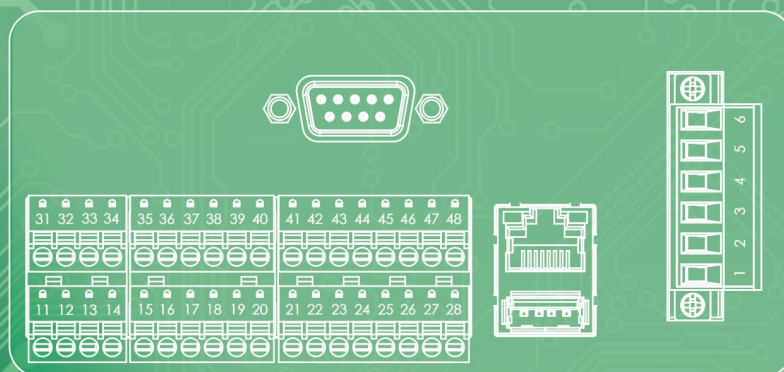




# AccuMind®

## Universal Flow Computer



Rear side of the AccuMind®

## ■ AccuMind® Flow Computer

When selecting a suitable flow computer, the user is often faced with the problem that the required calculation is not available at all or that a suitable device must be selected from a large number of hardware and software variants with different operating philosophies. Costly and time-consuming errors are pre-programmed.

The AccuMind® offers numerous calculation algorithms in one device with a uniform operating philosophy. Despite the complexity, the setup of the device is very simple. The first step is to select the desired application. Depending on the application, only those values are entered in the parameterization menu that are necessary for the device to function properly. In the last step, the display contents can be freely arranged according to the user's wishes within wide limits.

Do you prefer a "plug-and-play" solution? Then simply order the device with the parameters set.

The list of already established as well as novel features and functions includes:

- ... Calculation of properties of **water and steam** according to IAPWS-97;
- ... **calculation of the properties of gaseous media** (density, viscosity, speed of sound, heat capacity etc.);
- ... calculation methods for **natural gases** and sensors according to **international standards** (AGA-8 (DC/GC), SGERG-88, AGA-NX 19, ISO 20765-1 combined with AGA-3, AGA-5, AGA-7, AGA-10, AGA-11);
- ... support for a wide range of **flow sensors** (differential pressure based primary elements, volume and mass flow meters, turbines, ultrasonic, vortex etc.);
- ... **increased accuracy** for primary elements (orifice plates, venturi, nozzles etc.) by elimination of linearity errors;
- ... operate your flow sensor even at flows outside of calibrated limits and increase accuracy due to **digital communication**;
- ... store and renew **calibration data** for the sensors inside the AccuMind®;
- ... the possibility for the user to **freely adjust the content of the display**;
- ... a **comprehensive interface concept** incl. **Ethernet** interface suitable also for control and maintenance;
- ... a free configurable capacitive **touch screen display** offers a robust and aging-resistant interface for the user.



## ■ Technical Specification

### Calculation Methods

#### Fluids

Water & Steam	IAPWS-97
Technical Gases	Ideal and real gas computation methods (Redlich-Kwong(-Soave), Peng-Robinson etc.)
Natural Gases	AGA-8 (DC, GC methods); SGERG-88; AGA-NX19; ISO20765-1 (gas properties)
Heat Transfer Fluids	Constantly growing list with usual heat transfer fluids

#### Sensors

Standard Orifices	ISO 5167-2 with realtime correction of non linearity; AGA-3 ("Orifice Metering of Natural Gas")
Nozzles, Venturi Tubes, Cones	ISO 5167-3/4/5 with realtime correction of non linearity
Averaging Pitot Tubes	Computation acc. to ISO 5167; Simplified procedure
Vortex	proprietary calculation method
Turbine Flow Meters	proprietary calculation method, optional AGA-7
Ultrasonic Flow Meters	proprietary calculation method, optional AGA-10
Mass Flow Meters	proprietary calculation method depending on sensor technology, optional AGA-11

### Interfaces

User Interface	4.3" TFT color display, 480 × 272 pixels, 16:9 ratio incl. capacitive touch
Bus Interfaces	Modbus RTU or TCP, optional M-Bus, Profibus or Profinet
FSK-Modem	Compatible with HART-capable field devices; bidirectional use
Analog Inputs	Four current inputs 0/4 ... 20 mA and two RTD-inputs (3 and 4 wires)
Frequency/Pulse	Two inputs, electrically isolated
Analog Outputs	Two outputs 0/4 ... 20 mA, electrically isolated, applied value selectable
Switch Outputs	One mechanical relay (6A; 230 V AC) and two electronical relays (120 mA; 60 V DC or 40 V AC)

### Power Supply

AC Power Supply	100 ... 250 V AC ±10 %; 50 ... 60 Hz ±5 %
AC Power Supply (optional)	18 ... 30 V DC ±10 %
Power Consumption	max. 20 VA

### Housing

Dimensions	Housing for panel mounting; internal parts: protection class IP20; 135 W × 65 H × 120 D (in mm <sup>3</sup> ); display: protection class IP54; 144 W × 83 H × 14 D (in mm <sup>3</sup> )
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## ■ Ordering Codes – AccuMind®

<b>AccuMind</b>	__	__	__	__	__	__	__	__	
<b>Housing &amp; User Interface</b>									
	PM								Panel mounting, 4.3" TFT touch display
	WM								Wall mounting, IP65, 4.3" TFT touch display behind protective cover
<b>Operating Modes</b>									
	HB								Heat flow computer for steam, water and heat transfer fluids (mass flow, heat output and quantity) and ideal gas calculation
	QL								QAL1 incl. ideal gas calculation
	TG								Technical gases (mass flow, heat totalizing; computing of gas properties)
	NG								Natural gases (AGA8 (DC92/G1/G2), NX-19, SGERG-88, gas properties ISO-20765-1)
<b>Power Supply</b>									
	AC								Wide range supply (integrated), 100 ... 250 V AC (50 ... 60 Hz)
	DC								DC supply, 18 ... 30 V DC
<b>Functional Extension</b>									
	NA								None
	AZ								AccuFlo®Zero for automated zero-point calibration on standard HART-compatible differential pressure transmitters
	LS								Controller for LSE-HD air purging unit
	LA								Controller for LSE-HD air purging unit with integrated automated zero-point calibration
<b>1<sup>st</sup> Interface</b>									
	DE								Modbus Slave RTU
	MB								M-Bus
	DA								Modbus for functional extension AZ
<b>2<sup>nd</sup> Interface</b>									
	00								None
	MS								Modbus Slave RTU
	DA								Modbus for functional extension AZ
	MN								Modbus Master RTU
	PB								Profibus DP Slave
	PN								Profinet Slave
<b>Custom Settings</b>									
	FC								Device with standard parameters (no custom setup)
	CP								Customized setup
	CC								Device with standard parameters and factory calibration certificate (5 points, <b>no</b> custom setup)
	CA								Device with custom setup and factory calibration certificate (5 points, <b>with</b> custom setup)
<b>Tag Number</b>									
	DI								Tag number in display
	KK								Tag number in display and on enclosed metal plate

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