

# AT9000 Advanced Transmitter Model GTX



**Yamatake Europe**

***azbil***

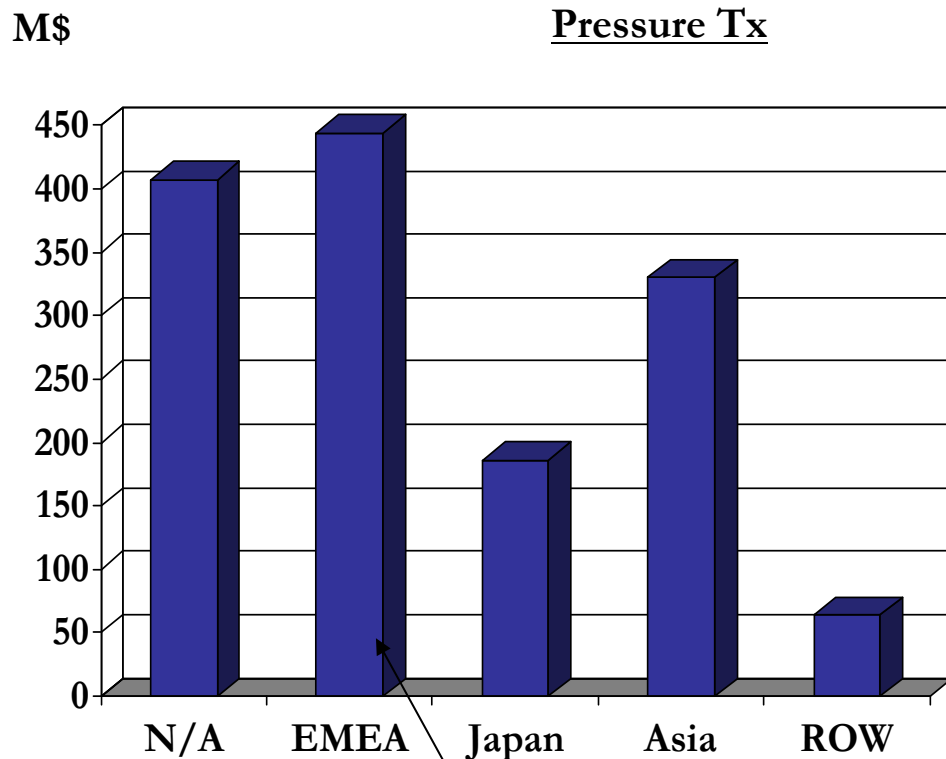
# Yamatake position in the world



Shares	%				
	WW	NA	FMEA	Asia	LA
	\$1807.2M	453.4M	\$591.1M	\$674.4M	\$88.3M
Units	1950k	489.2k	637.8k	727.7k	95.2k
Emerson	43.9	50.7	55.0	28.2	53.9
Yokogawa	21.9	9.6	11.7	40.0	15.7
F+H	7.3	6.5	12.1	3.0	12.1
ABB	6.6	6.6	10.0	4.2	2.2
Fuji	3.8	4.7	2.8	4.7	-
Honeywell	3.4	6.4	2.4	2.2	4.3
Invensys	3.1	6.7	-	2.0	3.8
Yamatake	2.9	-	-	7.6	-
SMAR	2.4	6.2	-	-	3.9
Siemens	2.4	-	3.0	2.6	2.3

ARC Report 2007,WW

# European positioning



**Yamatake Mark et Share: very low**



1. **Safety plant operation** to avoid accidents
  - Reliability on field devices
  - Safety approvals of devices
2. **Stable plant operation** to maintain high product quality controlling and high productivity.
  - Reliability on field devices
  - Stability on field devices
  - No clogging in the process line
3. **Reducing a implementation and running cost**
  - Want to reduce the device cost and maintaining reliability at a same time
  - Want to reduce construction cost
4. **Reducing plant down time** to maintain stable productivity
  - Gather a variable data from device for predictive maintenance.
  - Analyze the causes of a trouble and immediately discover trouble shooting method
  - Punctual delivery

