

Coriolis Flow Solutions for a Global Marketplace



DECADES of EXPERIENCE = EXCEPTIONAL RESULTS

When you combine decades of experience with truly unique talents, great things can happen. TRICOR Coriolis technology may be a new name on the scene but our engineers have been intimately involved with the development and evolution of Coriolis flow instrumentation since the beginning. In fact, many of the critical patents for Coriolis technology bear our engineers' names.

TRICOR Coriolis Technology products were designed and engineered in Colorado, Wisconsin and Germany. Our state-of-the-art manufacturing facility in Germany is equipped with superior calibration and test equipment that guarantees the performance of your instrument from the time it arrives at your site.

Our promise to you is that we will deliver high quality Coriolis technology, supported by the very experts who crafted the original technology.

Expertise, Accuracy, Value and Quality are the attributes that enable TRICOR Coriolis Technology to exceed our clients' expectations and leave a positive impact on the industries they serve.



QUALITY MANUFACTURING

TRICOR Coriolis Technology flow meters and transmitters are manufactured and calibrated by Coriolis experts using state-of-the-art equipment in our new 43,000 square foot manufacturing facility in Germany. We have chosen world-class suppliers of high quality components, all with demonstrated quality control systems and procedures. We have assembled manufacturing teams of German precision welders and assemblers with intense attention to detail, to ensure we consistently deliver quality Coriolis mass flow meters. Our focus on quality is put into action with our TRICOR Quality Program which keeps production teams organized and working in clean environments, maintaining our high product quality.



FEATURES:

- High accuracy
- No moving parts
- Ability to measure mass flow rate, volumetric flow rate, density and temperature
- 316L stainless steel flow tubes allow measurement of a wide range of materials
- Tubes available in Hastelloy C-22 in the 1" size meter for compatibility with a broader range of chemicals



FLOW RATE:

Model Number	Traditional Meter Size	Max. Flow Rate (water)			Internal Tube Diameter		Pressure Rating	
		(Kg/Hr)	(Lbs/Min)	(Gal/Min)	(mm)	(in)	(psig)	(bar)
TCM 325	1/8"	300	11	1.31	4 mm*	0.157"	2900	200
TCM 650	1/8"	600	22	2.64	4 mm	0.157"	2900	200
TCM 1550	1/4"	1500	55	6.59	8 mm*	0.315"	2900	200
TCM 3100	1/4"	3000	110	13.19	8 mm	0.315"	2900	200
TCM 5500	1/2"	5500	202	24.2	7 mm	0.276"	5000	345
TCM 7900	1/2"	7900	290	34.8	9 mm	0.354"	1450	100
TCM 28K	1"	28K	1026	126.6	16 mm	0.630"	1450	100
TCM 65K	2"	65K	2400	288	28 mm	1.1"	1450	100

* Double loop design.

MATERIALS OF CONSTRUCTION:

Wetted Parts: 316L SS seamless tubing

Case: 304 SS

Flow Splitter: CF3M (316 SS)

Brazing Alloy: BNi-2

HAZARDOUS AREA CLASSIFICATIONS:

Designed to meet ratings and/or certifications specified.

CSA/cUS Hazardous Area - US & Canada

Class I, Div 1, Groups C & D

ATEX Ex ib IIC T1-T6

IEC Ex & [ia] II C T4 Gb



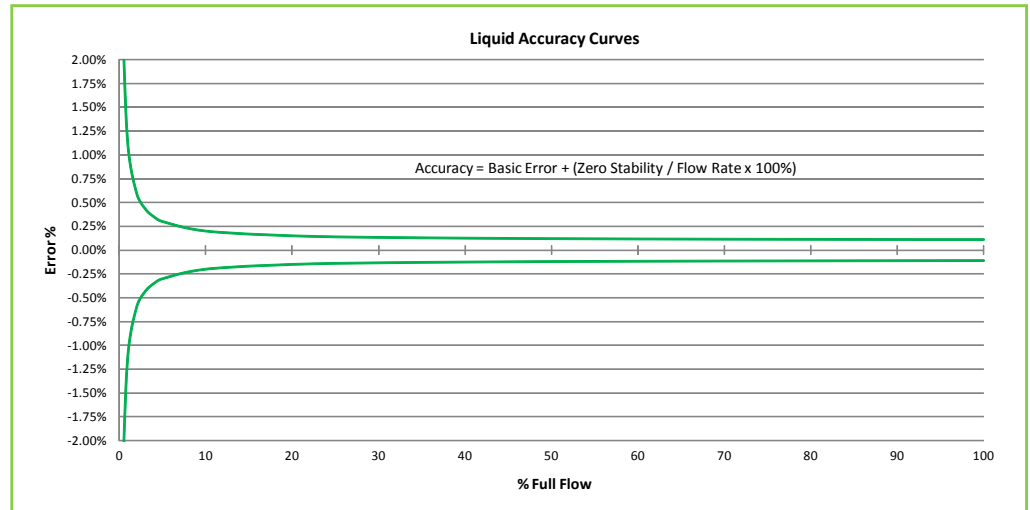
ACCURACY:

Mass Flow Repeatability:

Repeatability = $\pm 1/2(\text{zero stability} / \text{flow rate}) * 100\%$ of rate

Zero Stability (0.01% full scale):

Model No.	(lb/min)	(kg/hr)
TCM 325	0.0012	0.033
TCM 650	0.0024	0.065
TCM 1550	0.0057	0.155
TCM 3100	0.0114	0.310
TCM 5500	0.0202	0.550
TCM 7900	0.0290	0.790
TCM 28K	0.1029	2.800
TCM 65K	0.2388	6.500



Basic Uncertainty:

Mass $\pm 0.10\%$ (liquid), $\pm 0.50\%$ (gases)

Volumetric $\pm 0.15\%$ (liquid)

Stated accuracy combines the effects of repeatability, linearity, and hysteresis.

Accuracy rate $\pm (\text{zero stability}/\text{flow rate}) * 100\%$ of flow rate.

DENSITY:

Density Accuracy: Liquids: $\pm 1.0 \text{ kg/m}^3$, $\pm 0.001 \text{ g/cm}^3$, $\pm 0.062 \text{ lb/ft}^3$

Density Repeatability: $\pm 0.5 \text{ kg/m}^3$, $\pm 0.0005 \text{ g/cm}^3$, $\pm 0.031 \text{ lb/ft}^3$

Density Range: Up to 5000 kg/m^3 (5 g/cm^3 , 5.0 S.G.), $\pm 312 \text{ lb/ft}^3$

TEMPERATURE:

Media Temperature Range:

TCM-325, 650, 1550, 3100: -150° to 392° F (100° to 200° C)

TCM-7900, 28K, 65K: -150° to 302° F (-100° to 150° C)

Temperature Accuracy:

- $\pm 1.0^\circ \text{ C}$, $\pm 0.5\%$ of reading
- Repeatability $\pm 0.1\%$
- Requires a special platinum RTD for temps below -40° .

Ambient Temperature Limits: -40° to 140° F

(-40° C to 284° C)

PRESSURE:

Max Pressure: see chart page 3

Process Pressure Effect*:

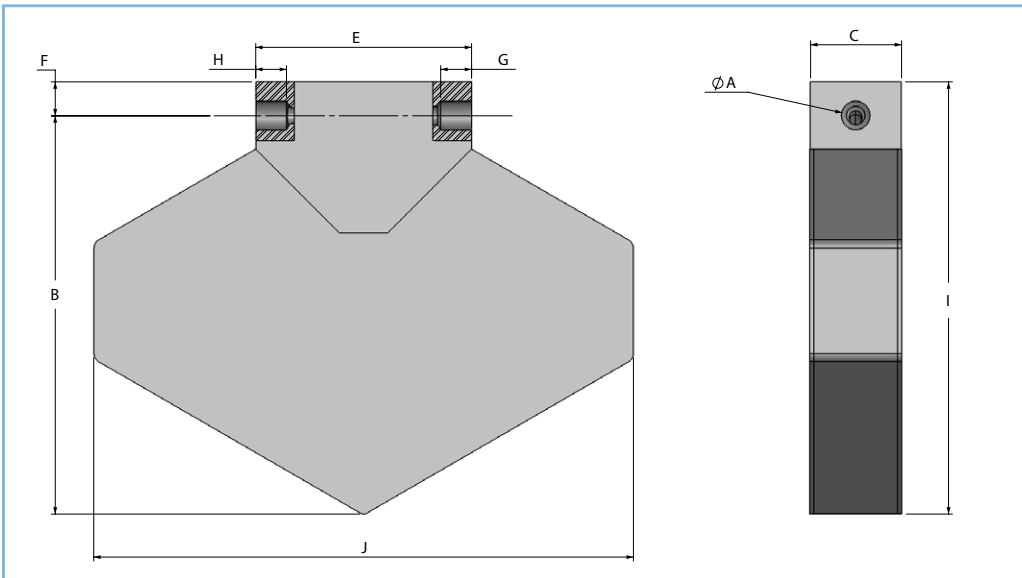
Mass Flow Accuracy: $\pm 0.001\%$ of rate per PSI

