nyle Dry Kilns

User Manual

NSC-100

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⚠WARNING Read through entire manual before installing, operating, or servicing this unit. Failure to follow any steps or guidelines could result in personal injury, death, destruction of property or may cause the unit to become inoperable. These are the "original Instructions for this unit."This manual must be kept with the unit at all times.

Safety Guidelines

Precautions

Do not operate if the unit or any of its parts:

- Have been exposed to fire.
- Have been submerged in or exposed to excessive water.
- Has significant interior or exterior damage.

If any of the above are suspected make sure to have your unit serviced by a qualified professional before continuing operation.

**The unit is rated for an ambient temp of 10-40° C, 80 RH % at a maximum 200 meters.*

Electrical Grounding

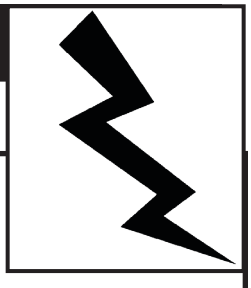
The unit must be grounded.

Failure to ground the unit will result in unreliable performance or an inoperative unit. You can ground the unit by connecting the unit to a grounded metal, permanent wiring system. Make sure the unit is in accordance with national and local electrical codes. If you don't know the building codes in your area or need more information, please contact your municipal office.

**Normally airborne noise is rated at 77 dB.*

⚠WARNING

Electrical Shock!



- Turn off power to unit before service.
- Make sure wires are labeled before disconnecting.
- Test unit after reconnecting wires.
- Failure to do the above could result in death or injury.

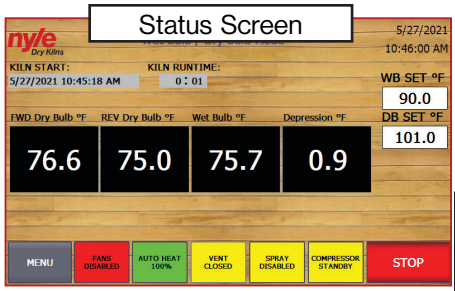
About The Controls

The NSC-100 Kiln Control System is one of Nyle's user-friendly control solutions, designed to boost productivity and simplify kiln operation. Featuring a color touchscreen interface, it allows operators to monitor and manage temperature, humidity, and kiln schedules with precision. Up to 20 customizable steps can be programmed to adjust settings based on time, temperature, or moisture content—ideal for both traditional drying and heat-treat-only cycles. Real-time data logging & trending are built in, with no external computer required.

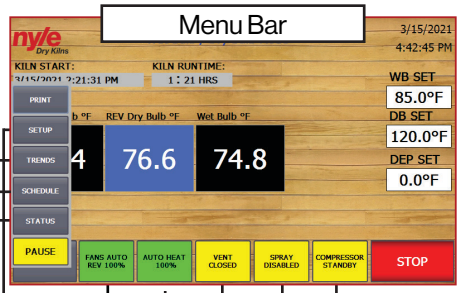
For remote access and control, the NSC-100 includes a built-in web server that works on any device connected to the local network; smart-phones, tablets, or PCs.

Screen Outline

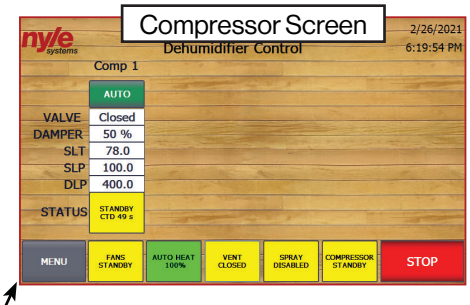
Status Screen



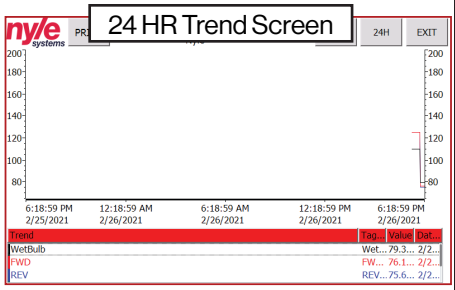
Menu Bar



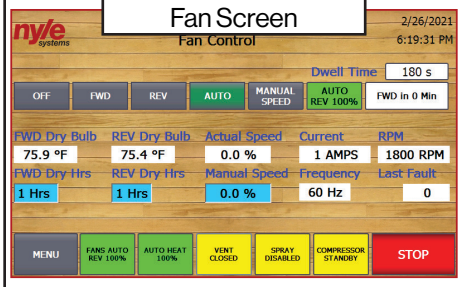
Compressor Screen



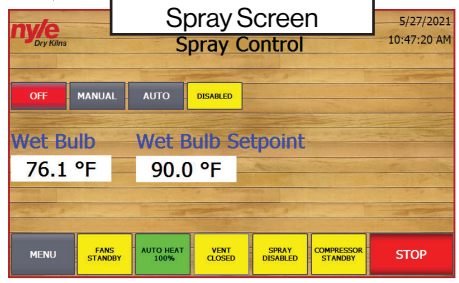
24 HR Trend Screen



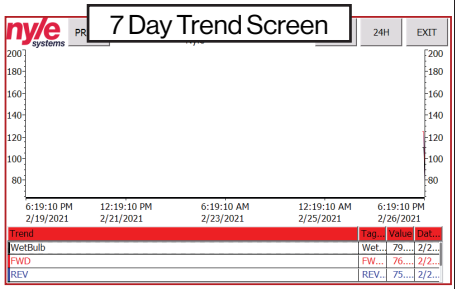
Fan Screen



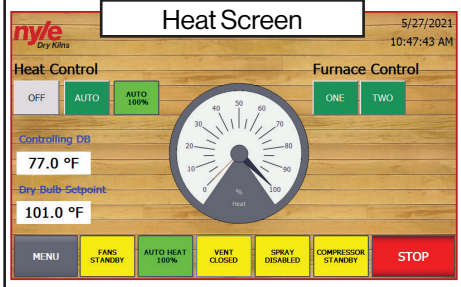
Spray Screen



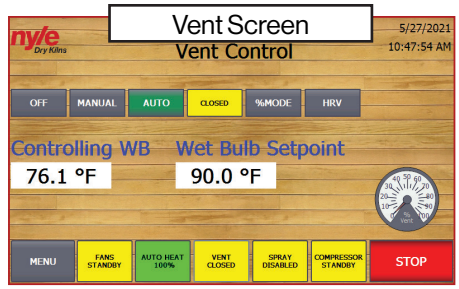
7 Day Trend Screen



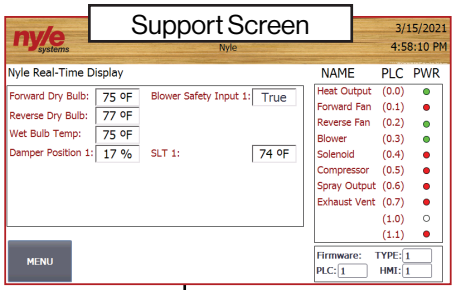
Heat Screen



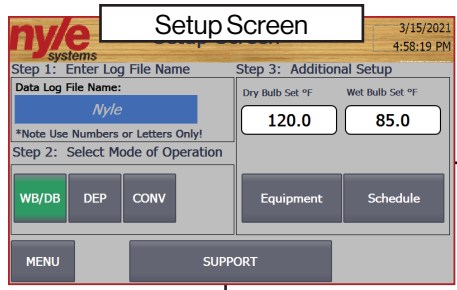
Vent Screen



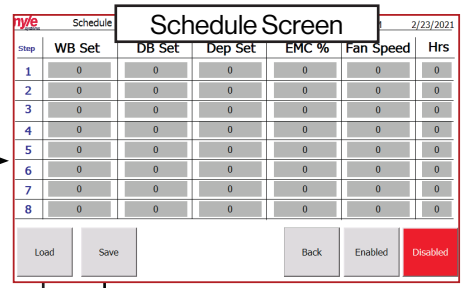
Support Screen



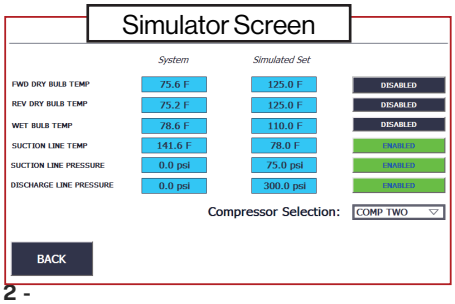
Setup Screen



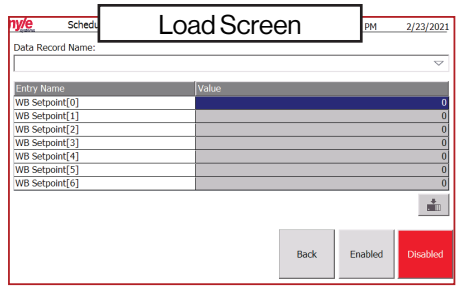
Schedule Screen



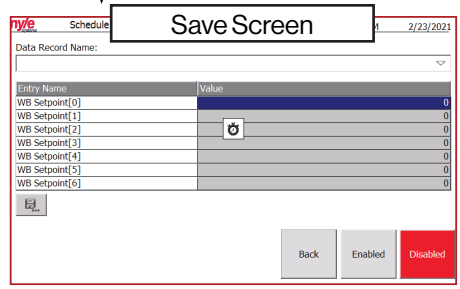
Simulator Screen



Load Screen



Save Screen



Quick Start Guide

Menu Bar.

From the menu bar, the user can navigate to 3 function screens; status screen, trend screen and setup screen.

Function Buttons

MENU The "Menu" button will toggle the function buttons to access the function screens

PRINT The "Print" button allows you to print the screen you are on.

Note: a printer must be installed and configured to your control in order for this feature to work.

SETUP The "Setup" button will bring you to the setup screen where you can enter the log file name, kiln mode as well as naviagte further to the schedule and support screens.

TRENDS The "Trend" button will bring you to the trend screen where you can see the graphs of the kiln cycle.

SCHEDULE The "Schedule" button will bring you to the schedule screen where you can see and edit the kiln's schedule.

STATUS The "Status" button will bring you to the status screen where you can see the status of the kiln cycle.

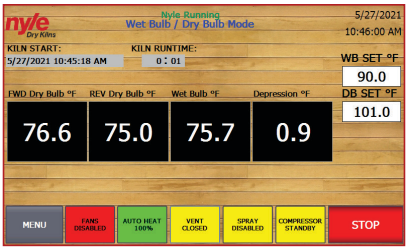
PAUSE The "Pause" button allows you to pause the kiln cycle at any point and be able to resume from where you left off.

Equipment Buttons

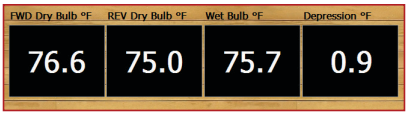
The user can also access the five equipment sceens along the botton. These screens are the fan, heat, vent, spray & compressor. Thes buttons will take the user to the corresponding screens but also display their current conditions

Status Screen

From the status screen, the user can see all of the real time kiln conditions during the drying cycle.



Temperature & Set Points



This section shows the actual temperatures;

FWD - The temperature of the dry bulb sensors in front of the fan wall (if fans are moving in the forward position)

REV - The temperature of the dry bulb sensors behind the fan wall (If fans are moving in reverse)

WET - The average temperature of the wet bulb sensors.

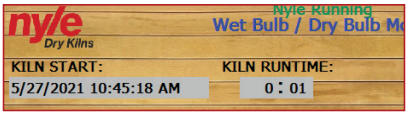
Wet Bulb > Wet Bulb Set Point = Vents open

Wet Bulb < Wet Bulb Set Point = Vents closed

Note: the FWD or REV value that is highlighted in blue indicates which direction the fans are moving. In this case they are running in reverse.

Dry Bulb Set points and Wet Bulb Set points are the current set points used to control. If the schedule is enabled, schedule values are shown on the schedule screen. If the schedule is disabled, these values become "live editable" & the controller will follow the values you enter here.

Kiln Start and Runtime

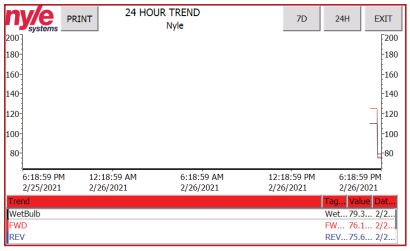


This section logs the start time of the cycle and how long its been running for.

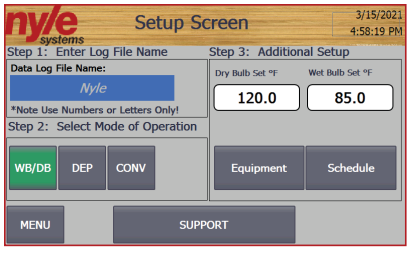
Trend Screen

From the trend screen, the user can see all of the graphs for the kiln cycle.

Note: the user can toggle between a 24 hour & 7 day view by usuing the buttons on the top right of the screen.



