LAND

SYSTEM 4

Landmark Technic Processor

User Guide

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An AMETEK® Company

Important Health and Safety Information

Equipment Operation
Use of this instrument in a manner not specified by Land Instruments International may be hazardous.

Electrical Power Supply
Before working on the electrical connections all of the electrical power lines to the equipment must be isolated. All the electrical cables and signal cables must be connected exactly as indicated in these operating instructions. If in doubt contact Land Instruments International.

Face and Eye Protection
Suitable face and eye protection must be worn when working on hot vessels and ducts! Special safety measures must be taken when working on a high-pressure duct.

Protective Clothing
Protective clothing must always be worn when working in the vicinity of hot vessels or ducts.

Storage
The instrument should be stored in its packaging, in a dry sheltered area.

Unpacking
Check all packages for external signs of damage. Check the contents against the packing note.

Return of Damaged Goods

IMPORTANT
If any item has been damaged in transit, this should be reported to the carrier and to the supplier immediately. Damage caused in transit is the responsibility of the carrier not the supplier.

DO NOT RETURN a damaged instrument to the sender as the carrier will not then consider a claim. Save the packing with the damaged article for inspection by the carrier.

Return of Goods for Repair
If you need to return goods for repair please contact our Customer Service Department. They will be able to advise you on the correct returns procedure.

Any item returned to Land Instruments International should be adequately packaged to prevent damage during transit.

You must include a written report of the problem together with your own name and contact information, address, telephone number, email address etc.

Lifting Instructions
Where items are too heavy to be lifted manually, use suitably rated lifting equipment. Refer to the Technical Specification for weights. All lifting should be done as stated in local regulations.

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Design and Manufacturing Standards

The Quality Management System of Land Instruments International is approved to BS EN ISO 9001 for the design, manufacture and on-site servicing of combustion, environmental monitoring and non-contact temperature measuring instrumentation.

The quality management system of Land Instruments International Inc., USA is approved to ISO 9001.

This instrument complies with current European directives relating to Electromagnetic Compatibility 89/336/EEC, Low Voltage Directive 73/23/EEC and Explosive Atmospheres (ATEX Directive 94/9/EC).

Operation of radio transmitters, telephones or other electrical/electronic devices in close proximity to the equipment while the enclosure doors of the instrument or its peripherals are open, may cause interference and possible failure where the radiated emissions exceed the EMC directive.

The protection provided by both CE and IP classifications to this product may be invalidated if alterations or additions are made to the structural, electrical, mechanical or pneumatic parts of this system. Such changes may also invalidate the standard terms of warranty.

Dimensions
Unless otherwise stated, all measurements are given in millimetres and inches.

Signs and Symbols Used on Equipment and Documentation


Caution, risk of electric shock.
This item or material can be recycled.


Caution, attention to possibility of risk of damage to the product, process or surroundings. Refer to instruction manual.


Caution, hot surface.


This item or material can be recycled.


This item or material must be disposed of in accordance with the Waste Electrical and Electronic Equipment directive as applied by local regulations.


Protective Conductor Terminal.


Observe precautions for handling electrostatic discharge sensitive devices.

SYSTEM 4

Contents

Fig. 1 Landmark Technic Signal Processor

1 Introduction

1.1 About this guide

This guide gives the information necessary for you to operate a Landmark Technic Signal Processor. Information regarding installation is contained within the Installation Guide. More detailed information regarding servicing, repair and calibration of the processor is contained in the Service Manual.

1.2 About the Landmark Technic Processor

The Landmark Technic Signal Processor provides an accurate signal processing unit for a single LAND System 4 thermometer. Features include:

- DIN rail mounting case
- Averager, Peak Picker and Track and Hold, for signal processing
- Remote input for Track and Hold, Control, Peak Picker Reset
- Emissivity/Non-greyness
- Alarm output
- Retransmission of the thermometer signal output.

Setting up of the processor is performed using a PC and configuration software (see Section 4).

1.3 Unpacking the processor

The package containing the processor will contain the following items:

- Landmark Technic Signal Processor
- Installation Guide
- CD containing System 4 User Documentation
- Configuration software on CD and cable

1.4 Nomenclature

The processor is identified as the Landmark Technic (LM Technic) signal processor.

