Multi-Function Burner Display

Burner control

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

0214190 - 01/2022

Multi-Function Burner Display

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 Boiler Control System manual (Main control panel for Massimo).

2 System and hardware configuration

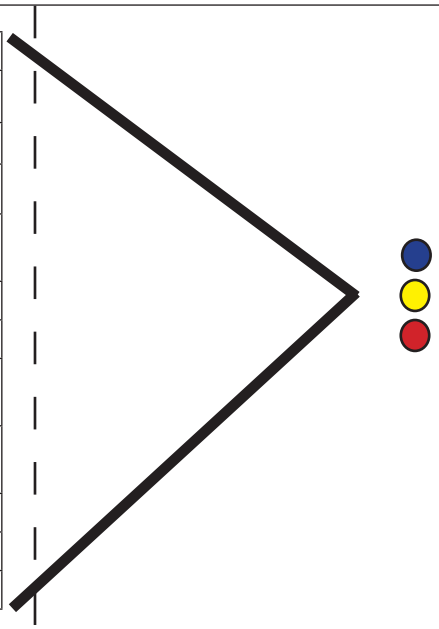
2.1 Introduction

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

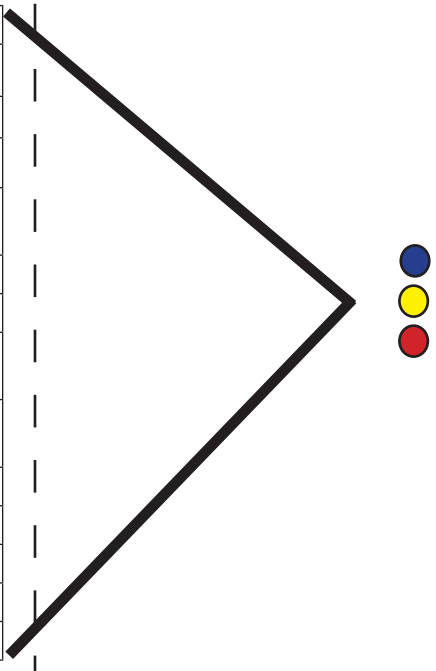
2.2.1 4.3" touch screen kit (LMV3) - 20107665

4.3" kit (20107665) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	4.3" touch screen	20180445 - done
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



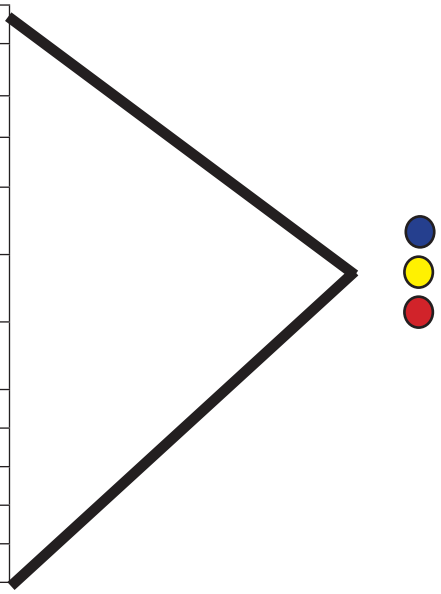
2.2.2 4.3" touch screen kit (LMV5) - 20167984

7" kit (20167984) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	4.3" touch screen	20138548
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

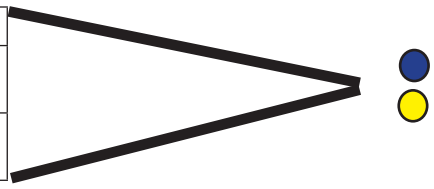
7" kit (20179829) Components list		
#	Description	Part Number
1	DB9 to wire	20143749
2	7" touch screen	20164159
3	Wire (beldon,white, red , green, black)	
4	120AC/24 VDC power supply	20138550
5	Din rail	C5311121
6	OCI412.10	C5360140
7	Light and Light button	
8	M6 Threaded rivet	20143688
9	RJ45 - RJ12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

Optional parts		
9a	Gateway (5 protocol) - 1 per 8 burners	20141213
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, statuses, 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 setup
► Boiler circulator pump off delay
► Boiler isolation valve closed 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.

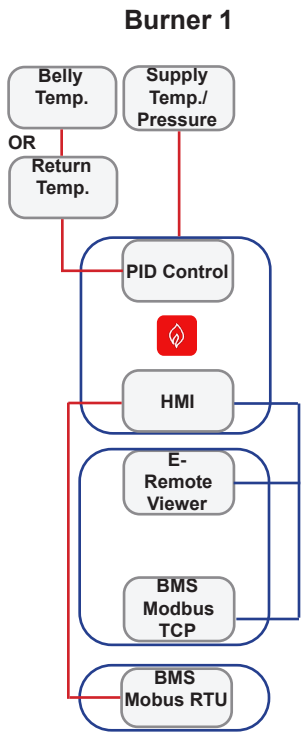
An optional gateway can be included in the burner with other protocols (BACnet IP or BACnet/MSTP, Modbus TCP, Ethernet/IP, Metasys N2, Lonworks).

Points list is protocol dependant, consult section 6.

2.6 System overview

2.6.1 & 2.6.2 Solo & Piccolo system overview

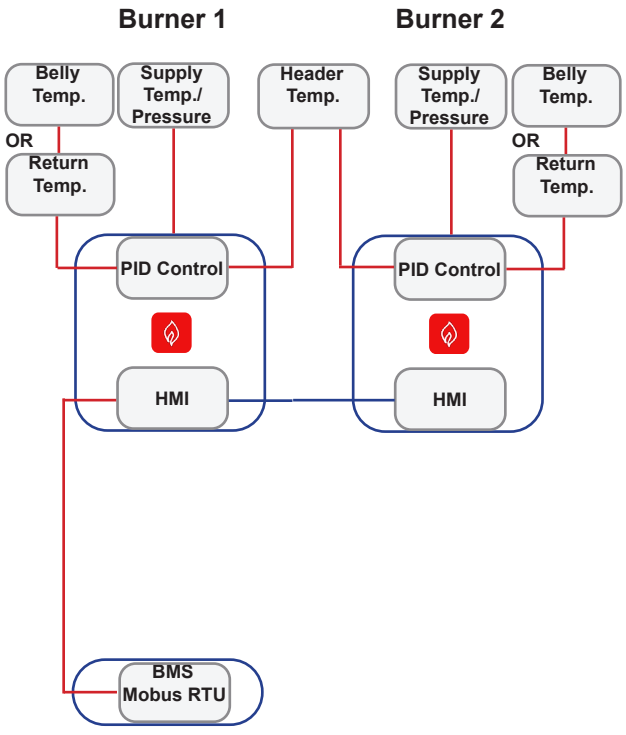
Solo - LMV3/5 (2.6.1)



For LMV5:

► PLC is added to interface between LMV5 and touchscreen

Piccolo (2.6.2)

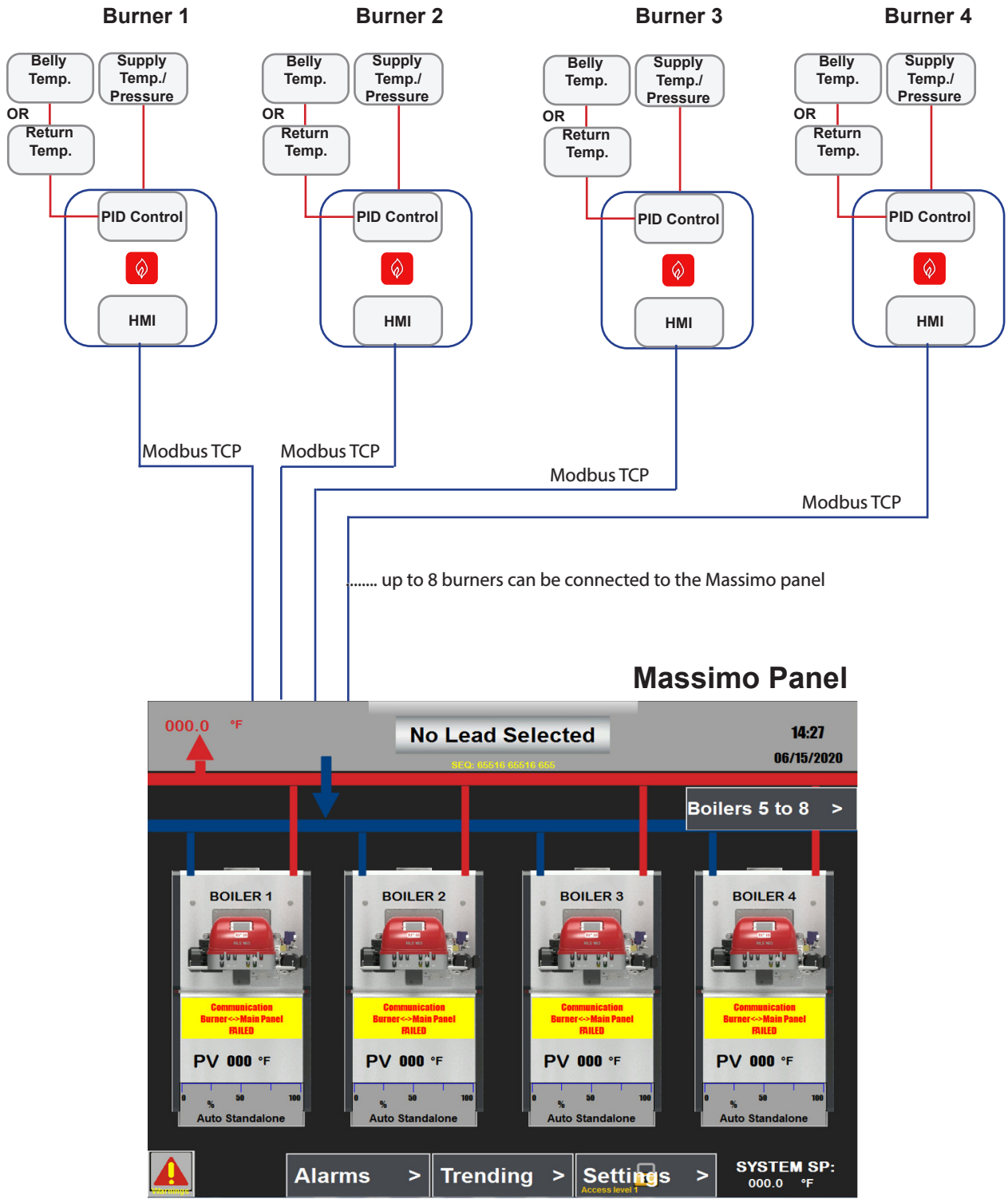


For LMV5:

