	Default Value	Range
Cold start - Enable/Disable the cold start routine.	Disabled	Enabled Disabled
Release - Target temperature/pressure for the cold start.	Dependent on system setpoint and media	1 - 400 °F/°C 1 - 400 PSI
Trigger - Trigger value for initiation of cold start.	Dependent on system setpoint and media	1 - 400 °F/°C 1 - 400 PSI
Max. Time - Max. wait time for load increase.	2 minutes	1 - 10 minutes

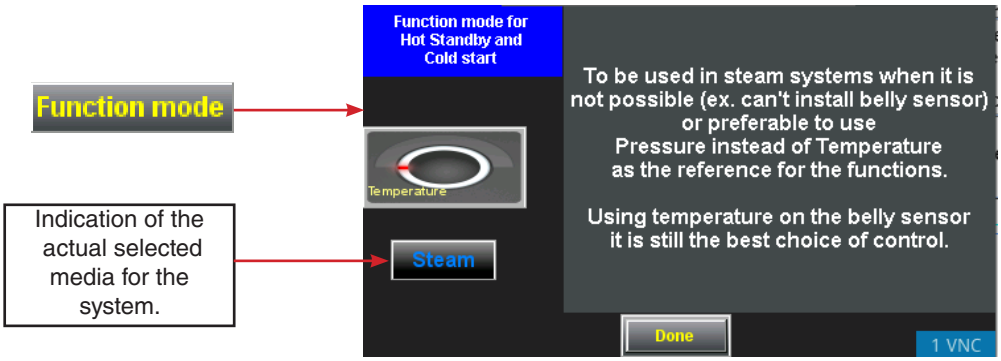
Boiler "Cold Start" function will be activated when the water temperature drops below “Trigger”. The burner will start and enter "Cold Start" when there is a call for heat.

Hot water systems use boiler PV for reference. No extra belly sensor needed.

Steam systems use an extra sensor installed in the boiler belly or boiler pressure depending on "Function mode".

► Do NOT set “Maximum” value over 80% of the “steam temperature” at the system setpoint or the setpoint for the hot water supply.

3.8.2 Function Mode



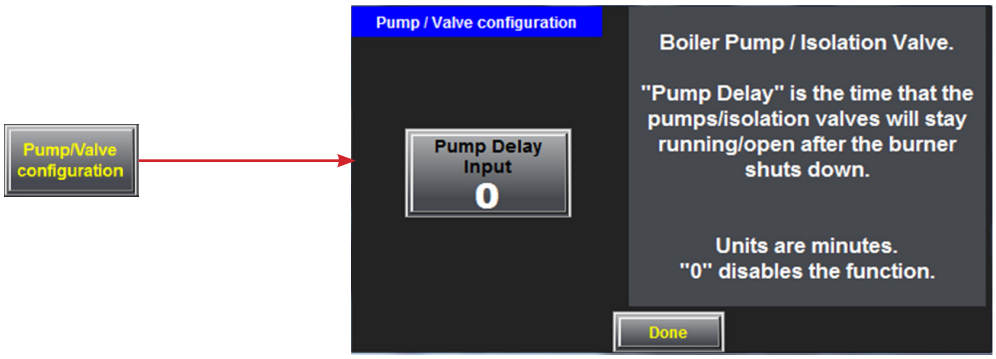
Function mode for Hot Standby and Cold start:

To be used in steam systems when it is not possible (ex. can't install belly sensor) or preferable to use Pressure instead of Temperature as the reference for the functions.

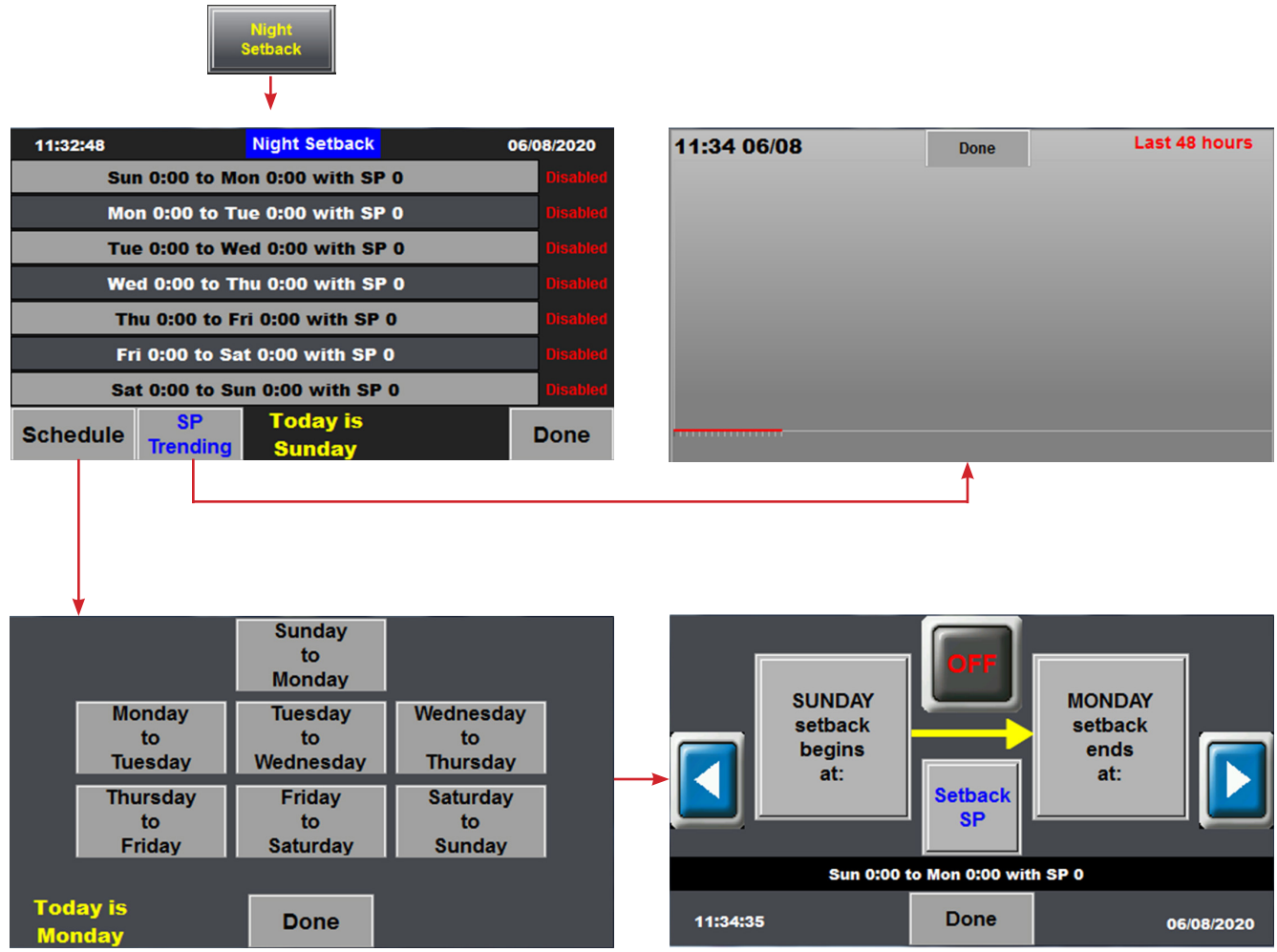
Using temperature on the belly sensor it is still the best choice of control.