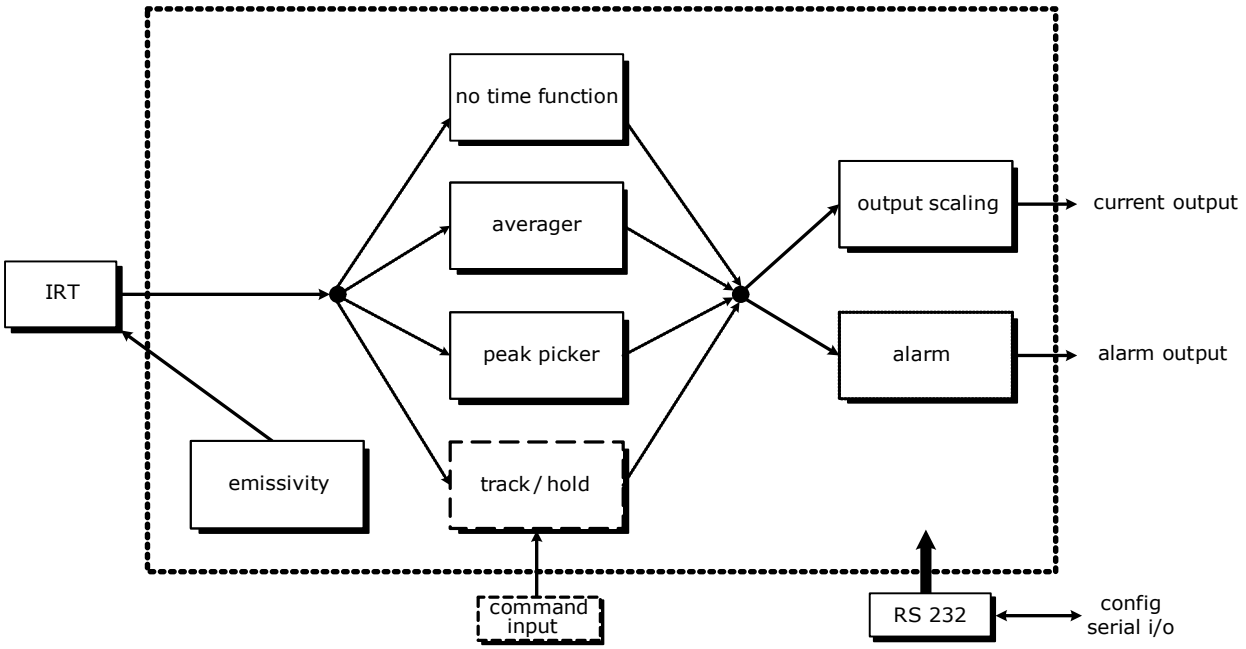


Fig. 2 LM Technic - Functional Block Diagram

2 Specification

Input/output accuracy:		<0.1% of span
Input/output drift:		<0.1% of span/°C
Quantisation:		16 bit
Sampling:		10ms
Signal retransmission range:		Adjustable over thermometer span (min 100°)
Signal retransmission current:		0 to 20mA/4 to 20mA
Signal update rate:		10ms
Current output load inc. cable:		500 ohms
Emissivity setting:		0.200 to 1.000 in 0.001 steps
Non-greyness setting:		0.800 to 1.250 in 0.001 steps
Averager adjustment range:		50ms to 512s (63%) in 15 steps
Peak Picker decay	range:	0.25°/s to 512°/s in 12 steps
	threshold:	1° steps
	on delay:	0 to 10s in 0.1s steps
	off delay:	0 to 10s in 0.1s steps
	reset mode:	Hold/reset
Track/Hold:		Controlled by external contact closure/5 to 24V d.c.
Track/Hold response time:		10ms
Alarm:		Hi/Lo
Trip level:		1° steps
Relay:		50V d.c. at 0.1A
Configuration:		Parameters set by configuration port**
Configuration port:		RS232 9600 baud fixed
PSU*:		30V to 50V d.c. at 300mA (including thermometer) 24V to 34V a.c. rms
Environment:		
Vibration:		1g any axis, 10 to 300 Hz
Humidity:		0 to 99% non condensing
Sealing:		IP20
Ambient:		5 to 50°C/41 to 122°F in specification
EMC:		EN61326

* LAND DPU recommended

** LAND Configuration software recommended

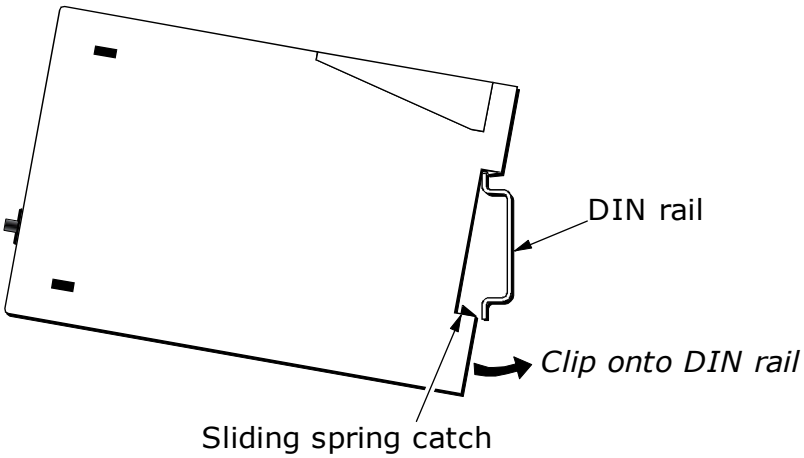


Fig. 3 Installing the LM Technic onto a DIN rail LMT010065

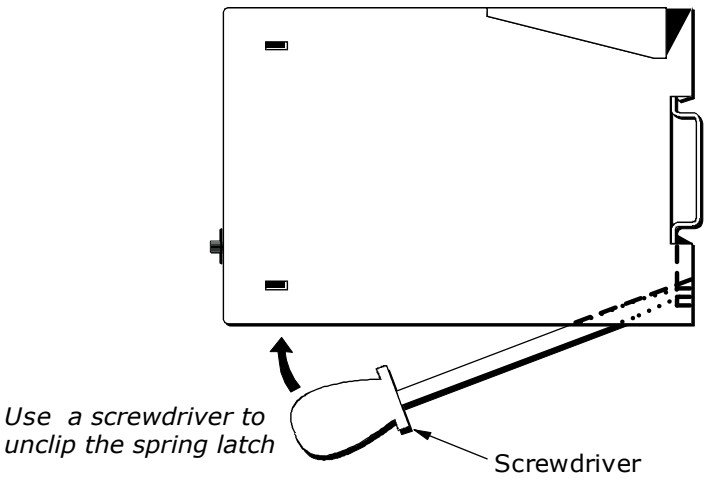


Fig. 4 Removing the LM Technic from a DIN rail LMT010066

3 Installation and Removal

3.1 Fitting the unit onto a DIN rail

The LM Technic processor is designed to be mounted onto a standard DIN rail. To install the unit:

1) Ensure that a suitable DIN rail (DIN EN 50 022) is available and installed correctly (refer to Appendix).
2) Refer to Fig. 3. Rest the uppermost groove on the rear of the processor on the top lip of the DIN rail.
3) Push the bottom of the unit so that the sliding spring catch clips onto the DIN rail.

3.2 Removing the unit from a DIN rail

1) Refer to Fig. 4. Insert a screwdriver into the sliding spring catch via the slot on the underside of the unit.
2) Lever the sliding spring catch downwards so that it disengages from the DIN rail.
3) Lift the processor off the DIN rail.

3.3 Electrical connections

The LM Technic processor is designed to be used in conjunction with the Land DPU Power Supply Unit.

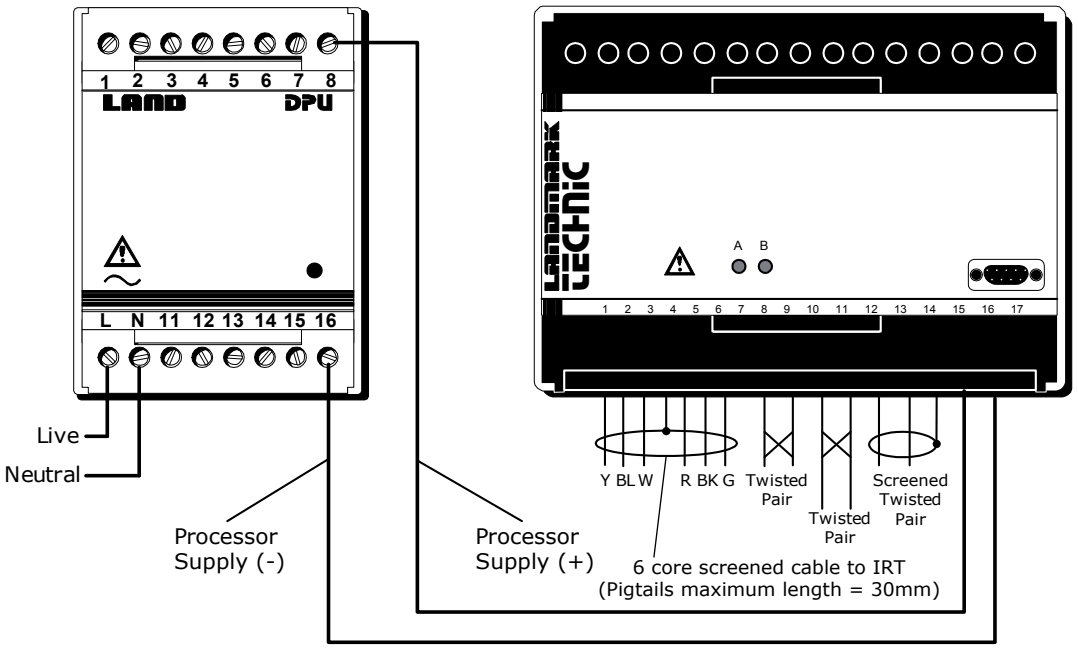
To prevent damage to the equipment, ensure that the DPU (power supply) and signal processor are fully interconnected, before switching on the mains power supply.

The LMT to DPU wiring interconnections are given in Fig. 5 (overleaf).

The LMT wiring schedule is given in Table 1.

The DPU wiring schedule is given in Table 2.

Connections to the configuration port are given in Table 3 - Appendix B.



NOTE

The LM Technic processor is designed to work with an a.c. or d.c power supply, making pins 6 & 7 on the processor interchangeable. The output of the DPU power supply is polarised, with pin 8 the positive and pin 16 the negative.

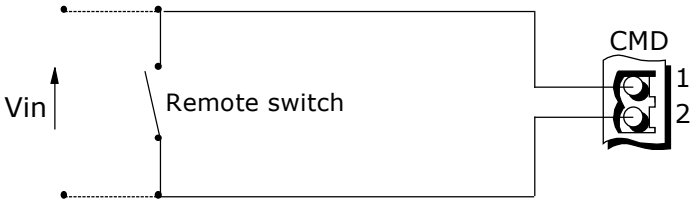
Fig. 5 LM Technic and DPU interconnections LMT010067

LM Technic Terminal Nº	Wire Colour	Function
1	Yellow	Signal input (+) from thermometer
2	Blue	Signal input (-) from thermometer
3	White	Emissivity output (+) to thermometer
4	Screen	Thermometer cable screen
5	Red	Thermometer power supply (+)
6	Black	Thermometer power supply (-)
7	Green	Emissivity return (-)
8	•	Not applicable - Do not use
9	•	Alarm relay (1)
10	•	Alarm relay (2)
11	•	Command (+)
12	•	Command (-)
13	•	Signal out (+)
14	•	Signal out (-)
15	•	Signal out (Screen)
16	•	Processor power supply input (1)
17	•	Processor power supply input (2)

Table 1 Landmark Technic terminal connections

DPU Terminal Nº	Function
L	Mains input live
N	Mains input neutral
8	DPU output (+)
16	DPU output (-)
***** All other DPU terminals are not used in this application *****	

Table 2 DPU terminal connections



	Peak Picker	Track & Hold
Switch open	Peak Pick	Track
Switch closed	Reset	Hold

Note

Remote switch can be replicated by voltage Vin. Where:
>+3.0V = Switch open
<+1.5V = Switch closed

Fig. 6 CMD (Command) input control via a remote switch S4970387

	Peak Picker	Track & Hold	
Open Circuit	Peak Pick	Track	Valley Picker
Short Circuit	Reset	Hold	Valley Pick
			Reset

Note
Potential-free contacts can be replicated by voltage Vin.
Where:
>+3.0V = Open Circuit
<+1.5V = Short Circuit

Fig. 7 CMD (Command) input control via potential-free contacts S4970388

3.3.1 Alarm output connection schedule

The Alarm output connection schedule is given in Fig. 5 and Table 1.

The Alarm relay contact rating is 50V a.c. or d.c. at 0.1A.

It is recommended that a twisted pair connection be used.

3.3.2 CMD (Command) input connection schedule

The CMD (Command) input connection schedule is given in Fig. 5 and Table 1.

The command signal is inactive when the voltage is >3.0V or open circuit (i.e. Track). The command signal is active when the voltage is <1.5V or short circuit (i.e. Hold).

The command input can be controlled via a remote switch, as shown in Fig. 6 or via potential-free contacts as shown in Fig. 7.

