

**SERIES 100
 METERS AND
 ACCESSORIES**
**Series 190 Totalizer, Indicator
 and Transmitter Option for
 Mechanical Drive
 Propeller Flowmeters**
**PDS-190-111
 Issue Date: October 2010**
DESCRIPTION

For applications where the environment is unfriendly to a digital microprocessor device, Sparling has updated its FT190 to incorporate a 4-20 mA and scaled pulse output. The FT190 is a rugged mechanical transmitter that has been successfully used in the field for over 30 years and the FT190-111 continues Sparlings' tradition of highly robust solutions for the flow metering world.

The FT190-111 mechanical indicator/totalizer is used in combination with, and mounted on, Sparling mechanical propeller flowmeters to provide mechanical totalization (registration), mechanical indication (flow rate) and a 4-20mA and scaled pulse output.



READOUT AND OUTPUT CAPABILITIES						
Type	Mechanical Totalization	Mechanical Rate Indication	Outputs	4-20mA (2-wire)	Scaled Electronic Pulse Rate	Approx. Shipping Wt.
FT190-111	YES	YES	YES	YES	YES	20 lbs.

Sparling Instruments, LLC

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 Phone (626) 444-0571 • Fax (626) 452-0723

SPECIFICATIONS:

MECHANICAL RATE INDICATOR

Scale Length 6 inches
 Accuracy 5% full scale
 Available Scales See Table 4

MECHANICAL TOTALIZER

Number of digits 6
 Accuracy ±2% actual flow
 Units of registration See Table 2
 Test Hand One full rotation per least significant digit of totalizer

4-20mA OUTPUT

True two-wire requiring external power supply
 External Power Supply 18-30 vDC
 Output Load Capacity See power supply vs. output load curve
 Reverse polarity protection 35vDC (max.)
 Accuracy 0.5% of full scale

SCALED ELECTRONIC PULSE RATE

Two-wire isolated solid state switch (photocoupled)
 External Power Supply 10-30 vDC
 Pulse amplitude 0 vDC (off) to external supply voltage minus 3 vDC (on)
 Output load 4 watts maximum
 Pulse on time 100ms
 Pulse output registration Equal to mechanical totalizer least significant digit
 Accuracy 2% actual flow

ALL OUTPUT CONNECTIONS

Pigtail leads through 1/2 NPT grommets or potted sealed conduit connection.

MATERIAL OF CONSTRUCTION

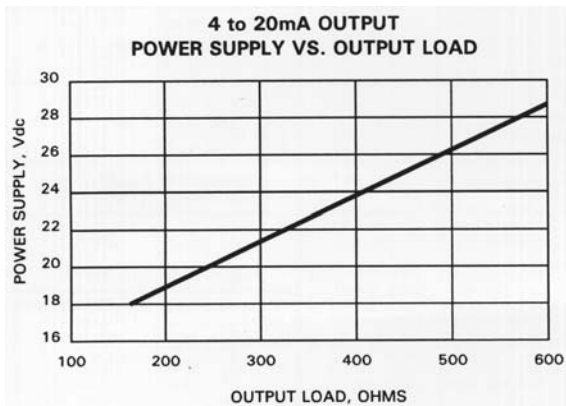
Painted Die Cast Aluminum.

ENCLOSURE RATING NEMA 3R

ELECTRICAL RATING General Purpose

AMBIENT TEMPERATURE LIMITS

+30°F (-1°C) to 130°F (+55°C)



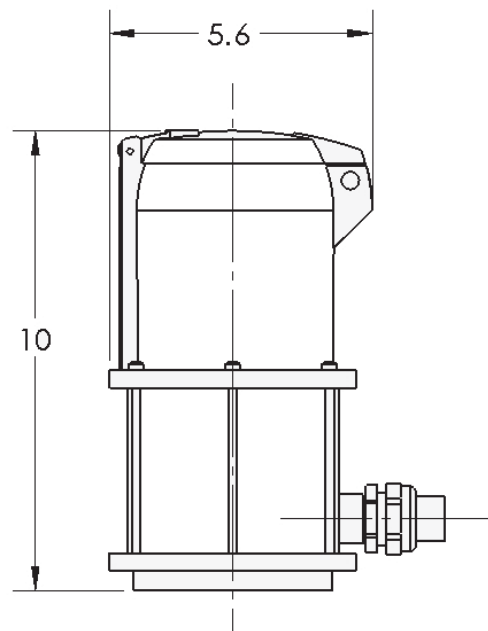
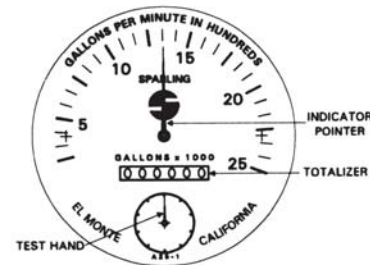
FT190-111-2 PROPELLER FLOWMETER TRANSMITTER MODEL NUMER SCHEDULE

Table 1 - Base Model Number FT190 - Mechanical Flow Totalizer and Indicator
Table 2 - Outputs 111 - 4-20mA and Scaled Pulse Output
Table 3 - Mounting 2 For Mounting on Meterhead on Same Order 3 Replacement for Existing Meterheads

FT190-111-__

ORDERING INFORMATION

- Construct model number by selecting one code for each category.
- If ordered with a new meter-head, state base model number and size of meter-head. If replacement for an existing meterhead, state serial number of existing meter-head.
- Provide the following information from Tables 2 & 3.
 - Mechanical indicator scale and units
 - Mechanical totalizer registration and units



**TABLE 2
STANDARD INDICATOR SCALE AND REGISTRATION FOR FT190-111-2**

Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration
2"	100 GPM	10 GALLONS	6" cont	1000 GPM	100 CF	10" cont	4.0 CFS	0.001 AF	14"	3500 GPM	1000 GALLONS
	100 IGPM	10 IMP. GAL.		1000 GPM	0.001 AF		5.5 CFS	0.001 AF		3500 IGPM	1000 IMP. GAL.
	100 GPM	10 CF		2.0 CFS	10 CF		2.5 MGD	1000 GALLONS		3500 GPM	100 CF
	200 GPM	100 GALLONS		3.0 CFS	10 CF		100 LPS	1000 LITERS		3500 GPM	1000 CF
	200 IGPM	10 IMP. GAL.		3.0 CFS	100 CF		100 LPS	UNIT CU. MTRS.		3500 GPM	0.01 AF
	300 GPM	10 CF		3.0 CFS	0.001 AF		125 LPS	1000 LITERS		4500 GPM	1000 GALLONS
	0.25 CFS	10 CF		1.5 MGD	1000 GALLONS		2500 GPM	1000 GALLONS		4500 IGPM	1000 IMP. GAL.
	0.5 CFS	10 CF		60 LPS	1000 LITERS		2500 IGPM	1000 IMP. GAL.		4500 GPM	0.01 AF
	6 LPS	100 LITERS		60 LPS	UNIT CU. MTRS.		2500 GPM	100 CF		4500 GPM	100 CF
	12.5 LPS	0.1 CU. MTRS.		75 LPS	UNIT CU. MTRS.		2500 GPM	0.01 AF		10.0 CFS	100 CF
				1400 GPM	1000 GALLONS		2500 GPM	0.1 ACRE IN.		10.0 CFS	0.01 AF
				1400 IGPM	1000 IMP. GAL.		6.0 CFS	100 CF		7.5 MGD	1000 GALLONS
				1400 GPM	100 CF		6.0 CFS	0.01 AF		250 LPS	10000 LITERS
				1400 GPM	0.001 AF		4.0 MGD	1000 GALLONS		250 LPS	10 CU. MTRS.
				1400 GPM	UNIT CU. MTRS.		200 LPS	10 CU. MTRS.		5000 GPM	1000 GALLONS
3"	200 GPM	10 GALLONS	8"	1400 GPM	1000 GALLONS	12"	2500 GPM	1000 GALLONS	16"	4500 GPM	1000 GALLONS
	200 IGPM	10 IMP. GAL.		1400 IGPM	1000 IMP. GAL.		2500 IGPM	1000 IMP. GAL.		4500 IGPM	1000 IMP. GAL.
