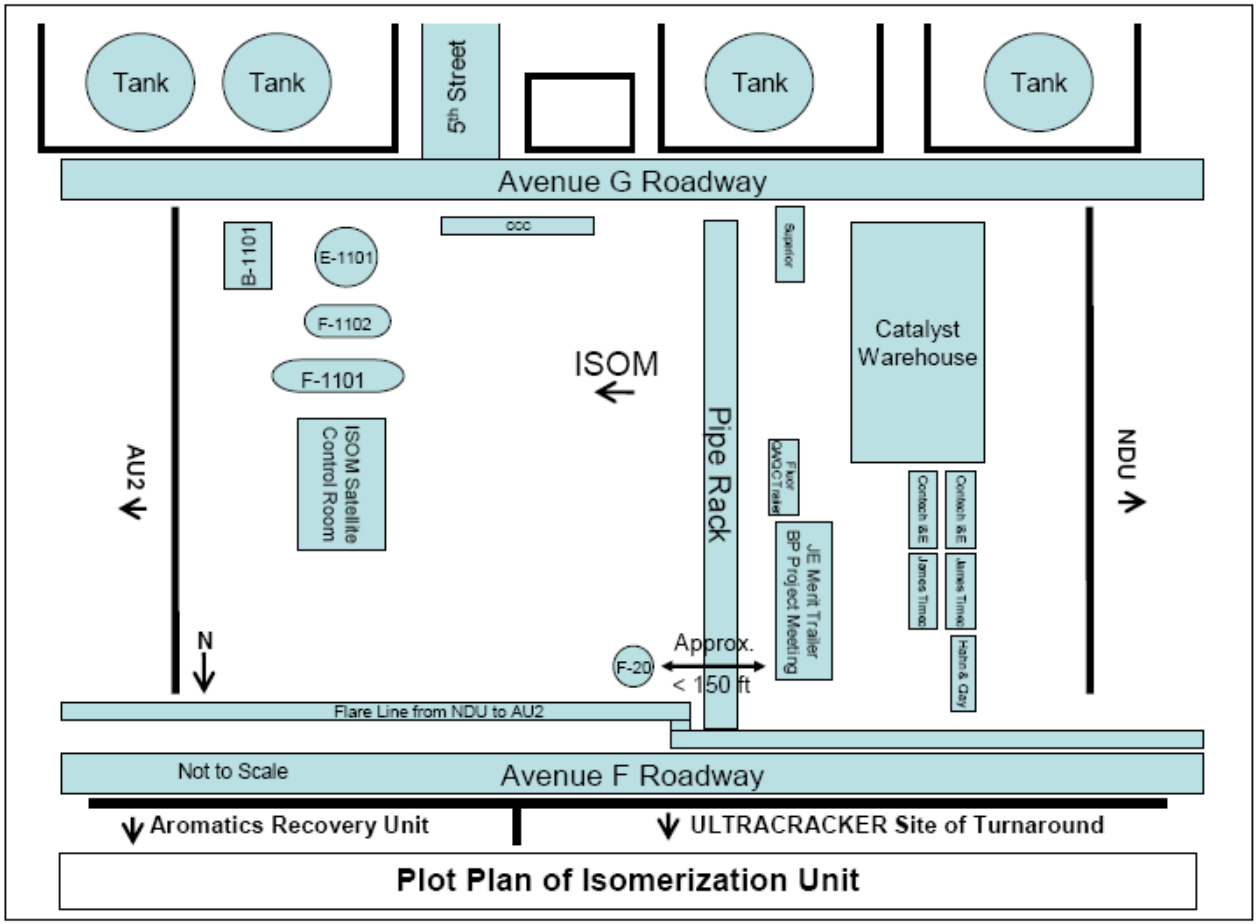
A HFGT folyamatműszerezése

Terepi eszközök - távadók

Folyamatműszerezési szabványok

Tipikus dokumentumok

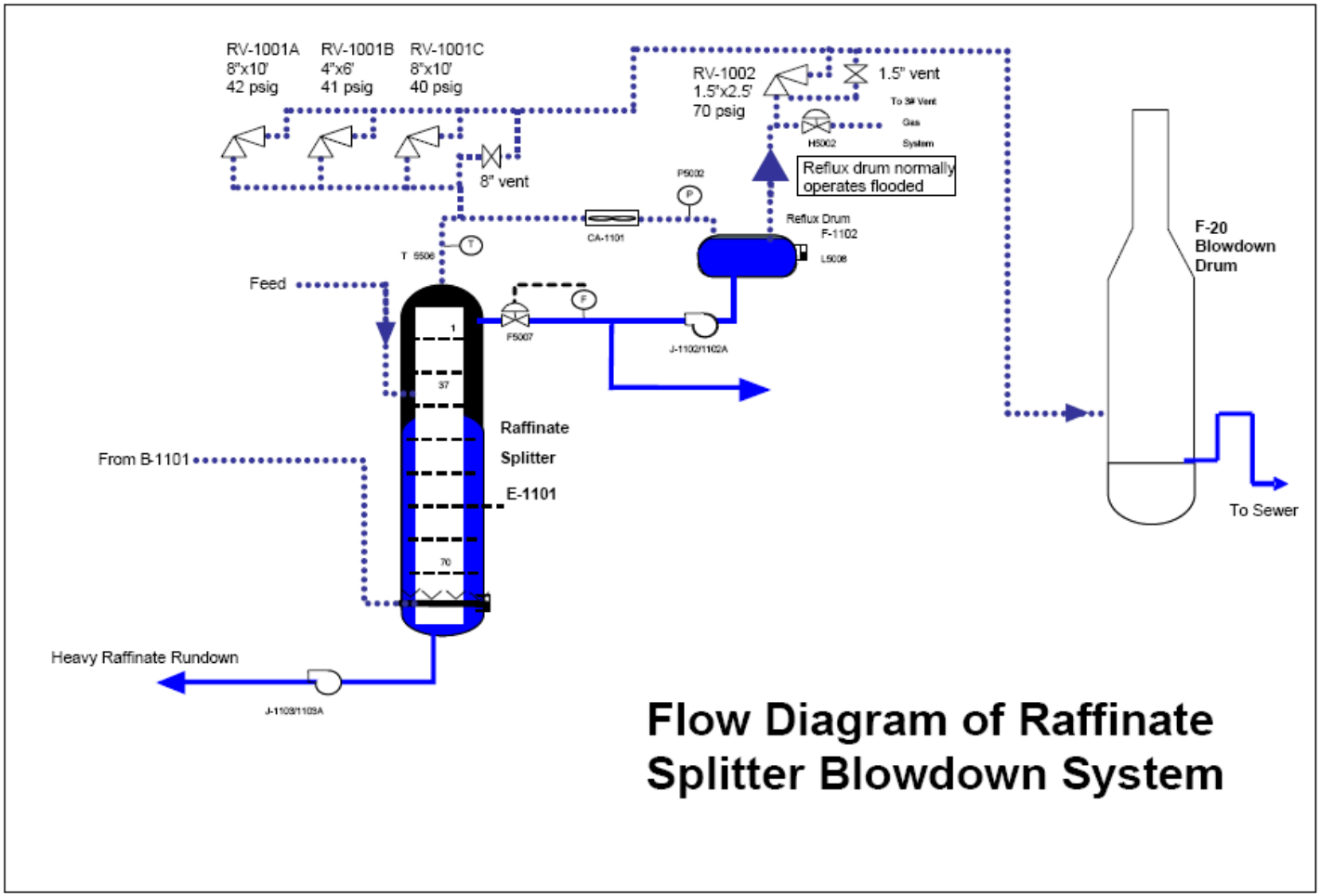
- Vázlatos technológia – a technológiai berendezések egyszerűsített, fizikai elhelyezkedése