It is recommended that a twisted pair connection be used.

3.3.3 Output (Retransmission output) connection schedule

The Output (retransmission output) connection schedule is given in Fig. 5 and Table 1.

It is recommended that a screened twisted pair cable is used.

3.3.4 Thermometer output connection schedule

The thermometer output connection schedule is given in Fig. 5 and Table 1.

It is recommended that 6-way screened cable is used.

3.4 Cable connector assembly

The cable connectors for the processor are included in the processor package. Each cable connector must be correctly wired with the appropriate cable. (Refer to Section 3.3 for the cable schedules).

To wire up the connector.

1) Make a note of the connector's orientation.
2) Unclip the two halves of the connector shell to reveal the terminal block and the cable tie/clamp bar.
3) Wire up the connector, remembering the correct orientation of the plug, in accordance with the relevant cable schedule (see Section 3.3).
4) Ensure that the cable outer insulation is held in the clamp bar/cable tie at the connector and tighten the clamp bar screws/cable tie. Refer to Fig. 8.
5) Clip together the two halves of the connector shell ensuring that the 'write-on' label is held in place by the shell assembly.

The connector is now ready for use.

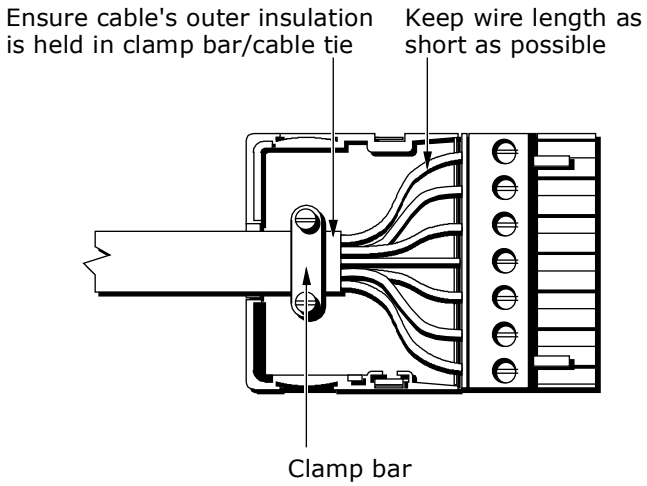


Fig. 8 Correct cable wiring arrangement S4970080

4 Using the Configurator

When the processor is connected to a System 4 thermometer, the processor must be configured for use with that particular thermometer and have its operating parameters set. The temperature measurement system (i.e. processor and thermometer) is most easily configured using the LM Technic Configuration Software and a suitable PC.

It is also possible to use a PC running standard terminal software and an RS232 port to perform the configuration, allowing the individual commands to be used. See Appendix B.

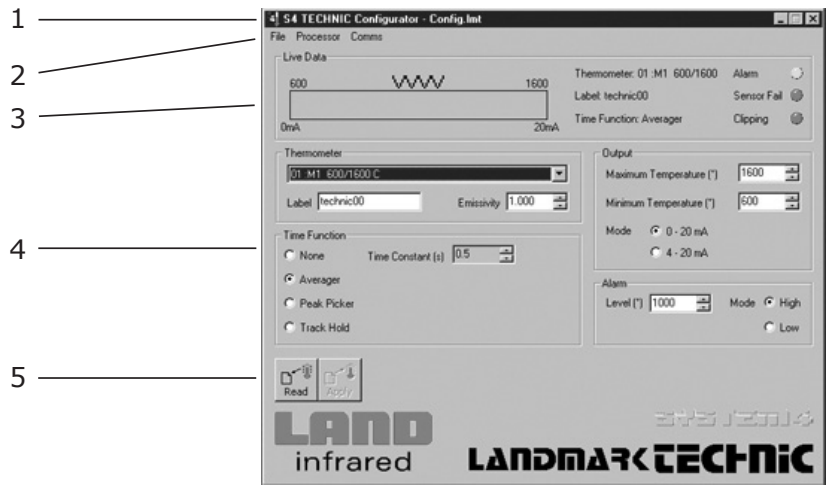
Once configured, the PC can be disconnected and the LM Technic can be left to run alone, with configuration stored into it's non-volatile memory.

4.1 Installation

Run the file on the CD and follow the Installation Instructions.

4.2 Getting Started

After the power supply has been connected (see Section 3) and switched on, it is possible to configure the LM Technic using the configuration software. Connect the configurator cable between the PC and the LM Technic and run the software by running the .exe file in the installation directory. The configurator software should respond with the display as shown below.



1 Title bar indicating configuration file name

2 A menu bar

3 A 'live' display showing actual configuration and process data from the connected processor

4 A 'configuration area' allowing parameters to be adjusted

5 Buttons for applying/reading the configuration to/from the processor

Fig. 9 Configurator Display

Configuration parameters can be stored to the LM Technic and/or can be downloaded to a file on the PC for later use. It is possible to use the software without an LM Technic, however, only file menus will be available.

4.2.1 Setting a new configuration in a processor

1) **New**. Use the 'File', 'New', menu to load default data into the configuration area.
2) **Thermometer**. In the configuration area, select the thermometer type from the list box to match the thermometer actually connected to the LM Technic.

> **Note**
>
> It is important that this is done first because it sets defaults and parameter limits in the other boxes.

3) **Label**. Type in a label for the processor/thermometer (15 characters maximum).
4) **Emissivity/Non-Greyness**. The menu changes dependent upon the selected thermometer. If a single colour thermometer has been selected, enter the desired emissivity for the material being measured. If a 2-colour ratio thermometer has been selected, enter the non-greyness.
5) **Output**. The current loop output can be scaled to any temperature range within the range of the selected thermometer (minimum span 100°). Select the desired current output range.
6) **Alarm**. The alarm level can be selected for any temperature within the range of the thermometer. The alarm can be selected to trip above (High) or below (Low) this temperature.
7) **Time function**. Select from the time function processing available as required. Depending on the time function selected, a further set of parameters may need to be chosen. (See Section 5 for details on time function processing).
8) **Apply**. When the required configuration parameters have been entered, press the 'Apply' button to send the configuration data to the LM Technic.
9) A summary of the data sent will appear in the live data, confirming that the data has been received by the LM Technic.

