

DEX⁷ Technical Manual



DEX⁷

Compact Display. Total Insight.



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Warnings

⚠ Warnings

Read Carefully Before Installation or Service

Disconnect all power sources before installing, wiring, or servicing the DEX⁷. This includes both DC battery power and any AC shore power connections.

Verify that all circuits are de-energized using a multimeter before handling wiring or connectors.

Improper wiring may result in electrical shock, fire, or equipment damage. Only qualified personnel should perform installation or maintenance.

Do not exceed rated input ranges. Exceeding the input voltage, current, or frequency ratings can result in permanent damage to the unit.

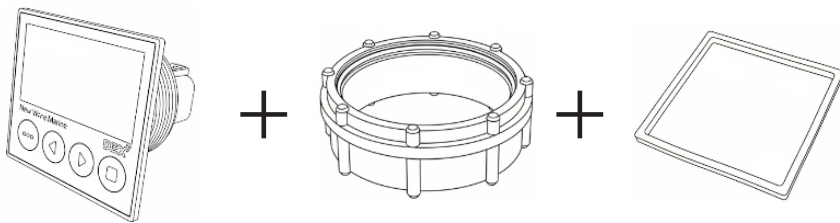
Alarm output (pin 12) is limited to 1A. Connecting devices that exceed this limit may damage the DEX⁷.

Use proper overcurrent protection on all circuits connected to the DEX⁷ in accordance with ABYC E-11 standards and local codes.

Ensure all connectors are properly mated and wedgelocks installed. Improper connector mating may result in intermittent operation or damage.

Parts List

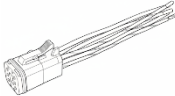
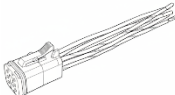
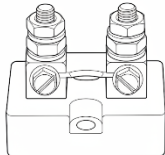
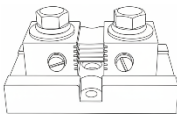
Bare Unit Includes: Unit, Nut, Gasket Seal



Retail Box:



Accessories:

SKU	Description	Image
101135	DEX ⁷ , Pigtail A	
101136	DEX ⁷ , Pigtail B	
101137	150A DC Shunt	
101138	500A DC Shunt	
101139	AC Current Transformer	

Kits:

SKU	Description	Unit	Retail Box	A & B Pigtails	DC Shunt (150A)	DC Shunt (500A)	AC CT
DEX7000	OEM / Bulk	x					
DEX7001	Bare unit	x	x				
DEX7002	Base, Volts	x	x	x			
DEX7003	Base, Volts, 150A DC Current	x	x	x	x		
DEX7004	Base, Volts, 500A DC Current	x	x	x		x	
DEX7005	Base, Volts, AC Current	x	x	x			x
DEX7006	Base, Volts, 150A DC / AC Current	x	x	x	x		x
DEX7007	Base, Volts, 500A DC / AC Current	x	x	x		x	x

Product Description

The DEX⁷ is a marine-grade multimeter designed for harsh environments, capable of monitoring up to seven separate electrical inputs. It supports a combination of DC and AC voltage and current monitoring, as well as configurable multifunction inputs for specialized applications such as bilge pump tracking and hourmeter functionality. Its rugged design and flexible input configuration make it suitable for both OEM and retrofit installations across a wide range of vessel types.

Pinouts and ratings

		Pin	Input	Function	Color	Range
Connector A		1	5	DC Shunt -	BLU/BLK	100mV or 50mV
		2		DC Shunt +	BLU/ORG	
		3	3	Flex Input 2	PUR	70Vdc max
		4	2	Flex Input 1	TAN	70Vdc max
		5	-	DC Negative	YEL	
		6	1	Battery 1 +	RED	10-30Vdc
Connector B		7	-	Alarm Output	TAN/ORG	9-30Vdc, 1A max
		8	7	AC Current 2	BRN/BLU	
		9		AC Current 1	BRN/GRN	
		10	6	AC Volt N	WHT	300Vac Max
		11		AC Volt L	BLK	
		12	4	Flex Input 3	ORG	70Vdc max