Specific Parameters	Default Value	Range
Function mode - Selection of the source reference for control.	Temperature	Temperature Pressure

3.9 Pump/Valve Configuration

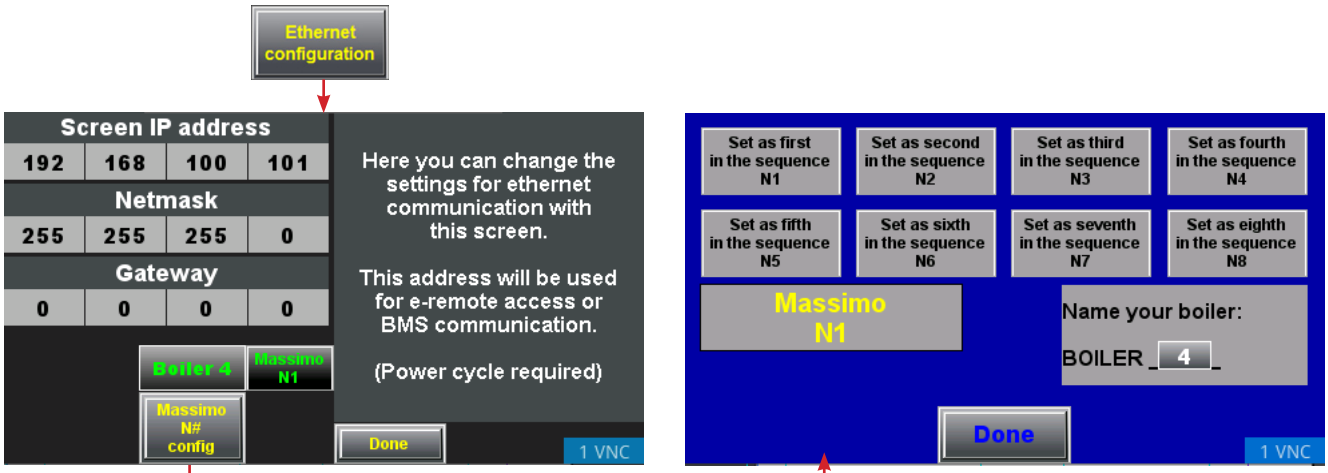


3.10 Night Setback

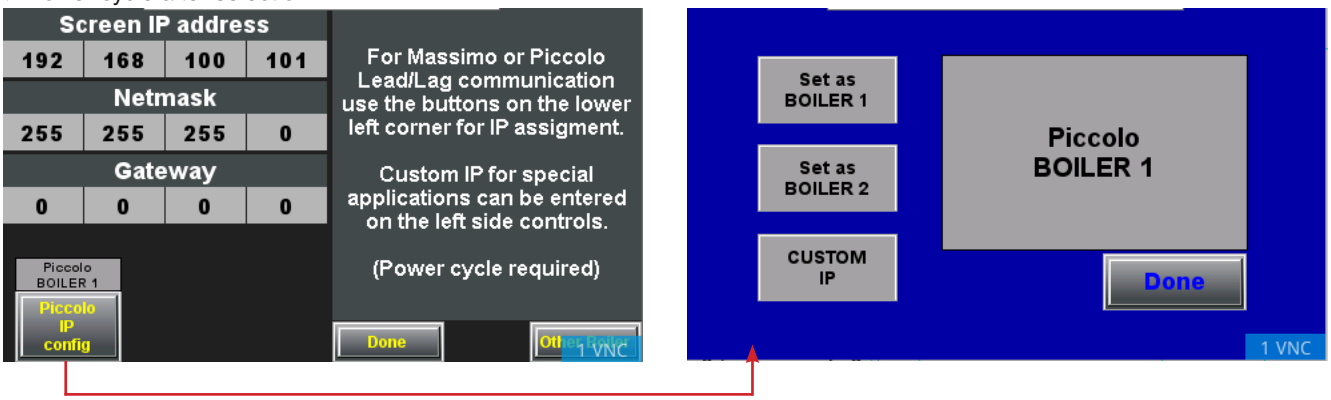


Night setback can be set for any range of time any day of the week. Night setback setpoint will take priority over local or remote setpoint.

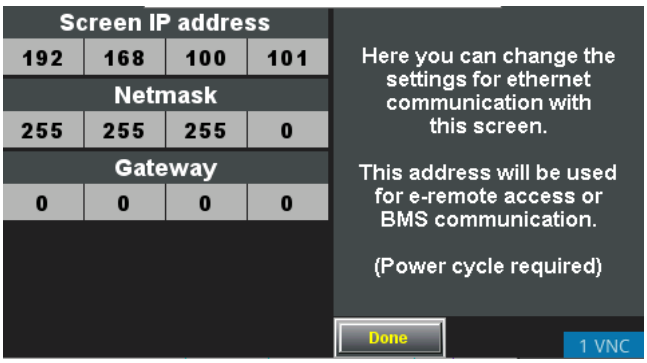
3.11 Ethernet Configuration



►Massimo mode: Select "Massimo N# config", sets the actual position of how the boiler will be displayed in the Massimo Touchscreen to match the order of how the boilers are installed in the mechanical room.
Also in the bottom right side select the buttom to give the desired name (number) to this boiler.
►Power cycle after selection.

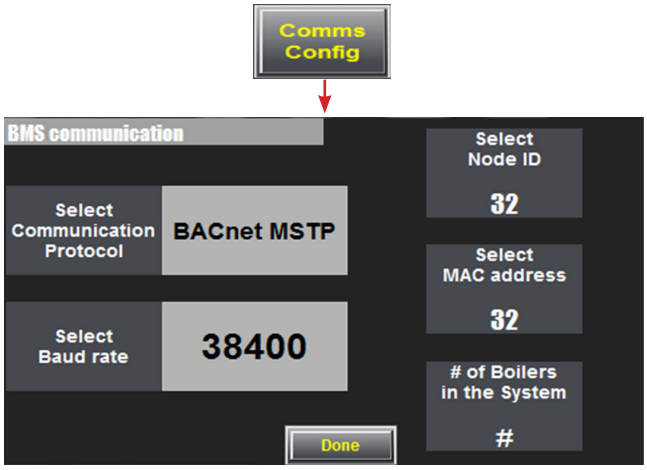


►Piccolo mode: Select "Piccolo IP config", in the next page select the desired boiler number. Power cycle after selection.



►Solo mode: you can set the IP address of the screen for connection through Modbus TCP.

