

# **WILKERSON INSTRUMENT CO., INC**

## **INSTALLATION & OPERATION MANUAL**

### **SCADA INTERFACE BOARD**

# **MODEL SIB-V245 / V453**

**FOR**

**MOTOROLA™ ACE3600 MIXED I/O MODULE**



RoHS Compliant  
UL/cUL Recognized



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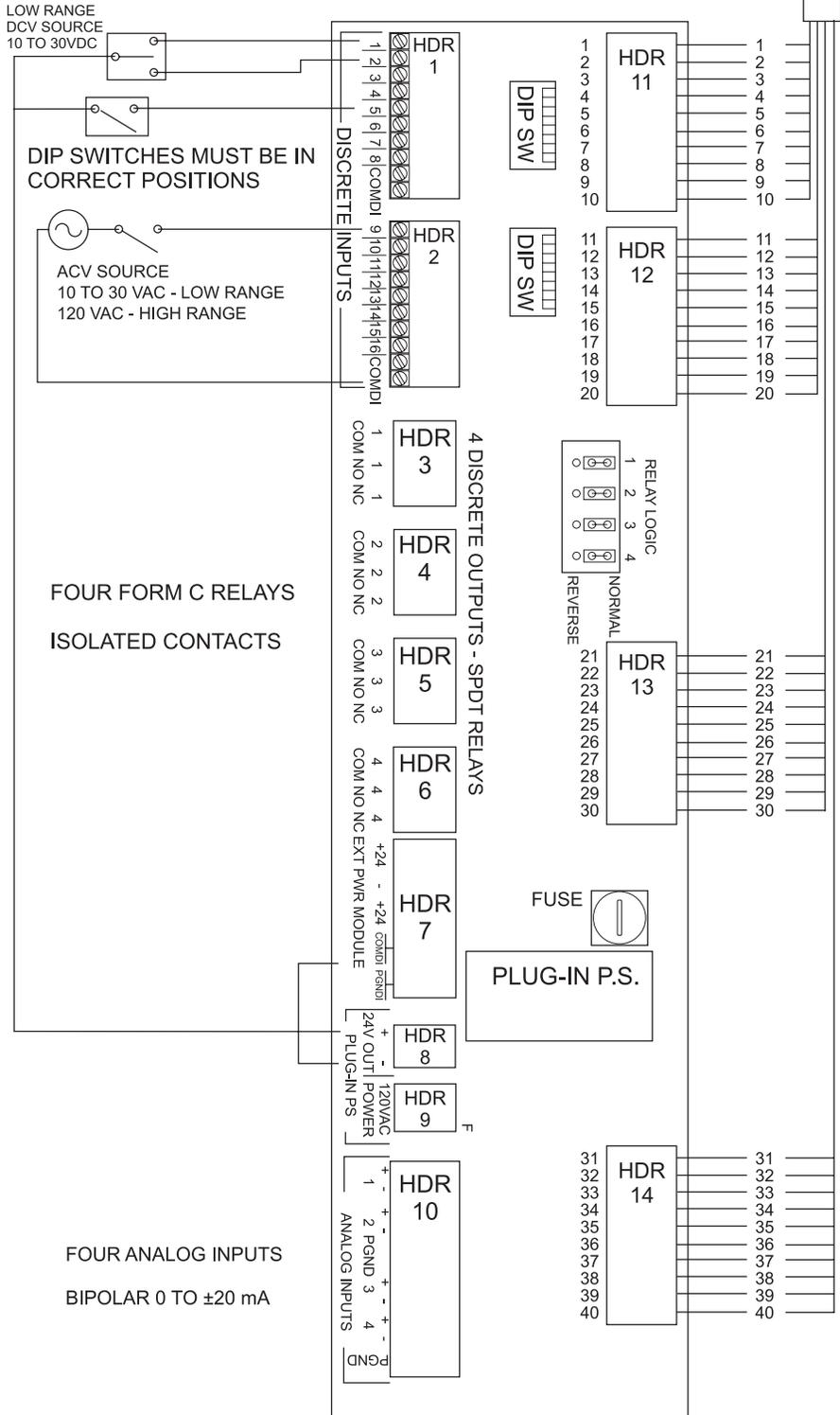
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CABLE TO ACE3600 MIXED I/O MODULE



WILKERSON INSTRUMENT CO. INC.  
 SCADA INTERFACE BOARD  
 MODEL SIB-V245 / V453  
 FOR USE WITH ACE3600 MIXED I/O MODULE

## DESCRIPTION

The Model SIB-V245 / V453 SCADA Interface Board (SIB) is an external interface product which extends the ranges of the Motorola ACE3600 Mixed I/O module's Discrete Inputs (DI), Discrete Outputs (DO) , and provides test points which allow monitoring each Analog Input's (AI) current signal without breaking the current loop.