Folyamatműszerezési szabványok

Tipikus dokumentumok

A technológia folyamatábrája – a (rész)technológia területén elhelyezkedő főbb készülékek a gyártási folyamat sorrendjében a tervezett működési paraméterekkel

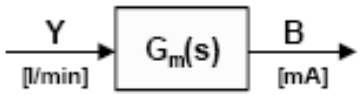


Folyamatműszerezési szabványok

Tipikus dokumentumok

A P&ID vagy folyamatműszerezési diagram – mutatja a (rész)technológia és annak technológiai műszerezéséhez szükséges készülékeket

- **Individual TF of the standard block diagram**
  - **TF of each block between input and output of that block**
  - **Each gain will have different unit.**
    - **[Example] Sensor TF**
    - **Input range: 0 -50 l/min**
    - **Output range: 4 -20 mA**



$$\text{Gain, } K_m = \frac{20-4}{50-0} = 0.32\,[\text{mA/(l/min)}]$$

- **Dynamics: usually 1st order with small time constant** $G_m(s) = \frac{K_m}{\tau_m s + 1}$
  - **Block diagram shows the flow of signal and the connections**
  - **Schematic diagram shows the physical components connection**

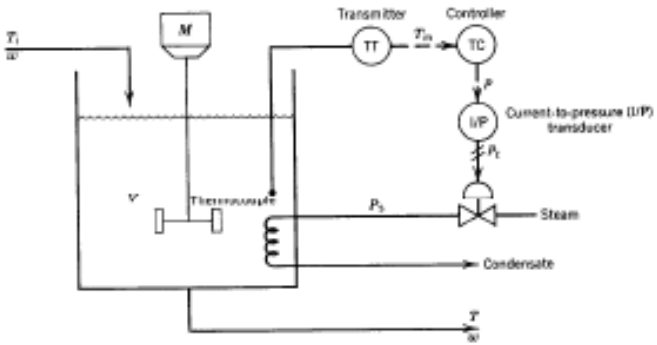
Electrical signal

Pneumatic signal

TT Temperature Transmitter

FC Flow Controller

LI Level Indicator

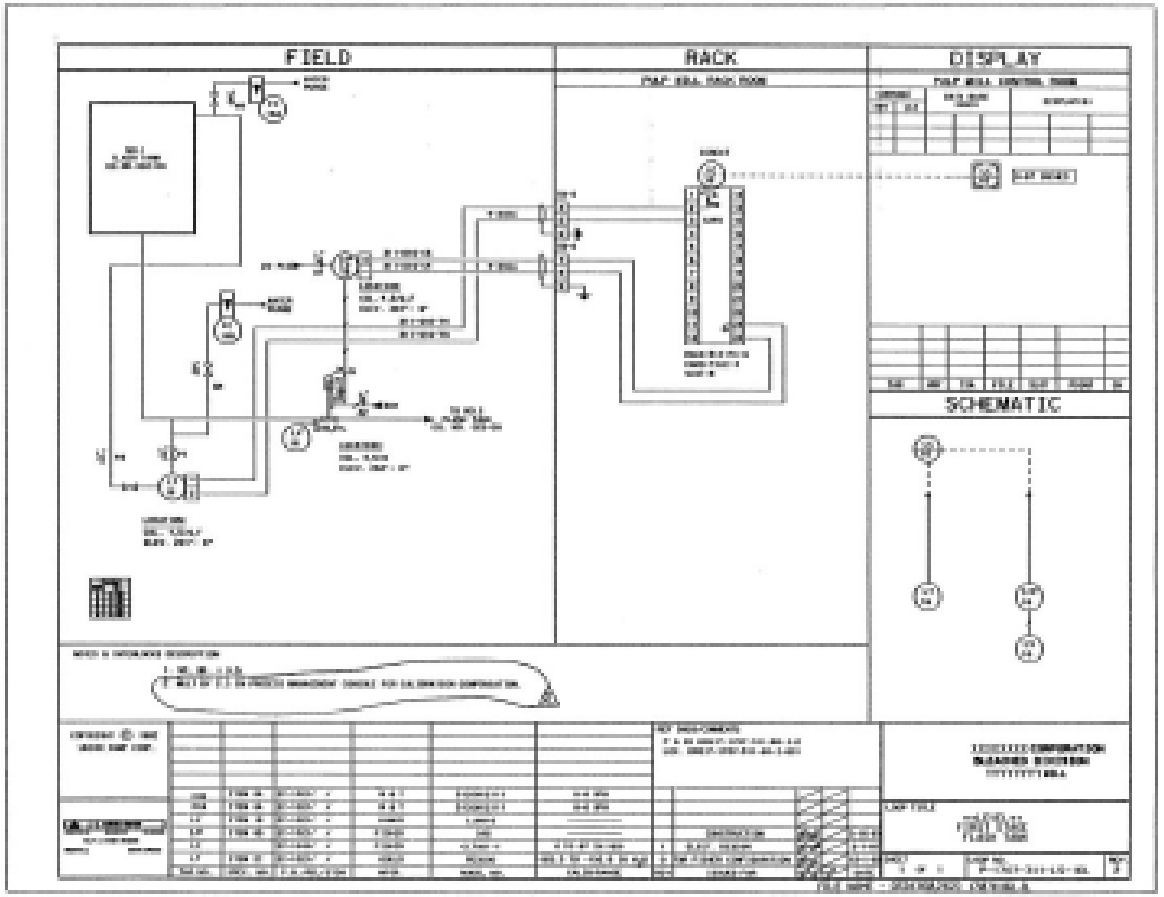


Folyamatműszerezési szabványok

Tipikus dokumentumok

A műszerezésikör diagramja – részletes, a terepi huzalozásra is vonatkozó műszerbekötési ábrák rendszere

