

SECTION O

REMOTE CONTROL

Revision Date: 7-22-24

REMOTE PUMP DISABLE COMMANDS

Pump 1– 3 Remote Pump Disable Commands provides the remote operator with the ability to temporarily disable operation of the pumps individually by setting Modbus Coils 149 - 151 (Modbus Register 40010 Bits 4 - 6). See page O-4.

If SCADA communication is lost, the Pump Disable logic will be automatically reset, and any pump that had been remotely disabled will be re-enabled after the expiration of the respective Remote Control Command Canceling Delay (Parameter E.01 or E.02). See Page O-3.

REMOTE FORCE PUMP ON COMMANDS

Pump 1– 3 Remote Force Pump On Commands provides the remote operator with the ability to temporarily force on the pumps individually by setting Modbus Coils 17 - 19 (Modbus Register 40002 Bits 0 - 2). See page O-4.

If SCADA communication is lost, the Force Pump On logic will be automatically reset, and any pump that had been remotely forced on will be returned to normal control after the expiration of the respective Remote Control Command Canceling Delay (Parameter E.01 or E.02). See Page O-3.

REMOTE CONTROL of RELAY OUTPUTS

Relay Outputs that are assigned the Function of “Remote Control” (Function 0) may be controlled remotely by writing to Modbus Coils 25 - 29 (Register 40002 Bits 8 - 12). See page O-4.

When the respective Modbus Coil or Bit is set to “1” the Relay Output contacts close.

When the respective Modbus Coil or Bit is cleared to “0” the Relay Output contacts open.

Upon loss of communication with the SCADA system the Relay Output Control Commands are canceled, after a delay. See the respective Remote Control Command Canceling Delay (Parameters E.01 - E.02) on page O-3.

REMOTE CONTROL LEVEL INPUT

The Remote Control Level Input feature is provided to allow a SCADA system to send the Controller a Level Input value that had been obtained from another location.

When using the Remote Control Level Input feature, other than getting the Level Input value through SCADA, the Controller will operate normally as it would if it were getting the Level Input from a local Pressure Transducer through Analog Input AIX1.

For this feature to operate, the SCADA system must periodically write the newest value for the Level Input to the Remote Control Level Input (Parameter rcLn) at Modbus Register 40025. See page O-4.

Also, the value of the Remote Control Level Input may be viewed or changed locally at the Controller from Parameter rcLn in the menu.

For the Controller to use the Remote Control Level Input (Parameter rcLn) as the Level Input the Level Input Select (Parameter P.22) must be set for the Remote Control Level Input (Parameter P.22 = 4). See Section 1.

When remotely changing the value of the Remote Control Level Input through one of the communication ports, the change is only permitted when the communication port being used is "UNLOCKED". See Section S.

Upon initial power up of the Controller, the Remote Control Level Input (Parameter rcLn) will be defaulted to the value of the Default Remote Level (Parameter E.03). The numerical display will flash until the Remote Control Level Input (Parameter rcLn) is written to at least once.

Upon loss of SCADA communication, the value in the Remote Control Level Input (Parameter rcLn) is replaced by the value of the Default Remote Level (Parameter E.03), the Numerical Display is made to flash, the Fault LED is turned on and Fault Code 1037 is generated.

Loss of SCADA communication is established when there has been no communication for the time set on the respective Remote Control Command Canceling Delay (Parameter E.01 or E.02).

The Default Remote Level (Parameter E.03) must be strategically set on a value that will turn off all of the pumps or if desired leave one or more running, based on the Pump On / Off settings. It can also be set to turn on either the Low Level Alarm for a Pump-Down application or the High Level Alarm for a Pump-Up application.

The value written to the Remote Control Level Input (Parameter rcLn) (Modbus Register 40025) is stored in the Controller's RAM memory and never copied to its EEPROM, so there is no concern about wearing out the EEPROM by repeatedly writing to this parameter.

REMOTE CONTROL COMMAND CANCELING

Remote control commands should (in most applications) be automatically canceled upon a loss of communication with the SCADA system. This requires that there be a delay before canceling the remote control commands that is longer than the interval between polling events. Therefore, each of the Communication Ports has its own "Remote Control Command Canceling Delay" Parameter (E.01 & E.02) where an operator may set the delay.

The Following Occurs when one of the Communication Ports stops being poled by its Master and when the respective Remote Control Canceling Delay has expired:

Pump 1-3 Force On - All Remote Force Pump On Commands are Canceled.

Pump 1-3 Disable - All Remote Pump Disable Commands are Canceled.

Relays ROX1 - ROX5 Remote Control - All Remote Relay Control Commands are Canceled.

If the Controller is setup to follow the Remote Control Level Input (Parameter P.22 = 4), then the value entered as the Default Remote Level (Parameter E.03) is copied into the Remote Control Level Input (Parameter rcln), the Numerical Display is made to flash, the Fault LED is turned on and Fault Code 1037 is generated.

REMOTE CONTROL - SETUP

User / Operator Info.			SCADA	Description of Parameters and SCADA Notes
Parameter	Default Value	Current Value	Register Address	
Remote Control Command Canceling Delays				
E.01	60 sec.		40181	Remote Control Command Canceling Delay - RS232 Port - COM1 Delay Range: 1 - 65535 seconds Set to "0" to disable the Remote Control Command Canceling feature. See Note 3.
E.02	60 sec.		40182	Remote Control Command Canceling Delay - Ethernet Port - ENET1 Delay Range: 1 - 65535 seconds Set to "0" to disable the Remote Control Command Canceling feature. See Note 3.
Default Remote Level				
E.03	0.0 feet		40183	Default Remote Level See Note 4. Range: 0.0 - 231.0 feet

Notes:

- Each Communication Port has its own separate Remote Control Command Canceling Delay. The delay for each port is reset and restarted each time a successful polling event occurs through that port.
- Each of the delays must be set long enough so that it will not time out between polling events of the port.
- It may be desirable to not cancel the remote control commands upon a loss of communication through one of the ports. In this case set the Remote Control Command Canceling Delay Parameter to "0" for that port, so that a loss of communication through that port will not initiate the canceling of the remote control commands.
- The Default Remote Level (Parameter E.03) is only used when the Level Input Select (Parameter P.22) is set for Remote Control Level Input (Parameter P.22 = 4).
- Upon loss of power, all remote control commands will be canceled. When power is restored the Default Remote Level (Parameter E.03) will be copied to the Remote Control Level Input (Parameter rcln).

REMOTE CONTROL - SCADA REGISTERS

User / Operator Info.	SCADA	Description of Parameter
Parameter	Register Address	
rcLn	40025	Remote Control Level Input Range: 0 - 231.0 feet

User / Operator Info.			SCADA	Description of Parameters and SCADA Notes
Parameter	Default Value	Current Value	Register Address	
Relay Output Setup				
Relay Output Function				Relay Output
F.31	1		40331	Relay Output - ROX1
F.32	2		40332	Relay Output - ROX2
F.33	3		40333	Relay Output - ROX3
F.34	4		40334	Relay Output - ROX4
F.35	5		40335	Relay Output - ROX5
<div>Function of Relay Output: 0 = Remote Control 1 = High Level Alarm 2 = Low Level Alarm 3 = Pump 1 Control 4 = Pump 2 Control 5 = Pump 3 Control</div> <div>Notes: 1. Output Relays set for Function 0 may be Remotely Controlled through SCADA. 2. Output Relay's status may be viewed from Parameters ro.1 - ro.5. 3. Output Relay ROX1 (the default relay for the High Level Alarm) has a Normally Closed (NC) Contact which will close if the Controller loses electrical power.</div>				

SCADA Register Address	Description of Register Contents (Where a Modbus Coil is represented by a Bit in a Register)																
40002	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	Coil
				Relay ROX5 - Remote Control With Parameter F.35 = 0	Relay ROX4 - Remote Control With Parameter F.34 = 0	Relay ROX3 - Remote Control With Parameter F.33 = 0	Relay ROX2 - Remote Control With Parameter F.32 = 0	Relay ROX1 - Remote Control With Parameter F.31 = 0						Pump 3 Remote Control Force Pump On	Pump 2 Remote Control Force Pump On	Pump 1 Remote Control Force Pump On	
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit
40010	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	Coil
										Pump 3 Remote Control Disable Pump Operation	Pump 2 Remote Control Disable Pump Operation	Pump 1 Remote Control Disable Pump Operation					
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit