Rethink
integration

Honeywell

ARE YOU READY TO
RETHINK INTEGRATION?

THE POWER TO
DEVELOP DIFFERENTIATED SOLUTIONS

THE POWER TO
ENTER NEW MARKETS

THE POWER TO

CAPTURE MORE
MARKET SHARE

Main
Power

Menu

OK

Home

CONFIGURABLE SAFETY + PROGRAMMABLE LOGIC

IN A SINGLE PLATFORM
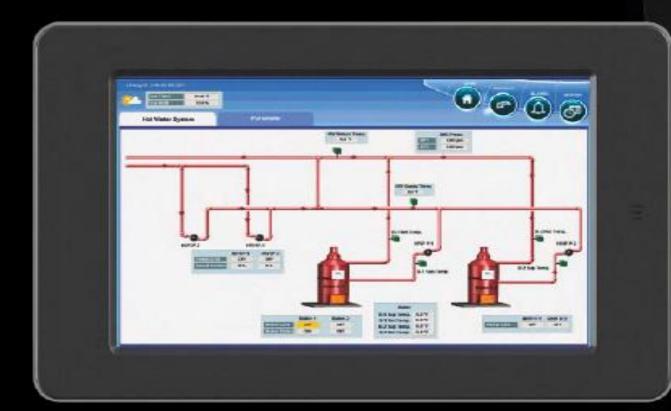
MODULAR DESIGN

HELPS SPEED PROGRAMMING, ENGINEERING AND PRODUCTION

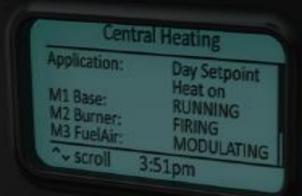**FEWER COMPONENTS**

LESS WIRING

FASTER TIME TO MARKET

MODULAR DESIGN

HELPS SPEED PROGRAMMING, ENGINEERING AND PRODUCTION

SLATE™

INTEGRATED COMBUSTION
EQUIPMENT MANAGEMENT

SLATE Overview

Amy Davidson

SLATE™

Configurable safety smoothly integrated with programmable logic

▶ Does not replace or is a substitute for the 7800/SOLA

▶ Our competitors have nothing like this

▶ Our customers have been asking for this

▶ Will differentiate Honeywell

▶ We have been waiting for this for a very long time

▶ Customers have a "blank" SLATE

Why SLATE?

"For commercial and industrial combustion customers that need differentiation, Honeywell's SLATE™ system provides a platform to enable customer's to design their custom applications in weeks not months or years unlike today's standard flame safeguard and programmable logic controllers. We do this by offering a flexible and configurable platform that reduces time to market for their combustion systems"

SLATE Brings Effort

EFFORT	REVENUE
Reduce Programming Time	Increase Take per Application
Reduce Wiring	Increase Market Share
Reduce Hardware Complexity	Increase Profitability
Reduce Troubleshooting Time	Increase Differentiation
Reduce Panel Footprint	Increase Speed to Market
Reduce Time To Market	Increase Productivity

Let's take a closer look

►Base
  • Power Supply, Communications

►Configurable Safety
  • Burner Control, Flame Amps, Fuel Air Ratio, Limit

►Programmable Logic
  • Digital and Analog I/O
  • Annunciation

Meet the Base Module

►Power Supply and Communications
- 24 VDC or 24 VAC to 240 VAC
- Modbus IP/RS485
- BACNet IP/MSTP (RS-485)
- Web Services

►Why is this important?
- Multiple voltage options
- No need for JACE or Gateways
- See information from Smart Phone
- Remote troubleshooting

Meet the Base Module

►Display
- Simple clean messaging
- Menu driven
- Configuration and setup

►Why is this important?
- Human Factors element provides better user experience
- Easy to understand messaging
- Easy to follow navigation
- Save time when troubleshooting
- Commissioning and panel checkout
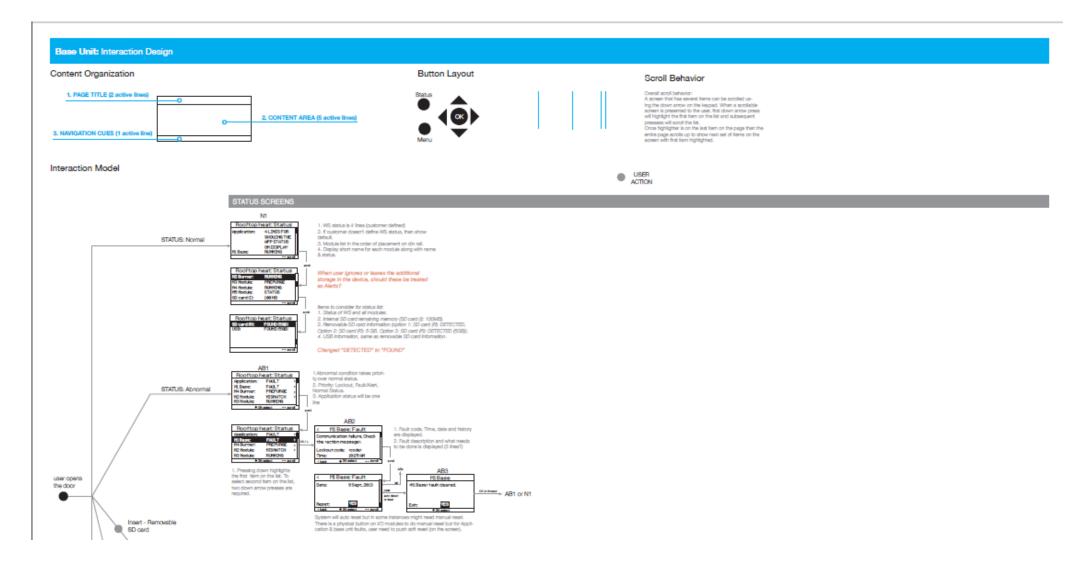
Human Factors