Example – Loop Sheet

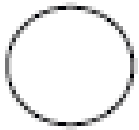


Folyamatműszerezési szabványok

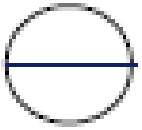
P&ID tervjelek

ISA S5.1 General Instrument or Function Symbol

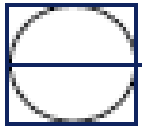
Discrete Instrument,
field mounted



Discrete instrument,
accessible to operator



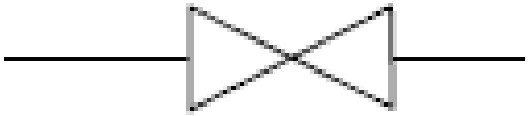
Shared display,
shared control

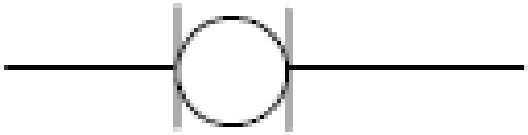


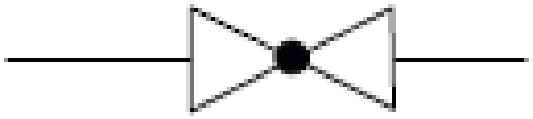
Folyamatműszerezési szabványok

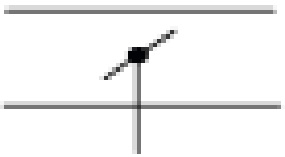
P&ID tervjelek

ISA S5.1 Valve Body, Damper Symbols

General Symbol 

Rotary Valve 

Globe Valve 

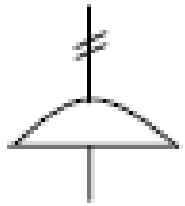
Damper 

Folyamatműszerezési szabványok

P&ID tervjelek

ISA S5.1 Actuator Symbols

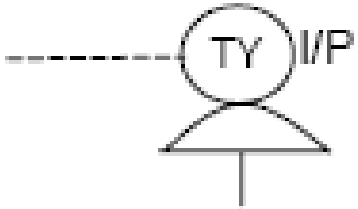
- Diaphragm, spring-opposed



- Rotary Motor

- Digital

Valve Actuator with Electro-pneumatic converter

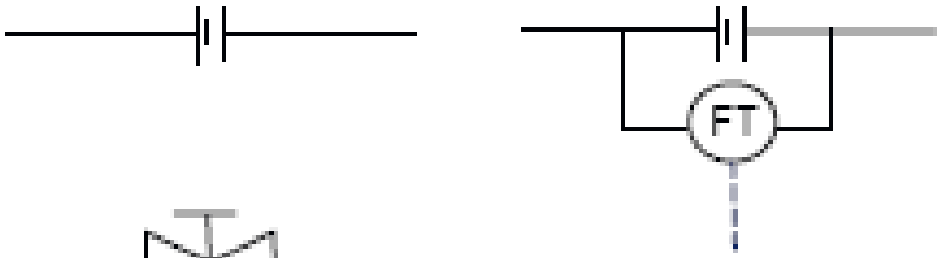


Folyamatműszerezési szabványok

P&ID tervjelek

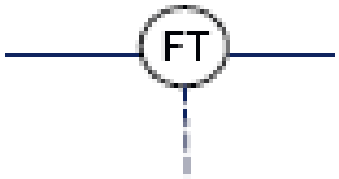
ISA S5.1 Symbols for Other Devices

Restricting Orifice, With Flow Transmitter

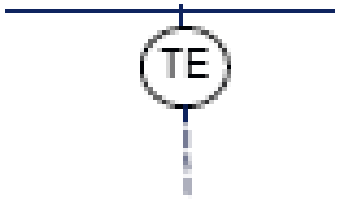


Hand Valve

Inline Measurement



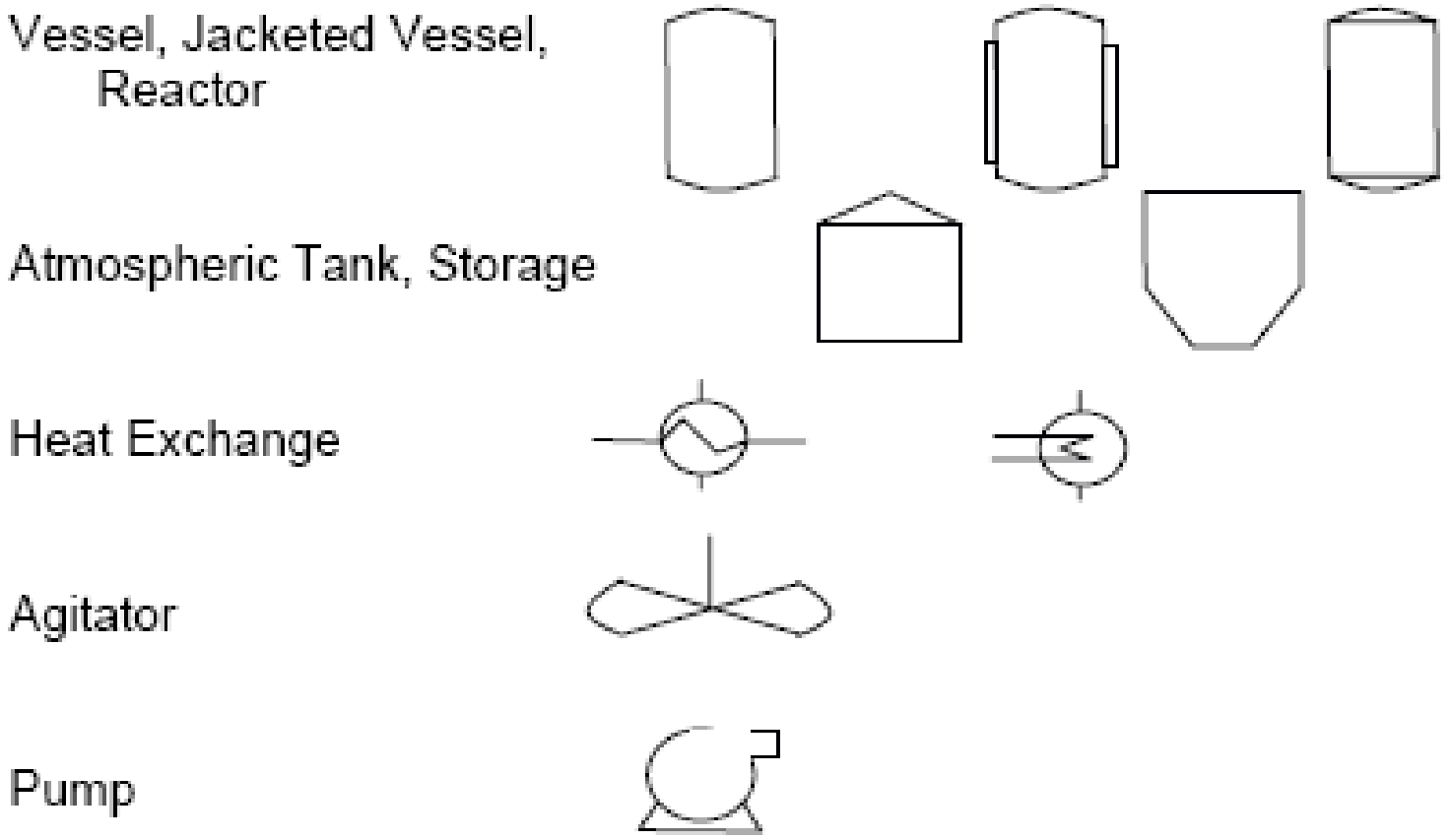
Measurement Element



Folyamatműszerezési szabványok

Alapvető technológiai készülékek

ISA 5.5 Process Symbols



