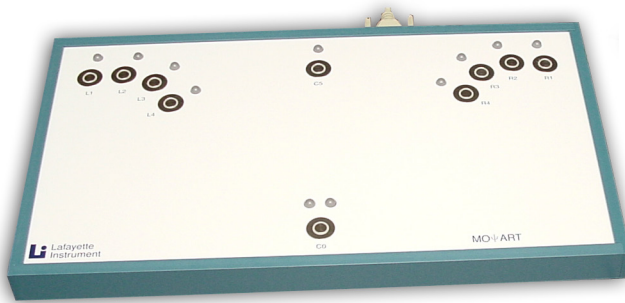


Multi-Operational Apparatus for Reaction Time (MOΨART)

User Instructions



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Table of Contents

System Description	2
Parts	2
Specifications	2
Front Panel Description	3
Rear Panel Description	4
Notes	6
Ordering Information	8

System Description

The Multi-Operational Apparatus for Reaction Time (MOΨART) is an integrated, versatile device used for the study of cognitive processing. It can perform a wide range of tests including reaction time, choice reaction time, reaction/movement time, and tapping tests. The MOΨART features state-of-the-art touch sensitive keypads for ultra-accurate reaction times with no key travel errors. It also uses tri-color stimulus lights and dual tone generation, giving it a high degree of versatility in stimulus presentation. Combined with the PsymCon control panel, it can provide six highly adaptable tests that will find use in any motor behavior laboratory.

This manual describes the MOΨART panel when used as a stand-alone device only. A second set of instructions will be issued with the software release describing the use of the MOΨART with the computer interface.

Parts

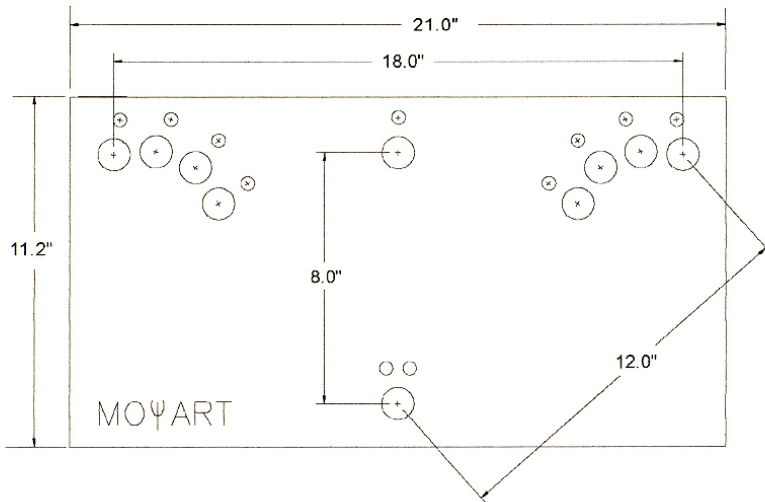
- MOΨART panel: Main panel for the system
- 10V DC power supply with power cord

Specifications

Low Tone:	200Hz
High Tone:	1kHz
Tone Volume:	75-85 dB max.
Headphone:	90-105 dB max. depending on style
Stimulus:	9 tri-color lights, high or low tone
Keys:	Touch sensitive with dual accuracy zones
Cue:	Tri-color light, high or low tone
Cue Time:	Fixed, random or none
Cue Time Range:	0-25.5 seconds, 0.1 second resolution
Error Types:	Early response, no response, incorrect response, inaccurate response
Response Timeout:	0-25.5 seconds, 0.1 second resolution
Tapping Duration:	0-120 seconds, 1.0 second resolution
Power:	10V DC, 1.5 Amp supplied with AC adapter
Computer Conn:	USB
Timing Resolution:	0.001 seconds \pm 0.005%
Dimensions:	21.0" x 11.2" x 2.5"
Aux. Connector:	8-pin circular mini-DIN

Front Panel Description

The MOΨART front panel uses an ergonomic design for the button layout. The design is based on established normal distances for tapping tests and published standards for reaction time experiments. Each key site features a dual zone touch sensitive keypad. The inner and outer zone of each key can be monitored separately which allows the accuracy of responses to be monitored. Each key site also features a tri-color LED stimulus light. The light can be set for red, green or orange stimulus (orange available through computer control only). The main key site at the bottom of the panel (C0) uses two separate lights, which allows greater flexibility when presenting stimuli. Each key site is labeled on the panel and these labels are referenced in both the control hardware and software to set up the various experiments.