4.2.2 Editing a configuration in a processor

1) **Read**. Use the 'Read' button to load data from the connected processor into the configuration area.
2) In the configuration area, adjust parameters as described in 4.2.1.
3) **Apply**. When the required configuration parameters have been entered, press the 'Apply' button to send the configuration data to the LM Technic.
4) A summary of the data sent will appear in the live data, confirming that the data has been received by the LM Technic.

4.2.3 Saving/Opening a configuration file

1) **Save**. Use the 'File', 'Save' menu to save the data from the configuration area to a file.
2) **Open**. Use the 'File', 'Open' menu to load data from a file into the configuration area.

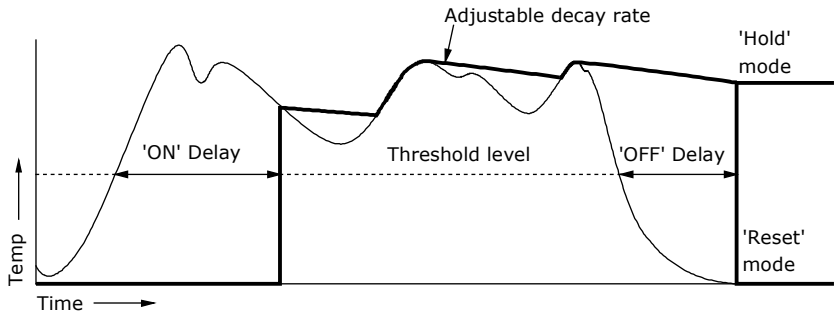
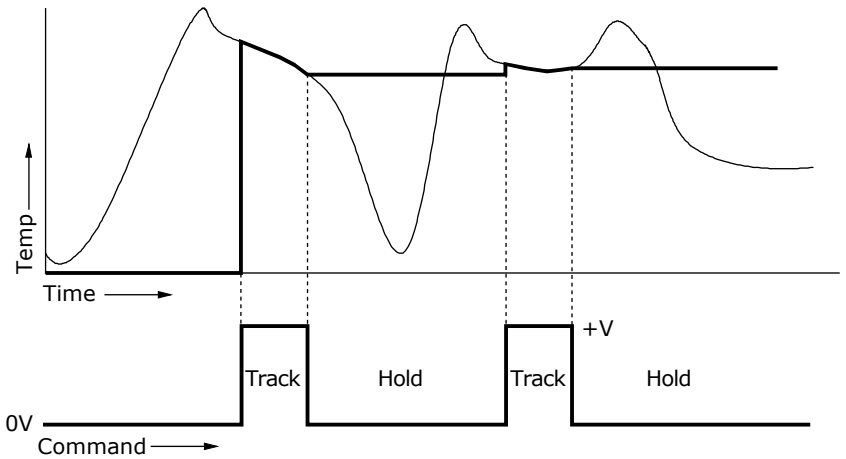


Fig. 10 Graphical representation of the Peak Picker time function S4970092



Command signal = Closure of potential-free contacts, s/c = Hold
TTL level (0 to 5V) +5V = Track
or 0 to 24V +24V = Track
0V = Hold

Fig. 11 Graphical representation of Track and Hold time function S4970093

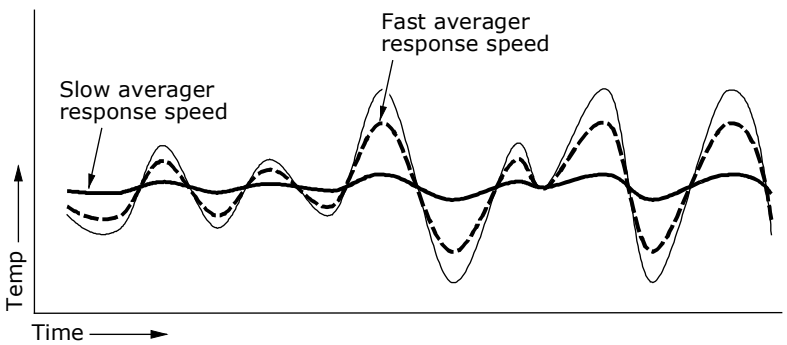


Fig. 12 Graphical representation of Averager time function S4970093

5 Time Function Processing

5.1 Peak Picker

The Peak Picker function can be used to monitor the highest temperature measured by the thermometer. This feature is useful especially for moving targets and/or where the target is obscured partially e.g. a steel slab on a rolling mill where parts of the surface are covered with scale. The 'clean' area will be at the higher (i.e. true) temperature. The Peak Picker used in Landmark Technic processors has the following features. Refer to Fig. 10.

Threshold level:	Temperature above which the Peak Picker is active, used in conjunction with the 'ON' and 'OFF' delay.
ON delay:	Time period between the temperature rising above the threshold level and the Peak Picker function switching on
OFF delay:	Time period between the temperature falling below the threshold level and the Peak Picker function switching off.
Mode:	In 'Hold' mode, at the end of the 'OFF' delay, the temperature output value is held constant until the temperature input next rises above the threshold level. In 'Reset' mode, at the end of the 'OFF' delay, the temperature output signal falls to 'under-range' until the temperature input next rises above the threshold level. The Peak Picker can be 'Reset' at any time by using the CMD input. See 3.3.2.
Decay rate:	A user-adjustable value at which the stored temperature output signal decays.

5.2 Track and Hold

Refer to Fig. 11. The Track and Hold time function is useful especially for measuring intermittent processes e.g. items on a conveyor belt. The presence of a 'hot' object can be used to activate the 'Track' function, which causes the output to display the temperature of the object. When the object moves from the measurement area, the 'Track' function can be switched off and the temperature value held until the next 'hot' object appears.

