

PRTM-x

Line marking computer

User Manual
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UNIT ID V123.

Designed & Manufactured in Australia
By Permatronics

www.permatronics.com.au

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1 Unit Description

The PRTM-x Line marker is a simple to use, versatile multi-gun line marking computer designed for controlling up to 12 independent solenoids and 16 individually selected patterns.

Fully Designed, Manufactured and Supported in Australia, functions can be customized to meet individual user requirements.

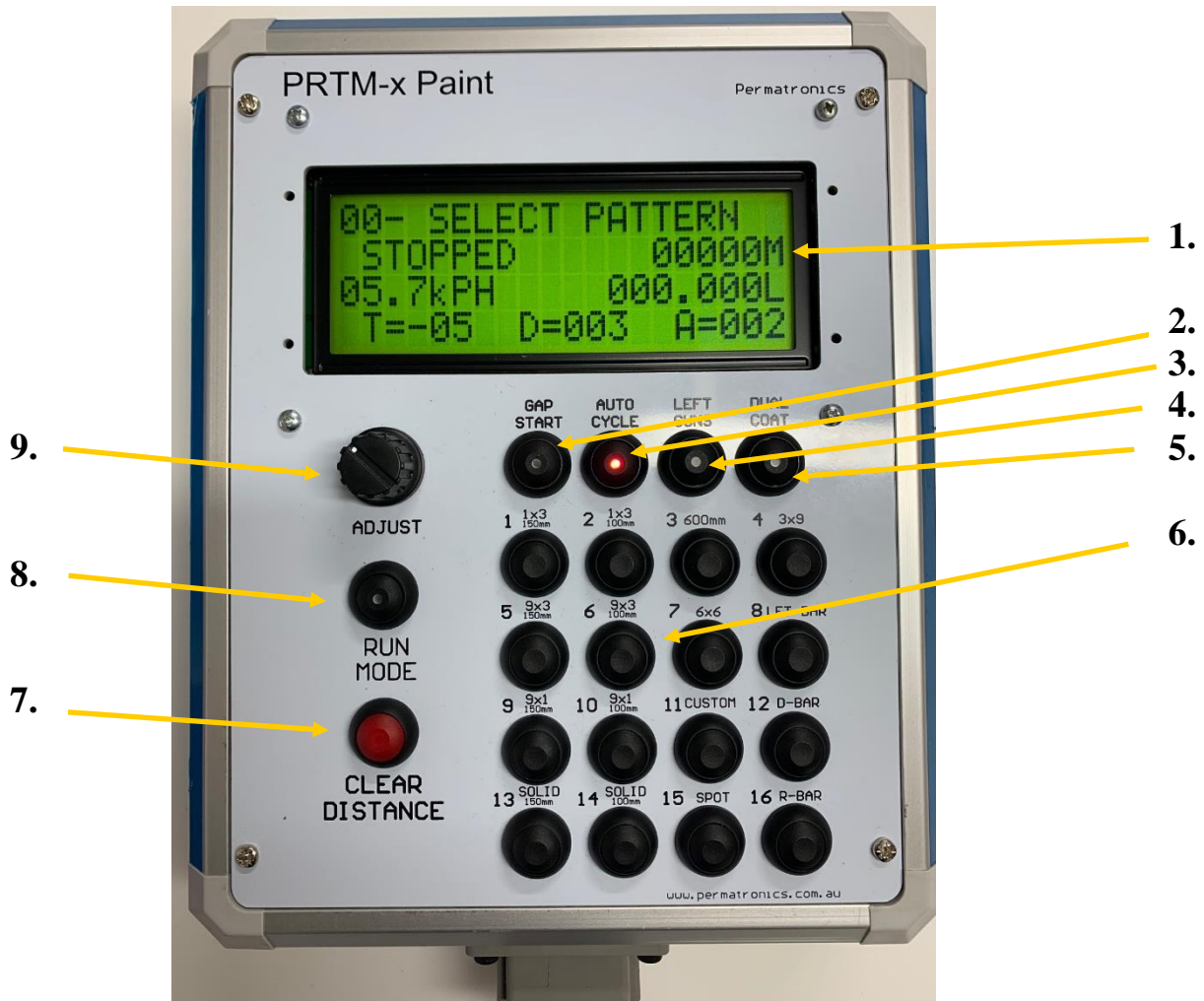
Features include.

- 12V operation.
- 4 x M5 100mm standard VESA mounting holes.
- 12 Independently controlled outputs. Configured for 4 paint guns, 4 dual coat paint guns and 4 bead guns.
- 16 programmable pattern selection.
- Easy to read backlit display showing Line information, Current speed, Line adjustment, Line distance, Pattern paint usage¹, Wet film thickness².
- Separate Start and Stop inputs for hand trigger use.
- Switch inputs for Bead flush. Paint flush and Right cutout Gun outputs.
- Normally closed E-Safety input to turn off all solenoids which can be wired into truck safety system.
- Auto Cycle switch input for use with a hand or footswitch.
- Line finish and Line change synchronisation feature.
- Programmable Line offset to compensate for lazy gun outputs.
- Programmable Bead Delay and Bead Advance to ensure correct bead coverage.
- Dual Coat Gun output switch to run Dual coat guns.
- 4 Independent Job selection including different programmable patterns.
- Datalogging of line types, distances and paint usages for each job. Optional Bluetooth adapter for exporting to tablet or PC

¹ When fitted with Pump Stroke counter.

² When fitted with Pump Stroke counter and line width information is programmed and calibrated.

2 Button description



1. 20 x 4 Large Text LCD Display
2. Gap Start Selector (Used in Auto cycle)_
3. Auto Cycle / Rework Cycle Selector and Indicator
4. Driver / Passenger side Selector and indicator
5. Dual Coat Enabled Selector and Indicator
6. 16 x Pattern selection buttons
7. Clear Distance button
8. RUN / PAUSE button
9. Rotary Trim Adjustment with Selector switch

3 Display Description

The PRTM-x has been fitted with a large easy to read 20 x 4 line backlit display. This allows the user to easily see what the unit is doing without the need for external lighting at night.

The display gives the user information on selected pattern, machines current status, vehicle speed, pattern distance, pattern paint usage, wet film thickness and trim values.

When power is applied to the PRTM-x, the display will show a greeting message with Firmware version information as seen below.

P	R	T	M	x			R	o	a	d		M	a	r	k	e	r		
P	E	R	M	A	T	R	O	N	I	C	S	.	C	O	M	.	A	U	
M	a	i	n		V	1	2	3		R	e	m		V	1	2	3		

The unit will default to being STOPPED, AUTO GUN CYCLE, RIGHT SIDE GUNS.

The format of the Display is as follows

0	8	-		L	E	F	T		B	A	R	R	I	E	R					
	P	A	U	S	E	D								0	0	3	4	5	M	
	0	4	.	0	k	P	H							0	0	5	0	u	M	
	T	=	+	0	4				D	=	0	1	0			A	=	0	0	3

0 8	Selected Pattern Number
L E F T B A R R I E R	Selected Pattern Name
P A U S E D	Computer Status PAUSED, STOPPED, MARKING, TRIGGER START, LINE CHANGE
0 0 3 4 5 M	Pattern Distance
0 4 . 0 k P H	Vehicle Speed
0 0 5 0 u M	Calculated Wet Film Thickness <i>Shown in PAUSED or MARKING modes</i>
T = + 0 4	Line Trim -50 to +50
D = 0 1 0	Bead Delay 000 to 100 pulses
A = 0 0 3	Bead Advance 000 to 100 pulses
0 1 0 . 5 0 0 L	Pattern Paint Usage <i>Shown in STOPPED mode</i>

4 Auto Cycle Operation

Operation in Auto cycle mode is designed for use when marking new roads or roads where alignment to previous markings is not required. Selecting AUTO CYCLE means that any pattern selected on the screen will mark repeatedly until either a new pattern is selected, or the unit is Paused / Stopped.

- Apply power to Unit from Main unit Switch.
- Select the required pattern.
- If dual coat is required press “DUAL COAT” button.
- Press the “RUN MODE” Button. RUN MODE light will and display will show status as “PAUSED”

At this point the computer is all ready to start marking once the “START TRIGGER” is given.

- Press the “START TRIGGER” to start painting the pattern. Pressing the “START TRIGGER” again will cause unit to finish the line and pause or pressing the “STOP TRIGGER” will end the line instantly.

Pattern distance paint strokes and paint usage will be added to the selected patterns totals while the unit is marking.