3.12 Comms Config

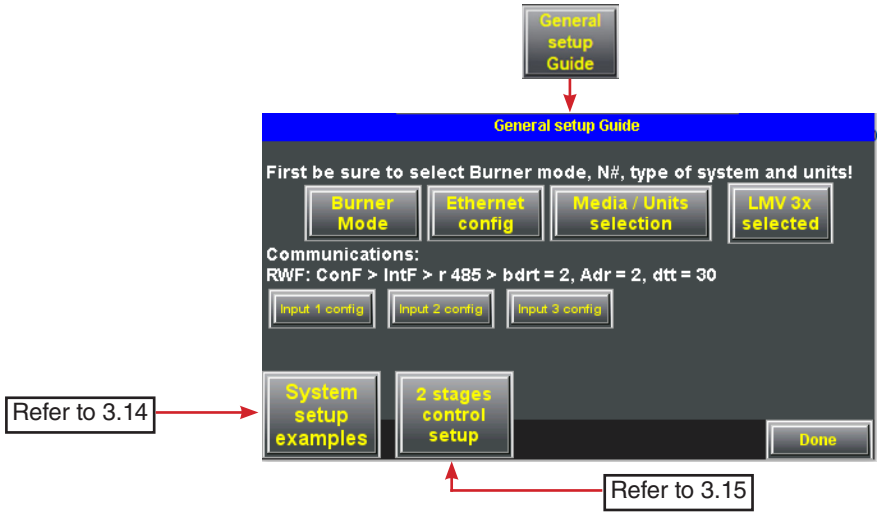


If a **Riello gateway is connected to the Riello burner**, it is configured in "BMS communication". The S3 dip switch has to be in the off position.

Available gateway protocols:
- ► BACnet MS/TP
- ► BACnet/IP
- ► Modbus TCP (gateway only needed for Piccolo)
- ► Ethernet/IP
- ► Metasys N2
- ► Lonworks

To connect the touchscreen to a gateway, please refer to Riello Gateway N54 Manual or Riello Gateway N34 & N35 Manual. Scan the QR code to view the gateway manual on section 2.2.

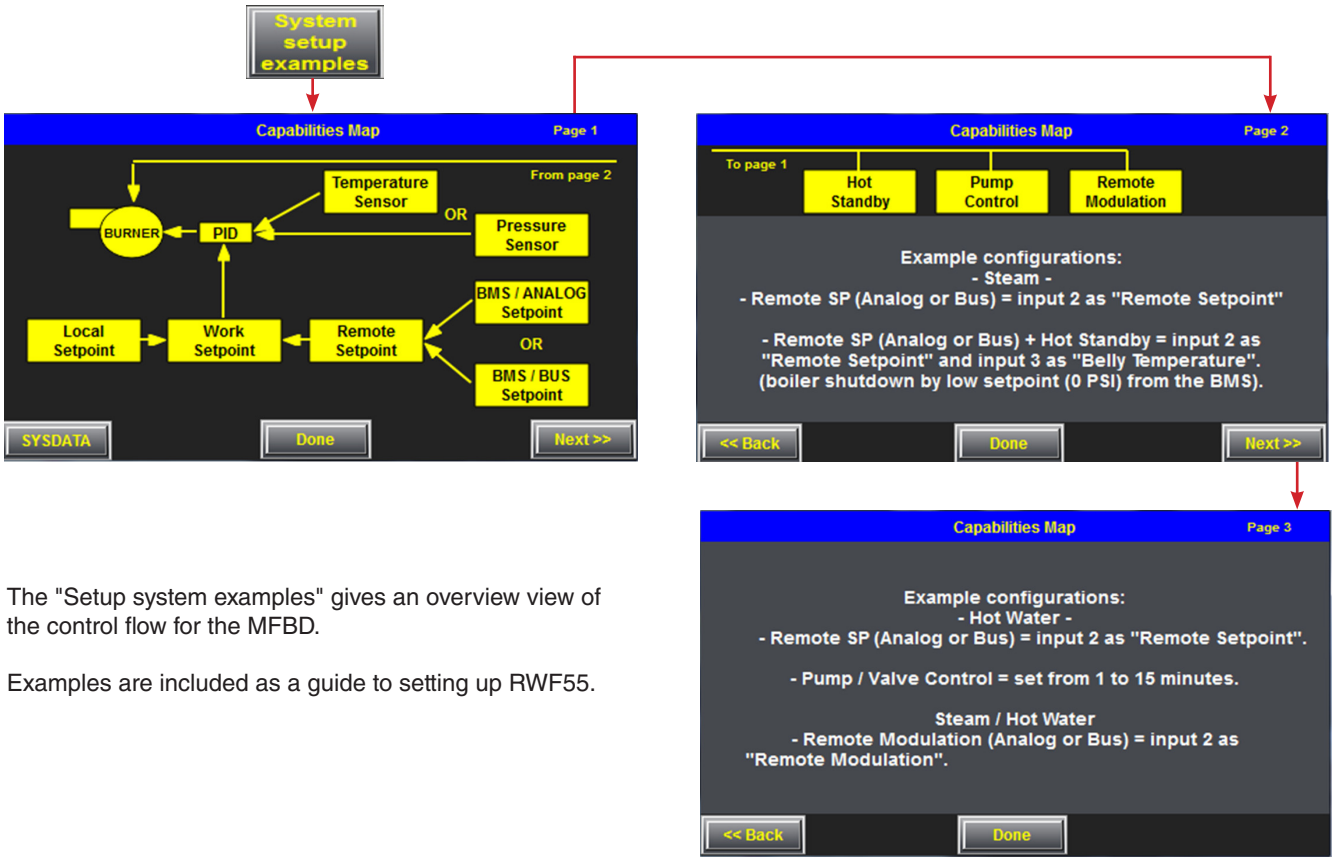
3.13 General setup Guide



The "General setup Guide" offers assistance to the user in setting up the touchscreen.
- ► Burner mode
- ► Ethernet Config
- ► Media / Units selection
- ► Flame safeguard selected

- ►RWF communications
- ►Input 1 config
- ► Input 2 config
- ► Input 3 config
- ► 2 stage control setup
- ► System setup examples

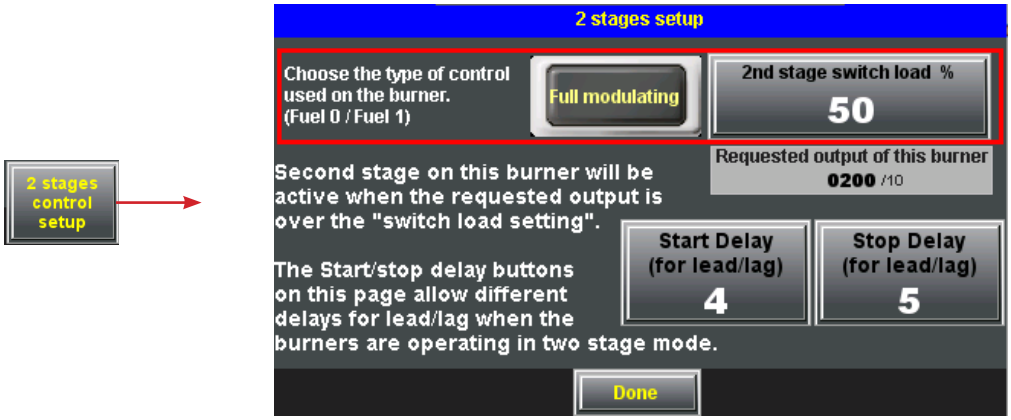
3.14 System setup examples



The "Setup system examples" gives an overview view of the control flow for the MFBD.

