



I/O 786-10

**INPUT/OUTPUT DEVICE
USER REFERENCE SHEET
FOR**

**SYSTEM INPUT/OUTPUT PCB
(a Local I/O board)**

Part No. 46S02786-0010

For use in MicroTrac DSD Drive

Effective 8/01/91

CONTENTS

INTRODUCTION	3
HARDWARE DESCRIPTION.....	3
Input/Output Interconnect	3
Input/Output Descriptions.....	3
INSTALLATION AND HOOKUP.....	5
SETUP	6

For additional information, contact any of our Representatives or Authorized Distributors, or contact our Product Technical Support Staff.

MagneTek
16555 W. Ryerson Road
New Berlin, WI 53151

(800) 541-0939 (414) 782-0200
FAX (414) 782-1283

INTRODUCTION

This Local I/O board, REQUIRED in a system drive, allows communication with the LAN, inputs from a Digital Tachometer and other I/O. This board must be mounted in the lower Local I/O board position, and is interfaced to the Main CPU Control PCB by connecting the 50 conductor ribbon cable (from J1 of this board) to either J1 of the Main CPU Control PCB.

HARDWARE DESCRIPTION

INPUT/OUTPUT INTERCONNECT

There are two header connectors (J2 - 26 pin, and J4 - 34 pin) on this board that allow ribbon cable connection to Terminal Transition Adapter PCBs with the same connector pin/terminal count. This terminal transition arrangement allows input/output wiring for this board to be accomplished without having to open the power cube.

INPUT/OUTPUT DESCRIPTIONS

The following sections describe each input and output in detail. Table 1 describes the PAC needed information.

Digital Tachometer Input. There is provision for a Digital Tachometer input. The Digital Tachometer signals A, \bar{A} , B, and \bar{B} , may be input to this PCB. By supporting all of these tachometer signals, various tachometer configurations are supported. If the motor is controlled in only one direction, then only one stream of pulses is needed to indicate its motion. If

the motor is controlled in two directions, then two channels of pulses are required; the relationship of the two streams indicates the direction of motor shaft movement.

The Digital Tachometer signals MARKER and \bar{MARKER} may also be input to this board. These signals allow the drive to know the exact position of the motor shaft.

The Digital Tachometer circuitry also provides two LEDs that indicate the direction of rotation of the motor shaft. When this board is mounted properly, these LEDs are visible on the right hand side of the drive. The Green LED (DS1), when lit, indicates forward rotation. The Yellow LED (DS2), when lit, indicates reverse rotation.

The signal names are labeled A, \bar{A} , B, and \bar{B} , MARKER and \bar{MARKER} .

Connection terminals are provided that will supply TACH POWER (+5 Vdc), TACH RTN (COMMON), and SHIELD tie points.

Analog Inputs. There is provision for 4 non-isolated analog inputs. The inputs have a maximum range of +/- 10 Vdc with respect to common, are single ended, include a filter with a time constant of about 1 millisecond, and have 50K ohm input resistance. The overall A/D conversion accuracy is +/- 0.4 % with 12 bits of resolution over the full scale range. The signal names are labeled ANACH1 through ANACH4. Full scale range may be less than the maximum range. The full scale range is determined by the PAC program.

Connection terminals are provided that will

Table 1 System I/O PCB PAC Definitions

NODE: 254. When connected to J1 of Main CPU Control PCB

CHANNEL-SUBCHANNEL:

- 0-1. ANACH1, Non-isolated Analog Input 1
- 0-2. ANACH2, Non-isolated Analog Input 2
- 0-3. ANACH3, Non-isolated Analog Input 3
- 0-4. ANACH4, Non-isolated Analog Input 4
- 0-5. CUR. FOL. IN, 4-20 mA Input
- 0-6. DIFF IN, Differential Analog Input
- 1-0. ANOUT1, Non-isolated Analog Output 1
- 1-1. undefined
- 2-0. undefined
- 2-1. undefined
- 2-2. undefined
- 2-3. undefined
- 2-4. undefined
- 2-5. undefined
- 2-6. undefined
- 2-7. undefined
- 3-0. undefined
- 3-1. undefined
- 3-2. undefined
- 3-3. K1, Logic Output Relay Coil For K1
- 3-4. undefined
- 3-5. undefined
- 3-6. undefined
- 3-7. undefined
- 4-0. undefined
- 4-1. undefined
- 4-2. undefined
- 4-3. undefined
- 4-4. undefined

- 4-5. undefined
- 4-6. undefined
- 4-7. undefined
- 4-8. undefined

supply +10.0 Vdc reference, -10.0 VDC reference, COMMON, and SHIELD tie points. Each of the references will supply up to 50 milliamps of current.

