



## SmartLine Introductory Training

**Honeywell**

**Honeywell**

### Safety - Spacer

- ☐ **S**afety
- ☐ **P**urpose
- ☐ **A**genda
- ☐ **C**ode of Conduct
- ☐ **E**xpectations
- ☐ **R**oles



## Agenda

### Purpose:

- Learn the details of the *NEW* SmartLine offering, but more importantly.....
- Learn the SmartLine Story
  - Better on it's Own (Value from Industry Leading Performance and Lowest Cost of Ownership)
  - Better Together (Value of Better Integration with Experion)

### Agenda Topics:

- Pressure Theory (Slides also available for self instruction @ [WEB SITE](#) (you must sign in for access))
- SmartLine Overview & Program The SmartLine Story (Why Develop SmartLine/Project Scope/Phases/Logistics)
- SmartLine Features, Functions & Associated Value
  - 3 Pillars of Excellence
- Demo Kits & Hands-On Workshop
- Competitive Information
- Field Instruments Segmentation (How to Position and sell the ST 800 & ST 700)
- MARCOM Overview & How to Find More Information?
- Final Summary / Quiz and Call to Action

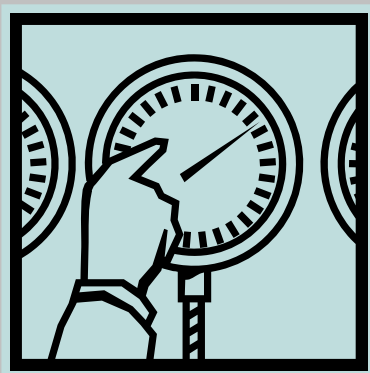
**AM Break ~ 10:00AM**  
**Lunch ~ 12:00 Noon**  
**PM Break ~ 3:00PM**

### Expectations:

- Be able to properly communicate the major differentiating categories of the ST 800.
- Know the details behind each of these categories.
- Be able to communicate the value story associated with these features.

## What is Pressure and How Do We Measure It?

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### Pressure Basic Theory: Theory & Fundamentals (Optional Presentation)

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Agenda

## Transmitter Fundamentals

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- **Theory of Pressure Measurement**

- Absolute Pressure
- Gauge Pressure
- Differential Pressure

- **Transmitter Basics**

- Terminology
- Transmitter Types
- Process Heads
- Barrier Diaphragms
- Fill Fluids
- Overload Assembly
- Sensor Assembly
- Electronics Module
- Diagnostics
- Housing
- Optional Equipment



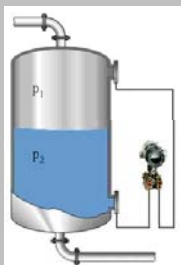
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## Pressure Principles

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- All pressure measurements are differential pressure measurements, but make specific references to a specific point...
  - Absolute
  - Gauge
  - True differential
- Every pressure exercises a force proportionate to its intensity on a given area.
- This force causes a slight deflection in the sensor diaphragm "transmitted" through silicon fill fluid, and is converted into an output signal representing an index for the applied pressure.



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## What is Pressure?

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- **Static Pressure**

- Most common measurement used
- Represents the exact process pressure
- Valid with either gauge or absolute pressures
- Key component of flow measurement calculations



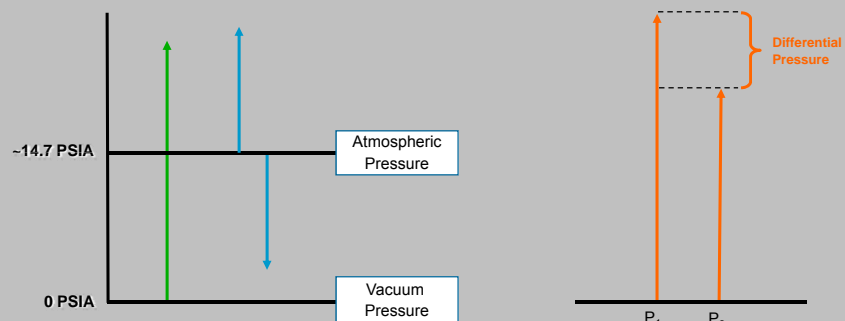
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## What is Pressure?

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- **Absolute pressure**
  - is zero referenced against a perfect vacuum (0 psia). Atmospheric pressure has no effect on absolute pressure
- **Gauge pressure**
  - is zero referenced against ambient air pressure, so it is equal to absolute pressure plus atmospheric pressure.
- **Differential pressure**
  - is the difference in pressure between two points. ( $P_1 - P_2$ )



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## Absolute/Gauge Pressure Principle

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- **Gauge Pressure**

- This sensor is used in different applications because it can be calibrated to measure the pressure relative to a given atmospheric pressure at a given location.
- An example of gauge pressure would be a tire pressure gauge.
  - When the tire pressure gauge reads 0 PSI, there is really 14.7 PSI (atmospheric pressure) in the tire.

- **Absolute Pressure**

- This sensor measures the pressure relative to perfect Vacuum pressure (0 PSI or no pressure).
- Atmospheric pressure, is about 100kPa (14.7 PSI) at sea level. Atmospheric pressure is an absolute pressure.



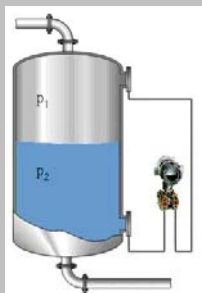
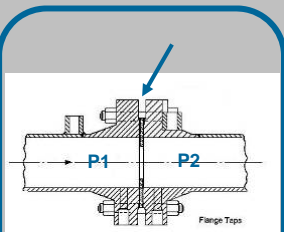
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## ST 3000 Differential Pressure Principle

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- **Differential pressure measures the pressure drop across a fixed orifice plate or over/between any two areas.**
- **The difference in pressure exercised on both sides of the sensor causes a deflection of the diaphragms which is then converted to a proportionate output signal.**



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## Transmitter Basics – Terminology

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- **Accuracy:**
  - Limits that errors will not exceed in “% of full scale” or “% of rate”.
  - Includes the combined effects of linearity, hysteresis and repeatability.
  - Includes residual error after averaging successive readings.
- **Repeatability:**
  - Closeness of agreement between consecutive measurements under the same conditions.
- **Rangeability:**
  - Minimum and maximum measurements for a given instrument.
- **Turndown Ratio:**
  - Ratio of maximum measurement to minimum measurement for a given instrument.
- **Reliability:**
  - Measure of expected life; typically expressed as MTBF.
- **Reference Accuracy:**
  - Accuracy of the device at lab conditions. (Typically 25oC, 10 – 55% relative humidity, & stainless diaphragm material)
  - Does not tell the whole accuracy story once installed!
- **MAWP:**
  - Maximum Allowable Working Pressure.
  - It is the published “do-not-exceed pressure” for Absolute or Gauge transmitters!
  - For differential pressure, it is the “do-not-exceed” static pressure.



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## Transmitter Basics – Terminology (cont'd)

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- **Linearity:**
  - The closeness to which a curve approximates a straight line.
- **URL / LRL – (Upper Range Limit / Lower Range Limit):**
  - Manufacturer's designated normal range of the device
- **URV / LRV - (Upper Range Value / Lower Range Value):**
  - User's designated upper/lower range of the device
- **Stability:**
  - Expressed as a percentage of the URL (upper range limit) per year for the lifetime of the transmitter.
- **Combined Zero and Span Temperature Effect:**
  - The effect that changes in temperature have on “Total Probable Error”
- **Combined Zero and Span Pressure Effect:**
  - The effect that changes in atmospheric pressure have on “Total Probable Error”
- **Total Probable Error:**
  - Accuracy plus Combined Zero and Span (Temperature and Pressure)



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## Transmitter Basics -Total Probable Error

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*How to compare the accuracy referred to in specifications?*

### Using Total Probable Error (TPE) Performance

$$TPE = \sqrt{(RA)^2 + (TEZ)^2 + (TES)^2 + (SPEZ)^2 + (SPES)^2}$$

Where:	TPE	=	Total Probable Error
	RA	=	reference accuracy
	TEZ	=	temperature effect on zero
	TES	=	temperature effect on span
	SPEZ	=	static pressure effect on zero
	SPES	=	static pressure effect on span

Consider all these 5 variables as the most comprehensive and accurate way to determine "TPE performance"!



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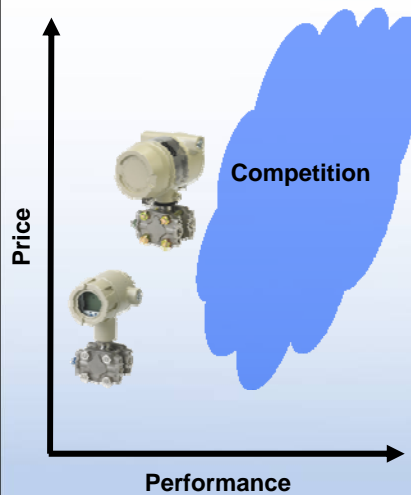
# SmartLine



## The SmartLine Story

Agenda

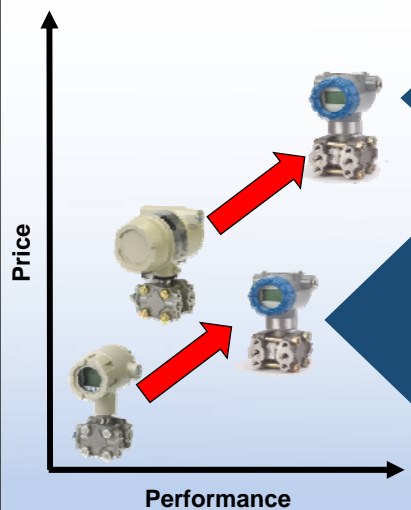
## Honeywell Pressure Current State



- ST3000 was the first “Smart Transmitter” introduced to the market
  - 25 years of support
  - Millions of units installed
- Lost competitiveness over time
  - Performance
  - Features
  - Integration
- Current design unsuitable to support rapid deployment of new technologies

*Investment Across Entire Pressure Portfolio Needed to Achieve Future Success*

## SmartLine Improves Entire Portfolio



### ST800 – Performance Tier

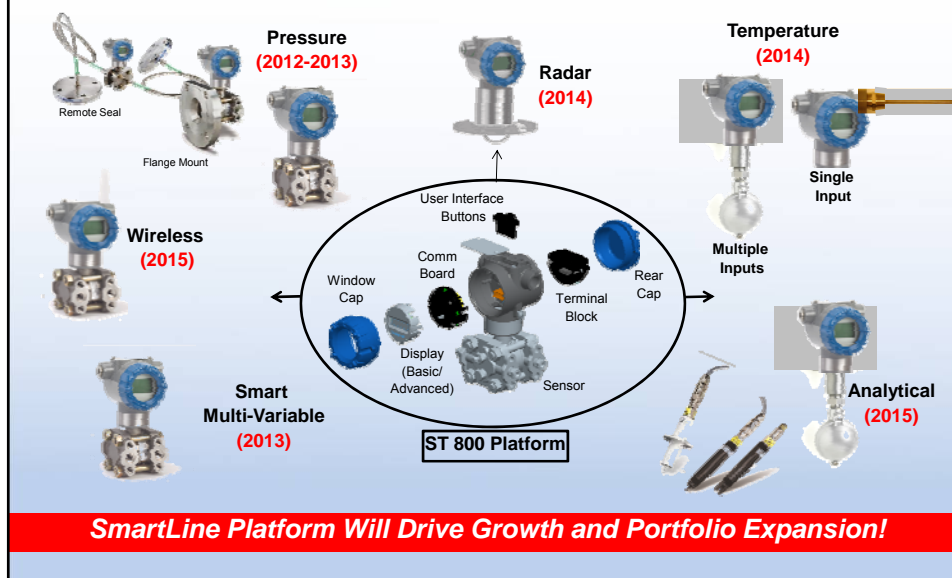
- Differentiate vs. Competition
- Drive Product Specifications
- Advanced HMI Capabilities
- Enhanced Integration Features