P&ID egyszerűsített jelölések

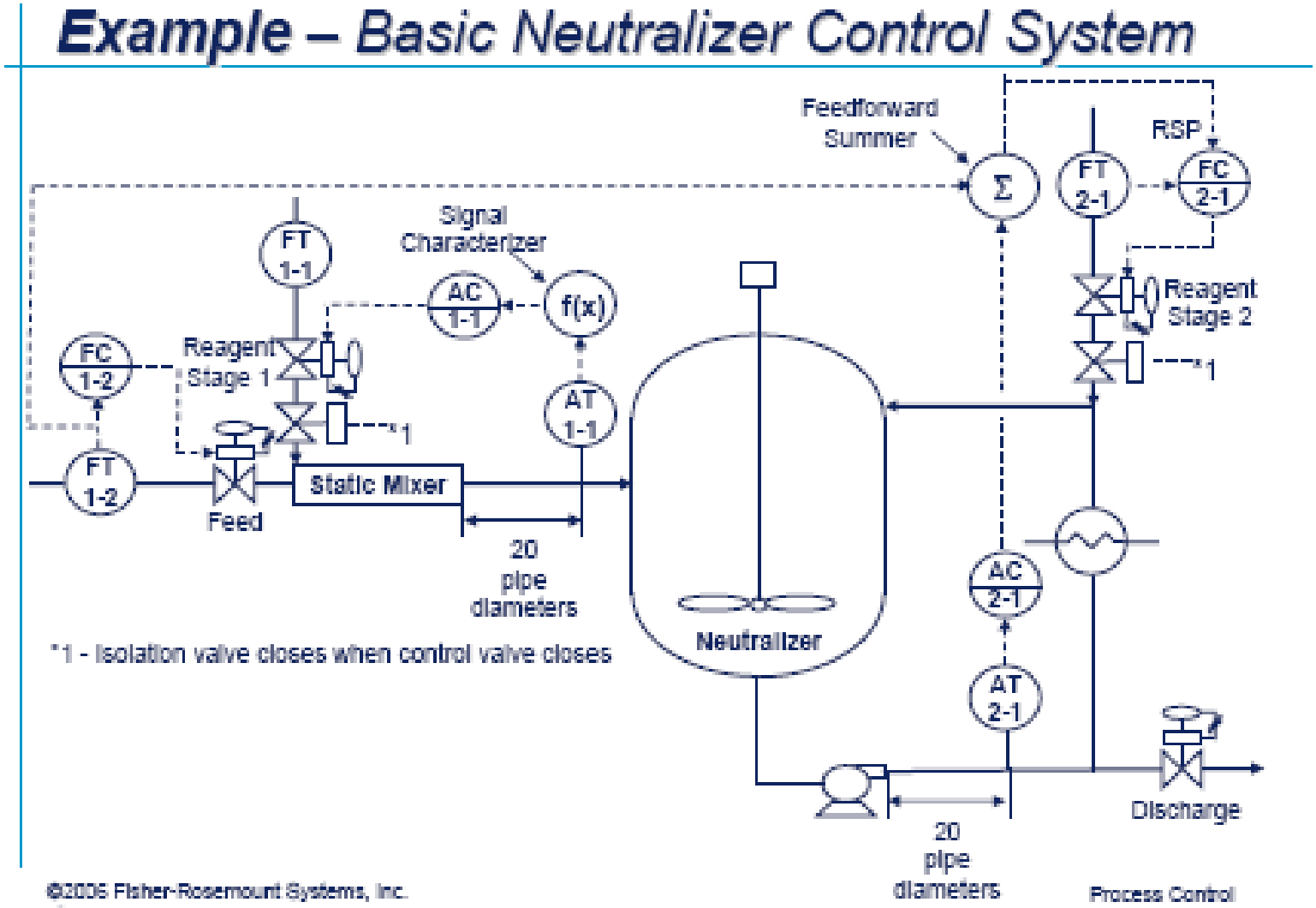
	First Letter	Second Letter
A	Analysis	Alarm
B	Burner, combustion	User's choice[a]
C	User's choice	Control
D	User's choice	
E	Voltage	Sensory (primary element)
F	Flow rate	
G	User's choice	Glass (sight tube)
H	Hand (manually initiated)	
I	Current (electric)	Indicate
J	Power	
K	Time or time schedule	Control station
L	Level	Light (pilot)
M	User's choice	
N	User's choice	User's choice
O	User's choice	Orifice, restriction
P	Pressure, vacuum	Point (test connection)
Q	Quantity	
R	Radiation	Record or print
S	Speed or frequency	Switch
T	Temperature	Transmit
U	Multivariable	Multifunction
V	Vibration, mechanical analysis	Valve, damper, louver
W	Weight, force	Well
X	Unclassified[b]	Unclassified
Y	Event, state, or presence	Relay, compute
Z	Position, dimension	Driver, actuator, unclassified

[a] User's choice may be used to denote a particular meaning, having one meaning as a first letter and another meaning as a second letter. The user must describe the particular meaning(s) in the legend. This letter can be used repetitively in a particular project.

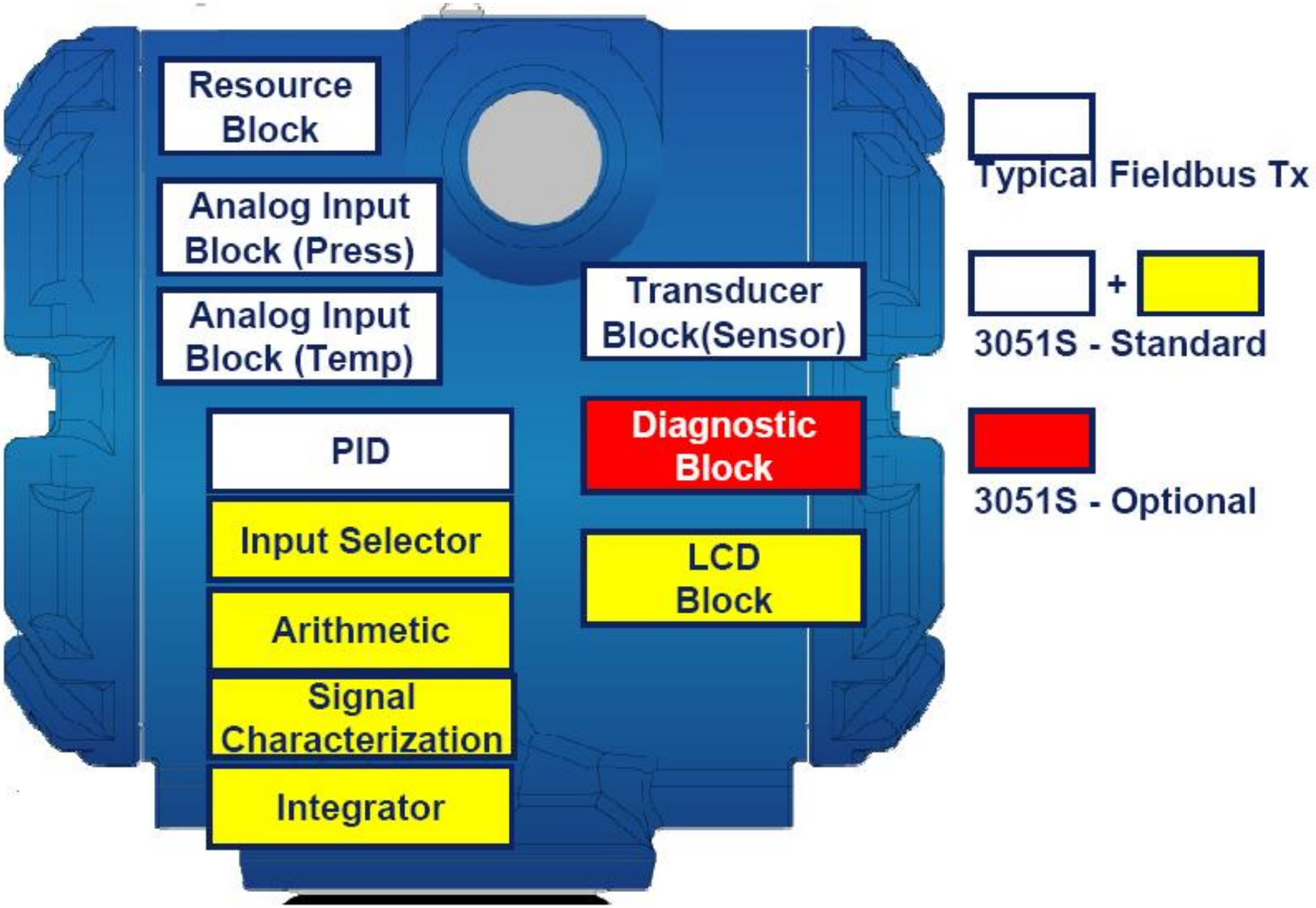
[b] Unclassified letters may be used only once or to a limited extent. If used, the letter may have one meaning as a first letter and another meaning as a second letter. The user must specify the meaning(s) in the legend.

