

**ENABLING TECHNOLOGIES LABORATORY
WAYNE STATE UNIVERSITY**

**ETL INDEXING TURNTABLE
VERSION 3.0**

INSTRUCTION SET

JULY 1997

ENABLING TECHNOLOGIES LABORATORY WAYNE STATE UNIVERSITY

ETL INDEXING TURNTABLE VERSION 3.0

Introduction

The ETL Indexing Turntable was designed to assist users with a number of tasks, such as assembling and sorting. Users may set the speed of the turntable as well as the number of steps per rotation as necessary for each session. An auto pause function, which holds the turntable in *pause mode* after each step, is also available.

The ETL Indexing Turntable is equipped with two input jacks. A single switch may be connected to one of the input jacks, allowing a single user to control the turntable's movements. Other inputs, such as an ETL Counter Controller or a Poka-Yoke Controller, may be connected to the remaining input jack to accommodate a wide variety of tasks.

A voice output device or other switch-activated device may be connected to the turntable to provide as many as four different prompts during each session.

With these directions, the user of the ETL Indexing Turntable will be able to:

- Setup the turntable correctly
- Program the desired values
- Run the program

Equipment:

ETL Indexing Turntable	RS-232 Serial Cable
User Interface Module	IEC Power Cord
Switch	Voice Output Device (optional)

! CAUTION ! Only use 3.5-mm (1/8") mono audio cable to connect all audio and input/output devices. Using stereo cables may produce poor results.

ETL INDEXING TURNTABLE

VERSION 3.0

<h3>TABLE OF CONTENTS</h3>

Setup Procedures. ....	.1
Assembling the Turntable. ....	.1
Connecting the Input Devices. ....	.1
Connecting the Output Device . . . . .	.2
Connecting the Power Source. ....	.3
Using the ETL Indexing Turntable. ....	.4
Programming Your Values. ....	.4
Setting the Speed. ....	.4
Setting the Number of Steps. ....	.5
Setting the Auto Pause. ....	.6
Setting the timed Prompt. ....	.6
Running the Program. ....	.7
Reference Guide. ....	.10

SETUP PROCEDURES: ETL INDEXING TURNTABLE

MATERIALS:

ETL Indexing Turntable
User Interface
Switch

RS-232 Serial Cable
IEC Power Cord
Voice Output Device (optional)

Assembling the Turntable

1. Place the turntable on a solid, sturdy surface that is free of water or other liquids that may come into contact with the equipment.
2. Place the table top, with the 17 sensor magnets face down, on the turntable. The three guide pins on the turntable will slide the table top into the correct position (Figure 1).

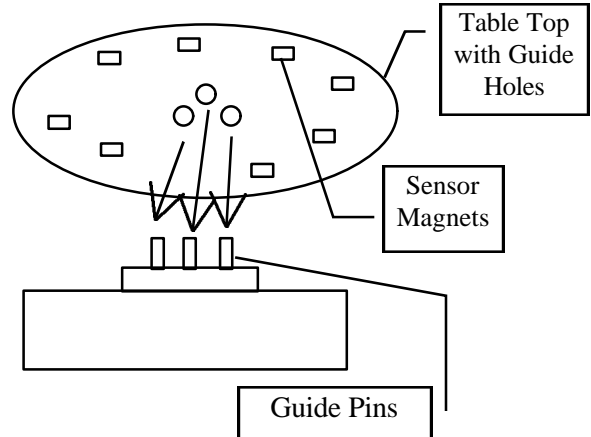


Figure 1

Connecting the Input Devices

1. Two input jacks are available on the Turntable: IN 1 and IN 2. Attach the user switch to either IN 1 or IN 2 on the side of the turntable. If an additional input is desired, attach that input to the remaining input jack (Figure 2). Other viable inputs include an additional switch, a Poka-Yoke controller, or an ETL Counter Controller.

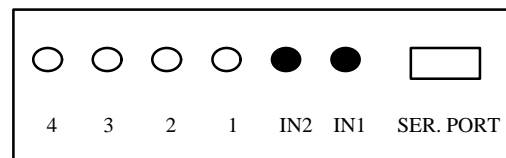


Figure 2

NOTE: Attach all input devices before turning on the turntable.

2. Using the RS-232 cable, attach the user interface to the turntable. The plug side of the cable attaches to the turntable, and the socket side attaches to the user interface.

Connecting the Switch-Activated Output Devices

1. If a voice output device or other switch-activated output device is needed, establish the desired messages according to the instructions provided by the manufacturer of the device, then attach it to the turntable according to the specifications noted in Step 2.

! CAUTION ! Use 3.5-mm (1/8") mono audio cables to connect all audio devices. Using stereo cables may produce poor results.