The Track and Hold function is controlled via the CMD (Command) input. See 3.3.2

5.3 Averager

Refer to Fig. 12. The Averager time function can be used to 'smooth' the temperature output signal in relation to the temperature input. The averager response can be adjusted to suit your application. With a fast response speed, the temperature output signal tracks the input signal closely, any rapid fluctuations in the input are reflected in the output. With a slow response speed, the temperature output signal is much smoother, displaying more the 'trend' of the input signal rather than rapid changes.

6 LED Indicators

LEDs A and B on the Landmark Technic give visual identification of internal operations of the unit. The following table lists the indications in order of precedence.

LED A	
Colour	**Indication**
Amber	Test mode
Flashing Amber	Volatile configuration
Flashing Green	Configurator connected
Green	OK
LED B	
Colour	**Indication**
Red	Sensor fail***
Flashing Red	Alarm
Amber	Clipping*
Flashing Amber	Obscured**
Flashing Green	Command input active
Green	OK
*Clipping = Unstable input to averaging function **Unclamped ratio pyrometers only ***Clamped pyrometers only	

7 Maintenance

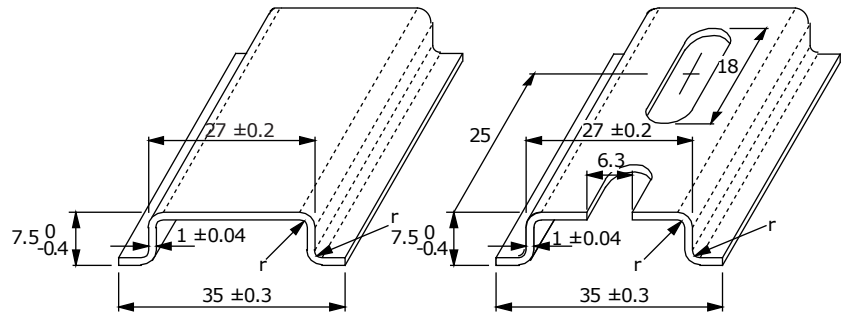
The Landmark Technic Processor is designed to be virtually maintenance free, but calibration checks are highly recommended at periods of not more than one year.

For details on Landmark Technic calibration, please contact the Calibration department at Land Instruments International.

Appendix A

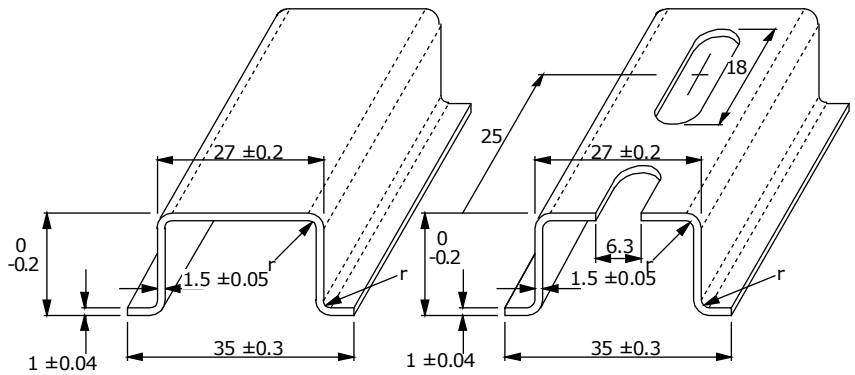
DIN rail specification. DIN EN 50 022.

(See Fig. 13 for DIN rail specifications)



Plain	
RS Stock Nº	Length
176-652	1.0m
176-668	2.0m

Punched	
RS Stock Nº	Length
424-131	0.5m
606-838	1.0m



Plain	
RS Stock Nº	Length
176-674	1.0m
176-680	2.0m

Punched	
RS Stock Nº	Length
176-696	0.5m
176-703	1.0m

Fig. 13 DIN rail dimensions

S4970179

APPENDIX B

Serial Communications Set-up

The Landmark Technic configurator port can be used for communication between the processor and either a terminal or a computer.

> **NOTE**
>
> It is recommended that configuration is normally performed using the configuration software provided.

RS232C is standard and compatible with either terminals or computers which allows communications with a single processor only.

RS485 - contact Land Instruments International.

Serial Communications specification

Mode selection: RS232C

Baud rate: 9600

Data bits: 8 bits

Parity: None

Stop bits: 1

The RS232 serial communications output connection schedules are given in Fig. 5 and Table 3.

Configurator Connector Pin Nº	Function	232 Cable (031.085)	
		Colour	D Type Pin Nº
1	0V	Black	5
2	232RX	Yellow	3
3	232TX	White	2
4	485(Y)	-	-
5	485(Z)	-	-
6	Do not use	-	-
7	Do not use	-	-
8	485(A)	-	-
9	485(B)	-	-