Setup Screen



From the Setup screen, the user can set the Log File Name, Select the Mode of operation and navigate to the Schedule and Support Screens.

Log File Name

Under this step the user can select the name that the kiln cycle will be recorded under in the data log.

Select Mode of Operation

Under this step the user can select the mode of operation for the kiln. The user can choose from three modes of operation; Wet Bulb/ Dry Bulb, Depreciation or Conventional.

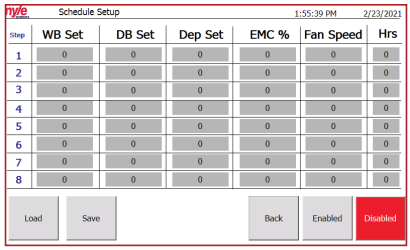
Wet Bulb / Dry Bulb Mode: This mode controls our standard dehumidification system via a wet bulb temperature inside the kiln. The controlling dry bulb (dry bulb based on fan direction) controls the heat output and the exhaust vents.

Depression Mode: This mode controls the heat based on the controlling dry bulb (dry bulb based on fan direction). Either our standard dehumidifications system or the exhaust vents are controlled via the depression inside the kiln (Controlling Dry Bulb Temp – Wet Bulb Temp).

Example: 140F Dry Bulb–100F Wet Bulb = 40F Depression

Conventional Mode: This mode controls the heat based on the controlling dry bulb (dry bulb based on fan direction). The exhaust vents are controlled by the wet bulb temperature.

Schedule Screen



The Schedule Screen has 8 time based steps. For each step you can set;

WB Set - Will call Vent to open when Wet Bulb actual is above this value & to close when below.

DB Set - Will call for Heat to come on when Dry bulb is below this value and will shut off when above.

Fan Speed - Percentage of VFD output. Can be 100% with wood MC above 28% and 80% when below 28%

Hrs - Time to run in this step before progressing to the next step.

Current schedule can be Saved or Loaded from memory.

Takes you back to the Setup Screen.

These buttons enables / disables the Schedule function. When “Enabled” is green, the controller will follow the schedule as per the schedule screen. When “Disabled” is red, the controller will follow the Dry bulb set point and Wet bulb set point, settable “live” on the home screen.

Incase of kiln power failure during schedule

If your kiln experiences power failure during a schedule your kiln will power back up and start the schedule over. To resume where you left off you must;

-Stop the kiln

-Changes the completed steps “Hrs” to 0

-Start the Kiln

Note: Be sure to save this schedule under a different name

Schedule Controls

Entering a Schedule

A new schedule can be entered either manually or by pressing the LOAD button. If no previous schedules have been saved, the HMI will not be able to load a schedule into the PLC control. Navigate to the SETUP screens and then to Schedule to begin the schedule control process.

On the main schedule screen the full 8 step schedule that is currently loaded into the PLC will be displayed. To change values in that schedule simply touch on the desired set-point, enter a new value, & press the return key. Once satisfied with the currently loaded schedule, press the "Enabled" key to run via the automatic set point changing schedule control.

Saving a Schedule

If you would like to SAVE a schedule for later use, first enter into the PLC as described above. Once you are satisfied with the currently loaded schedule press the "Save" button to display the save schedule interface. You may verify the schedule about to be saved by pressing the up and down arrows displayed on the left of the screen. Press the arrow facing left to begin the save process. A pop-up will appear verifying the save command. Press "Yes" followed by "Save As" to rename the schedule in a way that makes sense for the schedule. See image above.

Loading a Saved Schedule

Once a schedule has been saved, it can be reused over and over for efficient drying processes. To load a schedule, navigate to the schedule setup screen. Press the "Load" button to begin the loading process. Press the left arrow once, and press on the schedule you want to load into the PLC. Pressing the "Back" button pushes the new schedule into the PLC for runtime. Verify the loaded schedule before pressing the "Enabled" key.

Data Logging

Starting a Data Log

Logging data with the NSC100 control is simple. Just by entering a LOTID and pressing the start button automatically begins the data logging process. The control is capable of storing up to 2 complete cycle logs in most cases. Once the data log storage space has been filled up on the PLC, an operator message will appear requiring the download and clearing of the logs through the retrieval system.

A log bypass option is available if the data log is not required. To access this operation press "SETUP" & afterwards "SUPPORT". This operator screen will display all system real time data and the log bypass button. Press the log bypass button to disable the data log function.

Retrieving a Data Log

All data logs are stored on the PLC memory card as a CSV data log file. To obtain the data logs the kiln operator may either log into the PLC via the web interface or pull the SD card and copy over the files to a computer.

To retrieve the data through the web interface, enter the IP address of the connected PLC into a web browser connected to the same local area network. Click "ENTER" to proceed into the default Siemens web interface. Login using supplied login from Nyle Systems. Click on "DATA LOGS" to view, download and clear the data logs stored on the PLC. Each log file will have the same name as the LOT ID that was entered when starting the kiln cycle.

Remote Access

Loading a Saved Schedule

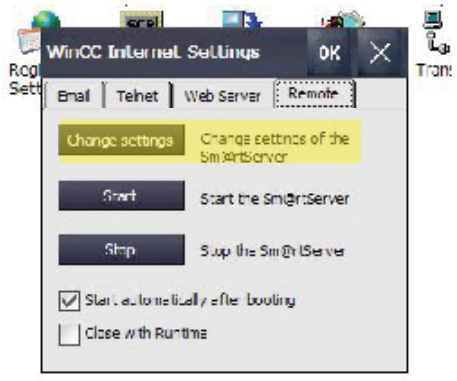
The HMI screen will be configured to enable VNC and HTTP web remote access when shipped. However, you may need to set up remote access after an upgrade or replacement of the HMI, follow the steps below.

Enter the control menu by pressing the top right corner of the screen on the clock.

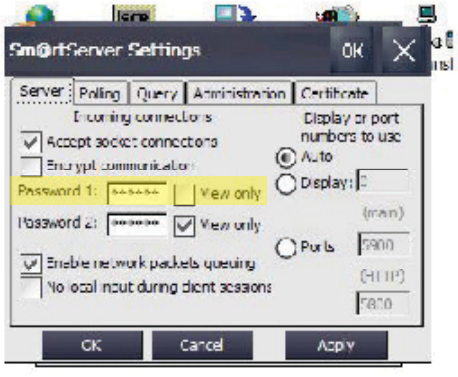
When you are in the control menu, click on WinCC Internet Settings

VNC:

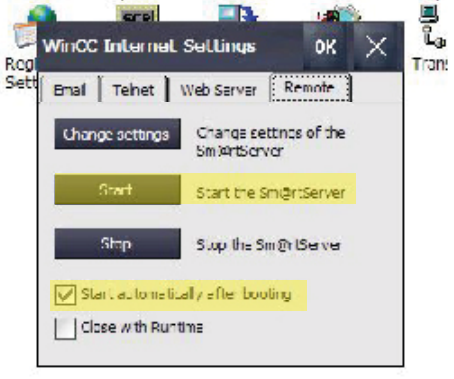
Choose the “Remote” tab and click the “Change Settings” button



Choose the “password 1” box & set the password to the default password of “100” or a user selected password. Note: if the Master password is lost a service charge will be required for a reload of the firmware.