Meet the Base Module

Display

Meet the Burner Control Module

▶ 7800/SOLA Series emulation

▶ Safety relay

▶ Dual fuels

▶ Valve Proving

▶ Provides 24 VDC flame safeguard

▶ Automatically adapts to 24 VDC or 24 VAC to 240 VAC

Why is this important?
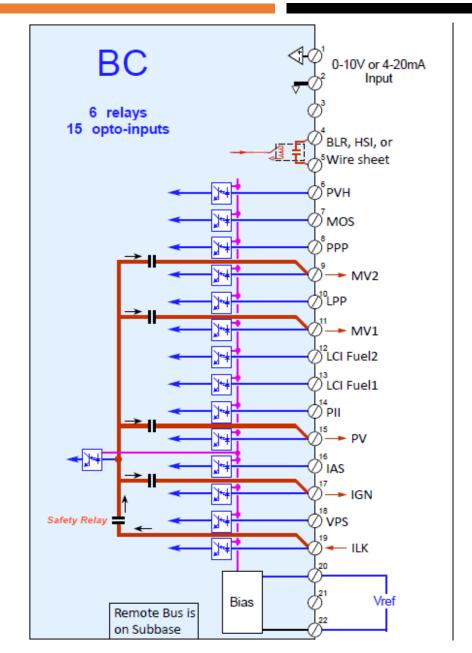
▶ Customer is familiar with it

▶ No additional PLC wiring, communication or troubleshooting

▶ Fault indication clean and concise

SLATE™ Burner Control

Meet the Fuel Air Ratio Control Module

▶ 4 actuators

▶ 2 VFDs (or low voltage I/O)

▶ RS-485 communications to actuators

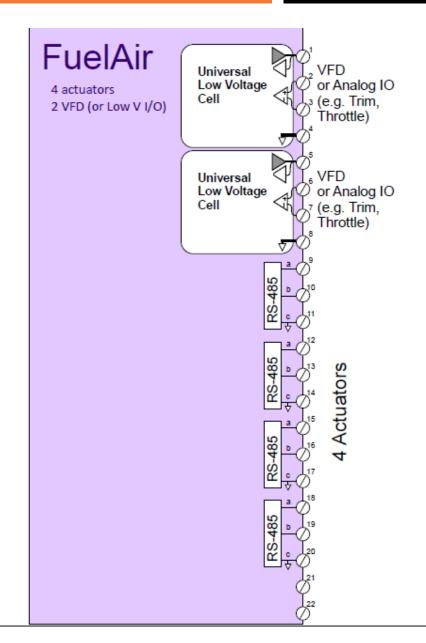▶ Wide range of torque sizes 50 in/lb to 900 in/lb

Why is this important?

▶ Predefined commissioning curves

▶ Graphical representation and larger views

▶ Up to 24 points on each curve

▶ Diagnostic feedback information

▶ Analog cell could be used for other purposes other than VFD

SLATE™ Fuel Air Ratio Control

Meet the SLATE Actuators

▶ 50 in/lb (NEMA 1 and NEMA 4)

▶ 150 in/lb (NEMA 1 and NEMA 4)

▶ 300 in/lb and 900 in/lb Durastep for SLATE

Why is this important?

▶ Field reversible clockwise and counterclockwise rotation

▶ Internal temperature, valve status, and health diagnostics

▶ Robust heavy duty construction for continuous duty cycle rated

▶ Closed loop position control

▶ Meets UL353 Safety for Limit Controls

Meet the Flame Amp Modules
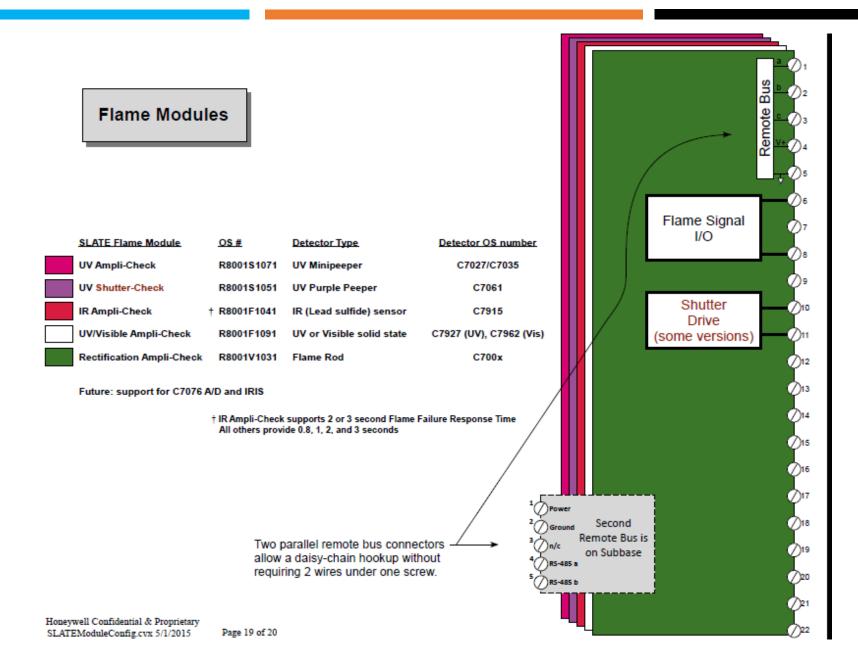
▶ UV with Dynamic Ampli-Check and Dynamic Self-Check

▶ Low Voltage IR with Dynamic Ampli-Check

▶ Low Voltage UV/Visible with Dynamic Ampli-Check

▶ Rectification with Dynamic Ampli-Check and Dynamic Self Check

Why is this important?