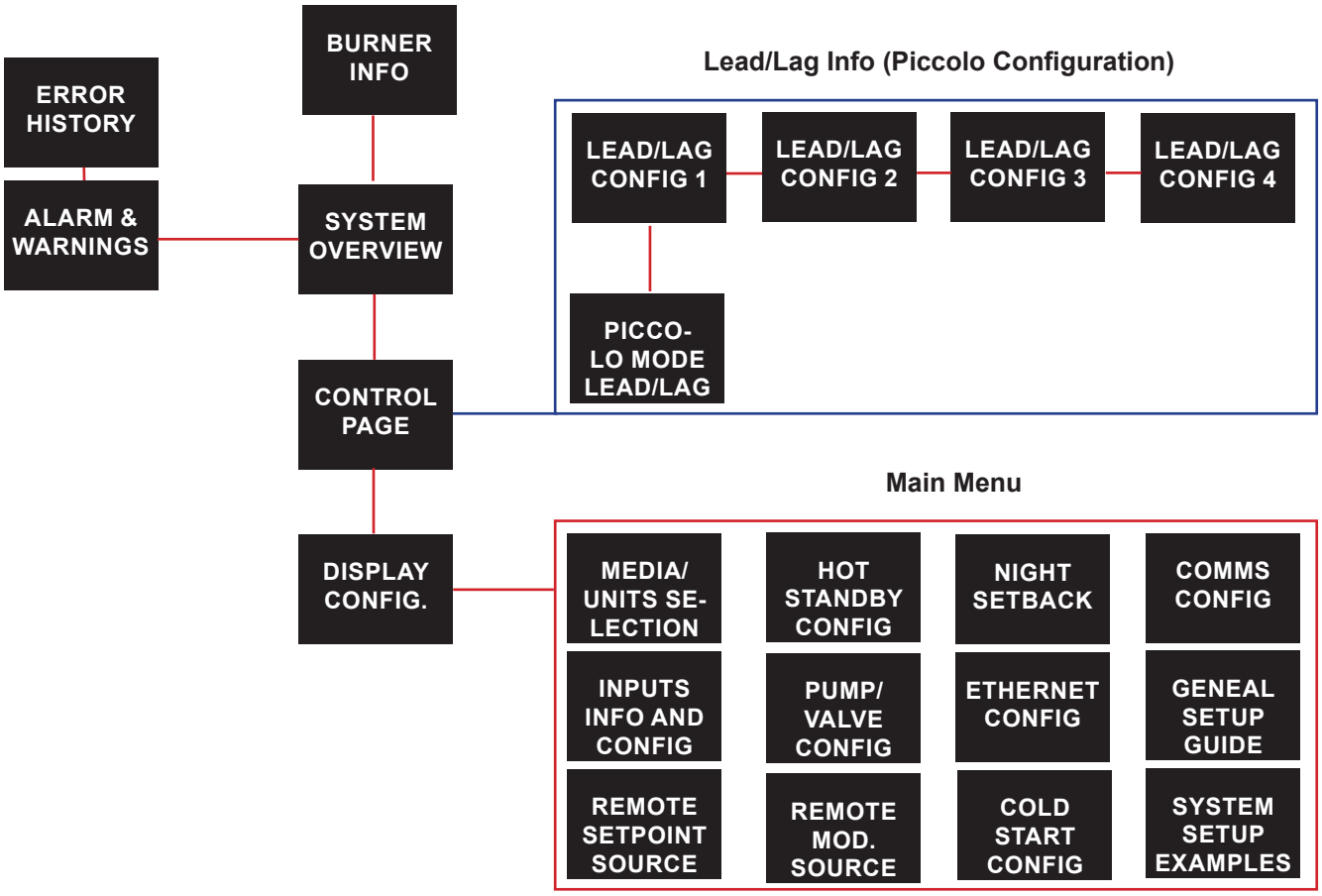
► PLC is added to interface between LMV5 and touchscreen

2.6.3 Massimo system overview

Massimo



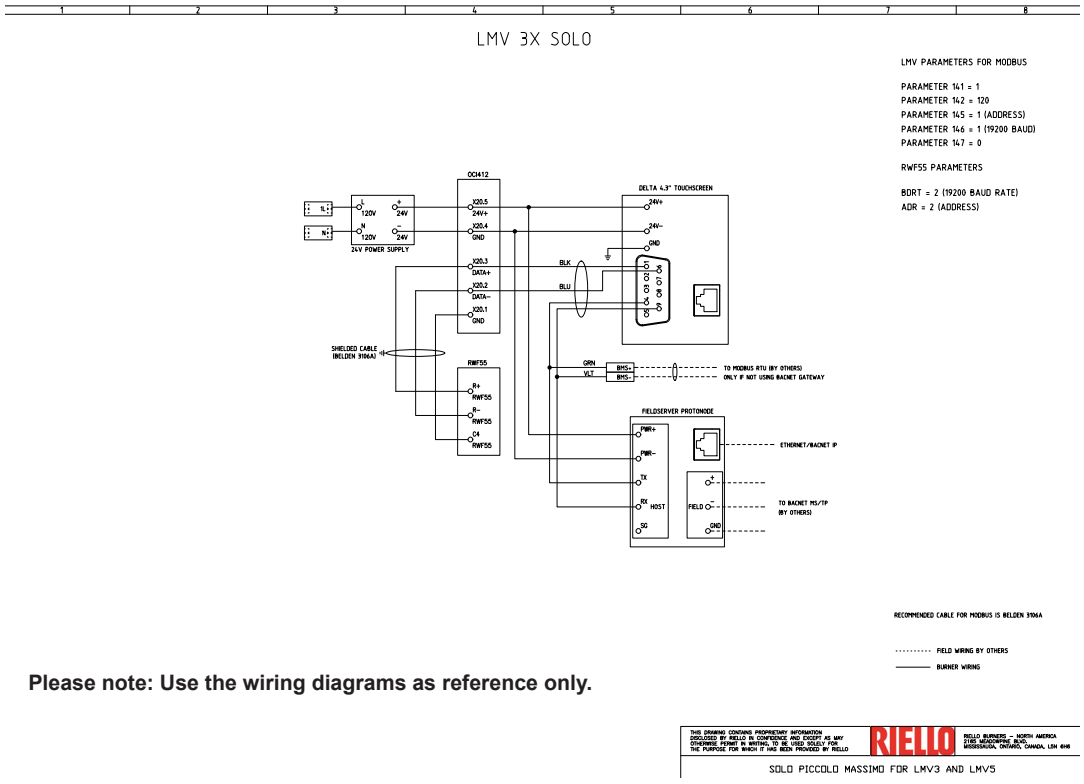
2.7 Navigation



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.

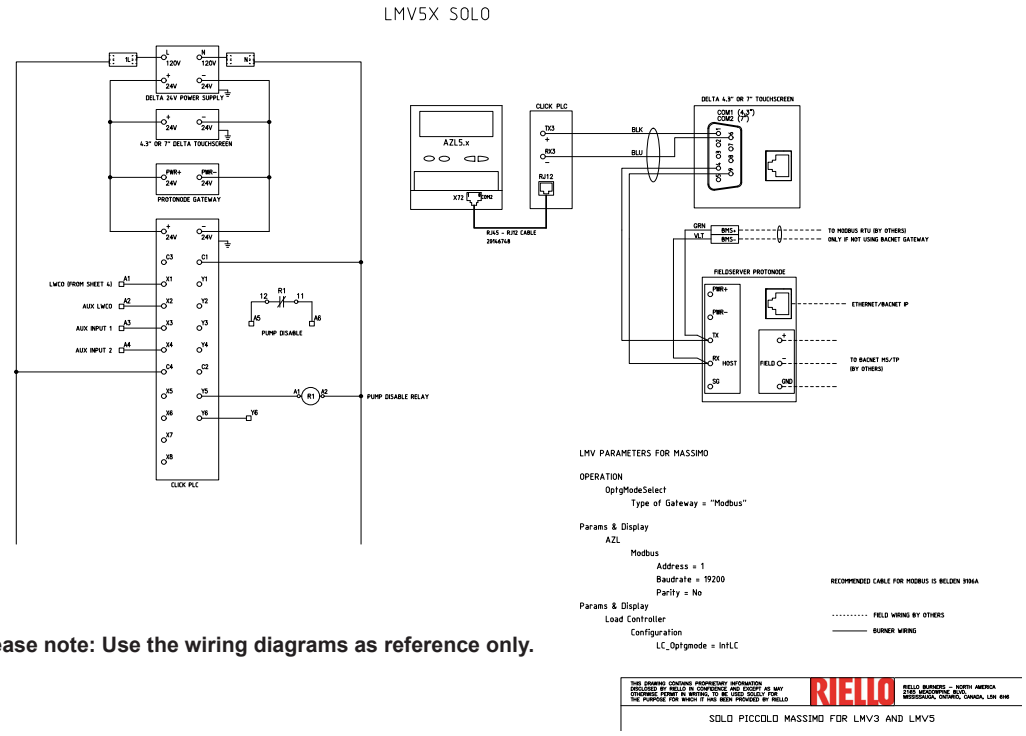
2.7 Navigation

2.7.1 Solo wiring: LMV3x, 4.3" touchscreen



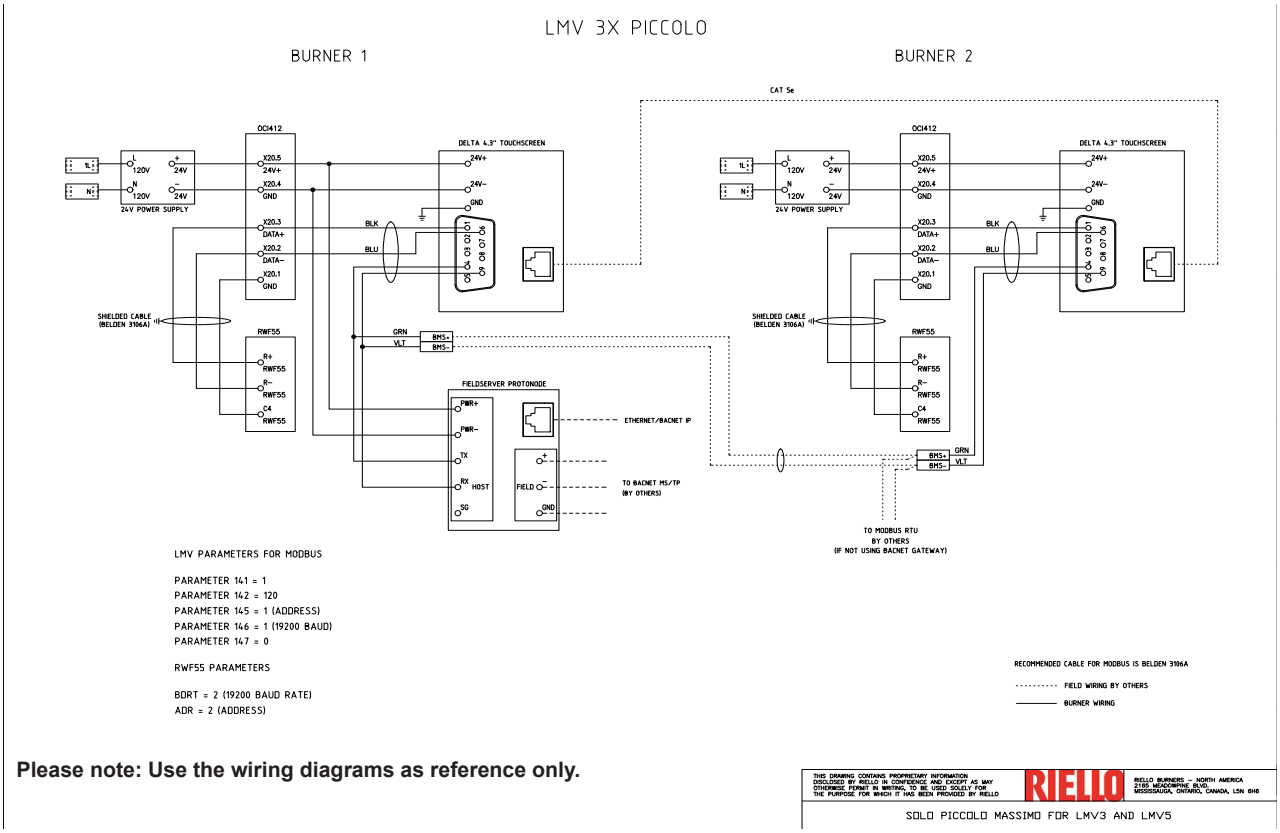
Please note: Use the wiring diagrams as reference only.