### ST700 – Fighting Tier

- Good Enough Performance
- Positioned for Minimum Bid Specification Projects
- Guards ST800 Value and Pricing
- Battle directly with competitor's low tier

*SmartLine Gives You the Opportunity to Win in All Pursuits*

## SmartLine More Than Just Pressure



# SmartLine



## Pressure Launch Scope and Timing

Agenda

## What is SmartLine Pressure?



### SmartLine is a complete pressure transmitter offering

- A complete line of New High (ST 800) and Low (ST 700) Performance Pressure Transmitters will be offered

Absolute Pressure Transmitters  
 Differential Pressure Transmitters  
 Gauge Pressure Transmitters  
 Remote Seal Transmitters  
 Flanged/Level Transmitters  
 Multivariable Transmitters  
 OEM Meter Bodies  
 Remote Meters



## When are we launching?



### SmartLine transmitter phased release timing.

- Internal release for sale – September 1<sup>st</sup>, 2012
- 1<sup>st</sup> Public Showing – EMEA HUG November 14<sup>th</sup>, 2012
- Phased product releases -

<b>R100</b>	AP/DP/GP (HART/DE/FFB)	Volume Shipments <b>Oct, 2012 APAC; Nov, 2012 ROW</b>
<b>R170</b>	Remote Seal/FL	Volume Shipments <b>Q4, 2012</b>
<b>R200</b>	Remote Seal/FL	Volume Shipments <b>Q1, 2013</b>
<b>R300</b>	SMV/RM (Profibus)	Volume Shipments <b>Q3, 2013</b>



## What's happening with ST 3000?



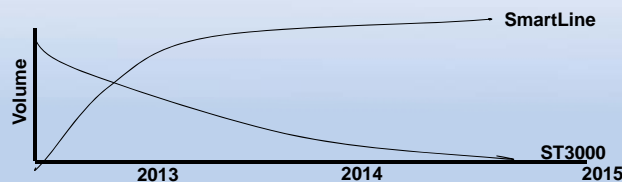
### ST 3000 future plans.

- SmartLine will eventually replace the ST 3000

**Obsolescence Date Driven by Phase II Release**

**Minimum 6 months advanced notice**

**Full Discontinuance in 2014**



## How will I know what's available?



### For current availability refer to SmartLine MSG's & Specifications.

- All phases will have individual release notices
- Released SmartLine material selection guides (MSG's) & product specifications will show only the currently available product

**Color brochures will show the complete line**

**Released MSG's & Specs show what is available**



## R100 Detailed Content

Old Key #	New Key #
<b>Differential Pressure Transmitters</b>	
STD110	STD810
STD120	STD820
STD125	OBSOLETE
STD130	STD830
STD170	STD870
<b>Gauge Pressure Transmitters</b>	
STG140	STG840
STG14L	STG84L
STG14T	OBSOLETE
STG170	STG870
STG17L	STG87L
STG180	OBSOLETE
STG18L	STG88L
STG19L	STG89L
<b>Absolute Pressure</b>	
STA122	STA822
STA12L	STA82L
STA140	STA840
STA14L	STA84L
STA17L	STA87L

- Absolute/Differential/Gauge Pressure Transmitters
- Protocols Available
  - HART/DE/FFB
- User HMI
  - Basic Display
  - Advanced Digital Display
  - Three Button Programming
  - Languages
    - Basic Display – English Only
    - Advanced Digital Display – English, German, French, Spanish & Russian
- Diagnostics
  - Current ST 3000 advanced diagnostic set becomes the basic offering
- Materials
  - All Diaphragms, Heads, & Bolts etc
  - Silicone Oil DC200 & Fluorinated Oil CTFE
  - Aluminum Housing
- Approvals
  - FM/CSA/ATEX/IECEx/NEPSI
  - X-Proof/IS/Non-incendive/Dust-proof
- Single Calibration
- All ST 3000 Mounting Brackets
  - Angle/Flat Carbon Steel /304SS
  - Marine 304SS
- Experion Integration Tools

**1<sup>st</sup> Volume Shipments 1 Oct 2012 (Tianjin) 1 Nov 2012 (York)**

## R170 Detailed Content

Old Key #	New Key #
<b>Differential Pressure Transmitters</b>	
STD904	STD720
STD924	STD720
STD930	STD730
STD974	STD770
<b>Gauge Pressure Transmitters</b>	
STG90L	STG74L
STG94L	STG74L
STG944	STG740
STG974	STG770
STG97L	STG77L
STG98L	STG78L
STG99L	STG79L
<b>Absolute Pressure</b>	
STA922	STA722
STA92L	STA72L
STA940	STA740
STA94L	STA74L
STA97L	STA77L

Standard Offering	Series 100	ST800	Series 900	ST 700
<b>Ranges</b>		Same as Series 100 Except 600"		Same as Series 900 Except 600"
<b>Reference Accuracy % of Span</b>	.0525% Std 0.025% Opt	0.0375% Std 0.025% Opt	0.075% span	0.05% span
<b>TPE</b>	Not spec'd	<0.15% span	Not spec'd	<0.25% span
<b>Stability</b>	Up to 0.01%/year	Up to 0.01%/year	Up to 0.01%/year	Up to 0.02%/year
<b>Response Time</b>	> 300MS Not specified	90 MS	> 300MS Not specified	100 MS
<b>Materials</b>	Carbon Steel 316L SS HAST C Monel Tantalum Gold Plated (Y-Special)	Carbon Steel 316L SS HAST C Monel Tantalum Gold Plated (Standard)	Carbon Steel 316L SS HAST C Monel Tantalum Gold Plated (Y-Special)	Carbon Steel 316L SS HAST C Monel Tantalum
<b>Oil Fills</b>	DC 200 CTFE	DC 200 CTFE DC 704 Neobee	DC 200 CTFE	DC 200 CTFE
<b>DP Static Pressure</b>	4500 psig	4500/6000 psig	4500 psig	4500 psig
<b>Comms Protocols</b>	HART/DE/FF	HART/DE/FF (Profibus Future)	HART/DE/FF	HART/DE/FF
<b>Indicator(s)</b>	Basic	Basic & Advanced Graphic	Basic	Basic
<b>Diagnostic/Adv Apps</b>	Basic	Advanced	Basic	Basic
<b>Warranty</b>	up to 15 years	Up to 15 years	1 year	1 year

**Estimated 1<sup>st</sup> Shipments Q4, 2012**

## R200 Detailed Content

Old Key #	New Key #
<i>Flange Mounted Transmitters</i>	
STF128	STF828
STF12F	STF82F
STF132	STF832
STF13F	STF83F
STF14F	OBSOLETE
STF14T	OBSOLETE
STF924	STF724
STF92F	STF72F
STF932	STF732
STF93F	STF73F
<i>Remote Seal Transmitters</i>	
STR12D	STR82D
STR13D	STR83D
STR14A	STR84A
STR14G	STR84G
STR17G	STR87G
STR93D	STR73D
STR94G	STR74G

- All R100 & 170 Availability
- Remote Seals Transmitters
- Flange Level Transmitters
- Stainless Steel Electronics Housing

**Estimated 1<sup>st</sup> Shipments Q1, 2013**

## R300 Detailed Content

Old Key #	New Key #
<i>OEM Multivariable Meter Bodies</i>	
MXA045	MXA745
MXA125	MXA845
MXA145	MXA845
MXG170	MGX870
<i>Smart Multivariable Transmitters</i>	
SMA110	SMA810
SMA125	SMA825
SMG170	SMG870
<i>Gauge Pressure Transmitters</i>	
New	STG830
New	STG83L
New	STG730
New	STG73L
STG93P	STG73P

- All R100, 170, 200 Availability
- Smart Multivariable Transmitter
- OEM METER Bodies (MVX)
- Advanced Diagnostics
  - PILD
- Remote Meter/Indicator
- High Accuracy
- All Hast C LGP
- G ½ B Fitting for LGP
- 50 psi Range for GP & LGP
- DC 704 & Neobee Fill Fluids (ST 800 Only)
- Profibus

**Estimated 1<sup>st</sup> Shipments Q3, 2013**

# SmartLine



## Model Selection Guide Example

Agenda

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## Model Selection Guide Overview

- Key Numbers
  - Minimal Change STD120 & or STD 924 => STD820 or STD720
    - Table I Meter Body Related Selections
  - No Model # *Structure* Changes to basic material selections
    - Process Head Material – no changes
    - Barrier Diaphragm Material – no changes
    - Fill Fluid Selection – no changes
    - STD120-A1A => STD820-A1A
  - Table I Expanded to Include:
    - All Material Selections are Now a Part of Table 1 i.e. Gold Diaphragms etc
    - Adapter selections added
    - Bolt Materials added
    - Vent/Drain Selections added
    - Meter Body Static Pressure Rating selection added
    - Gasket Material Selection added
- Tables II – VIII Standardized for all ST800 Models
- Models/Options with Best Delivery Indication 🌟

**Table I now contains all meter body Selections**

Section 13					
Page: STD-1					
Effective Date: September 1, 2012					

Model Selection Guide		
		with Price Data

Honeywell Proprietary

List Price equals the sum of prices for all selections made.

- Minimal Key Number Change to 8 for the 800 Series
- URL, LRL, Min & Max Spans all noted
- English & Metric Units

## Table I Meter Body Selections

- No changes to material selections for Heads
- Gold Plated Diaphragms integrated into basic meter body materials
- New fill fluids Silicone Oil DC 704 & Neobee M-20 coming in release 3

## Table I Additions

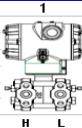
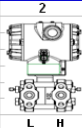
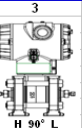
c. Process Connection	None 1/2" NPT female	None (1/4" NPTF female thread Std) Materials to Match Head & Head Bolt Materials Selections <sup>1</sup>		<table><tr><td>--- A ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- H ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr></table>	--- A ---	*	*	*	*	--- H ---	*	*	*	*																																									
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d. Bolt Nut Materials	Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Monel K500 Super Duplex B7M			<table><tr><td>--- C ---</td><td>a</td><td>a</td><td>a</td><td>a</td></tr><tr><td>--- S ---</td><td>a</td><td>a</td><td>a</td><td>a</td></tr><tr><td>--- N ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- K ---</td><td>p</td><td>p</td><td>p</td><td>p</td></tr><tr><td>--- M ---</td><td>r</td><td>r</td><td>r</td><td>r</td></tr><tr><td>--- D ---</td><td>p</td><td>p</td><td>p</td><td>p</td></tr><tr><td>--- B ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr></table>	--- C ---	a	a	a	a	--- S ---	a	a	a	a	--- N ---	*	*	*	*	--- K ---	p	p	p	p	--- M ---	r	r	r	r	--- D ---	p	p	p	p	--- B ---	*	*	*	*																
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e. Vent Drain Type/Location	<table><tr><th>Head Type</th><th>Vent Drain Location</th><th>Vent Material</th></tr><tr><td>Single Ended</td><td>None</td><td>None</td></tr><tr><td>Single Ended</td><td>Side w/Vent</td><td>Matches Head Material<sup>1</sup></td></tr><tr><td>Single Ended</td><td>Side w/Center Vent</td><td>Stainless Steel Only</td></tr><tr><td>Dual Ended</td><td>End w/Vent</td><td>Matches Head Material<sup>1</sup></td></tr><tr><td>Dual Ended</td><td>End w/Center Vent</td><td>Stainless Steel Only</td></tr><tr><td>Dual Ended</td><td>Side w/ Vent &amp; End w/Plug</td><td>Matches Head Material<sup>1</sup></td></tr></table>	Head Type	Vent Drain Location	Vent Material	Single Ended	None	None	Single Ended	Side w/Vent	Matches Head Material <sup>1</sup>	Single Ended	Side w/Center Vent	Stainless Steel Only	Dual Ended	End w/Vent	Matches Head Material <sup>1</sup>	Dual Ended	End w/Center Vent	Stainless Steel Only	Dual Ended	Side w/ Vent & End w/Plug	Matches Head Material <sup>1</sup>	<table><tr><td>--- 1 ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- 2 ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- 3 ---</td><td>t</td><td>t</td><td>t</td><td>t</td></tr><tr><td>--- 4 ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- 5 ---</td><td>t</td><td>t</td><td>t</td><td>t</td></tr><tr><td>--- 6 ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr></table>			--- 1 ---	*	*	*	*	--- 2 ---	*	*	*	*	--- 3 ---	t	t	t	t	--- 4 ---	*	*	*	*	--- 5 ---	t	t	t	t	--- 6 ---	*	*	*	*
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f. Gasket Material	Teflon® or PTFE (Glass Filled) Viton® or Fluorocarbon Elastomer Graphite			<table><tr><td>--- A ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- B ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>--- C ---</td><td>*</td><td>*</td><td>*</td><td>*</td></tr></table>	--- A ---	*	*	*	*	--- B ---	*	*	*	*	--- C ---	*	*	*	*																																				
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Table I Additions

