

FUJI ELECTRIC
Electronic Transmitters

FCX-AII Series



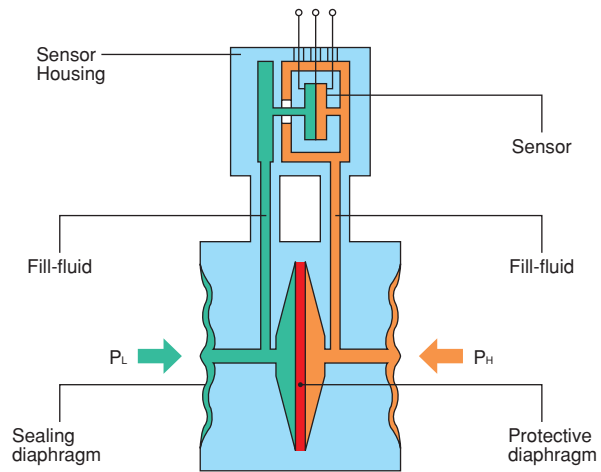
Abundant Experience and Dramatic Evolution

Since we released our first smart transmitter in late 1980's, with its reliable performance based on our original unique measuring principle, the "ADVANCED FLOATING CELL", Fuji FCX and FCX-A/C transmitters have been chosen by many customers all over the world.

Over 500,000 units in various industrial processes and services show excellent reliability and performance of our transmitter.

To respond to increasing demands of reliability and accuracy, we now offer you much more accurate, and flexible series of transmitters - FCX-AII series.

ADVANCED FLOATING CELL



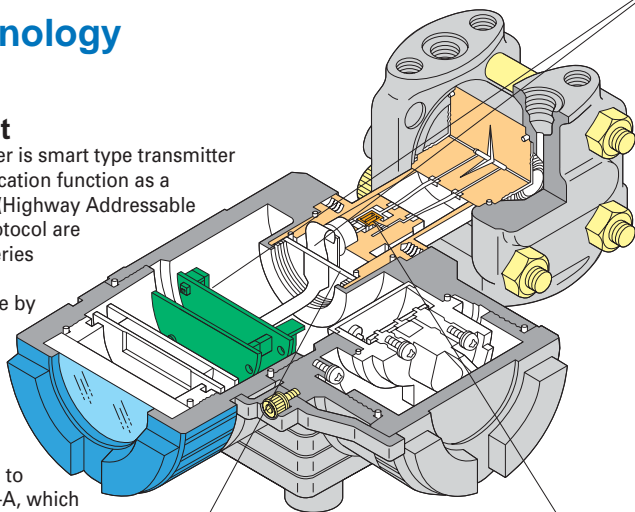
Reliable Performance and Compactness (ISO 9001 Facility)

Thanks to the best combination of unique construction of mechanical parts (Sensor unit) and high performance electronics circuit (Electronics unit), reliability of dry calibration without reference pressure is at equal level as wet calibration. Manufacturing quality control complied with ISO 9001 ensures FCX-AII transmitter's long-term stability and reliability.

Unique Technology

Electronics Unit

FCX-AII Series transmitter is smart type transmitter equipped with communication function as a standard. Fuji and HART(Highway Addressable Remote Transducer) protocol are supported on FCX-AII Series transmitter. Remote setting/display is possible by using Fuji's Hand Held Communicator (HHC) or HART compatible HHC. Dead time of FCX-AII Series transmitter is approximately 200msec, that is smaller compared to our previous model FCX-A, which has approximately 300msec. Dead time of 40msec (update rate=25times/sec) is available as an option.

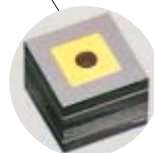


ASIC Technology

New original ASIC in which digital and analog circuits are mounted jointly is developed by making free use of forefront microelectronics design technique. FCX-AII Series adopts this ASIC to detect the electrical capacitance of the sensor. This new ASIC allows stable and accurate analog/digital conversion, thereby considerably improves the long term stability and reliabilities.