▶ Easy to daisy chain multiple detectors

▶ Remote mounting closer to sensor prevents voltage drops

▶ RS-485 communication has advantage of no noise

▶ Multiple flavors

▶ Display flame strength

Flame Detector Reference

Flame Modules

SLATE Flame Module	OS #	Detector Type	Detector OS number
UV Ampli-Check	R8001S1071	UV Minipeeper	C7027/C7035
UV Shutter-Check	R8001S1051	UV Purple Peeper	C7061
IR Ampli-Check	† R8001F1041	IR (Lead sulfide) sensor	C7915
UV/Visible Ampli-Check	R8001F1091	UV or Visible solid state	C7927 (UV), C7962 (Vis)
Rectification Ampli-Check	R8001V1031	Flame Rod	C700x

Future: support for C7076 A/D and IRIS

† IR Ampli-Check supports 2 or 3 second Flame Failure Response Time
All others provide 0.8, 1, 2, and 3 seconds

Remote Bus

Flame Signal I/O

Shutter Drive (some versions)

Two parallel remote bus connectors allow a daisy-chain hookup without requiring 2 wires under one screw.

1 Power
2 Ground
3 n/c
4 RS-485 a
5 RS-485 b

Second Remote Bus is on Subbase

Meet the Limit Module

► 4 sensors, 8 limits and 2 dual limits

► Safety relay

► Dual tracking

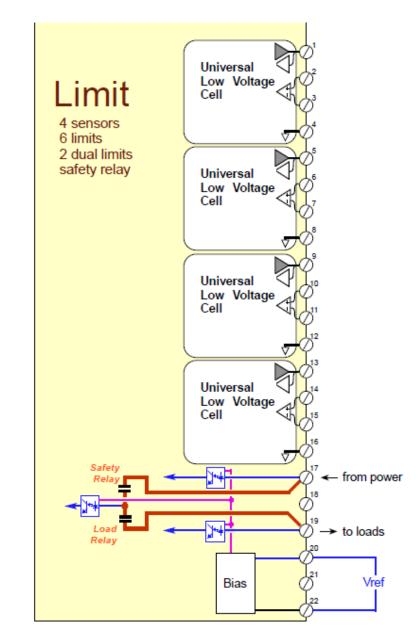► Limit on threshold or rate of change

Why is this important?

► Gets into applications where high temp limits are needed

► Replaces expensive limits

► Safety limits on virtually any analog signal

► Such as 4-20mA, NTC, RTD, PWM
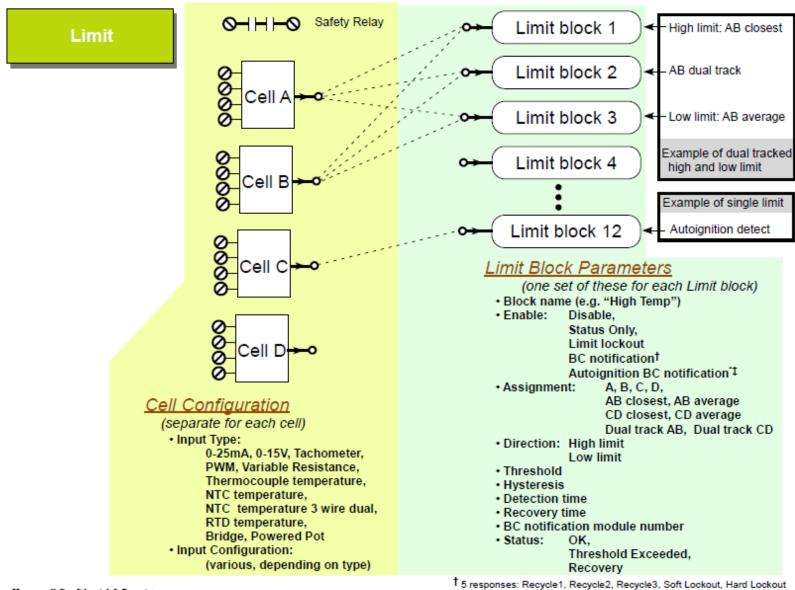
► One limit module for multiple burner controls

SLATE™ Limit

SLATE™ Limit

Limit

Safety Relay

Cell A — **Cell B** — **Cell C** — **Cell D**

Limit block 1 ← High limit: AB closest
Limit block 2 ← AB dual track
Limit block 3 ← Low limit: AB average
Limit block 4
Example of dual tracked high and low limit

Limit block 12 ← Autoignition detect
Example of single limit

Cell Configuration
(separate for each cell)

- Input Type:
  - 0-25mA, 0-15V, Tachometer,
  - PWM, Variable Resistance,
  - Thermocouple temperature,
  - NTC temperature,
  - NTC temperature 3 wire dual,
  - RTD temperature,
  - Bridge, Powered Pot
- Input Configuration:
  - (various, depending on type)

Limit Block Parameters
(one set of these for each Limit block)

- Block name (e.g. "High Temp")
- Enable:
  - Disable,
  - Status Only,
  - Limit lockout
  - BC notification[†]
  - Autoignition BC notification[†‡]
- Assignment:
  - A, B, C, D,
  - AB closest, AB average
  - CD closest, CD average
  - Dual track AB, Dual track CD
- Direction: High limit
  - Low limit
- Threshold
- Hysteresis
- Detection time
- Recovery time
- BC notification module number
- Status:
  - OK,
  - Threshold Exceeded,
  - Recovery

[†] 5 responses: Recycle1, Recycle2, Recycle3, Soft Lockout, Hard Lockout
[‡] 3 responses: Ignore flame sensor, No prepurge needed, Both

Meet the Digital I/O Module

- ►14 opto inputs
- ►6 relays
- ►Automatically adapts to 24 VDC or 24 VAC to 240 VAC

Why is this important?