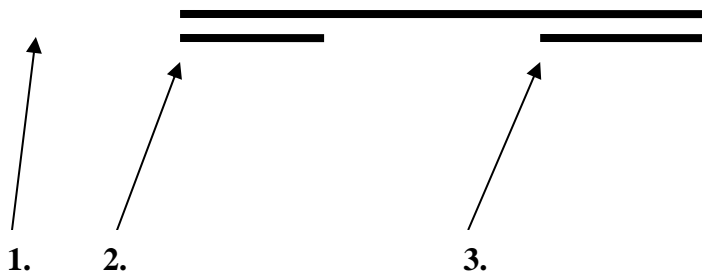
5 Semi Auto Operation

Semi-Auto operation allows the user to manually set the start point of each line made by the unit. This is useful when re-marking existing lines to ensure that the lines start at the same point.

In this mode, once a pattern has been selected and enabled by pressing the “START TRIGGER”, the pattern will begin. Once the pattern is marking any solid lines will continue to spray but broken lines will not spray until the “START TRIGGER” has been activated. Once the “START TRIGGER” has been activated, the unit will spray 1 cycle of the broken line then stop until it receives the next external “START TRIGGER”.

Pressing the “STOP TRIGGER” will instantly finish all patterns and return the unit to the Paused mode.

See diagram below



1. Barrier (Solid Left / Broken right) pattern selected.

2. Momentary external trigger from the user hand/foot switch starts the painting of the barrier line, once the painted section of the line is finished the gun turns off and waits for the next external trigger.

3. Next momentary trigger from the user starts painting the next section of the broken line. During the whole period, the Solid line gun remains on.

5.1 Auto painting in Semi-Auto mode

In situations where the starting point of the existing line is missing, or a section of the painted pattern is missing completely it is possible to have the semi-auto mode automatically fill the missing area. This is done by pressing and holding the “START TRIGGER” in Semi-Auto mode. In this situation, the unit will mark a line to its correct length, leave the correct space and automatically start to mark the next line. It is equivalent to enabling the “AUTO CYCLE” for a short period of time while the “START TRIGGER” is kept pressed.

6 Offset Adjustment.



In many situations road marking machines suffer from lazy gun solenoids, this is a common occurrence in air activated systems, which can lead to delays in either the activation of the output (causing a shorter line than expected), or when the output is de-activated (causing a longer line than expected). To compensate for this, the unit has an adjustable trim value “T” which lengthens or shortens the duration of the line pattern to increase accuracy.

Adjustments to the Line length trim, Bead Delay and Bead Advance can all be made on the fly while marking so changes can be done without the need to start and stop.

To make an adjustment at any time.

- Press down once on the “**Rotary Trim Adjustment with Selector switch**” this will place “→” Next to the T value.

Rotate the knob clockwise to increase the value or counter-clockwise to decrease the value.

- Press down again on the “**Rotary Trim Adjustment with Selector switch**” to make it move to the D value, pressing it down another time will move it to the “A” value and one more time will make the Arrow disappear and save the selected values into the memory. It will then be remembered for next time the unit is powered up.

A “+” value on the display will increase the length of the line and should be used when experiencing delays in gun solenoids switching ON.

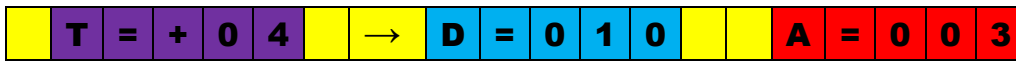
A “-” value on the display will decrease the length of the line and should be used for delays when experiencing delays in gun solenoids switching OFF.

(If both the line and the gap of a pattern are too long or too short the unit may need to be recalibrated.)

7 Gap Start.

When enabled in Auto cycle operation, the selected pattern will start marking with a leading gap rather than the leading line. This may be useful where a leading Gap is required.

8 Bead Delay Adjustment.



The PRTM-x line marking computer has two Bead adjustment values to allow the user to adjust the delay given before the beads are turned on and off after the paint solenoid has activated.

This allows the user to place bead guns further back and still ensure complete coverage of the paint with beads. The two adjustment values are set in the same way as the Offset adjustment by pressing down on the *“Rotary Trim Adjustment with Selector switch”* until the “→” is beside the **“D”**. The user can adjust the extra time that beads remain on after the paint solenoid has turned off. The adjustment of the **“A”** allows the user to adjust the time that the beads turn on before the paint guns are activated.³

All values are updated on the machine in real time and saved into the units memory after the **“A”** value has been adjusted and *“Rotary Trim Adjustment with Selector switch”* is pressed to make the “→” disappear.

