

SECTION B

RELAY OUTPUTS

Revision Date: 1-3-25

DESCRIPTION OF OPERATION

Introduction

Relay Outputs ROX1 - ROX5 are provided to perform the Function of Pump Control, High Level Alarm and Low Level Alarm. The relays may also be re-assigned the Function of "Remote Control".

The Relay Outputs have Dry Contacts that are rated for 6A @ 250VAC.

For Terminal Block numbers see page B-3.

Status

The status of the Relay Outputs is available in the menu from Parameters ro.1 - ro.5 and is made available to be read by SCADA .

See pages B-2 & B-3.

Functions

The Relay Outputs are assigned default Functions from the factory, but they may be changed by the operator using Parameters F.31 - F.35.

See "RELAY OUTPUT FUNCTIONS" below for a description of each of the Relay Output Functions.

RELAY OUTPUT FUNCTIONS

Remote Control - Function 0

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).

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 will be canceled, after a delay. See the "Remote Control Command Canceling Delay" (Parameters E.01 - E.02) on page E-2.

For more information on the remote control of the relays see Section O.

High Level Alarm - Function 1

A Relay Output assigned the Function of "High Level Alarm" (Function 1) provides contacts that closes upon a High Level Alarm condition.

The default relay for the High Level Alarm (ROX1) has normally closed contacts that open upon power up of the Controller and close upon a High Level Alarm. The normally closed contact of ROX1 is there to provide an alarm should the Controller lose electrical power or be unable to perform even basic tasks.

Low Level Alarm - Function 2

A Relay Output assigned the Function of "Low Level Alarm" (Function 2) provides contacts that close upon a Low Level Alarm condition.

Pump 1 (2, 3) Control - Functions 3 - 5

Relay Outputs assigned the Function of "Pump 1 (2, 3) Control" (Functions 3 - 5) provides contacts to turn on and off the pumps.

RELAY OUTPUTS

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	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 Notes: 1. Output Relays set for Function 0 may be Remotely Controlled through SCADA. See pages B1, B3 and Section O. 2. Output Relay's status may be viewed from Parameters ro.1 - ro.5. See below. 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.
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	

User / Operator Info.		SCADA	Description of Parameters and SCADA Notes	
Parameter	Coil Address			
Relay Output Status				
ro.1	Coil 153	Relay Output - ROX1	Relay Status: 0 = Relay Not Energized 1 = Relay Is Energized	
ro.2	Coil 154	Relay Output - ROX2		
ro.3	Coil 155	Relay Output - ROX3		
ro.4	Coil 156	Relay Output - ROX4		
ro.5	Coil 157	Relay Output - ROX5		

RELAY REMOTE CONTROL & OUTPUT STATUS

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
				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									
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
				Relay Output ROX5 Status	Relay Output ROX4 Status	Relay Output ROX3 Status	Relay Output ROX2 Status	Relay Output ROX1 Status									
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bit

Connection Diagram

