

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



Order from: **C A Briggs Company**

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Sales@cabriggs.com - www.cabriggs.com

KOBOLD Instruments, Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205



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)
Solid State Relay 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 - 20mA, 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:	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-Z5P): 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

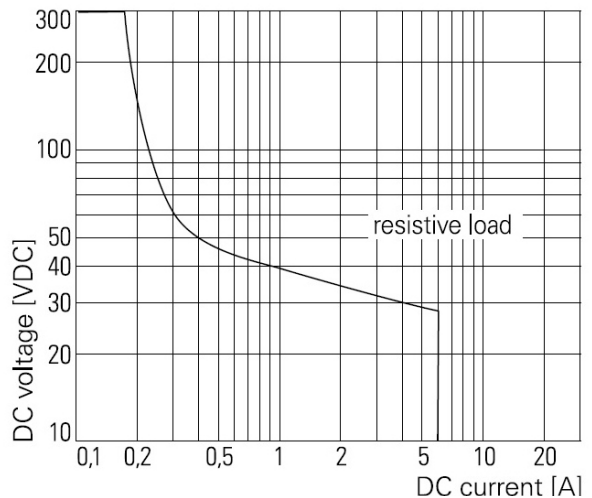
Reading Retention:

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	Z5P/Z5F	Z3K/M/0/F	Z5K/M/0	E1K/M/0	E2K/M/0	E3K/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
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 ³⁾		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		X		with solid state relay board ¹⁾		with solid state relay board ¹⁾
Status Outputs	X	X	X	X	X	X	X				
Analog Outputs					3L	2L / 3L	3L			2L / 3L	3L
Pulse Outputs					X	X	X				with solid state relay 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	X			
Arithmetic Functions	X	X			X	X	X	X	X	X	X

¹⁾ Solid state relay board serves as a galvanic separation to be used in ATEX area

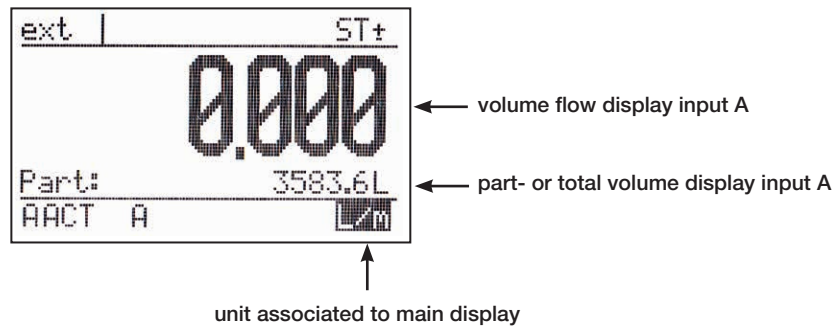
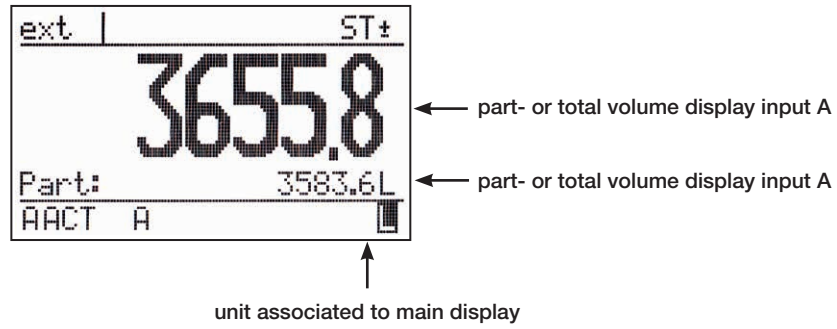
²⁾ Battery operation only applicable with a passive sensor (i.e. reed switch)