Micro capacitance silicone sensor

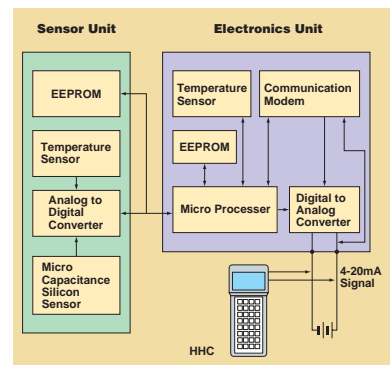
The technological centerpiece of the FCX-AII Series is a Fuji micro-capacitance silicon sensor with improved S/N ratio. It was specifically designed to raise the output in electrical capacitance caused by changing input pressures. As a measuring diaphragm material, the sensor uses a single crystal silicon that has little hysteresis and material fatigue. The result is remarkable improvement in temperature characteristics and stability.



Dual Temperature Sensors

In addition to the temperature sensor in the sensor unit, one more temperature sensor is put in the electronics unit. Temperature errors occurred in the sensor unit and the electronics unit are corrected by the data of each temperature sensor in each unit, thereby the temperature characteristic of transmitter is distinctly enhanced.

Sensor Unit

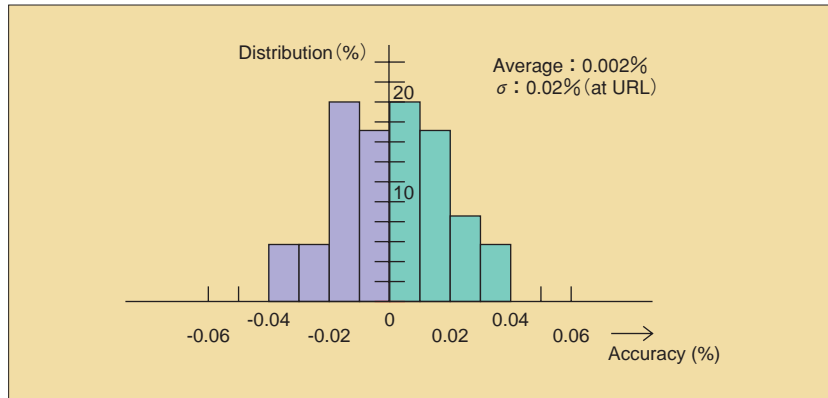


Full Interchangeability

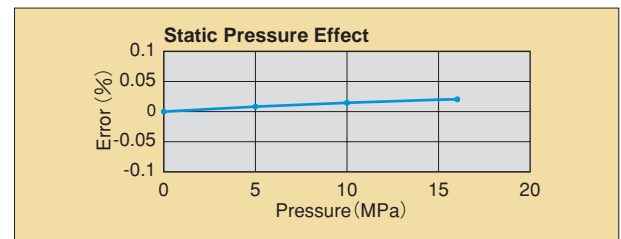
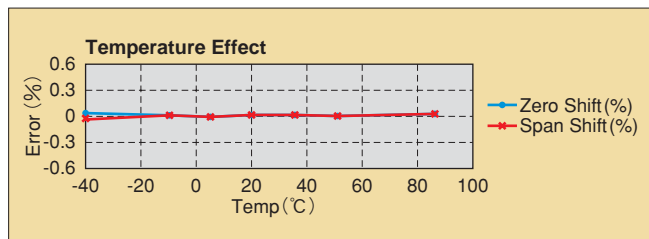
Both Electronics unit and Sensor unit are fully interchangeable as individual configuration data of both units are stored separately at each own EEPROM. The electronics unit is also interchangeable over the entire range of FCX-AII models, including differential pressure type, pressure type, absolute pressure type, level remote seal type, and others.

High Performance & Reliability

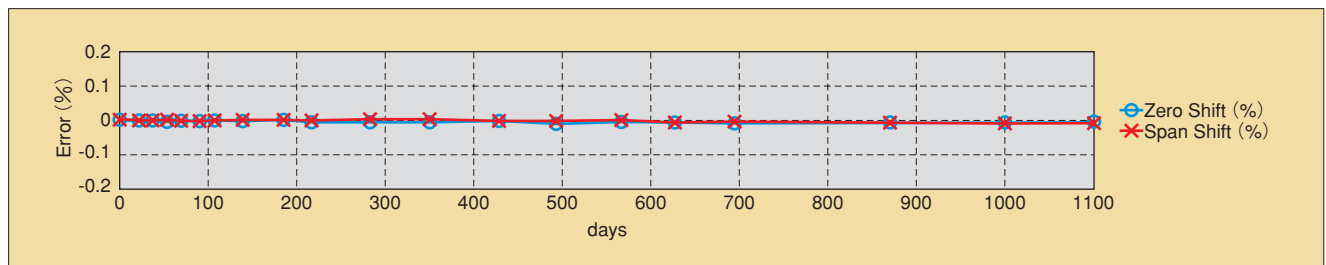
■ **Accuracy : 0.07%** (Standard Models)
Even with Remote seal : 0.1% (option)