	300 GPM	10 GALLONS		1400 GPM	100 CF		2500 GPM	100 CF		4500 GPM	0.01 AF
	300 IGPM	10 IMP. GAL.		1400 GPM	0.001 CF		2500 GPM	0.01 AF		4500 GPM	0.01 AF
	300 GPM	UNIT CF		1400 GPM	UNIT CU. MTRS.		6.0 CFS	100 CF		10.0 CFS	100 CF
	300 GPM	10 CF		1400 GPM	0.01 ACRE IN.		6.0 CFS	0.01 AF		10.0 CFS	0.01 AF
	300 GPM	.0001 AF		2.0 MGD	1000 GALLONS		4.0 MGD	1000 GALLONS		7.5 MGD	1000 GALLONS
	500 GPM	100 GALLONS		1700 GPM	1000 GALLONS		3500 GPM	1000 GALLONS		250 LPS	10000 LITERS
	500 IGPM	100 IMP. GAL.		1700 IGPM	1000 IMP. GAL.		3500 GPM	1000 IMP. GAL.		250 LPS	10 CU. MTRS.
	500 GPM	10 CF		1700 GPM	100 CF		3500 GPM	100 CF		250 LPS	1000 GALLONS
	500 GPM	10 CF		1700 GPM	0.01 AF		3500 GPM	1000 CF		250 LPS	1000 GALLONS
	500 GPM	0.001 AF		4.0 CFS	100 CF		3500 GPM	1000 GALLONS		5000 GPM	1000 IMP. GAL.
	0.5 CFS	10 CF		4.0 CFS	0.001 AF		3500 IGPM	1000 IMP. GAL.		5000 GPM	100 CF
	1.0 CFS	10 CF		5.5 CFS	0.001 AF		3500 GPM	100 CF		5000 GPM	100 CF
	0.5 MGD	100 GALLONS		2.5 MGD	1000 GALLONS		3500 GPM	100 CF		14.0 CFS	100 CF
12.5 LPS	0.1 CU. MTRS.	100 LPS	1000 LITERS	3500 GPM	1000 CF	10.0 CFS	0.01 AF				
25 LPS	1000 LITERS	100 LPS	UNIT CU. MTRS.	3500 GPM	0.01 AF	7.5 MGD	1000 GALLONS				
30 LPS	1000 LITERS	125 LPS	1000 LITERS			250 LPS	10000 LITERS				
100 M ³ /HR	UNIT CU. MTRS.					250 LPS	10 CU. MTRS.				
4"	500 GPM	100 GALLONS	10"	1700 GPM	1000 GALLONS	14"	3000 GPM	1000 GALLONS	18"	5000 GPM	1000 GALLONS
	500 IGPM	100 IMP. GAL.		1700 IGPM	1000 IMP. GAL.		3000 IGPM	1000 IMP. GAL.		5000 IGPM	1000 IMP. GAL.
	500 GPM	10 CF		1700 GPM	100 CF		7.5 CFS	0.001 AF		5000 GPM	100 CF
	500 GPM	0.001 AF		1700 GPM	0.01 AF		8.0 CFS	100 CF		5000 GPM	100 CF
	1000 GPM	10 CF		1700 GPM	0.01 ACRE IN.		8.0 CFS	0.01 AF		6000 GPM	1000 GALLONS
	1.0 CFS	10 CF		3.0 CFS	10 CF		5.0 MGD	1000 GALLONS		6000 GPM	1000 GALLONS
	1.0 CFS	100 CF		3.0 CFS	100 CF		200 LPS	10 CU. MTRS.		6000 GPM	10000 GALLONS
	1.0 CFS	0.001 AF		3.0 CFS	0.001 AF		200 LPS	0.01 MEGA LTR.		6000 GPM	100 CF
	30 LPS	1000 LITERS		2.0 MGD	1000 GALLONS		3000 GPM	1000 GALLONS		7500 GPM	10000 GALLONS
	50 LPS	UNIT CU. MTRS.		75 LPS	UNIT CU. MTRS.		3000 IGPM	1000 IMP. GAL.		15.0 CFS	100 CF
	100 M ³ /HR	UNIT CU. MTRS.		100 LPS	UNIT CU. MTRS.		7.5 CFS	0.001 AF		15.0 CFS	0.01 AF