Table 3 Configurator terminal connections

B1 Serial Communications protocol

B1.1 RS232C read data

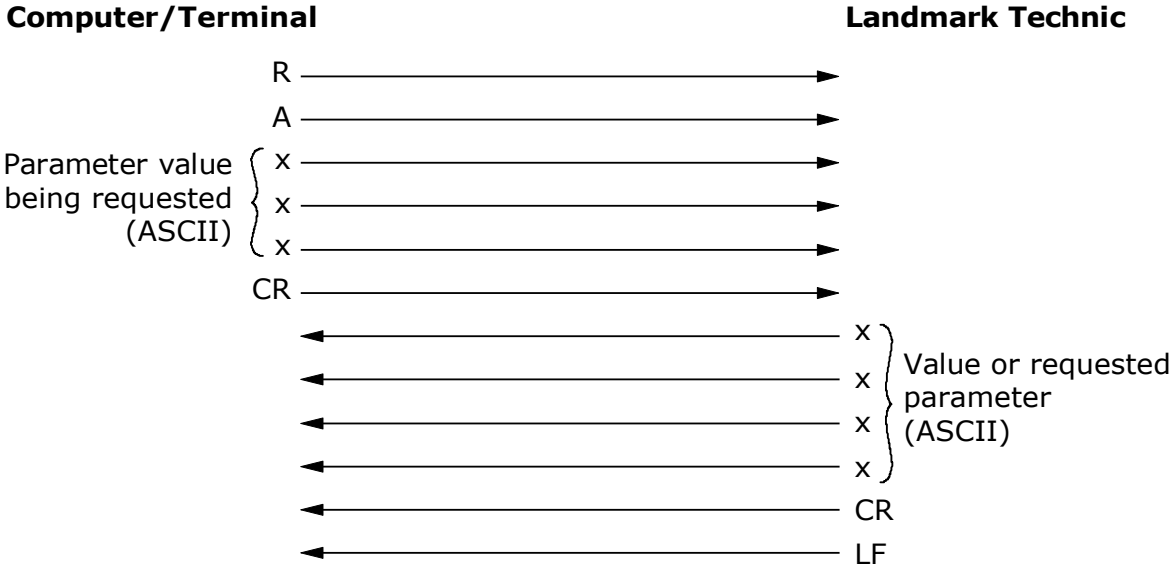


Fig. 14 RS232C mode *READ* protocol LMT010075

B1.2 RS232C set data

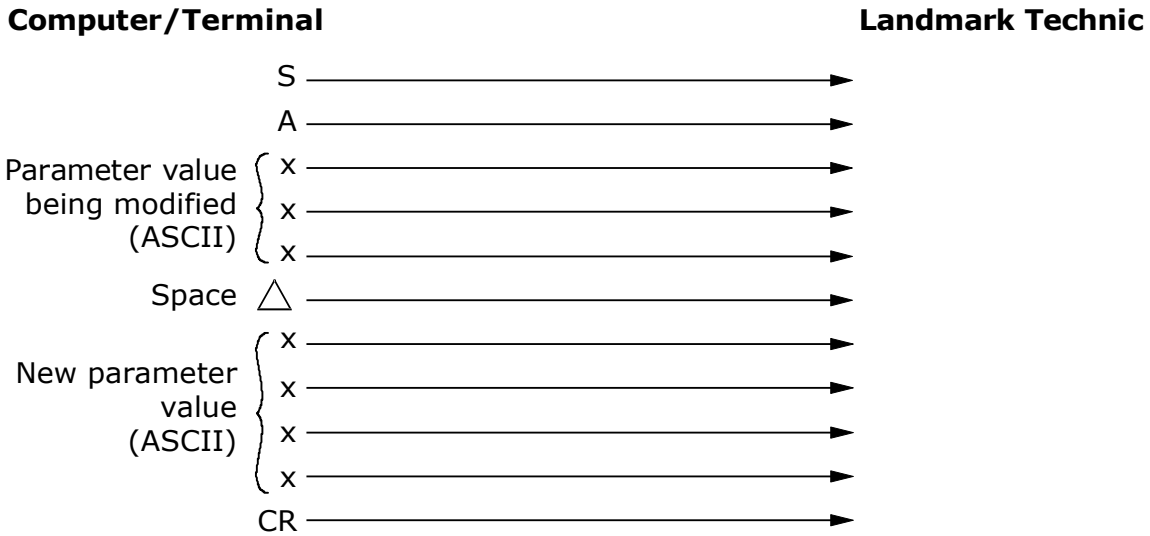


Fig. 15 RS232C mode *WRITE* protocol LMT010076

B1.3 RS232C examples

To read the temperature:

Type at the terminal:	RATMP [enter]	
Breakdown:	R	Read mode
	A	Always A
	TMP	Command to report the temperature
	[enter]	Press terminal enter key
Reply:	1000	Temperature in degrees

To set the emissivity to 0.500

Type at the terminal:	SAEMS 500 [enter]	
Breakdown:	S	Set mode
	A	Always A
	EMS	Command to work on the emissivity value
	D	(Space)
	500	New value
	[enter]	Press terminal enter key
Reply:	None	

> **NOTE**
>
> In general, changed parameters are stored in volatile memory until an explicit save command is sent (see MEM in Section B1.4).

B1.4 Serial Port Parameters

Name	Menu title text	Range		Increment	Default	Comments	
		Min	Max				
IRT	Thermometer type						List of available thermometers obtained using IFO command. **Note** Changing IRT sets default parameters in other places.
EMS	Emissivity	200	1000	1	1000	e.g. 0.200 = 200	Use of correct parameter is determined by irt_type value.
NGR	Non-greyness	800	1250	1	1000	e.g. 1.103 = 1103	
TFN	Time function	0	3	1	0	0 = None 1 = Averager 2 = Peak picker 3 = Track & Hold	
PPM	Peak picker mode	0	1	1	0	0 = Reset 1 = Hold	
PPT	Peak picker threshold	irt_ tmin	irt_ tmax	1	irt_tmin	= value in degrees e.g. 1051C	Limits and units determined by irt_type value
PON	Peak picker ON delay	0	100	1	0	e.g. 69 = 6.9s	Seconds
POF	Peak picker OFF delay	0	100	1	100	e.g. 32 = 3.2s	Seconds
PPD	Peak picker decay rate	0	15	1	0	0 = 0.00 1 = 0.25 2 = 0.5 3 = 1.0 4 = 2.0 5 = 4.0 6 = 8.0 7 = 16.0 8 = 32.0 9 = 64.0 10 = 128 11 = 256 12 = 512	Units are °/s 13 to 15 not used Initially set to 12
AVR	Averager response time	0	15	1	1	0 = 0.00 1 = 0.25 2 = 0.5 3 = 1.0 4 = 2.0 5 = 4.0 6 = 8.0 7 = 16.0 8 = 32.0 9 = 64.0 10 = 128 11 = 256 12 = 512	