Surge arrestors are provided on the SIB board to protect the ACE3600 module Analog Inputs. These surge arrestors can be easily replaced with a small screwdriver if the surge arrestors are damaged. Replacement surge arrestors are available (See Accessories, Page 6).

An optional plug-in 120VAC powered 24VDC (350mA) power supply is available which can be mounted on the SIB.

The 24VDC power supply can power the DO relays and can be used for excitation of system switches which are being monitored by the DI. It can also power 2 wire transmitters for the Analog Inputs.

A fuse holder with a 1/4 Amp Fast Blow Fuse (5mm x 20mm) for the power supply's 120VAC power input is vertically mounted on the SIB.

All connections to the SIB board are made to plug-in terminal blocks which plug into Headers on the board. The output terminal blocks, which connect to the ACE3600 module, use 10 pin Headers which accept 10 pin connector terminal blocks. These Terminals and Headers match the ACE3600 Mixed I/O module pin for pin.

Module connector cables of different lengths are optionally available to make the connection from the SIB to the ACE3600 module (See Accessories, Page 6)

## WARRANTY

The SIB-V245 / V453 carries a limited 3 year warranty. In the event of a failure due to defective material or workmanship, during the 3 year period, the unit will be repaired or replaced at no charge.

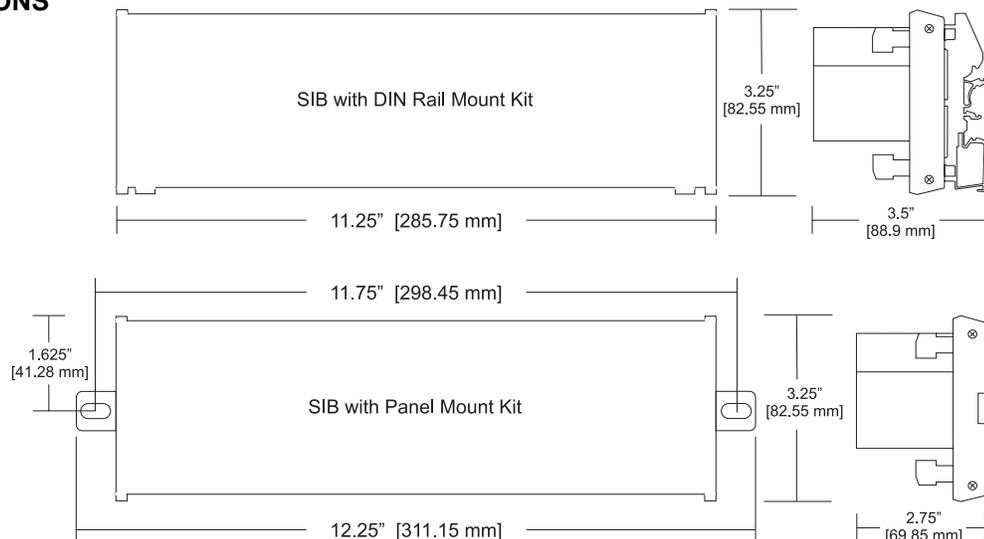
NOTE: Relays and Surge Arrestors are not covered by the warranty.

## INSTALLATION

The SIB mounts by sliding into 2 grooves in a plastic track. The plastic track has DIN rail clips so the track can be snapped on to a DIN rail. The track is also shipped with plastic brackets so it can be mounted on a flat surface with 2 screws. Both mounts are supplied with each unit (See Accessories, Page 6).

The Module connector cable is plugged into the ACE3600 Module and the terminal blocks on the SIB end are plugged into the SIB. The cable has a flexible coating and the wire is flexible stranded to provide ease of positioning.

