



Control Systems, Inc.

PRODUCT DATA BULLETIN

DC101-F
DUPLIX PUMP
CONTROLLER



STANDARD FEATURES

- MAN-OFF-AUTO SELECTOR SWITCHES
- MOTOR LEAD / LAG SELECTOR SWITCH
- PILOT LIGHTS FOR RUNNING, FAILURE, SEAL FAILURE, HIGH/LOW LEVEL AND AUXILIARY ALARM
- PILOT LIGHTS FOR EACH LEVEL INPUT
- COMMON ALARM LIGHT WITH DIM GLOW
- COMMON ALARM DRY CONTACT OUTPUT
- AUTOMATIC MOTOR ALTERNATION
- 14VDC OPTICALLY ISOLATED INPUTS WITH MAX CURRENT OF 12 mada.
- LAG MOTOR START IF LEAD FAILS
- ADJUSTABLE MOTOR FAILURE DELAYS
- ADJUSTABLE POWER-ON DELAYS
- ADJUSTABLE PUMP OFF-DELAYS
- ALARM TELEMETRY OUTPUTS ARE OPTICALLY ISOLATED, OPEN-COLLECTOR TRANSISTOR TYPE
- FLOAT TEST / IMPROPER SEQUENCE ALARM OPTION
- LAMP TEST INPUT
- REPEAT-CYCLE TIMER OPTION BOARD
- 7-DAY PROGRAMMABLE TIMER OPTION
- SWITCH POSITION OUTPUT OPTION
- SERIAL PORT (RS232 OR RS485) OUTPUT OPTIONS
- UL RECOGNIZED FOR USE IN INDUSTRIAL CONTROL PANELS
- 120 VAC POWER SUPPLY

DESCRIPTION

The DC101-F board is a 120 VAC powered unit that controls two fixed-speed pumps. The board will automatically alternate the pumps and provide variable delays for Power-On, Pump Failure and Improper Sequence Pump Off delays. Each pump has its own Manual/Off/Auto switch. The Manual position will operate the pumps, bypassing all of the on-board circuitry, including the delays and failure timers. A Lead Selector switch allows automatic alternation each cycle, or one pump may be set to always be the Lead pump. Level inputs are provided for Low Level, Stop, Lead, Lag and High Level that operate at 14vdc with a current of 12madc for intrinsic safety and are optically isolated. The board is panel mounted with a backplate mounted terminal board (DCTB-F) for field contacts. Optional Float Test, Alarm Telemetry, Repeat-Cycle Timer, 7-Day Timer, Man/Off/Auto Switch position, RS232 and RS485 Serial output boards add to its functionality. The DC101-F has been UL recognized for use in industrial control panels.

SUGGESTED SPECIFICATIONS

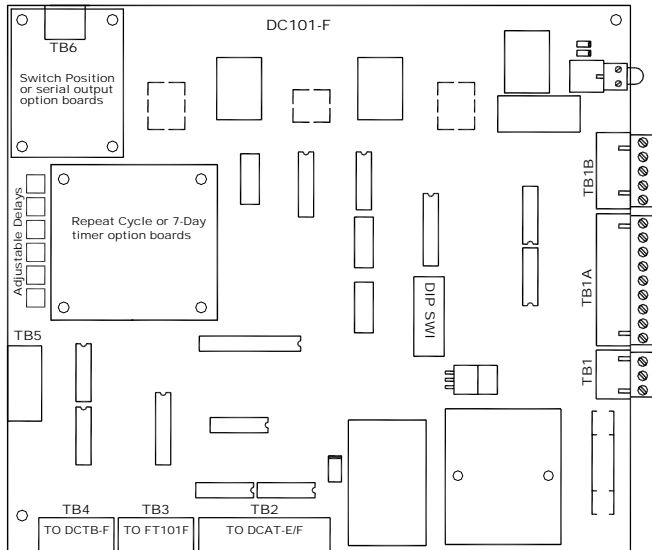
Provide a duplex motor controller with panel mounted Man-Off-Auto switches, green running pilot lights, red motor failure and seal failure pilot lights for each motor. Each motor can be selected for Lead operation or fully automatic alternation on each call-for cycle. All of the electronic controls shall be bypassed when the Man-Off-Auto switches are in the Manual or Off positions to allow motor control even in the event of a circuit failure. Level inputs shall be provided for low level, stop, lead start, lag start and high level with pilot light indications. Level inputs shall be optically isolated, operate at 14Vdc with a current 12madc for intrinsic safety. Field adjustable motor failure delays shall be provided in the range of 5 seconds to 8 minutes. Upon motor failure, the remaining functional motor shall be made Lead until the failure is corrected and manually reset. The failed motor shall only be called to operate at the lag pump operating level. Individual, adjustable power-on delays shall also be supplied which delay pump start during initial startup or after a power failure. A soft start and stop feature shall be included to prevent water hammer. In the event that both motors are called for at the same time, there shall be a minimum of 5 seconds between motor starts and stops. Motor failure, seal failure and high level alarms will flash the red pilot lights. In addition, when not used as seal failures, the seal failure pilot lights can be made to indicate an auxiliary condition by flashing or steady operation without interfering with the duplex controller operation. Provide an exterior alarm light output which allows the light to dim glow under normal conditions to indicate power on and lamp good. The light shall flash brightly during any alarm condition. Provide a lamp test feature to light all front panel pilot lights. Provide rear panel LED indications of all level inputs and all auxiliary alarm outputs. Also provide 'master controller' inputs with LED indications for manual Pump On/Off controls from an external source.