## Safety Integrity Level (SIL)

Safety integrity level	Probability of failure on demand (PFD), average (Low Demand mode of operation)	Risk Reduction Factor
SIL-1	$\geq 10^{-2}$ to $< 10^{-1}$	100 to 10
SIL-2	$\geq 10^{-3}$ to $< 10^{-2}$	1000 to 100
SIL-3	$\geq 10^{-4}$ to $< 10^{-3}$	10000 to 1000
SIL-4	$\geq 10^{-5}$ to $< 10^{-4}$	10000 to 1000

- **SIL is determined by Probability of Failure on Demand (PFD)**
- **Plant users have requested the safety instrument complying with SIL-2**
- **When customers constructs the SIS, GTX meet the requirement.**

# Reliability: Best in World Class Performance

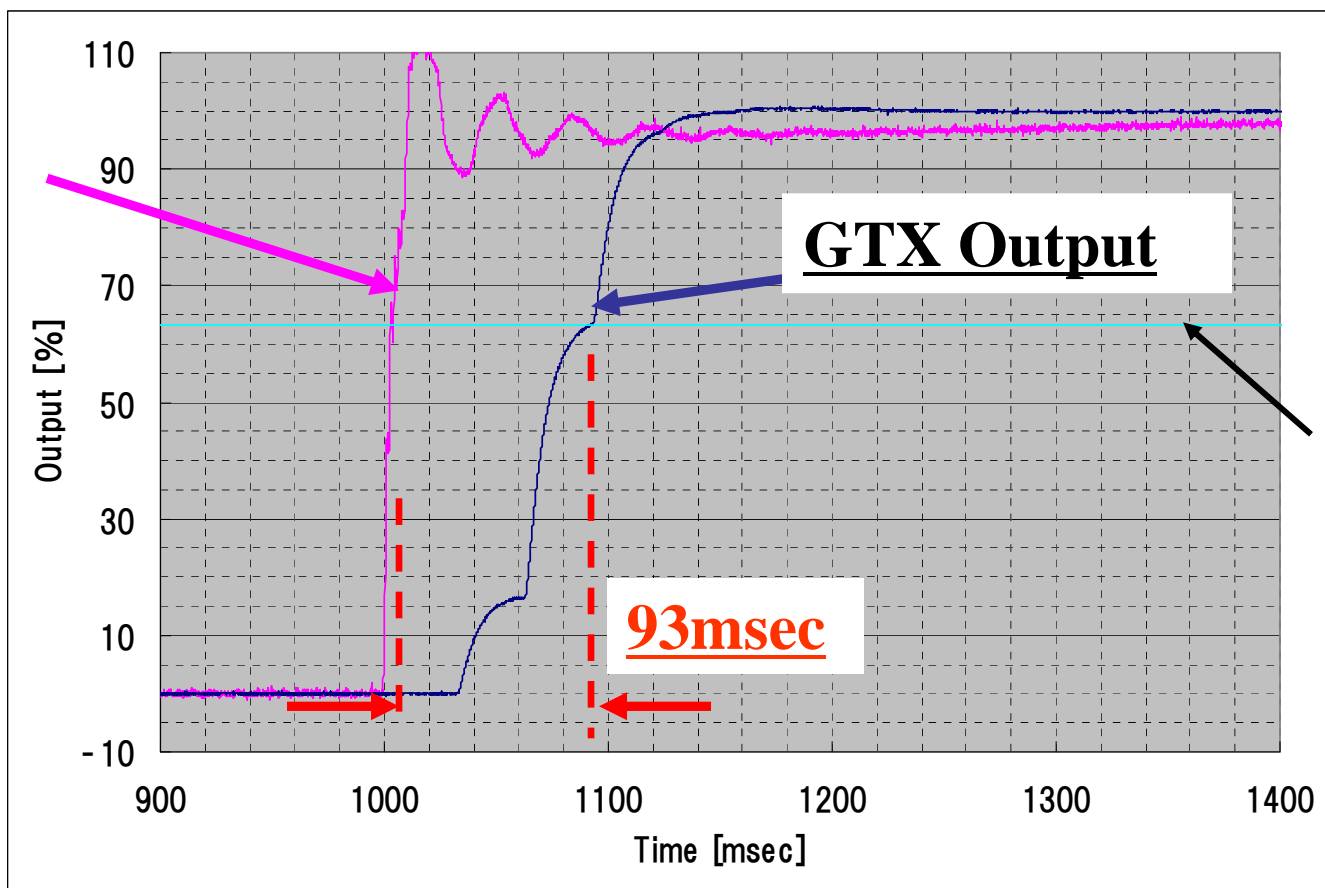


- High Accuracy
  - $\pm 0.04\%$  F.S.
- Faster in response
  - Below 100msec
- High stability
  - $\pm 0.1\%$  F.S. for ten-years

# Faster in Response

- Response time: Below 100msec

Input

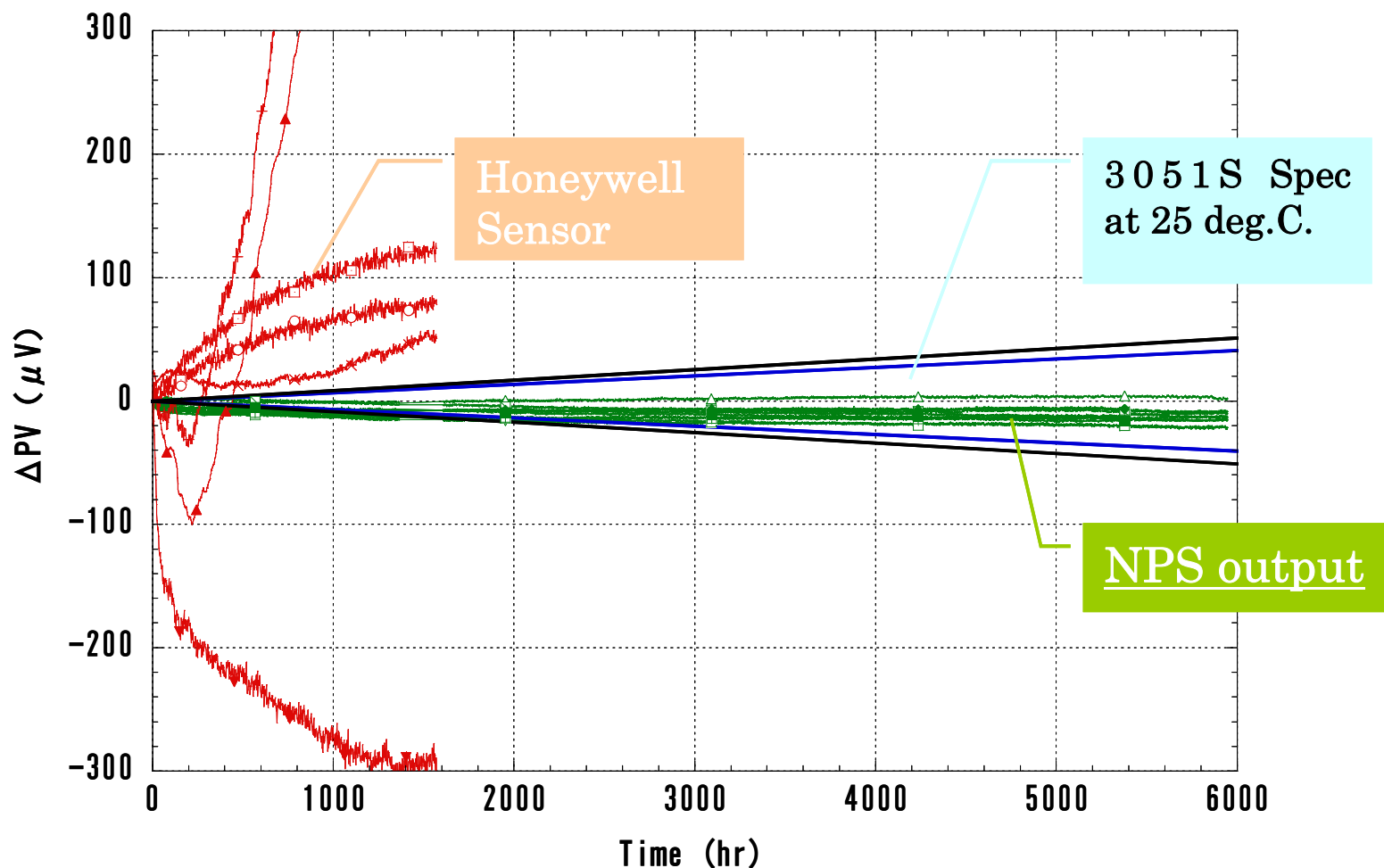


GTX Output

63.2%

93msec

- Zero drift at 125°C



- All technologies are based on over 1,000,000 units field proven technology.
  - Sensor
  - Characterization System
  - Meter Body