Examples are included as a guide to setting up RWF55.

3.15 2 Stages Control Setup



This page displays all the settings for 2 stage setup with Piccolo & Massimo System. When the burner fuel selection is in oil, and in 2 stage mode, the "type of control" selection should be in "modulating/2 stages".

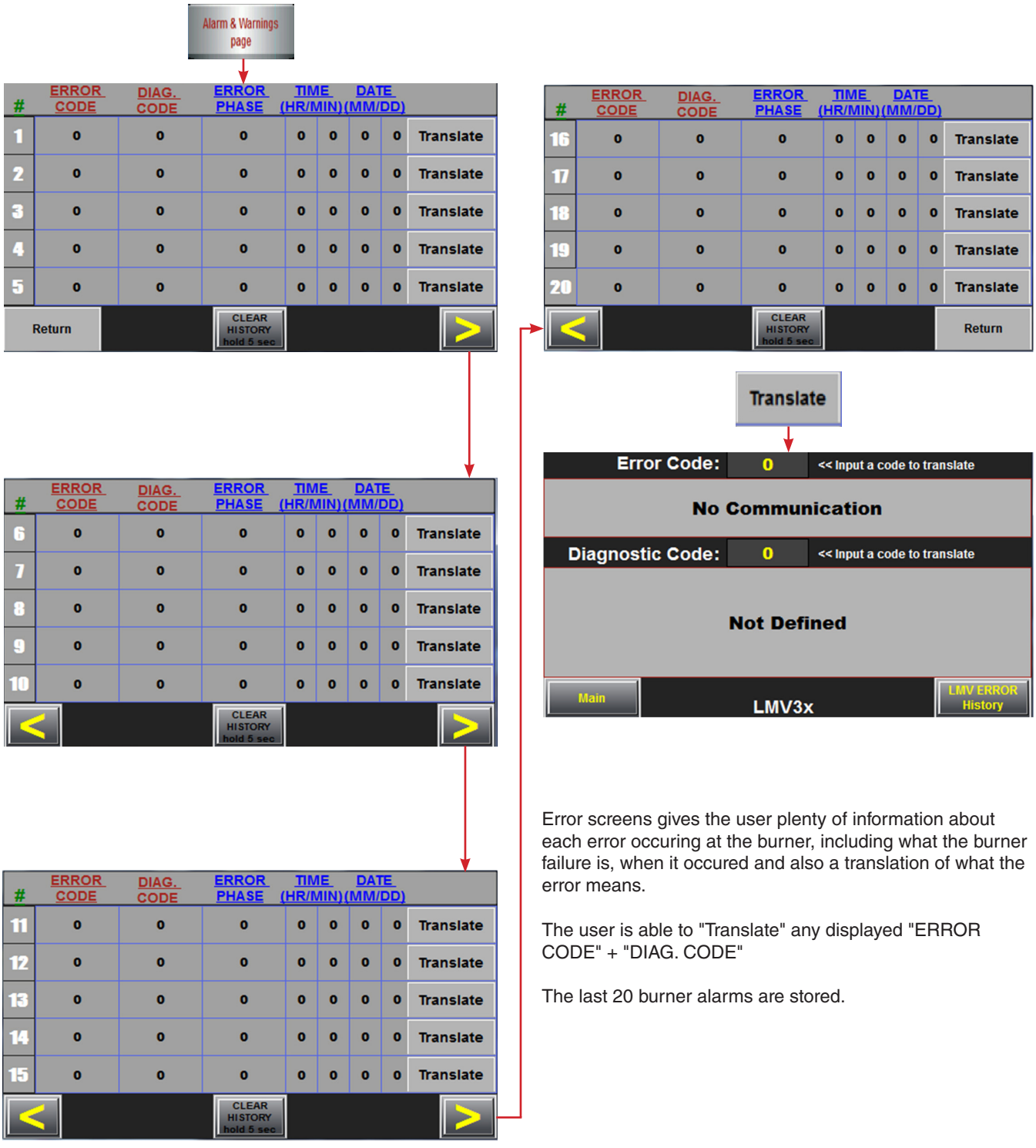
The user adjustable "2nd stage switch load %" will allow the burner to engage into 2nd stage when the requested firing rate of the burner is greater than "2nd stage switch load %".

When burner is operating in second stage, the burner will revert back to its first stage when the firing rate of the burner is less than "2nd stage switch load %".

The "start/stop delay" buttons allow different delays for lead/lag when burners are operating in two stage mode.

It is recommended that burners with 2 stage operation can not be used as a lead boiler.

3.16 Alarms & Warnings page

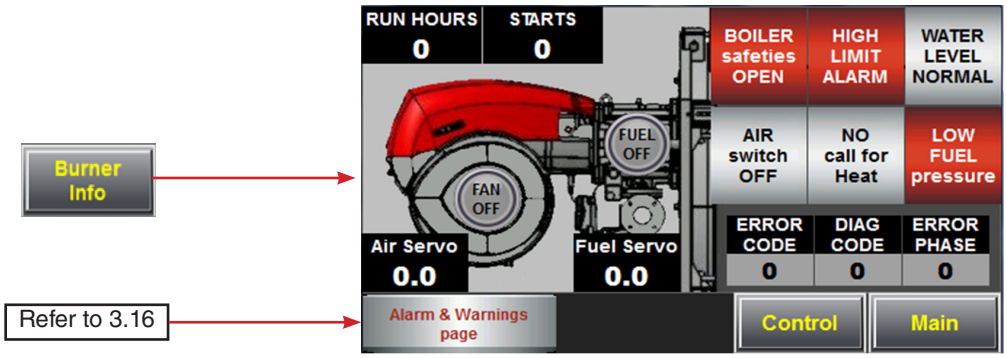


Error screens gives the user plenty of information about each error occuring at the burner, including what the burner failure is, when it occured and also a translation of what the error means.

The user is able to "Translate" any displayed "ERROR CODE" + "DIAG. CODE"

The last 20 burner alarms are stored.