- Adapter Flange & Bolt Selections
- Bolt Materials
- Vent/Drain Selections
- Meter Body Static Pressure Rating
- Gasket Materials

*Table I Now Fully Defines the Meter Body Selections*

## Tables II & III Head Orientation & Approvals

Section 13 Page: STD-2 Effective Date: September 1, 2012				Honeywell Proprietary
				STD870 STD830 STD820 STD810
TABLE II	Meter Body & Connection Orientation			
Head/Connect Orientation	Standard Reversed 90/Standard	High Side Left, Low Side Right <sup>2</sup> / Std Head Orientation Low Side Left, High Side Right <sup>2</sup> / Std Head Orientation High Side Left, Low Side Right <sup>2</sup> / 90° Head Rotation	1 2 3	* * * * * * * * h h h h
TABLE III	Agency Approvals (see data sheet for Approval Code Details)			
Approvals	No Approvals Required FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof ATEX Explosion proof, Intrinsically Safe & Non-incendive IECEx Explosion proof, Intrinsically Safe & Non-incendive NEPSI Explosion proof, Intrinsically Safe & Non-incendive		0 A B C D G	* *

<sup>1</sup> Left side/Right side as viewed from the customer connection perspective

<sup>2</sup> NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

- Ability to specify orientation
- FM, CSA, ATEX, IECEx, & NEPSI available at release
- Approval codes cover Ex-proof, IS, Non-incendive, & Dustproof by agency
- SIL 2/3 Standard - Initial Release FMEDA, Subsequent Update TUV
  - All HART units will conform as standard
  - Charges are for certificate only if required see table VIII

High Side Left Low Side Right

High Side Right Low Side Left

High Side Left Low Side Right  
90° Head Rotation

### Table V Electronic Transmitter Selections

TABLE IV		TRANSMITTER ELECTRONICS SELECTIONS		
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection	
	Polyester Painted Aluminum	1/2 NPT	None	
	Polyester Painted Aluminum	M20	None	
	Polyester Painted Aluminum	1/2 NPT	Yes	
	Polyester Painted Aluminum	M20	Yes	
b. Output/ Protocol	Analog Output		Digital Protocol	
	4-20mA dc		HART Protocol	
	4-20mA dc none		DE Protocol	
			Foundation Fieldbus	
c. Customer Interface Selections	Indicator	Ext Zero, Span & Config Buttons	Languages	
	None	None	None	
	None	Yes (Zero/Span Only)	None	
	Basic	None	EN	
	Basic	Yes	EN	
	Advanced	None	EN, GR, FR, SP, RU	
	Advanced	Yes	EN, GR, FR, SP, RU	

A	--	*	*	*	*	*
B	--	*	*	*	*	*
C	--	*	*	*	*	*
D	--	*	*	*	*	*

--	H	--	*	*	*	*
--	D	--	*	*	*	*
--	F	--	*	*	*	*

--	0	--	*	*	*	*
--	A	f	f	f	f	f
--	B	*	*	*	*	*
--	C	*	*	*	*	*
--	D	*	*	*	*	*
--	E	*	*	*	*	*

- ½" or M20 and Aluminum or Stainless (future) Housings
- Basic & Advanced Indicators
- External Zero/Span/Configuration Buttons

## Table V Configuration Selections

TABLE V	CONFIGURATION SELECTIONS										
a. Application Software	Diagnostics										
	Standard Diagnostics					1	—	*	*	*	*
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits <sup>1</sup>								
	Disabled	High > 21.0mAdc	Honeywell Std	(3.8 - 20.8 mAdc)		1	—	f	f	f	f
	Disabled	Low < 3.6mAdc	Honeywell Std	(3.8 - 20.8 mAdc)		2	—	f	f	f	f
	Enabled	High > 21.0mAdc	Honeywell Std	(3.8 - 20.8 mAdc)		3	—	f	f	f	f
	Enabled	Low < 3.6mAdc	Honeywell Std	(3.8 - 20.8 mAdc)		4	—	f	f	f	f
	Enabled	N/A	N/A	Fieldbus or Profibus		5	—	g	g	g	g
	Disabled	N/A	N/A	Fieldbus or Profibus		6	—	g	g	g	g
c. General Configuration	General Configuration										
	Factory Standard					8	—	*	*	*	*
	Custom Configuration (Unit Data Required from customer)										
						C	—	*	*	*	*

<sup>1</sup> NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

- Standard Diagnostics Include all Current ST 3000 Diagnostics
- Advanced Diagnostics will include PILD and other TBD (future)
- Ability to Specify Write Protect & Failsafe Settings
- Selection of Factory or Custom Configuration for Other Parameters

## Table VI Calibration Selections

						STD870					
						STD830					
						STD820					
						STD810					
TABLE VI	CALIBRATION & ACCURACY SELECTIONS										
a. Accuracy and Calibration	Accuracy	Calibrated Range		Calibration Qty							
	Standard	Factory Std		Single Calibration		A	*	*	*	*	
	Standard	Custom (Unit Data Required)		Single Calibration		B	*	*	*	*	

- Single, Dual (future), or Triple (future) Calibrations Available
- Standard or High Accuracy (future)

## Table VII Accessories

TABLE VII		ACCESSORY SELECTIONS									
a. Mounting Bracket	Bracket Type		Material		0	1	2	4	5	6	
	None		None		*	*	*	*	*	*	
	Angle Bracket		Carbon Steel		*	*	*	*	*	*	
	Angle Bracket		304 SS		*	*	*	*	*	*	
	Marine Approved Angle Bracket		304 SS		*	*	*	*	*	*	
	Flat Bracket		Carbon Steel		*	*	*	*	*	*	
b. Customer Tag	Customer Tag Type				0	1	2				
	No customer tag				*	*	*	*	*	*	
	One Wired Stainless Steel Tag (Up to 4 lines 28 char/line)				*	*	*	*	*	*	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters				A0	A2	A6	A7	A8	A9	
	No Conduit Plugs or Adapters Required				*	*	*	*	*	*	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter				n	n	n	n	n	n	
	1/2 NPT 316 SS Certified Conduit Plug				n	n	n	n	n	n	
	M20 316 SS Certified Conduit Plug				m	m	m	m	m	m	
	Minifast <sup>®</sup> 4 pin (1/2 NPT) (not suitable for X-Proof applications)				n	n	n	n	n	n	
	Minifast <sup>®</sup> 4 pin (M20) (not suitable for X-Proof applications)				m	m	m	m	m	m	

- New 316 SS Brackets (future)
- Specify the plugs required – (Unassembled)
- New Minifast Connectors Available for both M20 & NPT Enclosures

## Table VIII Certificates & Other

TABLE VIII		OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))									
Certifications & Warranty	NACE MR0175, MR0103, ISO15156 (FC3338) Process wetted parts only	FG	c	c	c	c	b				
	NACE MR0175, MR0103, ISO15156 (FC3339) Process wetted and non-wetted parts	F7	c	c	c	c					
	Marine (DNV, ABS, BV, KR, LR) (FC33340)	MT	d	d	d	d					
	EN10204 Type 3.1 Material Traceability (FC33341)	FX	*	*	*	*					
	Certificate of Conformance (F3391)	F3	*	*	*	*					
	Calibration Test Report & Certificate of Conformance (F3399)	F1	*	*	*	*	b				
	Certificate of Origin (F0195)	F5	*	*	*	*					
	FMEDA (SIL 2/3) Certification (FC33337)	FE	j	j	j	j					
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)	TP	*	*	*	*					
	Cert Clean for O <sub>2</sub> or CL <sub>2</sub> service per ASTM G93	OX	e	e	e	e					
	Extended Warranty Additional 1 year	01	*	*	*	*					
	Extended Warranty Additional 2 years	02	*	*	*	*					
	Extended Warranty Additional 3 years	03	*	*	*	*	b				
	Extended Warranty Additional 4 years	04	*	*	*	*					
	Extended Warranty Additional 15 years	15	*	*	*	*					

- SIL 2/3 Standard - Initial Release FMEDA, Subsequent Update TUV
  - All units will conform as standard
  - Charges are for certification only if required

- [illegible]



## The SmartLine Story

Honeywell

### Better on its Own

*Industry Leading Performance Providing*

- Improved Quality and Efficiency of Operations

*New Differentiated Features Providing*

- Lowest Total Cost of Ownership



### Even Better Together

*Best Integration Platform Providing*

- Safe, Efficient, Reliable Integration

Honeywell

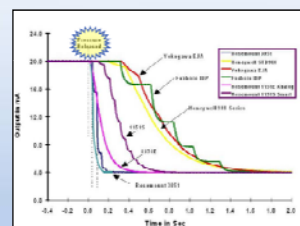
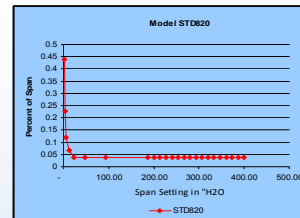
Agenda

## Industry Leading Performance

Honeywell

### Key Performance Improvements Insure We Exceed Competitive Specifications

- Accuracy: Up to 0.0375% of Span Standard up to 0.025% of Span Optional
  - ST 800 Meets or Exceeds Competitive Accuracies
  - Ability to Lead EPC Specifications
  - Helping Customers Meet Their Quality Standards
- Industry leading TPE
  - Better Than Emerson's 0.15% span
    - 5:1 Turndown, 28°C, & 1000 psig static
- Best Stability Specification @ up to 0.01%/year
- Step Response Time 80 MS AP/GP & 90 MS for DP's
  - ST 800 Exceeds Competitive Response Times
  - Exceeds Today's EPC Specifications
  - Helping to Improve Customer Quality

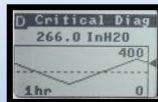
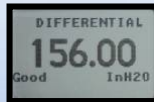
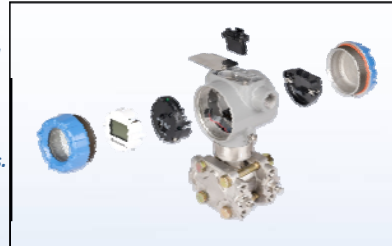


**Don't Just Meet Specs – WRITE THEM!**

# Total Cost of Ownership

## Simple Modular Design

- Increasing distributors flexibility and responsiveness.
- Meeting a wider variety of customer needs w/o added cost.
- Minimizing customer spare parts inventory and associated costs to carry.
- Improving the efficiency of maintenance organizations.
- Reducing process down times during maintenance activities.
- Platform for future product development (Temp, Analytical, Level & Wireless)
- Provides lowest cost of ownership

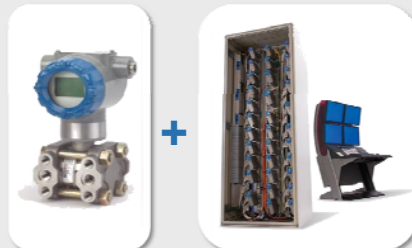


## HMI Improvements

- Increasing safety for plant and maintenance personnel.
- Improving, operations, and maintenance efficiencies.