Note: Static Discharge Information: The metallic keys and connectors on the MOΨART are susceptible to static discharge. If a user or subject "shocks" one of the buttons or headphone connectors, errant operation may occur. This may include the LCD screen on the control going blank or tests that will not run correctly. Static discharges will not permanently damage panel and normal operation can be restored by turning the power off and restarting the panel. For best operation, always plug in headphones before starting the panel and avoid building up static charge before using MOΨART.

Rear Panel Description



The rear panel provides all of the external connections for the MOΨART. The following is the connector description for the panel, starting from the left side of the panel (when facing the back).

USB connector

Used to connect the panel to the computer for software control. Plugging in the USB connector disables the Psymcon control module.

Psymcon connector

Used to connect the optional manual control module (Psymcon) to the MOΨART. The 25 pin connecting cable is included with the system.

DC Power Inlet

The 10V-power supply plugs into this connector.

Power Switch

Turns the panel OFF and ON.

Power Indicator

Illuminates when power is applied.

External Initiate (RCA style connector)

A switch closure on this input starts a test. This input can be used to remotely initiate tests or allow a second piece of equipment to control the initiate function.

Event Out 2 (3.5mm phono style connector)

Event marker output for schedule 2. The output is normally at a 5V level. The event mark pulls the output to 0V for 20, 40, or 60 milliseconds depending on the event type:

Stimulus events:	20 ms
Response events:	40 ms
End of Schedule:	60 ms
Other events:	20 ms

When used in stand alone operation, schedule 2 is not implemented and this event marker is not used. When used with the computer software, a mark can be assigned to any event in the schedule 2 experiment.

Event Out 1 (3.5mm phono style connector)

Event marker output for schedule 1. The output is normally at a 5V level. The event mark pulls the output to 0V for 20, 40, or 60 milliseconds depending on the event type:

Stimulus events:	20 ms
Response events:	40 ms
End of Schedule:	60 ms
Other events:	20 ms

When used in stand alone operation, the cue, stimulus, response (correct, errors, and taps) and the End of Schedule automatically cause event marks. When used with the computer software, a event mark can be assigned to any event in the schedule 1 experiment.

Trigger Out 2 (RCA style connector)

Trigger output for schedule 2. The trigger is used to send timing signals to other equipment. The trigger line is normally at a 5V level. The trigger drives the output to 0V for 60 ms. In stand alone operation, schedule 2 is not implemented and this trigger output is not used. When used with the computer software, a trigger can be assigned to any event in the schedule 2 experiment.

Trigger Out 1 (RCA style connector)

Trigger output for schedule 1. The trigger is used to send timing signals to other equipment. The trigger line is normally at a 5V level. The trigger drives the output to 0V for 60 ms. When the panel is used in stand alone operation, the end of schedule automatically causes a trigger. This end of schedule trigger is fixed. It cannot be turned off and no other triggers can be implemented. When used with the computer software, a trigger can be assigned to any event in the schedule 1 experiment.

Auxiliary 5 through Auxiliary 1 (8 pin mini-DIN style connector)

Connectors for Auxiliary keys or lights. These ports allow peripheral devices to be connected to the MOΨART panel. When used with the Psymcon control module, auxiliary ports are limited or unavailable for certain test types, as documented in the test type descriptions. Computer operation allows the use of all auxiliary ports. Auxiliary devices may include, but are not limited to:

- touch keys
- stimulus lights
- remote response buttons
- switch mats
- foot switches
- photobeam switches

* Custom devices can be made to interface to the auxiliary ports.

Headphone Jack (3.5mm stereo jack)

Connector for headphones. The headphones can be used to listen to the tone or the external audio input signal. Plugging in the headphones automatically disables the internal speaker.

