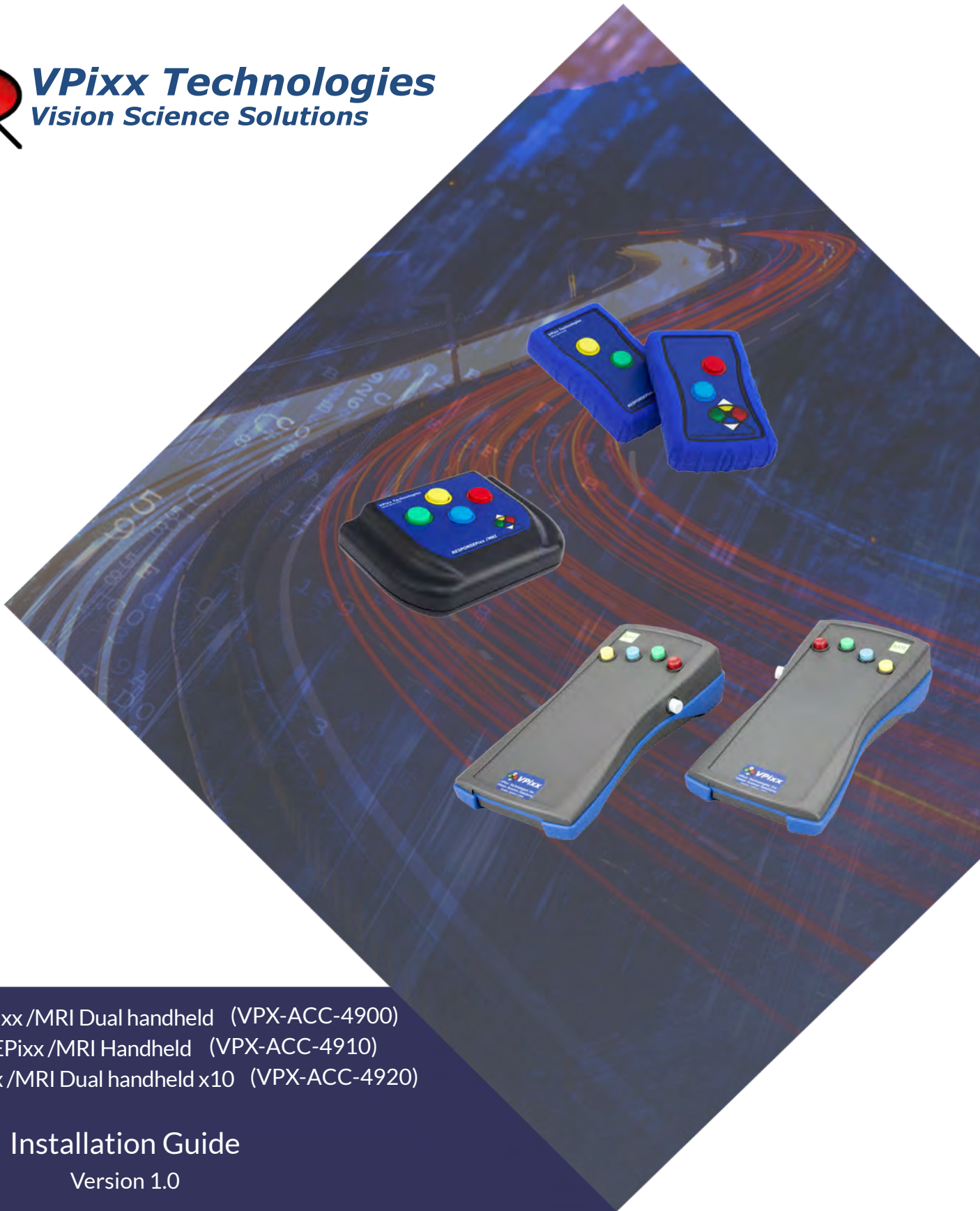




VPiXX Technologies
Vision Science Solutions



RESPONSEPiXX /MRI Dual handheld (VPX-ACC-4900)
RESPONSEPiXX /MRI Handheld (VPX-ACC-4910)
RESPONSEPiXX /MRI Dual handheld x10 (VPX-ACC-4920)

Installation Guide

Version 1.0

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1.0	2019/08/08	P.Kakos	v1.0 release
1.1	2019/08/16	P.Kakos	V1.1 update. Added x10 versions

Document Icons

The use of icons emphasizes helpful, caution or warning notes. Below is a list of the icons available.




Icon	Type	Description
	Helpful Hint	<i>Information to help out during assembly, installation or usage</i>
	Caution Notice	<i>Important Information to prevent misuse and/or damage to equipment</i>
	Warning	<i>Critical information to prevent damage to equipment and/or personnel</i>

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Overview

This manual provides safety, installation and maintenance information for VPixx Technologies Inc.'s RESPONSEPixx /MRI systems.

This manual applies to the following VPixx Technologies products:

- RESPONSEPixx /MRI Handheld (VPX-ACC-4910)
- RESPONSEPixx /MRI Dual handheld (VPX-ACC-4900)
- RESPONSEPixx /MRI Dual handheld x10 (VPX-ACC-4920)

Unless otherwise stated, use of the term *RESPONSEPixx* in this manual refers to the three products listed above.

For technical questions or product support information, do not hesitate to contact the VPixx support team by sending an E-mail at support@vpixx.com or by phone.






By creating your *MyVPixx* account on the VPixx Technologies website, you will have access to additional product documentation, demos, source code examples and the latest firmware and software drivers.



WARNINGS AND MARKINGS MUST BE OBSERVED!
Before installing and using your RESPONSEPixx /MRI, familiarize yourself with the MR room safety symbols that are found on each component of your RESPONSEPixx /MRI. These are explained on the following table

Table 1 MR room safety symbols

<i>Symbol</i>	<i>Name</i>	<i>Description</i>
	MR safe	Objects and components that are marked with the green MR safe icon present no danger for staff and equipment when operating in the MR room.
	Conditionally MR safe	The yellow Conditionally MR safe icon indicates objects and components that are only MR safe in a limited fashion. There are specified safety distances that limit how close the object or component in question may be from the magnet.
	MR unsafe	The red MR unsafe icon marks objects or components which are strictly prohibited from entering the MR room.

WARNING - SAFETY INFORMATION & PRECAUTIONS

Safety precautions

- Use only a power source and connection compatible with this product, as indicated on the label of the power adapter.
- Be sure that the total ampere rating of the products connected to the outlet does not exceed the maximum ampere rating of the electrical outlet, and the total ampere rating of the products connected to the power cord does not exceed the maximum ampere rating of the power cord. Look on the power label to determine the ampere rating (Amps or A) for each device.
- Install the RESPONSEPixx /MRI near a power outlet that you can easily reach. Disconnect it by grasping the plug firmly and pulling it from the outlet.

Product overview

There are three versions of our RESPONSEPixx /MRI line of reliable, ergonomic response boxes. The button boxes themselves are 100% plastic and magnetically inert, making them compatible with MRI and MEG installations. A fiber-optic bundle carries the button states through the waveguide separating the magnet room from the control room. Once inside the control room, the fiber-optic signals are then converted to TTL signals. Plugging the TTL signals into a VPixx system will give you microsecond-precise response times, with a reliability that exceeds USB-based response boxes. Custom configurations are available.

Features (response boxes and Control pad interface)

- Built of 100% plastic and fiber optic parts
- Magnetically and RF inert
- 25 m (82 ft) of fiber optic cable

When connected to any VPixx system

- Guaranteed microsecond-precise reaction time measurement
- Free TTL inputs are available for general purpose interfacing (eg: with GE or Siemens scanner trigger output)
- Perfect synchronization to video refresh.

Environmental specifications

- Operating temperature: 0°C to 70°C
- Relative humidity (non-condensing): 0 to 95%

Electrical specifications

- Power requirements: +12 VDC or +5 VDC (15 W max)

Mechanical specifications, Control box



- Dimensions: 11.70"W x 5.58"D x 2.10"H (29.72W x 14.17D x 5.33H cm)
- Enclosure: steel
- 19" rack-mount hardware (option)

Mechanical specifications, Control pad interface



- Dimensions: 9.18"W x 5.25"D x 1.675"H (23.31W x 13.33D x 4.25H cm)
- *Dimensions (x10 model) : 9.18"W x 5.25"D x 2.36"H (23.31W x 13.33D x 6H cm)*
- Enclosure: 100% plastic
- 20 m (65.62 ft) of fiber optic cable

Mechanical specifications, dual-handheld response box



- Dimensions: 2"W x 5.5"D x 0.83"H (5W x 14D x 2.1H cm)
- Enclosure: 100% plastic
- 5 m (16.4 ft) of fiber optic cable

Mechanical specifications, dual-handheld x10 response box



- Dimensions: 3.86"W x 8.24"D x 2.0"H (9.8W x 20.93D x 5.08H cm)
- Enclosure: 100% plastic
- 5 m (16.4 ft) of fiber optic cable

Mechanical specifications, handheld response box



- Dimensions: 5.5"W x 4"D x 1.38"H (14W x 10.2D x 3.5H cm)
- Enclosure: 100% plastic
- 5 m (16.4 ft) of fiber optic cable

Installation

Follow the instructions in this chapter to install your RESPONSEPixx /MRI.

Typical installation setup

The following illustration details a typical setup for the RESPONSEPixx /MRI system.

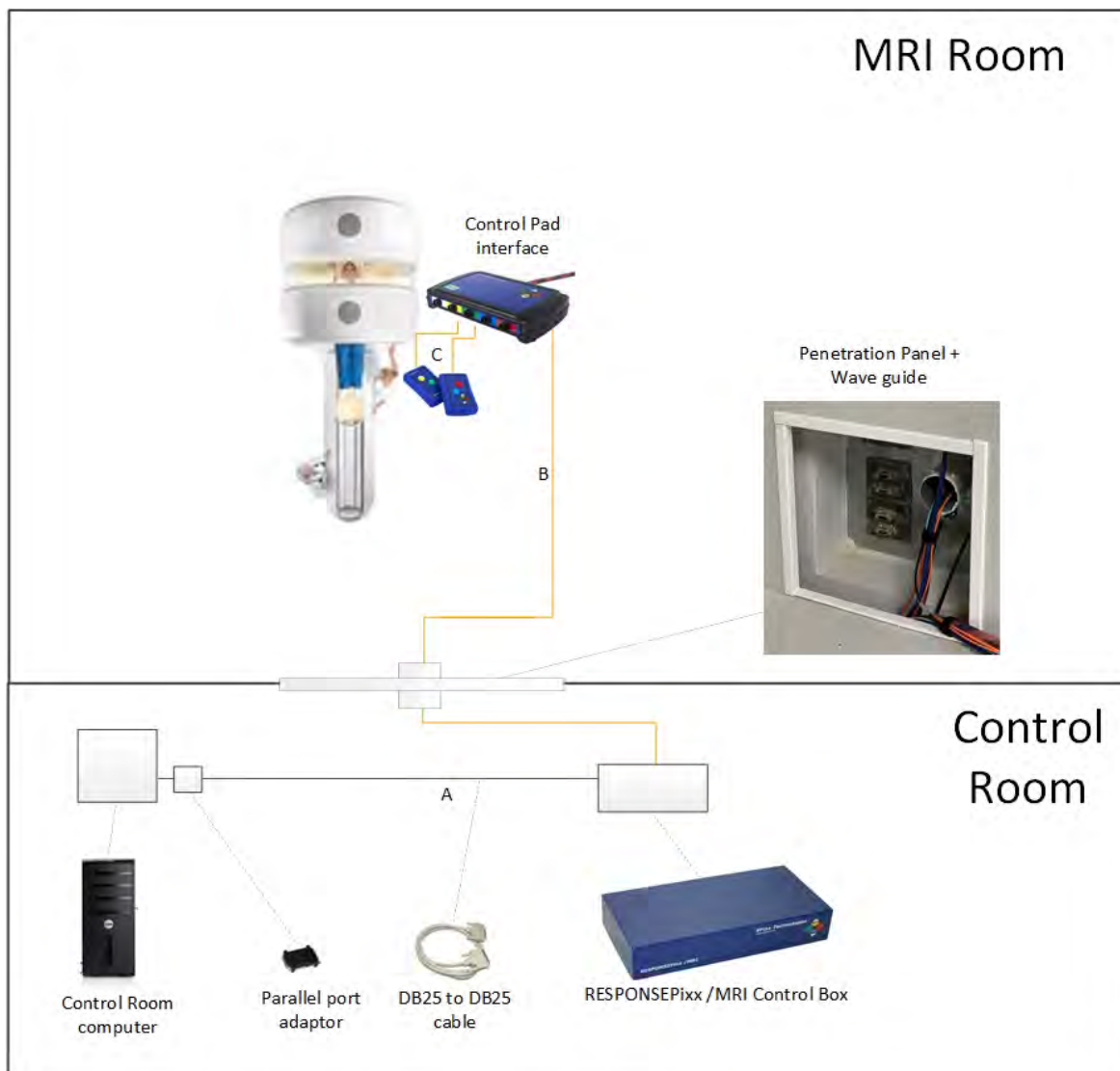


Figure 1 RESPONSEPixx /MRI typical installation without DATAPixx3

A	DB25 cable from Control Room computer parallel port (through optional parallel port adaptor) to RESPONSEPixx /MRI Control Box (rear panel DATAPixx Interface connector) OR DB25 cable from DATAPixx digital input connector (without parallel port adaptor) to RESPONSEPixx /MRI Control Box (rear panel DATAPixx Interface connector)
B	Fiber optic cable bundle from Control pad interface, through wave guide, to RESPONSEPixx /MRI Control Box (rear panel Control pad interface color-coded connectors)
C	Fiber optic cables from response boxes to Control pad interface

Control Box Rear Panel

- 1- DATAPixx Interface connector
- 2- Digital In connector
- 3- Control pad interface connectors (left and right)
- 4- Power switch
- 5- DC-In jack



Figure 2 Control Box Rear panel (x10 model shown)

Control pad interface connectors

Connect each color-coded connector from the control pad's fiber optic cable bundle.