2. Jacks **R1 through R4** provide switch closures at different points in the turntable's cycle (Figure 3):

- **R1: Timed Prompt**--If no input is received within the specified prompt delay time, R1 will provide a 1 second switch closure, allowing the interface to a CheapTalk, Lynx, or other switch-activated device to operate.
- **R2: Input Prompt**-- When either of the input jacks (IN 1 or IN 2) receives a pulse, R2 will provide a 1 second switch closure that will operate the attached switch-activated interface device.
- **R3: End of Step Prompt**-- When the turntable reaches the end of one step in its rotation, R3 will provide a momentary switch closure that will support the "end of step" prompt from the

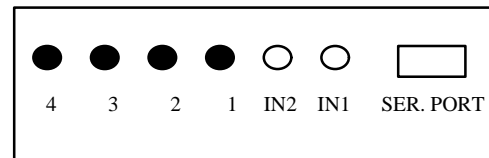


Figure 3

switch-activated interface.

- **R4: Auto Pause Prompt**--
If the Auto Pause feature is selected (See Page 5), R4 will provide a 1 second switch closure that will support the “Auto Pause” prompt.

NOTE: If the Auto Pause feature is not on, the R4 jack will not provide switch closures at any point.

Connecting the Power Source

1. Attach the IEC Power cord to the turntable. Make sure that the power switch is in the off position, then plug the unit into a ***GROUND***ED outlet (Figure 4).

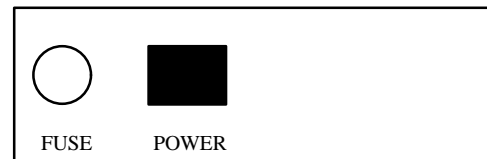


Figure 4

USING THE ETL INDEXING TURNTABLE

! CAUTION ! Before using the ETL Indexing Turntable, follow the setup instructions on Pages 1-2.

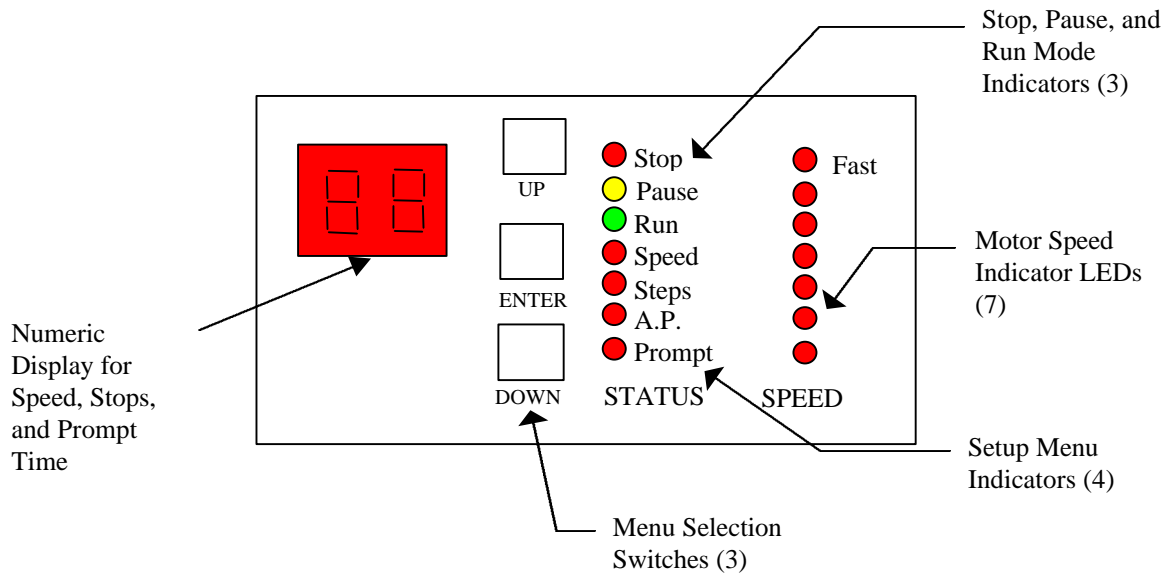


Figure 1: User Interface Module

Programming Your Values

1. Turn on the turntable using the red power switch on the side of the unit.
2. After the machine has been turned on, it will beep once and the table top will rotate to the "home" position. The user interface module will be in the STOP mode, which is indicated by the "S" on the module's display (Figure 2).

