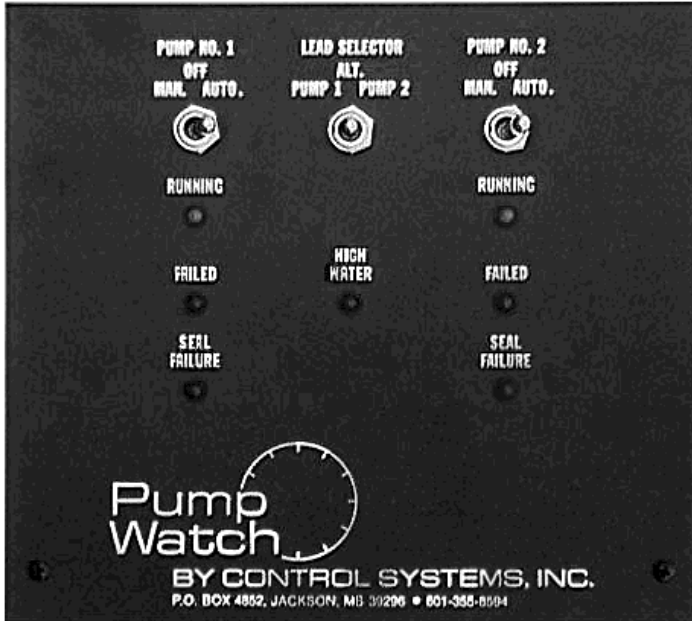




Control Systems, Inc.

PRODUCT DATA BULLETIN

DC201B
DUPLIX CONTROL
WITH RTU AND
LIFT-STATION
ANALYZER



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
- 12 VDC OPTICALLY ISOLATED INPUTS WITH MAX CURRENT OF 15 mADC.
- LAG MOTOR START IF LEAD FAILS
- ADJUSTABLE MOTOR FAILURE DELAY
- ADJUSTABLE SEAL FAILURE DELAY
- TELEMETRY OUTPUTS ARE OPTICALLY ISOLATED, OPEN-COLLECTOR TRANSISTOR TYPE
- OPTIONAL FLOAT TEST / IMPROPER SEQUENCE ALARM BOARD
- 1-WIRE COMMUNICATIONS OPTION
- EIGHT OPEN-COLLECTOR TRANSISTOR DIGITAL AUXILIARY OUTPUTS
- LAMP TEST INPUT
- REMOTE TELEMETRY UNIT (RTU) CAPABLE WITH INDUSTRY STANDARD MODBUS, DF1 and BRICKNET PROTOCOLS
- OPTIONAL OPERATOR INTERFACE DISPLAY
- FOUR ANALOG INPUTS (4-20ma) – ONE FOR LEVEL, TWO FOR MOTOR CURRENTS AND ONE FOR ANY OTHER REQUIREMENTS
- TWO RS232 SERIAL PORTS
- RTU ADDRESSES SUPPORTED: 000-999
- USER SELECTABLE BAUD RATES OF 4800 OR 9600
- LSA2000 (LIFT-STATION ANALYZER) OPERATION
- 120 VAC OR 12 VDC POWER SUPPLY

DESCRIPTION

The model DC201B board is a 115 VAC or +12 Vdc powered solid-state controller combining duplex controls with a built-in Lift-Station Analyzer (LSA), Remote Telemetry Unit and optional Data Logging. The board is panel mounted with a backplate mounted terminal board for field contacts. Automatic alternation is provided along with variable rate delays for motor failure and seal failure. Manual/Off/Auto switches allow either fully automatic or manual operation. Alarm indicators and outputs are provided for motor failure, seal failure, high level, auxiliary alarm and improper sequence. All inputs are optically isolated. Optional Float Test (FT201-B) and Alarm Telemetry (DCAT) boards make this a very versatile system. The board is the same size as the DC101, making it very easy to replace older controllers with the DC201 for use in SCADA systems without having to find additional space to wire in an external RTU.

Remote Telemetry features include industry standard communications protocols, operator interface options, user-selectable baud rates, interfacing to telephone or radio modems and System Control and Data Acquisition (SCADA) systems. Four analog inputs are standard for RTU SCADA transmission: one for tank level, two for motor currents and one for other use. This multi-functional unit also includes CSI's Lift-Station Analyzer circuitry which tracks vital duplex lift-station statistics including influent flow rate and totalized flow, tank level, pump runtimes, pump capacities and back-pressure loss among others. Two 9-pin RS232 serial ports are provided for communications.

The '1-Wire' interface option is a serial protocol developed by Dallas Semiconductor that is ideal for security applications and is fully compatible with their 'I-Button' security devices. Optional LCD operator interfaces or laptop computers can be used to view lift-station statistics locally.

SUGGESTED SPECIFICATIONS

Provide a duplex motor controller built-in RTU features, containing 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 stop, lead start, lag start and high/low level with pilot light indications. All digital inputs should be limited to 15 Vdc with a maximum current of less than 15mADC for intrinsic safety and optically isolated. Field adjustable motor failure delays shall be provided in the range of 7.5 seconds to 7.75 minutes. Upon motor failure, the remaining functional motor shall be made Lead until the failure is corrected and manually reset. A built-in power-on delay shall be included which delay motor start during initial start-up 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 three Auxiliary inputs, an Intrusion Alarm Input and a UPS Low Battery Input. The unit shall have provision to automatically test an external UPS Battery charger for a low battery condition. Provide an exterior alarm light output which allows the light to optionally dim glow under normal conditions to indicate power on and lamp good. The light shall flash brightly during any alarm condition. Motor call-for outputs as well as Common Alarm outputs shall be dry-contact relay types. Provide a lamp test feature to light all front panel pilot lights.