Apply and choose yes to restart.

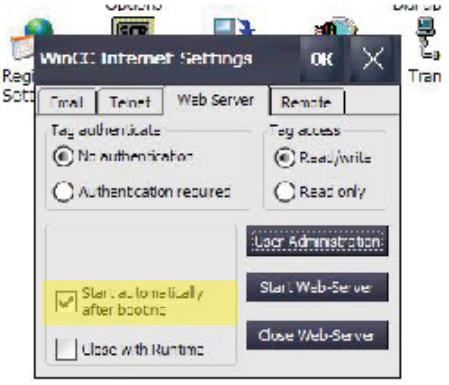


Check the “Start automatically after booting” box.

Press the “Start” button and press OK. You will now have remote access to this HMI.

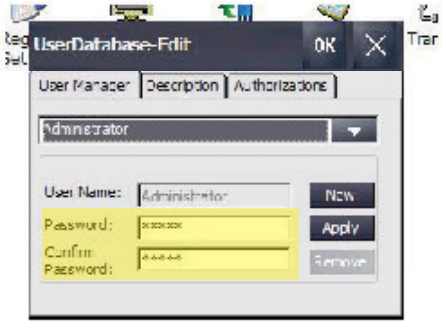
WEB Server:

Choose the “Web Server” tab



Check the “start automatically after booting” Box.

Click “User Administration”



Under the “User Manager”, Change the password and confirm password too the default password of “100” or a user selected password. Note: if the Master password is lost a service charge will be required for a reload of the firmware.

Apply & choose OK and then select yes to restart.

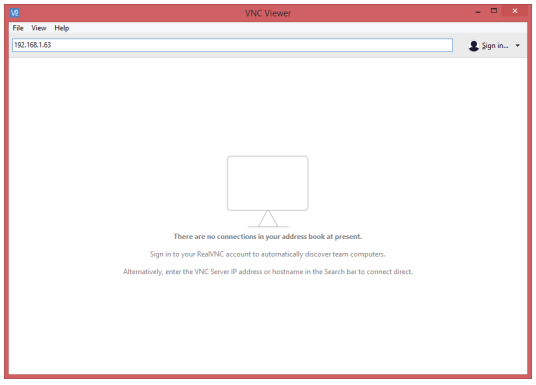
Setting up Remote Access with VNC Viewer

Note: ask your local IT support to set this up.

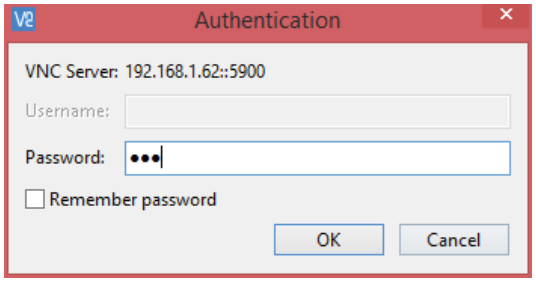
To remote into the HMI screen from another device, the user will need to install a program called VNC Viewer. The link for this program is;

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

After the VNC Viewer is installed, the user will need to set up a connection to the HMI screen. To do this, enter the IP Address of your HMI screen in the search bar at the top of the window in VNC Viewer. The search bar will read Enter a VNC Search address or search. This is where the user will enter in the IP address and press enter.



When the enter key is pressed, a window will pop up asking for a password. The password will always be 100 unless set by the user.



Type in 100 or the defined password and then press OK or enter. This will bring up the same screen that is displayed on the HMI screen and the user will be able to monitor or change values as the user would be able to on the HMI screen.

Warranty

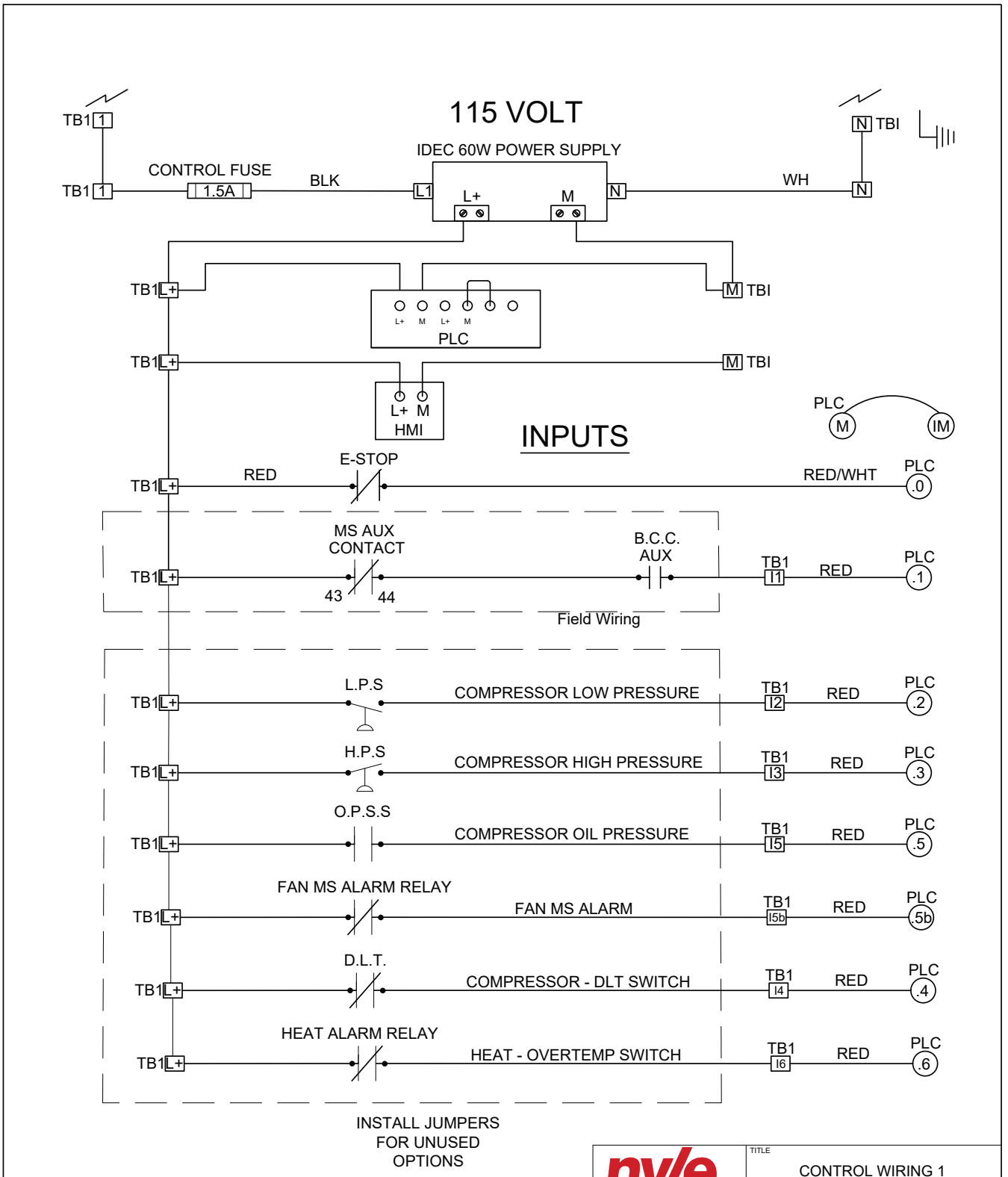
LIMITED WARRANTY: The equipment supplied by Nyle Systems is warranted to be free from defects in workmanship and materials for a period of one year from the date of the original installation under normal use and maintenance, or 15 months from the date of delivery, whichever comes first. A new or re-manufactured part will be supplied by Nyle Systems if the defective part is first returned to Nyle Systems for inspection. The replacement part assumes the unused portion of the warranty. The warranty does not include labor or other costs incurred for diagnosis, repairing or removing, installing or shipping the defective or replacement part(s). Nyle Systems makes no warranty as to the fitness of the equipment for a particular use and shall not be liable for any direct, indirect or consequential damages in conjunction with this contract and/or the use of its equipment. Buyer agrees to indemnify and save harmless Nyle Systems from any claims or demands against Nyle Systems for injuries or damages to the third parties resulting from buyer's use or ownership of the equipment. No other warranties, expressed or implied, will be honored unless in writing by an authorized officer of Nyle Systems.