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



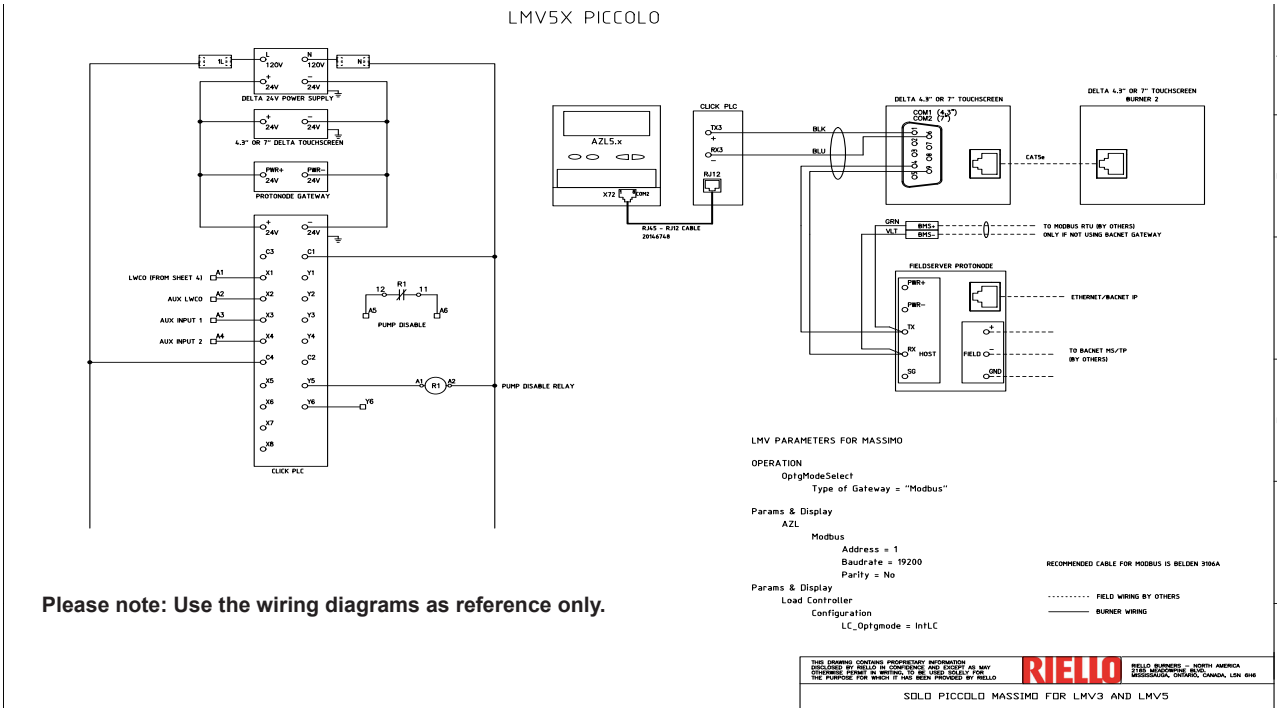
Please note: Use the wiring diagrams as reference only.

2.7.3 Piccolo wiring: LMV3x, 4.3" touchscreen



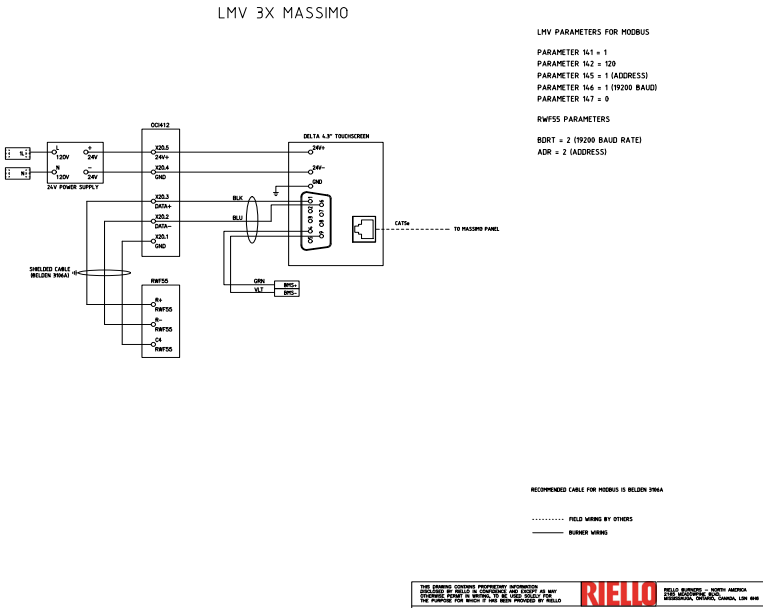
Please note: Use the wiring diagrams as reference only.

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

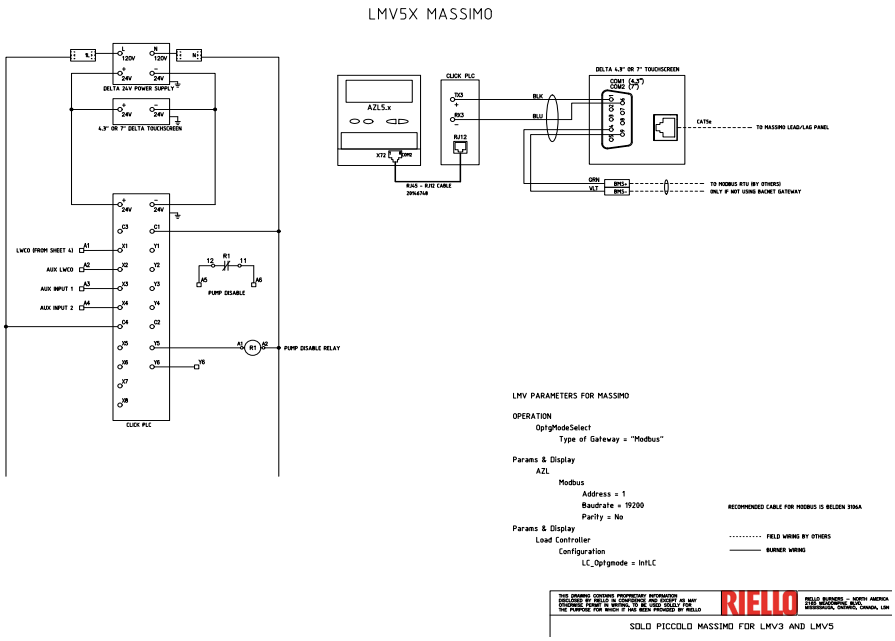


Please note: Use the wiring diagrams as reference only.

2.7.4 Massimo wiring: LMV5x, 4.3" touchscreen



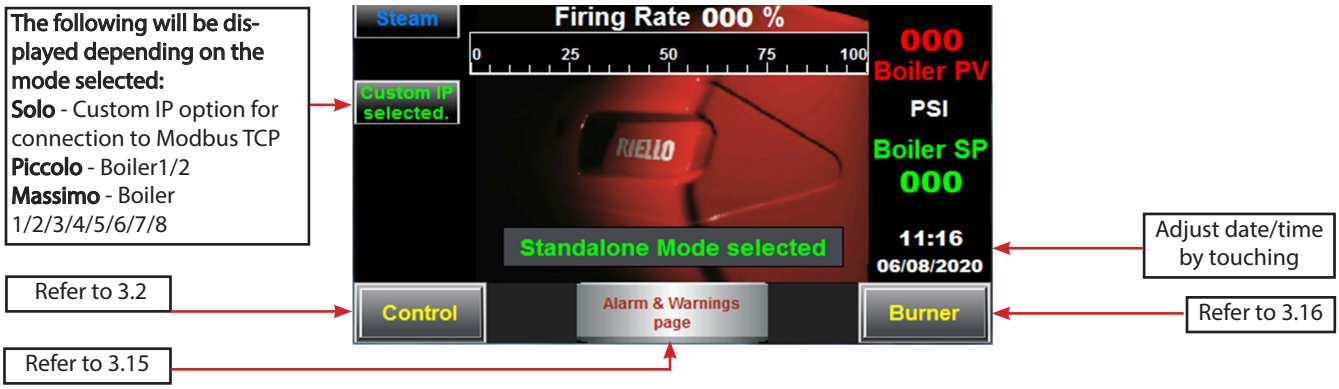
2.7.5 Massimo wiring: LMV5x, 7" touchscreen



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:

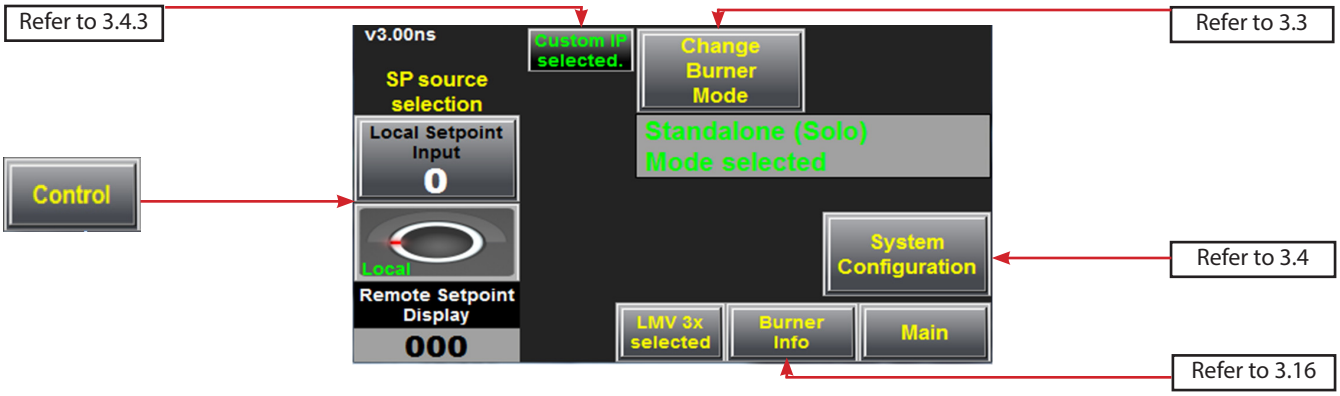
3.1 Burner view



The burner screen gives an over-all general picture of the 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
- ► Boiler number (Only in Piccolo and Massimo)
- ► Communication failure

3.2 Control



Local/remote setpoint available. Local setpoints include:
- ► Switch for selectable setpoint source (local/remote)
- ► Outside Reset Setpoint

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

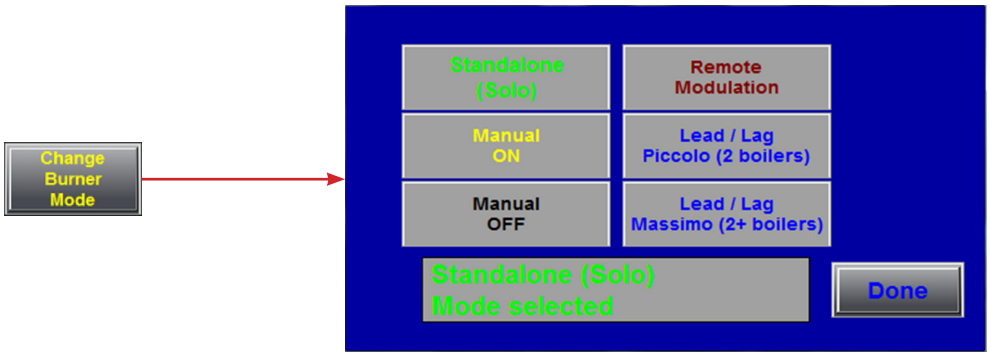
LMV3/LMV5 flamesafeguard selection

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

Burner information

System Configuration (main menu)

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.

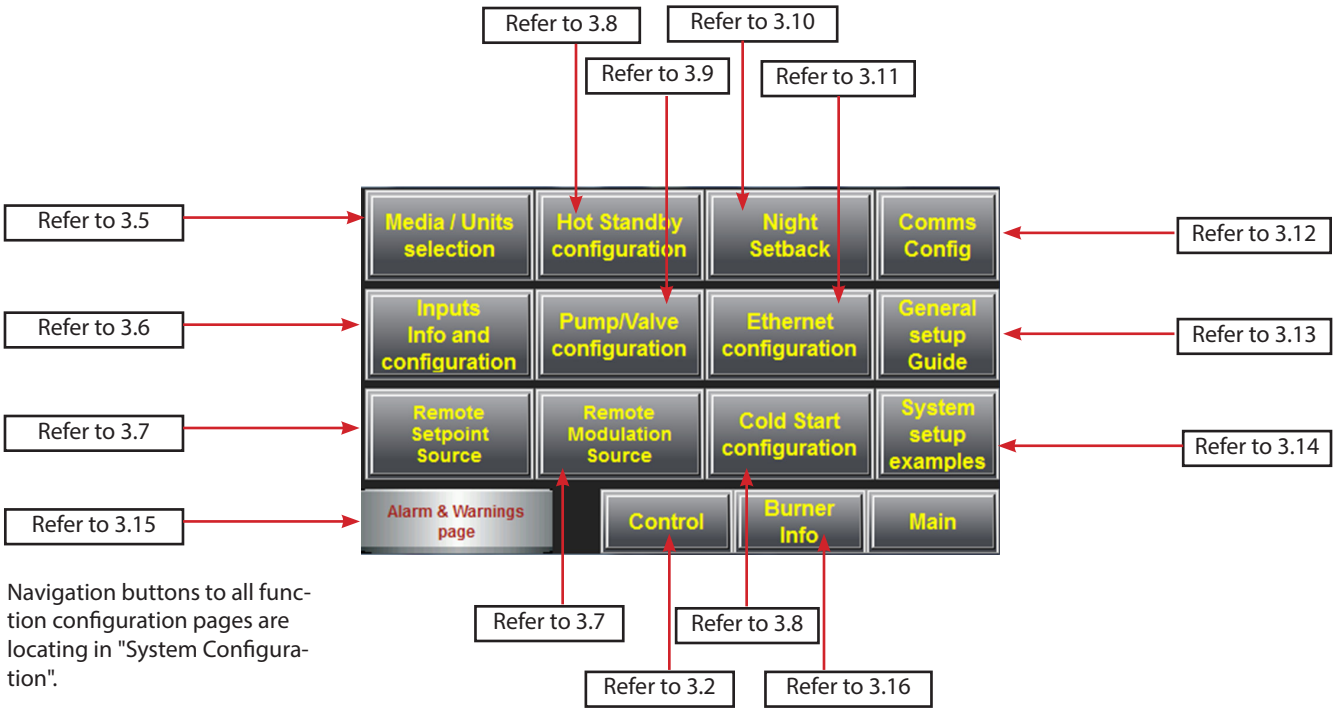
Manual OFF: stops the burner for an undetermined period of time regardless any existing call for heat.