Differential Analog Input. There is provision for one non-isolated differential or single ended analog input. The input has a maximum differential range of +/- 10 VDC or +/-0.5 VDC with an input common mode voltage range of +/- 10 VDC. The overall A/D conversion accuracy is +/- 0.4 % with 12 bits of resolution over the full scale range. The signal names are labeled DIFF IN (+) and DIFF IN (-).

Connection terminals are provided that will supply COMMON and SHIELD tie points. Also see **SETUP**.

4-20 mA Input. There is provision for one non-isolated 4-20 mA analog input. The input signal feeds a differential amplifier with a maximum of +5 VDC across a 249 ohm burden resistor at the 20 mA level. The input common mode voltage range is +/- 10 VDC. The overall A/D conversion accuracy is +/- 0.4 % with 12 bits of resolution over the full scale range. The signal names are labeled CUR. FOL. IN (-) and CUR. FOL. IN (+).

Connection terminals are provided that will supply +5 Vdc, COMMON, and SHIELD tie points.

Analog Output. There is provision for one non-isolated analog output. The output has a range of +/- 10 VDC with respect to common, is single ended, and has an output drive limited to +/- 4 mA. The D/A

conversion accuracy is +/- 0.4% with 12 bits of resolution over the full scale range. The signal name is labeled ANOUT1.

Connection terminals are provided that will supply COMMON and SHIELD tie points.

Relay Contact Outputs. There is provision for one relay with form C type contacts being brought to the connector. The maximum switching voltage is 36 VAC/VDC. The maximum switching current is 0.5 A. The signal names for the form C contacts are labeled K1-C, K1-NO, and K1-NC.

INSTALLATION AND HOOKUP

This board is factory installed in the drive and should require no further connections to be made to it. However, if it should become necessary to install the board in the field, then the following steps should be taken:

WARNING

HAZARDOUS VOLTAGES CAPABLE OF SEVERE INJURY OR DEATH MAY BE PRESENT WITHIN CABINET. BEFORE OPENING CABINET DOOR, DISCONNECT AND LOCK-OUT INCOMING POWER.

CAUTION

TO AVOID DAMAGE TO ELECTRONIC COMPONENTS, DO NOT MAKE ANY CONNECTIONS WITH POWER APPLIED. USE PROPER ELECTROSTATIC DISCHARGE (ESD) PROCEDURES WHEN HANDLING PRINTED CIRCUIT BOARDS.

1. Turn off incoming power.
2. Locate where this board is to be physically mounted. The Local I/O boards mount onto the back side of the Main CPU Control PCB in either the upper position (next to connector J9) or the lower position (next to connector J1). Refer to the System Schematic for the location.
3. Disconnect all cables to the Main CPU Control PCB and to the Local I/O board(s) attached to it, noting location of cables for proper replacement.
4. Remove the Main CPU Control PCB from the hinged door by removing two screws, at center top and center bottom.
5. If replacing an existing Local I/O board, then unmount the existing board by removing the nuts, washers and bolts that secure it to the Main CPU Control PCB.
6. Mount this board into its proper position using the nuts, washers and bolts provided.
7. Remount the Main CPU Control PCB, with the attached Local I/O board(s), back onto the hinged door.
8. Connect (reconnect) all of the cables per the Interconnection Diagram.

Refer to the equipment Interconnection Diagram for detailed wiring information. Ensure that wire size and disconnect devices conform to the installation contractor's drawings and to all applicable codes. Observe the following:

- A. In long cable runs, take care to prevent excessive voltage drop.

- B. Separate the leads used for speed reference, feedback, and other low level signals from those used for the motor armature, field and AC power. Do not run these two groups in the same conduit or wire trough.

- C. Provide shielded and twisted leads as indicated on the schematic and Interconnection Diagrams. Connect all shields on shielded wire to system common (not ground) on one end only. Use Twisted shielded pair wire for long runs.

IMPORTANT

Since LAN cable connection cannot be made directly to this board, a LAN Interface PCB, 46S02787-0010, must be used in conjunction with this board. If not present on the power cube, it must be added.

SETUP

There are no jumpers or potentiometers to set up.

The Differential Input Setup Switch (S1) on this board should be set according to the drive schematic to ensure that the PAC software and the drive hardware are set to the same scaling. If the drive schematic is not available or if the switch position isn't shown, the PAC software and hardware GAIN switch should be in the "HI" position for signals of -0.5 volts to +0.5 volts, and in the "LO" position for signals of -10 volts to +10 volts. If the input is a differential signal, the INPUT switch should be in the "DIF" position. If the input is a single ended signal (i.e. referenced to the power supply common of this drive), the switch should be in the "SE" position.