

Totalizing, Batching, and Monitoring Electronics

Pulse Input



measuring
•
monitoring
•
analyzing

ZOK



2" Pipe Mount Kit



Wall Mount Kit

- Backlit LCD-Display
- 2 Pulse Inputs (NPN, PNP, NAMUR, Reed Switch, etc.)
- Analog, Switching, Pulse, Relay and Status Outputs
- Sensor Supply
- Fully Scalable
- Universal or Panel Mount Housing



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Description

The ZOK is designed to calculate, display, and transfer calculations and flow rates of flow meters with pulse or frequency outputs. It displays flow rate, a resettable day count, and a total count. An easy to use menu guides you through the programming. All program settings are retained, even during a battery change. Option ZOK-ZxP is offered in a panel housing with a protection of IP44. The electronic option ZOK-ZxK is weather resistant and offers IP66/67 ingress protection. The electronics are housed in a UV-resistant, glass-filled plastic housing with stainless steel screws and FKM seals. The ZOK-ZxF is available in a powder coated aluminum extruded housing with a plastic lid and offers IP 66/67 protection. They are all suitable for harsh indoor or covered outdoor environments and complies with EU Directive 2004/108/EC for electromagnetic compatibility.

Features:

- Self or External Powered, 8 Digit LCD Resettable and Cumulative Totalizer, 5 Digit Rate Display as Main Value
- Rugged Field or Meter Mount Housing with Protective Cover
- Easy to Program
- Accepts Universal Pulse Inputs
- Rugged IP66/67 Universal Mount or DIN Panel Mount
- Long Battery Life
- Reverse Polarity Protection
- Optional Display Backlighting
- Preamplified Pulse
- Scalable Pulse Output
- Optional Wall or Pipe Mounting

Technical Details

External Power Supply: 5...28 V_{DC} (without using the Analog Output)
 8...28 V_{DC} (with using the Analog Output)
 12...28 V_{DC} (with Relay Output)

Max. Consumption: Approx. 70 mA (with Full Backlight, without Outputs)
See Table on Page 7 for Details

Ex Versions: U_i = 28V
 I_i = 100 mA
 P_i = 0.7 W



Battery: 3.6 V / 2200 mAh
 Size AA Lithium

Battery Life in Battery Mode: Dep. on "Sleep" Mode Settings
 Max. 17 Months, Min. 3 Months

Display: LCD, Backlight Adjustable (only with External Power Supply)

Display Value: 0.49"

Display Resolution: 5 Digits, Based on Measuring Range End Value

Display Units: Liters, Milliliters, Gallons (US or UK), Barrel, m³, User Defined Engineering Units

Input Scaling Range: 0.001 ... 99,999.999 with 3 Floating Decimal Points

Mount: Meter Mount, Wall, Surface, Pipe or Panel Mount, Field Mount

Measuring Inputs Type: 2x Pulse Input
 NPN, PNP, NAMUR, Reed, Hall, Active (Configurable with Software)

Input Frequency: 0.1 ... 1000 Hz,
 High-Low-Threshold 1 V_{DC},
 Max. Input Amplitude 30 V_{DC}

Accuracy: <0.1 % of Reading
 (the Accuracy of the Displayed Value Depends on the Adjusted Scale and Display Resolution)

Sensor Supply: 8 V_{DC}, Max. 30 mA
 (with External Supply > 10 V_{DC})

Arithmetic Functions: A+B, A-B, with Scalable Analog Output



Outputs

Status Output:	Transistor Output, Push-Pull (PP), Max. 300 mA, Overload Protected
Relay Output (Optional) (Z2 Only):	2 SPDT Dry (Changeover) Contacts, Max. Switching Voltage 230 V _{AC/DC} , Max. Current Load Dependent (See Diagram)
Optocoupler Output (Only E2/E5):	Max. Switching Voltage: 30 V _{DC} R _{ON} = 1700 Ω, R _{OFF} > 10 G Ω, For Use with NAMUR Isolated Switching Amplifier
Switching Output	Transistor Output PNP, NPN or Push-Pull (PP), with Software Configurable
Max. Output Current:	300 mA (Source/Sink), Overload Protected
Pulse Output:	Transistor Output, Push Pull (PP), Max. 300 mA, Overload Protected
Analog Output:	4 - 20 mA, 2 Conductor Loop Operation or 3-wire Operation (Current Source or Sink) Selectable by External Wiring, Free Scaling, Max. Load: 750 Ω at 24 V _{DC} , 250 Ω at 14 V _{DC} , 150 Ω at 12 V _{DC} , Resolution: 16 bits
Operation:	4 Buttons
Housing:	Plastic, PA6, GF-enhanced
Ingress Protection:	IP66/67 (Not for Panel Mounting)
Cable Entry:	3xM20x1.5 or 1/2" NPT (Prepared, Not for Panel Mounting)
Electrical Connection:	Plug-in Terminals
ATEX Certification:	Ex II 2G Ex ia IIC T4 Gb
IECEX Certification:	Ex ia IIC T4 Gb
Ambient Temperature	
ZOK-Z:	-4 ... 176 °F
ZOK-E:	-4 ... 140 °F