- Protocol
  - Analog
    - HART
    - SFN communication (CommPad)
  - Foundation Fieldbus
  - DE protocol
- EDDL
  - AMS Aware
- DTM

# EDDL display



The screenshot displays the AMS Suite Intelligent Device Manager software interface. The main window shows process variables for a device, including a line graph for 'Strip' and a gauge for 'Gauge'. The 'Strip' graph shows a red line fluctuating between approximately 8.0 and 18.0 on a scale from 4.0 to 20.0. The 'Gauge' shows a red needle pointing to 12.13 on a scale from 4 to 20. The configuration window is open, showing fields for Manufacturer (Yamatake Corporation), Model (ST3000), Measurement Type (DP), Device ID (2495627), Tag (TAG), Date (01/01/1993), Descriptor (REMOVED/REMOVED), Message (MESSAGE), Sensor Serial No. (2495627), PROM ID (2495627800), and Final Assembly No. (2495627). The 'Revision Numbers' section includes Universal Rev (5), Field Device Rev (2), and Software Rev (3). The 'Meter Type' section includes Display Type, EU LO (0.000), and EU HI (100.000). The 'azbil' logo is visible in the bottom right corner of the configuration window.

AMS Suite: Intelligent Device Manager - [09/22/2006 13:29:27.670 [ST3000 5900 Rev. 2]]

File Edit View Tools Window Help

Process Variables

Pressure Analog Output Sensor Temp

Analog Output 12.129 mA PV % Range 41.58 %

Strip

20.0  
18.4  
16.8  
15.2  
13.6  
12.0  
10.4  
8.8  
7.2  
5.6  
4.0

11:30:00 11:30:14 11:30:28 11:30:44

Gauge

4 8 12 16 20

12.13

OK

AMS Suite: Intelligent Device Manager - [09/22/2006 13:29:27.670 [ST3000 5900 Rev. 2]]

File Edit View Tools Window Help

Configure/Setup

Enter Values Device Information

Configure/Setup  
BASIC SETUP  
DETAILED SETUP  
Calibration  
REVIEW

Manufacturer Yamatake Corporation  
Model ST3000  
Measurement Type DP  
Device ID 2495627  
Tag TAG  
Date 01/01/1993  
Descriptor REMOVED/REMOVED  
Message MESSAGE  
Sensor Serial No. 2495627  
PROM ID 2495627800  
Final Assembly No. 2495627

Revision Numbers  
Universal Rev 5  
Field Device Rev 2  
Software Rev 3

Meter Type  
Display Type  
EU LO 0.000  
EU HI 100.000

azbil

Time: Current

OK Cancel Apply Print Help

Last Synchronized: 10/24/2006 11:33:09 AM

Ready

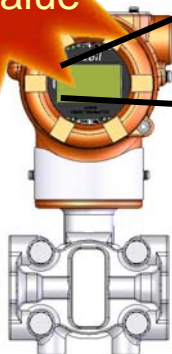
Start C:\AMSDevices\HART... E:\0002\00000000 AMS Suite: Intelligen... User:Yamatake 11:33 AM

## a. Alarm displays & contact output

- In case of abnormal process value, give the early alarming information.
  - Confirming the alarm status displayed in the indicator.
  - Informing the output abnormality to the host computers.