## DIMENSIONS



## POWER INPUTS

The SIB has 3 circuits which must be powered. These circuits have several ways to be powered.

- 1 The four relay coils must be powered (24VDC, 136mA total).
- 2 The Discrete Inputs must be powered with +/- 10 to 30VDC or 10 to 30VAC or 120VAC. Current for each input is 6.5mA to 10mA.
- 3 If 2 wire transmitters are used to provide the Analog Inputs, they must be powered 25mA per transmitter.

The optional Plug-In PS 24VDC (350mA) output can simultaneously provide power to the relay coils as well as wetting the components for the DI inputs. This PS is powered by 120VAC on HDR 9. The fuse is in the 120VAC circuit. The plug-in PS 24VDC powers the relay coils as well as four 2 wire transmitters for the analog input.

A Motorola™ available floating power supply in the Mixed I/O Module can provide 24VDC (150mA) for wetting the DI components. This power supply is internal to the ACE3600 and must be obtained from Motorola™.

An external VDC PS can be used to power the relay coils. A different voltage relay coil can be used with a matching external PS.

## POWER SUPPLY HEADERS EXPLANATION

- HDR7 +24 EXT PWR is input connection for an external PS. Terminal - is for the negative connection to the external PS. This terminal is connected to the COMDI circuit common.
- HDR7 +24 MODULE is connected to the +24V from the Floating Power Supply in the Module. Its negative terminal is internally connected to the COMDI circuit common.
- HDR7 COMDI terminal is internally connected to the COMDI circuit common from the Module.
- HDR7 PGNDI terminal is internally connected to the PGNDI circuit from the Module.
- HDR8 + is +24V from Plug-In PS; - is minus terminal of Plug-In PS.
- HDR9 120VAC Terminal for power to Plug-In PS. Fuse is in series with right most pin (marked with F).

## FUNCTIONAL DESCRIPTION

### DISCRETE INPUTS (DI) — HDR 1 & HDR 2

The SIB 16 DI's condition the monitored inputs to make them compatible with the ACE3600 Mixed I/O Module. The SIB allows monitoring higher voltages than the ACE3600 Module alone can process.

The SIB inputs have a Low Range input and a High Range input. Two Headers, of ten terminals per Header, each carry 8 inputs. Two terminals of each Header are connected to COMDI which is the circuit common for the ACE3600 Module DI input circuit.

Two 8 pin Dip switches allow singular input selection of Range for the 16 inputs. Low Range (Dip SW closed - push handle down) is plus or minus 10 to 30VDC or 10 to 30VAC. High Range (Dip SW open - pull handle up) is 120VAC (see Specifications).

Each DI input can require 10mA current. All 16 energized will require 160mA total current. Additionally, each of the 16 DI's have a red LED, which is lighted when an input is energized.

### DISCRETE OUTPUTS (DO) — HDR'S 3, 4, 5, 6

The SIB has Form C Plug-in relays. They are held in sockets by wire bales. Normal relays are 24VDC (34mA per coil). Other coil voltages can be used with power from an external PS.

An LED on the relay energizes when the coil is energized. A push button on the top of a relay enclosure closes the relay contact when the button is pushed.

Four moveable Jumpers allows any relay to energize when it is given a NORMAL (Module NO contact closes) or REVERSE (Module NC contact closes) acting signal from the Ace Module.

Each relay has a 3 terminal Header for its contacts' plug-in terminal. This allows individual relay circuits to be disabled, if desired, by unplugging its terminal block.

### ANALOG INPUTS (AI) — HDR 10

The four AI's are bipolar and respond to + or - polarity signals. Each of the Input terminals has a surge arrester connected from the terminal to the PGND circuit.

The surge arrestors are mounted in small terminals. If an arrester is damaged by a surge (usually lightning) it can be replaced using a small screwdriver (See Accessories, Page 6).

Each of the four AI's has test points connected so the current can be measured with a current meter without breaking the loop.

### LEGEND

Term	Explanation
Terminal	Wire Termination Connector
SIB	SCADA Interface Board
HDR	Header
PS	Power Supply
DI	Discrete Inputs
DO	Discrete Outputs
AI	Analog Inputs
COMDI	Discrete Input Common
PGND	Protective Ground
PGNDI	Discrete Input Protective Ground

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### SPECIFICATIONS

#### DI (16 Digital Inputs)

LOW RANGE  
±10 VDC to 30 VDC  
10 VAC to 30 VAC  
HIGH RANGE  
120 VAC

RoHS Compliant  
UL/cUL Recognized

#### DO (4 Relay Outputs)

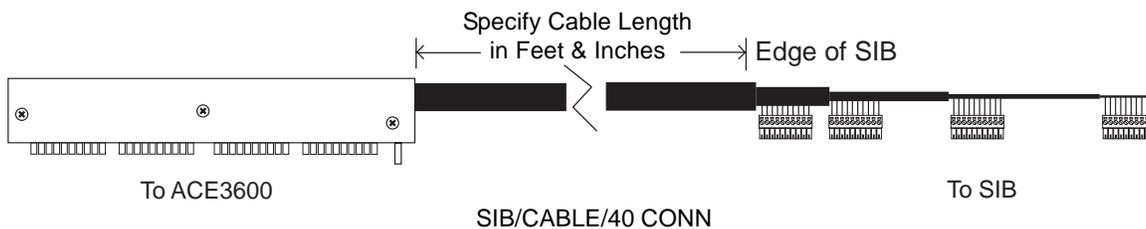
Contacts - Form C (SPDT)  
Current Rating - 10A AC or DC  
Voltage Rating 277 VAC - 220 VDC  
Coil 24 VDC  
Coil Current .034A  
Contact - Silver Alloy - Gold Flashed  
Pull In Voltage = 80% of Rating

#### ANALOG (4 Inputs)

± 0 mA to 20 mA or  
± 4 mA to 20 mA

## ACCESSORIES

ITEM	DESCRIPTION	PACKAGE QUANTITY	PART NUMBER
FUSE	5mm x 20mm, 1/4A, FAST	5	4564
SURGE ARRESTOR	ANALOG INPUT SURGE ARRESTOR, BENT TO SHAPE FOR INSTALLATION	4	4304
PLUG-IN TERMINAL	FOR HDR1, HDR2, HDR10, 10 TERMINALS, WIRE ENTRY PARALLEL TO CIRCUIT BOARD	1	4565R
PLUG-IN TERMINAL	FOR HDR3, HDR4, HDR5, HDR6, 3 TERMINALS, WIRE ENTRY PARALLEL TO CIRCUIT BOARD	1	4336R
PLUG-IN TERMINAL	FOR HDR7, 5 TERMINALS, WIRE ENTRY PARALLEL TO CIRCUIT BOARD	1	4338R
PLUG-IN TERMINAL	FOR HDR8, HDR9, 2 TERMINALS, WIRE ENTRY PARALLEL TO CIRCUIT BOARD	1	4334R
PLUG-IN TERMINAL	FOR HDR11, HDR12, HDR13, HDR14, 10 TERMINALS, WIRE ENTRY PERPENDICULAR TO CIRCUIT BOARD	1	4341R
RELAY	24V COIL, FORM C (SPDT), 10A RATING	1	4306
JUMPER	BLACK JUMPER - RELAY LOGIC CONNECTOR AND BB CONNECTOR	5	2681
PS	PLUG-IN PS, 120VAC TO 24VDC	1	4353
RELAY CLIP	CLIP TO SECURE RELAY IN SOCKET	1	4308
TRACK	TRACK FOR SIB-V245/V453	1	TRK-SIB-V245
TRACK DIN RAIL	DIN RAIL MOUNT CLIP	2	DMP-SIB
TRACK SURFACE	SURFACE MOUNT BRACKET	2	SMP-SIB
MODULE CABLE	CABLE - SIB TO MODULE (Specify Length in Feet & Inches)	1	SIB/CABLE/40 CONN



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## Water/Waste Water Products

### LM1000 Level Monitor and Controller

Level monitor, control, indicator and sensor calibrator for lift stations, pump stations, wet wells and tanks. Using the LS1000 pressure transmitter, the LM1000 is an excellent replacement for maintenance demanding bubbler systems

The LM1000 is the ideal level monitor, control, indicator and sensor calibrator for lift stations, pump stations, wet wells and tanks. The LM1000 features an LED digital display that indicates level in the LEVEL mode and loop current in the CURRENT mode. A significant feature is the ability to create a 4-20 mADC signal by means of a front panel potentiometer. The ability to accurately create and display 4-20 mA allows the user to accurately calibrate the display in Feet and the Alarm setpoint and deadband. The alarm relay output with an adjustable setpoint and deadband allows the unit to be used as a level alarm or level control. A retransmitted 4-20 mADC output from the Level Monitor is provided for input to a PLC or SCADA system. The LM1000 includes a 24 VDC power supply to power the pressure transmitter. The LM1000 is available in a panel mount version or pre-mounted in a NEMA 4X enclosure with window.