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 boiler Lead/Lag system (refer to section 3 Piccolo user manual).

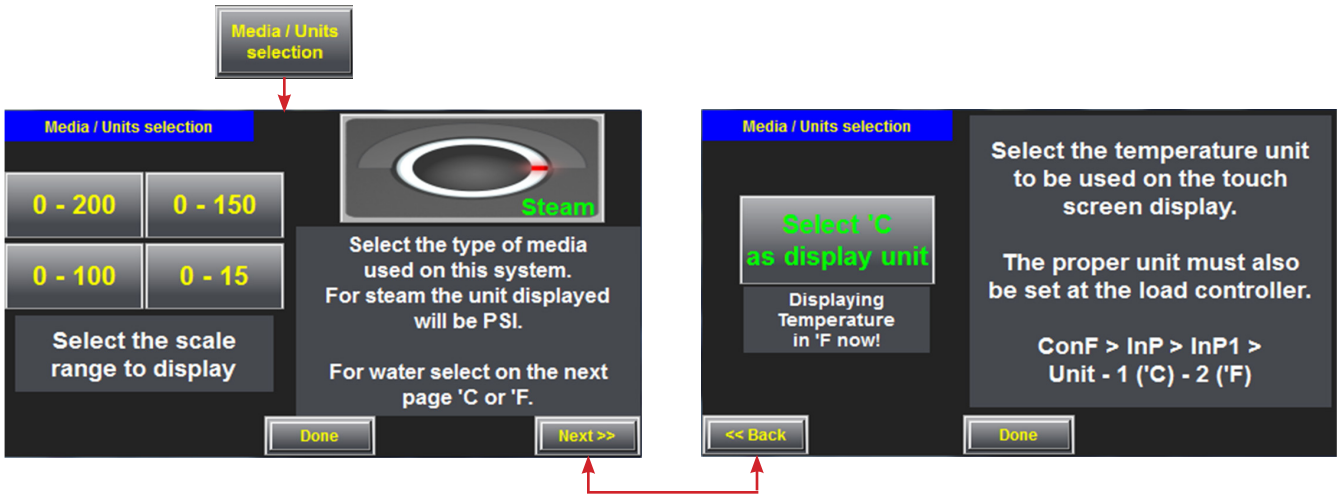
Lead/Lag Massimo mode: enables communication and control for the 2+ boiler Lead/Lag system (refer to section 4 Massimo user manual).

3.4 System Configuration (main menu)

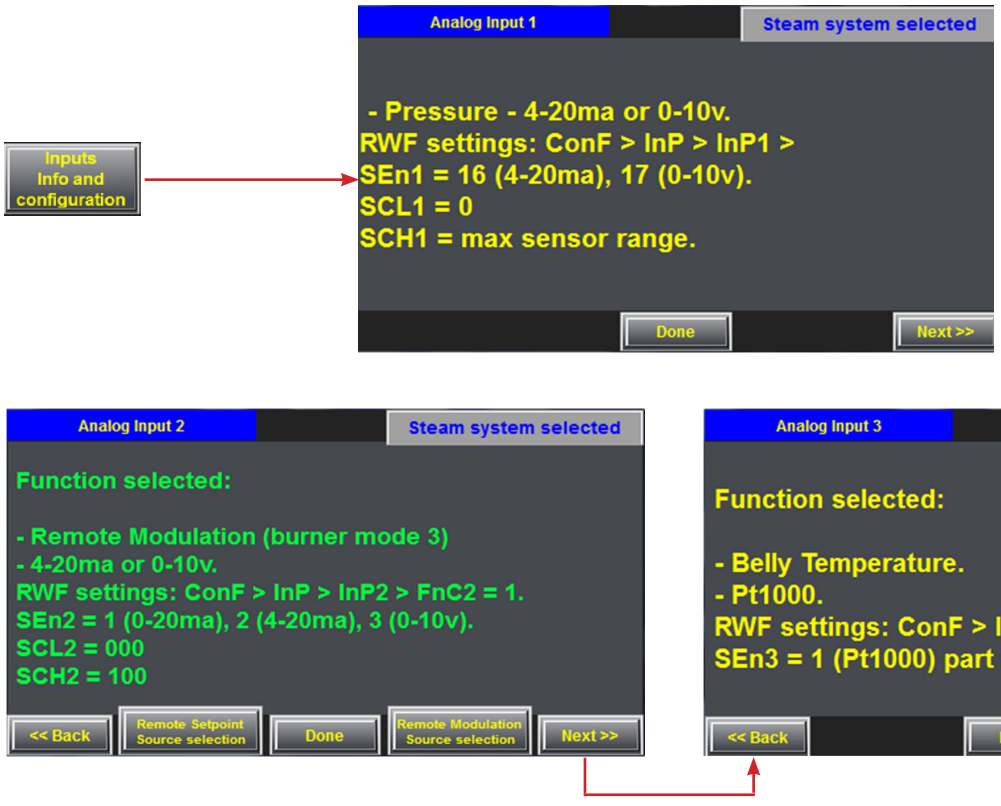


Navigation buttons to all function configuration pages are locating in "System Configuration".

3.5 Media/ Units selection

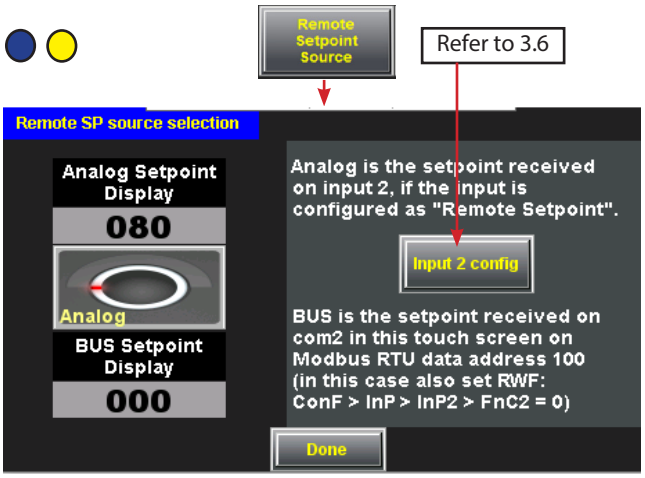


3.6 Inputs info and configuration



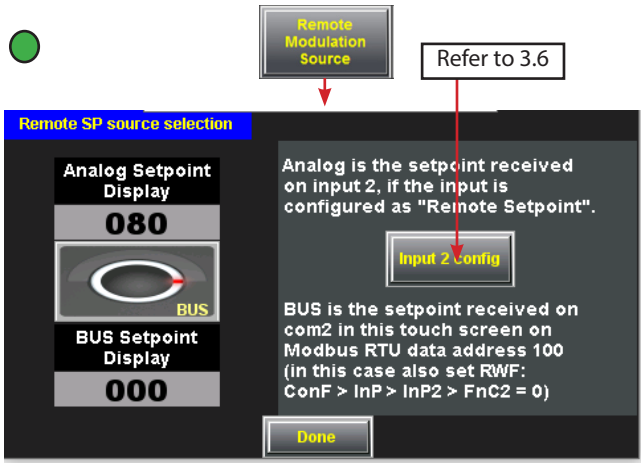
When using Burner with LMV3 and RWF55 Help screens are available to assist the technican properly set up the RWF55 to work with the touchscreen.

3.7 Remote Setpoint Source & Remote Modulation Source



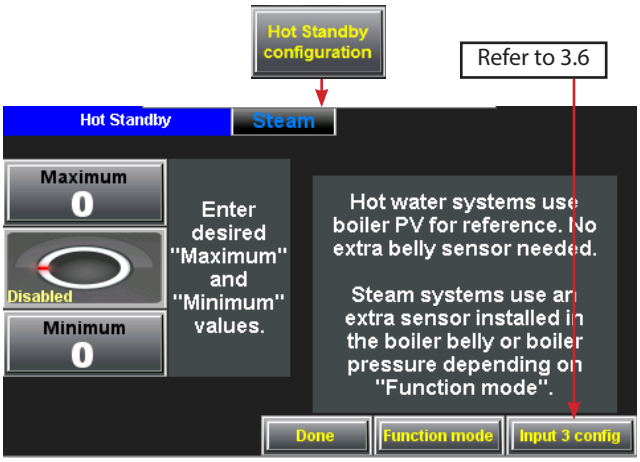
A remote setpoint can be sent to the burner via 0-20ma/4-20ma/0-10vd hardwired or bus signal.

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



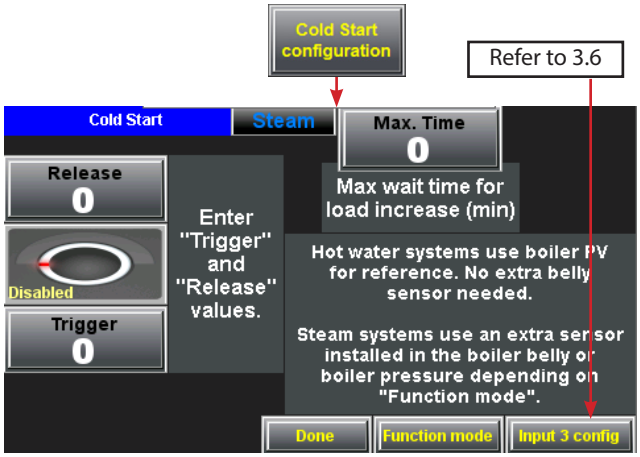
A remote modulation signal can be sent to the burner via 0-20ma/4-20ma/0-10vd hardwired or bus signal.

3.8 Hot Standby Configuration & Cold Start Configuration



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

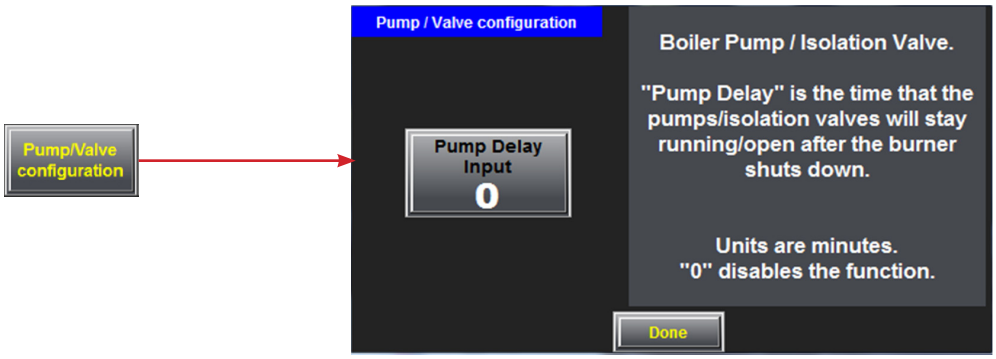
For a steam system:
► The belly temperature sensor is used for temperature reference
► Do NOT set “Maximum” over 80% of the “steam temperature” at the system setpoint.