Flex inputs may be DC volts, bilge monitor or hourmeter

Mating Connectors

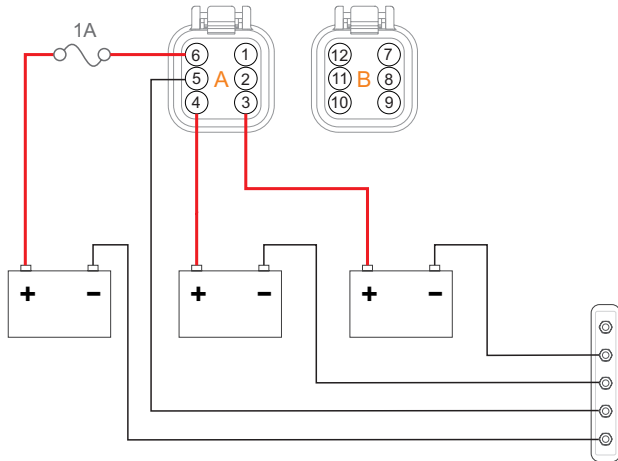
The DEX⁷ uses two keyed connectors to prevent accidental cross-connection. Connector A and Connector B are physically different and must be paired with the correct mating parts. The following connector models are compatible:

	Deutsch	Amphenol
Connector A	DT06-6S	AT06-6S
Connector B	DT06-6S	AT06-6S
Connector A Wedgelock	W6S-P012	AW6S
Connector B Wedgelock	W6S2-P012	AW6S2-BLU

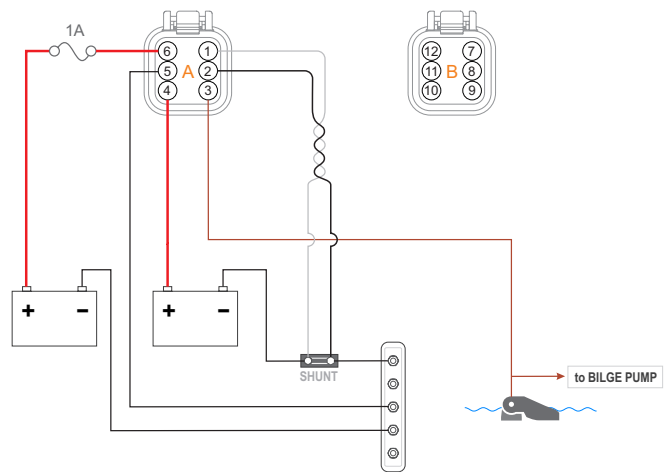
Each connector requires proper insertion of the corresponding wedgelock to ensure secure contact and environmental sealing. Improper mating may result in intermittent signals, water ingress, or damage to the DEX⁷.