Density Accuracy: $\pm 0.00003 \text{ g/cm}^3$ per PSI

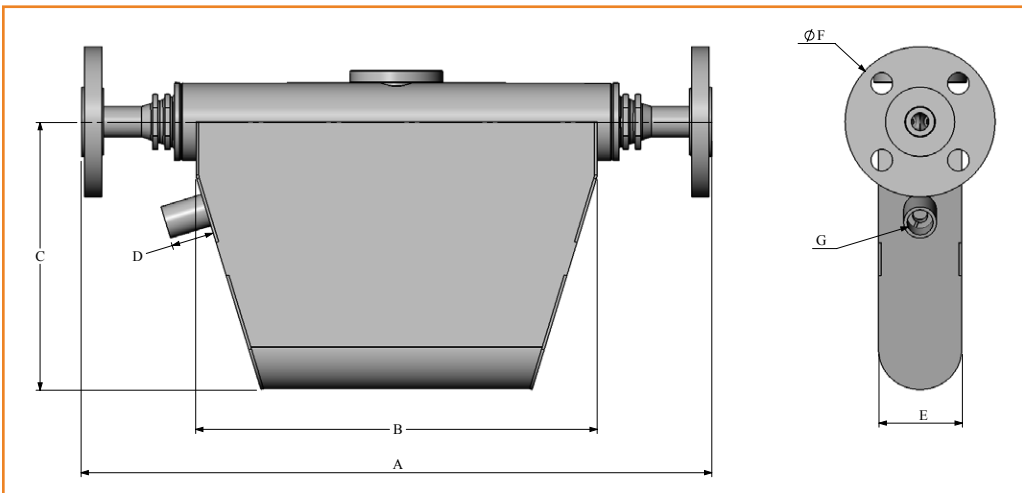
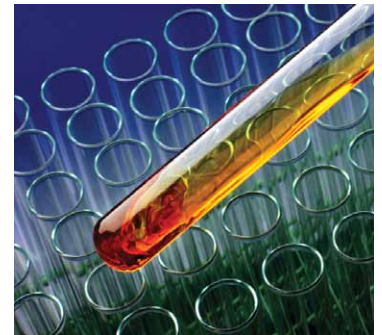
*Process pressure effect is eliminated with Pressure Compensation option on TCE-8000 electronics.



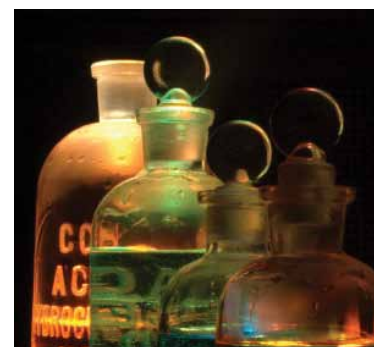
METER DIMENSIONS:



Dimension	TCM 325 & 650	TCM 1550 & 3100
A	1/2" BSPP or NPT	1/2" BSPP or NPT
B	160 mm (6-1/4")	259 mm (10-3/16")
C	60 mm (2-3/8")	59 mm (2-5/16")
E	109 mm (4-5/16")	140 mm (5-1/2")
F	22 mm (7/8")	22 mm (7/8")
G	19 mm (3/4")	22 mm (7/8")
H	19 mm (3/4")	22 mm (7/8")
I	182 mm (7-3/16")	281 mm (11-1/16")
J	214 mm (8-7/16")	349 mm (13-3/4")



Dimension	TCM 5500 / 7900	TCM 28K	TCM 65K
A	461.9 mm (18.2")	626 mm (24.6")	832 mm (32.8")
B	294 mm (11.6")	334 mm (13.1")	539.2 mm (21.2")
C	196 mm (7.7")	250.6 mm (9.9")	384.1 mm (15.1")
D	31 mm (1.2")	31 mm (1.2")	31 mm (1.2")
E	61 mm (2.4")	80.1 mm (3.2")	137 mm (5.4")
F	see note	see note	see note
G	1/2" BSPP Female	1/2" BSPP Female	1/2" BSPP Female



Note: All ANSI, DN and Tri-Clamp flange sizes available. Consult factory for flange dimension F.

