

The Ockam 007 Matryx is a graphical indicator capable of displaying up to 18 user-defined pages, each containing from 1 to 4 instrument readings or a combination of graphical and numeric data for certain instrument functions. It features 128 by 160 pixel high-contrast graphics, adjustable lighting level, and remote control by push-button or the Ockam Bus, or both in addition to 4 front-mounted controls. The 007 may be mounted vertically (Portrait, as shown to the left, the default) or horizontally (Landscape) as desired. All display options are available in both orientations.

SPECIFICATIONS

- Bezel: 8" x 6" x 1/4" above mounting surface.
- Cutout: 7-1/4" x 5-1/4" with 3/4" corner radii.
- Clearance: 2-1/8" behind mounting surface, except 3-1/8" for connector.
- Mounting: #6 Screws on 7-1/4" x 5-1/4" Centers.
- Weight: 28 oz.
- Orientation: Portrait (tall; default) or Landscape (wide)
- Accessories: Mounting screws with O-rings & bezel gasket.
- Power: 160ma (lights off); 200ma (lights on)
- Fuse: 500ma Pico fuse (internal)
- Mating Connector: BNC Female (UG-89/U)
- Compatibility: Any rev of system software, except remote control via Ockam Bus requires CPU software A14.3 or later.

OPERATION

Orientation & Polarity

The Matryx display can be mounted and used in either Landscape mode (wide) or Portrait mode (tall). To switch between Portrait and Landscape, press the Setup button (▲), then >> twice to select the Display Setup page. Press **Next** to select Change Orientation, then **Sel.**

Similarly, the display will operate black-on-white (default) or white-on-black. Repeat the procedure above to the Display Setup page, then select Invert Display and **Sel.**

NOTE:
In Landscape mode (wide), the display polarizer is horizontal and therefore incompatible with polarized sunglasses.

Display pages

The Ockam Matryx displays one of up to 18 pages of information. Each page consists of from one to four numeric items (e.g. Boatspeed, True Wind Speed, etc.) along with its description, or one of 6 stripcharts (plots of instrument functions versus time) with its associated numeric and average values.

Pages can be added (up to 18), deleted (minimum of 1) and modified as required using the front buttons. The current page is selected using the front or remote buttons (if attached), or via commands from an onboard computer.

Instrument items available for display consist of about 79 items (see item list below). Availability of these items depends on the configuration of your instrument system (see Section 4).

Controls

The Ockam Matryx has four front-mounted control buttons and rear terminals for connecting two remote momentary push-buttons. These provide the means for manually controlling what page the indicator displays.

➤ ➡ These two buttons (and the remote buttons, if connected) step forward and backward through the defined pages.

✳ This button controls the display's light level in 4 steps. In addition, the overall brightness of Matryx and Magnum displays in the system may be set using the Instrument Setup/Set system Options/Sys light level function (see below).

▲ Display Setup

This button brings up the setup pages, used to modify the pages list for the display. In addition, instrument control items can be set from here. When in setup, the 4 buttons are redefined as needed for the particular page, and their function labels become visible.

Page Setup
Modify current page
Add new page
Delete current page

This is the first setup page, and allows you to add, delete or modify the display page list. If you want to do one of these, use the **Next** button to highlight the desired action, then press **Sel**.

Add and **Modify** bring up another page (see **Adding or Modifying Pages** below) where you will be asked about which instrument functions to include on the new or current page. **Delete** simply removes the current page and exits setup.

To leave setup, press **Abort**. To move on to the instrument setup page, press **>>**.

Instrument Setup
Stopwatch & Resets
Set calibrations
Set system averages
Set system options

This setup page allows you to:

1. Control the instrument stopwatch, log and delta wind displays;
2. Adjust the instrument calibrations;
3. Change the instrument averages;
4. Set certain instrument options.

If you want to do one of these, use the **Next** button to highlight the desired action, then press **Sel**.

To leave setup, press **Abort**. To move on to the display setup page, press **>>**.

Display Setup
Set display address
Invert display
Change orientation
Reset display

This setup page allows you to:

1. Set the display address (computer remote control: see below);
2. Switch between black-on-white and white-on-black display;
3. Change display orientation between landscape and portrait;
4. Reset the display to factory settings.

If you want to do one of these, use the **Next** button to highlight the desired action, then press **Sel.** To leave setup, press **Abort.** To return to page setup, press **>>**.