■ Temperature and Static Pressure Effect



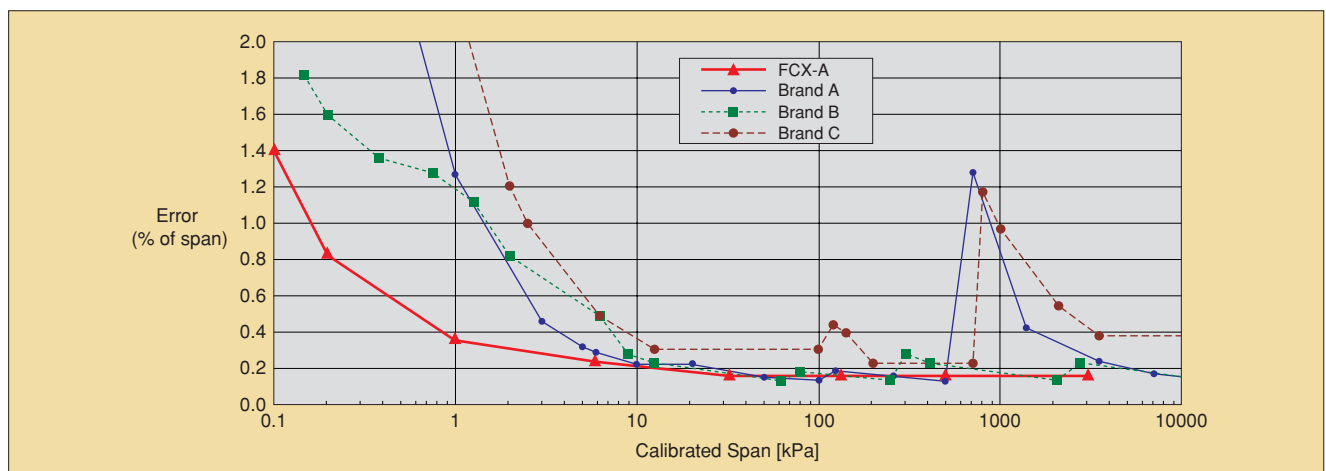
■ Stability : 0.1% of URL for 3 years



■ Over Range Effect : 0.1% of URL

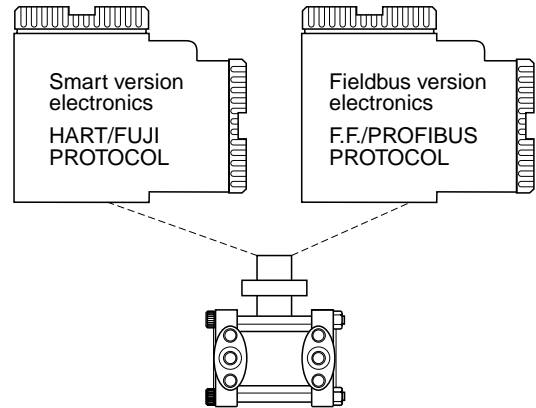
■ Total Probable Error

As shown in graph below, FCX-AII provides stable accuracy in a broad measurement range.



Communication Compatibility

■ **FCX-AII Series transmitters are compatible with various communication protocols (Fuji protocol, HART protocol, Foundation Fieldbus and PROFIBUS).**



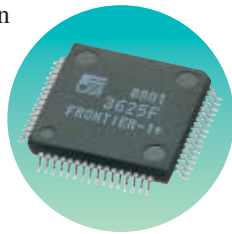
Fieldbus Compatibility

There is no doubt that by the beginning of the 21st century, Fieldbus, the new world wide standard for all digital communication between field and control systems, will become main stream in process control. As one of the leading members of IEC standard Foundation Fieldbus (FF), we are ready to supply Fieldbus transmitters. In addition to Foundation Fieldbus, PROFIBUS is also available. FCX-AII can be upgraded at affordable cost by changing electronics and terminal unit to fieldbus version when you introduce Fieldbus into your system.

