COMMUNICATION FORMAT FOR ADI PANEL AND MODICON PLC:

Automation Displays control graphic panels can communicate using the Modbus ASCII data format as described in the Modicon Protocol Reference Guide PI-MBUS-300. You can connect ADI control graphics to the Modbus serial ports on the Modicon Bridgemux unit, for example.

Ladder logic refers to the first register as #1. The Modbus data command for that register uses a binary value of 0. For convenience, this text will use the ladder logic convention.

REPORTING SWITCHES FROM THE ADI PANEL TO THE Modicon PLC:

The ADI panel uses the "PRESET MULTIPLE REGISTERS" function code 16 (10 hex)command to report switch status to the 4X registers in the PLC. When a switch is activated, a single bit is set. Each PLC register holds sixteen bits, so sixteen switches are stored in each register. The ADI panel maintains a memory image of all of the switches, so it is able to fill in all sixteen bits of the register. The PLC should not modify these registers.

When a graphic panel switch is released, the ADI interface clears the associated register bit using the same "PRESET MULTIPLE REGISTERS" command.

Each switch requires a unique register bit address. For example, a switch for door 101 might use 4X register 40024, bit 7.

CONTROLLING ADI LEDS FROM THE Modicon PLC:

The ADI panel uses the "READ HOLDING REGISTERS" function code 03 command to read the LED status from the PLC. The PLC uses two bits to represent each LED. A single 16-bit PLC register controls eight LEDs. For each LED, the two bits are encoded as follows:

00 = LED off
01 = LED slow flash
10 = LED fast flash
11 = LED on

Each LED requires a unique register bit address. For example, the first LED might use register 1, bits 1 & 2. In this text, bit 1 refers to the least significant bit, and bit 16 refers to the most significant bit.

It is not practical to use a single bit per LED because steady flash rates cannot be supported.

USING THE ADI Z-NET:

The ADI Z-Net is a proprietary network protocol that can interconnect up to eight graphic panels so that they appear as one large panel to the PLC.
Each switch & LED on the interconnected panels must have a unique address, even if the panels are visually and functionally identical.

The Z-Net wiring requires a single twisted-shielded pair. The panels are wired in daisy chain configuration, with total length up to 2000 feet. Communication uses the RS-485 standard, and runs at 76.8K baud.

1st LED "4x" REGISTER

BIT NO.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LED NO.									7	6	5	4	3	2	1	0

2nd LED "4x" REGISTER

BIT NO.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LED NO.	15	14	13	12	11	10	9	8								

BIT VALUE
0 0 = LED OFF
0 1 = LED SLOW FLASH
1 0 = LED FAST FLASH
1 1 = LED ON

LED BITS SET BY CUSTOMER,
POLLED BY ADI PANEL USING MODBUS ASCII DATA FORMAT.

1st SWITCH "4x" REGISTER

BIT NO.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SWITCH NO.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

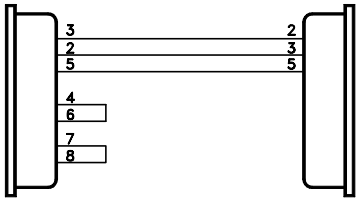
2nd SWITCH "4x" REGISTER

BIT NO.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SWITCH NO.	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

BIT VALUE
0 = SWITCH OFF
1 = SWITCH ON

SWITCH BITS SET BY ADI PANEL
USING MODBUS ASCII DATA FORMAT.

BRIDGEMUX
NW-BM85-000
MODBUS PORT



DB-9M DB-9F

MODICON PORT TO ADI Z-CARD RS-232 CABLE DIAGRAM

MODBUS PORT 1, 2, 3, OR 4.
ADDITIONAL MODBUS PLUS PORT
CONNECTS BRIDGEMUX TO PLC.

USE BRIDGEMUX IN ASCII MODE, SET TO
"MASTER" SO IT WILL EXPECT A MASTER
TO BE CONNECTED.

PORT PARAMETERS:
7 DATA BITS,
EVEN PARITY,
1 STOP BIT.

USE 19.2K BAUD FOR BEST SWITCH AND
LED RESPONSE TIMES.

AUTOMATION DISPLAYS INC.

MODICON INTERFACE CONNECTOR PINOUT
AND REGISTER USAGE.

A	DRAWN BY: TN/RPL	DWG: modicon plc data-landscape
	DATE: 27 AUG 2003	SHEET 1 OF 1