³⁾ Shipment without battery with option N



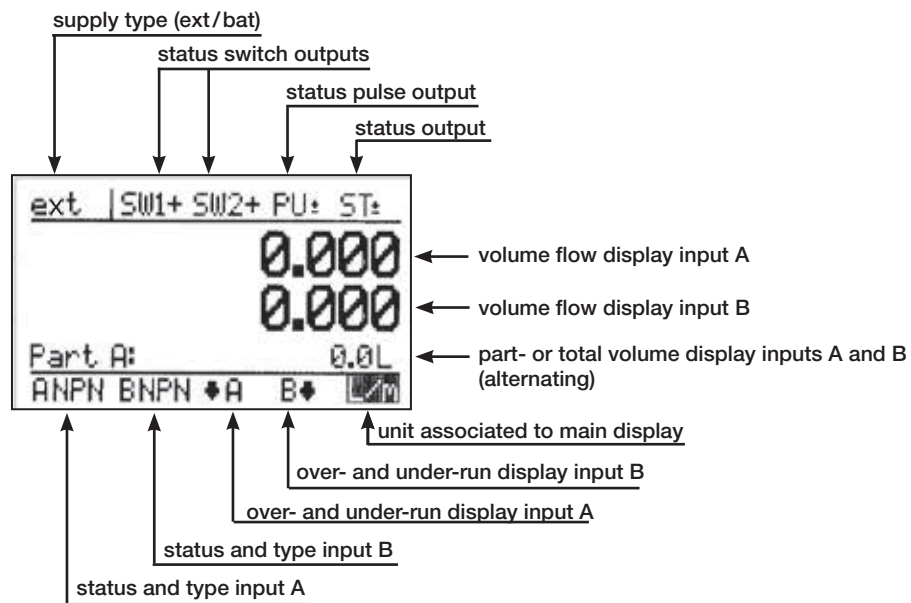
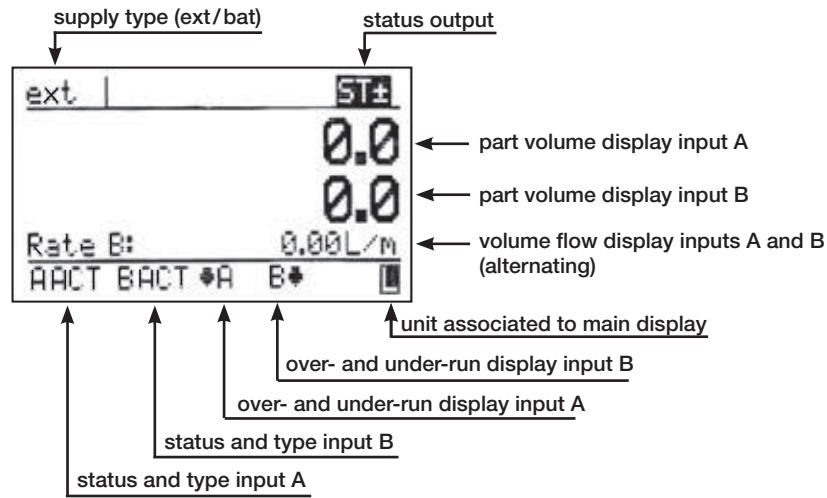
Display

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

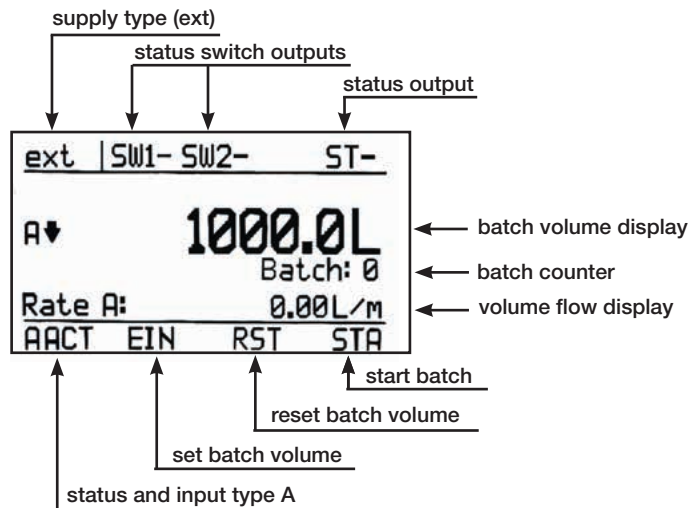


Display (Continued)

Display Layout in Measuring Mode for Dual Channel (ZOK-Z1/E1/Z3/E3/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	Special
ZOK-	..Z1.. = Dual totalizer, LCD	..0.. = Universal mount (Standard, round plastic without holder plates, without holes)	..MF ³⁾ .. = 3x M20x1.5 cable entry	..3 ²⁾ .. = 5 ... 28 V _{DC} , battery	..0.. = Without	..0 = Without
	..Z2 ²⁾ .. = Batching unit, LCD	..K.. = Universal mount (Standard, round plastic with holder plates)	..2F ³⁾ .. = 3x 1/2" NPT cable entry	..0 ²⁾ .. = 90 ... 260 V _{AC}	..R ²⁾ .. = 2x Relays	..N = Shipment without battery
	..Z3.. = LCD rate totalizer with 4-20 mA output, 4-20 mA HART [®]	..M.. = Universal mount (Round plastic for retrofitting model DON)	..KF ⁹⁾ .. = Terminal on the back	..6 ²⁾ .. = 12 ... 28 V _{DC}	..G ⁷⁾ .. = 2x Solid State Relays	..Y = Special (Please specify in clear text)
	..Z5.. = Same as Z3 with 2 Relays	..P ¹⁾ .. = Panel mount 3.8" x 3.8"	..NF ⁴⁾ .. = 3x M16x1.5		..P ⁸⁾ .. = 3x Solid State Relays	
	..E1.. = Same as Z1 with ATEX/IECEEx approval	..F ¹⁾ .. = Field housing	..PF ⁴⁾ .. = 2x PG13.5			
	..E2 ²⁾ .. = Same as Z2 with ATEX/IECEEx approval					
	..E3.. = Same as Z3 with ATEX/IECEEx approval, 4-20 mA, without pulse and switching output					
	..E5 ⁶⁾ .. = Same as E3 with 4-20 mA and pulse and switching outputs					