9 Dual Coat trigger.

The PRTM-x line marking computer has a dual coat switch which allows the user to run two output paint solenoids for each output, this is useful for times when a dual coat is required or there is an advantage in running two paint solenoids. When selected the **“DUAL COAT”** light will be illuminated.

Refer to the wiring section to see how the dual coat system is connected.

10 Clearing Pattern distances

One of the features of the PRTM-x Road marker is the ability to record the distances travelled with each pattern. The distance is shown on the display is in metres and has a range of 65000M or 65 KM for each pattern.

Any distance travelled while the unit is in a **“MARKING”** mode (not stopped or paused) is added to the selected pattern’s total.

To clear the tallied distance on a pattern, the **“RUN MODE”** light must be off and units status is **“STOPPED”** In this mode the user can freely flick between patterns to look at distances and paint usages travelled knowing the unit will not start marking.

Once in the **“STOPPED”** mode select the pattern to clear then press and hold the **“CLEAR”** button. After 5 seconds, the distance value on the screen will be reset to 00000M and the distance is cleared from memory.

See Section 16.1.3 Clear Current Job. for information on clearing all pattern distances and paint usages at once..

³ This feature works by estimating when next cycle will start and takes a full cycle before it becomes active.

11 Line change synchronisation

11.1 Line change in AUTO mode.

0	8	-		L	E	F	T		B	A	R	R	I	E	R				
L	I	N	E		C	H	A	N	G	E				0	0	3	4	5	M

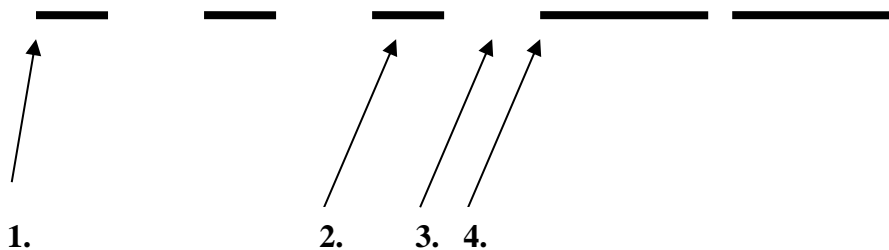
In the situation where multiple patterns are used on a given stretch of road, the line synchronisation feature is particularly useful in providing effortless transitions between lines without stopping and restarting.

Line change synchronisation works by finishing a complete cycle of the selected pattern being painted before switching to the new pattern. As an example the operator could be painting a 3x9 pattern, then want to change to a 1x3 pattern. While marking the 3x9 pattern in AUTO mode the operator can select the 1x3 pattern to change patterns. This will finish off the 3M line and 9M gap then automatically switch over to the new pattern.

The Line change synchronisation feature also has the following features.

- Automatically inserts a leading gap when changing from a solid line to a broken line.
- Finishes left and right barrier lines together so lines finish at the same point.
- Line change can be pushed in either the mark or the space of a pattern to change lines.

Below is an example of the Line change synchronisation.



1. User is marking a 6M line with a 6M gap.
2. Halfway through the 6M line, user selects 9M line with 1M gap. Display shows "AUTO LINE CHANGE"
3. Unit finishes the 6M line and leaves a 6M gap.
4. After completing the 6M gap from the previous pattern the unit starts marking the 9M line with 1M gap.

Display updates itself with 9x1 information and continues marking.

12 No Speed Spray Inhibit

As a safety measure the PRTM-x line marking computer is fitted with a software programmable speed inhibit cut-out to all output guns.

When enabled, this feature will turn stop spraying any lines if the vehicle is below a set speed.

This protects the system from accidentally spraying paint while the unit is stationary or from starting a new pattern while the unit is not moving.

The bead and Gun flush inputs will still work when the Speed Spray inhibit is enabled.

The speed enabling and speed threshold can be setup in Diagnostics mode under “BASIC USER SETUP / SET SPEED INHIBITER”. *See Section 16.5 SET SPEED INHIBITER*

13 Bead Flush

External Input 1 on the PRTM-x is a dedicated Bead flush input. When connected to a switch and with the unit in the “PAUSED” mode, pressing the switch will activate the corresponding bead guns associated with the selected pattern. This is useful for flushing bead guns or doing quick checks to ensure beads are operational before marking the road.