Typical Wiring Diagrams

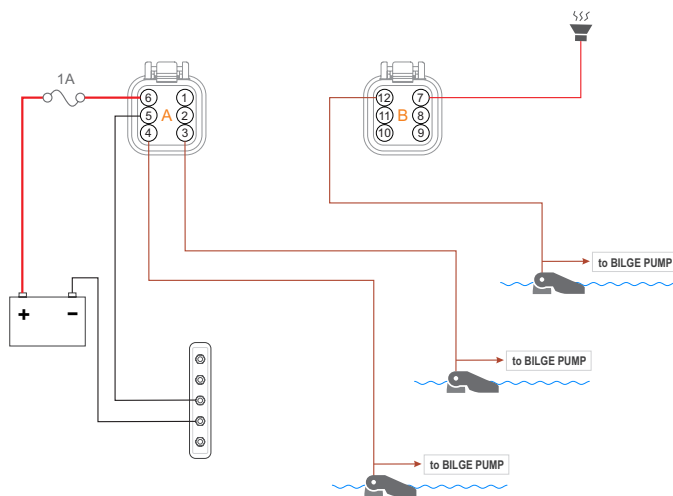
Three Batteries



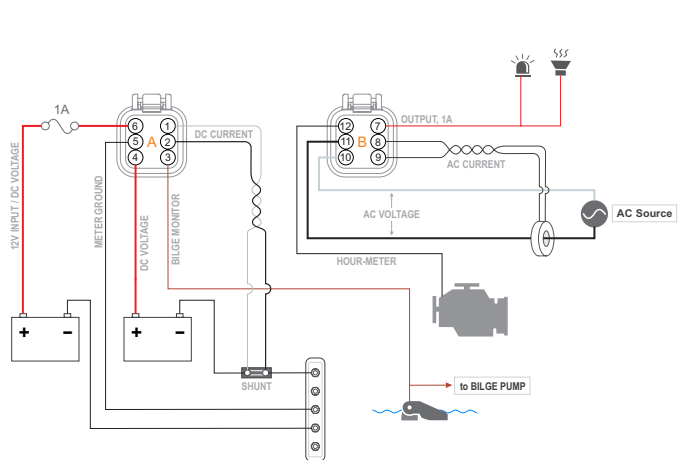
2 Batteries | 1 DC Current | 1 Bilge Monitor



1 Battery | 3 Bilge Pumps | 1 Output Buzzer



2 Batteries | 1 Bilge Pump | 1 Hourmeter
1 DC Current | 1 AC Voltage | 1 AC Current
| 1 Output LED & Buzzer



DC Voltage 1, Required (Input 1)

DC Voltage 1 (Input 1) is the only required input on the DEX⁷. It is located on pin 6 (Connector A) and must be paired with a corresponding DC negative connection on pin 5.

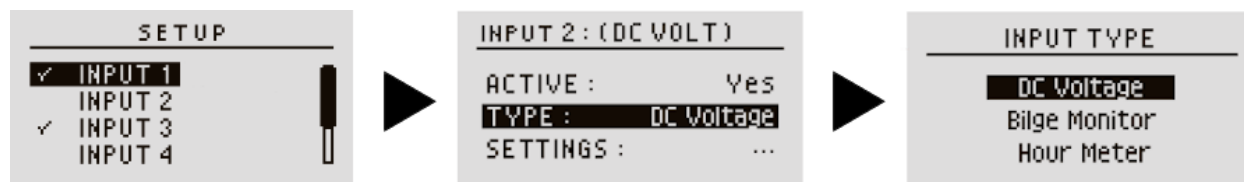
Input 1 is a dedicated DC battery voltage monitor and serves as the primary power source for the unit. Up to three additional DC voltage inputs can be configured using the available flex inputs, for a total of four DC voltage monitors.

This input accepts a nominal voltage range of 10–30VDC. It powers the device and is automatically enabled on startup. No additional configuration is required for this input to function.

Flex Inputs (Inputs 2, 3 and 4)

Inputs 2, 3, and 4 are “flex inputs” located on pins 4, 3, and 12, respectively. Each can be configured via the settings menu as one of the following:

- DC Voltage Monitor
- Bilge Pump Monitor
- Hourmeter



DC Voltage

When set to DC Voltage mode, a flex input measures voltage from 0 to 70VDC. High and low voltage alarms can be configured individually for each input in this mode.

Bilge Monitor

In Bilge Monitor mode, the DEX⁷ detects the run status of a bilge pump by sensing voltage present on the circuit. It records:

Run time percentage over a configurable time period (up to 99 hours).

Cycle count (activation events) over the same period.

Current active running time (while running)

⚠ Data is stored in volatile memory. If power is removed from the DEX⁷, the cycle count will reset. No historical data is retained.

The bilge monitor accepts any DC signal from 5VDC to 70VDC and is typically connected in parallel with the bilge pump, downstream of a float switch. Alarm conditions based on runtime, cycle count, or run duration can be enabled via the settings menu. Set run duration alarm to a low value to effectively make it a configurable and mute capable high water alarm.

Hourmeter

When configured as an Hourmeter, the input tracks accumulated run time in tenths of an hour. It accepts any DC signal from 5VDC to 70VDC and may be connected to systems such as ignition circuits, stabilizers, pumps, or anything requiring routine maintenance.

The hourmeter supports user-defined start time adjustment for tracking existing equipment or maintenance schedules. Data is stored in non-volatile memory and is retained through power cycles unless a new start time is entered or the unit is factory reset. If a flex input type is changed from an hourmeter to another type and back again the previous hour readings are not retained.

Alarms based on total run hours are configurable through the input's settings menu.