ORDERING INFORMATION:

TCM Meter Part Numbering



Max. flow in Kg/h

Process Connections

code	ANSI Flange	code	TriClamp Flange
AA	0.5" CL 150	TA	0.5"
AB	0.5" CL 300	TB	0.75"
AC	0.5" CL 600	TC	1.0"
AD	0.5" CL 900	TD	1.5"
BE	0.5" CL 2500	TE	2.0"
BA	0.75" CL 150	TF	2.5"
BB	0.75" CL 300	TG	3"
BC	0.75" CL 600	TH	4"
code	ANSI Flange	code	Female Thread
AE	1.0" CL 150	FA	0.5" BSPP
AF	1.0" CL 300	FB	0.25" BSPP
AG	1.0" CL 600	FC	0.75" BSPP
AH	1.0" CL 900	FD	1.0" BSPP
AJ	1.5" CL 150	FE	1.25" BSPP
AK	1.5" CL 300	FF	1.5" BSPP
AL	1.5" CL 600	FG	1.75" BSPP
AM	1.5" CL 900	FH	2.0" BSPP
AN	2.0" CL 150	FJ	0.25" NPT
AO	2.0" CL 300	FK	0.5" NPT
AP	2.0" CL 600	FL	0.75" NPT
AR	2.0" CL 900	FM	1.0" NPT
AS	3.0" CL 150	FN	1.25" NPT
AT	3.0" CL 300	FO	1.5" NPT
AU	3.0" CL 600	FP	1.75" NPT
AV	3.0" CL 900	FQ	2.0" NPT
AW	4.0" CL 150		
AX	4.0" CL 300		
AY	4.0" CL 600		
AZ	4.0" CL 900		

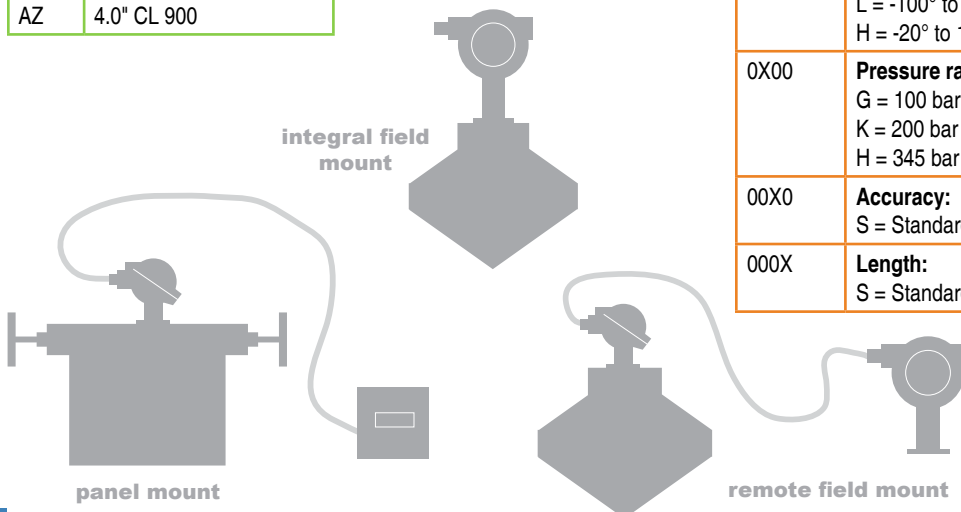
(For other flanges available, contact factory)

code	Custom Specific
empty	Standard unit
01	NOC (Net Oil Computer)
02	Housing made of 326Ti (1.4571)
C22	Hastelloy tubes (TCM-28K only)
WF	Welded fittings (TCM-325-3100 only)

code	Ex Protection
EX	Ex-protection - ATEX, IEC Ex
EX1	Ex-protection - CSA/cUS Class I Div 1
empty	no Ex-protection

code	Electronics / Terminal (4 digits)
X000	Electronics: A = Junction box only C = Integral field mount electronics E = ATEX approved local electronics F = TCE-6000 electronics (Blind meter mount electronics) Z = no electronics (replacement only)
0X00	Interface: S = RS-485, Modbus (standard) A = HART + RS 485, Modbus B = Foundation™ Fieldbus & RS 485, Modbus F = USB connector (TCE 6000 only) Z = not used
00X0	Supply voltage: D = 24 VDC M = 90 - 264 VAC Z = not used
000X	Cable lengths: (for panel mount & wall mount units) S = None A = Pressure Compensation, 4-20mA input B = 8-pin I/O connector (TCE 6000 only)

code	Mechanical Options (4 digits)
X000	Temperature range: S = -40° to 100°C L = -100° to 100°C H = -20° to 150°C (for other ranges, contact factory)
0X00	Pressure range: G = 100 bar (1450 psi) with rupture disc K = 200 bar (2900 psi) with rupture disc H = 345 bar (5000 psi) with rupture disc
00X0	Accuracy: S = Standard (Liquid = ±0.1%, Gas = ±0.5%)
000X	Length: S = Standard