3.17 Burner

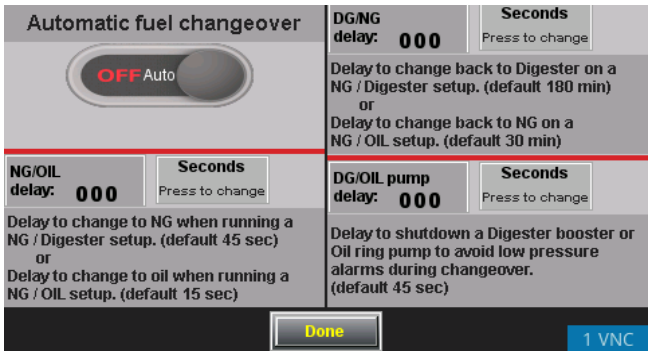


This page displays details of the burner such as:

- Run hours
- Number of Starts
- Air Servomotor
- Fuel Servomotor
- Boiler safety
- Air switch
- High limit alarm
- Water level alarm
- Call for heat indicator
- Low fuel pressure
- Error code
- Diagnostic code
- Error phase
- Fan running light
- Fuel open light
- Alarm & Warnings page Button

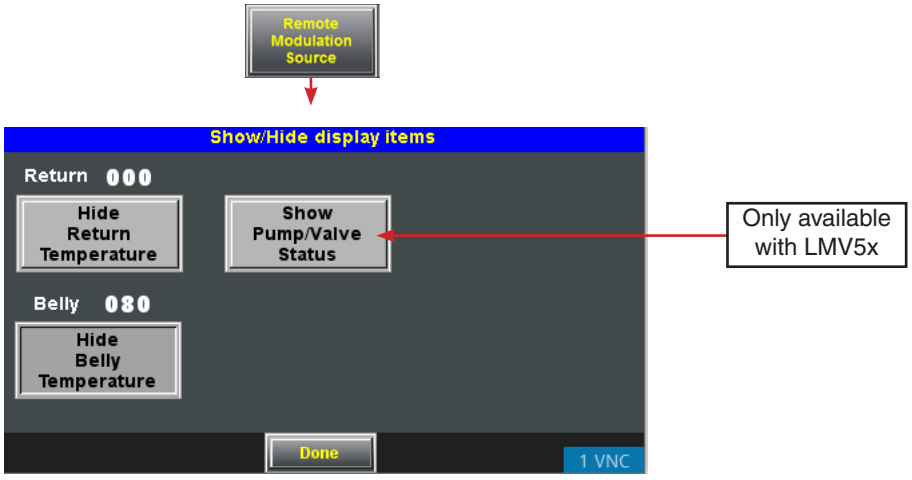
3.18 Automatic Fuel Change Over

The automatic fuel changeover function is an optional function for both LMV3X and LMV5X.
(LMV3X requires additional hardware).
The parameters are programmable to suit your application needs.



Specific Parameters	Default Value	Range
Automatic fuel changeover - Enable/Disable the function.	OFF	OFF - ON
NG/OIL delay - Delay to change to NG when running NG/Digester setup.	45 sec	5 - 600 sec or 5 - 600 min
NG/OIL delay - Delay to change to OIL when running NG/OIL setup.	15 sec	5 - 600 sec or 5 - 600 min
DG/NG delay - Delay to change back to digester on a NG/Digester setup.	180 min	5 - 600 sec or 5 - 600 min
DG/NG delay - Delay to change back to NG on a NG/OIL setup.	30 min	5 - 600 sec or 5 - 600 min
DG/OIL pump delay - Delay to shutdown a digester booster or oil ring pump to avoid low pressure alarms during changeover.	45 sec	1 - 60 sec or 1 - 60 min

3.19 Show/Hide Display Items

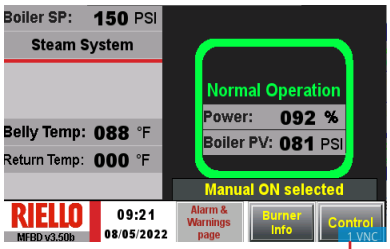


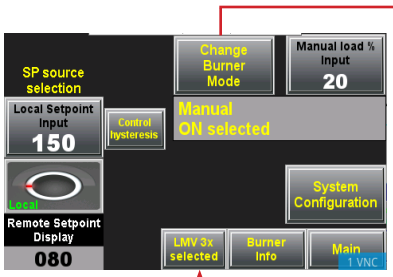
Show/Hide display items:
The button function on this page hides the temperature in Return/Belly readings.
Show Pump/Valve Status is only available in LMV5x.

4 QuickStart Guide - Setting up control mode

4.1 QuickStart Guide - Setting up Solo mode

For Solo mode functionality. See below for setting up touch screen in Solo mode.

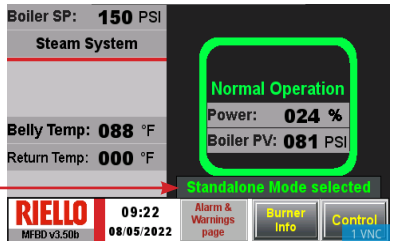




Set for LMV3x or LMV5x

Select "Standalone (Solo)" After selection, click done and power cycle the touchscreen.

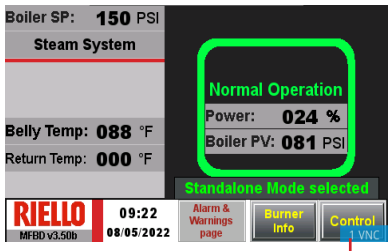
After completion your main screen will display "Standalone Mode selected"

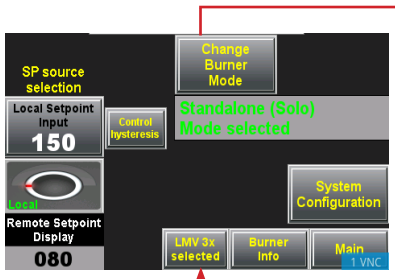


4.2 QuickStart Guide - Setting up Piccolo mode

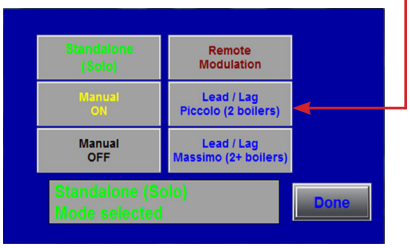
See below for lead/lag functionality.
See below for setting up touchscreen in Piccolo mode.