DC Current Input (Input 5)

Input 5 is a dedicated DC current (amperage) input located on pins 1 and 2 on Connector A. It is designed for use with a DC shunt sensor, which must be installed in the negative conductor of the circuit you want to measure - typically on the main negative bus or house battery return.

The DEX⁷ measures voltage across the shunt to calculate current flow. Readings are sampled every second and displayed as new single screen views:

Instantaneous current: Real-time amperage draw updated every second.

Average current: A rolling 30 second average of last 30 readings.

Graph: A graphical display of current flow over the past 1 hour.

Note: Some multi-input screens display only the instantaneous value. To view the average reading, navigate to the dedicated single screen view using the left/right navigation buttons.

Because shunt sensors operate with low signal voltages, it is strongly recommended to twist the wire pair between the shunt and the DEX⁷ to minimize interference.

Configuring to match your shunt

Input 5 must be configured to match the specifications of the shunt installed in your system. The DEX⁷ provides a list of predefined shunt ratios in the format of **Max Amps : Sensor Voltage** (e.g., 500A:50mV, 150A:100mV). This pairing ensures accurate current measurement based on the expected millivolt output at full-scale current.

If your DEX⁷ was supplied with a shunt, its rating will be printed on the shunt body. Select the corresponding option from the menu.

TO CONFIGURE:

Navigate to **Menu > Input 4 > Settings > Shunt Ratio**, and choose the correct ratio from the available list.

High and low current alarms can also be enabled in this menu.

AC Voltage (Input 6)

Input 6 is a dedicated AC voltage input located on pins 10 and 11 of Connector B. It measures single or split phase AC line voltage up to 300VAC and does not require a sensor or transformer.

The DEX⁷ reads the voltage directly from the connected AC line (pin 11) and neutral (pin 10). For split phase, apply the second phase to pin 10).

Frequency readings are taken from the AC voltage supply input, no additional input is required.

High and low voltage alarms can be configured via the settings menu.

 Accurate AC Voltage readings rely on a properly grounded AC system, where the AC system ground (green) is connected to the DC main negative in accordance with ABYC E-11.5.3. Without an AC ground to DC negative connection, voltage and frequency readings may be erratic.

AC Ammeter (Input 7)

Input 7 is a dedicated AC current input located on pins 8 and 9 of Connector B. It is designed for use with a **passive toroidal current transformer (CT)** that outputs a **scaled-down current** (not voltage).

Current draw is sampled **once per second** and displayed as:

Instantaneous current: Real-time amperage draw updated every second.

Average current: A rolling 30 second average of last 30 readings.

Graph: A graphical display of current flow over the past 1 hour.

Note: On multi-input screens, only the instantaneous value may be shown. To view average current, navigate to the dedicated Input 7 screen using the left/right navigation buttons.

High and low current alarms can be configured through the settings menu.

Configuring to match your CT

To ensure accurate readings, Input 7 must be configured to match the CT's characteristics. The DEX⁷ provides a list of predefined CT ratio options, expressed as **Max Current : Turns Ratio** (e.g., 1000:1, 3000:1, etc).

If you purchased the DEX⁷ with an included CT, select **1000:1** from the list. This CT is rated for up to 75A.

 Do **not** use third party CTs with internal burden resistors or fixed-voltage outputs (e.g., 0.333V sensors). These are not compatible with the DEX⁷ and may result in incorrect readings or device damage.

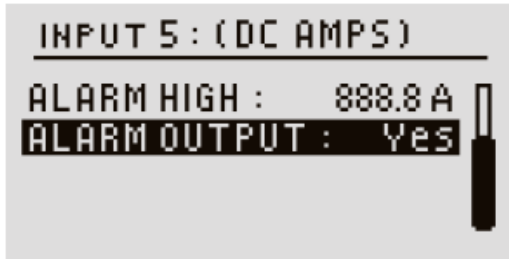
TO CONFIGURE:

Navigate to **Menu > Input 7 > Settings > CT Ratio**, and select the appropriate ratio.

Alarm thresholds for high and low current can also be set from this menu.

Alarm Output

The DEX⁷ provides an alarm output on **pin 12**, capable of sourcing up to **1A at system voltage (9–30VDC)**. The output voltage on pin 12 matches the voltage applied to **pin 6 (Input 1)**.