				100 LPS	UNIT CU. MTRS.		8.0 CFS	100 CF		10.0 MGD	1000 GALLONS
				1700 GPM	1000 GALLONS		8.0 CFS	0.01 AF		10.0 MGD	10000 GALLONS
				1700 IGPM	1000 IMP. GAL.		5.0 MGD	1000 GALLONS		350 LPS	10 CU. MTRS.
				1700 GPM	100 CF		3500 GPM	1000 GALLONS		400 LPS	10 K LTRS.
		1700 GPM	0.01 AF	3500 IGPM	1000 IMP. GAL.						
5"	750 GPM	100 GALLONS	14"	3000 GPM	1000 GALLONS	14"	3000 GPM	1000 GALLONS	18"	5000 GPM	1000 GALLONS
	750 GPM	1000 GALLONS		3000 IGPM	1000 IMP. GAL.		3000 IGPM	1000 IMP. GAL.		5000 IGPM	1000 IMP. GAL.
	750 IGPM	1000 IMP. GAL.		4.0 CFS	100 CF		3500 GPM	100 CF		5000 GPM	100 CF
	1000 GPM	100 GALLONS		4.0 CFS	0.001 AF		3500 GPM	1000 CF		5000 GPM	100 CF
	1000 GPM	1000 GALLONS		5.5 CFS	0.001 AF		3500 GPM	0.01 AF		6000 GPM	100 CF
	1000 IGPM	1000 IMP. GAL.		2.5 MGD	1000 GALLONS		4500 GPM	1000 GALLONS		14.0 CFS	1000 CF
	1000 GPM	10 CF		125 LPS	1000 LITERS		4500 IGPM	1000 IMP. GAL.		7.5 MGD	1000 GALLONS
	1000 GPM	100 CF		2500 GPM	1000 GALLONS		4500 GPM	0.01 AF		300 KOS	19 CU. MTRS
	1000 GPM	0.001 AF		2500 IGPM	1000 IMP. GAL.		4500 gpm	100 CF		10000 GPM	10000 GALLONS
	2.0 CFS	10 CF		2500 GPM	100 CF		10.0 CFS	100 CF		10000 IGPM	10000 IMP. GAL.
	3.0 CFS	10 CF		2500 GPM	0.01 AF		10.0 CFS	0.01 AF		10000 GPM	0.01 AF
	3.0 CFS	100 CF		2500 GPM	0.1 ACRE IN.		7.5 MGD	1000 GALLONS		10000 GPM	100 CF
	1.0 MGD	100 GALLONS		6.0 CFS	100 CF		250 LPS	10000 LITERS		18.0 CFS	100 CF
	1.5 MGD	1000 GALLONS		6.0 CFS	0.02 AF		250 LPS	10 CU. MTRS.		18.0 CFS	1000 CF
	50 LPS	UNIT CU. MTRS.		4.0 MGD	1000 GALLONS					18.0 CFS	0.01 AF
60 LPS	1000 LITERS	200 LPS	0 CU. MTRS.			20.0 CFS	1000 CF				
60 LPS	UNIT CU. MTRS.	200 LPS	0.01 MEGA LTR.			20.0 CFS	0.01 AF				
75 LPS	UNIT CU. MTRS.					25.0 CFS	1000 CF				
6"	1000 GPM	100 GALLONS	10"	1700 GPM	1000 GALLONS	14"	8.0 CFS	100 CF	18"	25.0 CFS	0.01 AF
	1000 GPM	1000 GALLONS		1700 IGPM	1000 IMP. GAL.		8.0 CFS	0.01 AF		15.0 MGD	1000 GALLONS
	1000 IGPM	1000 IMP. GAL.		1700 GPM	100 CF		5.0 MGD	1000 GALLONS		15.0 MGD	10000 GALLONS
	1000 GPM	10 CF		1700 GPM	0.01 AG		200 LPS	10 CU. MTRS.		750 LPS	10 CU. MTRS.
				4.0 CFS	100 CF		200 LPS	0.01 MEGA LTR.			