Model_____

Serial Number_____

Date Purchased _____

Wiring Diagrams



MS AUX CONTACT - MOTOR STARTER AUX CONTACT
B.C.C. AUX - BLOWER CONTACT COIL AUX CONTACT
L.P.S. - LOW PRESSURE SWITCH
H.P.S. - HIGH PRESSURE SWITCH
O.P.S.S. - OIL PRESSURE SAFETY SWITCH
D.L.T. - DISCHARGE LINE THERMOSTAT

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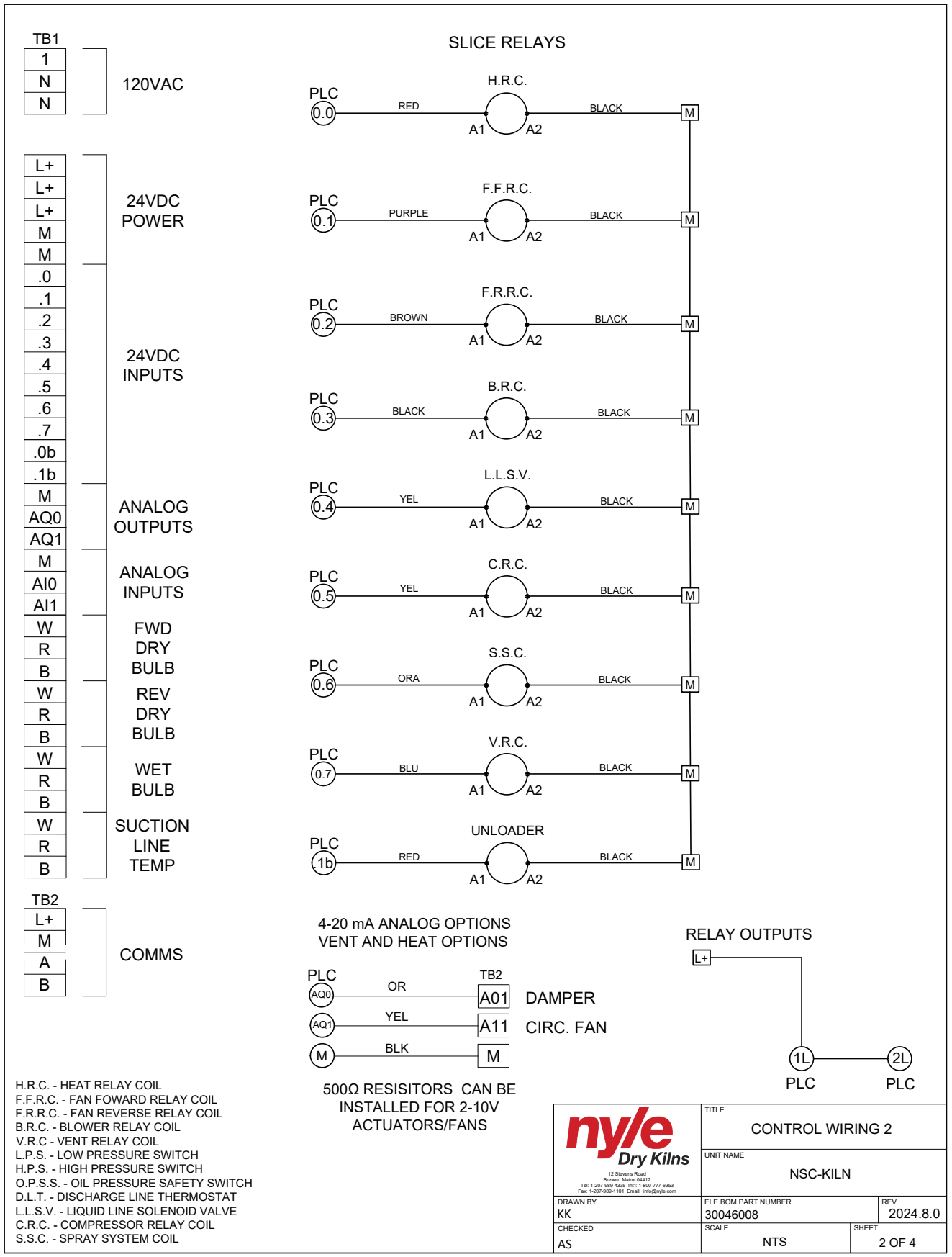
Brewer, Maine 04412
Tel: 1-207-989-4335 Intl: 1-800-777-6953
Fax: 1-207-989-1101 Email: info@nyle.com