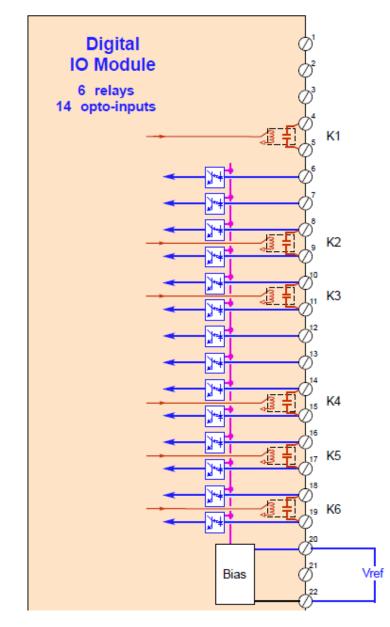- ►PLC customers have to buy multiple flavors
- ►One module can provide any voltage
- ►No BMS competitor offers this I/O density without going to a PLC

SLATE™ Digital I/O Module

Meet the Analog I/O Module

- ▶ 4 Analog cells per module
- ▶ Each cell offers multiple combination of analog functionality
- ▶ Voltage, Current, PWM, Tach, RTD, NTC, Thermocouple

Why is this important?

- ▶ Customers using PLCs have to purchase multiple modules
- ▶ Flexible use of terminals
- ▶ Reduces the number of modules and SKUs that customers have to deal with
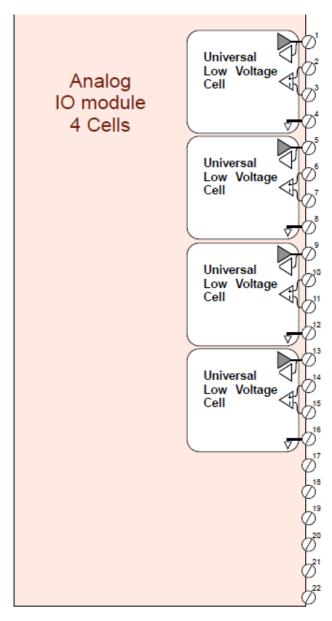
SLATE™ Analog Module

Meet the Annunicator Module

►14 opto-inputs

►1 relay

►Provides first out annunciation

►Responds to trigger events from burner control or programmable logic

►Automatically adapts to 24 VDC or 24 VAC to 240 VAC

Why is this important?
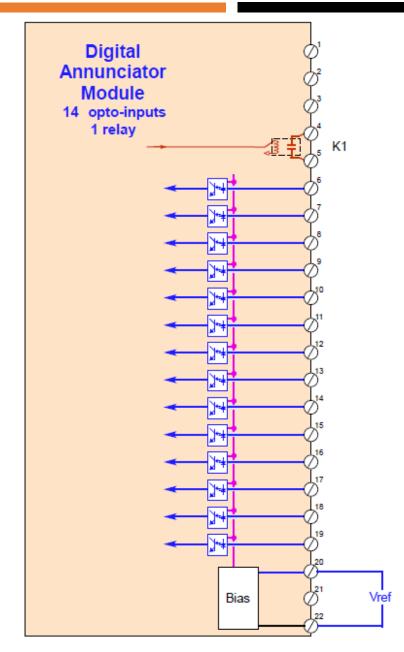
►Tells which interlock in a string of interlocks caused shut-down or hold

►Make multiple annunciation strings with one module
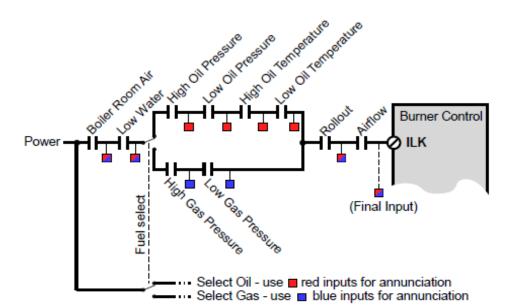
►Provides current status

SLATE™ Annunciator
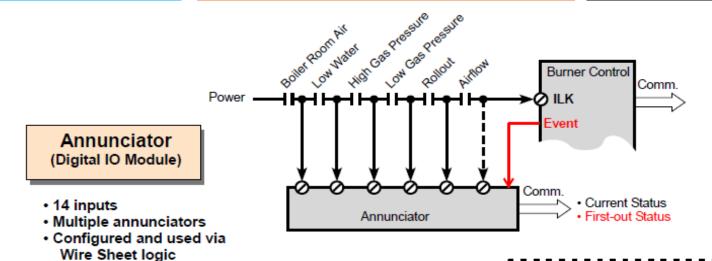
SLATE™ Annunciator

Annunciator
(Digital IO Module)

- 14 inputs
- Multiple annunciators
- Configured and used via Wire Sheet logic

Inputs: Boiler Room Air, Low Water, High Gas Pressure, Low Gas Pressure, Rollout, Airflow

Power → ILK → Burner Control → Comm.

