

# DITCHMASTER® DM-0001-1

CONTROLS WATER LEVELS & FLOW



Typical DitchMaster® Station

Never Let Your Ditch Run Dry!



Technology Based on Sutron's Highly Successful Stage Discharge Recorder

Huge Time & Money Saver for Irrigators, Water Resource Managers, & Ditch Riders

## DESCRIPTION

Sutron's latest innovation, *DitchMaster*®, is designed for water users who want to save time and money while monitoring water resource usage. *DM*'s primary task is to fill and maintain water levels in irrigation ditches.

Based on user-defined operational parameters, *DM* senses changes in the water level and automatically adjusts the supply gate to provide consistent deliveries. *DM* uses standard equations to convert water level data into discharge. *DitchMaster*® can be used as a stand-alone controller or integrated into a larger network with communications.

## FEATURES

- Built-In Front Panel Keypad & Back-lit LCD Display
- User-Friendly Menu Tree
- Integral Shaft Encoder
- Supports External Analog or SDI-12 Sensor
- Control Water Level or Discharge
- Manual or Scheduled Start-Up & Shut-Down
- User Selectable Discharge Equation
- Logs Levels, Discharge, & Various Operational Data
- MODBUS Protocol for Easy Networking

# DITCHMASTER<sup>®</sup> DM-0001-1

## CONTROLS WATER LEVELS & FLOW



### SPECIFICATIONS

Battery	12V Gel Cell Battery @24 amp-hr capacity (operates station 4 days without charging)
Solar Panel	18 Watts (4 hours sunlight a day to keep battery fully charged)
Charger/Regulator	6 Amps
Power Quiescent	2.5mA
Power Moving Gate	8 Amps at 0.25 in/sec (6mm/sec)
Control Interval	User set (15 to 300 sec.)
Communications	RS232 Port for <ul style="list-style-type: none"> <li>• SDRComm for log retrieval</li> <li>• Modbus Slave Protocol for remote operation</li> </ul> SDI-12 V1.3 to a data recorder
Set-Up	Via front panel with all data stored in non-volatile flash memory
Front Panel	6 keys, 2 lines x 20 characters backlit LCD, 2 status LEDs
Recording Interval	1, 5, 10, 15, 30, 60 minute selectable
Data Download	Using SDRComm or Modbus with data in CSV format
Discharge Calculations	Equations for Parshall Flumes, Broad-Crested Weirs, Generic Devices, 50 Point Rating Table & Submerged Orifices
Logging	300,000 total entries in flash memory for recording canal & ditch levels, discharge, gate movements & user interactions
Real-Time Clock	Accurate to 2 minutes a month
<b>GENERAL</b>	
Sealing	NEMA enclosure, drip/spray resistant
Input Voltage	8-16 VDC
Temp Range	-40° to +125° F
Clock	Internal real-time clock w/battery backup
Front Panel	6 keys, 2 line x 20 character backlit LCD
Status Lights	2 on front panel provide "heartbeat" & run/error status
Communications	RS232 command line mode
Modbus	Slave protocol with user-set address & baud
SDI-12	V1.3
Recording Interval	1, 5, 10, 15, 30, 60 minute selectable
Log Capacity	300,000 total flash memory
Setup	All setup stored non-volatile flash memory
Data Format	Comma-separated variable (CSV)
Data Download	Pocket PC, compatible PDA or laptop Windows PC
Available Data	Station name, date/time, current stage, flow & running total, logged values of stage & flow, daily avg. stage & flow, & battery voltage
Flow Calculation	Supports Parshall Flume, Broad Crested Weir, Submerged Orifice, & general purpose equation with user-selectable constants

5100-0411 Level Sensors 3911-1101	Solar Panel Regulators Built-in 400 Count Optical Shaft Encoder for use with separate pulley, float, tape/cable  Analog Interface for: <ul style="list-style-type: none"> <li>• 0-5 Single Ended (qty 1)</li> <li>• 39mV Differential (qty 2)</li> <li>• 4-20mA (qty 1)</li> </ul> Resolution: 24 bits Accuracy: 0.02% full scale at 25°C Temp Co: ±5ppm/°C typical  SDI-12 Sensor (only if DitchMaster is not connected to a logger as a sensor itself)
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Gate Actuator	Stroke: 2 ft Sealing: IP54 for outdoor use Position Output: 10K ohm potentiometer (IP65 sealed) Protection: Internal limit switches
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### LEVEL SENSORS ENCODER

Type	400 count per revolution optical
Shaft	5/16" diameter
Stage Range	± 80 ft of set value

<b>SINGLE ENDED</b>	
Number of Bits	24
Full Scale	0 to 5 Volts
Resolution	0.298 uV

<b>DIFFERENTIAL</b>	
Number of Bits	24
Full Scale	+/- 0.0390625 V
Resolution	4.657 uV

<b>4-20mA INPUT</b>	
Number of Bits	24
Full Scale	20mA
Resolution	<1mA

SDI-12	V1.3 (if DM is not being used as a sensor to another logger)
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<b>GATE ACTUATOR</b>	
Power	12VDC
Current	<8A @ 0.25 in./sec.
Position Output	10K ohm potentiometer
Protection	Internal limit switches
Sealing	IP54 for outdoor use
Stroke	2, 3, 4 ft.

### ORDERING

DM-0001-1	DitchMaster <sup>®</sup> includes the following items:
SDR-0002-1	Stage Discharge Recorder with encoder, analog option board, & control board
5100-0410-1	18 Watt Solar Panel & Mounting Bracket
5100-0040	24 Amp/Hr Battery
5100-0411	Solar Panel Regulator
3911-1101	Lift Mechanism with 10 Meter Cable

All items above are available separately.

Not Included: Gate, enclosure, stilling well/float/tape/pulley, solar panel mounting pole, canal level sensor

SUTRON