Reference: ANSI/ISA-S5.1-1984, Instrumentation Symbols and Identification, ISBN 0-87664-844-0

Példa semlegesítő berendezés műszerezésére



Terepi műszerek - távadók



Technológiai paraméterek mérése

Navigator
Colorimetric Analyzer

SensyTemp
Temperature Transmitter

364..

261..

Pressure Transmitter

Corporate identity,
common user interfaces

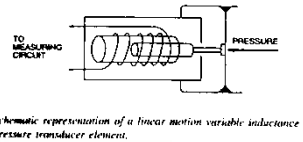
ProcessMaster
Magnetic Flowmeter

HygenicMaster
Magnetic
Flowmeter

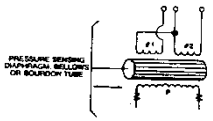
OriMaster
DP Flowmeter

WaterMaster
Magnetic Flowmeter

Pressure Measurement



Schematic representation of a linear motion variable inductance pressure transducer element.



Linear variable differential transformer.

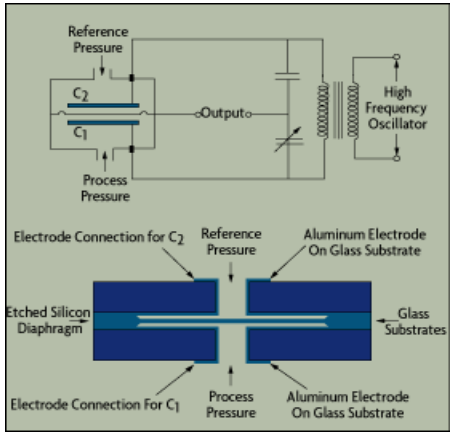
Absolute Pressure

Gauge Pressure

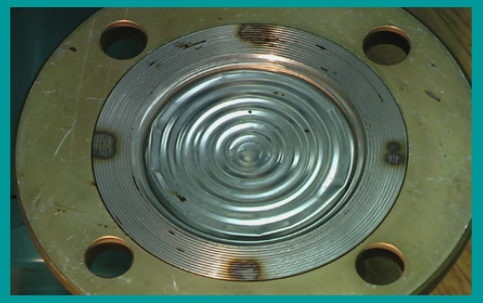
Differential Pressure

SIL Safety Transmitter

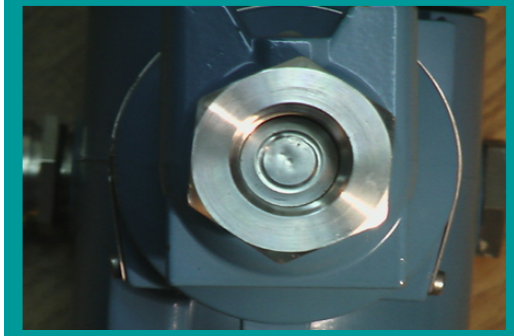
Multivariable Transmitter



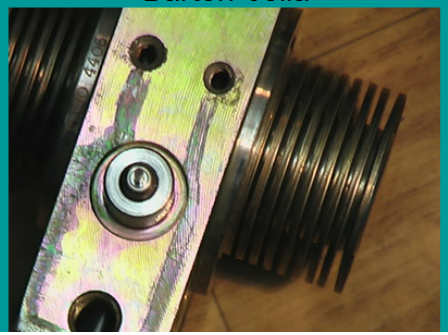
Profilos membrán



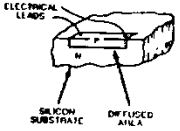
Síkmembrán

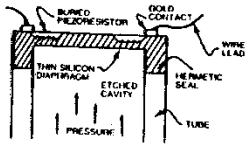