Additional Data for Option ZOK-ZxP and ZOK-ZxF

Power Supply

Option "-6":	12 ... 28 V _{DC}
Option "-0":	90 - 260 V _{AC}
	Battery Operation only Possible with ZOK-ZxF with Supply Option 3

(See Table on Page 7 for Details)

Sensor Supply

Option "-3":	8V with Supply Voltage ≥ 8.5 V _{DC}
Options "-0" and "-6":	8V or 24V Selectable, Max. 30 mA

Relay Output:

2 SPDT Dry (Changeover)
Contacts, Max. Switching
Voltage 230 V_{AC/DC},
Max. Current Load Dependent
(See Diagram)

Analog Output

(only for ZOK-Z3P): 4 - 20 mA, 3-wire,
Current Sourcing

Housings

ZOK-ZxP Panel Mount:	3.8" x 3.8", Depth 2.4" (Protection: Front IP65, Back IP20)
ZOK-ZxF Field Mount:	4.6" x 4.6", Depth 5" Aluminum Housing with PA6 Plastic Cover (Protection: IP65)

Cable Entry

ZOK-ZxP:	3 x Screw Terminals
ZOK-ZxF:	3 x M16x1.5/2xPG13.5

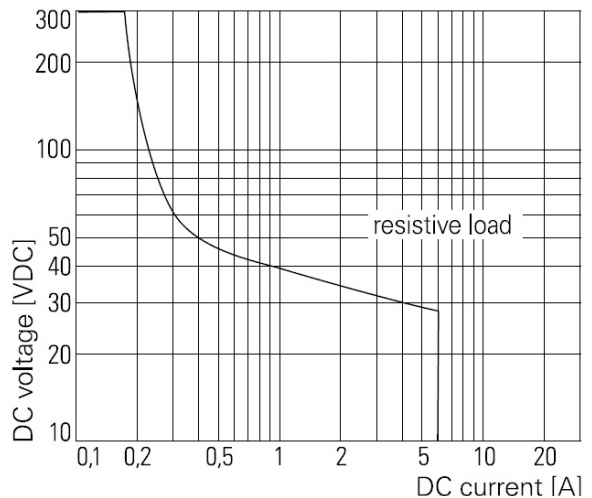
Reading Retention:

Integrated, Non-volatile Memory

Ambient Temperature:

-4 ... 176 °F

Max. DC Load Breaking Capacity





ZOK Overview

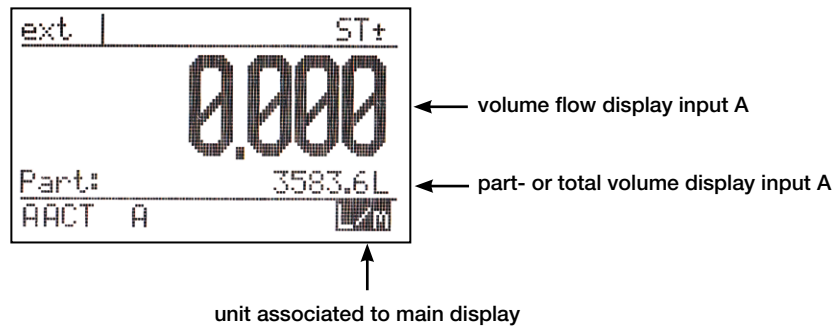
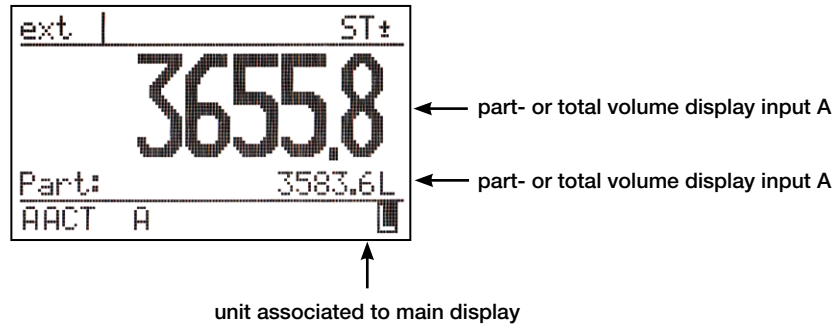
Function	Z1P/Z1F	Z1K/M/0	Z2P/Z2F	Z2K/M/0	Z3P/Z3F	Z3K/M/0	E1K/M/0	E2K/M/0	E3K/M/0	E4K/M/0	E5K/M/0
Dual Counter	X	X			X	X	X		X	X	X
Batching Function			X	X				X			
Controller Function					X	X			X	X	X
Certification											
ATEX IECEx Certification							X	X	X	X	X
Power Supply											
DC-Supply	X	X	X	X	X	X	X	X	X	X	X
AC-Supply	X		X		X						
Battery Operation (Output Deactivated) ²⁾		X				X	X		X		
Battery Included in Shipment		X				X	X		X		
Sensor Supply (Only with External Power Supply)											
Sensor Supply	8 V/ 24 V	8 V	8 V/ 24 V	8 V	8 V/ 24 V	8 V	8 V	8 V	8 V	8 V	8 V
Electrical Outputs (Only with External Supply)											
Relay Outputs			X	X	X			with opto-coupler board*			with opto-coupler board ¹⁾
Status Outputs	X	X	X	X	X	X					
Analog Outputs					3L	2L / 3L			2L / 3L	2L/3L HART®	3L
Pulse Outputs					X	X					with opto-coupler board ¹⁾
LCD Display											
Selectable Units	X	X	X	X	X	X	X	X	X	X	X
Decimal Point	X	X	X	X	X	X	X	X	X	X	X
Accumulative Total	X	X	X	X	X	X	X	X	X	X	X
Resettable Total	X	X	X	X	X	X	X	X	X	X	X
Linearization	X	X			X	X	X	X	X	X	X
Rate Display	X	X	X	X	X	X	X	X	X	X	X
Backlighting	X	X	X	X	X	X	X				
Arithmetic Functions	X	X			X	X	X	X	X	X	X

¹⁾ Optocoupler board serves as a galvanic separation to be used in ATEX area

²⁾ Battery operation only applicable with a passive sensor (i.e. reed switch)

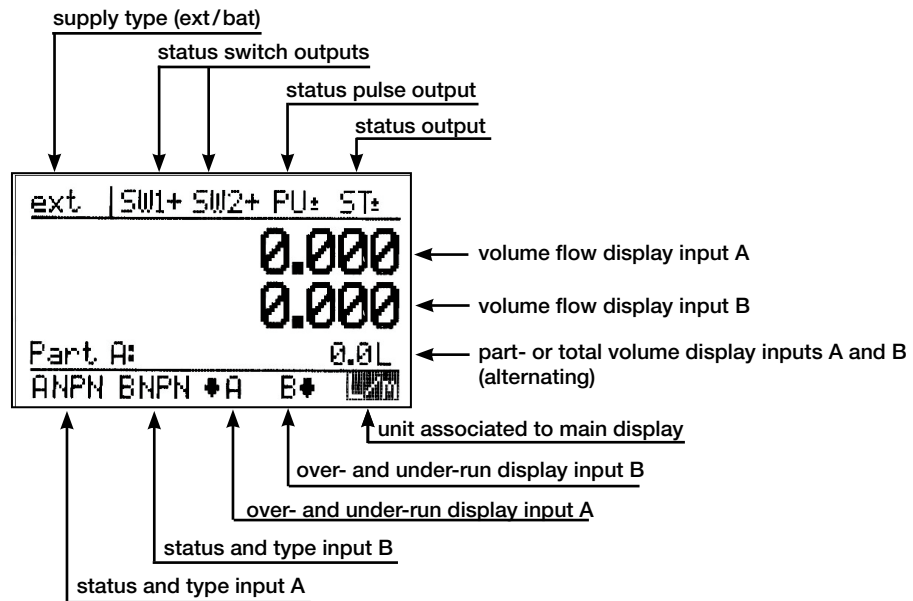
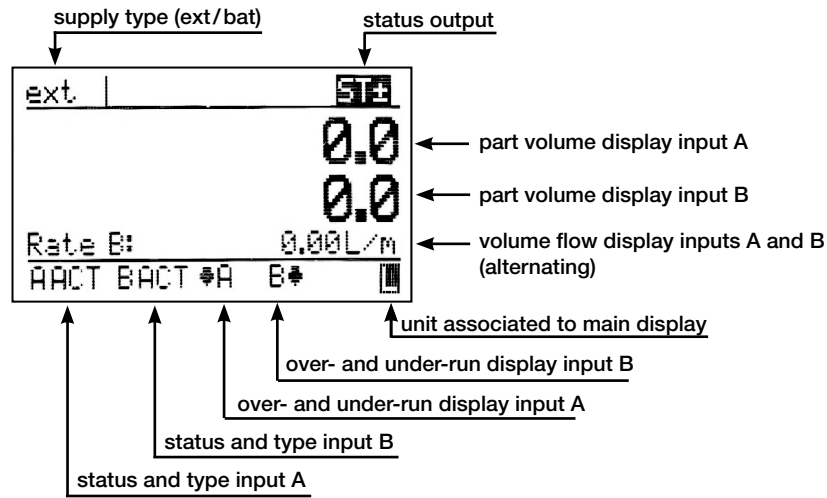
Display