### 1. Alarm displays in indicator

Abnormal process value



GTX

**AL.34  
OUT%.AL**

※Example of alarm display

### 2. Contact output

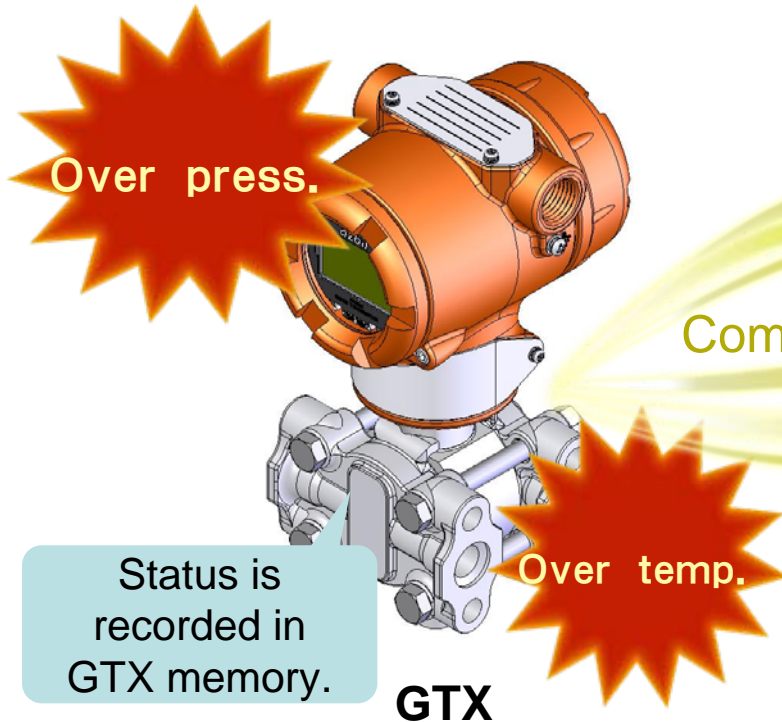


Host computer

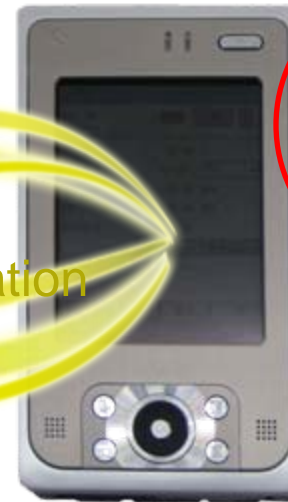
**Customer can detect the abnormal process value quickly**

# Trouble shooting

## b. Status record

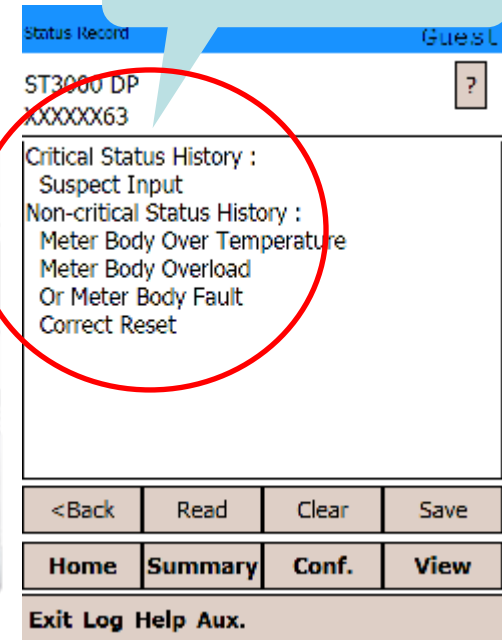


Communication



CommPad  
(Smart communicator)

Confirming the status records



Using CommPad, customers can confirm the status in the past.