Any connected device must be protected with a **1A fuse** to prevent exceeding the DEX⁷'s output limit. Exceeding this limit may result in permanent damage.

Alarm logic is input-specific. Each input on the DEX⁷ includes an “**Alarm Output**” setting in its configuration menu. To enable pin 12 to respond to a given input, set that input's **Alarm Output** setting to **YES**.

When an input enters an alarm condition (e.g., voltage too high, bilge runtime exceeded), and its Alarm Output is set to YES, pin 12 will be driven high.

The alarm output is typically used to trigger:

- An indicator light
- A buzzer
- A relay for higher-current devices

The DEX⁷ does **not** include a built-in audible alarm.

Alarm Silence and Visual Indicators

From the main menu, the **Alarm Silence** setting can be used to suppress the pin 12 output. When **Alarm Silence = YES**, the output will remain off even if one or more inputs are in an alarm state. This setting must be manually reset to **NO** to restore normal alarm output behavior.



When Alarm Silence is active, visual indicators on the DEX⁷ display are also minimized. Full-screen flashing is suppressed, but a small corner icon will continue to indicate that an alarm condition exists.

Multiple inputs can independently trigger the pin 12 output. If more than one input is set to **Alarm Output: YES**, any of them can activate the output. Use the on-screen indicators to identify which input(s) are currently in alarm.

Initial System Setup

To power on the DEX⁷, apply DC power to **pin 6** (positive) and connect DC negative to **pin 5** in Connector A. These are the only required connections for basic operation.

Pin 6 functions as both the primary power input and **Input 1** (DC Voltage 1). This input is always active by default and will immediately appear on the display upon startup.

All other inputs default to **inactive**. To activate an input, first apply the corresponding signal (e.g., a voltage source or sensor), then navigate to the input's settings menu and enable it. When active:

- The input will appear on the DEX⁷'s **multi-input screen**, if more than one input is enabled.
- The input can be selected and viewed in full-screen mode using the **left/right navigation buttons**.

This two-step process—signal present and input enabled—ensures inactive inputs do not clutter the display.

Navigating Screens and Menus

The DEX⁷ features a streamlined navigation system for accessing input data, settings, and system features. Navigation is controlled via four buttons located on the face of the unit.

Buttons

The four buttons function as follows:



- **Menu / Back:** Press to enter the main menu or to return to the previous screen while navigating menu items.
- **Left / Up:** Scroll left through active input screens or upward through menu options.
- **Right / Down:** Scroll right through active input screens or downward through menu options.
- **Enter:** Confirm a selection within a menu or setting.

Screens

When powered on, the DEX⁷ defaults to the **multi-input screen** if more than one input is active. The system will automatically select the appropriate layout based on how many inputs are enabled.

Examples:

Two Active

Name	88.8 V
ThisNameyouC	888.8 A

Three Active

Name	88 CY
	88 %
theNameyouC	8888.8 hr
ThisNameyouC	888.8 A

Six Active

MMMM	MMMM	MMMM
88.8 V	88.8 V	88 CY
		88 %
MMMM	MMMM	MMMM
8888.8 hr	888.8 A	888 V

Using the **left and right navigation buttons**, users can scroll through individual full-screen views for each active input. These **single input screens** display larger text, full names, and—in some cases—additional data not shown on the multi-input view. For example, current inputs display both **instantaneous** and **average** values in single-screen mode, while only the instantaneous value is shown on the multi-input screen.

Example:

Single Input
Screen

Nameggg123	
88.8	V

Long and Short Names

Each input supports both a **long name** (up to 15 characters) and a **short name** (up to 4 characters), which can be set in the input’s configuration menu.

The DEX⁷ selects which name to display based on the current screen.

This dual-label system allows users to identify inputs clearly without sacrificing layout efficiency—for example, displaying “**Stbd Start Batt**” on a single screen and “**STBD**” on the multi-input screen.

Visual Alarms

When an input enters an alarm condition, the DEX⁷ will display a **visual indicator** on both the **multi-input** and **single input** screens. This occurs regardless of whether the input’s **Alarm Output** setting is enabled.