14 Paint Flush

External Input 2 on the PRTM-x is a dedicated Paint flush input. When connected to a switch and with the unit in the “PAUSED” mode, pressing the switch will activate the corresponding paint guns associated with the selected pattern. If “DUAL COAT” is enabled this button will also activate the associated dual coats guns. This is useful for flushing paint guns or doing quick checks to ensure beads are operational before marking the road.

15 Right Solenoid Cut-out

External Input 3 on the PRTM-x is a used as a right solenoid cut-out. In certain situations where you are marking double lines and want to merge them during the transition period this button can be pressed and while activated will cut power to the right line in the double line. When the button is released, the unit goes back to normal operation.

16 Diagnostic Mode

The PRTM-x contains a diagnostic mode which allows users to setup and configure the machine, Diagnose any possible faults by testing inputs and outputs and view/clear stored pattern distance and paint data.

Diagnostic mode is entered by applying power to the PRTM-x with the “**CLEAR**” button pressed and held.

The screen will then prompt the user to release the clear button after which time a menu list appears. The “→” on the Left hand character indicated the menu item for selection. The “*Rotary Trim Adjustment with Selector switch*” is used to scroll through the options and the selection is made by pressing on the Adjust selector switch.

Example videos showing many of these features can be seen on youtube by searching “*PRTM-x*” or “*PERMATRONICS*”

16.1 Diagnostics – Clear / Export Data.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

16.1.1 Bluetooth Job Data.

When an optional Bluetooth module is installed and using compatible software, when this option is selected, a list of all the job patterns with their distance and paint usage is sent to your compatible device. *For more information on this feature, Contact Permatronics.*

16.1.2 Show Job Paint Used.

Shows the total paint usage calculated for all the patterns on the selected job since being cleared. (Press the “Clear” button to return to the previous menu.)

16.1.3 Clear Current Job.

Clears the Distances and paint usage for all 16 patterns on the currently selected job.

16.1.4 Clear All Data Jobs.

Clears the Distances and paint usage for all 16 patterns on all 5 jobs. This option clears all distance and paint usage data on the unit.

16.2 Job Selection.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

This item allows the user to select between 5 jobs. The PRTM-x has internal memory to store information for 5 complete separate jobs. This is useful as you can start you day with Job 1. Use the computer to paint all the required lines for that job, then select Job 2, 3 or 4 and repeat. At the end of the day you can switch back to Job 1, 2, 3, 4 or 5 and see the individual distances of each pattern and paint usage for each pattern in each job.

16.3 Set Custom Pattern.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

This item allows the user to setup the output for **“PATTERN 11 – CUSTOM”**

Using the Rotary Trim Adjustment and selector, the user is first prompted to set a line length, then a gap length and finally a gun width which is used to make calculations on the wet film thickness.

Unit must be re-started once this selection is made.

16.4 10 Second Bead Test.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

User can select the Bead gun output they wish to turn on, this option is reduced to only showing bead gun outputs “C” , “F” , “I” and “L”

Once selected, the unit will turn on the associated bead gun and show a 10 second timer before turning the Bead output off.

This feature is useful in testing the flow rates of your bead guns to ensure enough product is being placed on the paint and ensuring that all bead guns are flowing the same.

(Press the “Clear” button to return to the previous menu.)

16.5 Test Gun Outputs.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

User can select any output A through to P and using the selector knob toggle the outputs on or off. This is particularly useful during commissioning or to test an individual solenoid.

When any solenoid is active, the corresponding light on the Main PCB will illuminate.
(Note. Circuit board shows numbered outputs 1-16, this corresponds to lettered outputs A-P)

(Press the “Clear” button to return to the previous menu.)

16.6 Test All Inputs.

(Press the “Clear” button to return to the previous menu.)

H	A	N	D		T	R	I	G		S	T	A	R	T	/	S	T	O	P
E	X	T		T	R	I	G		1	2	3	4							
P	U	L	S	E	=	0	0	0	0	2		S	T	R	O	K	E		X
C	L	E	A	R		T	O		R	E	S	E	T		C	O	U	N	T

S	T	A	R	T															
S	T	O	P																
	1																		
	2																		
	3																		
	4																		
0	0	0	0	2															
	X																		

Note: wheel / gearbox input pulse sensor must be setup correctly in PRTM-x setup before pulse detection will occur. See **“SETUP INPUT TRIGGER”**

16.7 Basic User Setup.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

16.7.1 Setup LCD Display

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

Selecting this option allows the user to set the brightness of the display backlight from off to 100% in 5% increments.