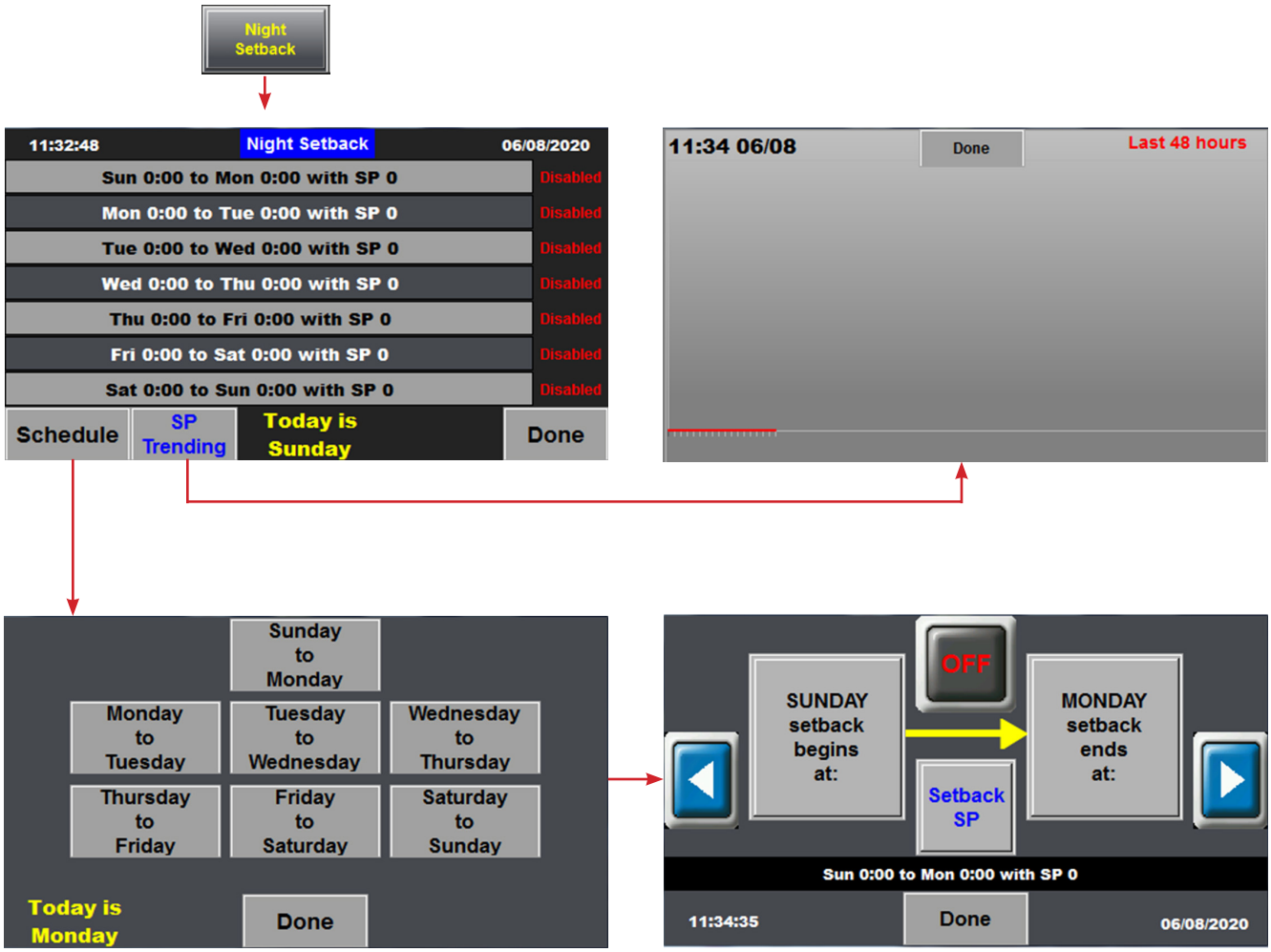
Boiler "Cold Start" function will be activated when the water temperature drops below “Trigger”. The burner will start and enter "Cold Start" when there is a call for heat.

For a steam system
► The belly temperature sensor is used for temperature reference
► Do NOT set “Maximum” over 80% of the “steam temperature” at the system setpoint.

3.9 Pump/Valve Configuration

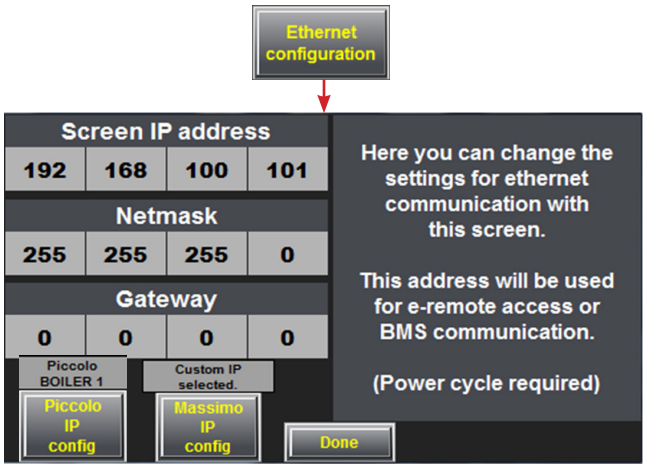


3.10 Night Setback



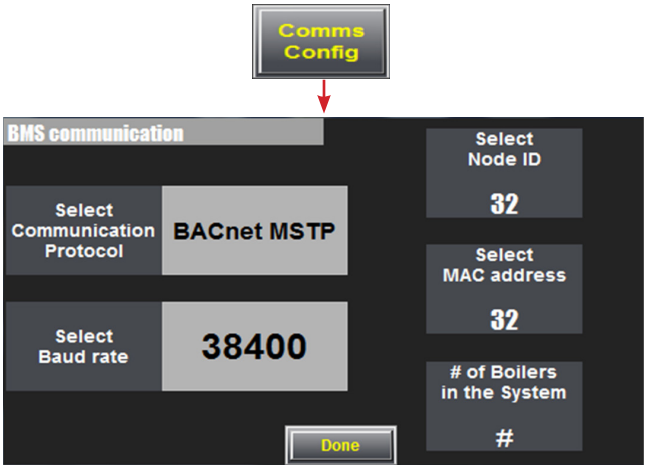
Night setback can be set for any range of time, any day of the week and for any range of time. Night setback setpoint will take priority over local or remote setpoint.

3.11 Ethernet Configuration



In Ethernet configuration:
► Solo mode: you can set the IP address of the screen for connecting through Modbus TCP
►Piccolo mode: Select "Piccolo IP config", in next page select boiler number. Power cycle after selection
►Massimo mode: Select "Massimo IP config", in next page select boiler number. Power cycle after selection

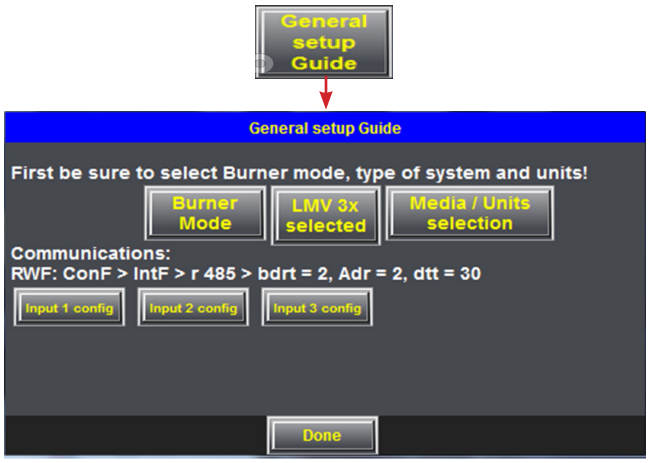
3.12 Comms Config



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

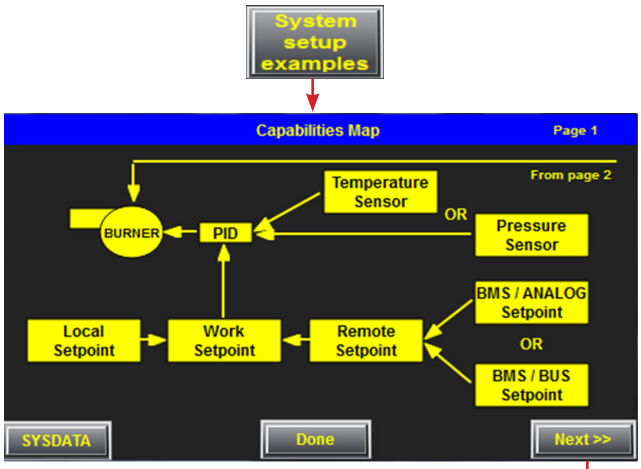
Available gateway protocols:
► BACnet MS/TP
► BACnet/IP
► Modbus TCP (gateway only needed for Piccolo)
► Ethernet/IP
► Metasys N2
► Lonworks

3.13 General setup Guide



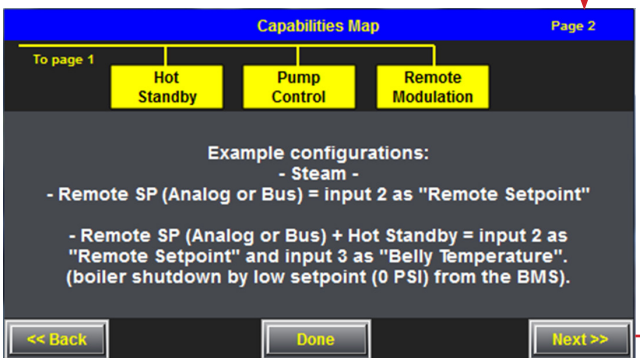
The "General setup Guide" offers assistance to the user in setting up the touchscreen.

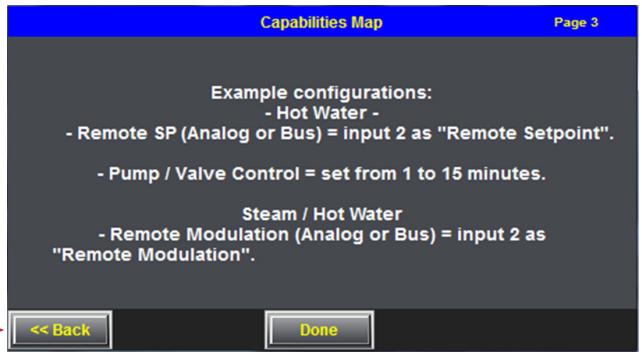
3.14 System setup examples



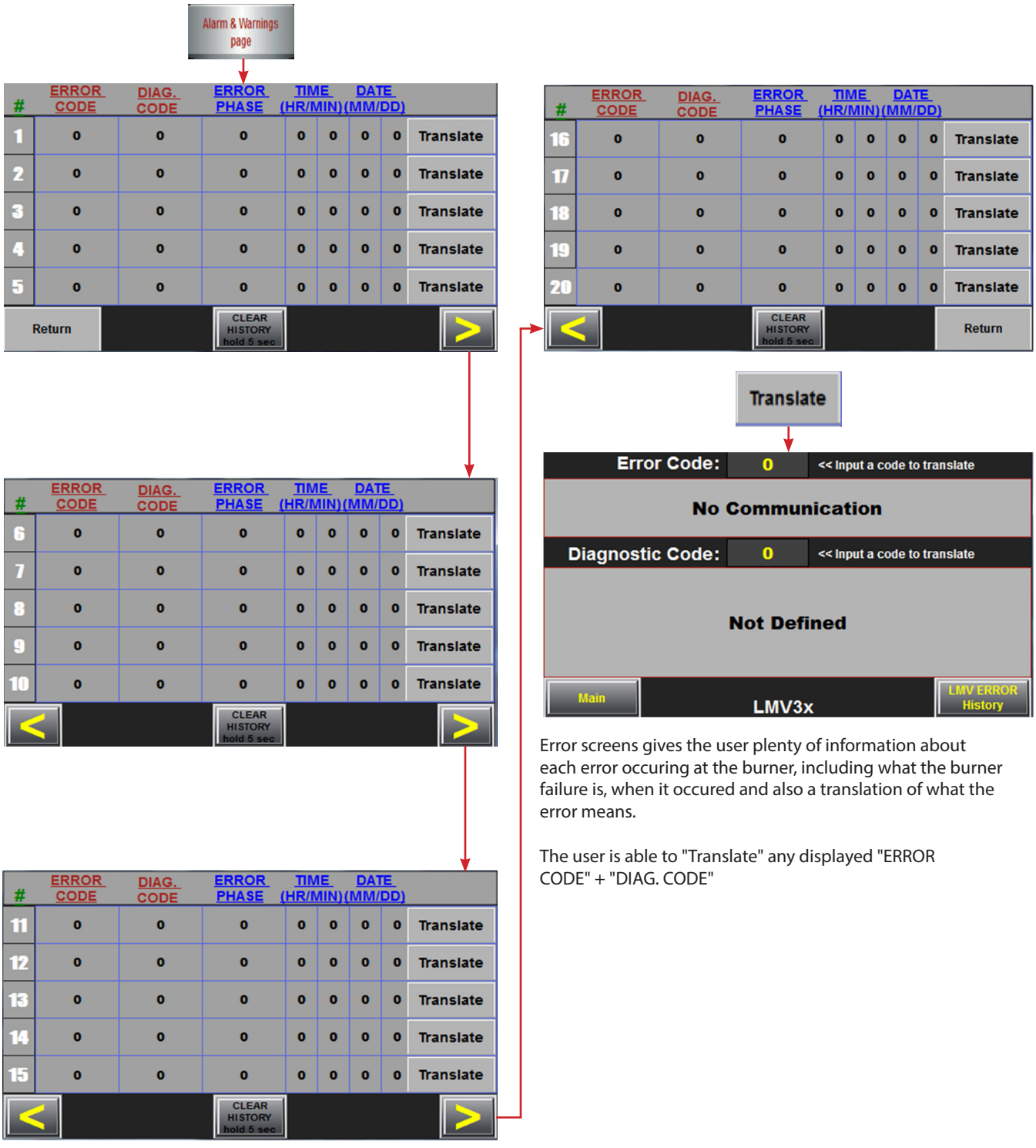
The "Setup system examples" gives an overview view of the control flow for the MFBD

Examples are included as a guide to setting up RWF55





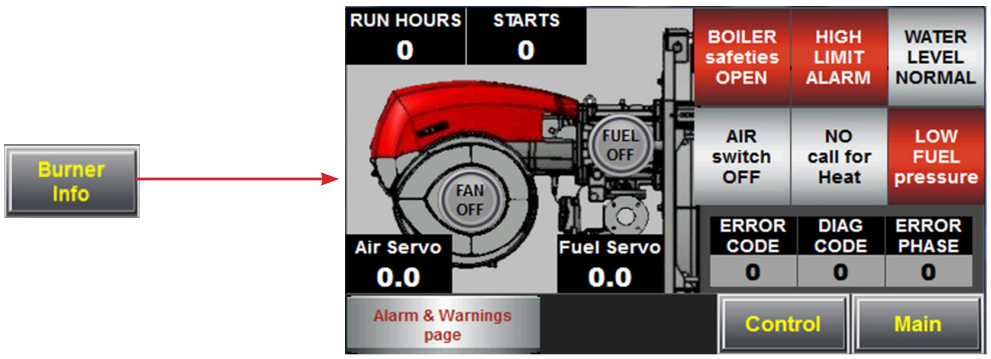
3.15 Alarms & Warnings page



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"

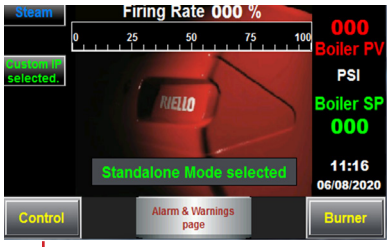
3.16 Burner

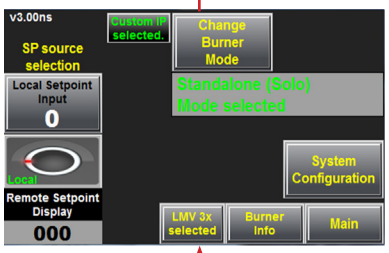

Burner Info
RUN HOURS
0
STARTS
0
BOILER safeties OPEN
HIGH LIMIT ALARM
WATER LEVEL NORMAL
FUEL OFF
FAN OFF
AIR switch OFF
NO call for Heat
LOW FUEL pressure
ERROR CODE
0
DIAG CODE
0
ERROR PHASE
0
Air Servo
0.0
Fuel Servo
0.0
Alarm & Warnings page
Control
Main

4 Setting up control mode

4.1 Setting up Solo mode

See section 3 for Solo mode functionality. See below for putting touch screen in Solo mode.

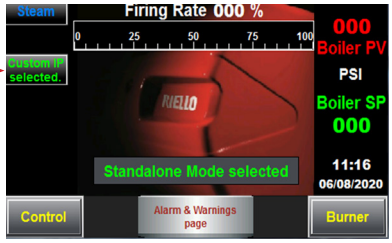




Set for LMV3/5

Select "Standalone (Solo)"

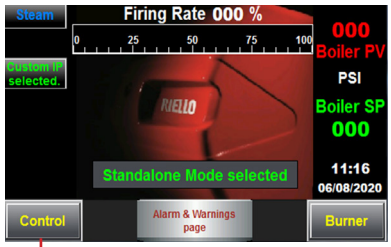
After completion your main screen will display "Custom IP selected"

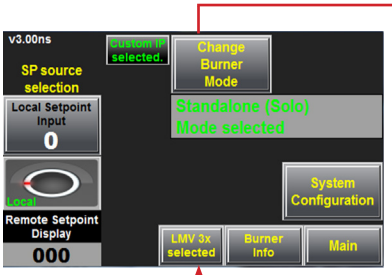


4.2 Setting up Piccolo mode

See below for lead/lag functionality. See section 3 for other functionality for Piccolo mode. See below for putting touch screen in Piccolo mode.

Step 1: Selecting Piccolo mode

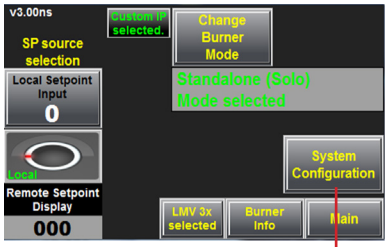


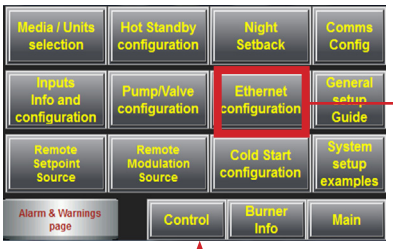


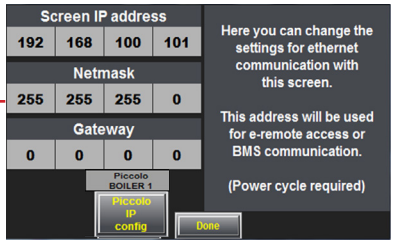
Set for LMV3/5

Select "Lead/ Lag Piccolo (2 boilers)

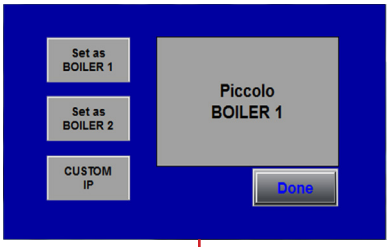
Step 2: Selecting boiler number







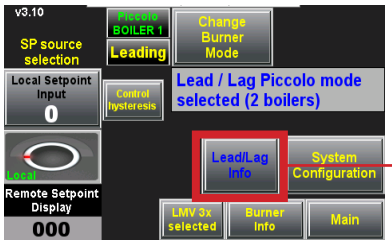
Select "Piccolo IP config"

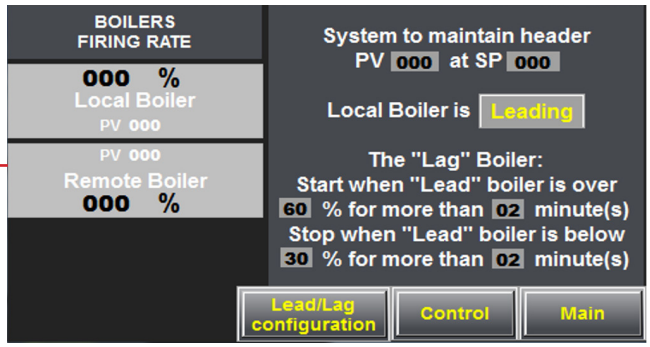


After selecting boiler number, recycle power on the burner. THIS IS VERY IMPORTANT!

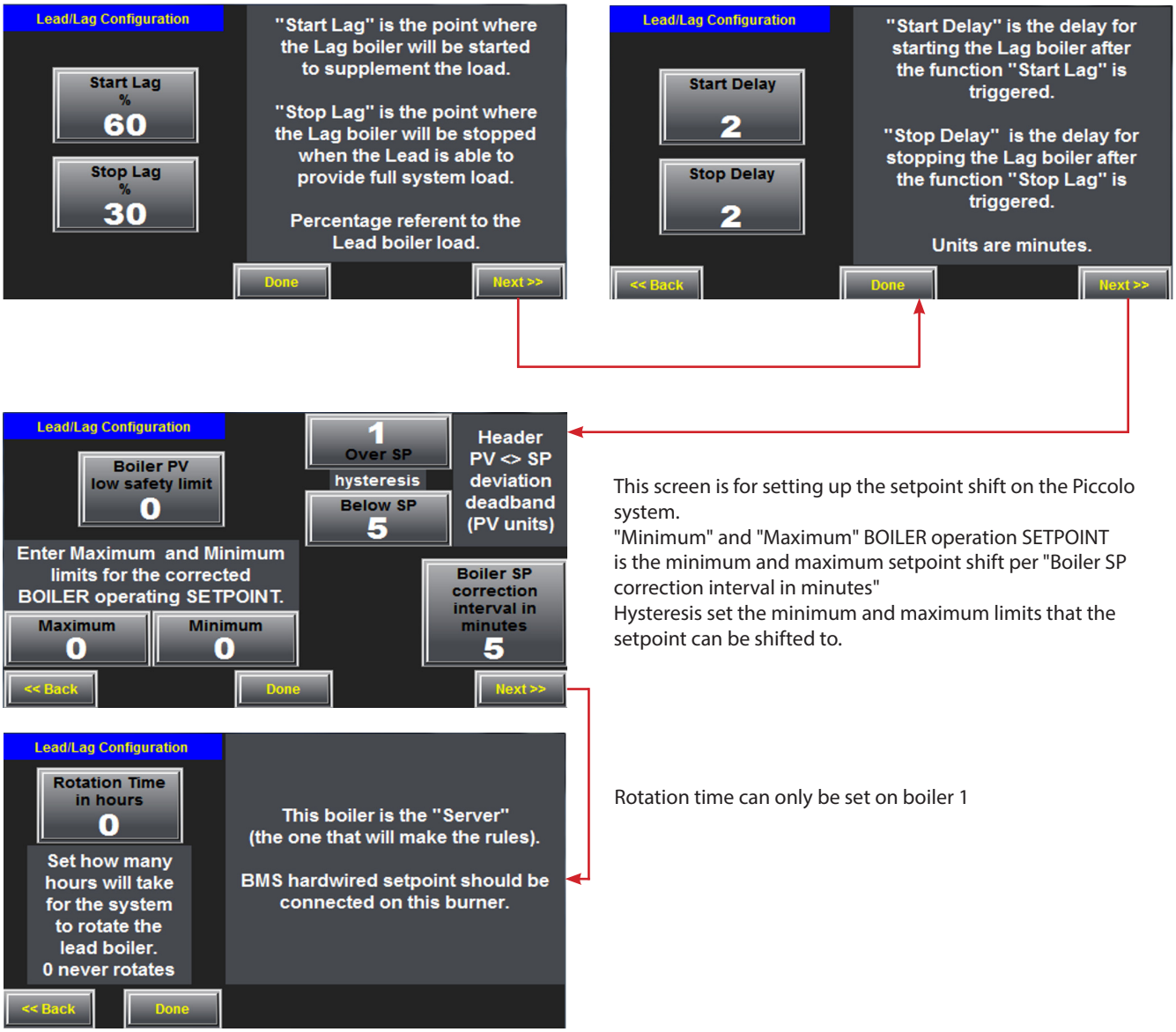
After recycling, on the main screen you will see "Piccolo BOILER x" displayed

Step 3: Piccolo configurations





The page provides the user with an overall readout of Piccolo setup.