The visual alarm consists of a flashing alert zone on the affected input’s display area. This provides immediate visibility of the fault condition on-screen without requiring external hardware.

Alarm Silence Behavior

If **Alarm Silence** is enabled in the main menu, the visual alarm will be minimized. Full-screen flashing is suppressed, and instead a **small flashing icon** appears in the corner of the screen to indicate an alarm is present.



This allows silent operation while still notifying the user of active alarm conditions.

Visual alarms are **independent** of the pin 12 alarm output and will always display unless suppressed by Alarm Silence.

Voltage Drop Experiment

The DEX⁷ includes a built-in **voltage drop experiment** feature, available when **two or more DC voltage inputs** are active. This tool allows real-time analysis of voltage drop across conductors or system components under load.

Setup

To configure a voltage drop experiment, navigate to the **Main Menu > Vdrop Test**. From this menu, you can:

- Assign a **name** to the experiment
- Select source and load voltage inputs
- Enable or disable the experiment



Once configured and activated, the experiment will calculate and display:

- Source Voltage
- Load Voltage
- Voltage Drop (absolute value)
- Percent Drop (relative to source voltage)

ThistheNameyouC	
SOURCEnameHere	88.8 V
LINEnameHere	88.8 V
VDROP	88.8 V
VDROP %	88 %

Display Behavior

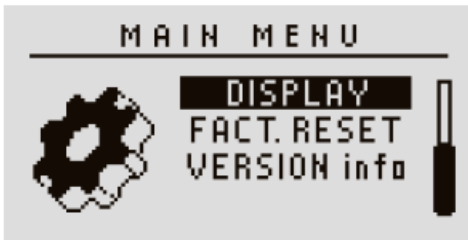
Active voltage drop experiments are **not** shown on the multi-input screen. Instead, they appear as a dedicated screen in the single-input scroll rotation. Use the **left/right navigation buttons** to view the experiment alongside other active inputs.

Up to **three voltage drop experiments** can run concurrently.

This feature is useful for diagnosing conductor voltage drop under dynamic load conditions.

Display Settings

The DEX⁷ offers several configurable display options to suit varying lighting conditions and user preferences. These can be accessed from the **Main Menu > Display Settings**.



Adjusting Brightness

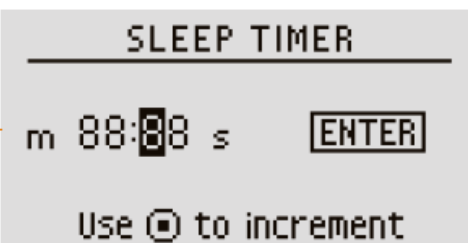
The **Brightness** setting adjusts the display backlight intensity. Use the left/right navigation buttons to raise or lower brightness as needed.

This setting takes effect immediately and remains persistent through power cycles.



Sleep Timer

The **Sleep Timer** allows the display to turn off completely after a defined period of inactivity (up to 1 hour). When the timer expires, the screen goes blank to conserve power and improve visibility at night.



To reactivate the screen, press any button.

Demo Mode

Demo Mode simulates live data on inputs 2 through 7. Input 1 must be powered for the unit to function, and its live data is used as the source reference.

Demo Mode is intended for training, trade shows, or demonstration purposes. It does not affect saved configuration data.

Factory Reset

The **Factory Reset** option restores the Dex7 to its original default state. This action will:

- Erase all input names and settings
- Clear accumulated data (e.g., hourmeter totals, bilge stats)
- Reset display preferences and alarms

 Use with caution—this action is irreversible and cannot be undone. All user-configured values will be lost.

TO INITIATE:

Navigate to **Main Menu > Factory Reset**, and confirm when prompted.