Setting the Speed

1. To set the speed at which the turntable will revolve, hit the DOWN key on the user interface module until the lamp next to SPEED is

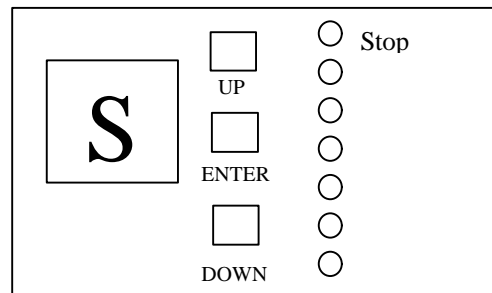


Figure 2

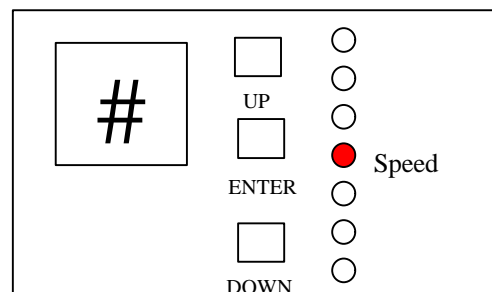


Figure 3

illuminated (Figure 3). Two horizontal lines appear, then hit ENTER to display lines will the value that is set for that mode.

NOTE: The two horizontal lines must be present on the module display in order to scroll through the setup menu.

- The speed of the turntable's rotation ranges between 1 (slowest) and 7 (fastest). Use the UP and DOWN keys to select the speed appropriate for your task. The LED bar graph on the right side of the User interface Module will indicate the chosen Speed (Figure 4).

NOTE: For light loads, start with a low speed setting as a fast setting may cause light objects to slide off of the table. Similarly, higher initial speed settings may be necessary for heavier loads. As the table turns, it will automatically determine the appropriate speed for each load.

- Hit ENTER when you are satisfied with the speed you have chosen. A beep will sound, and the module will again display two horizontal lines.

Setting the Number of Steps

- To set the number of times that the turntable will stop within one complete rotation, press the DOWN key until the lamp next to STEPS is illuminated.
- Press ENTER to display the value set for this mode. The number of steps available are 2,4, and 8 (Figure 5). To adjust the STEPS value, use the UP and DOWN keys.

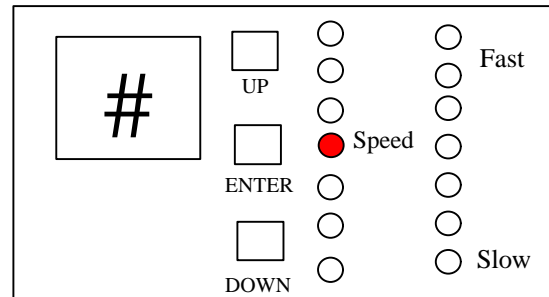


Figure 4

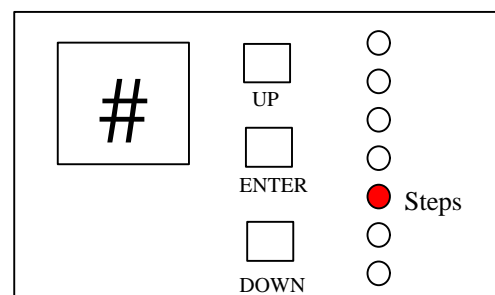


Figure 5

- When you are satisfied with the number of steps you have selected, hit ENTER. A beep will sound, and the module will display two horizontal lines.

Setting the Auto Pause (A.P.)

- The turntable may be set to automatically go into a pause mode after each step. To adjust or check the status of this mode, press DOWN until the lamp next to **A.P.** is illuminated (Figure 6).
- Press ENTER to display the status of the A.P. mode. A “1” indicates that the A.P. is ON, so the table will go into PAUSE after each step. A “0” indicates that the A.P. is OFF, so the turntable will rotate every time that the user hits the switch. Use the UP or DOWN keys to adjust the value, then hit ENTER. Two horizontal lines will appear on the user interface display to indicate that your value has been saved.

Setting the Timed Prompt

- To set the amount of time before the timed prompt activates, press DOWN until the lamp next to PROMPT is illuminated. Press ENTER to display the value of this mode (Figure 7).
- Use the UP and DOWN keys to establish the desired value. Valid entries are between 1 and 99 seconds.
- When satisfied with the selected value, press ENTER. Two horizontal lines will appear on the

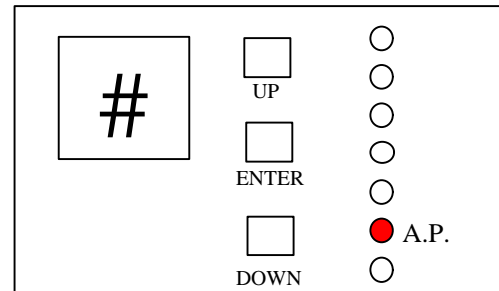


Figure 6

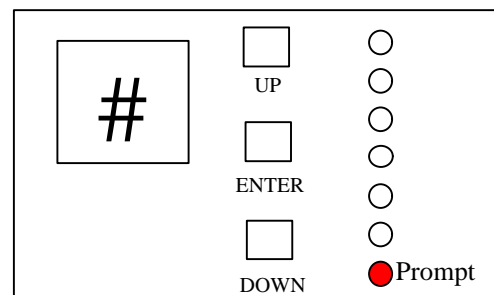


Figure 7

display, indicating that the values have been saved.

