Technical Manual for the PNM-220

Version 1.00

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Introduction

The Logic IO PNM-220 is a complete solution using the Navigation and Messaging Platform designed for the most demanding and professional fleet management applications. The PNM-220 device is a ruggedized 7-inch, easy to read, screen optimized for finger touch usage. A powerful processor and generous RAM and flash ensure a delightful experience. The PNM-220 also offers support for connecting up to two cameras used for rear-view or cabin view etc.
The PNM-220 comes with the PNM software/maps pre-installed and interface cables for the RTCU MX2i pro/pro+. *Ready to go!*

This technical manual describes the installation of the PNM-220, and the technical details of the system. For controlling the PNM device from the VPL user application, please refer to the RTCU online help, and for detailed information on the NMP software interface, please refer to the documentation of the Navigation and Messaging Platform.

The NMP software and the Sygic maps are pre-installed on the PNM device and activated according to the user agreement. Please refer to the NMP software documentation for detailed information.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Table of Contents

Introduction....2
Table of Contents....3
Graphical view....4
Package overview....5
PNM-220 Overview....6
Typical System Connection....8
Typical Application....9
Interfacing to the RTCU MX2i Pro/Pro+....9
Analog camera interface....10
Interfacing to the RTCU IDE Simulator....11
Technical Specifications....12
Appendix A – Mounting the dashboard bracket....13
Appendix B – Installation and removal of the SD card....15

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Graphical view

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Package overview

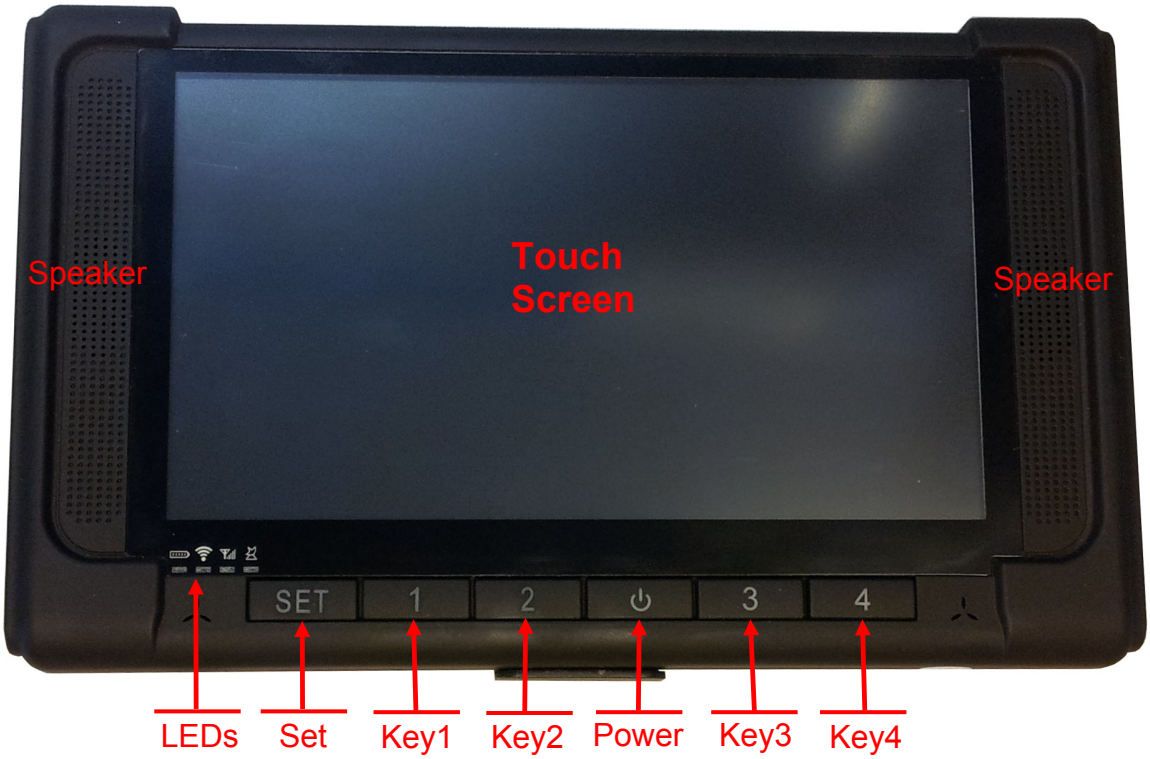
The PNM-220 package includes the following items:

Quantity	Item	Description
1	PNM-220 device	Windows CE6.0 device.
1	Mounting Bracket	PNM-220 device mounting bracket
1	8 GB SD-CARD	With pre-installed software. Typically already installed in the PNM-220 device.
1	PNM-220 series device cable	Connection cable between PNM device and the PNM interface box

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

PNM-220 Overview



Interface	Description
Power	No built-in functionality. May be used for power by the application.
SET	User-defined key.
Key 1	User-defined key.
Key 2	User-defined key.
Key 3	User-defined key.
Key 4	User-defined key.
LEDs	1 power LED and 3 status LEDs
Touch Screen	To interact with the application using finger touch or attached stylus

Please note that all the keys and the status LEDs on the PNM-220 device can be configured by the VPL application. Please refer to the RTCU IDE online-help for further information.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Interface	Description
Reset Button	Reset button of the PNM-220 device
Stylus	Stylus for the touch screen
Interface Cable Connector	The connector for the PNM-220 device interface cable
SD card compartment Cover	The cover for the compartment where the SD card reader is located.

The PNM-220 device can be reset asynchronously using the reset button, located at the backside of the device. Please do not use the button unless it is absolutely needed.

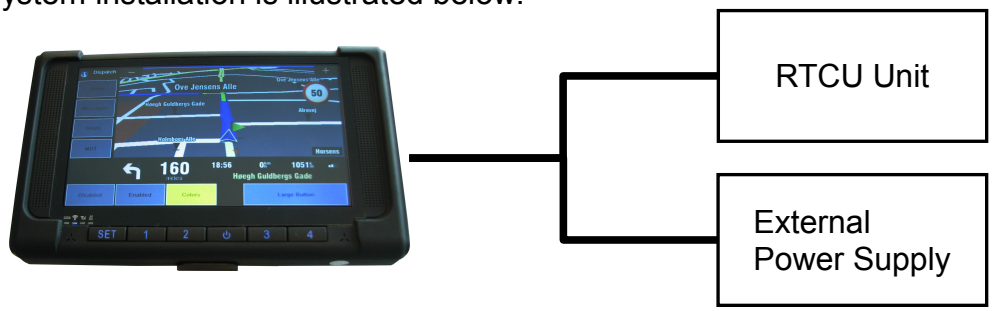
The stylus can be used for more accurate handling of the touch screen. As the touch screen is resistive, a finger can be used as well. The stylus is mounted tightly at the backside of the device. It can be removed by sliding it out sideways.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Typical System Connection

A typical system installation is illustrated below:



The application in the RTCU unit controls the power to the PNM device.
Unlike the other PNM devices with external interface box, this device will only shut down directly while it is communicating with the RTCU. If asked to shut down while the connection is lost, it will either wait for a timeout[1] before shutting down, or it can be manually shut down by pressing the reset button on the back. Note that the reset button should not be used unless absolutely necessary, as it cuts the power immediately, while the two other ways allows the device to perform a controlled shut down.

1 See the setting `DisconnectTimeout` in the Navigation and Messaging Platform User Guide.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

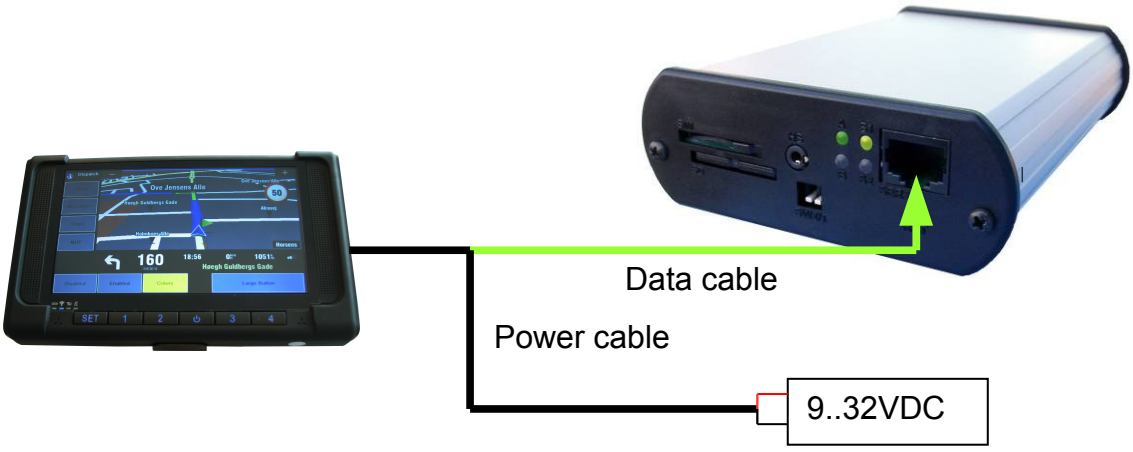
Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Typical Application