Display Layout in Measuring Mode Single Channel (ZOK-Z1/E1/Z3/E3/E4/E5)

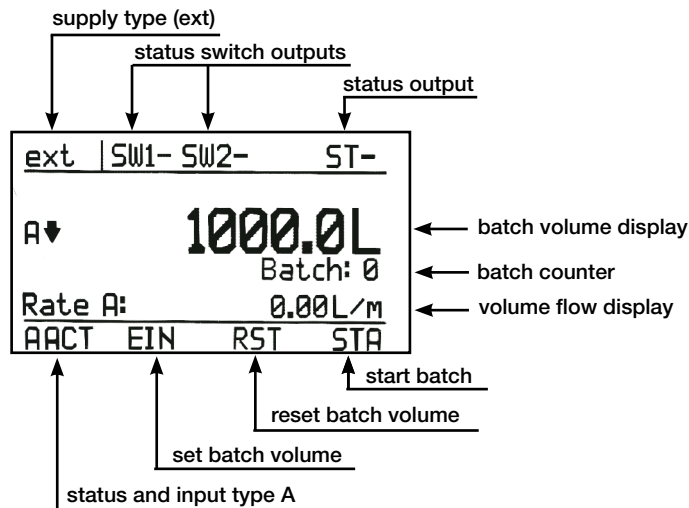


Display (Continued)

Display Layout in Measuring Mode for Dual Channel (ZOK-Z1/E1/Z3/E3/E4/E5)



ZOK-Z2/E2 Batching Unit





Order Details (Example: ZOK-Z1 K MF 3 00)

Model	LCD Electronics	Housing Type	Electrical Connection/ Cable Gland	Power Supply	Options
ZOK-	<p>..Z1.. = Dual Totalizer, LCD</p> <p>..Z2²⁾.. = Batching Unit, LCD</p> <p>..Z3.. = LCD Rate Totalizer with 4-20 mA Output, 4-20 mA HART[®]</p> <p>..E1.. = Same as Z1 with ATEX/IECEX Approval</p> <p>..E2²⁾.. = as Z2 with ATEX/IECEX Approval</p> <p>..E3.. = Same as Z3 with ATEX/IECEX Approval, 4-20 mA, without Pulse Switching Output</p> <p>..E4⁶⁾.. = As E3 with HART[®]</p> <p>..E5⁶⁾.. = As E3 with 4-20 mA and with Pulse and Switching Outputs</p>	<p>..0.. = Universal Mount (Standard, Round Plastic without Holder Plates, without Holes)</p> <p>..K.. = Universal Mount (Standard, Round Plastic with Holder Plates)</p> <p>..M.. = Universal Mount (Round Plastic for Retrofitting Model DON)</p> <p>..P¹⁾.. = Panel Mount 3.8" x 3.8"</p> <p>..F¹⁾.. = Field Housing</p>	<p>..MF³⁾.. = 3 x M20x1.5 Cable Entry</p> <p>..2F³⁾.. = 3 x 1/2" NPT Cable Entry</p> <p>..KF⁹⁾.. = Terminal on the Back</p> <p>..NF⁴⁾.. = 3xM16x1.5</p> <p>..PF⁴⁾.. = 2xPG13.5</p>	<p>..3²⁾.. = 5...28 Vdc, Battery</p> <p>..0²⁾.. = 90...260 VAC</p> <p>..6²⁾.. = 12...28 VDC</p>	<p>..00 = without</p> <p>..R0²⁾ = 2 Relays</p> <p>..G0⁷⁾ = 2 Optocouplers</p> <p>..P0⁸⁾ = 3 Optocouplers</p>

¹⁾ Not for ZOK-E1, ZOK-E3, ZOK-E4, ZOK-E5 ²⁾ See Table Below ³⁾ Only for housing ZOK-xxK, ZOK-xxM ⁴⁾ Only for ZOK-ZxF ⁵⁾ In preparation ⁶⁾ Option E5 possible only with remote I.S. Isolator ⁷⁾ Standard for ZOK-E2 ⁸⁾ Standard for ZOK-E5 ⁹⁾ For ZOK-ZxP