16.7.2 Setup Speed Inhibit

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

This setting is used to enable or disable the Paint speed inhibit and if enabled, se the speed threshold when it activates.

16.8 Unit Calibration

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

16.8.1 Setup Input Sensor

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

This option allows the user to select the input sensor type and pulses per meter

After selecting the Sensor Type PNP or NPN the sensor pulses per meter can be set.

All sensors sold by Permatronics are NPN type sensors which pull low or down with each pulse.

Certain other brands of sensor may be PNP type which pulls high with each pulse. If the wrong type is selected no damage will be done to the unit but the received pulses will not be correct.

After making your selection the unit will prompt the user to enter the “PULSES PER METRE”.

The default on any factory programmed unit is 50.0 pulses per meter or 1 pulse every 20mm. Use the Rotary Trim to adjust to the desired value and press the knob to set and save the value.

Please note that the accuracy of the line distances, speed readouts and thickness readouts all depend on the accurate calibration of the input trigger. It is recommended that the unit receives at least 50.0 pulses per metre giving the unit an accuracy of 2cm or better than 2%.

16.8.2 100M Auto Calibrate.

The 100M Sensor calibration option is used to automatically calculate and calibrate the 5th wheel / gearbox sensor by driving exactly 100M. This function is useful for easily setting up a PRTM-x line-marking computer and for routine calibration of 5th wheels to ensure accuracy.

To do a 100M sensor calibration follow the following steps.

- Select “**100M Auto Calibrate**” from within the Unit calibration
- Drive to the start of your 100M mark and press the “**CLEAR**” button to begin the calibration.
- Drive EXACTLY 100M (during this time the received pulse count is displayed on the bottom line.
- With the vehicle stationary press the “**CLEAR**” button again to complete the calibration.
- The PRTM-x will then display and save the calculated calibration value.

After a calibration has been undertaken, the result should be noted and checked against future calibration to ensure minimal deviation.

If the measured calibration is 0.0 pulses per metre, it is possible the sensor type selected is incorrect and should be programmed. See 15.8.1 “*Setup Input Sensor.*”

16.8.3 Setup Paint Stroke.

“Use the Rotary Trim Adjustment with select and press down on knob the enter selections.”

Selecting this option allows the user to enter a volume of paint in millilitres per paint sensor pulse. This figure is then used to calculate the average wet film paint thickness and paint usage.

16.8.4 20L Paint sensor calibration.

The 20L Paint sensor calibration option is used to automatically calculate the volume of paint used for each input from the paint sensor.

To do a 20L Paint sensor calibration follow the following steps.

- Select “**20L Paint Calibration**”
- Press the “**CLEAR**” button to start the calibration.
- Pass 20L of fluid through the system ensuring the paint sensor is registering the pump strokes.
- Once 20L of fluid has been passed through the system, press the “**CLEAR**” button again to complete the calibration.
- The PRTM-x will then display the calculated mL of paint per pulse value which can be saved by again pressing the “**CLEAR**” button.

After a calibration has been undertaken, the result should be noted and checked against future calibration to ensure minimal deviation.

17 PRTM-x Technical Specifications.

PHYSICAL SPECIFICATIONS	
Physical Dimensions (L x W x D)	300mm x 200mm x 60mm (Remote) 200mm x 160mm x 60mm (Main Controller)
Mounting	100mm M5 VESA mount (Remote) 4 x Mounting points (Main Controller)
Harness	Deutsch DT Series (See connection diagrams)
Protection rating	IP42 (Remote) IP65 (Main Controller)
ELECTRICAL SPECIFICATIONS	
Max Operating Voltage	15.0V DC
Standby Current (No outputs engaged)	220mA
Recommended External Fuse	5A Standard
Internal Fusing	7A PCB mount Output fuse 500mA PTC Fuse for controller and sensor power
5 th Wheel input	Open collector NPN or PNP
5 th Wheel / sensor supply voltage from PRTM-x	Input Voltage – 0.6VDC
External Triggers	User supplied Normally open contacts
Output Drivers	High side 2A source current limited smart drivers

18 PRTM-x Installation Diagram

18.1 PRTM-x Main Controller Connection Diagram

PRTM-x Main Unit contains 4 Keyed Deutsch DT 12 series connectors.

