



Instruction Bulletin

Subject: SY/MAX[®]
CLASS 8030 TYPE HIM-151
8 FUNCTION TTL INPUT MODULE

Note: This module requires an external 5VDC power source. This can be either a user supplied 5VDC source or a SY/MAX Class 8030 Type PS Power Supply with a Class 8030 Type CC-40 Cable. When used as a TTL I/O Power Supply, the Class 8030 Type PS Power Supply may only be used for that purpose. To maintain electrical isolation, no other cables may be connected to the power supply. See Power Supply Instruction Bulletin (30598-156-02).

DESCRIPTION

The Type HIM-151 TTL Input Module provides 8 optically isolated inputs which are capable of receiving signals from TTL (transistor transistor logic) or other 5VDC level devices. Through the use of DIP switches located on the bottom of the module, the user has the option of selecting 1.0mA or 10.0mA current levels. The module also features both capacitive noise filtering and built-in hysteresis to ensure greater input signal integrity.

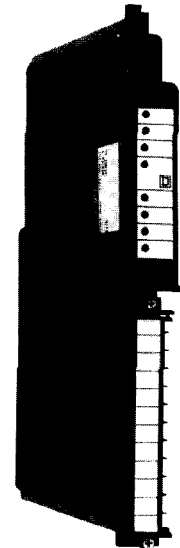
Eight LEDs on the face of the module provide status indication for the individual inputs. LED illumination indicates a logic 1 input voltage.

SPECIFICATIONS

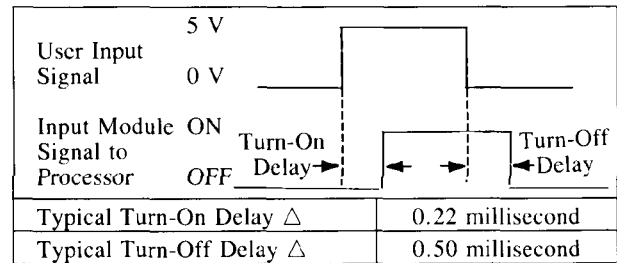
Inputs per Module 8
 Type and Rated Isolation
 Between Input Terminal and
 Logic Optical: 2500V RMS
 User Information:

PARAMETERS	LOGIC 0	LOGIC 1
Signal	Low	High
Input Voltage	0.0V min. to 0.8V max.	2.0V min. to 8.0V max.
LED Operation	OFF	ON
Status Seen by Processor	OFF	ON
User Current Sink Req. (per input)	-1.6mA max. (DIP switch OFF)* -10.0mA (DIP switch ON)*	—
User Current Source Req. (per input)	—	3.0mA max. (DIP switch OFF)‡ 10.0mA max. (DIP switch ON)‡
User Supply Voltage Req.	5VDC (± 0.25V) at 200mA max. 100mV (p-p) ripple max.	

*At 0.0V with User Supply Voltage at 5.25V
 ‡At 8.0V with User Supply Voltage at 4.75V.



Input Module Switching Characteristics:



Δ — Turn-On Delay and Turn-Off Delay Values are based on Input Voltage Levels indicated in the Diagram.

Minimum Input Pulse Width* 1.67 millisecond at 300 Hz
 1.00 millisecond at 500 Hz

Rated Module Current Draw on
 SY/MAX Power Supply 32mA per Module
 Ambient Temperature Rating 0 - 60°C
 Humidity Rating 0 - 95% non-condensing
 Weight 1.2 lb/0.54 kg.
 Rack Assemblies in Which
 Module May be Used HRK-100, HRK-150†,
 HRK-200

Compatibility with Output
 Modules COM-261, COM-271,
 COM-281, HOM-261, HOM-271

Detachable Terminal Blocks CBP-110
 Ten Terminal Labels CBP-109

TYPICAL WIRING

Input devices are wired to the removable terminal block on the front of the module. Figure 1 illustrates the typical wiring for the first four inputs of the HIM-151 TTL Input Module. Wiring terminals 1 through 4 share common "1A" and "1B" terminals. Wiring terminals 5 through 8 share common

terminals "2A" and "2B". Each group of four inputs on the module is capable of being connected to a separate voltage supply. If only one voltage supply is used for more than one module, the "1B" and "2B" terminals for each terminal block may be connected together and "1A" and "2A" terminals of each terminal block may be connected together.

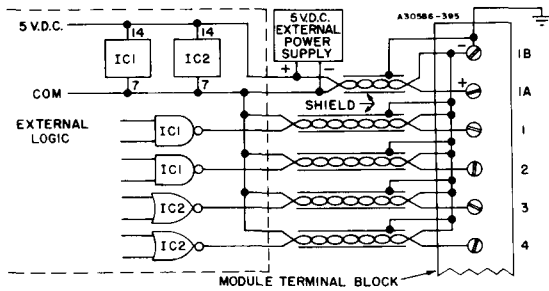


Figure 1 — Typical Wiring

A hinged plastic flap covers the wiring terminals on the front of the module. Labels are provided for both sides of the flap. See Figure 2. The label with eight marking areas is placed on the outside of the flap to identify I/O devices, wire numbers, etc. Two wiring terminal labels are included with the module. One is for terminals 1 through 8, the other for terminals 9 through 16. If the module is inserted in an ODD number slot, the terminal 1 through 8 label is placed on the inside of the flap. If the module is placed in an EVEN number slot, use the terminals 9 through 16 label. See Figure 3.