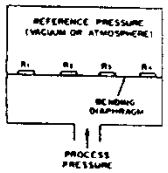
Barton-cella



Electronic Pressure Sensors







Strain gauge transducer with diaphragm elem

Different sensor technologies, capacitive/Piezo/inductive

ABB Instrumentation

2600T The Transmitters Family

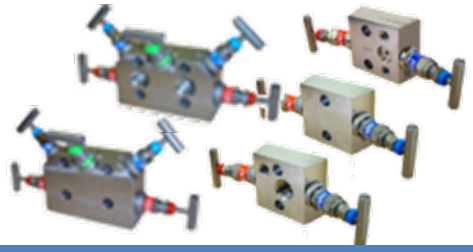
Top Performance

Compact DP

Multivariable

High Performance

Safety

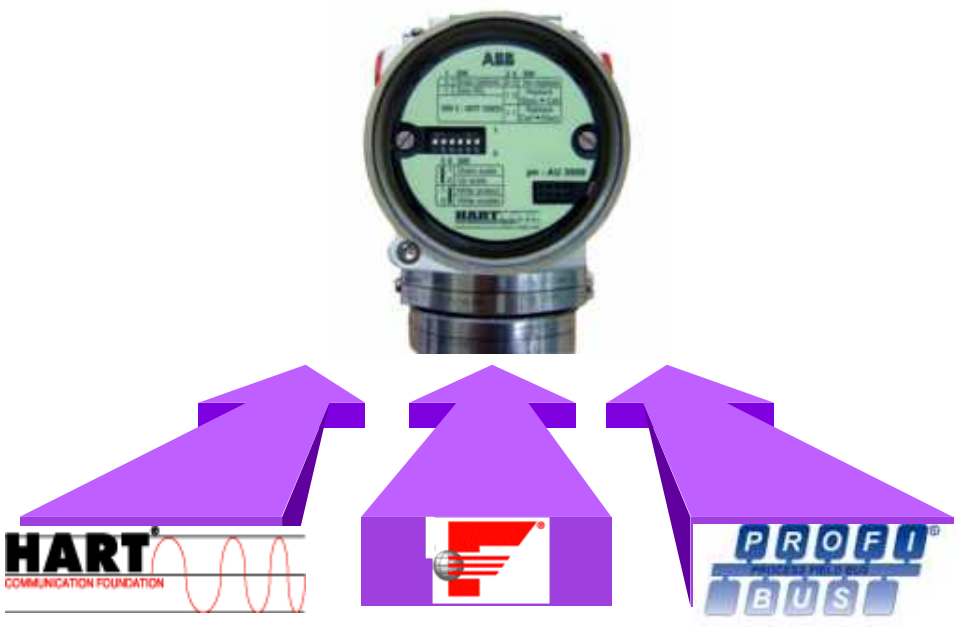


Accessories

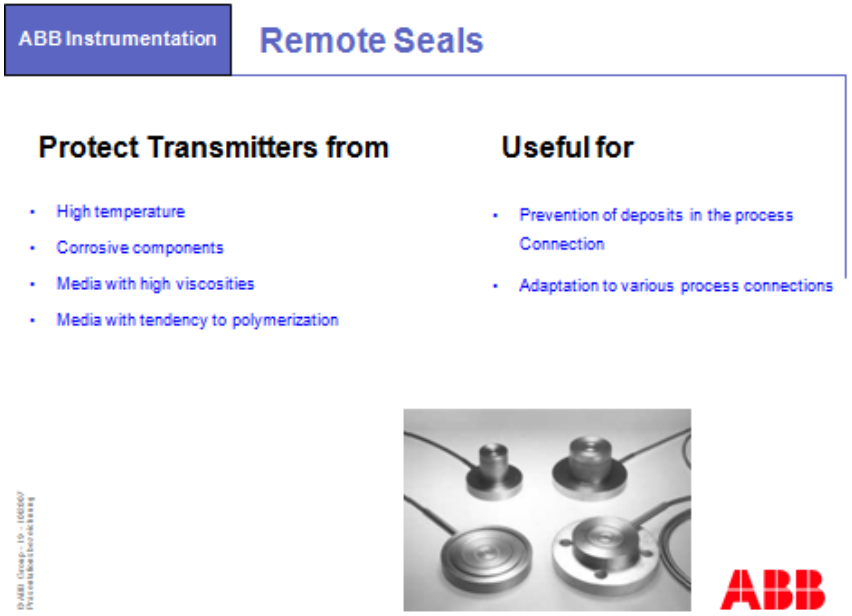
Std. Performance

Diaphragm seals

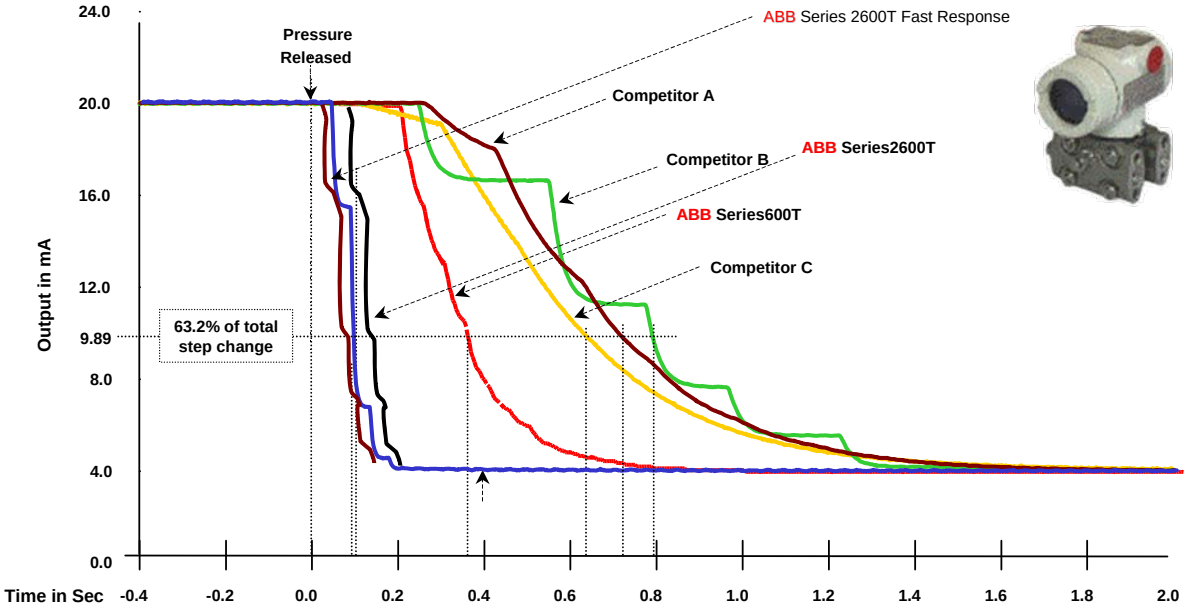
COMMUNICATION PROTOCOLS FIELD UPGRADE CAPABILITY



- *Improved Housing* is not required.
- Electronics can be directly replaced in the field. There is no need to send transmitters back to manufacturer
- “Plug and Play” without wet calibration at the workshop.



2600T Dynamic Performance Comparison



- Exceeding the expectations: 80 msec !!

ABB Instrumentation

Safety Transmitter Architecture

For IEC 61508 Hardware Fault Tolerance (HFT) is the number of faults that the component can withstand before causing the loss of the safety function

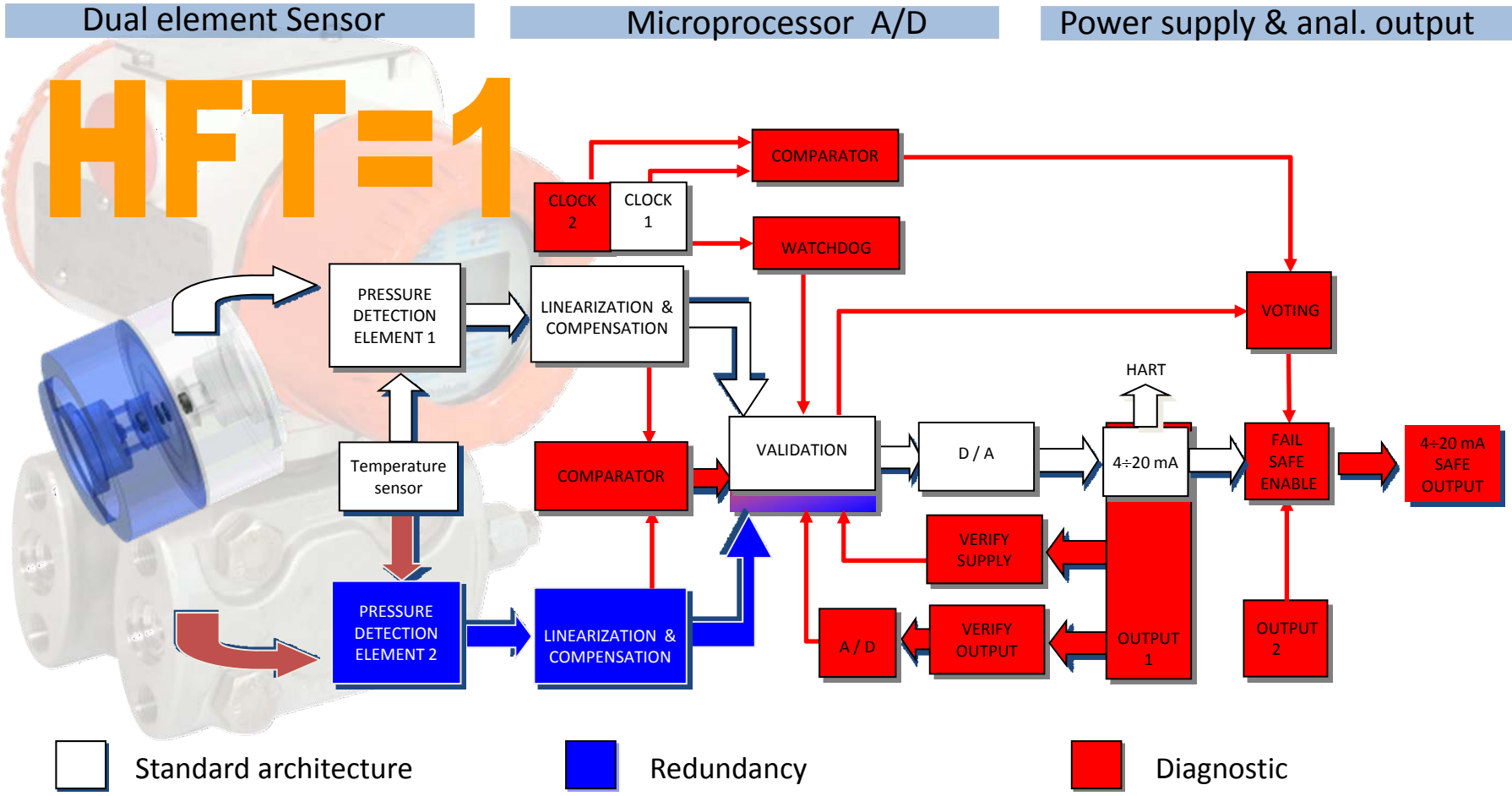


ABB Instrumentation

Enhanced 268 (Rev.2)

Std. Connection

Transmitter

Direct Mount

Diaphragm seals

Remote

Diaphragm Seals

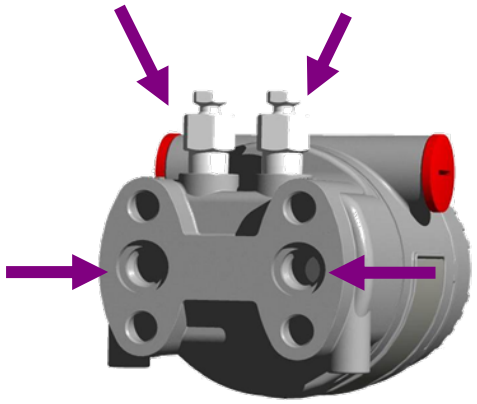
ABB Instrumentation

All welded design

- The only bolt-less, all welded transmitter on the market

  Increased safety thanks to the reduction at the minimum of the potential leaking points.

Potential leaking points reduced by 50% compared to conventional transmitters



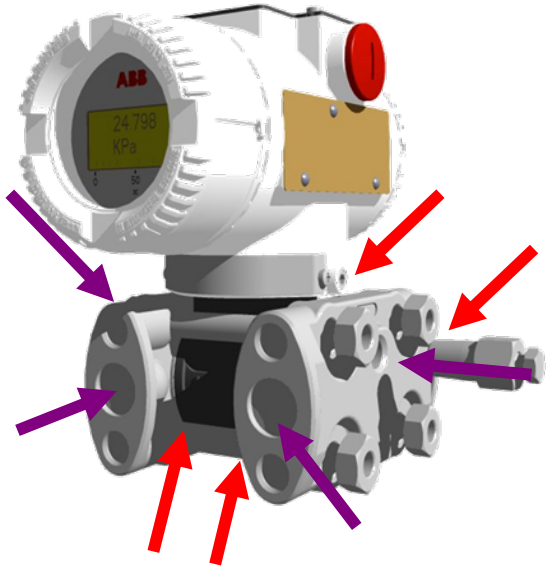


ABB Instrumentation

364 Innovation – Polarity selection

P2 = High pressure

P1 = Low pressure

P2 = Low pressure

P1 = High pressure

Installation not limited by high/low pressure orientation.
Install with the best mechanical solution then define high/low pressure connection.

ABB Instrumentation

364 Innovation- Materials

Process Wetted Materials :

Diaphragm : Hastelloy C276 NACE

Process Connection : 316L Stainless Steel NACE

Fill Fluid : Silicone Oil DC200

Housing & Mounting Bracket:
Stainless steel

ABB Instrumentation

364 Innovation – LCD indicator

- Up to 2 variables + bar-graph

- Tag Number

- Variables
  - Pressure
  - Output %
  - Output current
  - Engineering output
  - Totalizer
  - Static Pressure
  - Sensor temperature

- Diagnostic messages

ABB Instrumentation

364 Innovation - Configuration

Easy Set Up
Language
Pressure Polarity
Engineering Unit
LRV
URV
Transfer Function
Linearization Point
Low flow cut off
Auto Set Zero Scaling
Damping

Communication
HART Tag
Descriptor
Message
Polling Address

Device Config
Rerange
PV Scaling
Damping
Output on Alarm
Pressure Polarity
Transfer Function
SW Write Protect