# Comparison with S900

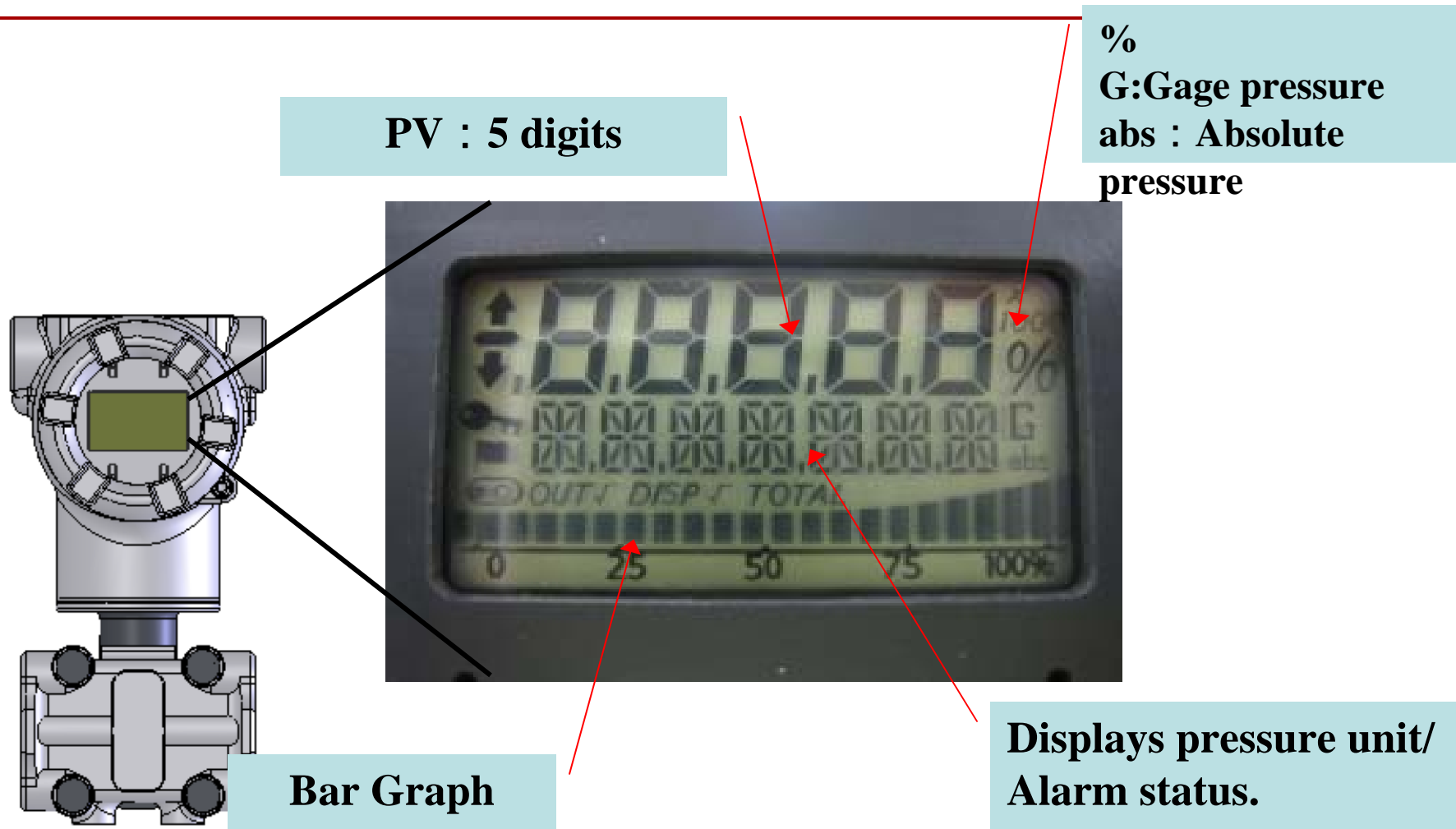


Series Name	ST9000 Model GTX	ST3000 Series 900
Model NO.	GTX31D	STD920
Sensor	NPS(Yamatake Original Sensor)	ED(Honeywell Sensor)
Measuring Span	0.5 to 100kPa {2 to 400 inchH2O}	0.75 to 100kPa {3 to 400 inchH2O}
Accuracy(Linear Output) Analog mode	+/-0.04% for X>10 +/- (0.008+0.032*10/x)% for X<10	±0.075% For X <sub>≥</sub> 50kPa ±0.1% For 5kPa <sub>≤</sub> X<50kPa ± {0.025+0.075*5kPa/X} % For X<5kPa
Zero Stability	+/- 0.1%/ 10years	+/- 0.1%/ 1year
Response time	below 100msec	Approx. 400msec
Indicator	5 digit, Eng. units indication	4.5 digit
Write protection	Standard (Hard switch, software)	Standard (Hard switch)
Contact output	Available in Option	Not available
Weight	Approx. 3.4kg	Approx. 4.1kg
Safety approvals	SIL2	Not available
Characterization data store	Characterization data in SPM (No need to change electrical board when you change MB )	Characterization data in PROM that located on the main electrical board
Diagnostics	Self diagnostic	Self diagnostic
	Status record	Not available
	Zero drift recode	Not available

**-Possibility to change meter body without electrical board.**

# High-performance indicator

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**PV : 5 digits**

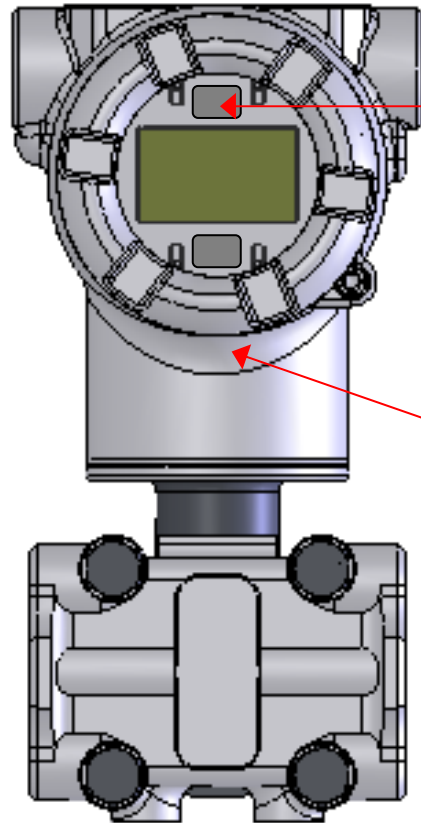
**%  
G:Gage pressure  
abs : Absolute  
pressure**

**Bar Graph**

**Displays pressure unit/  
Alarm status.**

- **Easily Viewable.**
- **Alarm status also can be confirmed**

# External zero/span adjustment switch

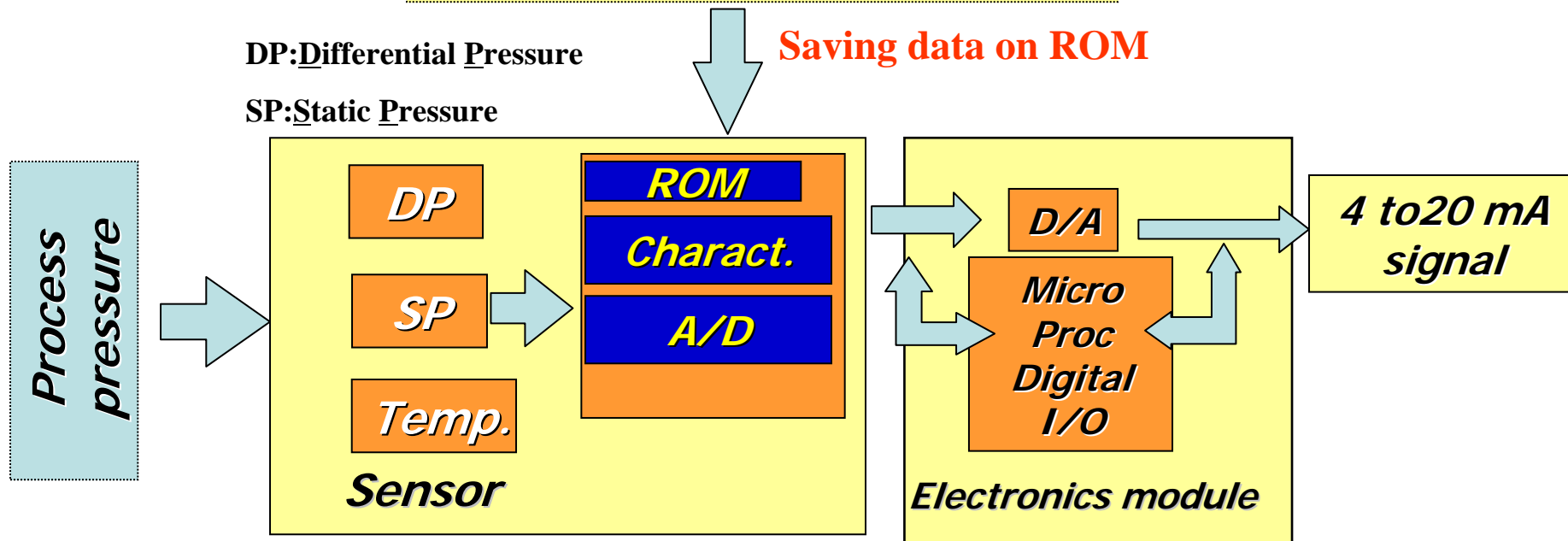


**External span  
adjustment switch**

**External zero  
adjustment switch**

Easy to adjustment to touch with magnetic stick without opening the case-cover.

*Manufacturing line Computer*  
Data acquisition of each characteristics



- GTX realized high accuracy and high stability owing to compensation called “Characterization.”
- It enable to reduce the influence of ambient temperature and process pressure changes on GTX output.