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

Rotation time can only be set on boiler 1

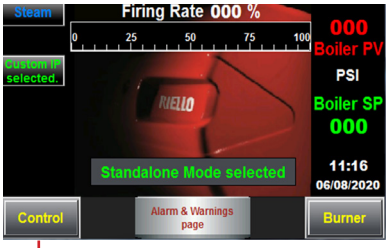
Step 4: Setting up other burner

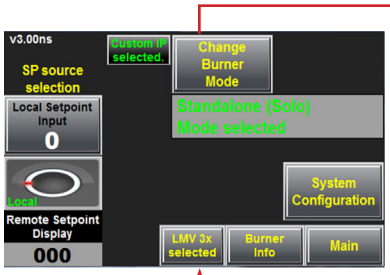
1 Repeat Step 2, select boiler number
2 Repeat Step 3, enter same values as first screen.
Please note that "Rotation Time" is only adjustable on boiler 1

4.2 Setting up Massimo mode

See below for lead/lag functionality. See section 3 for other functionality for Massimo mode. See below for putting touch screen in Massimo mode.

Step 1: Selecting Massimo mode

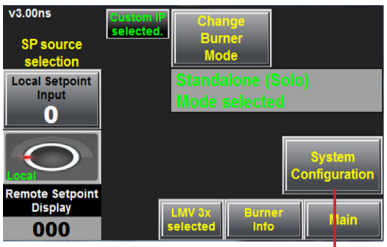


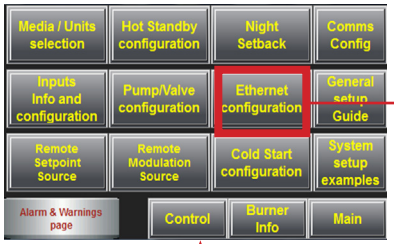


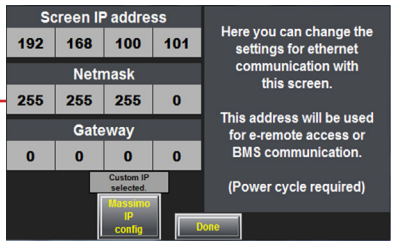
Set for LMV3/5

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

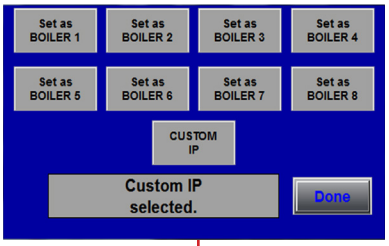
Step 2: Selecting boiler number







Select "Massimo IP config"



After selecting boiler number, recycle power on the burner. THIS IS VERY IMPORTANT!

After recycling, on the main screen you will see "Massimo BOILER x" displayed

Step 3: FInishing setup of the Massimo

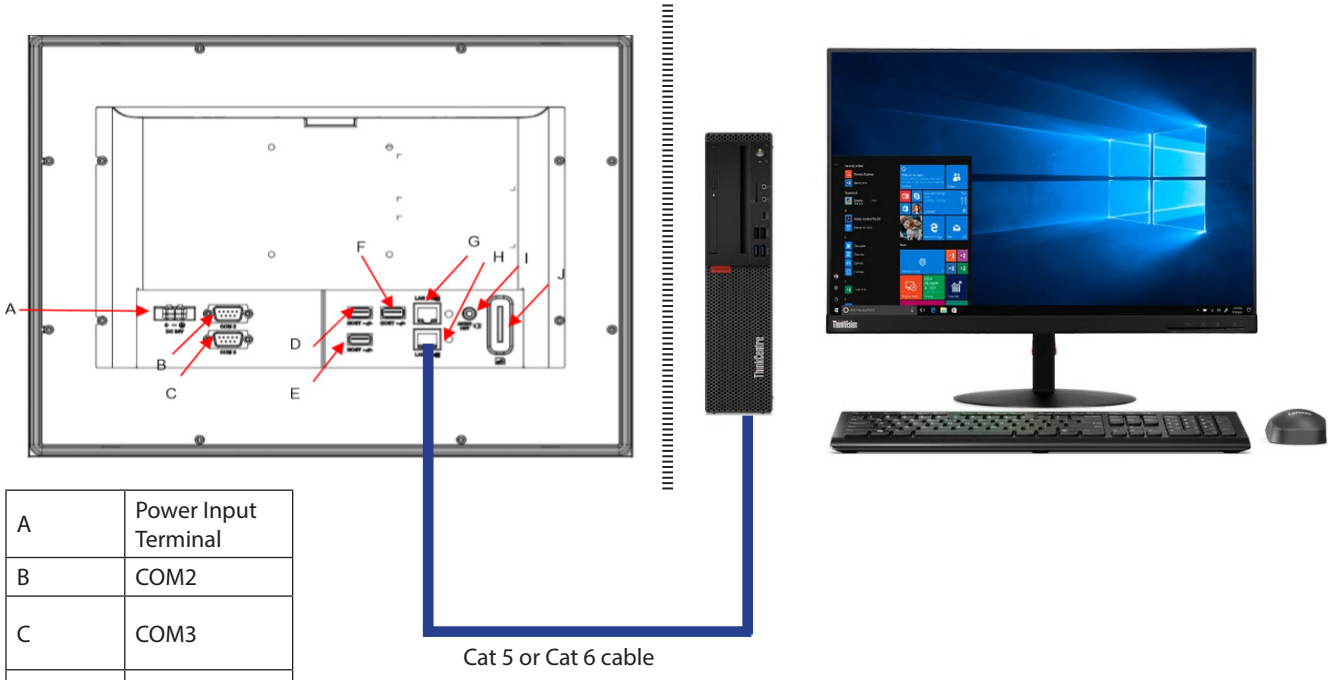
1 Please refer to Massimo control manual for completion of setup

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.

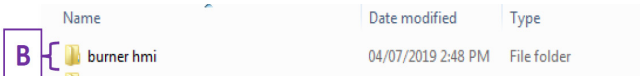
The IP of the Massimo panel touchscreen is 192.168.100.111.

6 Multi-function display version update

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

6.1 Unpacking the software

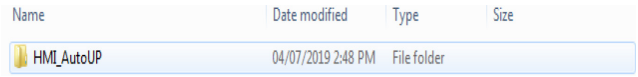
1 Unzip "vX.XX_loader" into a separate folder you desire



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

2 Prepare one USB drive, formatted using FAT32 file system

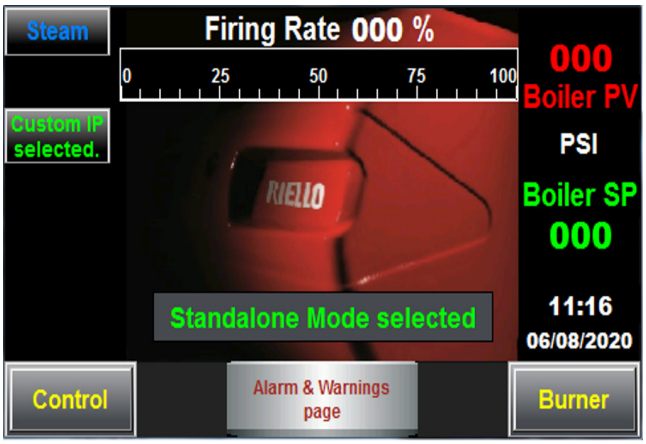
3 For the burner screen update (Solo, Piccolo, Massimo), open the folder "burner hmi" indicated as selection B



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

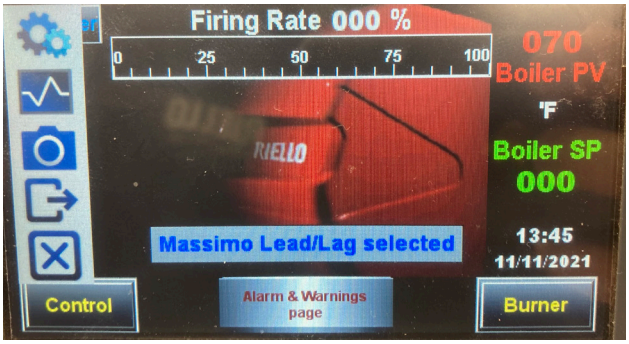
4 Copy then this "HMI_AutoUP" folder to the root directory of and empty USB drive.

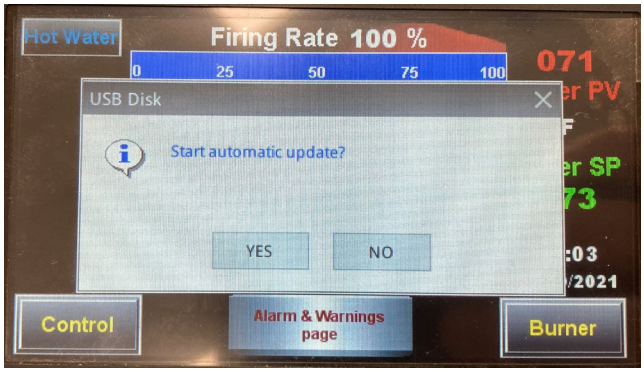
6.2 Burner HMI update

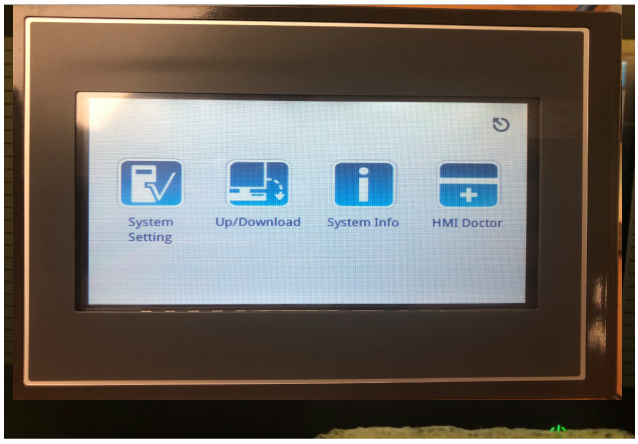


1 Power OFF the burner screen
2 Insert USB stick with "HMI_AutoUP" from selection B
3 Power up the screen and wait for the full boot up
4 Press the button marked as "SYSTEM" on the back of the screen until you hear a single beep

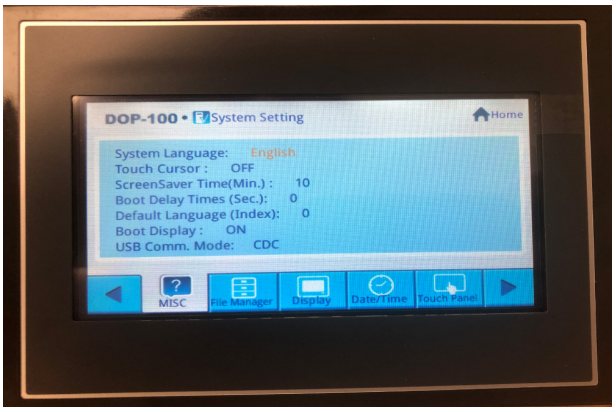
5 After this screen opens go to "System Setting"







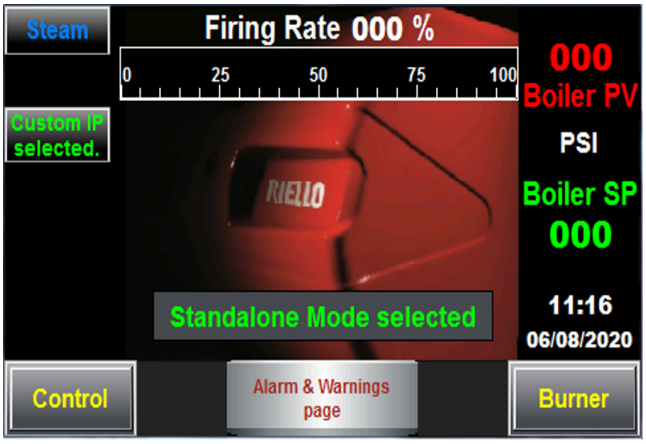
6 Select "MISC." (miscellaneous)



12 Answer yes and wait until the screen asks you: "Continue to Update FW?"
13 Answer yes and wait until screen displays: "FW File Burn Success!!"