ORDERING INFORMATION: TCE Transmitter Part Numbering



code	Electronics
8001	Low power (for -EX only)
8011	High power (all sizes)

code	Custom Specific
empty	Standard unit
01	NOC (Net Oil Computer)

code	Housing (1 digit)
W	Wall mounted housing with fixed cable to TCM
S	Panel-mounted housing (separate cable required)
C	Compact version (only replacement)
E	Large wall mount housing for -EX (ATEX, IEC Ex only)
L	Wide panel mount housing for -EX (CSA/cUS, ATEX, IEC Ex)

code	Ex Protection
EX	Ex-protection - ATEX, IEC Ex
EX1	Ex-protection - CSA/cUS Class I Div 1
empty	no Ex-protection

code	Options (4 digits)	code	Options (4 digits)
X000	Interface: S = RS 485 only + Modbus A = Hart + RS 485 + Modbus B = Foundation Fieldbus + RS 485 + Modbus Z = not used	000X	Cable Length: N = No cable included (housing S, C and L only) S = 3m / 10ft cable length B = 6m / 20ft cable length C = 10m / 33ft cable length D = 15m / 49ft cable length E = 20m / 65ft cable length
0X00	Power Supply: D = 24 VDC M = Mains (90-264 VAC)		
00X0	Options: S = none R = Relay A = Pressure compensation, 4-20mA input		

ELECTRONICS:

The TCE-8000 electronic transmitters come in 3 different mounting options:

- Integral Field Mount
- Remote Field Mount
- Panel Mount

Display: Graphic, 132 x 32 dot

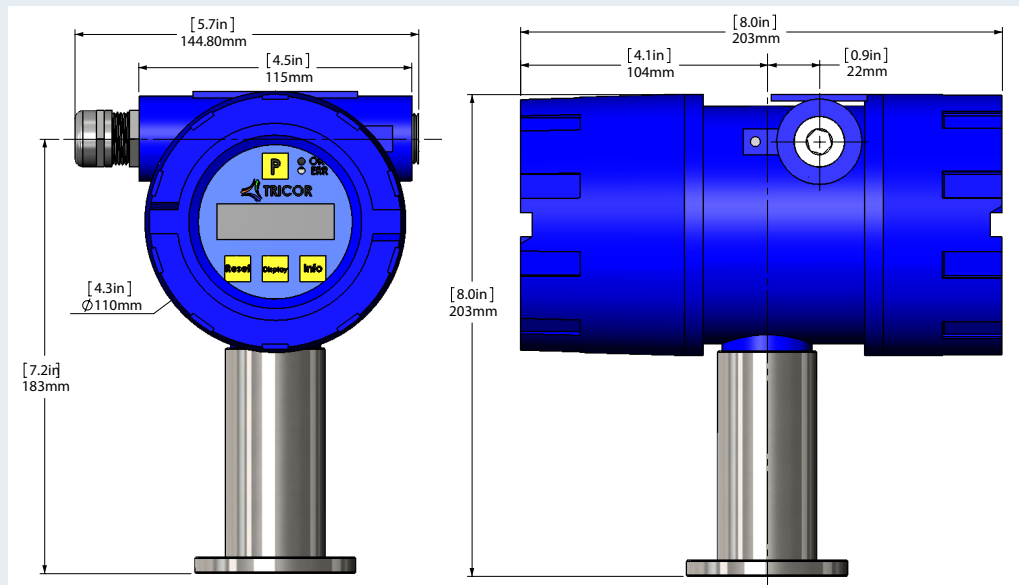
Supply voltage: 24 VDC ($\pm 20\%$);
90-240 VAC

Programming: via front keyboard

Interface: RS 485, options HART®,
Foundation™ Fieldbus, Modbus®

Power consumption: max. 4 W

Analog Outputs:	
Two current outputs	4-20 mA passive, two-wire insulated
Resolution	14 bit
Linearity	+0.05% of full scale
Temperature drift	0.05% per 10°C
Load	< 800 Ohm
Output value	programmable: flow, total, density, temperature

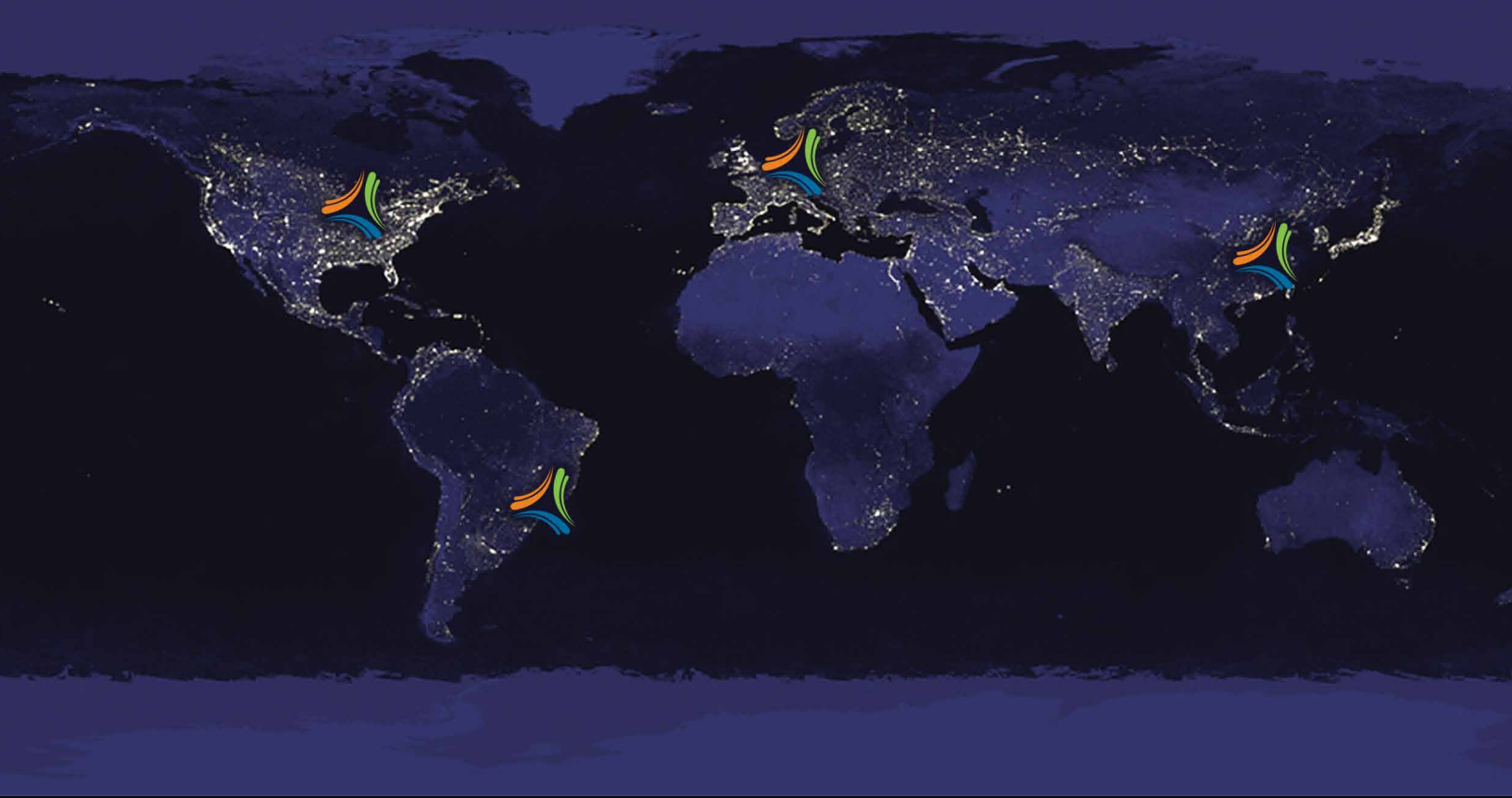


Pulse Output:	
Frequency range	0.5 - 10,000 Hz
Output signal	Active push-pull output of flow rate or cycle output

Status In- and Output:	
Status output	fault out info (push-pull)
Control input	programmable

To find a dealer in your area, visit:

www.tricorflow.com/locations



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