TITLE: CONTROL WIRING 1		
UNIT NAME: NSC-KILN		
DRAWN BY: KK	ELE BOM PART NUMBER: 30046008	REV: 2024.8.0
CHECKED: AS	SCALE: NTS	SHEET: 1 OF 4

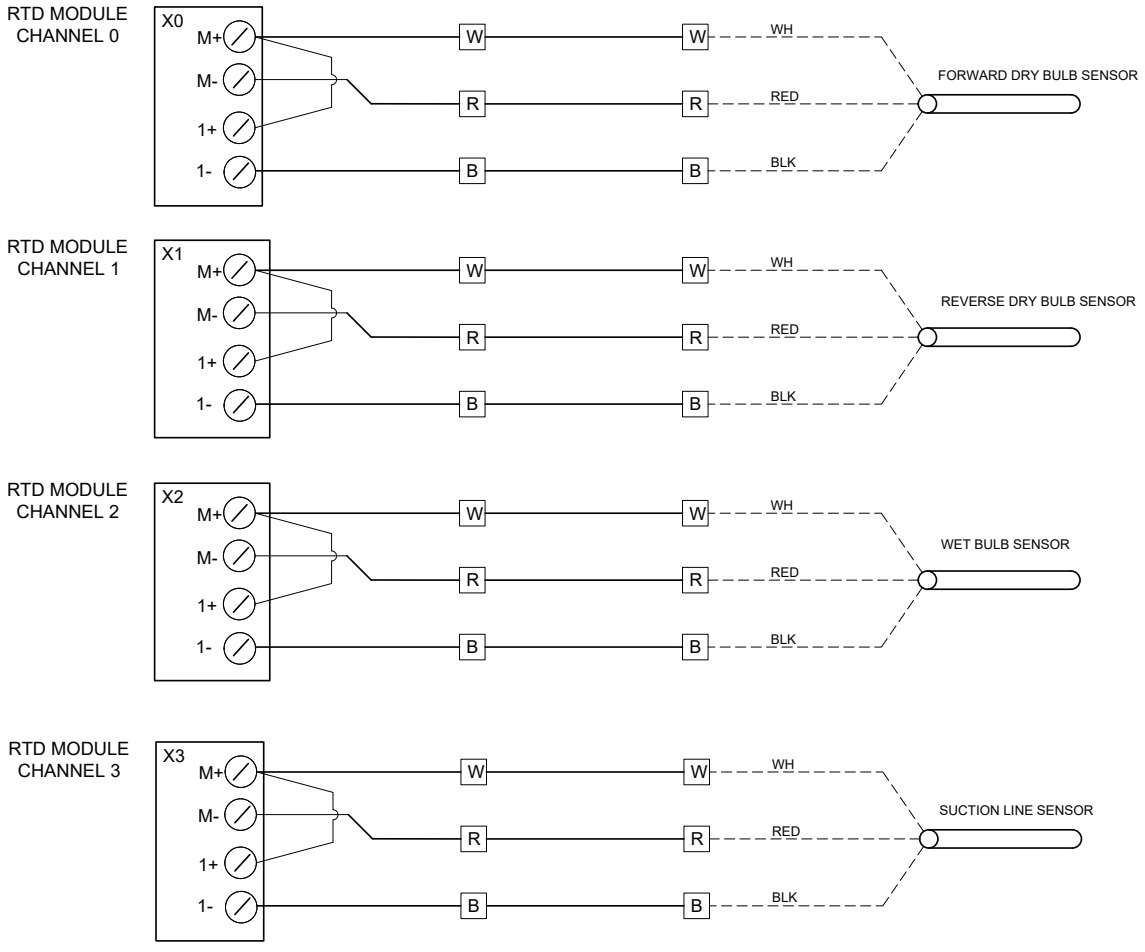


H.R.C. - HEAT RELAY COIL
F.F.R.C. - FAN FOWARD RELAY COIL
F.R.R.C. - FAN REVERSE RELAY COIL
B.R.C. - BLOWER RELAY COIL
V.R.C - VENT RELAY COIL
L.P.S. - LOW PRESSURE SWITCH
H.P.S. - HIGH PRESSURE SWITCH
O.P.S.S. - OIL PRESSURE SAFETY SWITCH
D.L.T. - DISCHARGE LINE THERMOSTAT
L.L.S.V. - LIQUID LINE SOLENOID VALVE
C.R.C. - COMPRESSOR RELAY COIL
S.S.C. - SPRAY SYSTEM COIL

nyle Dry Kilns
12 Stevens Road
Brewer, Maine 04412
Tel: 1-207-989-4335 Int'l: 1-800-777-6953
Fax: 1-207-989-1101 Email: info@nyle.com

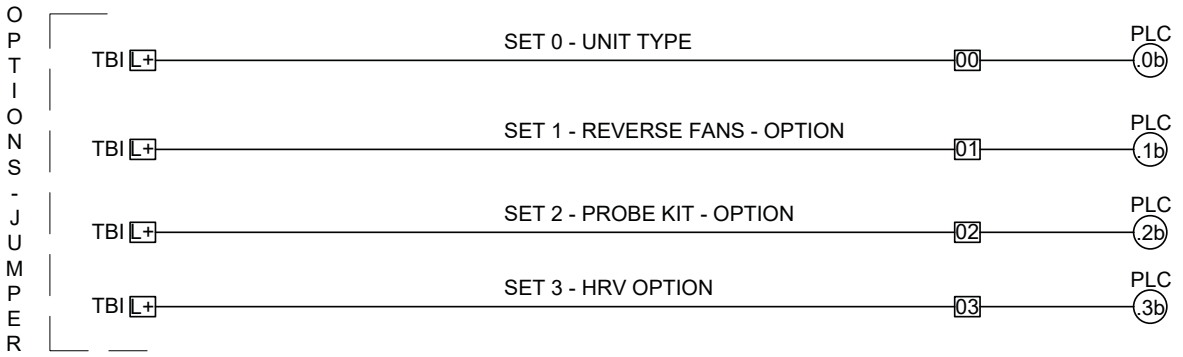
TITLE: CONTROL WIRING 2		
UNIT NAME: NSC-KILN		
DRAWN BY: KK	ELE BOM PART NUMBER: 30046008	REV: 2024.8.0
CHECKED: AS	SCALE: NTS	SHEET: 2 OF 4