Event

Annunciator → Comm.
- Current Status
- First-out Status

Event Triggers

Burner Control (20 mS resolution)
- ILK - Interlocks
- IAS - Interrupted Air Switch
- PII - Preignition Interlocks
- LCI/F1 - Limits / Fuel 1
- LCI/F2 - Limits / Fuel 2

Wire sheet block (1/4 to 1S resolution)
- Digital inputs
- Any logic event

Inputs: Boiler Room Air, Low Water, High Oil Pressure, Low Oil Pressure, High Oil Temperature, Low Oil Temperature, High Gas Pressure, Low Gas Pressure, Rollout, Airflow

Power → ILK → Burner Control

Fuel select

(Final Input)

Select Oil - use ■ red inputs for annunciation
Select Gas - use ■ blue inputs for annunciation
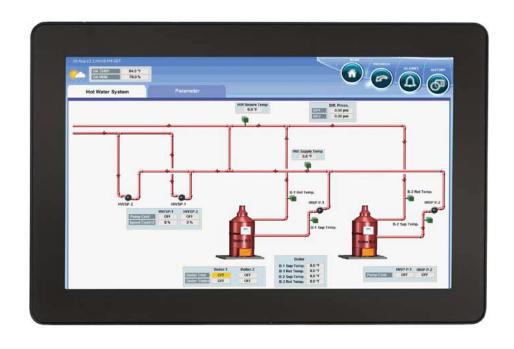
Meet the Display

Display and Communications

► 7" color touch screen display

► Display web page technology

► Programming tool

Why is this important?