Calibrate
Sensor Trim
Output Trim
Reset To Factory Trim

Diagnostics
Diagnostics
Loop Test

Totalizer
Totalizer Status
Totalizer Reset
Totalizer Settings

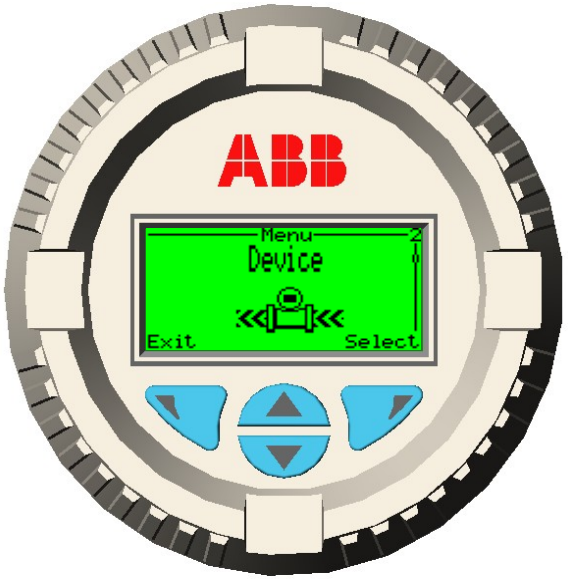
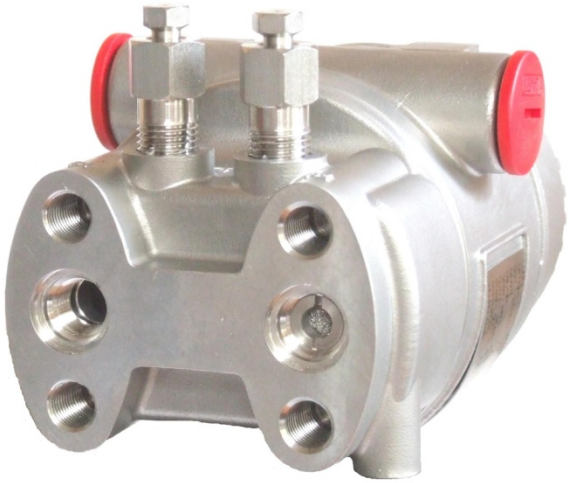
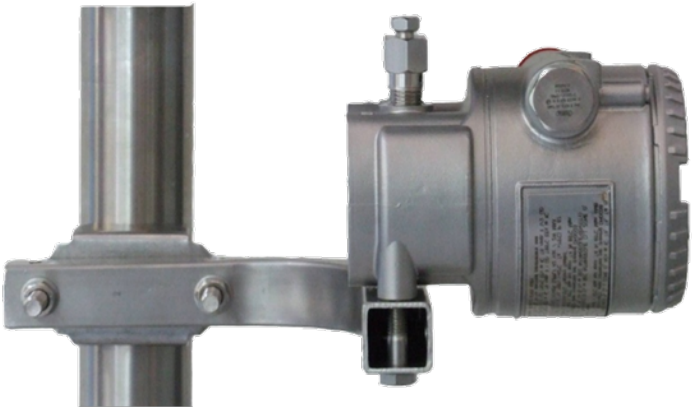


ABB Instrumentation

Flexibility of mounting



Direct mounting



Bracket mounting

Manifold mounting

Coplanar adaptor available

ABB Instrumentation

Flexibility of mounting

364 Series transmitters can be mounted to any standard manifolds

Transmitters shown mounted to Oliver Valves Y53S 5 valve manifolds

ABB Instrumentation

All flow products under the same name

Electromagnetic Flowmeters

Ultrasonic Flowmeters

Variable Area Flowmeters

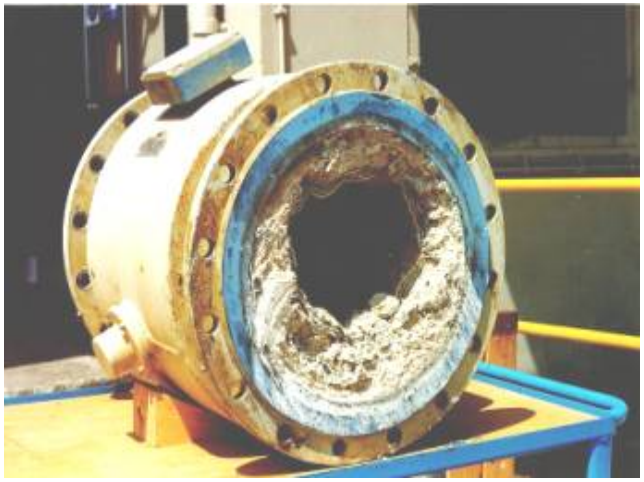
Vortex Flowmeters
Swirl Flowmeters

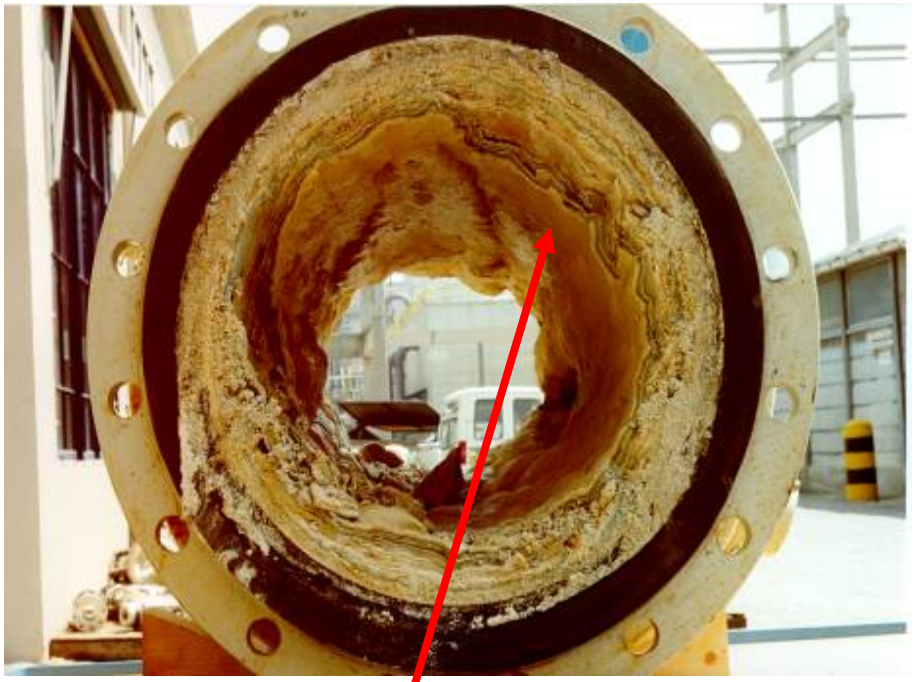
Mass Flowmeters

- Coriolis
- Thermal

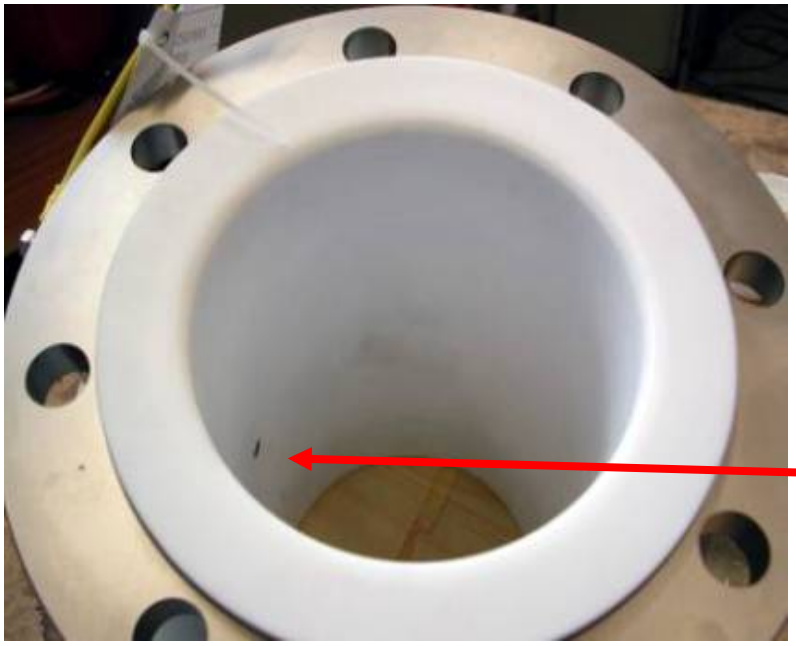
ABB Instrumentation

Coatings





Coating builds up layer by layer



Signal electrode

ABB Instrumentation

Acid measurement

Vacuum / High temperature / Ex