SECTION L
LEVEL PROBE METER

Revision Date: 7-23-24

LEVEL PROBE METER - LPM1

Description

The Level Probe Meter LPM1 provides all the necessary logic and parameters to take the selected Discrete Input's data and process it into a value for the wet well level that is scaled into feet and tenths of feet.

The logic in the Level Probe Meter counts the number of the Electrodes on the Level Probe that are covered by liquid and using the Electrode Spacing (Parameter P.520) determines the wet well level in feet and tenths of feet. For the calculated level at each of the Level Probe's Electrodes see page L-2 .

The Level Probe Meter requires connection to a Level Probe (having 10 Electrodes) using 10 Discrete Inputs. The Discrete Input Setup parameters of the inputs used must be set for Functions 1 - 10. See pages A-7 & L-3.

The Level Probe Meter must also be enabled. See Parameter P.519 below.

To be used by the Controller to perform Level Control, the "Level Probe Meter LPM1" must be selected as the Level Input, by setting the "Level Input Select" parameter to "Level Probe Meter - LPM1" (Parameter P.133 = 5).

Status

The value of the wet well level, scaled into feet and tenths of feet, is made available to be viewed from Parameter LPd.1.

When a Level Probe Electrode is not covered by the liquid (out of the liquid), then the Discrete Input's Test Signal has no path to Control Panel Ground, and the Discrete Input is considered Open.

When a Level Probe Electrode is covered by the liquid, then the Discrete Input's Test Signal does have a path to Control Panel Ground, and the Discrete Input is considered Closed.

The liquid being measured must be grounded to the Control Panel Ground.

The Status of the Test Signals for each of the Discrete Input (as an analog value) may be viewed from Parameters A.101 - A.130. See page A-9.

The status of the Discrete Inputs as a discrete value may also be read from Modbus Coils 1 - 30 (Register 40001 Bits 0 - 15, & Register 40002 Bits 0 - 13). See page A-10.

Please note that the Controller's Discrete Inputs are designed to read sewage very effectively but will not reliably read storm water or well water.

Sensitivity

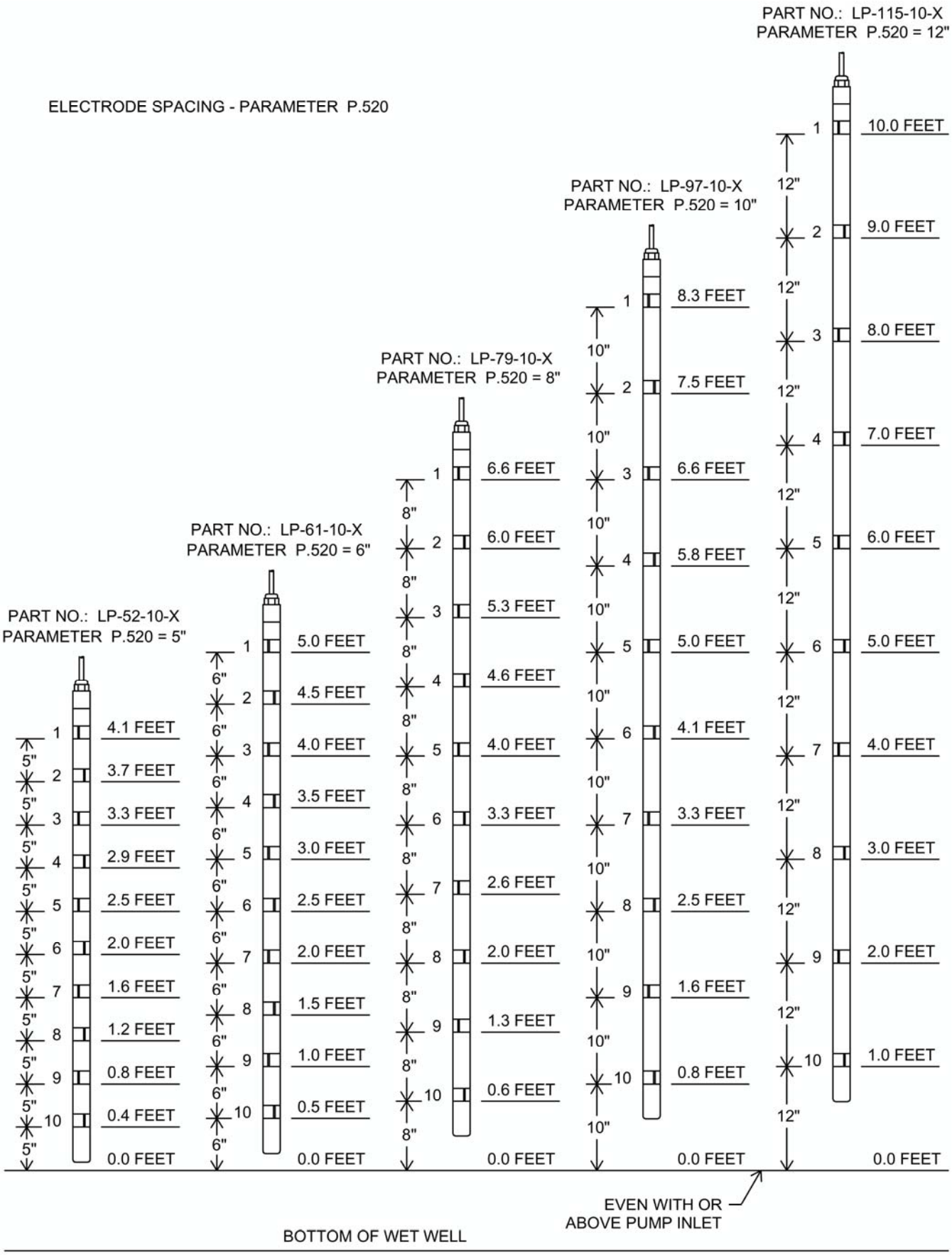
The Sensitivity of the Discrete Inputs can be changed by the operator in groups of 10 inputs as shown:

Input Sensitivity: D1 - D10 Parameter F.141 D11 - D20 Parameter F.142 D21 - D30 Parameter F.143

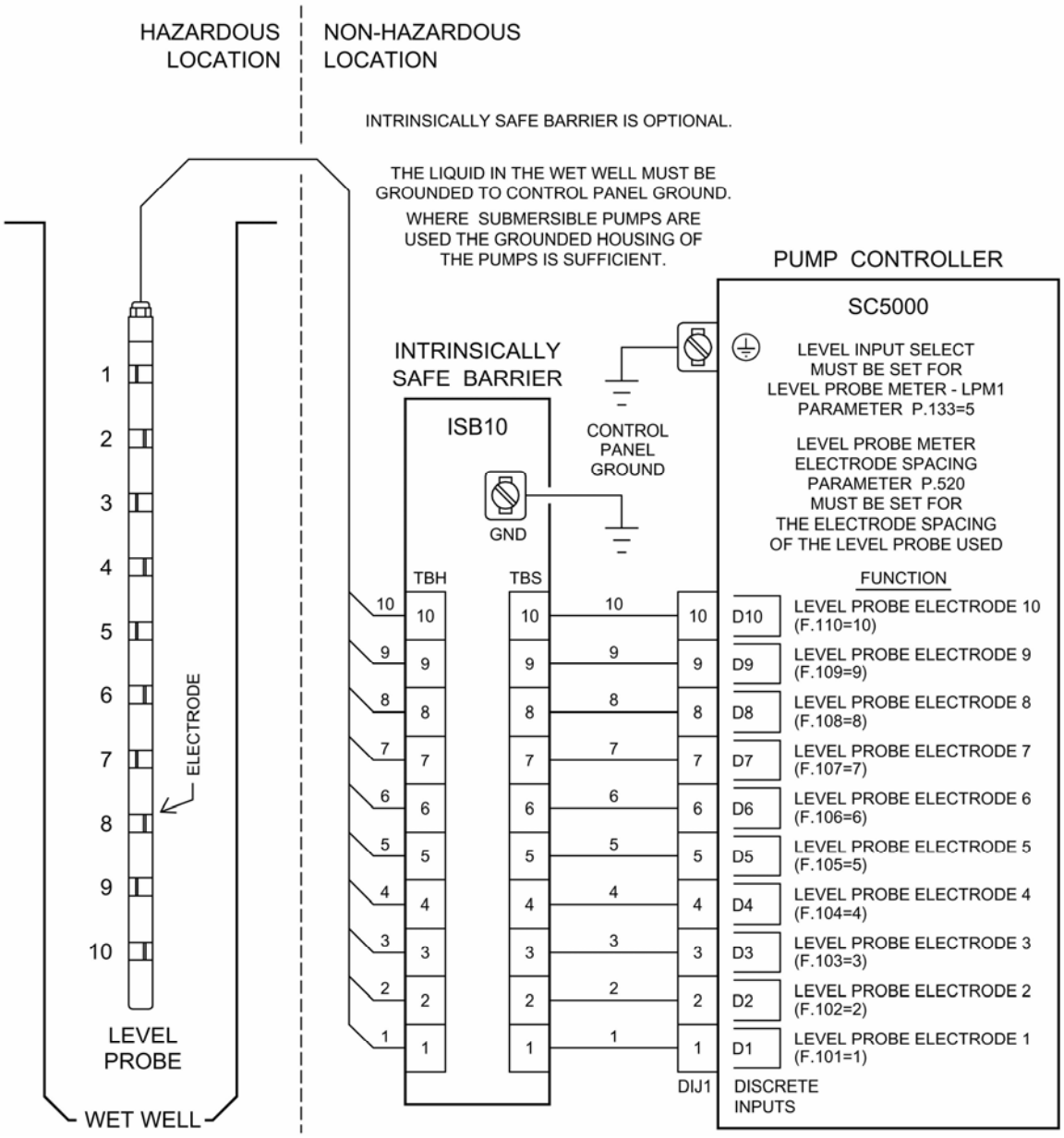
The Standard Sensitivity (the default) setting is 100 which is the best setting for reading typical sewage. For extra sensitivity while reading light sewage, the Sensitivity Parameter of the Discrete Inputs connected to the Level Probe, can be changed to 150 or higher. See page A-8.

User / Operator Info.			SCADA	
Parameter	Default Value	Current Value	Register Address	Description of Parameters and SCADA Notes
Level Probe Meter LPM1 - Setup Parameters				
P.519	1		40519	Level Probe Meter LPM1 - Mode 0 = Level Probe Meter Disabled 1 = Level Probe Meter Enabled
P.520	12 in.		40520	Level Probe Meter Electrode Spacing 5, 6, 8, 10 or 12 inches
Level Probe Meter LPM1 - Data				
LPd.1	-	-	42138	Level Probe Meter LPM1 - Scaled into feet and 1/10 feet Note: For Parameter LPd.1 to read correctly the Level Probe Meter Electrode Spacing (Parameter P.520) must be set for the Electrode spacing of the Level Probe, in inches.

LEVEL PROBE - ELECTRODE SPACING



LEVEL PROBE CONNECTION EXAMPLE



Notes:

The Discrete Input Setup parameters of the inputs used above must be set for Functions 1 - 10.

Each of the Discrete Inputs used to monitor the Level Probe Electrodes send out a low voltage (+/- 6 V), low current (0.6 mA), AC (60 Hz) square wave as a Test Signal to determine the status of the input, either covered by liquid (Closed) or not covered by liquid (Open).

For the example above, that uses Discrete Inputs D1 - D10, the Controller compares each of the Test Signal analog values with the Discrete Input Sensitivity set on Parameters F.141. See page A-8.

The status of the Test Signals for each of the Discrete Inputs used in the example above (as an analog value) may be viewed from Parameters A.101 - A.110. See page A-9 or X-21.

The status of the Discrete Inputs used in the example above (as a discrete value may) also be read from Modbus Coils 1 - 10 (Register 40001 Bits 0 - 9). See page A-10 or X-19.

The **SC5000-CTS-HMI** shows the Discrete Input Status on screens on the HMI. See pages L-4 & A-14.

The **SC5000-LED-HMI** shows the Discrete Input Status on Parameters n.01 - n.10 & A.101 - A.110 in the Menu. See pages X-19 & X-21.

To aid in troubleshooting, Fault Codes 1001 - 1009 are provided to show when an “Electrodes Covered Out of Sequence” fault has occurred. See page F-1 for more information.

LEVEL PROBE METER - Touchscreen HMI SCREEN