Name	Menu title text	Range		Increment	Default	Comments	
		Min	Max				
A1M	Mode	0	1	1	1	0 = Low 1 = High	
A1L	Level	irt_ min	irt_ max	1	irt_max	Value in de-grees	
OPT	Signal output type	0	1	1	1	0 = 0 to 20mA 1 = 4 to 20mA	
OMX	Signal output Tmax (20mA)	>irt_ tmin +100	< irt_ tmax	5	irt_tmax	= value in degrees	Additional limit on value ensures (t_max - t_min) = >100°
OMN	Signal output Tmin (mA)	> irt_ tmin	>irt_ tmin -100	5	irt_tmin	= value in degrees	
LBL	Channel label	Full char-acter set		1	LM Technic	= character string (15 characters long)	
A1S	Alarm 1 status					Read only	0 = not set 1 = set
OBS	Obscuration status					Read only	0 = not set 1 = set
OVR	Over range status					Read only	0 = not set 1 = set
TMP	Temperature reading					Read only	0 = not set 1 = set
UDR	Under range status					Read only	0 = not set 1 = set

Name	Menu title text	Range		Increment	Default	Comments				
		Min	Max							
FLG	Status flags	0x0000	0xFFFF	0x0001		Read only	Bit	Function	Set	
							0	X		
							1	X		
							2	X		
							3	Command I/P	Active	Not active
							4	Under range	Active	OK
							5	Over range	Active	OK
							6	Obscured*	Active	OK
							7	Clipping**	Active	OK
							8	Sensor fail***	Active	OK
							9	Alarm 1	Active	OK
							10	X		
							11	X		
							12	X		
							13	X		
							14	X		
							15	X		
							*	Unclamped Ratio IRT only		
							**	Average Node Only		
							***	Clamped IRT only		
MEM	Memory Function	0000	9999	0001	0000		Read response 0000 RAM = Flash Read response 0001 RAM ≠ Flash Flag is set when configuration is volatile i.e. will be lost at power down. Set arg 1101 Save RAM>FLASH Set arg 9999 Move FLASH>RAM See also REFresh			
REF	Refresh	0000	0001	0001		Read only	0 = refreshON, 1 = refreshOFF continuous refresh FLASH to RAM			
IFO	Information	0	3	1		Read only	0 = Processor build info 1 = Thermometer list 2 = Configuration report 3 = Contact information Multi-line reply with [start] and [end] delimiters			

B1.5 System Communications Timing Data

Command response time

This is the time taken between the end of the last character of a command and the beginning of the first character of the reply. This time is independent of the selected baud rate.

All commands are serviced within 20ms.

Command reply time

This is the time taken by the LM Technic reply. It is directly related to the selected baud rate and the number of characters in the reply.

> NOTE
>
> Use of the IFO command, which will involve long replies, will disrupt internal timing and affect time function processing.

Inter-command timing

This is the time between the end of the last character of a command received by the LM Technic and the end of the last character of its response i.e. the period when the LM Technic is unable to take a command because it is still processing a previous one.

This is the command response time + command reply time.

For RS232C at 9600 baud, assuming a reply of 20 characters maximum, the inter-command time is 41ms.

Cable Lengths

The maximum cable lengths are, to a great extent, dependent on baud rate and cable type. Generally a lower baud rate will give reliable communications over a longer length of a given cable type.

RS232C 9600 baud, 50m (EIA RS232C standard)

An AMETEK Company

PRODUCT WARRANTY

Thank you for purchasing your new product from Land Instruments International. This Land manufacturer's 'back-to-base' warranty covers product malfunctions arising from defects in design or manufacture. The warranty period commences on the instrument despatch date from the Land Instruments International Ltd. factory in Dronfield, UK.

36 MONTHS WARRANTY

Building upon the reputation for reliability and longevity that System 4 and UNO thermometers have earned, Land are delighted to be able to provide our customers with an industry-leading 36 month warranty for the following products:-

- System 4 thermometers, processors, accessories and mountings and special instruments based on System 4.
- UNO thermometers, accessories and mountings and special instruments based on UNO.
- Application-dedicated processors based on LANDMARK® Graphic.
- ABTS/S and ABTS/U.
- FTS.
- VDT/S and VDT/U.
- DTT.
- FLT5/A.

This 36 month warranty is provided as standard for all orders for the products listed above received from 1st May 2002.

We believe that our customers expect us to set the standard in terms of performance, quality, reliability and value for money. This 36 months warranty, as a part of an on-going program of continuous improvement, is just one way in which Land strive to maintain our position as the temperature measurement partner of choice.

12 MONTHS WARRANTY

All Land Instruments International products not provided with 36 months warranty (see list above), are provided with a 12 months warranty.

PRODUCT WARRANTY

EXCLUSIONS FROM WARRANTY

It should be noted that costs associated with calibration checks which may be requested during the warranty period are not covered within the warranty.

Land reserve the right to charge for service/calibration checks undertaken during the warranty period if the cause is deemed to fall outside the terms of the warranty.

This Land manufacturer's warranty does not cover product malfunction arising from:-

- incorrect electrical wiring.
- connection to electrical power sources outside the rating of the product.
- physical shock (being dropped, etc.) and impact damage.
- inappropriate routing, support, physical shock & strain protection, etc. of the lightguide (Fibroptic thermometers only).
- environmental conditions exceeding the IP / NEMA rating of the product.
- environmental conditions outside the Ambient Temperature, Humidity and Vibration rating of the product.
- environmental contamination (solvent vapours, deposition of airborne contamination, cooling liquids of non-neutral pH, etc.).
- overheating as a result of interruption of water/air flow through cooling jackets or of incorrect installation.
- inappropriate modification of product (drilling holes in thermometer bodies, etc.).
- inappropriate recalibration which results in product calibration being taken outside specification.
- improper resealing of thermometer following parameter adjustment (UNO, FLT5/A, etc.).
- attempted repair by a non-Land-authorised repair centre.

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