This is a quick start guide to connect the PNM device to the supported RTCU units. It is easy to install the PNM system on location with the supplied cable for the RTCU MX2i pro/pro+. The following section will describe the system connection to the supported RTCU units.

Interfacing to the RTCU MX2i Pro/Pro+

The data cable with the RJ-45 connector needs to be connected to the 8-pole serial port 2 connector on the RTCU unit. The power cable, with the read and black wires at the end, must be supplied from an external DC supply.
An example of the connection to RTCU MX2i pro is shown in the drawing below.



1. Connect the PNM device interface cable to the PNM device.

2. Connect the RJ-45 data cable of the PNM device interface cable to the serial Port 2 of the RTCU MX2i pro.

3. Connect the power supply to the power connector cable. The power requirement is 9..32VDC. The black wire is (**-**) and the red wire is (**+**).
   Note that the power to the PNM device is controlled by the RTCU MX2i pro application. The module will not power on unless the RTCU MX2i pro is powered on and the application enables the module. Please refer to the RTCU IDE online help for enabling and using the NMP interface.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Analog camera interface

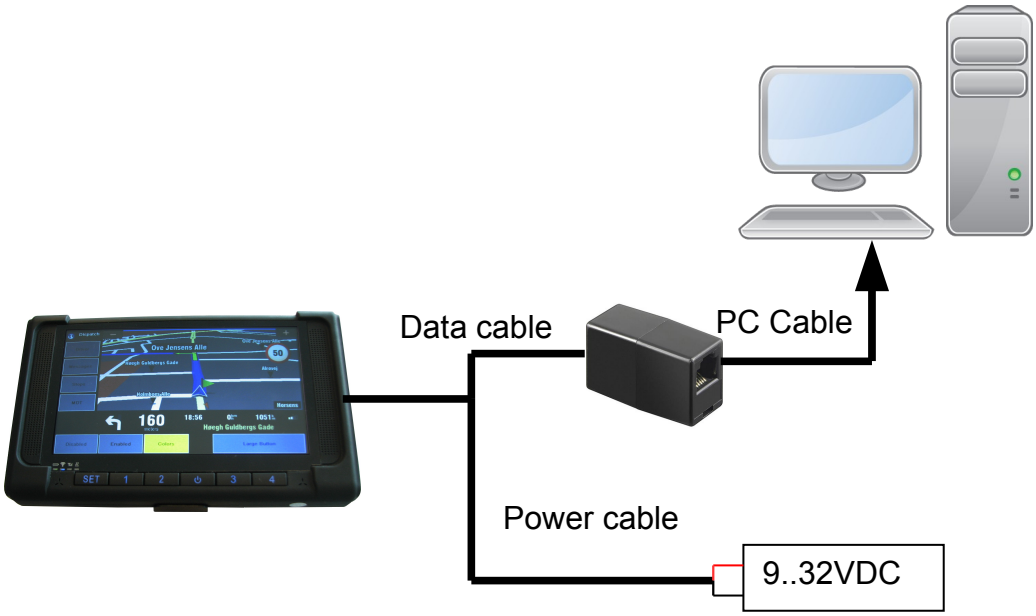
PNM-220 offers connection for up to two analog cameras using the BNC connectors available at the PNM device interface cable. Analog camera #1 must be connected to the cable labeled with **BNC-1** and analog camera #2 must be connected to **BNC-2**.
The use of the cameras is under full control of the VPL application. Please consult the RTCU IDE on-line help for additional information.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Interfacing to the RTCU IDE Simulator

The PNM-220 is supported by the RTCU IDE Simulator. In order to connect the PNM-220 series device to the PC, an optional cable with the order code **RT-PNM-PC** is needed.



1. Connect the PNM device interface cable to the PNM device.

2. Connect the RJ-45 data cable of the PNM device interface cable to the combiner.

3. Connect the combiner with one of the available serial ports on the PC with the PNM-220 PC interface cable.

4. Connect the power supply to the power cable. The power requirement is 9..32VDC. The black wire is (**-**) and the red wire is (**+**).
   Note that the power to the PNM device is controlled by RTCU IDE application. The module will not power on unless the RTCU IDE Simulator is running and the user application enables the module. Please refer to the RTCU IDE online help for enabling and using the NMP interface.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Technical Specifications

Power supply	Min	Typ	Max		
Operating Voltage	9	-	32	VDC	Protected against wrong polarity.
Power Consumption		450		mA	@12V – RTCU device is not included

Core	Processor	S3C6410, 624 MHz ARM11	
	Flash	256 MB	
	SDRAM	128 MB	
LCD	Size	7'' diagonal TFT	4-wire resistive touch screen
	Resolution	800 x 480	
	Aspect Ratio	16:9	
	Contrast	500:1	
	Brightness	300 cd/m²	
	Viewing Angle	70/70(L/R), 50/70(U/D)	

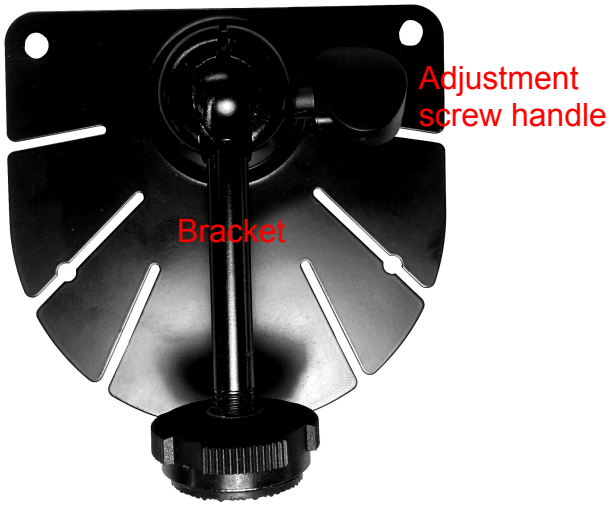
Storage temperature	-20	-	+70	ºC	External interfaces: • Fused flying lead for power • RJ-45 connector for RTCU unit connection. • Mini USB for ActiveSync and USB Host. • USB host port • SD-card slot and earphone jack • 2 * BNC connectors for analogue camera. • 4 * RS232 for interface to external devices. NMP software and maps are pre-installed on the delivered SD-card.
Operating temperature	-10	-	+60	ºC	
Operating humidity (non-condensing)	10	-	80	%	
Weight	550 (*PNM device*)			g	
Vibration / Shock	20 operating condition			g	MIL-STD-810F, Method 514.5, Table 514.5C-VII, Figure 51.45C-1
External dimensions	W200 x H158 x D40			mm	PNM device without interface cable.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Appendix A – Mounting the dashboard bracket

A dashboard mounting bracket is included for easy installation of the PNM-220 device. In the following the mounting of the bracket will be described.



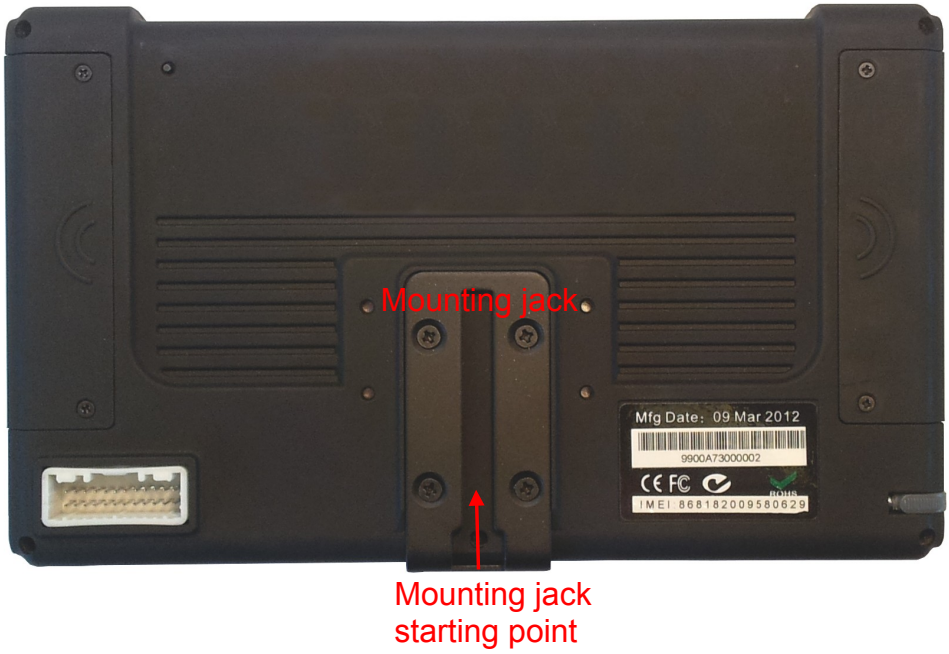
1. Loosen the adjustment screw handle, and set the bracket arm to an upraised position