RTD SENSOR INPUTS



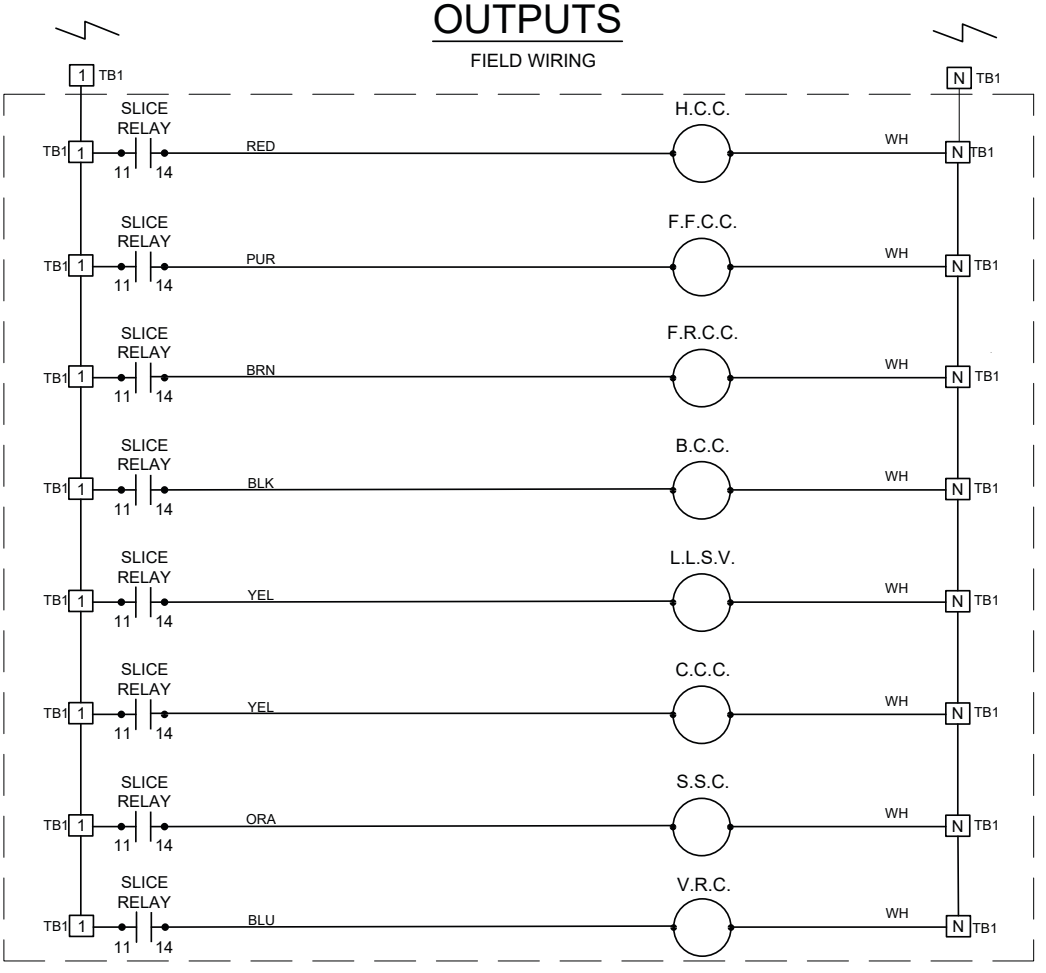
nyle Dry Kilns 12 Stevens Road Brewer, Maine 04412 Tel: 1-207-989-4335 Int'l: 1-800-777-6953 Fax: 1-207-989-1101 Email: info@nyle.com	TITLE: CONTROL WIRING 3	
	UNIT NAME: NSC-KILN	
DRAWN BY: KK	ELE BOM PART NUMBER: 30046008	REV: 2024.8.0
CHECKED: AS	SCALE: NTS	SHEET: 3 OF 4

INPUTS CONT'D



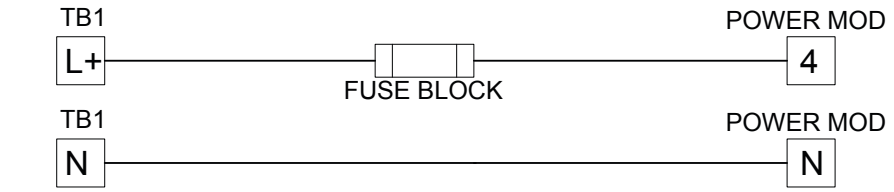
OUTPUTS

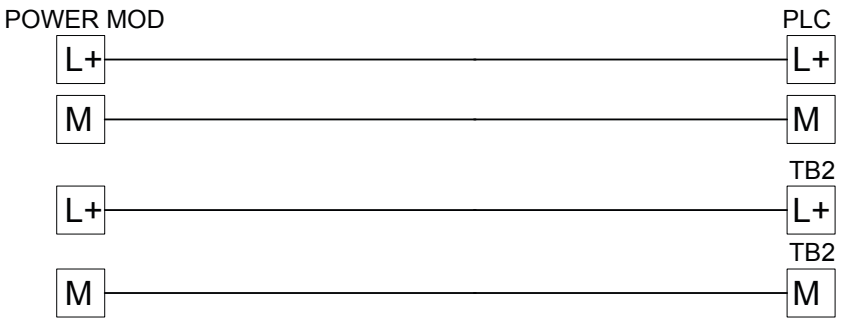
FIELD WIRING

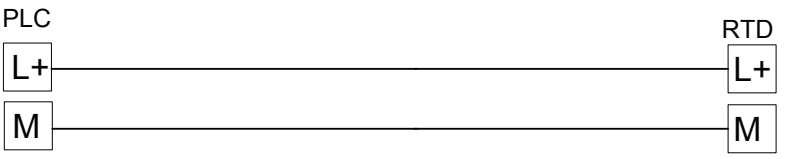


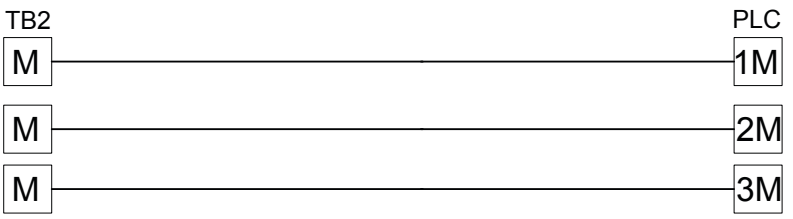
nyle Dry Kilns 12 Stevens Road Brewer, Maine 04412 Tel: 1-207-989-4335 Int'l: 1-800-777-6953 Fax: 1-207-989-1101 Email: info@nyle.com	TITLE: CONTROL WIRING 4	
	UNIT NAME: NSC-KILN	
DRAWN BY: KK	ELE BOM PART NUMBER: 30046008	REV: 2024.8.0
CHECKED: AS	SCALE: NTS	SHEET: 4 OF 4