**TABLE 2
STANDARD INDICATOR SCALE AND REGISTRATION FOR FT190-111-2**

Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration	Sz	Full Scale Indication	Registration		
20"	6000 GPM	1000 GALLONS	24" cont	18.0 CFS	100 CF	36"	17000 GPM	10000 GALLONS	48"	45000 GPM	10000 GALLONS		
	6000 IGPM	1000 IMP. GAL.		18.0 CFS	1000 CF		17000 IGPM	10000 IMP. GAL.		45000 IGPM	10000 IMP. GAL.		
	6000 GPM	10000 GALLONS		18.0 CFS	0.01 AF		25000 GPM	10000 GALLONS		75.0 CFS	0.1 AF		
	7500 GPM	10000 GALLONS		20.0 CFS	1000 CF		25000 IGPM	10000 IMP. GAL.		100 CFS	1000 CF		
	10000 GPM	10000 GALLONS		20.0 CFS	0.01 AF		35000 GPM	10000 GALLONS		60.0 MGD	10000 GALLONS		
	10000 IGPM	10000 GALLONS		25.0 CFS	1000 CF		35000 IGPM	10000 IMP. GAL.		75.0 MGD	10000 GALLONS		
	10000 GPM	0.01 AF		25.0 CFS	0.01 AF		50.0 CFS	1000 CF		2000 LPS	100 CU. MTRS.		
	10000 GPM	100 CF		30.0 CFS	1000 CF		50.0 CFS	0.01 AF		5000 LPS	100 CU. MTRS.		
	15.0 CFS	100 CF		34.0 CFS	0.01 AF		75.0 CFS	0.01 AF		54"	40000 GPM	10000 GALLONS	
	15.0 CFS	0.01 AF		15.0 MGD	1000 GALLONS		30.0 MGD	10000 GALLONS			40000 IGPM	10000 IMP. GAL.	
	18.0 CFS	100 CF		15.0 MGD	10000 GALLONS		40.0 MGD	10000 GALLONS		75.0 CFS	1000 CF		
	18.0 CFS	1000 CF		20.0 MGD	10000 GALLONS		60.0 MGD	10000 GALLONS		75.0 CFS	0.1 AF		
	18.0 CFS	0.01 AF		30.0 MGD	10000 GALLONS		1500 LPS	100 K LTRS.		75.0 MGD	10000 GALLONS		
	20.0 CFS	1000 CF		750 LPS	10 CU. MTRS.		2000 LPS	100 CU. MTRS.		3000 LPS	100 CU. MTRS.		
	20.0 CFS	0.01 AF		1000 LPS	100 CU. MTRS.		42"	25000 GPM		10000 GALLONS	60"	45000 GPM	10000 GALLONS
	25.0 CFS	1000 CF		1500 LPS	100 K LTRS.			25000 IGPM		10000 IMP. GAL.		45000 IGPM	10000 IMP. GAL.
	25.0 CFS	0.01 AF		30"	15000 GPM		10000 GALLONS	35000 GPM		10000 GALLONS	60000 GPM	10000 GALLONS	
	10.0 MGD	1000 GALLONS			15000 IGPM		10000 IMP. GAL.	35000 IGPM		10000 IMP. GAL.	60000 IGPM	10000 IMP. GAL.	
	10.0 MGD	10000 GALLONS		17000 GPM	10000 GALLONS		45000 GPM	10000 GALLONS		75000 GPM	10000 GALLONS		
	15.0 MGD	10000 GALLONS		17000 IGPM	10000 IMP. GAL.		45000 IGPM	10000 IMP. GAL.		75000 IGPM	10000 IMP. GAL.		
350 LPS	10 CU. MTRS.	25000 GPM	10000 GALLONS.	50.0 CFS	1000 CF	100 CFS	1000 CF						
400 LPS	10 K LTRS	15000 IGPM	10000 IMP. GAL.	50.0 CFS	0.01 AF	150 CFS	10000 CF						
750 LPS	10 CU. MTRS.	30.0 CFS	1000 CF	75.0 CFS	0.1 AF	150 CFS	0.01 AF						
24"	10000 GPM	10000 GALLONS	34.0 CFS	0.01 AF	100 CFS	1000 CF	75.0 MGD	10000 GALLONS					
	10000 IGPM	10000 IMP. GAL.	50.0 CFS	1000 CF	40.0 MGD	10000 GALLONS	100 MGD	10000 GALLONS					
	10000 GPM	0.01 AF	50.0 CFS	0.01 AF	60.0 MGD	10000 GALLONS	5000 LPS	100 CU. MTRS.					
	10000 GPM	100 CF	20.0 MGD	10000 GALLONS	75.0 MGD	10000 GALLONS	66" and 72"	60000 GPM	10000 GALLONS				
	15000 GPM	10000 GALLONS	30.0 MGD	10000 GALLONS	2000 LPS	100 CU. MTRS.		60000 IGPM	10000 GALLONS				
	15000 IGPM	10000 IMP. GAL.	40.0 MGD	10000 GALLONS	5000 LPS	100 CU. MTRS.	75000 GPM	10000 GALLONS					
	17000 GPM	10000 GALLONS	1000 LPS	100 CU. MTRS.	48"	35000 GPM	10000 GALLONS	75000 IGPM	10000 IMP. GAL.				
	17000 IGPM	10000 IMP. GAL.	1500 LPS	100 K LTRS.		35000 IGPM	10000 IMP. GAL.						
			2000 LPS	100 CU. MTRS.									