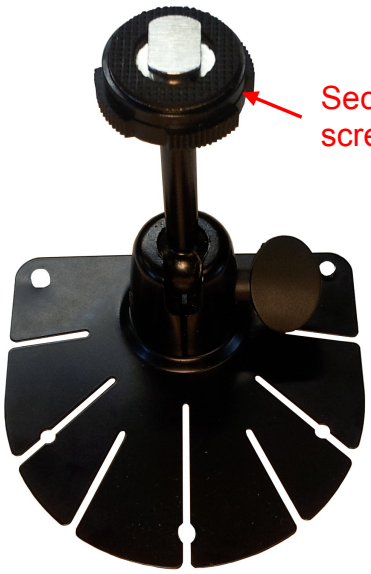
2. Loosen the securing screw until there is a gap between the bracket part and the metal plate.

3. Place the metal part on top of the bracket at the starting point of the mounting jack on the back side of the PNM device. Slide the bracket part until it is at the desired position. Fasten the securing screw. Please note the orientation of the bracket

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk





4. The vertical angle and rotation of the PNM device can be adjusted using the screw handle on the bracket.

5. Remove the protection paper of the adhesive and place the bracket on a proper location at the dashboard. Please make sure that the bracket is mounted on the correct location with the correct angle.

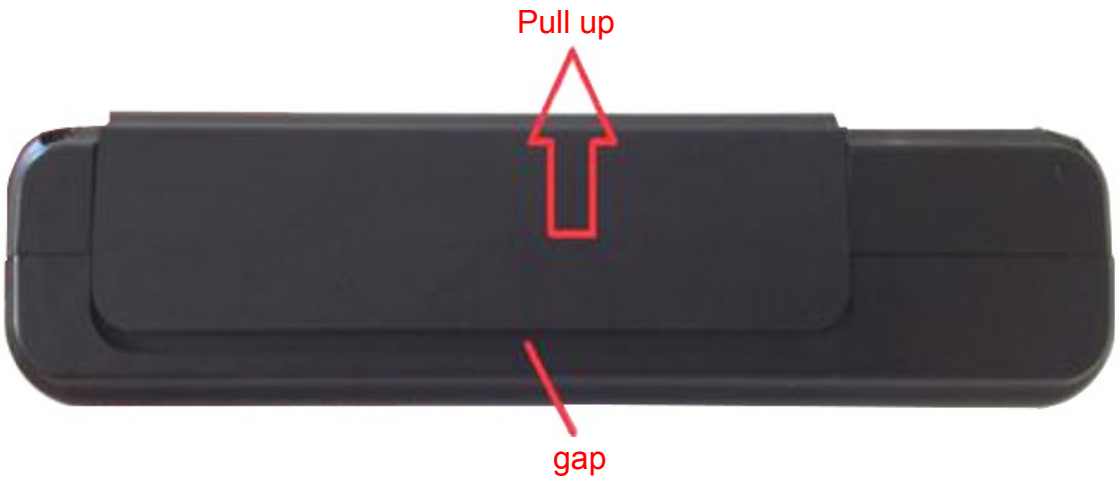
Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Appendix B – Installation and removal of the SD card

The SD card reader is hidden in a compartment for protection purpose.
Access the compartment with the SD-CARD reader as follows:

1. Unscrew the two M2 screw from the compartment cover.
2. Pull up the cover slightly until you see the gap.



3. Take out the cover

Please note that the compartment on the opposite side of the terminal is reserved and should not be accessed.

For closing the cover, please follow the steps above at reverse order.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

A side view of the terminal when the cover is removed is as follows:

Interface	Description
Mini USB Port	Mini USB 2.0 service port.
USB Port	USB host port.
Earphone jack	Connection with a stereo earphone
SD card slot	SD card reader for application / map card included with the product.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk