

SPECBOOK - BULLETIN B300, MODEL CB1T PUMP AND ALARM CONTROLLER

WHEN USED AS A BASIC (PRIMARY) SYSTEM:

A complete level-responsive automatic pump and alarm control system shall be supplied and placed in successful operation under this specification. It shall use direct-acting float switches and a Siemens Water Technologies, Control Systems (fka Consolidated Electric) Bulletin B300, Model CB1T Controller.

The Controller shall be designed to UL508 Industrial Control Panel standards and be suited for operation on either 120 VAC or 12 VDC. The normal 120 VAC line connection shall be fused and furnished with transient protection, an isolation transformer and a 12 VDC power supply.

The controller shall provide connection for up to three level-responsive float switches. Each float circuit input shall have an indicating LED showing its operation and shall be Controller-powered at 8 VDC. A fourth LED shall show the operation of the control contact outputs.

Indication shall be provided for the following conditions:

1. Control Contact Outputs Energized
2. High Level Alarm Input Active
3. Control Turn-On Input Active
4. Control Hold Input Active

A zero to five-minute off-delay timing adjustment shall be located on the face of the controller for convenient adjustment of an optional Alarm/Redundant-Control capability. This back-up operating mode shall be implemented with a wire jumper on the terminal block. The redundant mode shall allow the use of a single level-sensor for both high alarm sensing and control operation. In this mode, pump operation will occur when the high level alarm float actuates, and will continue during an off-delay timing period after the float switch has de-activated.

The controller shall provide ON/OFF, level-differential control of one or two pumps (simultaneous operation of two form A (SPST form C-NO) contacts). In addition, a High Level Alarm form C (SPDT) contact shall be included that operates on a non-differential basis when the high level sensor is actuated.

The load contacts of the Controller shall be rated to handle NEMA magnetic motor starter control circuits (through "Hand-Off-Auto" three-position selector switches) and be rated at 10 amps at up to 240 VAC. All job connections shall be made at clamp/barrier type terminals each accepting up to two AWG #12-20 wires.

The Controller shall be a standard catalogued product of a manufacturer regularly engaged in automatic control systems and it shall be fully integrated in the motor control equipment package and NEMA type enclosure as specified for this project. It shall be accompanied with all necessary drawings and instructions for its successful installation and operation.

WHEN USED AS A REDUNDANT CONTROL SYSTEM:

An independent high level alarm and redundant control capability with features hereinafter listed shall be provided in addition to the specified primary control system. It shall be powered by a 120 VAC circuit breaker (other than the one powering the primary system) and use one or more direct-acting level-responsive float switches as described.

The independent alarm/control panel equipment shall be designed to UL508 Industrial Control Panel standards and shall incorporate a 120 VAC input transformer with transient protection, a fused primary and a DC power supply with limited 12 VDC to supply the level sensing float circuit(s). The control shall be used here with a single high level float switch arranged in the wet well at a higher elevation than the normal operating range of the primary control and alarm. The float switch shall be mounted in the wet pit in accordance with manufacturers instructions or as shown on the plans. The front face of the Controller

shall incorporate a High Level Alarm LED, a Control Turn-On LED, a Control-Hold LED, Control Contacts LED and a time adjustment with a 0 to 5-minute range.

Upon the occurrence of a high level condition sensed by the high alarm float, the High Level Alarm red LED shall light, a form C SPDT alarm output contact circuit shall transfer to operate the specified alarm devices and two (2) form A, normally-open, redundant-control (10 amp/240 VAC) circuits shall close to provide redundant pump operation. These control circuits shall be wired in parallel with the primary control system two-wire control circuits to provide a redundant capability. As the level recedes from the high level float, the alarm contact shall return to its normal state; however, the redundant control contacts are to continue to operate during the time period setting of the off-delay timer. After that time interval (which is to commence following the lowering of the high level float) the control relay contacts are to re-open.

The Control Turn-On and Control-Hold LED's and circuitry allow two additional floats to be used with the CB1T to provide differential-level automatic control in addition to the High-Level Alarm capability. When the differential level pump control is in use, the High Level Alarm circuitry is not generally connected to activate the control circuits in the redundant mode here described.

The redundant control/alarm capability shall be completely integrated in the specified control panel and system as described and in accordance with all applicable codes and job requirements.

The logic/relay assembly and level-sensing means to perform the described functions shall be a Siemens Water Technologies, Control Systems (fka Consolidated Electric) Bulletin B300, Model CB1T.