Audio In (3.5mm stereo jack)

Allows an external audio signal to be input into the panel. The audio signal overrides the tone settings for an experiment. Any cue or stimulus setting that uses high or low tone will activate the external audio instead.

Volume control

Controls the volume of the tone. The volume adjust controls the tone whether it is routed to the headphones or to the internal speaker. The volume has no control of the external audio signal on the "Audio In" jack. This volume must be controlled by the external audio source.

Notes

Write user notes here for your convenience.

Terms and Conditions

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- Part Number
- Description
- Your purchase order number or method of pre-payment
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- Shipping address for this order
- Billing address for the invoice we'll mail when this order is shipped
- Signature and typed name of person authorized to order these products
- Your telephone number
- Your email address
- Your FAX number

Domestic Terms

There is a \$50 minimum order. Open accounts can be extended to most recognized businesses. Net amount due 30 days from the date of shipment unless otherwise specified by us. Enclose payment with the order; charge with VISA, MasterCard, American Express, or pay COD. We must have a hard copy of your purchase order by mail, E-mail or fax. Students, individuals and private companies may call for a credit application.

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If ordering instrumentation for use outside the USA, please specify the country of ultimate destination, as well as the power requirements (110V/60Hz or 220V/50Hz). Some model numbers for 220V/50Hz will have a "C" suffix.

Quotations

Quotations are supplied upon request. Written quotations will include the price of goods, cost of shipping and handling, if requested, and estimated delivery time frame. Quotations are good for 30 days, unless otherwise noted. Following that time, prices are subject to change and will be re-quoted at your request.

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Orders for custom products, custom assemblies or instruments built to customer specifications will be subject to a cancellation penalty of 100%. Payment for up to 100% of the invoice value of custom products may be required in advance. Cancellation for a standard Lafayette Instrument manufactured product once the product has been shipped will normally be assessed a charge of 25% of the invoice value, plus shipping charges. Resell items, like custom products, will be subject to a cancellation penalty of 100%.

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Instrumentation may not be returned without first receiving a Return Goods Authorization Number (RGA). When returning instrumentation for service,

please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to:

Lafayette Instrument Company
3700 Sagamore Parkway North
Lafayette, IN 47904, USA.

Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence for non-warranty repairs.

Damaged Goods

Damaged instrumentation should not be returned to Lafayette Instrument prior to a thorough inspection. If a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. If damage is not detected at the time of delivery, contact the carrier/shipper and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for repair or replacement of the damaged merchandise.

Limited Warranty

Lafayette Instrument Company warrants equipment manufactured by the company to be free of defects in material and workmanship for a period of one year from the date of shipment, except as provided hereinafter. The original manufacturer's warranty will be honored by Lafayette Instrument for items not manufactured by Lafayette Instrument Company, i.e. resell items. This assumes normal usage under commonly accepted operating parameters and excludes consumable products.

Warranty period for repairs or used instrumentation purchased from Lafayette Instrument is 90 days. Lafayette Instrument Company agrees either to repair or replace, at its sole option and free of part charges to the customer, instrumentation which, under proper and normal conditions of use, proves to be defective within the warranty period. Warranty for any parts of such repaired or replaced instrumentation shall be covered under the same limited warranty and shall have a warranty period of 90 days from the date of shipment or the remainder of the original warranty period whichever is greater. This warranty and remedy are given expressly and in lieu of all other warranties, expressed or implied, of merchantability or fitness for a particular purpose and constitutes the only warranty made by Lafayette Instrument Company.

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2. Shipping charges under warranty are covered only in one direction. The customer is responsible for shipping charges to the factory if return of the part is required.
3. This warranty does not cover damage to components due to improper installation by the customer.
4. Consumable and/or expendable items, including but not limited to electrodes, lights, batteries, fuses, O-rings, gaskets, and tubing, are excluded from warranty.
7. Failure by the customer to perform normal and reasonable maintenance on instruments will void warranty claims.
8. If the original invoice for the instrument is issued to a company that is not the company of the end user, and not an authorized Lafayette Instrument Company distributor, then all requests for warranty must be processed through the company that sold the product to the end user, and not directly to Lafayette Instrument Company.

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