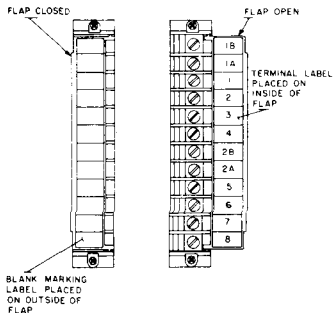


Figure 2
I/O Terminal Labels

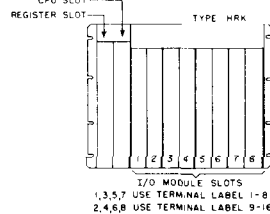


Figure 3
Terminal Label Placement

APPLICATION CONSIDERATIONS

- External power supply connections to terminals "1A" and "1B" will power inputs 1-4. Terminals "2A" and "2B" will power inputs 5-8. If one supply is to be used, "1A" and "2A", "1B" and "2B" terminals can be wired together.
- By removing the top and bottom retaining screws the terminal block may be removed from the module, allowing the module to be replaced without disturbing field wiring.
- The polarity of the wires connected to the terminals "A" (+) and "B" (-) must be as indicated or damage to the Module will occur (Figure 1).
- Only shielded twisted pair cable, such as Beldon No. 8760, should be used when connecting the TTL input module to an external device. With the 1.6mA current level selected, the maximum cable length is 10 feet. With the 10.0mA current level selected, the maximum cable length is 50 feet.

- Each terminal will accept up to two #14 AWG wires.
- The input common terminal "1B" and "2B" on the module should be connected to the rack chassis ground to minimize noise susceptibility. Each individual cable shield must also be connected to the common terminals "B" on the module. The other end of the shield must be left unconnected (Figure 1).
- If an output of a TTL output module is connected to the input of a TTL input module, the cable shields should be connected to the B terminals, (common) on the output module. The other end of the shield must be left unconnected.
- Although the input pulse width given in the "SPECIFICATIONS" is the minimum required by the HIM-151 TTL Input Module, the SY/MAX Processor (depending on the processor scan time) may require a greater input pulse width. Consult the SY/MAX PC Planning and Installation Guide (Bulletin #30598-175-01) for I/O update considerations.
- Depending on the size and routing of wiring to the terminals of adjacent modules, it may be necessary to remove an adjacent terminal strip before removing an I/O module.

MODULE KEYING

Each socket on the I/O rack assembly may be keyed to accept only one type of module. An optional keying pin kit, Class 8030 Type CBP-104, is available for this purpose. The correct position of the keying pin for the TTL input module is between pins 12 and 14. See Figure 4. The keying pin is simply inserted manually into the slot in the rack connector, as shown in Figure 5, using the keying pin insertion tool provided with the kit.

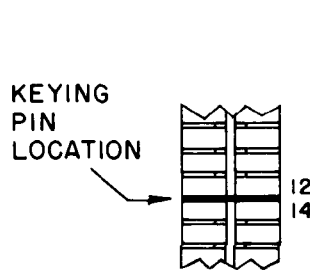


Figure 4
Keying Pin Location

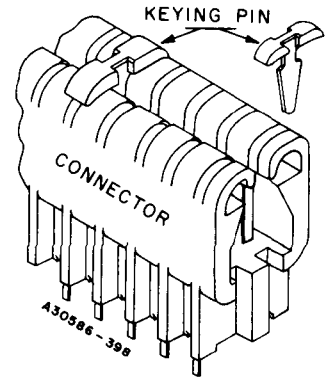


Figure 5
Inserting Keying Pin

CAUTION: When inserting or removing the keying pins, use care to avoid touching the contact fingers within the connector. Improper insertion/removal may damage the connector.

INSTALLATION INSTRUCTIONS

Insert the key mentioned above into the appropriate slot then, before inserting the module in the rack, set the DIP switches to select the 1.6mA or 10.0mA current level for each individual input. The DIP switches are accessible on the bottom of the module. Simply set the switch in the "ON" position (towards the PC board) to select 10.0mA current level or set the switch in the "OFF" position to select 1.6mA current

level (Figure 6). After setting the DIP switches to the desired position, insert the module into the rack slot (holding the module's pull tab in a horizontal position as the module is inserted) and tighten the captive screw at the bottom of the module. Lower the latching clamp to secure the top of the module.

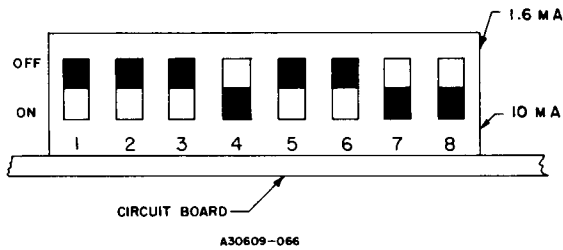


Figure 6 — Module DIP Switches

SIMPLIFIED SCHEMATIC OF MODULE

Figure 7 illustrates one of eight circuits within the module. The terminals marked "1A" and "1B" are common to the first four inputs within the module.

NOTE: The switch labeled "S1", when closed, selects 10.0mA current level.

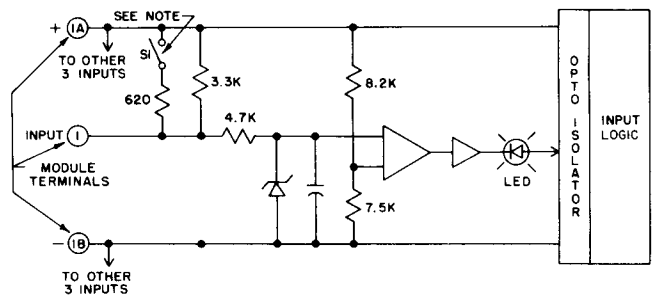


Figure 7 — Simplified Schematic of One Input Module Circuit