Foundation Fieldbus or PROFIBUS is selectable by setting digital switch on the fieldbus version electronics unit.

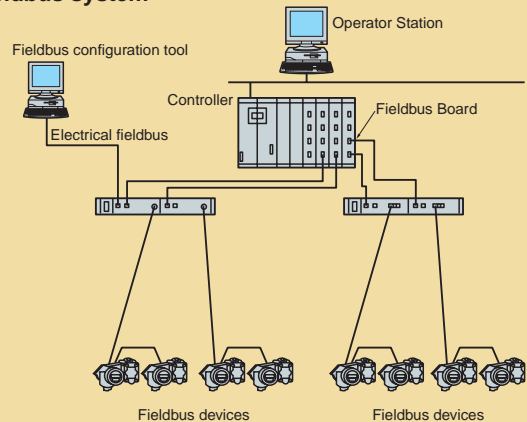
FRONTIER-1+(Fieldbus IC)

Fuji developed Communication Control IC based on IEC Fieldbus physical Layer Specification.



- Small/64-pin SQFP (Shrink Quad Flat Package)
- Low power consumption
- Distribution for Fieldbus Foundation Members

Fieldbus system



Widened remote maintenance by HART® protocol

- As a member of HART Communication Foundation, Fuji Electric offers fully compatible HART smart transmitters to contribute to the cost reduction of maintenance.
- In addition to the remote maintenance in point to point by any HART compatible Hand Held Communicator (HHC), FCX-AII provides multidrop network configuration through Personal Computer with On-Line HART Device Management Software (Ex. Cornerstone™, H-View™, AMS™ and etc..)

Hand Held Communicator (HHC)



*HART® is a registered trademark of the HART Communication Foundation. Cornerstone™ is a trademark of Applied System Technologies. H-View™ is a trademark of ARCOM. AMS™ is a trademark of Fisher-Rosemount.

Full Line-up with high standard features and Variety of Options

One of the remarkable features of our FCX-AII is the availability of an extraordinarily broad line-up. All of them are equipped with advanced functions and ideal materials as standard. Moreover, by adopting a variety of options, FCX-AII is fully ready to meet various and specialized demands from any industrial application. If you are in a struggle to find a solution for difficult/severe measuring points, why not try our transmitters?

Full Line-up with high standard features

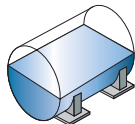
Wide coverage of process pressure measurement



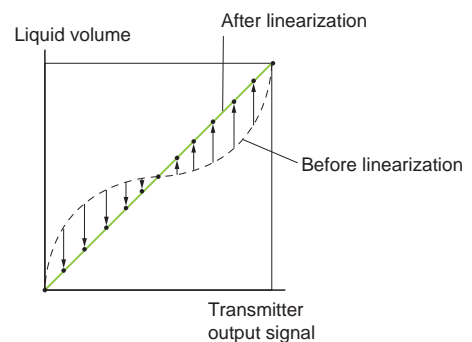
Programmable output Linearization Function (Available for DP and Level models.)

In addition to Linear and Square Root, output signal can be freely programmable. (Up to 14 compensated points at approximation.)

Application Example

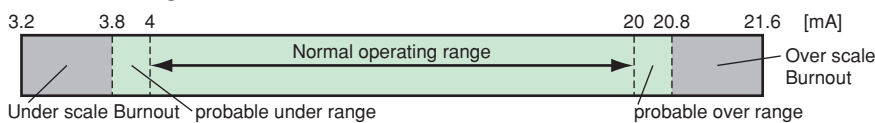


Volume Measurement of laid cylinder tank.



Burnout current flexibility : NAMUR NE43 (Under Scale : 3.2 to 3.8mA, Over Scale : 20.8 to 21.6mA)

Burnout current range can be set without overlapping normal output range including probable under and over range (3.8 to 20.8mA).