► Latest web technology

► Drop and drag configuration cuts programming time

► Web services allows footprint for other displays if needed

► Provides a level of differentiation for customers

► End users can make better decisions

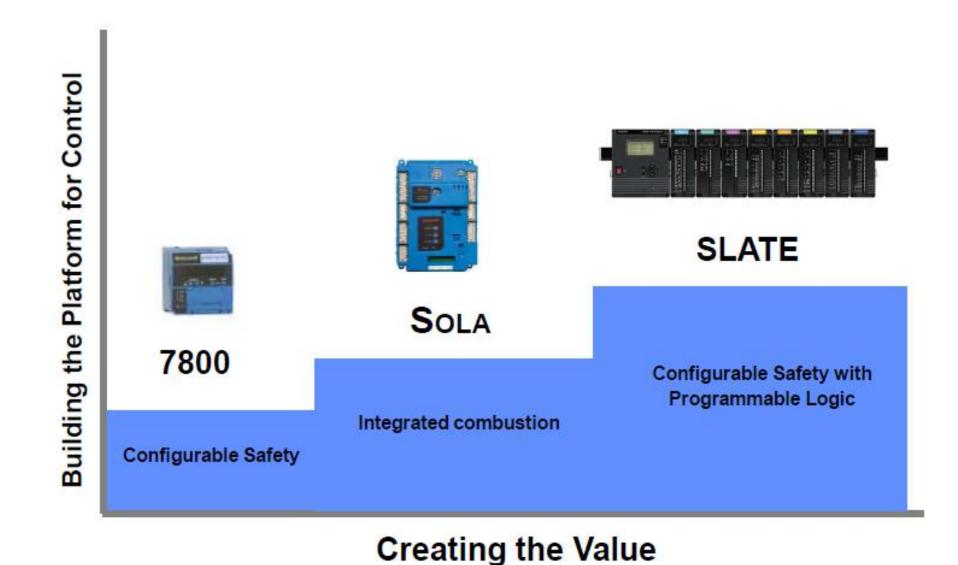# SLATE™ Positioning

Customers
► OEMs
► Systems Integrators

Applications
► Burner/ Boiler Controls
► Furnace
► Make-up Air
► Paint booths
► Batch Ovens
► Batch Applications with 2 to 3 zones and high temp limit
► 5 zones or less with basic PID look
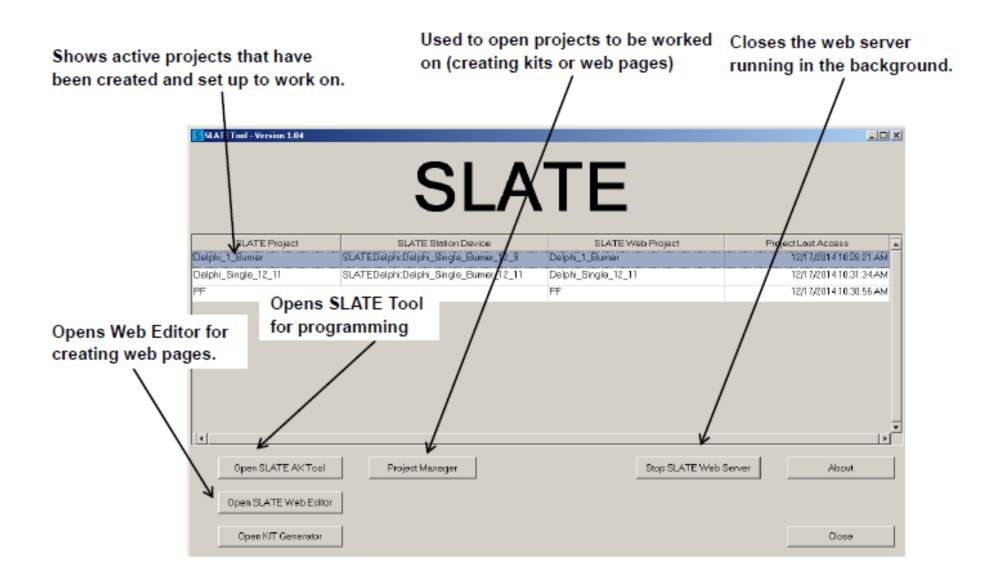
Our Controls Platform
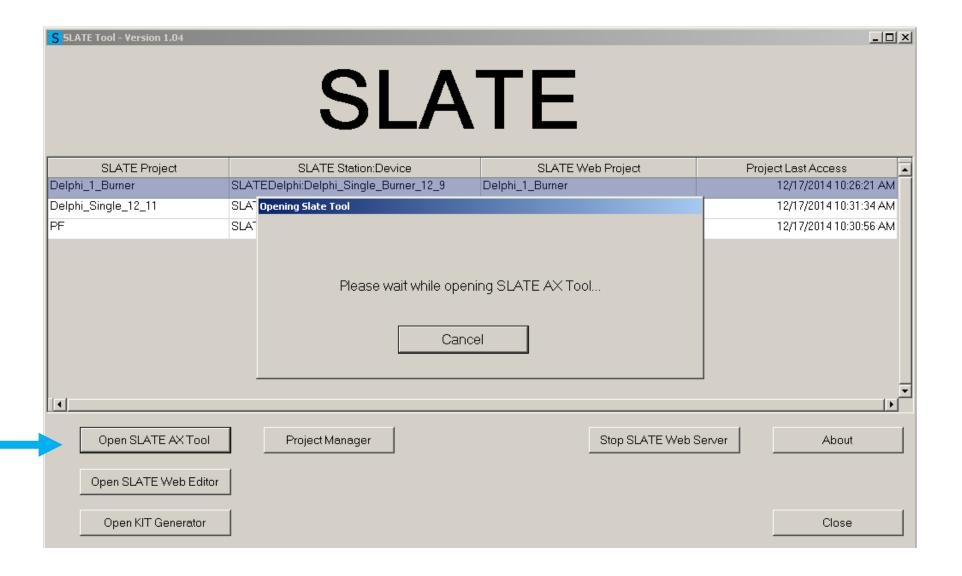
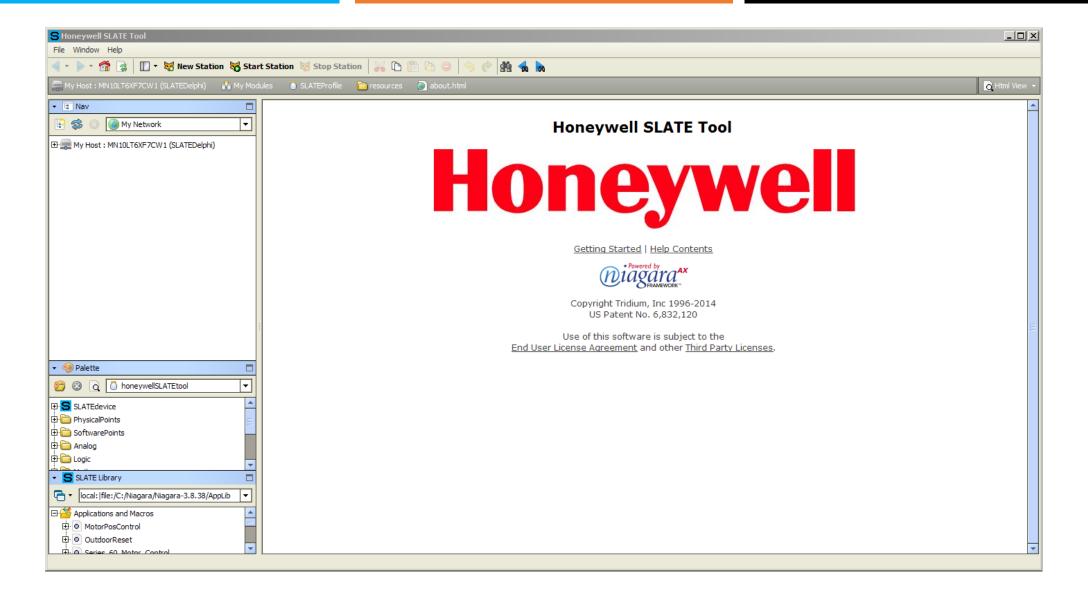# SLATE AX Tool

Improved User Experience- Profiled Version
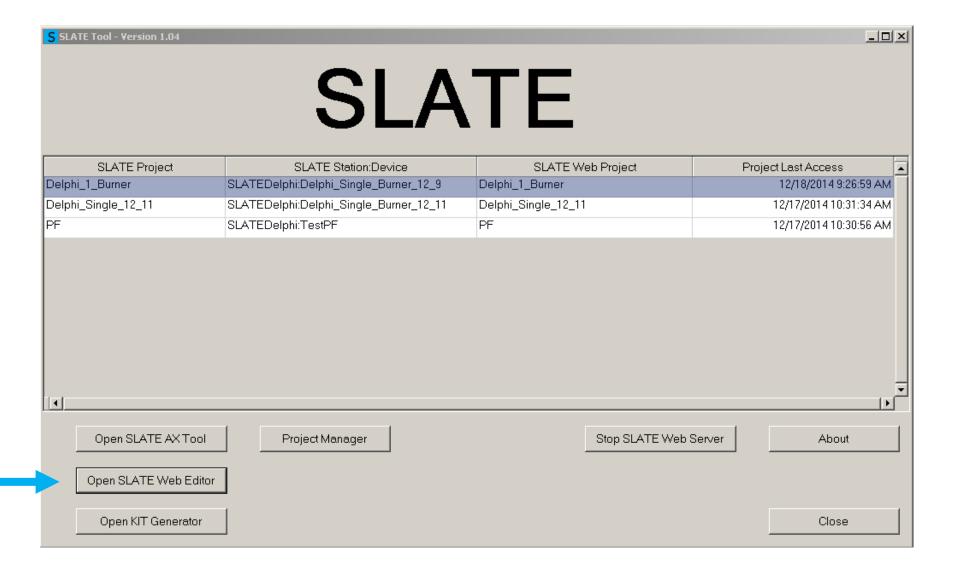
Improving the User Experience- Profiled Version