Running the Program

1. When you are satisfied with the values that you have selected, press the UP or DOWN keys until the green lamp next to RUN is illuminated. The display will show how many *steps* were programmed for the session (Figure 8).
2. While in the RUN mode, the bar graph on the right side of the controller will illuminate, indicating the selected turntable speed. Also, if "1" was chosen for the A.P. mode, the lamp next to A.P. will remain lit during the RUN mode (Figure 9).
3. Press ENTER to start the session. Two horizontal lines will appear on the display, indicating that the program is running
4. Each time that the user clicks the switch, the R2 jack (*Input prompt*) will provide a momentary switch closure, and the turntable will advance according to the speed and number of steps that were programmed.

NOTE: The turntable will automatically determine the appropriate speed for each session while in the RUN mode.

5. When the turntable completes one rotation, the R3 jack (*End of Cycle prompt*) will provide a momentary switch closure.

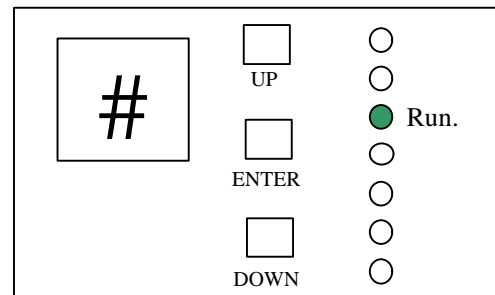


Figure 8

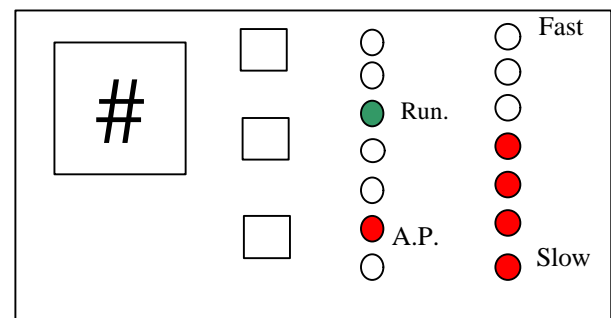


Figure 9

- If a timed prompt was established, the R1 jack will support a momentary switch closure when there has been no activity from the user within the set amount of time.

Auto Pause

- If a “1” was chosen for the A.P. mode, the turntable will go into PAUSE mode after each step. The R4 jack will support a momentary switch closure, allowing the “Auto Pause” prompt to operate, and a series of 6 beeps will alert users and staff that the machine is in PAUSE mode.
- To restore the RUN mode, press the DOWN key once to illuminate the lamp next to the RUN mode. Press ENTER to start the session again.

Pausing the Program

- To pause the program, press the UP key until either the PAUSE or STOP lamps are illuminated, then press ENTER. The two dashed lines that appear indicate that the chosen mode is functioning (Figure 10).

NOTE: All prompts are disabled while the turntable is in either the STOP or PAUSE mode.

- To resume the program, press the DOWN key until the RUN lamp is illuminated. Press ENTER to resume the session (Figure 11).

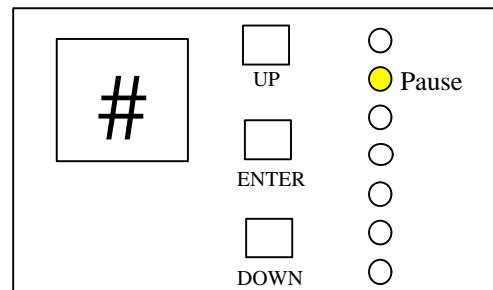


Figure 10

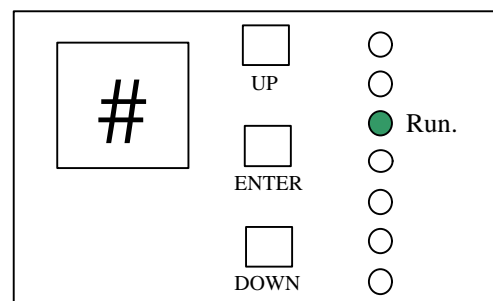


Figure 11

ETL INDEXING TURNTABLE VERSION 3.0

<h3>REFERENCE GUIDE</h3>

If you have any questions or concerns regarding your ETL indexing turntable, contact David Sant or Robert Erlandson at Wayne State University's Enabling Technologies Laboratory at (313) 577-1791. For questions regarding these instructions, contact Kristine Bradow at the same number.

Ending the Session

11. To end the session, turn off the red power switch. The values from the session will be saved in the turntable's memory.