3 The following page will open, just press "Next"

14 Wait for full boot up, Power OFF the screen and unplug the USB stick.
15 Power screen back on and .....you're done!...:)



7 Points list

7.1 Panel points list: Modbus RTU

B1	B2	B3	B4	B5	B6	B7	B8	Point Name	Modbus TCP Data type
1001	1201	1401	1601	1801	2001	2201	2401	B(X)_Phase	Holding Reg.
1002	1202	1402	1602	1802	2002	2202	2402	B(X)_Fuel act.	Holding Reg.
1005	1205	1405	1605	1805	2005	2205	2405	B(X)_Air act.	Holding Reg.
1009	1209	1409	1609	1809	2009	2209	2409	B(X)_VFD	Holding Reg.
1010	1210	1410	1610	1810	2010	2210	2410	B(X)_Current Fuel	Holding Reg.
1011	1211	1411	1611	1811	2011	2211	2411	B(X) _Firing Rate	Holding Reg.
1014	1214	1414	1614	1814	2014	2214	2414	B(X)_Flame Signal	Holding Reg.
1026	1226	1426	1626	1826	2026	2226	2426	B(X)_Error Code	Holding Reg.
1027	1227	1427	1627	1827	2027	2227	2427	B(X)_Diag. Code	Holding Reg.
1029	1229	1429	1629	1829	2029	2229	2429	B(X)_Error Phase	Holding Reg.
1036	1236	1436	1636	1836	2036	2236	2436		
0	0	0	0	0	0	0	0	B(X)_Call for heat	DI
8	8	8	8	8	8	8	8	B(X)_Boiler Safety Loop	DI
10	10	10	10	10	10	10	10	B(X) _Gas Switches	DI
13	13	13	13	13	13	13	13	B(X)_Air Pressure	DI
1038	1238	1438	1638	1838	2038	2238	2438		
0	0	0	0	0	0	0	0	B(X)_Alarm	DO
4	4	4	4	4	4	4	4	B(X)_Ign. Trans-former	DO
6	6	6	6	6	6	6	6	B(X)_Burner Fan	DO
13	13	13	13	13	13	13	13	B(X)_Fuel Valves	DO
1057,1058	1257,1258	1457,1458	1657,1658	1857,1858	2057,2058	2257,2258	2457,2458	B(X)_Hours run gas	Holding Reg.
1059,1060	1259,1260	1459,1460	1659,1660	1859,1860	2059,2060	2259,2260	2459,2460	B(X)_Hours run oil	Discrete_In-put
1071,1072	1271,1272	1471,1072	1671,1672	1871,1872	2071,2072	2271,2272	2471,2472	B(X)_Starts Gas	Discrete_In-put
1073,1074	1273,1274	1473,1474	1673,1674	1873,1874	2073,2074	2273,2274	2473,2474	B(X)_Starts Oil	Holding Reg.
1077,1078	1277,1278	1477,1478	1677,1678	1877,1878	2077,2078	2277,2278	2477,2478	B(X)_Total Starts	Holding Reg.
1085	1285	1485	1685	1885	2085	2285	2485	B(X)_Boiler PV	Holding Reg.
1086	1286	1486	1686	1886	2086	2286	2486	Boiler Inputs	
0	0	0	0	0	0	0	0	B(X) _Blr HL	DI
1	1	1	1	1	1	1	1	B(X)_Blr LWCO	DI
1087	1287	1487	1687	1887	2087	2287	2487	B(X)_Blr Pmp	Holding Reg.
								System info	
3021								Header PV	Holding Reg.
3022								Return Temperature	Holding Reg.
3023								Actual System Setpoint	Holding Reg.
3024								OAT	Holding Reg.
3035								Combustion_Dm-prSts	Holding Reg.
3036								Combustion_Dm-prAlm	Holding Reg.
3505								BMS Setpoint	Holding Reg.
3506								BMS_En	Holding Reg.

7.2 Gateway point list: BACnet MS/TP, BACnet/IP, Modbus TCP, Metasys N2, Ethernet/IP, Lonworks

B1	B2	B3	B4	Point Name	LON fun., type,Option, units	EIP Att., Class	Metasys N2 Data Type	Modbus TCP Data type	BAC-net Ob-ject	Unit/ SNVT_ Type
1	201	401	601	B(x)_Phase	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
2	202	402	602	B(x)_Fuel act.	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	De-grees-an-gular
5	205	405	605	B(x)_Air act.	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	De-grees-an-gular
9	209	409	609	B(x)_VSD	NVUI,switch,val-ue, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	Percent
10	210	410	610	B(x)_Current Fuel	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
11	211	411	611	B(x)_Firing Rate	NVUI,switch,val-ue, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	Percent
14	214	414	614	B(x)_Flame Signal	NVUI,switch,val-ue, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	Percent
26	226	426	626	B(x)_Error Code	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
27	227	427	627	B(x)_Diag Code	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
29	229	429	629	B(x)_Error Phase	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
1	41	71	101	B(x)_Call for heat	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	0 - off, 1 - on
2	42	72	102	B(x)_Safety Loop	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	0 - open, 1 - closed
3	43	73	103	B(x)_Gas Switches	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	0 - closed, 1 - open
4	44	74	104	B(x)_Air Pressure	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	0 - off, 1 - on
5	45	75	105	B(x)_Alarm	NVUI,switch,val-ue, raw	3,4	Dig_Output	DO	BO	0 - Normal, 1 - Alarm
6	46	76	106	B(x)_Ign. Trans-former	NVUI,switch,val-ue, raw	3,4	Dig_Output	DO	BO	0 - off, 1 - on
7	47	77	107	B(x)_Burner Fan	NVUI,switch,val-ue, raw	3,4	Dig_Output	DO	BO	0 - off, 1 - on
8	48	78	108	B(x)_Fuel Valve	NVUI,switch,val-ue, raw	3,4	Dig_Output	DO	BO	0 - off, 1 - on
57,58	257,258	457,458	657,658	B(x)_Hours Run Gas	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	Hours
59,60	259,260	459,460	659,660	B(x)_Hours Run Oil	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Discrete_ Input	AI	Hours
71,72	271,272	471,472	671,672	B(x)_Starts Gas	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Discrete_ Input	AI	No-units
73,74	273,274	473,474	673,674	B(x)_Starts Oil	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
75,76	275,276	475,476	675,676	B(x)_Total Starts	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No-units
85	285	485	685	B(x)_Boiler PV	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg.	AI	No Unit
9	49	79	109	B(x)_Blr HL	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	No-units
10	50	80	110	B(x)_Blr LWCO	NVUI,switch,val-ue, raw	3,4	Dig_Input	DI	BI	No-units
88	288	488	688	B(x)_Header PV	NVUI,switch,val-ue, raw	3,4	Dig_Input	Holding Reg.	AI	No-units

B5	B6	B7	B8	Point Name	LON fun., type,Option, units	EIP Att., Class	Metasys N2 Data Type	Modbus TCP/ BACnet data type	Unit/ SNVT_ Type
801	1001	1201	1401	B(x)_Phase	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
802	1002	1202	1402	B(x)_Fuel act.	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Degrees-angular
805	1005	1205	1405	B(x)_Air act.	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Degrees-angular
809	1009	1209	1409	B(x)_VSD	NVUI,switch,value, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Percent
810	1010	1210	1410	B(x)_Current Fuel	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
811	1011	1211	1411	B(x)_Firing Rate	NVUI,switch,value, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Percent
814	1014	1214	1414	B(x)_Flame Signal	NVUI,switch,value, raw	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Percent
826	1026	1226	1426	B(x)_Error Code	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
827	1027	1227	1427	B(x)_Diag Code	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
829	1029	1229	1429	B(x)_Error Phase	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
131	161	191	221	B(x)_Call for heat	NVUI,switch,value, raw	3,4	Dig_Input	BI	0 - off, 1 - on
132	162	192	222	B(x)_Safety Loop	NVUI,switch,value, raw	3,4	Dig_Input	BI	0 - open, 1 - closed
133	163	193	223	B(x)_Gas Switches	NVUI,switch,value, raw	3,4	Dig_Input	BI	0 - closed, 1 - open
134	164	194	224	B(x)_Air Pressure	NVUI,switch,value, raw	3,4	Dig_Input	BI	0 - off, 1 - on
135	165	195	225	B(x)_Alarm	NVUI,switch,value, raw	3,4	Dig_Output	BO	0 - Normal, 1 - Alarm
136	166	196	226	B(x)_Ign. Transformer	NVUI,switch,value, raw	3,4	Dig_Output	BO	0 - off, 1 - on
137	167	197	227	B(x)_Burner Fan	NVUI,switch,value, raw	3,4	Dig_Output	BO	0 - off, 1 - on
138	168	198	228	B(x)_Fuel Valve	NVUI,switch,value, raw	3,4	Dig_Output	BO	0 - off, 1 - on
857,858	1057,1058	1257,1258	1457,1458	B(x)_Hours Run Gas	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Hours
859,860	1059,1060	1259,1260	1459,1460	B(x)_Hours Run Oil	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	Hours
871,872	1071,1072	1271,1272	1471,1472	B(x)_Starts Gas	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
873,874	1073,1074	1273,1274	1473,1474	B(x)_Starts Oil	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
875,876	1075,1076	1275,1276	1475,1476	B(x)_Total Starts	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No-units
885	1085	1285	1485	B(x)_Boiler PV	NVUI,-,-	3,4	Ana_Input/Integer (B5-B8)	Holding Reg /AI	No Unit
139	169	199	229	B(x)_Blr HL	NVUI,switch,value, raw	3,4	Dig_Input	BI	No-units
140	170	200	230	B(x)_Blr LWCO	NVUI,switch,value, raw	3,4	Dig_Input	BI	No-units
888	1088	1288	1488	B(x)_Header PV	NVUI,switch,value, raw	3,4	Dig_Input	Holding Reg /AI	No-units

System	System information			f			
99	B1_Setpoint		3,4	Ana_Input	Holding Reg.	Holding Reg /AV	No-units
100	B1_Firing Rate		3,4	Ana_Input	Holding Reg.	Holding Reg /AI	No-units
299	B2_Setpoint		3,4	Ana_Input	Holding Reg.	Holding Reg /AI	No-units
300	B2_Firing Rate		3,4	Ana_Input	Holding Reg.	Holding Reg /AI	No-units
499	B3_Setpoint	NVUI,Value, SNVT_switch	3,4	Dig_Input	Holding Reg.	Holding Reg /AV	0 - closed, 1 - open
500	B3_Firing Rate	NVUI,Value, SNVT_switch	3,4	Dig_Input	Holding Reg.	Holding Reg /AV	0 - Normal, 1 - Alarm
699	B4_Setpoint		3,4	Ana_Input	Holding Reg.	Holding Reg /AV	No-units
700	B4_Firing Rate		3,4	Ana_Input	Holding Reg.	Holding Reg /AV	0 - Enable, 1 - Disable
899	B5_Setpoint		3,4		Holding Reg.	Holding Reg /AV	
900	B5_Firing Rate		3,4		Holding Reg.	Holding Reg /AV	
1099	B6_Setpoint		3,4		Holding Reg.	Holding Reg /AV	
1100	B6_Firing Rate		3,4		Holding Reg.	Holding Reg /AV	
1299	B7_Setpoint		3,4		Holding Reg.	Holding Reg /AV	
1300	B7_Firing Rate		3,4		Holding Reg.	Holding Reg /AV	
1499	B8_Setpoint		3,4		Holding Reg.	Holding Reg /AV	
1500	B8_Firing Rate		3,4		Holding Reg.	Holding Reg /AV	

* Metasys N2 registers.

► Please note that S3 dipswitch on the gateway have to be in the OFF position (facing left).