Step 1: Selecting Piccolo mode



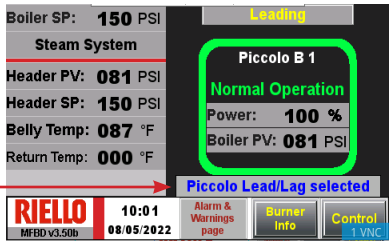


Set for LMV3x or LMV5x

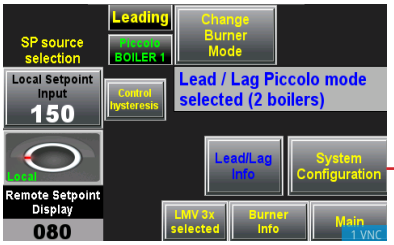


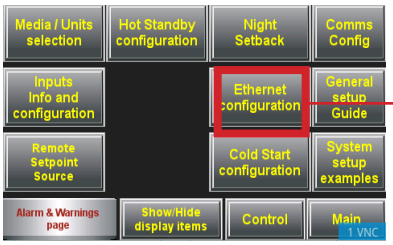
Select "Lead/ Lag Piccolo (2 boilers)

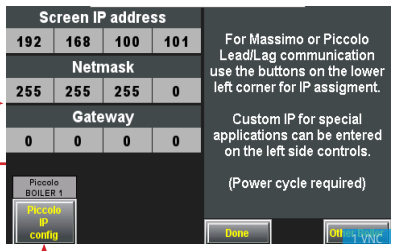
After completion your main screen will display "Piccolo Lead/Lag selected"



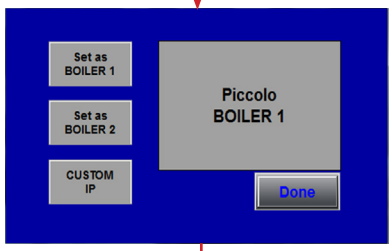
Step 2: Selecting boiler number for Piccolo mode



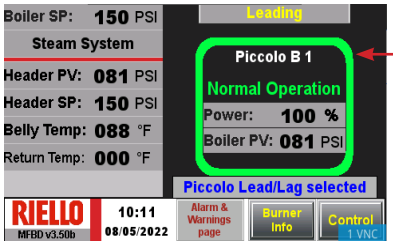




Select "Piccolo IP config".

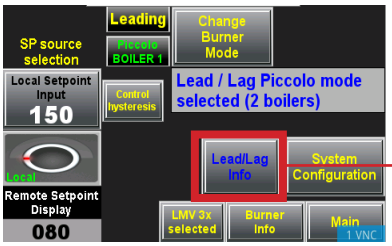


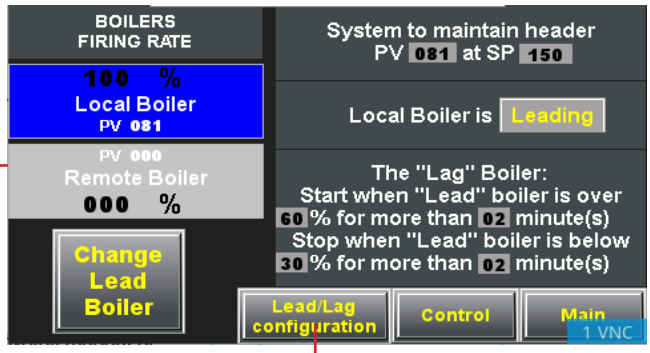
After selecting boiler number, power cycle the touchscreen.
THIS IS VERY IMPORTANT!



After power cycle is done, on the main screen you will see "Piccolo B(x)" displayed.

Step 3: Piccolo configurations

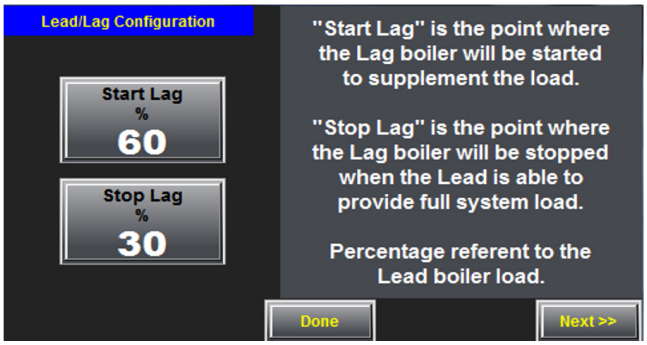




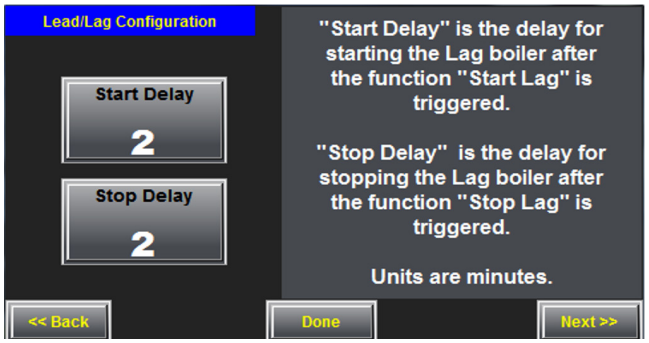
This page displays lead/lag information and the actual configurations.

See Page 26

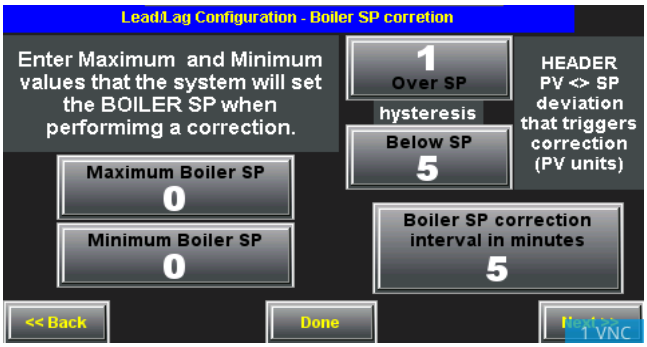
Step 4: Piccolo configurations (Lead/Lag)



Specific Parameters	Default Value	Range
Start Lag - Point where the lag boiler will be started.	60 %	50 to 99 %
Stop Lag - Point where the lag boiler will be stopped.	30 %	20 to 40 %

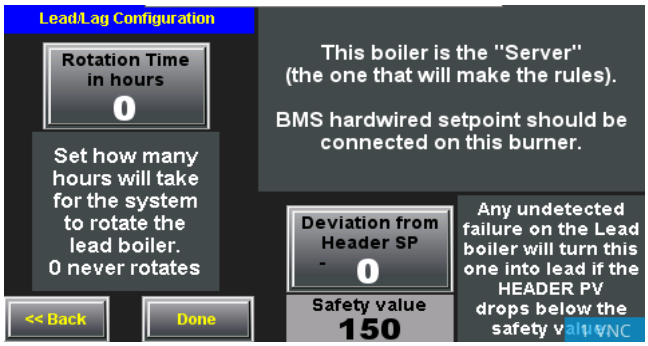


Specific Parameters	Default Value	Range
Start Delay - Delay for starting the lag boiler.	2 minute(s)	1 to 10 minute(s)
Stop Delay - Delay for stopping the lag boiler.	2 minute(s)	1 to 10 minute(s)



This screen is for setting up the setpoint shift on the Piccolo system.
"Minimum" and "Maximum" BOILER operation SETPOINT shift per "Boiler SP correction interval in minutes"
Hysteresis set the minimum and maximum limits that the setpoint can be shifted to.

Specific Parameters	Default Value	Range
Max. Boiler SP - Max. value that system will set Boiler SP.	Dependent on system setpoint and media	1 to 10 minute(s)
Min. Boiler SP - Min. value that system will set Boiler SP.	Dependent on system setpoint and media	1 to 10 minute(s)
Over SP- Deviation that triggers correction.	1 unit(s)	1 to 2 unit(s)
Below SP - Deviation that triggers correction.	5 unit(s)	1 to 9 unit(s)
Boiler SP interval - Boiler correction interval in minutes.	5 minute(s)	3 to 9 minute(s)



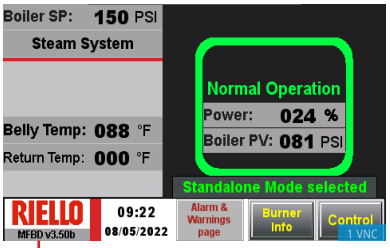
Specific Parameters	Default Value	Range
Rotation time - Schedule lead rotation.	24 hour(s)	0 to 168 hour(s)
Header SP Deviation - Safety trigger value for undetected failure.	Dependent on system setpoint and media	0 to 250 unit(s)

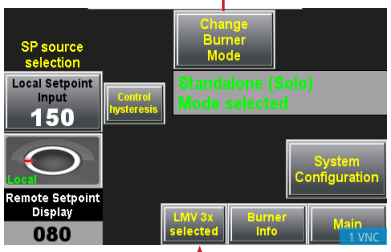
Rotation time can only be set on boiler 1

4.3 QuickStart Guide- Setting up Massimo

See below for lead/lag functionality.
See below for setting up touchscreen in Massimo mode.

Step 1: Selecting Massimo mode

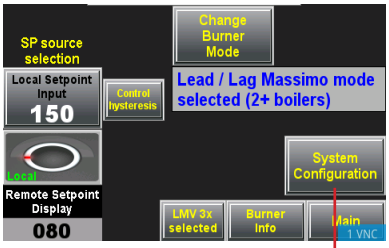


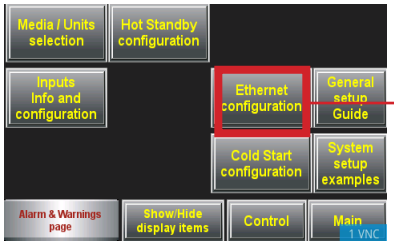


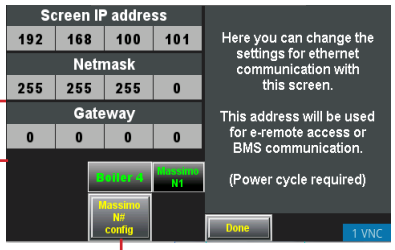
Set for LMV3x or LMV5x

Select "Lead/lag Massimo (2+ boilers)"

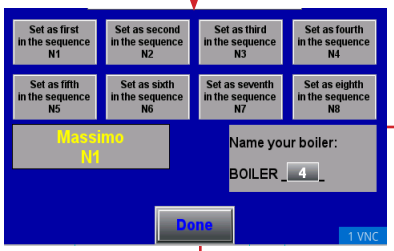
Step 2: Selecting boiler number



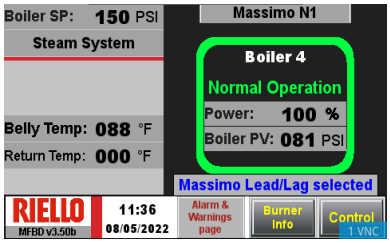




Select "Massimo N# config".



After selecting the position of the boiler in the sequence of operation and naming the boiler, power cycle the touchscreen. (THIS IS IMPORTANT)



After the power cycle, on the main screen you will see "Massimo N(x) and Boiler (x)" displayed.

Step 3: Finishing setup of the Massimo

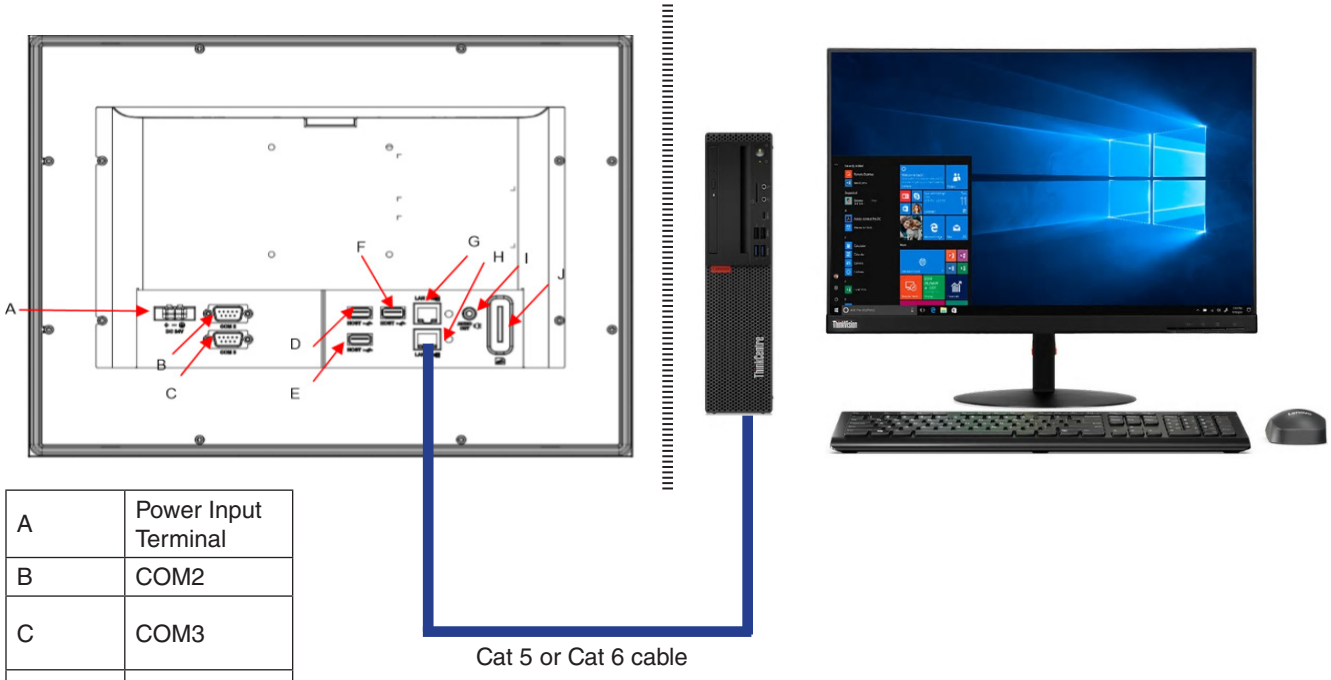
Please refer to "Massimo System v3.50" manual for completion of system lead/lag setup.

5 Remote monitoring - VNC Viewer

Remote monitoring of the Massimo touchscreen is possible from VNC Viewer application.

5.1 Hardwire

Connect a Cat 5 or Cat 6 ethernet cable between remote desktop and Ethernet LAN2 as shown below.



A	Power Input Terminal
B	COM2
C	COM3
D	USB Host
E	USB Host
F	USB Host
G	Ethernet LAN1
H	Ethernet LAN2
I	Audio
J	SD

5.2 Setting up VNC Viewer application

Connect to the Riello touchscreen through a third party VNC software by entering the IP of the touchscreen.

The IP of the burner touchscreens is set up and accessed through the burner touchscreen in "Ethernet Configuration" parameter.

The IP of the Massimo panel touchscreen is 192.168.100.111.

Recommended software for the VNC is "VNC CONNECT by RealVNC" (VNC Viewer) See link below for download:

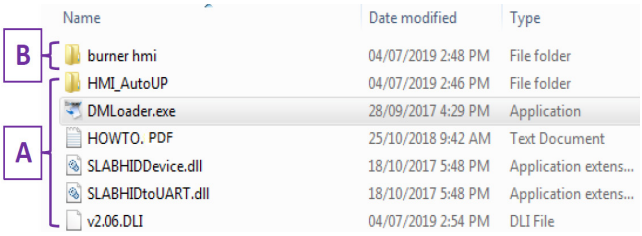
https://www.realvnc.com/en/connect/download/viewer/

6 Multi-function display version update

Introduction
The multi-function display is designed and programmed inhouse. Continuous improvements are being made to the system. For latest version please send a request to Riello for newest version (if available).

6.1 Unpacking the software

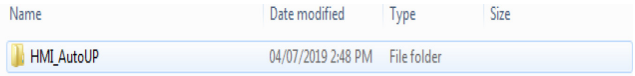
1- Unzip "vX.XX_loader" into a separate folder you desire



These are the contents of the folder after you have unzipped them.

2- Prepare one USB drive, formatted using FAT32 file system

3- For the burner screen update (Solo, Piccolo, Massimo), open the folder "burner hmi" indicated as selection B

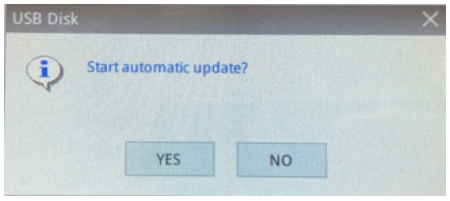


This is the content of the folder "burner hmi" after you open it.

4- Copy then this "HMI_AutoUP" folder to the root directory of and empty USB drive.

6.2 Burner HMI update

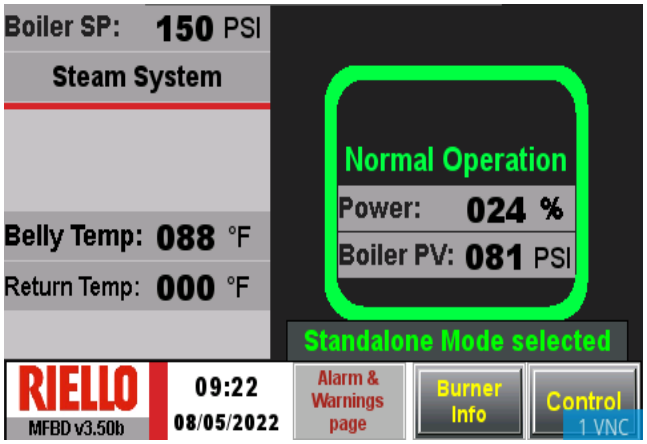
1- Power OFF the burner screen
2- Insert USB stick with "HMI_AutoUP" from selection B (see section 6.1)
3- Power up the screen and wait for full boot up and the screen will ask you:
"Start automatic update?"



5 – Answer yes and Wait for FULL boot up.
The screen will ask again to begin update, say no.

6 – Power OFF the screen and unplug the USB disk.

7 – Power the screen back ON and you're done... :)



7 Points list

7.1 MFBD points list: Modbus

Point Name	Modbus Adress (4xxxx)	Modbus TPC Data Type	Unit	Range
Burner Phase	001 (U16)	Holding Reg.	No-units	0-255
Fuel Servo	002 (U16)	Holding Reg.	Degrees-angular	(-)3-93°
Air servo	005 (U16)	Holding Reg.	Degrees-angular	(-)3-93°
VFD	009 (U16)	Holding Reg.	Percent	0-100 %
Current fuel	010 (U16)	Holding Reg.	No-units	0= Gas 1= Oil
Current output	011 (U16)	Holding Reg.	Percent	0-100 %
Flame signal	014 (U16)	Holding Reg.	Percent	0-100 %
Error code	026 (U16)	Holding Reg.	No-units	0-255
Diagnostic code	027 (U16)	Holding Reg.	No-units	0-255
Error phase	029 (U16)	Holding Reg.	No-units	0-255
Inputs	036 (U16)	Holding Reg.	-	-
Calls for heat	Bit 0	-	No-units	0 - off, 1 - on
Boiler safety loop	Bit 8	-	No-units	0 -open, 1-closed
Gas low & high pressure	Bit 10	-	No-units	0 -open, 1-closed
Air pressure	Bit 13	-	No-units	0 - off, 1 - on
Outputs	038 (U16)	Holding Reg.	-	-
Alarm	Bit 0	-	No-units	0-Normal, 1- Alarm
Ignition transformer	Bit 4	-	No-units	0 - off, 1 - on
Burner fan	Bit 6	-	No-units	0 - off, 1 - on
Fuel valve	Bit 13	-	No-units	0 - off, 1- on
Hours run gas	057,058 (S32)	Holding Reg.	Hours	0 - 999999 h
Hours run oil	059,060 (S32)	Holding Reg.	Hours	0 - 999999 h
Starts gas	071,072 (S32)	Holding Reg.	No-units	0 - 999999 h
Starts oil	073,074 (S32)	Holding Reg.	No-units	0 - 999999 h
Total Starts	077,078 (S32)	Holding Reg.	No-units	0 - 999999 h
Boiler PV	085 (U16)	Holding Reg.	No Unit	**
Boiler Inputs	086 (U16)	Holding Reg.	-	-
Boiler high limit	Bit 0	-	No-units	0 - normal, 1 - alarm
Boiler LWCO	Bit 1	-	No-units	0 - normal, 1 - alarm
Header Process Value	088 (U16)	Holding Reg.	No-units	**
Outside Temp. Sensor **(MFBD+)**	089 (U16)	Holding Reg.	No-units	**
BMS Modulation **(W)**	99 (U16)	Holding Reg.	No units	0-100
BMS setpoint **(W)**	100 (U16)	Holding Reg.	No units	**

**** For gateway points list for all other available protocols see "Riello Gateway N34 & N35 Manual" or "Riello Gateway N54 Manual".**

**** Means** - Unit range depends on the unit selected on the burner control (F,C & PSI). All units are scaled and within acceptable range of the variable.

(W) - Means Writable Points.

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