**Back-Up Lift Station Duplex Pump Control** - Takes over control of duplex pump systems in the event of primary control failure.

The DR1920 is typically used as a back-up for primary level controls. It prevents sewage overflows in lift stations by monitoring a back-up level alarm and starting up to two pumps when the high alarm switch contacts close. An alarm starts Pump 1 and Timer 1. If the alarm switch does not open before Timer 1 times out, Pump 2 is started. If the alarm switch opens during Timer 1, Pump 2 is not started. When the alarm switch opens, Timer 2 is started and the pump(s) run until Timer 2 times out and stops the pump(s) and resets the timers.



The DR1920 is an ideal back-up to PLC, RTU, microprocessor and relay controls.

**Three Phase Monitor** - Monitors voltage on two phases of a three phase line. Indicates and alarms on phase failure, low voltage, and phase reversal.

The DR6305 measures voltage of 2 phases of a 3 phase system and continuously monitors Phase voltage with 0/20mA and 0/-20mA alternating outputs. The unit requires only a single bipolar input on a PLC for monitoring. The DR6305 features alarm outputs for phase loss and phase reversal. LED's indicate which phase is being monitored, phase loss and phase reversal. Input Voltage is jumper selectable for 240 and 480 VAC systems.



# Wireless Data Acquisition and Control

Wireless Transmitters and Receivers have become the method of choice to move data from feet to miles from the source. The excessive cost of running wiring under roads, parking lots, over water, and other difficult paths, is deleted by wireless instruments with 2 simple antennas.

Wilkerson Instrument's small DIN Rail mounted devices operate on license free ISM\* 900 MHz or 2.4 GHz frequency bands. They use frequency hopping spread spectrum technology which permits 7 units to operate in proximity to each other without interference.

The Transmitters are available with two 4mA to 20mA inputs (and other currents) or a single DCV input. Inputs are also available for single RTD or Strain Gauge. The Strain Gauge input has a precision 10VDC excitation supply which can drive four 350ohm bridges in parallel.

## FOUR WIRELESS TYPES AVAILABLE

### Inputs & Outputs

Each Transmitter has four Discrete inputs for monitoring contact status on switches, relay contacts, etc.

Each Receiver has two 4mA to 20mA current outputs proportional to the Transmitter analog data input. It also has four Discrete NPN transistor outputs (optical isolator) proportional to the status of the Transmitter's Discrete inputs.

### Point to Point System

The DR9011 (TX) and DR9021(RX) wireless systems provide one way analog and Discrete data acquisition for distances up to 20 miles (900MHz).

### Bi-Directional System

The DR9031 TX/RX provides bi-directional analog and Discrete data acquisition in both directions. It has the same inputs and outputs as the DR9011 and DR9021.

### Modbus RTU Multi Point System

The DR9050 is a Controller which allows a Master Modbus Controller to query any remote DR9051R for analog and Discrete data from up to 247 remote locations. The DR9051R also has a repeater function that allows the DR9050 to communicate with a DR9051R that is obstructed by either objects or distance.

### ENCL900 Series Pre-Wired Enclosure

The ENCL900 Series are NEMA 4X polycarbonate enclosures pre-wired to hold a Wilkerson Instrument Co. DR9011 or DR9051R wireless transmitter, or DR9021 wireless receiver. The instrument's wiring is to Headers on a DIN mounted support. Field wiring connects to pluggable terminals.

The DIN rail has space for other devices.

A short, small diameter coaxial cable is supplied which connects the wireless unit to the Type N connector mounted in the top of the enclosure.

\*ISM is symbol for Industrial, Scientific, and Medical.