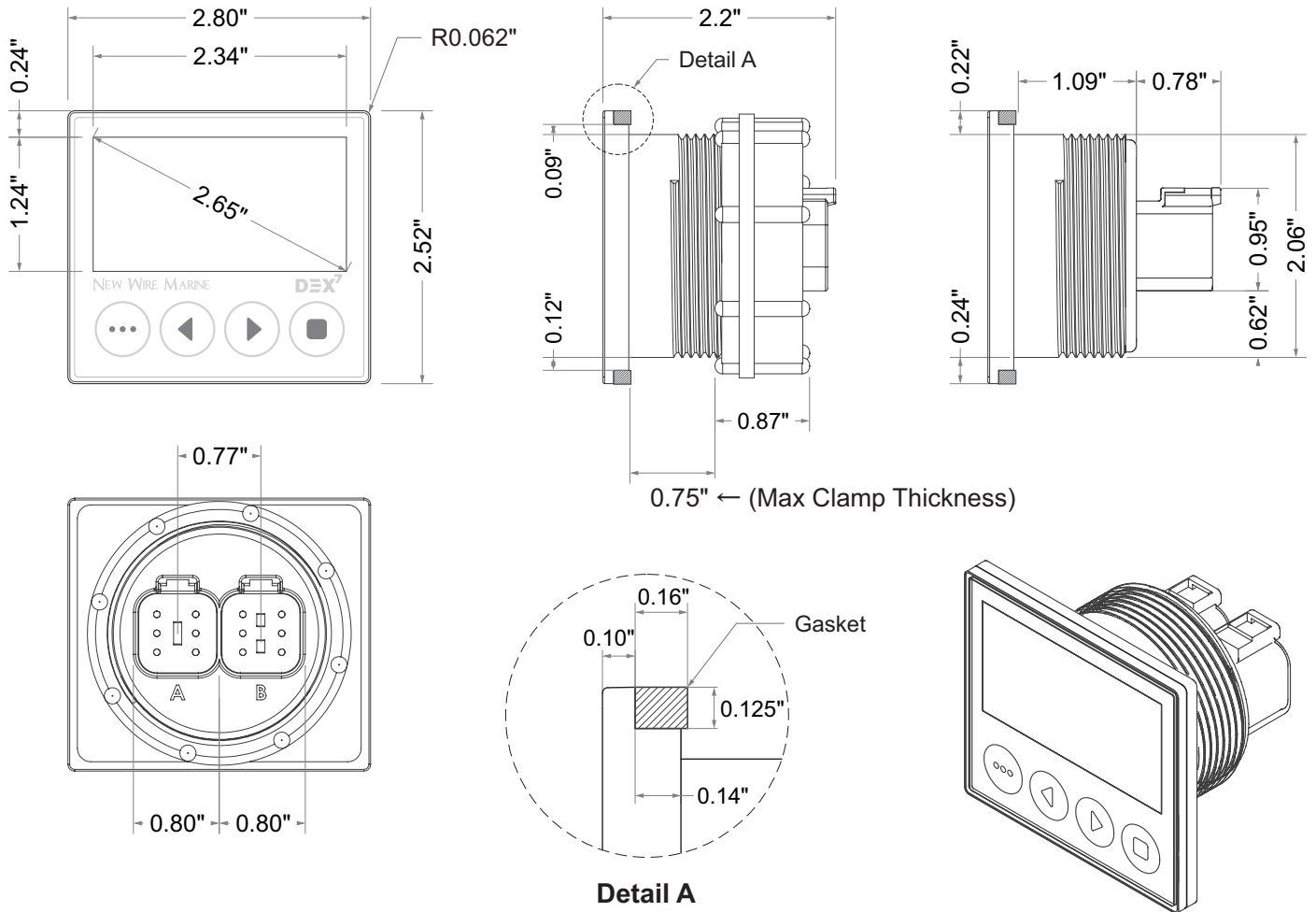
Version Info

The **Version Info** screen displays the current firmware version running on the Dex7. This is useful for troubleshooting, support inquiries, and verifying compatibility with documentation or accessories.

TO VIEW:

Navigate to **Main Menu > Version Info**.

Dimensional Drawing



Technical Publication Notice

The information contained in this manual is believed to be accurate and reliable at the time of publication. However, New Wire Marine assumes no responsibility for errors or omissions and reserves the right to make changes to the product or this documentation without notice.

It is the responsibility of the installer and end user to verify system compatibility, ensure safe installation, and comply with all applicable standards and regulations, including ABYC and local electrical codes.

If you identify an error in this manual or have suggestions for improvement, please contact our technical support team. Your feedback is appreciated and helps improve future revisions.