Adding or Modifying Pages

Page 1 item 1/2
User 9
Vmc
Vmg
Wind Dir.
Wind< App
Wind< True
Windspd App
WindspdTrue

From Page Setup/Add Page or Page Setup/Modify Page, you get a list of available functions to add or change. The title shows the Page and item numbers, and, for Modify, the selection will be placed on the present item. Press **>>** to move down 1 screen or **Next** to move down 1 item until you have reached the desired item, then press **Sel.** The screen repeats until all items have been selected (up to 4/4). When modifying, pressing **Abort** before all items are selected leaves the remaining items at their existing values. Pressing **Abort** while Adding a page prevents its creation.

This is the complete list of items available

ApWnd Axial (Tag +)	Course Gnd (Tag U)	Longitude (Tag X)	User 1 (Tag 1)
AirTemp (Tag G)	Curr Set (Tag F)	Mag Var. (Tag o)	User 2 (Tag 2)
Aux 1 (Tag M)	Curr Drift (Tag F')	Mast Angle (Tag E)	User 3 (Tag 3)
Aux 2 (Tag m)	Delta Wdr (Tag V)	NMEA stuff (Tag \$)	User 4 (Tag 4)
Aux 3 (Tag N)	Delta Wsp (Tag v)	Opp track (Tag O)	User 5 (Tag 5)
Aux 4 (Tag n)	Depth Surf (Tag W)	Polar 037 (Tag P)	User 6 (Tag 6)
Back Brg (Tag r)	DepthKeel (Tag w)	Pitch (Tag ^)	User 7 (Tag 7)
Back Range (Tag r')	Enemy Brg (Tag >)	Rudder < (Tag Y)	User 8 (Tag 8)
BaroTrend (Tag g)	Enemy Rng (Tag >')	Sea State (Tag ~)	User 9 (Tag 9)
Barometr (Tag g')	Errors (Tag z)	SeaTemp (Tag G')	Vmc (Tag f)
Boatspeed (Tag B)	Heading (Tag C)	Setup Cnds (Tag @)	Vmg (Tag b)
CAL Vs Mstr (Tag I)	Heel (Tag H)	Speed Gnd (Tag U')	Windspd App (Tag A)
CALVsOffst (Tag I)	Latitude (Tag X')	Stopwatch (Tag t)	WindspdTrue (Tag a)
CAL W<Offst (Tag J)	LayIn Stbd (Tag Q)	Synopsis (Tag :)	Wind Dir. (Tag c)
CAL Wndspd (Tag j)	LayIn Port (Tag q)	Target 037 (Tag p)	Wind< App (Tag D)
CAL Leeway (Tag K)	Leeway (Tag h)	Ticker (Tag ,)	Wind< True (Tag d)
CAL Upwash (Tag k)	Lights (Tag *)	Time (Tag T)	Wpt Brg (Tag R)
CAL UpSlope (Tag k')	Log Perm (Tag L)	Trimtab < (Tag y)	Wpt Range (Tag R')
Config (Tag Z)	Log Trip (Tag I)	User 0 (Tag 0)	

It is possible that instrument functions are being generated which aren't in this list, for instance by a custom interface. These custom functions will be identified by the word "Tag " and the tag letter. If you know you have an output and it isn't shown, scroll down to the T's and select the appropriate "Tag" entry. If you have an onboard computer attached to the Ockam System, you can rename these functions to a more meaningful description (see **Identifying "foreign" tags** below).

Stopwatch & Resets

Resets
Sw Start/Stop
Sw Reset/Sync
Trip Log
Delta Mt
Delta Vt

⏏ then **>>** to Instrument Setup, then **Sel** Stopwatch & Resets. This is a "sticky" page in that it stays up until you press **Abort**. Press **Next** to select the desired function, then press **Sel.** to execute the function.

The stopwatch functions are described more fully in Section 2.

EEPROM

Page and display configuration is stored in an EEPROM, which has a limited number of write cycles. In order to reduce wear & tear, changes in page and display configuration are written to the EEPROM 1 minute after the last change to these items. After you change the display, if the changes are important, wait at least 1 minute before powering down the display.

If the Flag Message **“EEPROM Failed”** occurs consistently on power-up, the display should be returned for service.

Identifying “foreign” items

Foreign items are tags generated by Custom Interfaces or PC software which aren't in the default tag list of the display. They show up on the display item list as “Tag #”. If you have a computer connected to the Ockam System, you can assign meaningful descriptions to these functions (or override the default descriptions) by sending a command of the form “@Vn,descr,symbol” where *n* is the decimal tag value, *descr* is the long name and *symbol* is the short name for the function. Up to 21 function descriptions can be saved in the EEPROM

Example: @V77,Forestay,Fst Re-defines Aux 1 (tag ‘M’) as the forestay loadcell

To enter this, you need to cast it as a user output, i.e. “U@=V77,Forestay,Fst”. This string can be entered via OckamSoft or any terminal emulator.