## Better Together

- Transmitter messaging
- Maintenance mode indication
- Tamper alerts
- FDM area health views
- Comprehensive integration testing



## SmartLine and Experion PKS Integration Advantages

- Reduced Maintenance
- Less Downtime
- Faster Commissioning
- Improved Plant Safety

## Your Choice

**Honeywell**



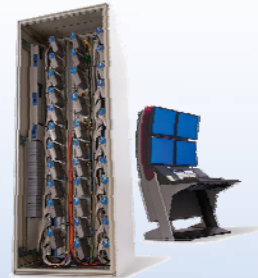
**Alone**

### *Remember*

#### **Value Through Three Pillars of Excellence**

- *Industry Leading Performance for:*
  - Improved quality and efficiency of operations
- *Differentiated Features for:*
  - Lowest Cost of Ownership
- *Best Integration Platform providing*
  - Safe, Efficient & Reliable Integration

### **Together**



***Either Way You Get  
Better Product & More Savings with  
SmartLine***

# SmartLine



**Three Pillars of  
Excellence**

Agenda

## Three Pillars of Excellence

	Rev	Rev	Rev	Rev
	Std	New	1	2
1. Compound Characterization: All DP units will be compound characterized as standard except the STD870 which will be limited to -14.7 to 3000 psi	X		X	
2. Improved Standard Accuracy: All units shall have improved accuracy performance vs. the ST 3000 and comparable products (i.e. 3051c) as standard (typically based on 0.04% of span/reading)		X	X	
3. Improved High Accuracy: performance compared to standard		X		X
4. External Configuration: and/or develop via a suitable for all approval		X	X	
5. Advanced Digital Display: screens with multiple available Trend, & Diagnostic Messages		X	X	
6. Basic Display: A low cost display, wide variety of available units support		X	X	
7. Remote Display: SE, HART, & FFD are appropriate digital protocol with the same display		X	X	
8. Modular Design: Ability to change out terminal boards (old vs. LPT) without voiding		X	X	
9. Improved Diagnostics: Add self contained		X	X	
10. SIL 2 Standard: All transmitters must contain		X	X	
11. Preflows: Add preflows		X		X
12. New Range ST630: 50		X	X	
13. New Range ST631: 50		X	X	
14. New Range ST671: 50		X	X	
15. New Connection: STG		X	X	
16. New Meter Body Material: 316		X	X	
17. Tantalum Diaphragm: STG		X	X	
18. Gold Diaphragm: Gold		X	X	
19. Bulk Material: Carbon		X	X	
20. Duplex, & 87M bolts		X	X	
21. Blind Head: Single end		X	X	
22. New VIB Fluids: Silicone		X	X	
23. New Aluminum Housing: Aluminum housing and no adapters required		X	X	
24. New Stainless Housing: Stainless housing with 1/2" NPT connections and no adapters required		X	X	
25. Stainless Steel Mounting Brackets: 316 SS flat and angle mounting brackets		X	X	
26. Fast Response Time: All units to respond in 100MS or less		X	X	

### \* ST 800 Differentiated Features

#### • Industry Leading Performance\*

- Accuracy\*
- Response Time\*
- Compound Characterization

#### • Lowest Cost of Ownership\*

- Modular Design\*
- Improved HMI
  - Displays, Keypad\*
  - New EDDL's & DTM's\*
- Polarity Insensitivity\*

#### • Experion System Integration Features\*

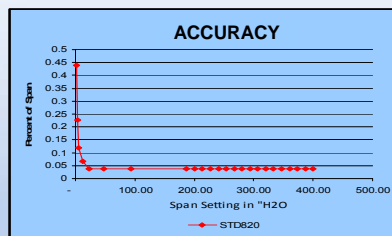
- Transmitter Messaging\*
- Maintenance Mode Indication\*
- Tamper Alerts\*
- FDM Plat Area View\*
- Experion/Integration Testing\*

Agenda

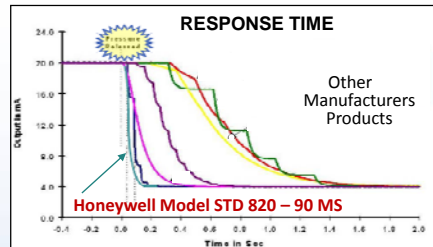
## Industry Leading Performance

### What is it?

- Best Total Performance < .15% of Span Based on:
  - Ref. Acc. Up to 0.0375% Span Std (Up to 0.025% Optional)
  - Combined Temperature Effect
  - Combined Static Pressure Effect
- Stability @ 0.01%/year
- Response Time @80 (AP, GP) 90MS (DP)



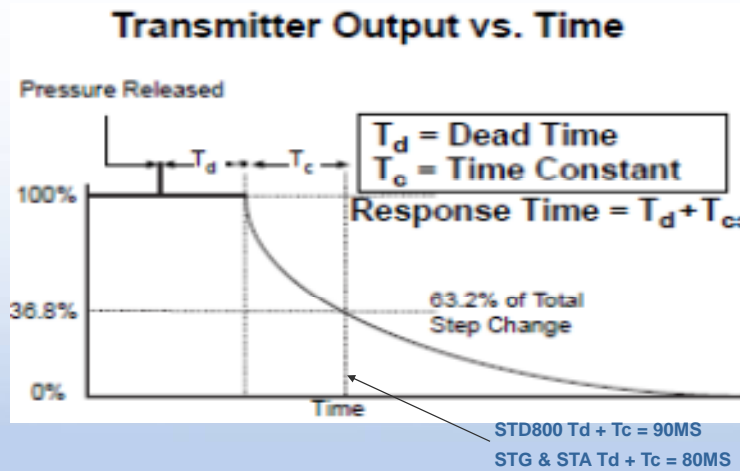
**Best Performance at Actual Process Conditions**



### What do I get?

- Better Process Control
- Improved Process Quality
- Improved Yield
- Lower Process Material Cost & Less Waste
- Ticket to Play - We meet or exceed all performance specifications

## Transmitter Response Time



## Performance Details

- Compound Characterization (R100)
  - All DP's are compound characterized over full range except the STD870

KEY NUMBER	URL	LRL	Max Span	Min Span	Units
Measurement Range	10 (24.9)	-10 (-24.9)	10 (24.9)	0.1 (0.249)	" H <sub>2</sub> O (mbar)
	400/(996.4)	-400/(-996.4)	400/(996.4)	1.0 (2.49)	" H <sub>2</sub> O (mbar)
	100 (6.9)	-100 (-6.9)	100 (6.9)	1 (0.069)	psi (bar)
	3000 (206.8)	-100 (-6.9)	3000 (206.8)	30 (2.07)	psi (bar)

- Turndown (R100)
  - All units are specified with minimum 100:1 turndown capability
  - STD820 Maintains Industry Leadership w/400:1 on the STD820\*

- Improved Accuracy (R100)
 

DP's	Standard	High Performance (R300)
- STD810	0.0750% of span	n/a
- STD820	0.0375% of span*	0.025% of span*
- STD830	0.0500% of span	0.0325% of span *
- STD870	0.0500% of span	0.035% of span *

\* ST 800 Differentiated Feature

## Performance Details \*

- Improved Accuracy (cont'd)

<u>GP's</u>	<u>Standard</u>	<u>High Performance (R300)*</u>
- All STG8XX	0.055% of span	0.025% of span *
- All STG8XL	0.055% of span	0.025% of span (except STG89L) *
- STG89L	0.055% of span	0.040% of span

<u>AP's</u>	<u>Standard</u>	<u>High Performance (R300)*</u>
- All STA8XX	0.055% of Span	0.025% of span *
- All STA8XL	0.055% of span	0.025% of span *

Response Times * (R100)	<u>HART</u>	<u>DE</u>	<u>FF</u>
- Differential Pressure	90MS*	90MS *	System Dependant
- Gauge Pressure	80MS*	80MS *	System Dependant
- Absolute Pressure	80MS*	80MS *	System Dependant

\* ST 800 Differentiated Feature

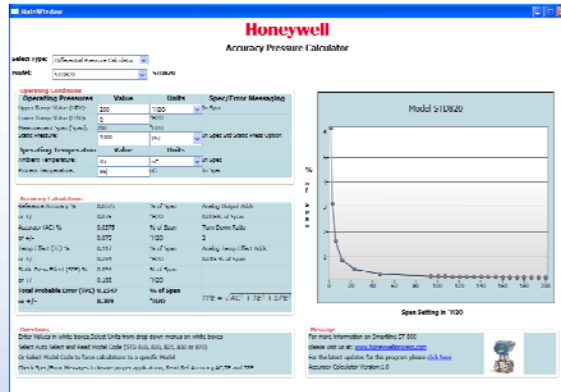
## Performance Details \*

- Static Pressure Available as a HART Output Variable

- Static Output Assignment is PV3 or Tertiary Value
  - PV1 is Differential, Gauge, or Absolute Pressure depending on transmitter type
  - PV2 is Meter Body temperature
  - PV3 is Static Pressure (DP only) \*
  - PV4 is Electronics/Housing temperature
- Models STD820, 830, 870
  - Accuracy: +/- 2% of Static URL (4500psig +/- 90 psig)
  - Not PV Quality, but suitable for Static pressure Indication
    - Confirmation of head pressure on closed tank systems
    - Indication of static pressure on flow applications

\* ST 800 Differentiated Feature

## ST 800 Accuracy Calculator



Find the ST 800 Accuracy Calculator

On theWEB Under

Transmitter Configuration Tools and Accessories

Field Instrumentation Configuration and Support Files

[Here](#)

You MUST Login to view channel partner documents

- 3051 Stated Total Performance Parameters

@ 5:1 Turndown, 28°C, 1000 psig

- Range 2 @ 50" H2O
- Range 3 @ 200" H2O
- Range 4 @ 60 psid
- Range 5 @ 400 psid

### ROSEMOUNT

3051C

- 0.15% STD820
- 0.15% STD820
- 0.15% STD830
- 0.15% STD870

### Honeywell

ST 800 Turn Down to Match Emerson Span

- 0.16% Span 8:1
- 0.10% Span 2:1
- 0.10% Span 1.7:1
- 0.15% Span 7.5:1

## Modular Construction

External Configuration\*\*

Options

Enabled

Standard Cover\*\*

Easy Change

Comm Modules

- HART
- DE
- Foundation
- Profibus

Cover w/

Quickly Interchange Terminal Boards\*

- Standard field wiring terminal
- Lightning protected field terminal board
- Potted assemblies for the harshest environmental

Display Module

- Basic display
- Advanced digital display
- Both supported

Change Modules without

- Reduce maintenance times with fast, easy and reliable plug in module replacements
- Individual module replacement versus complete unit replacement reduces repair cost
- Avoid shutdowns associated with complete unit replacements
- Avoid de-energizing the loop while replacing modules
- Reduces spare parts inventories

\* Field Replaceable Parts  
\*\* Field Replaceable Parts Under Power  
In all area classifications except Flameproof

anywhere except  
flameproof areas

**Failed Electronics Module:** Consider the value associated with parts replacement vs. a complete unit replacement.

**Honeywell**

DP Transmitter w/Remote Seals and Bad Communications Module	
Complete Unit Replacement	Est. Time
Permitting (Hot Work and Line Break)	½ hr
Acquisition and positioning of man lift (2 men)	1 hr
Seal Removal	1 hr
Capillary Removal (2 men)	1 hr
Transmitter Removal	½ hr
Seal Installation (2 men)	1 hr
Capillary Installation (2 men)	2 hrs
Transmitter Installation	½ hr
<b>Total hours</b>	<b>7½ hrs.</b>
Communications Module Replacement	Est. Time
Permitting (Hot Work Only)	½ hr
Acquisition and positioning of man lift (2 men)	1 hr
Module Replacement	½ hr
<b>Total hours</b>	<b>2 hrs.</b>
Labor savings, downtime and line break avoidance	Up to 5.5 hrs

Introducing something for everyone.