Spare plugs and pins can be purchased from Permatronics or many automotive electrical wholesalers.



DT06 12SA - GREY "A" Keyed DT connector *POWER AND COMMS*

Pin Number	Description	Notes
1		No Connection / Future USE
2		No Connection / Future USE
3	Remote_+12V_Feed	Connect to Remote Pin 1 on Deutsch
4	Remote Serial_RxD	Connect to Remote Pin 3 on Deutsch
5	Remote Serial_TxD	Connect to Remote Pin 4 on Deutsch
6	Remote GND	Connect to Remote Pin 2 on Deutsch
7		No Connection / Future USE
8		No Connection / Future USE
9		No Connection / Future USE
10		No Connection / Future USE
11	Battery Negative	Common to Pin 2. Ground connection to PTM
12	+12V Control Power Feed	+12V. Power should be provided through a fused switched input.

DT06 12SC - GREEN "C" Keyed DT connector *EXTERNAL SENSORS*

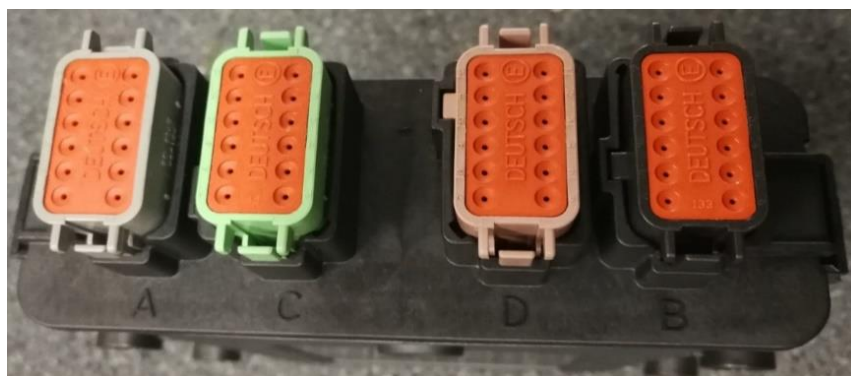
Pin Number	Description	Notes
1	BEAD FLUSH TRIGGER	External Trigger 1 "Bead Flush"
2	GUN BLEED TRIGGER	External Trigger 2 "Gun Bleed"
3	RIGHT SOL CUTOUT TRIGGER	External Trigger 3 "Right Solenoid Cut-out"
4	N/C SAFTEY CUTOUT	EMERGENCY SAFTEY CUTOUT. <i>If not used must be connected to GND or Pin C9</i>
5		No Connection / Future USE
6		No Connection / Future USE
7		No Connection / Future USE
8		No Connection / Future USE
9	Safety Cutout Negative	Emergency Safety COMMON. Internally connected to GND
10	Trigger 3 Negative	External Trigger 3 COMMON Internally Connected to GND
11	Trigger 2 Negative	External Trigger 2 COMMON Internally Connected to GND
12	Trigger 1 Negative	External Trigger 1 COMMON Internally Connected to GND

DT06 12SD - LIGHT BROWN "D" Keyed DT connector *OUTPUTS 7-12*

Pin Number	Description	Notes
1	Output "M" +	Output "M" Not Currently used
2	Output "N" +	Output "N" Not Currently used
3	Output "O" +	Output "O" Not Currently used
4	Output "P" +	Output "P" Not Currently used
5	Sensor GND	Sensor GND, internally connected to GND
6	Sensor GND	Sensor GND, internally connected to GND
7	Sensor PWR Feed	Power Output to power sensors (Internally current limited to 500mA)
8	Paint Stroke Input	NPN Open Collector input from Paint stroke Sensor
9	5 th Wheel Input Trigger	NPN/PNP selectable input from Wheel/Gearbox encoder
10	Sensor PWR Feed	Power Output to power sensors (Internally current limited to 500mA)
11	SOLENOID POWER FEED	Supply Power for all Gun / Gate outputs. Connect to Appropriately fused power feed
12	SOLENOID POWER FEED	Supply Power for all Gun / Gate outputs. Connect to Appropriately fused power feed

