

# Meters and accessories for Biodiesel, Ethanol & Methanol

Application Brochure TCS900-500  
© Copyright 2009 Total Control Systems



**TOTAL  
CONTROL  
SYSTEMS**

**“The Standard of Measurement”**

**MADE IN AMERICA**

**[www.tcsmeters.com](http://www.tcsmeters.com)**

## About Us

Total Control Systems is a leading manufacturer of piston and rotary positive displacement flow meters located in Fort Wayne, Indiana. All meters are designed with the highest quality to provide superior performance in custody-transfer measurement of refined fuels, LPG, fertilizers, chemicals, alcohols, solvents, and alternative fuels including bio-diesel, ethanol, and methanol. Marketed to provide application-driven flow meter solutions for vehicles, dispensers, and fixed-site installations, we provide a full line of accessory equipment including strainers, air and vapor eliminators, control valves, pulse transmitters, and mechanical or electronic registration to complete system requirements. Meters are designed and created using sound engineering principles and state-of-the-art computer numerically controlled (CNC) machines in a world-class manufacturing facility. Each flow meter is completely assembled and tested by highly skilled members of our production team, who strive for excellence in workmanship and quality. Our reputation for providing innovative, high-quality, and reliable fluid measurement products is coupled with our sense of customer-driven services. Our first priority is to help our customers achieve increased productivity and provide value to your business today and tomorrow.

### About Alternative Fuels

**Bio-diesel** is a renewable fuel manufactured from refined animal fats, recycled cooking oils, soy, canola and other virgin vegetable oils. Bio-diesel is expressed as a percentage of bio-fuel in a gallon of fuel, where the remainder of the gallon can be No. 1 or 2 diesel, kerosene, heating oil, etc. The ASTM specification for B100 (pure biofuel) is D6751-06.

**Ethanol** is an anhydrous, denatured alcohol intended for gasoline or oxygenated fuel blending. Ethanol is manufactured from agricultural waste and grains, such as sugar cane, corn, wheat, rye, rice, barley, and soy beans. Ethanol blends are expressed as a percentage of Ethanol in a gallon of fuel. The ASTM specification for E1 to E10 is D4806-06 and E75 to E85 is D5798-06.

**Methanol** is a renewable fuel manufactured from coal, wood, waste or any material containing carbon. Methanol blends are expressed as a percentage of methanol in a gallon of fuel. The ASTM specification for M70 to M85 is D5797-06 and M100 (Methyl Alcohol) is D1152-06.



Series 682  
Piston Meter with  
mechanical register

## 682 Series Piston Meters for Alternative Fuels

The 682 Series flow meter is a positive displacement piston-type meter that combines outstanding accuracy (+/-0.1%) with an exceptional turndown ratio of 250:1. Flow range is 0.2 to 50 gpm.

### Accessories

The 682 Series flow meter is available with a full complement of accessories including air eliminators, strainers, valves, mechanical and electronic registers with temperature volume compensation (TVC), and printers from industry leading suppliers.

### Testing and Approvals

Meters are Weights & Measures approved for custody transfer (NIST, OIML, NMI, MID, and SABS), and are flow-tested for accuracy before leaving the factory. A test report is supplied with every meter.

### 682 Series Meter Specifications

Meter Model No.	Flange Size	Flow Range		Working Pressure		Working Temperature	
		gpm	lpm	psi	bar	°F	°C
682-15	1-1/2"	0.2 to 50	0.75 to 190	150	10.5	-40 to 160	-40 to 71

Fuel Type	Application	Meter Type	Meter Housing	Meter Internals	Seal Materials
Biodiesel B2-B100	Vehicle/Storage	682-15-SP/SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
Ethanol E10	Vehicle	682-15-SP/SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	682-15-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/Simriz
Ethanol E10-E100	Vehicle	682-15-SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	682-15-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/Simriz
Methanol M10-M85	Vehicle	682-15-SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	682-15-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/Simriz

## 700 Series Rotary Meters for Alternative Fuels

The 700 Series Rotary Positive Displacement Flow Meters in Types SP, SPA, and SPD are ideal for metering alternative fuels including Biodiesel, ethanol, and methanol. Meters reflect a tri-rotor design with no metal-to-metal contact between rotors and housing to minimize internal wear, maintain high accuracy over time, and to extend the time between meter calibrations. Meters are ideal for tank truck applications, as well as for metering into/out of storage, and for skid-mounted metering systems.



### Accessories

The 700 Series meters are available with a full complement of accessories including air eliminators, strainers, and valves, as well as mechanical and electronic registers with temperature volume compensation (TVC), and printers from industry leading suppliers. Electronic encoders are available that mount directly to the meter for generating a pulse output to drive a local or remote register .

### Testing and Approvals

Meters are Weights & Measures approved for custody transfer (NIST, OIML, NMI, and SABS), and are flow-tested for accuracy before leaving the factory. A test report is supplied with every meter.

### 700 Series Meter Specifications

Meter Model No.	Flange Size NPT **	Max. Capacity		Working Pressure		Working Temperature	
		gpm	lpm	psi	bar	°F	°C
700-15	1-1/2"	60	227	150	10.5	-40 to 160	-40 to 71
700-20	2"	100	380	150	10.5	-40 to 160	-40 to 71
700-25	2"	150	567	150	10.5	-40 to 160	-40 to 71
700-30	3"	200	760	150	10.5	-40 to 160	-40 to 71
700-35	3"	300	1135	150	10.5	-40 to 160	-40 to 71
700-40	4"	500	1893	150	10.5	-40 to 160	-40 to 71
700-45	4"	600	2271	150	10.5	-40 to 160	-40 to 71



...Series 700 Rotary Meter with pulse output device for electronic registration

+ NPT flange is standard. BSPT, Slip Weld, ANSI and others available on request.

\* Optional flange sizes available upon request.

...Series 700 Rotary Meter for biodiesel

### 700 Series Meter Selection for Alternative Fuels

Fuel Type	Applica-tion	Meter Type	Meter Housing	Meter Internals	Seal Materials *
Biodiesel B2-B100	Vehicle/ Storage	700-SP/ SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
Ethanol E10	Vehicle	700-SP/ SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	700-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/ Simriz
Ethanol E10-E100	Vehicle	700-SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	700-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/ Simriz
Methanol M10-M85	Vehicle	700-SPA	Anodized Aluminum	Ni-Resist & S.S	Viton F
	Storage	700-SPD	Ductile Iron	Ni-Resist & S.S	Teflon/ Simriz



\* Viton is a registered trademark of E.I. Dupont de Nemours & Co. Teflon is a registered trademark of DuPont Dow Elastomers, LLC. Simriz is a registered trademark of Freudenberg-NOK.

**Total Control Systems** is a leading manufacturer of precision measurement systems. Our world-class positive displacement flow meters are among the most accurate available in any industry and are backed by excellent customer service, support, and prompt deliveries.

TCS meters are designed and manufactured to meet or exceed your needs. Our meters are used world-wide in a multitude of applications including Agriculture, Aviation, Marine, LPG, Refined Fuels, Industrial Chemicals, and Alternative Fuels.

*Discover why Total Control Systems  
should be the future of your metering solutions!*



**TOTAL  
CONTROL  
SYSTEMS**

**“The Standard of Measurement”**

2515 Charleston Place Fort Wayne, IN 46808  
Tel: (260) 484-0382 Toll Free: (800) 348-4753 Fax: (260) 484-9230  
E-mail: [sales@tcsmeters.com](mailto:sales@tcsmeters.com) Website: [www.tcsmeters.com](http://www.tcsmeters.com)