Remote control via the Ockam Bus

Matryx displays with non-zero display numbers (see Display Setup/Set Display Address; also shown on the splash screen during power up) can also be controlled via an 050 RS-232 interface. With it you can specify, for 1 or all indicators, the page, or specify any tag regardless of the page settings. You can also place a descriptor line above the displayed page and adjust the lighting level of individual Matri.

The indicator looks on the Ockam Bus for frames of the form “@Jnvd...”, that is, data on tag “@” specifying the indicator number (“Jn”) and followed by action items. The valid range for *n* is 1 through 15 (the range of S3), or “*” which specifies all indicators. The action items are:

Mn Same as *Sn*, see below.

Sn Switch indicator(s) to selection *n* (valid values of *n* are 1 through current number of pages, or “+” or “-”). The display switches to the *n* th page. Sending “S+” increments the page, “S-” decrements the page. U@=J1S4

Ttags Force the indicator to display tag list *tags* (alphanumeric characters, not hex). If a page exists with the specified tags, that page is selected. Otherwise, a page is created with the specified tags. Tag items can be modified with apostrophe to indicate the “prime” tag (e.g. R' for Waypoint Brg). Because the Matryx can have multiple tags per page and subsequent command items could be interpreted as tags, *Ttags* must be the last action item in any given command. U@=J1TBbR'

Dtext Pop up the flag line with *text*. NOTE: the *text* is terminated by the frame null, so D must be the last action item in any given command. The flag line will remain up 10 seconds unless refreshed. Maximum displayable length is 18 characters. U@=J1DTack!

Ln Set the indicator to light level *n* (valid values of *n* are 0-3). Normal indicator lighting level is obtained from the system lights frame, which is set by the Lights card or Option 9 (see section 4). Sending *Ln* to an indicator sets that (or those) indicator to the specified value. Control returns to the system level on power-up. U@=J1L2

Action items can be combined: for instance, you could send U@=J1M8S2L9DWATCH IT to select Opposite Tack with a descriptor of "WATCH IT" and lights full on. Note that the D item must be last. You can do the same with U@=J1TOL9DWATCH IT.

INSTALLATION

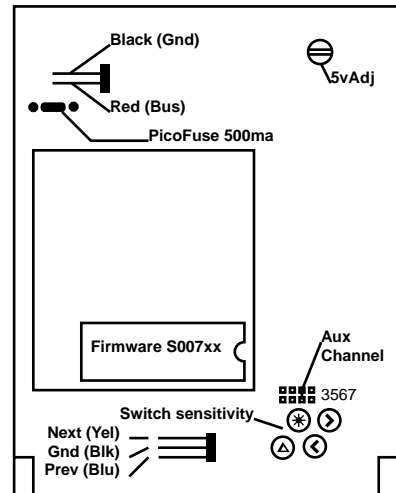
1. Select a proper location for the indicator. There must be at least 2-1/8" clearance behind the mounting surface for the box, and 3-1/8" behind the mounting surface on the top (portrait mount) or left side (landscape mount) for the connector. Be sure that the surface is even so as not to torque the box. Mark the mounting holes on 7-1/4" by 5-1/4" centers. Draw lines between these marks with 3/4" radii at the corners of the rectangle. Cut out the hole for the indicator body, kerf outside the lines, and drill 4 #35 pilot holes for the mounting screws.
 2. Pull the bus cable(s) through the hole, connect a 115 FMF tee, and attach the tee to the bus. Attach button wires to the button terminals if desired. Wire tie the cables to the strain-relief, and mount the indicator and mounting pad in the hole with the 4 O-rings under the screws.
 3. Power the system and set the correct orientation (see **Orientation & Polarity** above).
 4. If computer remote control is going to be used, set the display number (see above) so that all Matryx and Magnum displays have unique numbers. If you set the display number to 0, the display cannot be accessed by commands on the Ockam Bus.
 5. Changes in page and display configuration are written to the EEPROM 1 minute after the last change to these items. After you set up the display, wait at least 1 minute before powering down the system.

TROUBLESHOOTING

If the display fails to show anything, check other displays to be sure that the system is working. Try re-connecting the indicator to the CPU to check that the coax bus is OK. If the indicator seems to be at fault, the internal fuse should be replaced.

If the display fails to respond to the buttons or Ockam Bus commands, check that the display number is not set to zero, and that CPU software revision is A14.3 or later.

Pressing all 4 buttons at once "reboots" the display.



MODEL 007 INDICATOR REVISION HISTORY

REV	DATE	CHANGE
A1	9/27/99	First release. Software 1.01.