Options

Choice of ideal materials

Wetted parts : SUS 316L (Standard), Hastelloy C-276, Monel, Tantalum, Titanium, Zirconium, Gold plating and Gold and Ceramic plating designed for Hydro-seal*)

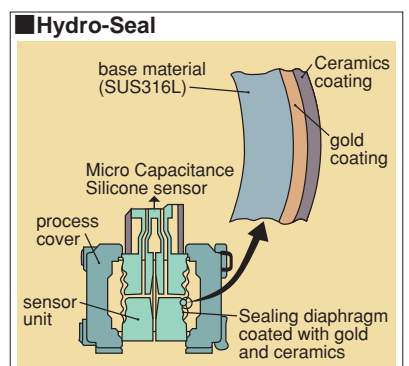
Note:*)In case of measuring water or sea water pressure, and using in petrochemical plant or oil refinery plant, our Hydro-seal reduces hydrogen penetrating into sensor unit to 1/160 of 316 Stainless Steel to 1/1600 of Hastelloy C-276.

Digital (LCD) indicator with industrial unit (91 kinds are field-selectable) or Analog indicator

Arrestor

Treatments

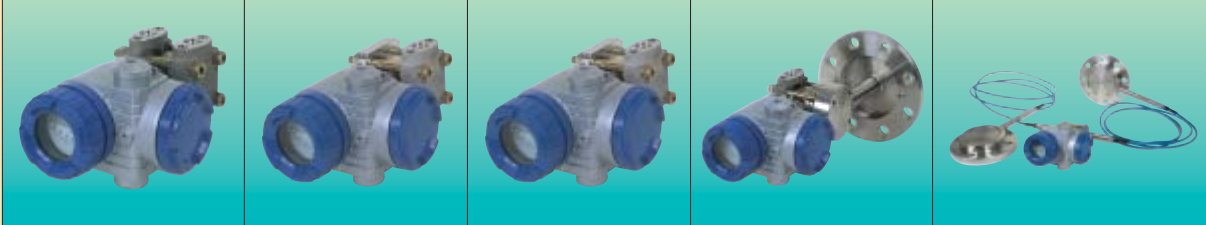
Oxygen Service, Chlorine Service, Vacuum Service and Degreasing Service



Digital (LCD) indicator



Specifications

					
	FCX-AII				
	Differential pressure kPa (mbar)	Gauge pressure kPa (bar)	Absolute pressure kPa (bar)	Liquid level kPa (mbar)	Remote seal kPa (mbar)
Upper range limit (max. span)	1 (10) 6 (60) 32 (320) 130 (1300) 500 (5000) 3000 (30000)	130 (1.3) 500 (5) 3000 (30) 10000 (100) 50000 (500)	16 (0.16) 130 (1.3) 500 (5) 3000 (30)	32 (320) 130 (1300) 500 (5000)	32 (320) 130 (1300) 500 (5000)
Zero elevation/ suppression	-100% to +100% of URL				
Pressure rating or overrange limit	3.2MPa {32bar} 10MPa {100bar} 16MPa {160bar} 42MPa {420bar} (see data sheet)	300% of URL (see data sheet)	0.5MPa {5bar} 1.5MPa {15bar} 9MPa {90bar} (see data sheet)	up to flange rating	
Accuracy rating	$\pm 0.07\%$ of span (see data sheet for details)				
Temp. limit • sensor • electronics	-40 to 120°C (-40 to 100°C for gauge pressure and absolute pressure) -40 to 85°C				
Material of wetted parts	316 LSS, Hastelloy C-276, Monel, Tantalum, Titanium, Zirconium, Gold plating, Gold and Ceramic plating (see data sheet for details)				
Output signal & power supply	DC 4-20mA / DC 10.5-45V				
Communication	Fuji protocol [HHC's version must be more than 6.0 (or FXW□□□1-□3)], HART [®] protocol, Fieldbus (FF), PROFIBUS				
Enclosure classification	IEC IP67 and NEMA 6/6P				
Hazardous location	Intrinsic safety and flameproof Certifications by CSA, FM, CENELEC, JIS				
Options	1) Indicator 2) Arrestor (Lightning protection) 3) Stainless steel housing 4) NACE specification 5) High temperature, high vacuum version (for liquid level and remote seal) 6) Chlorine service 7) Hydro-seal diaphragm for H ₂ service				
Approx. weight	4.4kg	3.4kg	3.4kg	12.4kg	14.4kg

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