Provide the capability of using integrated repeat-cycle timer or 7-day programmable timer options. The repeat-cycle timer board shall have DIP switch time settings for On and Off times in the range of 15 seconds to 34.05 hours. The 7-day timer shall mount through the controller nameplate and include an LCD display and keypad for settings and manual override. Provide the capability of providing solid-state, open-collector transistor outputs to indicate the position of each pump's Manual/Off/Automatic switch. The board shall have the capability of an optional RS232 or RS485 serial board to communicate the level input positions, manual/off/automatic switch positions and all detected failures.

OPERATING SPECIFICATIONS

- SUPPLY VOLTAGE: 115/120 VAC, 50/60 Hz
- OUTPUT CONTACT RATING: 3 Amps @ 120 VAC, Resistive (limited by 10amp fuse on DCTB)
- SUPPLY CURRENT: 100 ma
- DUTY CYCLE: Continuous
- POWER CONSUMPTION: 12 Watts
- NAMEPLATE DIMENSIONS: 8 7/8" Wide X 8" High
- INPUT CONTROL VOLTAGE: 14VDC @ 12mADC
- DCTB-F Terminal Board Dimensions: .5" W x 6.75" L x 1" H

DC101-F
DUPLEX PUMP
CONTROLLER

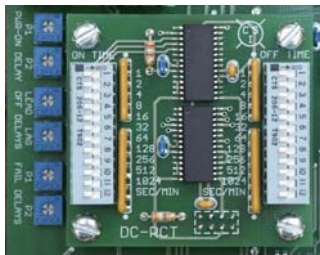


DC101-F FEATURES

1. TB1, TB1A and TB1B: DCTB-F wiring harness connectors
2. TB2: Optional DCATe Alarm Relay Output connector
3. TB3: Optional FT101-F float test board connector
4. TB4: Optional Auxiliary alarm, Low Level input and Lamp Test
5. TB5: Optional 'Master' Pump control connections
6. TB6: Optional Low Level output relay connector
7. Field adjustable delay potentiometers are located on the left edge.
8. DC-RCT or DC-7Day Timer option boards plug onto the board just beside the delay adjustment potentiometers
9. DC-SwiPos or RS232 option boards plug onto the board at the upper left corner.
10. The Logic Running LED, located near the center of the board, normally blinks on every second and off every second.
11. The diodes located near the upper right corner control the Common Alarm dim glow feature: Remove the two-pin jumper plug to disable this feature.
 (Caution: 120vac on this connector)
12. DIP switch settings:
 1. No HiLo Call
 2. No Imp. Seq.
 3. SF Steady
 4. No SF Alt
 5. No SF Alarm
 6. Lag-Stop on Lead-Start
 7. 1 Pmp Call on Lag/Hi Lvl
 8. P1 Long Fail Delay
 9. P2 Long Fail Delay
 10. Pmp Dwn/Up (controls High & Low Level operation)

'Piggyback' Option Boards:

DC-RCT
 Repeat-Cycle Timer Board



DC-7DAY
 7-Day Timer Interface
 To Clock module



DC-SWPOS
 Switch Positions
 Output Board



DC-RS232
 Communications



DC-RS485A
 Communications



Note: Can only use one or the other between DC-RCT and DC-7Day boards and between DC-SwPos, DC-RS232 and DC-RS485A boards.

ORDERING INFORMATION:

Duplex Controller: DC101-F (Terminal Board is required for new installations)

Auxiliary Boards:

Terminal Board: DCTB-F; Float Test Board: FT101-F; Alarm Telemetry Board: DCAT-E; Repeat-Cycle Timer: DC-RCT; 7-Day Timer: DC-7DAY
 Switch Positions: DC-SWIPOS; Serial Com: DC-RS232 or DC-RS485A (DC-Unit board will be supplied along with either serial board)

WARRANTY: Control Systems, Inc. (CSI) warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service, and will replace any component found to be defective on its return to CSI, transportation charges prepaid, within one year of its original purchase. CSI will extend the same warranty protection on accessories which is extended to CSI by the original manufacturer. CSI also assumes no liability, express or implied, beyond its obligation to replace any component involved. Such warranty is in lieu of all other warranties express or implied.



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