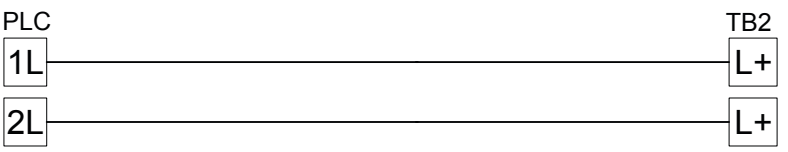
PLC POWER WIRING



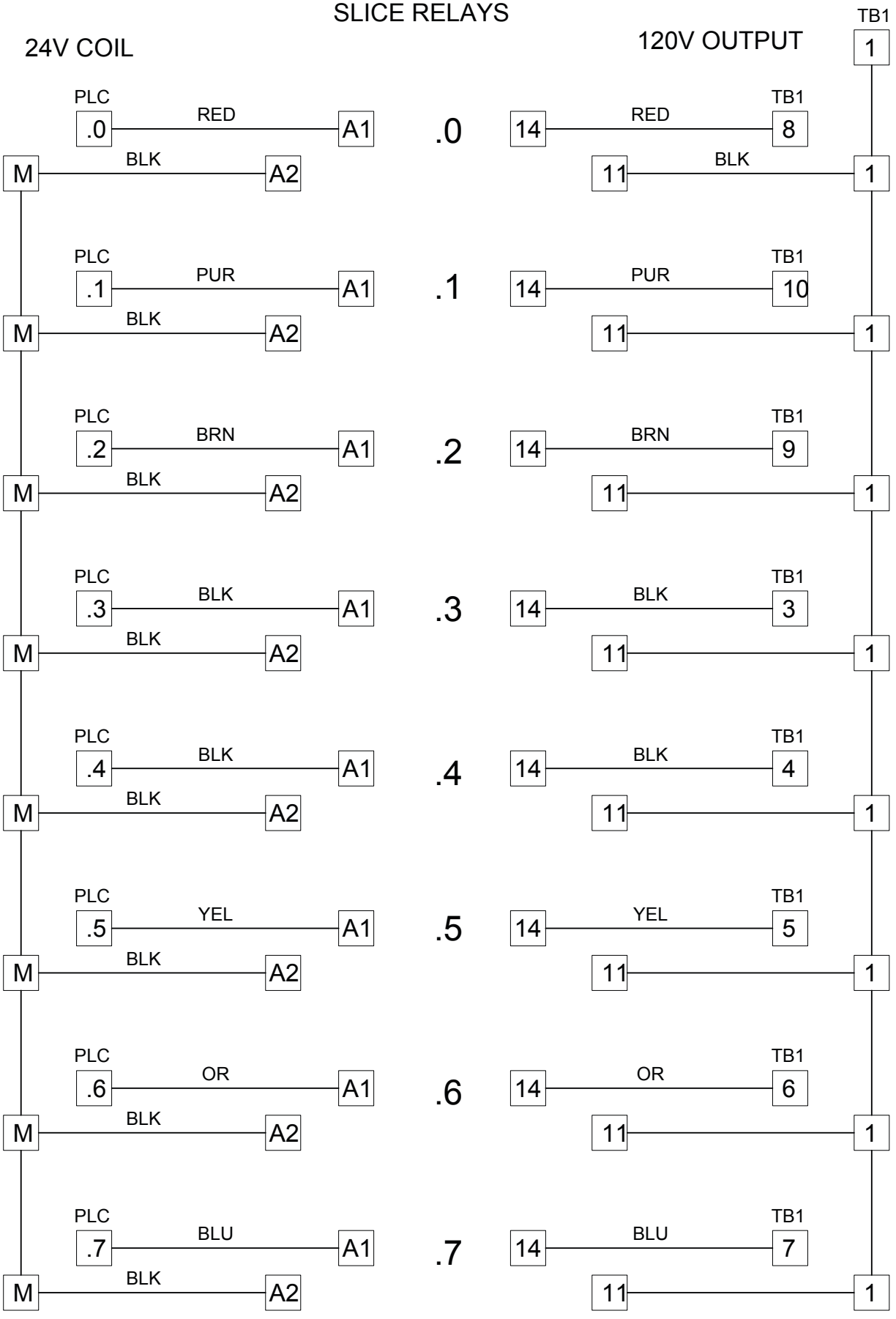




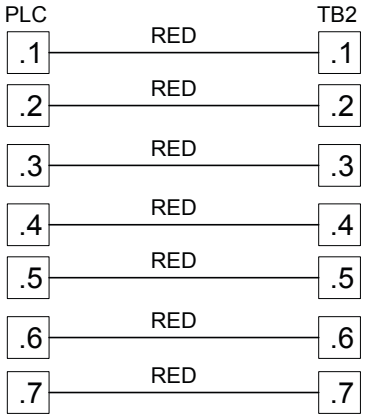




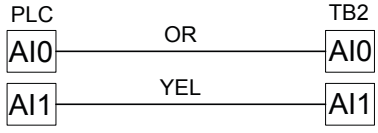
SLICE RELAYS



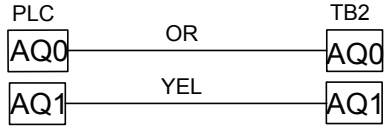
24V INPUTS



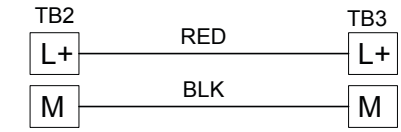
0-10VDC ANALOG IN

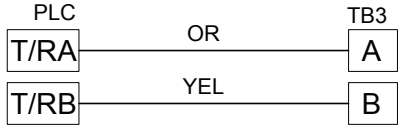


4-20 mA ANALOG OUT



RS-485 MODBUS





nyle systems 12 Stevens Road Brewer, Maine 04412 Tel: 1-207-989-4335 Int'l: 1-800-777-6953 Fax: 1-207-989-1101 Email: info@nyle.com	TITLE: NSC100 INPUTS	
	CUSTOMER	
DRAWN BY: NR	DWG FILE NAME	REV: 1.0
CHECKED	SCALE: NTS	SHEET: 1 OF 1

Service Log

Issue Description	Date	Servicer

Service Log

Issue Description	Date	Servicer

Service Log

Issue Description	Date	Servicer

Contact Us

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