Improved User Experience- Profiled Version
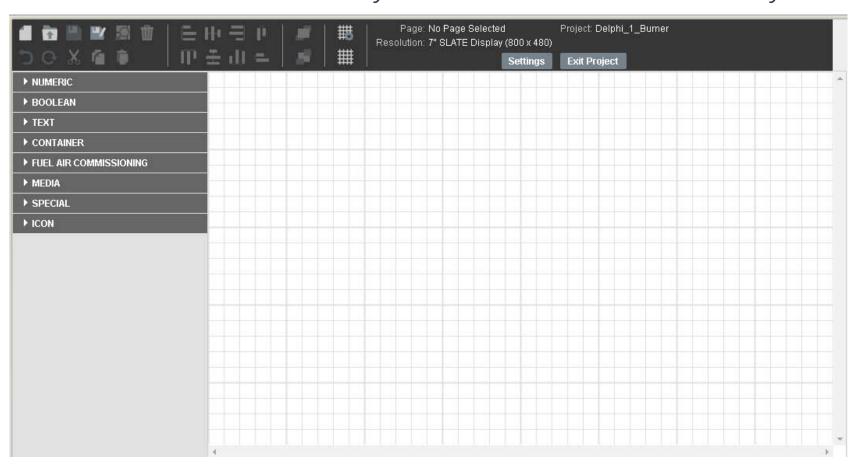
Improved User Experience- Web Editor

Improved User Experience- Web Editor

The Web Editor will load... make sure you have Chrome loaded on your machine!
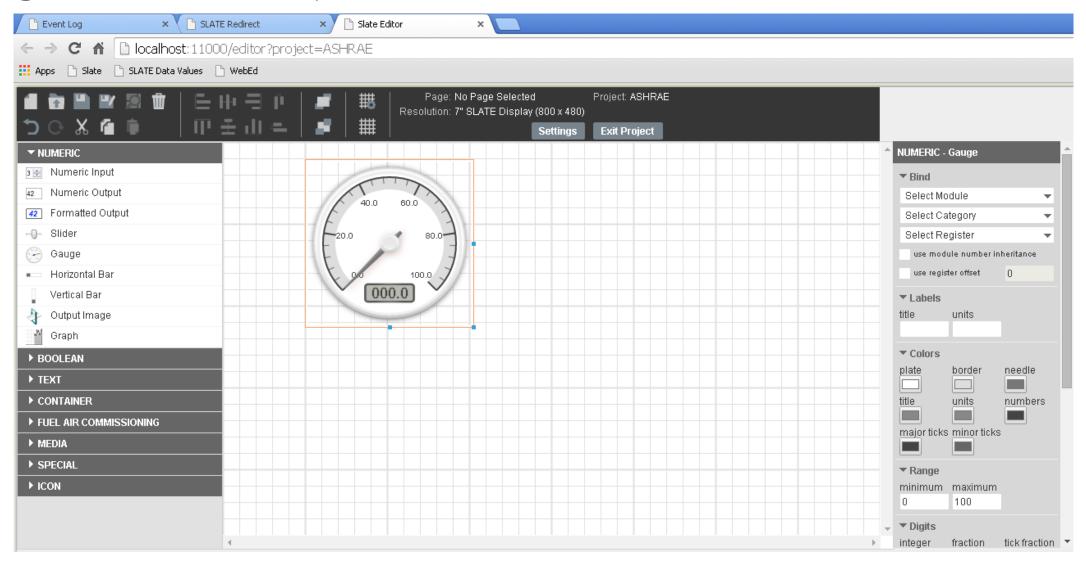

The project is already bound to your wire sheet (automatically).

Improved User Experience- Web Editor

Design Element and Properties

SLATE Launch

SLATE™ Launch Summary

Content

Microsite – Software & Content Delivery
Configurator Product Selection Tool
Product Samples
Case Studies
Application Notes & White Papers
Industry Specifications – Specifying Engineers
Testimonials – Video & Written
Promotional Video

Training Materials, Labs, Demos
How To Videos
SFDC Dashboard
SFDC Chatter Board
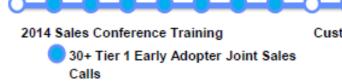Canned Application Programs
Customer Facing Tech Support Guide
Road Show Promotional Items
Industry Publications
Trade Show Content

Call Connect Fixed

chatter

Configure SLATE

Launch Events

January 2014

January 2015

2014 Sales Conference Training
30+ Tier 1 Early Adopter Joint Sales Calls

Customer & Sales Training (GV)
Maxon ESG Training (Muncie)
LAR & APAC Training (GV)
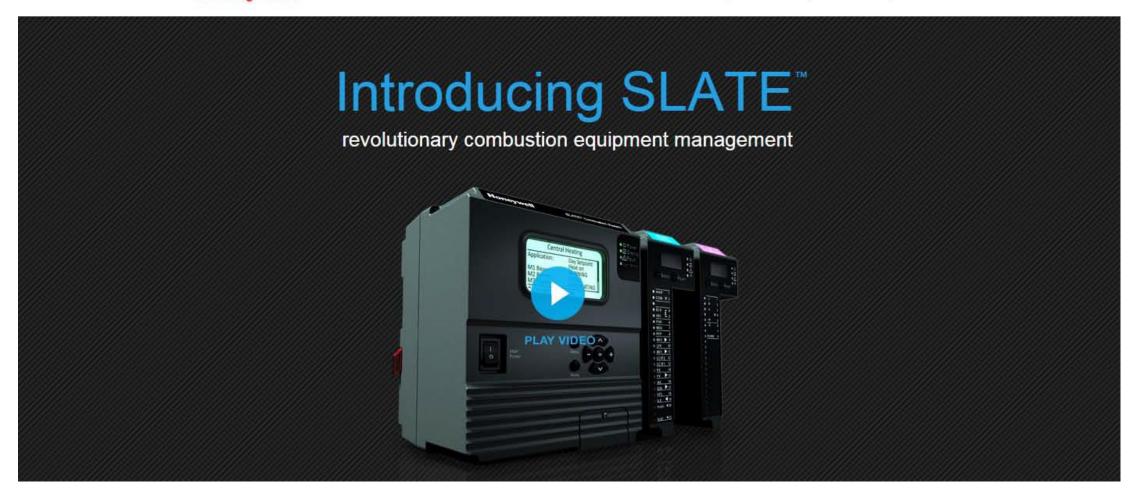2015 Sales Conference Training
Mexico, Brazil & ROR LAR Local Training
Mexico AHR Trade show
USA AHR Trade show
EMEA Mostra Trade show

Tier 2 Adopter Joint Sales Calls
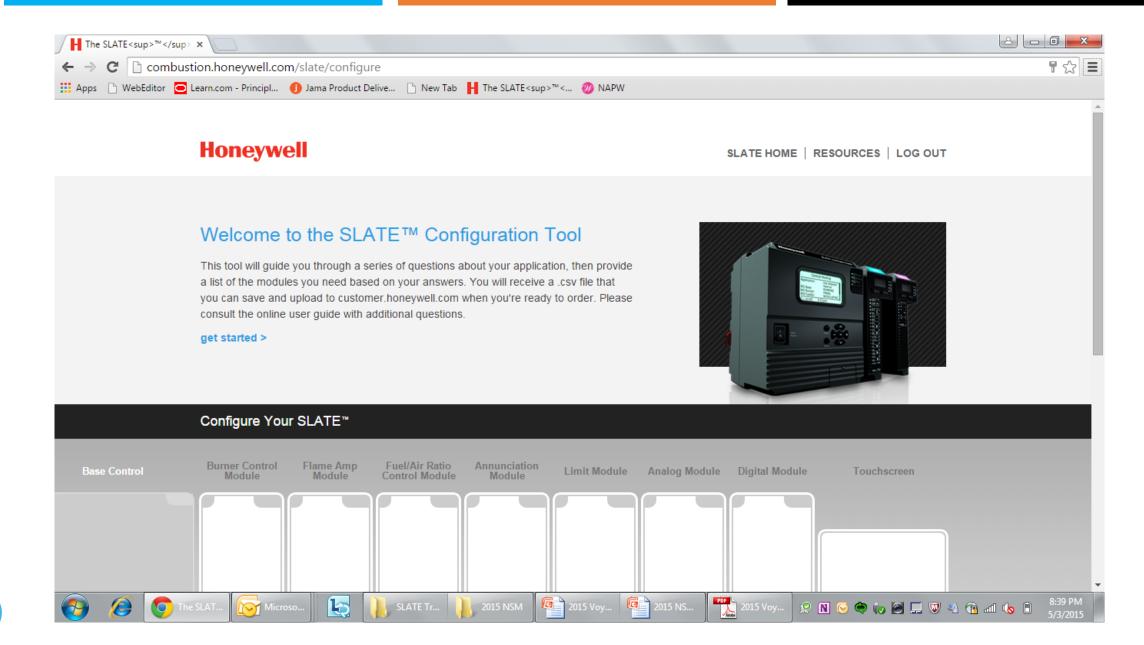Road Shows

SLATE Web Site

combustion.honyewell.com/SLATE

Meet the Configurator

SLATE Website and Configurator

SLATE Website and Tools

▶ **Main Section**
- SLATE Video
- Link to download full brochure
- Full SLATE list of modules

▶ **Resource Section**
- Software downloads (SLATE AX and updates)
- Application notes and canned programs
- How to videos
- Testimonials

▶ **SLATE Configurator**
- SLATE modules needed for your application
- Full SLATE list of modules

combustion. honeywell.com/SLATE

Configure SLATE

Use the SLATE configuration tool to generate a customized product list you can upload when you place an order.

SLATE Configurator

Helping customers define their systems

▶Located on the SLATE website

▶Access via user name and password

▶Series of questions about your application

▶Creates module list in Excel

▶Upload into B2B

▶Let's see it!

▶customer.honeywell.com/SLATE

Configure SLATE

Use the SLATE configuration tool to generate a customized product list you can upload when you place an order.