¹⁾ Not for ZOK-E1, ZOK-E2, ZOK-E3, ZOK-E5 ²⁾ See Table Below ³⁾ Only for housing ZOK-xxK, ZOK-xxM, ZOK-xx0 ⁴⁾ Only for ZOK-ZxF
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	Solid State Relay
			Power Supply Options (see table above)	Battery Mode		
ZOK-	Z1	0/K/M	3	Standard	No	No
		P	6/0	No		
		F	3/0	Yes, with Voltage Option 3		
	Z2	0/K/M	6	No	Standard	
		P	6/0			
		F				
	Z3	0/K/M/F	3	Yes	No	
	Z5	0/K/M	6	No	Standard	
		P	6/0			
		F	6/0			
E1/E3 ¹⁾	K/M	3	Standard	No	Standard	
E2/E5 ¹⁾	K/M	3	No			

¹⁾ Without Backlighting

Accessories

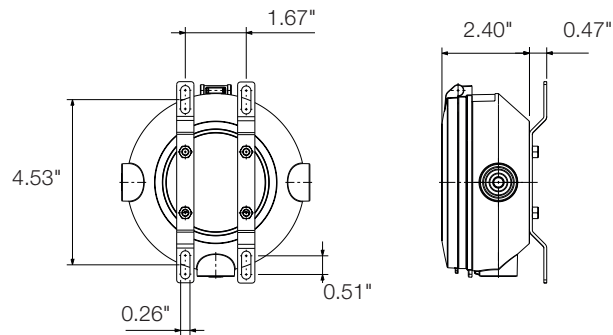
Description	Model
Stainless Steel Wall Mount Kit	ERS-ZOK-023618
Stainless Steel 2" Pipe Mount Kit	ERS-ZOK-003402
Cooling Fin for High Temperature Flowmeter	ERS-ZOK-023619
ATEX Battery Pack, 3.6 V (Comes Standard with ZOK-E1/E3/E4)	ERS-BATEX036 ¹⁾

¹⁾ ERS-BATEX036 is part of standard scope of delivery of ZOK-E1/E3
 (Shipment without battery with option N)

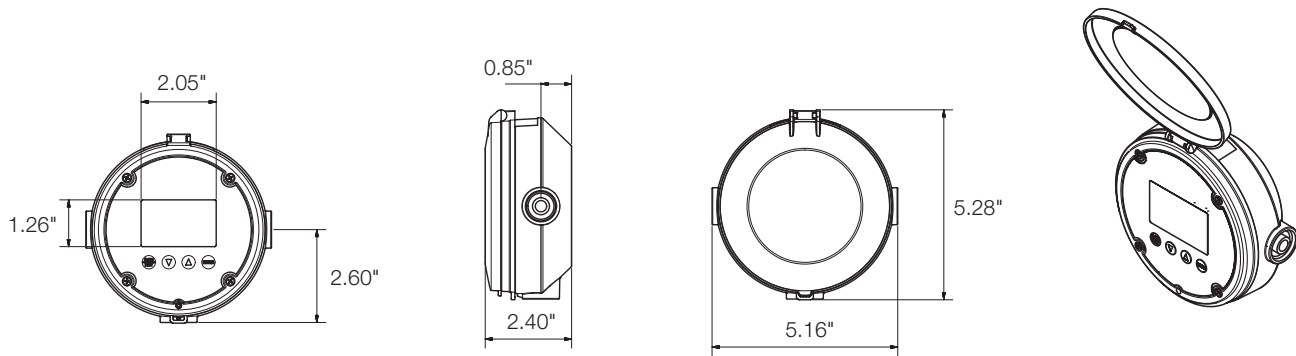


Dimensions

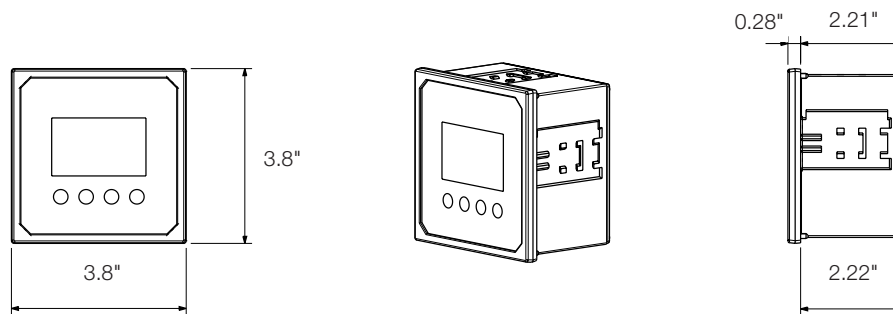
ZOK-ExK/-ZxK



ZOK-ExM/-ZxM



ZOK-ZxP



ZOK-ZxF