DT06 12SB - BLACK "B" Keyed DT connector *OUTPUTS 1-6*

Pin Number	Description	Notes
1	Output "A" +	Solenoid "A" output (Internally limited to 3A per output)
2	Output "B" +	Solenoid "B" output (Internally limited to 3A per output)
3	Output "C" +	Solenoid "C" output (Internally limited to 3A per output)
4	Output "D" +	Solenoid "D" output (Internally limited to 3A per output)
5	Output "E" +	Solenoid "E" output (Internally limited to 3A per output)
6	Output "F" +	Solenoid "F" output (Internally limited to 3A per output)
7	Output "G" +	Solenoid "G" output (Internally limited to 3A per output)
8	Output "H" +	Solenoid "H" output (Internally limited to 3A per output)
9	Output "I" +	Solenoid "I" output (Internally limited to 3A per output)
10	Output "J" +	Solenoid "J" output (Internally limited to 3A per output)
11	Output "K" +	Solenoid "K" output (Internally limited to 3A per output)
12	Output "L" +	Solenoid "L" output (Internally limited to 3A per output)



18.2 PRTM-x Remote Connection Diagram



DT06 12SA - GREY "A" Keyed DT connector POWER AND COMMS

Pin Number	Description	Notes
1	Remote_+12V_Feed	Connect to Main Grey Connector "A" Pin 3
2	Remote GND	Connect to Main Grey Connector "A" Pin 6
3	Remote Serial_RxD	Connect to Main Grey Connector "A" Pin 4
4	Remote Serial_TxD	Connect to Main Grey Connector "A" Pin 5
5		No Connection / Future USE
6		No Connection / Future USE
7		No Connection / Future USE
8		No Connection / Future USE
9	Hand Trigger Start / Pause	Momentary Push Button Switch to Start / Pause
10	Hand Trigger Common	Start Trigger COMMON Internally Connected to GND
11	Hand Trigger Stop	Momentary Push Button Switch to Stop marking instantly
12	Hand Trigger Common	Start Trigger COMMON Internally Connected to GND

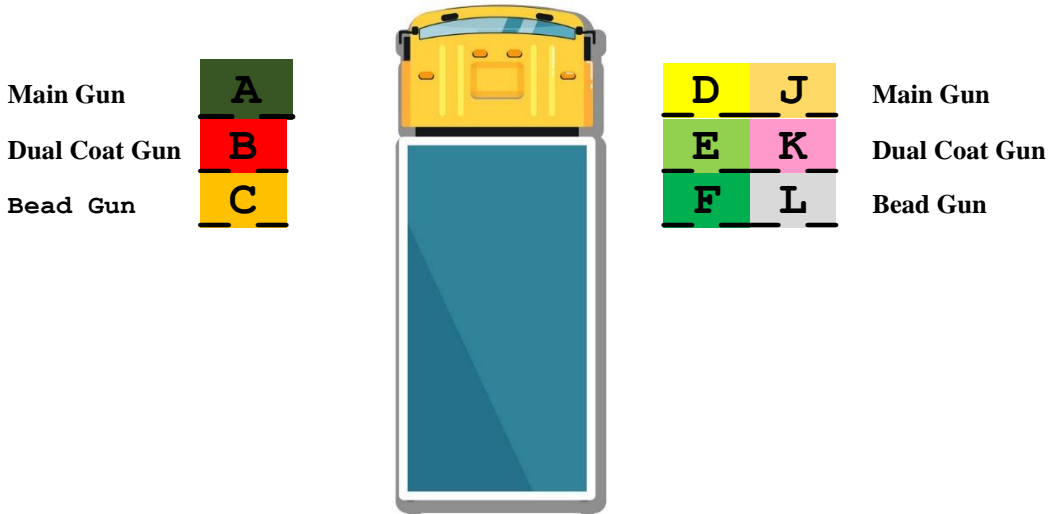
Power and Communications to the Display box are provided from the Main Controller Box Plug A pins 3-6.

Start and Stop hand triggers should be good quality momentary action switches. If required the two Hand trigger common wires (Pin 10 and Pin 12) can be joined to reduce wire count to hand trigger.

18.3 Suggested Solenoid Output Configurations

18.3.1 3-Gun Setup

Vehicle Front



18.3.2 4-Gun Setup

Vehicle Front