## Maintenance

- Simplified repairs
- Less line breaks – safer
- Maintains intrinsic safety

**Save 5 ½ hours labor and/or process downtime.**

## HART Only User (1 Range, 4 Variants)

**Honeywell**

### Traditional Inventory

HART Only Facility			List Price	
Item	Qty	Description	Each	Extended
1	1	200" DP w/HART	\$1,943	\$1,943
2	1	200" DP w/HART & Integral Indicator	\$2,177	\$2,177
3	1	200" DP w/HART & LP	\$2,011	\$2,011
4	1	200" DP w/HART <b>Integral Indicator</b> & LP	\$2,247	\$2,247
TOTAL	4	Complete Units		<b>\$8,378</b>

### ST800 Inventory

HART Only Facility			List Price	
Item	Qty	Description	Each	Extended
1	1	200" DP w/HART	\$1943	\$1943
2	1	<b>Integral Indicator</b>	\$ 300	\$ 300
3	1	LP Terminal Board	\$ 300	\$ 300
TOTAL	4	Complete Units		<b>\$2,543</b>

Replacements for only 4 Variations  
with a \$5,835 Inventory Savings

Modularity –  
Inventory  
Savings

- Lower Inventory Purchases
- Lower Inventory Carrying Cost
- Increased Inventory Flexibility

## Improved HMI – Basic Display

Basic display for basic process needs



STATIC PRESSURE  
367.6 PSI

### Display Characteristics

- 2 line 16 characters 4.13H x 1.83W mm
- Standard units of measurement
  - Pa, KPa, MPa, KGcm2, TORR, ATM, inH2O, mH2O, bar, mbar, inHg, FTH2O, mmH2O, MMHG, & PSI
- Square root indication
- Out of range indication
- Supports 3-button configuration

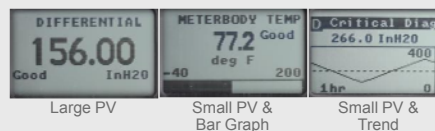
## Improved HMI – Advanced Display

Advance graphic display lets you see your process the way you want

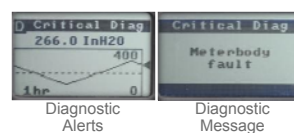


Up to 8 screens  
3 configurable display formats

### Configurable Screen Formats



### Non-configurable Screen Formats



## Improved HMI – 3 Button Configuration

3 buttons provide full configuration capability



3-Button Configuration

### Easy to Use – Handheld Device Not Required

#### Full Configuration w/Optional Display:

- Using increment, decrement & enter keys
- A comprehensive on screen menu guides the way
- Configure the transmitter
- Configure the display
- Set zero and span

#### Zero & Span Settings w/o Optional Display:

- Zero & span keys for setting w/o any display

#### Externally Accessible:

- Buttons are easily accessible without opening the transmitter housing

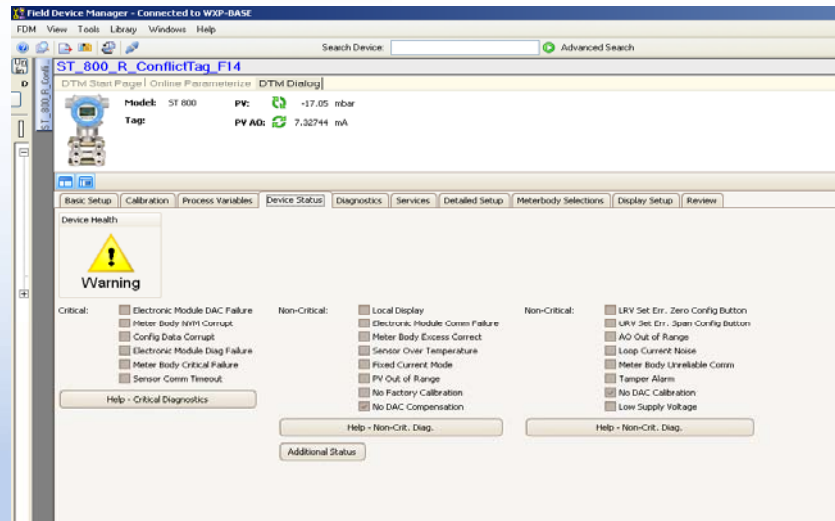
#### Suitable for All Environments:

- Hermetically sealed for long life in harsh environments
- Suitable for use in all electrical classifications (flameproof, dustproof & intrinsically safe)

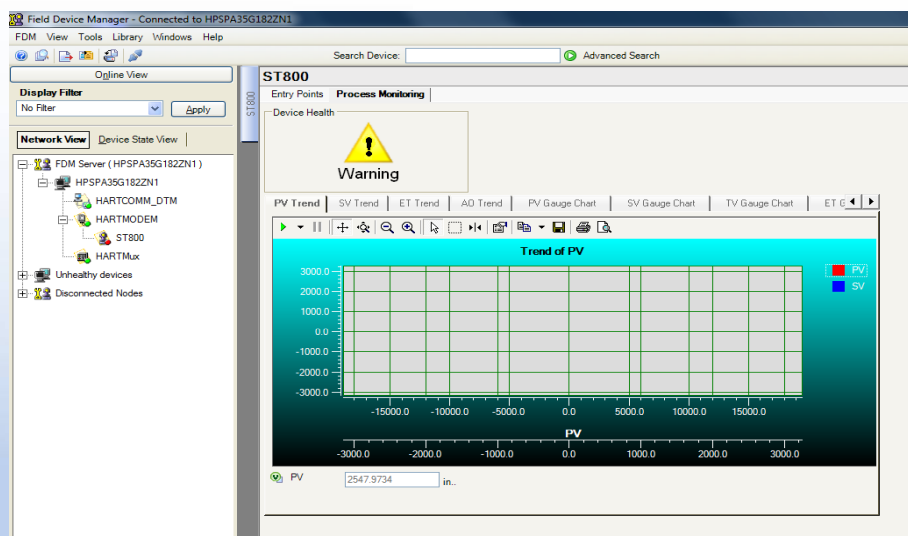
## DTM On-Line Parameters



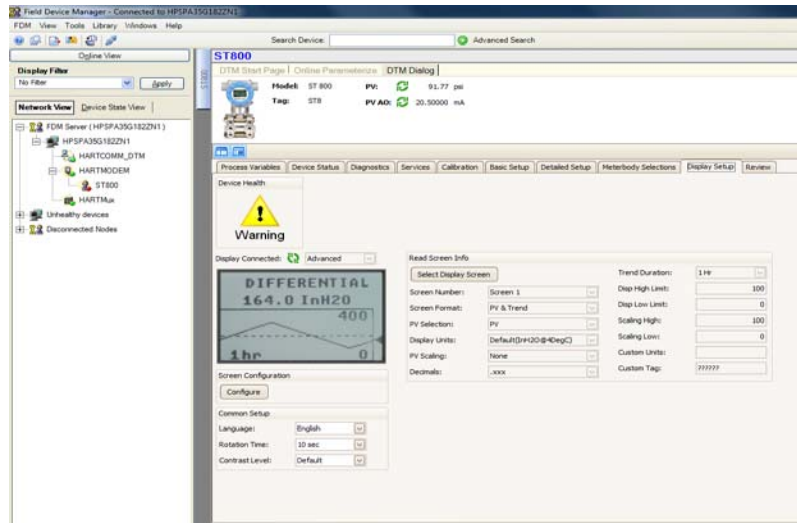
## DTM – Diagnostic Summary



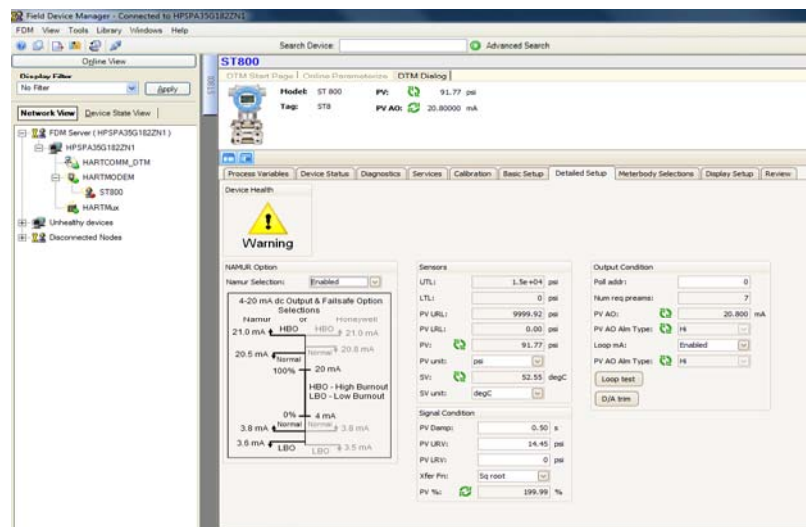
## DTM - Trending



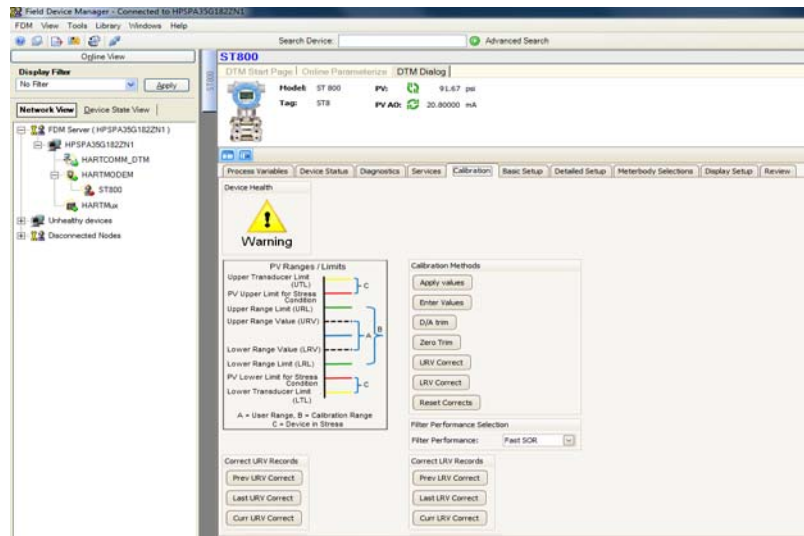
## DTM – Display Set-up



## DTM – NAMUR Set-up



## DTM - Calibration



## Field Device Manager Express

Access and management simplification of HART and Profibus smart instrument assets:

- configuration
- diagnostics
- maintenance



- **PC Based – No separate server or Experion connection required**
- **Windows 7 Compatible**
- **DD/EDDL or DTM Compatible**
- **Single or multiple instrument connectivity (external modem, mux, gateway)**
- **Provides instrument configuration and management tasks/functions**
- **Off-line and on-line instrument configuration**
- **Supports download of stored configurations to instruments in the field**

## Improved HMI – Advantage Summary

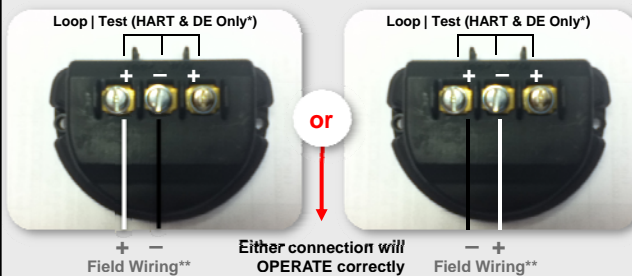
It's all about saving time & expense



- Pay only for what you need
- Clear messages save time diagnosing problems
- Advanced displays can speed diagnosing problems (Trend Display can assist in finding anomalies)
- Avoid return trips to shop for HHC or recharging
- Faster reaction time when HHC is not quickly available
- Potential savings on HHC purchases
- Advanced/Comprehensive EDDL & DTM Screens speed configuration and maintenance activities

## Polarity Insensitivity

All SmartLine transmitters (DE, HART, or Foundation Fieldbus) have polarity insensitive electrical connections:



**Eliminates re-work due to installation errors**

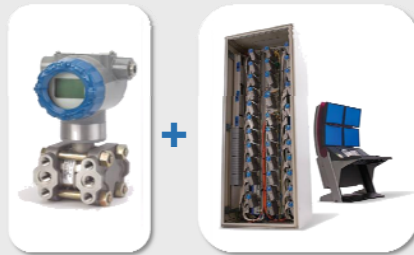
**Saves Time on Installation and Large Start-ups**

\* Only HART & DE units have loop test connection.

\*\* Subsequent handheld communicator connections must be made in accordance with the field wiring polarity.

## Better Together

- Transmitter messaging
- Maintenance mode indication
- Tamper alerts
- FDM area health views
- Comprehensive integration testing



## SmartLine and Experion PKS Integration Advantages

- *Reduced Maintenance*
- *Less Downtime*
- *Faster Commissioning*
- *Improved Plant Safety*

## Transmitter Messaging \*

### What is it?

- Standard HART 7 Messaging Command
  - 32 Character String Length can be sent to transmitter and stored in memory
- Unique Ability to Display Messages on the Transmitter's Local Display \*
  - When the ST 800 Advanced Display is specified messages can be posted on the local display

Calibrate Me!

### What do I get?

- Faster Safer and Accurate Maintenance by:
  - Quickly Identifying Transmitter
  - Clear Task Identification
  - Eliminating Ambiguity and Potential Errors

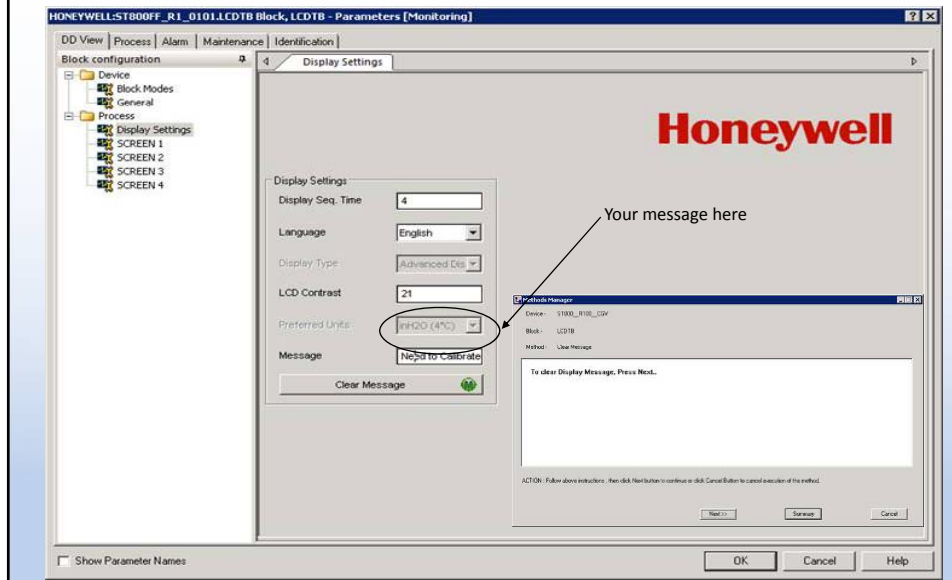
### When do I get it?

- SmartLine R100

***Transmitter Messaging Insures the Right Work on the Right Transmitter***

\* ST 800 Differentiated Feature

## Transmitter Messaging DTM



## Maintenance Mode Indication \*

### What is it?

- System and or Operator Driven Indication on the Transmitter Display indicating the device is available for maintenance.



### What do I get?

- When the Advanced Display is Specified, Indication is Provided showing Device/Loop Mode is Safe for Maintenance
  - Increases Plant Safety
  - Saves Maintenance Time by Quickly Confirming Safe Mode
  - Avoids Costly Errors and Related Downtime.

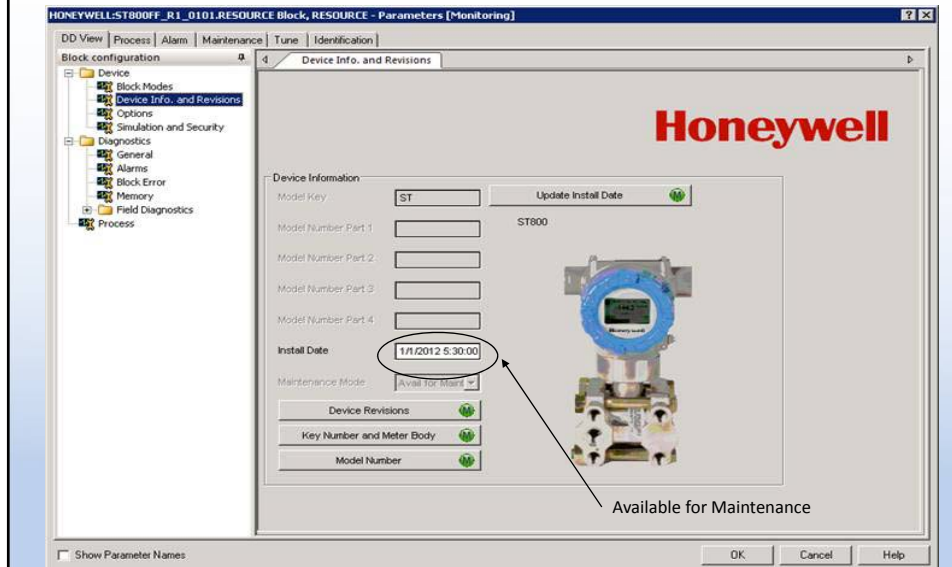
### When do I get it?

- Experion R410.1 CP3 September 2012

**Together with Transmitter Messaging Insures the Right Work,  
Right Transmitter and Right Mode for Safe Maintenance**

\* ST 800 Differentiated Feature

## Maintenance Mode Indication DTM



## Tamper Reporting \*

### What is it?

- Reports of Transmitter Tamper Attempts
  - Attempted Configuration Changes
  - Changes to Write Protect Jumper Position

Write Protect Jumper Status	Write Protect Software Status	Tamper Reporting Status	Tamper Alert Posted?	Configuration Change Allowed?
ON	ON	ON	YES	NO
ON	OFF	ON	YES	NO
OFF	ON	ON	YES	NO
OFF	OFF	ON	YES	YES
ON	ON	OFF	NO	NO
ON	OFF	OFF	NO	NO
OFF	ON	OFF	NO	NO
OFF	OFF	OFF	NO	NO
Jumper Moved		ON	YES	NA
Jumper Moved		OFF	NO	NA

1. SWP = Software Write Protection Jumper = Hardware Write Protect Jumper
2. Tamper Reporting parameter itself generates a Tamper Alarm when it is changed from ON to OFF

### What do I get?

- Increased Process Security & Safety
  - Identifies attempted costly configuration changes

### When do I get it?

- SmartLine R100

*Improved Plant Security & Safety*

\* ST 800 Differentiated Feature

## FDM Plant Area Views

### What is it?

- Provides an Overview of Device Health in User Defined Groups

1. Plants
2. Area
3. Process Cell
4. Units
5. Modules
6. Device

### What do I get?

- Increases Safety and Integrity of Instruments by Early Detection of Abnormalities
- Saves Time Finding and Diagnosing Problems
- Reduces Production of Off Spec Product

### When do I get it?

- FDM R430.1



**Maintenance Efficiency & Improved Plant Safety**

## Comprehensive Integration Testing

- Honeywell Solutions Get More Comprehensive Testing
  - Accessibility of More Devices
  - Ability to Test All Device Types
  - Longer Test Period Throughout Development
  - Compatibility Testing w/Series C & PMIO
- Honeywell Also Tests with More Configuration Tools
  - Honeywell MCToolkit
  - Honeywell Field Device Manager (FDM)
  - Emerson 375 Handhelds
  - Emerson 475 Handhelds
  - Interoperability with Emerson AMS
- Saves Time During Set-up & Commissioning



**Fewer Problems & Faster Integration & Commissioning**

## Easy Integration Platform Summary

- Transmitter Display Messaging (Right Device/Right Action)\*
  - Provide transmitter positive identification and eliminate errors
  - Alert service techs of requested actionable activities
- Maintenance Mode Indicator (Avoid Costly Errors)\*
  - Transmitter (via integral indicator) displays when the operator has placed the loop in a mode safe for maintenance.
    - Helps to avoid costly service tech errors
- Tamper Reporting\*
  - Reports write attempts to write protected devices.
- FDM Plant Area View (Faster Alerts/Speeds Maintenance Times)
  - Health Watch area summary screens for health monitoring
  - Detailed Diagnostic Data for field tech maintenance support
- Experion System Test (Lowers Integration Costs)\*
  - Extensive ST 800/Experion testing to assure trouble free integration.

\* ST 800 Differentiated Feature

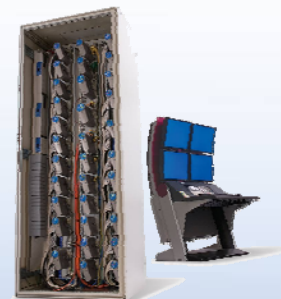
## Easiest Integration Platform



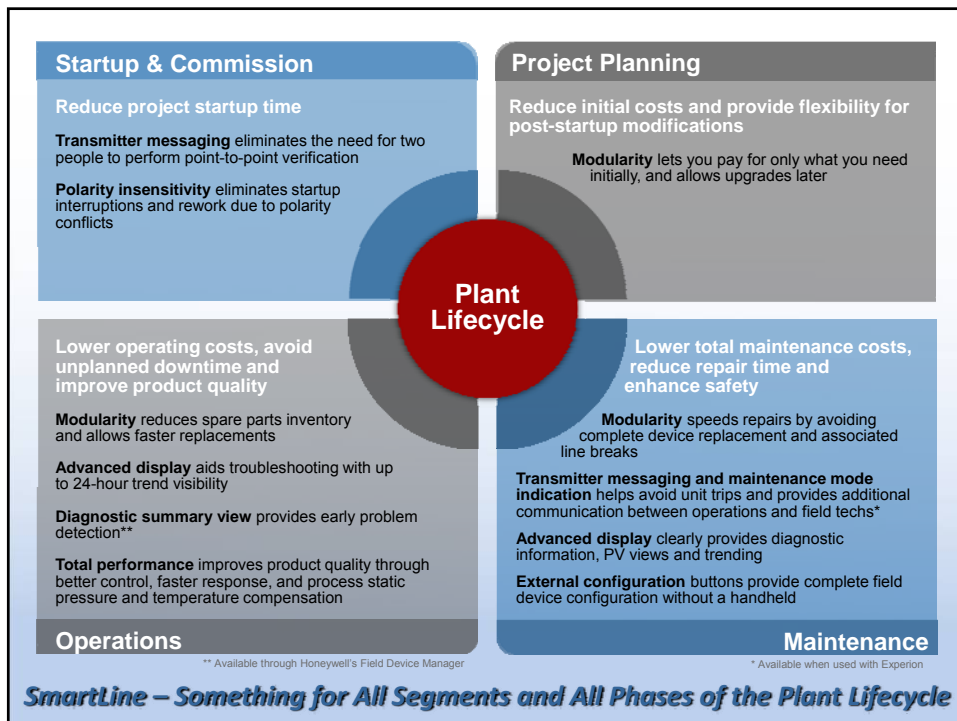
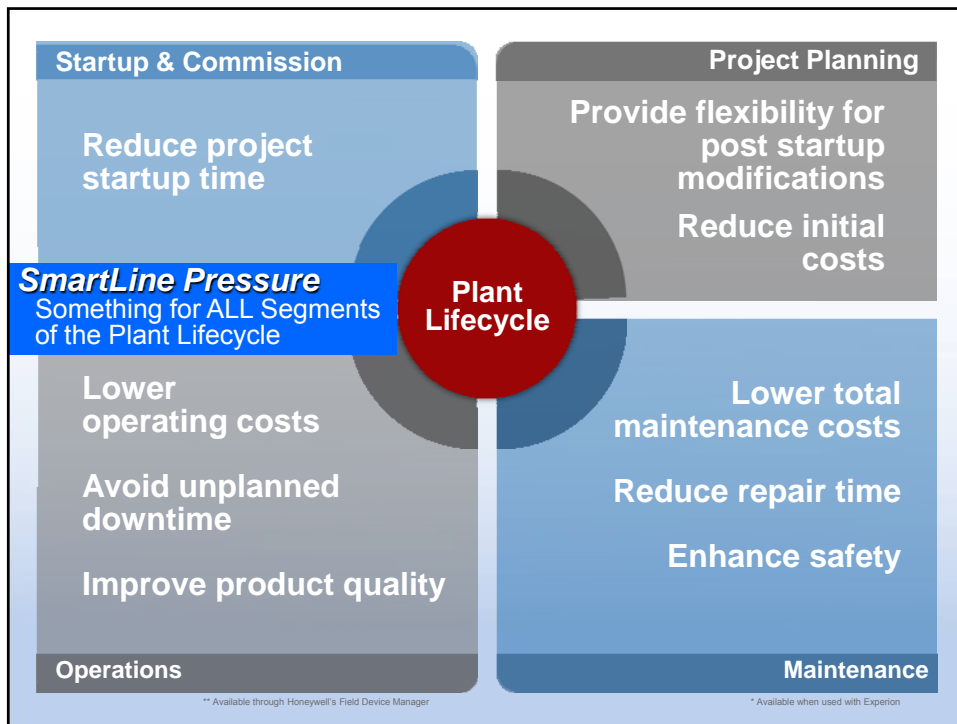
Alone

or

Together



***Either Way You Get  
Better Product & More Savings***



## Other Product Improvements

- **STG830 & STG83L** **SmartLine Release**
  - 50 psig (3.5 bar) Dual head GP (R300)
  - 50 psig (3.5 bar) In-Line GP (R300)
- **STA87L**
  - 3000 psia (210 barA) In-Line AP (R100)
    - Recently Released as part of the ST 3000 Line.
- **STG8XL & STA8XL**
  - G ½ B Process Connections (R300)

## Other Product Improvements

- **Materials & Connections**
  - Process Wetted Materials **SmartLine Release**
    - STG8XL with All Wetted (Bonnet & Diaphragm) HAST C (R300)
    - STG8XL with G ½ B Male Connections (R300)
    - STA822/824 with Tantalum Diaphragms (R100)
    - Gold Plated 316SS/Monel/HAST C all integrated into Table 1 selections (R100)
    - Blind Heads & Vent/Drain Selections al Integrated into Table 1 (R100)
  - Non-Wetted Material Selections
    - Complete Line of Bolting Material (R100)
      - Carbon Steel, 316SS
      - Grade 660 NACE A286
      - Monel K500
      - Super Duplex
      - B7m
    - Housings
      - Polyester Coated Aluminum w/M20 & ½" NPT Connections (R100)
      - Stainless Steel w/M20 & ½"NPT Connections (R200)
    - 316SS Flat & Angle Mounting Brackets (R300)
    - Silicone Oil DC704 & Neobee M-20 Fill Fluids (R300)

## Other Product Improvements

- Safety Ratings & Approvals
  - Flameproof, IS, Non-Incendive, & Dustproof for
    - R100
      - FM, CSA, ATEX, IECEx, NEPSI
    - R200
      - SAEx, INMETRO, GOST, KOSHA, CCoE
  - Sil 2/3 Compliance (Standard for HART units only)
    - Certified to IEC 61508 for non-redundant use in SIL 2 Safety Systems
    - Certified to IEC 61508 for redundant use in SIL 3 Safety Systems
    - TUV & Exida – IEC 61508-1: 2010, IEC 61508-2: 2010, and IEC 61508-3: 2010
  - European Pressure Equipment Directive (PED) Compliance
    - Design Verification
    - Material Selection
    - Manufacturing Practices
    - Qualification, Testing & Marking

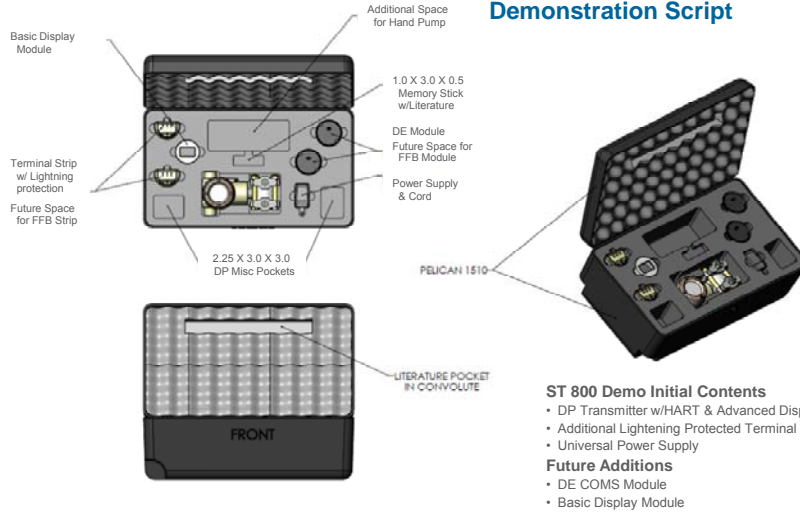
**SmartLine**



**Demonstration  
Kit & Hands On  
Workshop**

## Demo Kit Contents

### Demonstration Power Point Demonstration Script



**SmartLine**



**Competitive  
Information**

**Honeywell**

Category	Honeywell STD800	Emerson 3051S Ultra	Yokogawa EJX110
<b>PERFORMANCE</b>			
Accuracy	Up to 0.0375% 0.025% (Opt.)	0.025%	Up to 0.04% 0.025% (Opt.)
Stability	0.01% per year for 10 years	.2% 10 years	0.1% 10 years
Speed of Response	80 ms	100ms	90ms
Total Probable Error	0.12% Span	0.1% Span	0.12% Span
Turndown	400:1	200:1	200:1
Temperature	Yes	Yes	Yes
Static Pressure reading available on DP transmitters	Yes	No	Yes
<b>Communications</b>			
HART	HART 7	HART 5	HART 7
DE	Yes	No	No
FFB	Yes	Yes	Yes
Profibus	Yes	Yes	Yes
Modular Construction	Yes	Yes	No
<b>User Interface</b>			
Display	Graphic	Segments	Segments
Local configuration	Yes	No	No
<b>Diagnostics</b>			
Polarity Insensitivity	Standard	No	No
Transmitter Messaging	Standard	No	No
Maintenance Mode Indication	Standard	No	No
Tamper Reporting	Standard	No	No
<b>Max Working Pressure</b>			
Standard (psi)	4500	3626	2300
Optional (psi)	6000	4500/6092	N/A

**Honeywell's  
STD800  
performance  
advantage**

Superior

Comparable to Best

Acceptable

Inferior

**Honeywell**

Category	Honeywell STD700	Emerson 3051C	Yokogawa EJA110A
<b>PERFORMANCE</b>			
Accuracy	0.05%	0.04%	0.00665
Stability	0.02% per year for 5 years	.125% 5yrs	0.1%/5 years
Speed of Response	100 ms	100ms	200ms
Total Probable Error	N/A	0.15% Span 0.12% Span (Opt.)	N/A
Turndown	400:1	100:1 (150:1 Opt.)	100:1
Temperature	Yes	Yes	Yes
Static Pressure reading available on DP transmitters	Yes	No	No
<b>Communications</b>			
HART	HART 7	HART 7	HART 5
DE	Yes	No	No
FFB	Yes	Yes	Yes
Profibus	Yes	Yes	Yes
Modular Construction	Yes	No	No
<b>User Interface</b>			
Display	Graphic	Segments	Segments
Local configuration	Yes	Yes	No
<b>Diagnostics</b>			
Polarity Insensitivity	Standard	No	No
Transmitter Messaging	Standard	No	No
Maintenance Mode Indication	Standard	No	No
Tamper Reporting	Standard	No	No
<b>Max Working Pressure</b>			
Standard (psi)	4500	3626	2300
Optional (psi)	6000	4500/6092	N/A

**Honeywell's  
STD700  
performance  
advantage**

Superior

Comparable to Best







Acceptable

Inferior

Honeywell						
Category	Emerson 3051C	Emerson 3051S Ultra	Yokogawa EJA110A	Yokogawa EJA110	Honeywell STD800	Honeywell STD700
PERFORMANCE						
Accuracy	0.04%	0.025%	0.07%	Up to 0.04% 0.025% (Opt.)	Up to 0.0375% 0.025% (Opt.)	Up to 0.0375% 0.025% (Opt.)
Stability	.125% 5yrs	.2% 10 years	0.1% 5 years	0.1% 10 years	0.01% per year for 10 years	0.02% per year for 5 years
Speed of Response	100ms	100ms	200ms	90ms	80 ms	100 ms
Total Probable Error	0.15% Span 0.12% Span (Opt.)	0.1% Span	HA	0.12% Span	0.12% Span	HA
Turndown	100:1 (150:1 Opt.)	200:1	100:1	200:1	400:1	400:1
Temperature	Yes	Yes	Yes	Yes	Yes	Yes
Static Pressure reading available on DP transmitters	No	No	No	Yes	Yes	Yes
Communications						
HART	HART 7	HART 5	HART 5	HART 7	HART 7	HART 7
DE	No	No	No	No	Yes	Yes
FFB	Yes	Yes	Yes	Yes	Yes	Yes
Profibus	Yes	Yes	Yes	Yes	Yes	Yes
Modular Construction	No	Yes	No	No	Yes	Yes
User Interface						
Display	Segments	Segments	Segments	Segments	Graphic	Graphic
Local configuration	Yes	No	No	No	Yes	Yes
Diagnostics						
Polarity Insensitivity	No	No	No	No	Standard	Standard
Transmitter Messaging	No	No	No	No	Standard	Standard
Maintenance Mode Indication	No	No	No	No	Standard	Standard
Tamper Reporting	No	No	No	No	Standard	Standard
Max Working Pressure						
Standard (psi)	3626	3626	2300	2300	4500	4500
Optional (psi)	4500-6092	4500-6092	HA	HA	6000	6000

Overall Comparison

Superior  
Comparable to Best  
Acceptable  
Inferior

Honeywell	
Knock Out Specifications	
<ul style="list-style-type: none"> <li><b>HMI (Display &amp; Configuration)</b> <ul style="list-style-type: none"> <li>Transmitters shall be optionally capable of zero, span and full transmitter configuration via external buttons in any environmental or electrical safety environment without the need for a separate configuration device.</li> <li>In addition, transmitters shall have the option of a graphical display capable of supporting external configuration, trending and diagnostic messages.</li> <li>The graphics display shall also be capable of multiple screen formats including posting operator initiated messages to assist maintenance activities.</li> <li>Further when coupled with Honeywell's Experion system the transmitter shall permit the display of an operator initiated maintenance mode screen indicating safe mode for transmitter maintenance activities.</li> </ul> </li> <li><b>Polarity Insensitivity</b> <ul style="list-style-type: none"> <li>All transmitters (HART, DE, or FF) shall have polarity insensitive electrical connections which facilitate proper protection &amp; operation regardless of connection polarity.</li> </ul> </li> <li><b>Modular Design</b> <ul style="list-style-type: none"> <li>All transmitters shall be modular in design permitting maintenance shop or field <i>simple &amp; fast</i> replacements of transmitter display and or electronics without removal of power or violation of agency approvals in all electrical classifications except Flameproof (Div 1 or Zone 1) environments.</li> </ul> </li> </ul>	<p>Honeywell ROSEMOUNT ABB Endress + Hauser SIEMENS Honeywell ABB SIEMENS Honeywell Honeywell Honeywell Honeywell</p>
<p>       </p>	

## Knock Out Specifications

- **Safety Tamper Alert**

- In addition to optional write protection prohibiting system or manual writes, when integrated with Experion the transmitter shall also incorporate a Tamper Alarm which advises operators and or maintenance personnel regarding attempts to change or overwrite protected devices.

**Honeywell**

- **Transmitter Messaging**

- Transmitters shall be capable of receiving a standard HART XX command with a 32 character message and posting the message on the transmitter display

**Honeywell**

- **Static Pressure & Temperature Compensation**

- Differential pressure transmitters shall have the ability to compensate for both static pressure and temperature changes.
- Static pressure and meter body temperature shall be available on the device's display as well as digitally via HART protocol.

**Honeywell**



- **Total Probable Error (TPE)**

- Transmitters shall be capable of TPE of up to 0.12% of span over a 10:1 turndown and with temperature shifts up to 28°C and static pressures up to 1000 psig.

**Honeywell**

**ROSEMOUNT**



**ROSEMOUNT**

**ABB**



**Honeywell**

# SmartLine



**Customer Segmentation**

Agenda

## Segmentation

### What is it

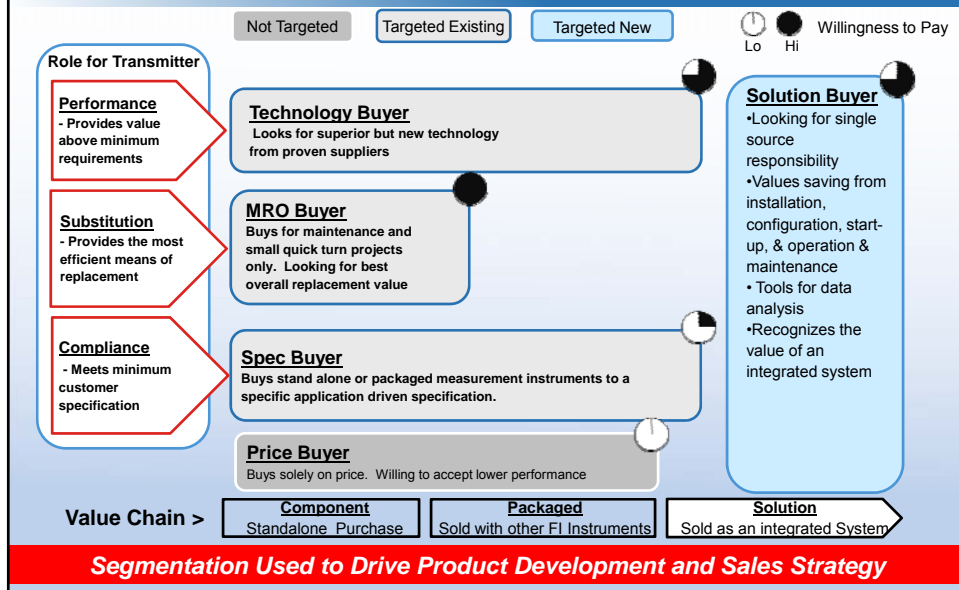
- Segmentation/Grouping of customers by their buying criteria
- Alignment of product features, benefits and value with that buying criteria

### How can it help

- Segmentation helps insure we match the meaningful aspects of our products with our customers' needs

\* ST 800 Differentiated Feature

## Who is SmartLine for?



## How to Sell – Spec Buyer

### Spec Buyer

**"I have a minimum set of specifications for my process."**

#### Characteristics/Customer Needs

- Must meet a set of minimum competitive project specs
- Limited Qualified Suppliers
- Long Term Product Reliability
- Faster Response Time
- High Accuracy Measurement
- Reduce Project Specification Time

- **Example** – Daelim Industries, Air Liquide, Praxair, EPCs

#### What do they typically Buy?

- Emerson 3051C / 2051C
- Yokogawa EJA 100
- Honeywell ST3000 Series

#### Pricing Strategy?

- Competitive bid after validation of compliance with customer specifications.

#### How We Win?

- "ST 800" w/advanced options to write "lockout" or competitor limiting specs.
  - Response Time, Turndown, Advanced Display, Local configuration vs. EMR & YOK
- Position ST700 fighting tier when minimum bid specs are written

## How to Sell – Tech Buyer

### Tech Buyer

**"I need a product from a proven supplier with advanced features for improving my process and associated cost efficiencies"**

#### Characteristics/Customer Needs

- Minimize Unscheduled Process Downtime
- Root Cause Failure Analysis
- Understand Wear & Tear on Plant
- Check Engine Light
- Intuitive Configuration and Display
- Better Total Performance

- **Example** – Shell, Netherlands; BP, Wintershall

#### What do they typically Buy?

- Emerson 3051S Ultra
- Yokogawa EJX100
- Honeywell Series 100

#### Pricing Strategy?

- Get price for differentiated offerings of value.

#### How We Win

- Position the "ST 800" w/advanced options:
  - Advanced Display
  - Local HMI
  - High Accuracy, TPE, & response times
  - Messaging, Polarity Insensitivity etc
  - Advanced Diagnostics
- Write the spec for the ST 800
- Promote ability for future technology upgrades with modularity

## How to Sell – MRO Buyer

### MRO Buyer

**"I need to maintain my plant when product needs maintenance or replacement."**

#### **Characteristics/Customer Needs**

- Reduce Maintenance Costs
- Reduce Configuration Costs
- Fast (product replacement) response
- Local support

- **Examples** – Grace, Baltimore; Sunoco, Philadelphia, Maintenance shop in a plant

#### **What do they typically Buy?**

- Emerson 3051C / S
- Yokogawa EJA/X 100
- Honeywell ST3000 Series

#### **Pricing Strategy?**

- List price depending on opportunity size
- Premiums for delivery where possible
- Established channel discounts (via distribution)

#### **How we win?**

- Introduce the value added features for MRO
  - Polarity insensitivity, local configuration, maintenance mode indication, extended warranty, tamper alerts, long term stability
- Promote reduced inventory costs provided by modularity

## How to Sell – Solution Buyer

### Solution Buyer

**"I have a substantial new process or plant upgrade and need overall system support".**

#### **Characteristics/Customer Needs**

- Prefers single source responsibility
- Time savings on installation
- Time savings on product & system configuration
- Time savings on start-up
- Reduced overall operational costs
- Overall simplicity and ease of integration

- **Examples** – Pulcra Chemical, Turkey; Petroleum Dev of Oman; Tebodin, Oman; Exxon Mobil, Petrobas

#### **What do they typically Buy?**

- Emerson 3051S or 3051C
- Yokogawa EJA 100 or EJX 100
- ABB 266 Series
- Honeywell ST3000

#### **Pricing Strategy?**

- Lead with "ST 800" Integration Savings Opportunities:
- Value sell cost savings driven by:
  - Transmitter Messaging
  - Maintenance Mode Indication
  - Tamper Alerts
  - Polarity Insensitivity
  - Advanced Display and Local HMI

#### **How we win?**

- Promote Experion Integration Features
- Promote modularity to reduce additional inventory



## MARCOM Promotional Program Overview

Agenda

## Primary External Tactics

Awareness

- Public Relations - Oct
  - Press conference and release/fact sheet
  - Equip channel partners with media kits for local media
  - Byline articles

Interest

- Advertising - Oct
  - Focus on digital advertising – direct traffic to landing page and lead generation

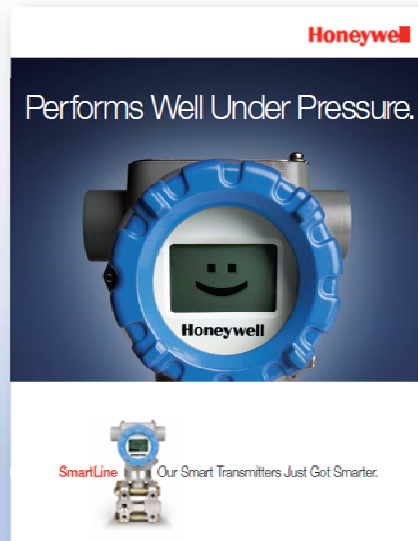
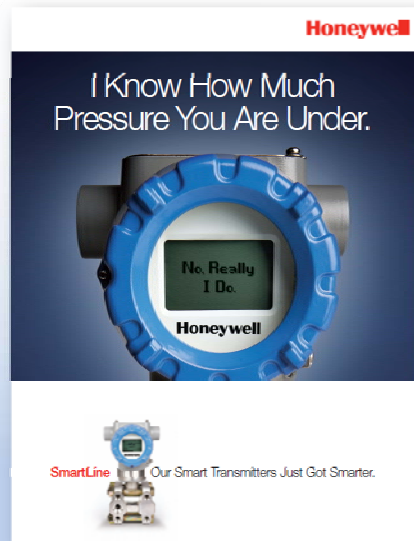
Belief

- Web page for multimedia assets - sales leads - Oct
- Online tools and visual messages - Oct

Acquisition

- Accuracy calculator, model number generator
- Interactive modules to highlight differentiation
- Direct Marketing - Oct
  - Email campaigns – lists from channel partners, Siebel, buy ISA list, etc.
  - Webinars – channel partners hosting
- Proof collateral, case studies and WPs – all the time

## Creative for Ad's, Posters, PPT's etc



## MARCOM MATERIALS

### Collateral

- Product Brochure (Complete offering)
- Product Specifications AP/DP/GP
- Accuracy Calculator Program
- White Paper – Transmitter Accuracies
- Model Selection Guides AP/DP/GP
- Model Conversion Program ST 3000 > ST 800
- SmartLine ST 800 Battle Card
- Customer overview Presentation
- Demo Presentation and Script
- Plant Lifecycle Message

### Additional Support Material

- Multimedia 3D Turnaround
- Images for Promotional Materials

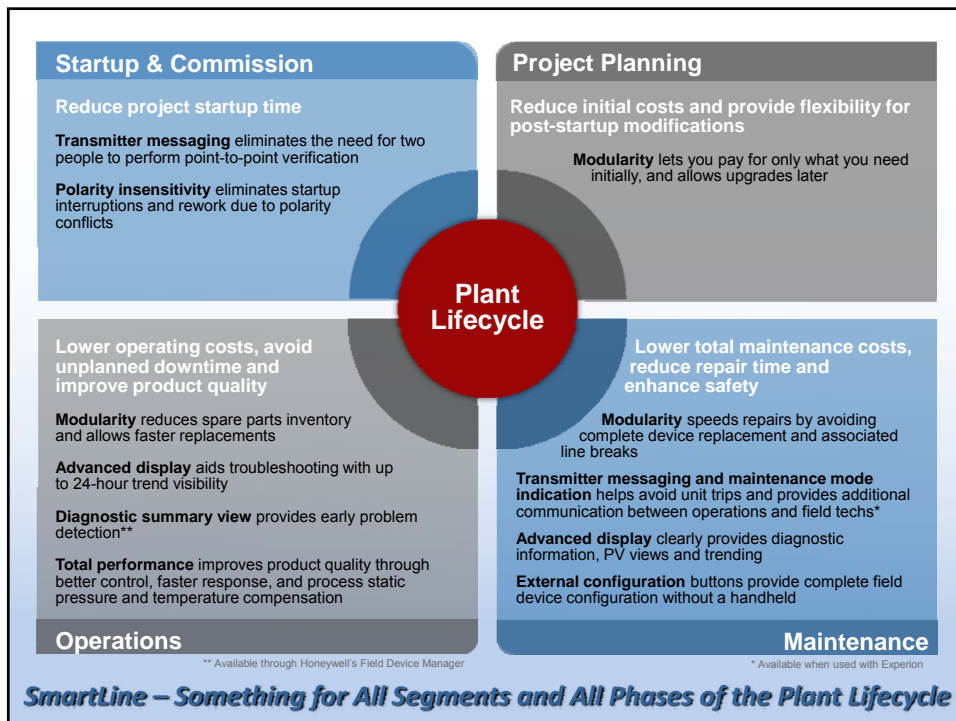


# SmartLine



**What did we learn?**

Agenda



## SmartLine Pressure Transmitter

**Honeywell**

### Better On Its Own



*Reduced Inventory Costs*  
*Quicker and Easier Project Start Ups*  
*Flexible Platform for Technology Upgrades*  
*Reduced Operating Costs*  
*Avoid Unplanned Shutdowns*  
*Lower Maintenance Costs*  
*Improve Product Quality*  
*Improved Safety*



### Even Better Together

## Call to Action

**Honeywell**

- Get price by selling the additional value of SmartLine
  - Performance, System Integration, Modularity, etc.
- Start introducing SmartLine to your current customers TODAY.
  - Upsell to the new platform
  - Migrate from ST3000 to SmartLine
- Position SmartLine in all project pursuits moving forward.
  - Do not position ST3000 unless delivery is required before features are available on SmartLine
- Use SmartLine to break in to competitive held accounts and grow share in your territory

**End of Presentation**