

COPA-XT - The First 2-Wire Electromagnetic Flowmeter for Industrial Applications



ABB Instrumentation

FISCHER
& PORTER 



COPA-XT - Energy and Installation Costs reduced through 2-Wire Technology

Flowrate metering in pipelines with electromagnetic flowmeter technology has been state of the art for the past 30 years. Since 1980 the analog technology has been replaced by modern microprocessor technology which resulted in an intelligent electromagnetic flowmeter and allowed communication with SPC, PC and PLS. In 1990, ABB Instrumentation's Fischer & Porter brand developed the first EMF for partially full pipelines and now offers the first 2-Wire EMF for industrial applications. The installation costs per meter installation are reduced appreciably because it is no longer necessary to lay a separate supply cable. The energy costs are also lowered because the meter requires only 0.5 Watts.

UNIQUE NEW FLOWMETER PRIMARY CONCEPT

An essential feature of this EMF is a totally reworked flowmeter primary concept, because until now it was not possible to satisfy the energy requirements for the EMF from the minimal 4 mA current. The EMF utilizes the well proven pulsed DC field technology which has been appreciably improved by the addition of a flowrate proportional excitation frequency.

INTELLIGENT 2-WIRE CONVERTER

The magnetic field is generated using a special driver circuit with energy storage and controlled directly from the μ Processor. The excitation frequency is controlled as a function of the flowrate signal and therefore also as a function of the power available. The signal measurement occurs during constant time intervals, i.e. the excitation cycle is constant and the power cycle is controlled proportional to the flowrate.

The noise signals superimposed on the flow signal are eliminated in the input circuit and through utilization of a high resolution Sigma-Delta A/D Converter fed to the μ Processor. It produces a scaled 4-20 mA flowrate signal, controls the internal 2-line LC-Display and generates a scaled pulse output which is available at an optocoupler output. The meter can be configured at the site using the 3 buttons or a magnetic wand, from an operator unit using the HART-Protocol or from the new PC-Operator Level using SmartVision®.

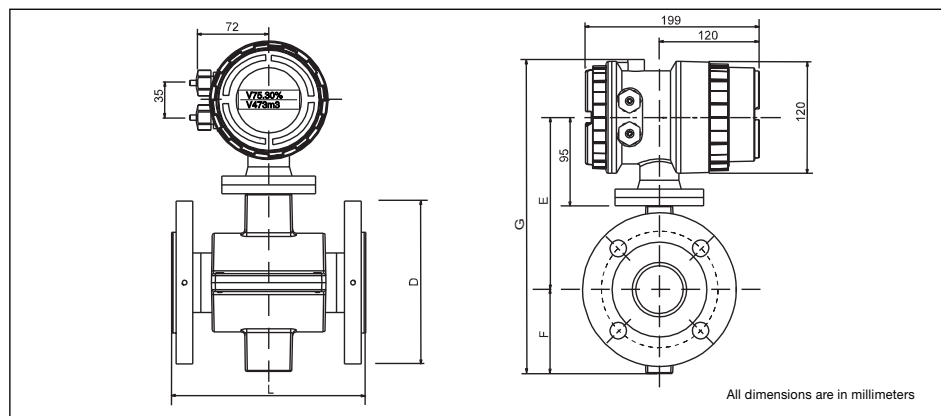


Fig. 2: Dimensions Flowmeter Primary

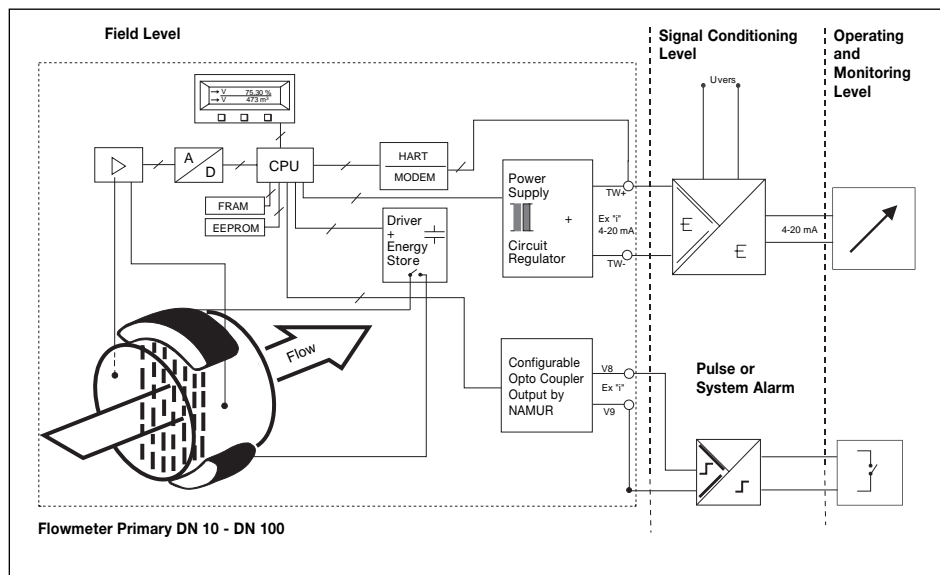


Fig. 1: Block Diagram COPA-XT

min. Flow Range DN Flow Velocity 0-0.5 m/s	D	L	G	F	E
10 0 to 2.25 l/min	95	200	281	62	157
15 0 to 5.00 l/min	95	200	281	62	157
20 0 to 7.50 l/min	105	200	292	73	168
25 0 to 10 l/min	115	200	292	73	168
32 0 to 20 l/min	140	200	297	78	173
40 0 to 30 l/min	150	200	301	82	177
50 0 to 3 m ³ /h	165	200	337	90	185
65 0 to 6 m ³ /h	185	200	365	104	199
80 0 to 9 m ³ /h	200	200	377	110	205
100 0 to 12 m ³ /h	220	250	417	130	225

Dimensions in millimeters, Flow Range

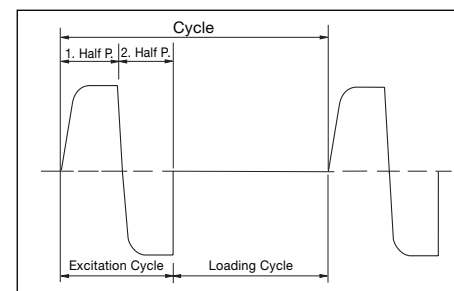


Fig. 3: Measure Cycle Schematic

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