Overview of Electrical Options and Corresponding Housings

Model	Electronics	Housing	Supply Voltage		Relay Operation	Opto-coupler
			Power Supply Options (see table above)	Battery Mode		
ZOK-	Z1	K/0	3	Standard	No	No
		M				
		P	6/0	No		
		F	3/0	Yes, with Voltage Option 3		
	Z2	K/0	6	No	Standard	
		M				
		P	6/0			
		F				
	Z3	K/0	3/6	Yes, with Voltage Option 3	Yes, with Voltage Option 6 for K/M; Standard for P	
		M				
		P	6 /0	No		
		F	3	Standard	No	
		6 /0	No	Standard		
	E1/E3/E4 ¹⁾	K/M/0	3	Standard	No	
	E2/E5 ¹⁾	K/M/0	3	No	Standard	

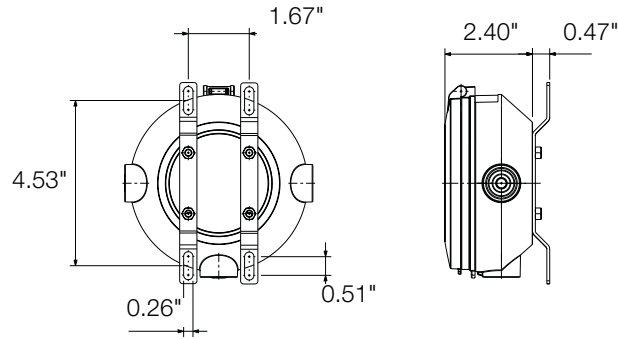
¹⁾ Without Backlighting

Accessories

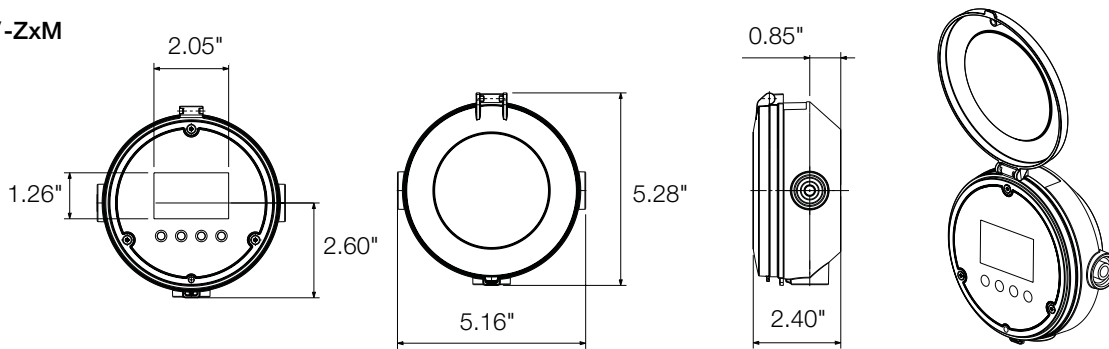
Description	Model
Stainless Steel Wall Mount Kit	ERS-ZOK-023618
Stainless Steel 2" Pipe Mount Kit	ERS-ZOK-003402
Cooling Fin for High Temperature Flowmeter	ERS-ZOK-023619
ATEX Battery Pack, 3.6 V (Comes Standard with ZOK-E1/E3/E4)	ERS-BATEX036

Dimensions

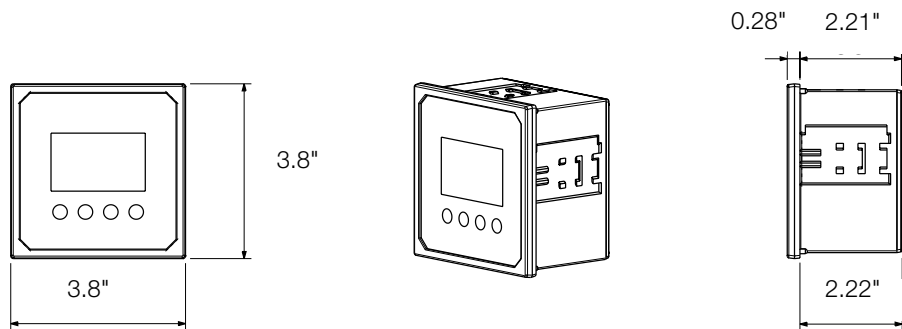
ZOK-ExK/-ZxK



ZOK-ExM/-ZxM



ZOK-ZxP



ZOK-ZxF