For the connections between dual-handheld response boxes, the Control pad interface and the Control Box, ENSURE that the left- and right-side fiber optic cables are properly connected to the corresponding left- and right-hand connectors.

Response boxes

Connect each response box to the control pad interface using the color-coded fiber optic cables of each response box.



DC-In jack

Plug the supplied AC adaptor into this jack to power your RESPONSEPixx /MRI.

Power switch

Turn this switch ON to start using the RESPONSEPixx /MRI.

Using the RESPONSEPixx /MRI with a Parallel Port Adaptor (VPX-ACC-3950)

Connect the RESPONSEPixx /MRI to the female connector and plug the dongle (using the male side connector) to the control room computer's parallel port.

DATAPixx interface connector

This interface is the output of the RESPONSEPixx /MRI kit. It is used to connect to a VPixx system's DIGITAL IN connector or to a computer's parallel port (requires parallel port adaptor). A DB25 to DB25 cable is included with the kit for this purpose.

On the VPixx system, use the Digital In connector to connect the RESPONSEPixx /MRI control box. The Digital In 5 to Digital In 23 signals will pass through the RESPONSEPixx /MRI control box to the Digital In connector.

The following table shows the DATAPixx interface pin assignment.

Table 2 DATAPixx Interface connector pin assignment for x5

Pin	Description	Pin	Description
1	Red button	14	Yellow button
2	Green button	15	Blue button
3	White button	16	Digital In 5
4	Digital In 6	17	Digital In 7
5	Digital In 8	18	Digital In 9
6	Digital In 10	19	Digital In 11
7	Digital In 12	20	Digital In 13
8	Digital In 14	21	Digital In 15
9	Digital In 16	22	Digital In 17
10	Digital In 18	23	Digital In 19
11	Digital In 20	24	Digital In 21
12	Digital In 22	25	Digital In 23
13	GND	Shield *	

* Shield is tied to the GND by a 0 Ohm resistor inside the controller.

Connector type: D-SUB, 25 pins

Gender: Female



Table 3 DATA Pixx Interface connector pin assignment for x10

Pin	Description	Pin	Description
1	Red button Left	14	Yellow button Left
2	Green button Left	15	Blue button Left
3	White button Left	16	Red button Right
4	Yellow button Right	17	Green button Right
5	Blue button Right	18	White button Right
6	Digital In 10	19	Digital In 11
7	Digital In 12	20	Digital In 13
8	Digital In 14	21	Digital In 15
9	Digital In 16	22	Digital In 17
10	Digital In 18	23	Digital In 19
11	Digital In 20	24	Digital In 21
12	Digital In 22	25	Digital In 23
13	GND	Shield *	

* Shield is tied to the GND by a 0 Ohm resistor inside the controller.

Connector type: D-SUB, 25 pins

Gender: Female



Digital In connector

The following table shows the digital input pin assignment when the RESPONSEPixx /MRI is connected to a VPixx system DIGITAL IN.

Table 4 Digital IN connector pin assignment x5

Pin	Description	Pin	Description
1	N.C.	14	N.C.
2	N.C.	15	N.C.
3	N.C.	16	Digital In 5
4	Digital In 6	17	Digital In 7
5	Digital In 8	18	Digital In 9
6	Digital In 10	19	Digital In 11
7	Digital In 12	20	Digital In 13
8	Digital In 14	21	Digital In 15
9	Digital In 16	22	Digital In 17
10	Digital In 18	23	Digital In 19
11	Digital In 20	24	Digital In 21
12	Digital In 22	25	Digital In 23
13	GND	Shield *	

Connector type: D-SUB, 25 pins

Gender: Female



Table 5 Digital IN connector pin assignment x10

Pin	Description	Pin	Description
1	N.C.	14	N.C.
2	N.C.	15	N.C.
3	N.C.	16	N.C.
4	N.C.	17	N.C.
5	N.C.	18	N.C.
6	Digital In 10	19	Digital In 11
7	Digital In 12	20	Digital In 13
8	Digital In 14	21	Digital In 15
9	Digital In 16	22	Digital In 17
10	Digital In 18	23	Digital In 19
11	Digital In 20	24	Digital In 21
12	Digital In 22	25	Digital In 23
13	GND	Shield *	

Connector type: D-SUB, 25 pins

Gender: Female



* Shield is tied to the GND by a 0 Ohm resistor inside the controller.

Warranty

The RESPONSEPixx /MRI is warranted against manufacturing defects in materials and workmanship for two years for parts and labor from the date of purchase.



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