SPECIFICATIONS (CONTINUED)

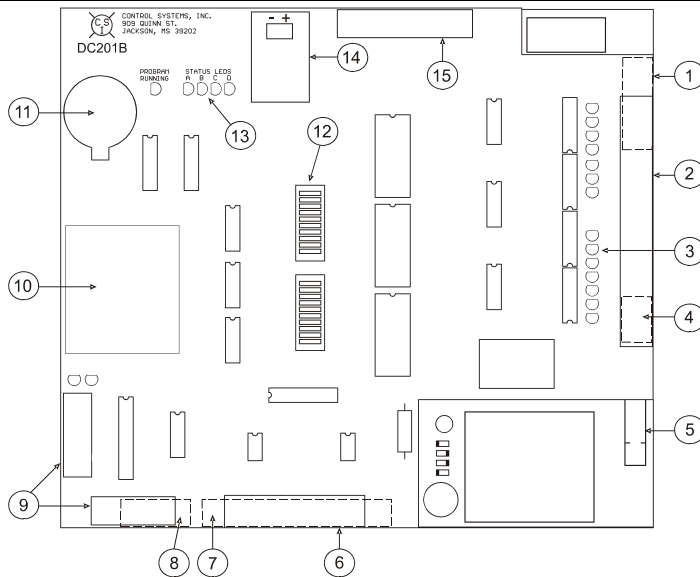
Built-In RTU (Remote Telemetry Unit) features: Provide user-selectable industry standard protocols of Modbus, DF1 and Bricknet. A Poll-By-Exception option shall be provided so that the DC201 will immediately report any failures without having to wait to be polled by the Central Station. Provide user-selectable communications baud rates of 4800 or 9600. The RTU shall have a user-selectable address of 000 - 999. Provide four 4-20ma analog inputs: one for tank level, two for motor currents and one for any other input. Each analog input shall be differential and have a loop impedance of 200 ohms. An Optional Operator Interface may be used to view all stored information locally. Provide two RS232 serial ports for connecting to the operator interface, other RTU's, radio or telephone modems or PC's. Provide an input for external power failure so that the RTU can be operated on +12 VDC during a power failure and report the power failure to the SCADA system. Provide up to eight open-collector transistor auxiliary outputs for special uses and option board support, as required. Provide a '1-Wire' interface option to connect to Dallas Semiconductor I-Button security devices, if required.

Lift-Station Analyzer (LSA) features: Provide a Lithium battery backup to maintain statistics during power failure conditions. The lithium battery shall maintain the data for at least 5 years. The battery backup shall in no way affect the operation of the duplex controller. The analyzer shall be user selectable to operate with floats or level transducer input. The level transducer shall have two modes: the first mode will still require floats for operation. The level transducer will be used for statistic calculations only. The second mode provides built-in level setpoints which are adjustable from the Central Station. In this mode, if the transducer fails, the unit automatically reverts back to external float use. Setup parameters shall be entered via a setup program from the main CTU or a laptop or other operator interface connected directly to the DC201. Provide an automatic calibrate mode for use with a level transducer which will automatically record the energize levels of the floats without the user having to enter the information manually. When a submersible pressure transducer is used, the unit shall automatically detect all float positions. Provide lift-station statistics including (but not limited to): influent flowrate and totalized flow based on floats or a level transmitter, pit level, pump average runtimes, number of starts and capacities.

DC201B DUPLEX CONTROL WITH RTU AND LIFT-STATION ANALYZER

OPERATING SPECIFICATIONS

- SUPPLY VOLTAGE: 115/120 VAC, 50/60 Hz OR 12 VDC
- SUPPLY CURRENT: 100 ma
- POWER CONSUMPTION: 12 Watts
- INPUT CONTROL VOLTAGE: 15 VDC @ 15 mADC
- OUTPUT CONTACT RATING: 5 Amps @ 120 VAC, Resistive
- DUTY CYCLE: Continuous
- NAMEPLATE DIMENSIONS: 8 7/8" Wide X 8" High
- DCTB Terminal Board Dimensions: .5" W x 6.75" L x 1" H



DC201 REAR VIEW FEATURES

1. Relay Outputs for Motor Call-For and Common Alarm
2. Optically Isolated Digital Inputs
3. Input LED indicators
4. 120VAC Input Terminals
5. AC power fuse
6. Four Analog Inputs (4-20ma)
7. Alarm Telemetry Outputs
8. Float Test board terminals
9. Two RS232 ports
10. Microprocessor
11. CR2354 lithium battery
12. DIP switch settings
13. Program Diagnostic LED's
14. '1-Wire' master option
15. Eight Digital Auxiliary outputs

ORDERING INFORMATION:

Duplex Controller: DC201B (Terminal Board is required for new installations)
Terminal Board: DCTB-F(201)

OPTIONS:

Float Test Board: FT201-B
Alarm Telemetry Board: DCAT-201
1-Wire Master: 1Wire

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.



CONTROL SYSTEMS, INC.
P.O. Box 4852, Jackson, MS 39296-4852
Telephone: (601) 355-8594
FAX: (601) 355-8774

Document Revision: B