

STARLOG

Pressure Transmitters

Model 6512



Copyright Notice

Copyright © Unidata Australia 1996. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without prior written permission of Unidata Australia, 3 Whyalla Street, Willetton, Western Australia, 6155, Australia.

Printed in Australia.

Published by Lynn MacLaren Publishing.

IBM[®] is a registered trademark of International Business Machines Corp.

Table of Contents

1. INTRODUCTION	1
2. USING A PRESSURE TRANSMITTER IN A STARLOG SCHEME	3
2.1. Choosing a Data Logger	3
2.2. Adding the Pressure Transmitter to a Scheme	3
2.3. Using a MACRO Data Logger	4
3. INSTALLATION	5
3.1. Mounting	5
3.2. Cabling	5
3.3. Connections	5
3.3.1. Pressure Transmitters (up to 200 kPa)	5
3.3.2. Pressure Transmitters (more than 200 kPa)	6
4. CALIBRATION	7
5. SPECIFICATIONS	9
APPENDIX A — USING VERSION 2 SOFTWARE	
A.1. Using a MACRO Data Logger	A-1

1. INTRODUCTION

The Pressure Transmitter (Model 6512) is a robust semiconductor pressure sensor packaged with temperature compensation circuitry and signal amplifiers in a weatherproof enclosure. It is designed to interface with UNIDATA's



Model 6512 Pressure Transmitter

STARLOG range of Data Loggers.

The Pressure Transmitter provides a voltage signal that is analogous to the pressure applied to the pressure sensor. This may be a gaseous or a liquid pressure.

Two types of transmitter are available: gauge and differential. The gauge type monitors pressure as compared to the atmosphere. It is used in many applications like monitoring gas, water level and water depth. While you can use the differential type instrument in the same way, you can also choose to measure a second pressure other than the atmosphere then monitor the difference between two pressures. One application for this type is to detect valve leaks.

The Pressure Transmitter is available in a range of models with each model having a different measurable maximum pressure. Models of 500kPa and above use high precision DRUCK pressure transducers (see supplement 6239).

The available models, documented in this supplement, are:

Model	Range	Type
6512M	0 to 10 kPa	Gauge
6512A	0 to 50 kPa	
6512B	0 to 100 kPa	
6512C	0 to 200 kPa	
6512J	0 to 500 kPa	
6512K	0 to 1000 kPa	
6512L	0 to 2000 kPa	
6512O	0 to 10 kPa	Differential
6512G	0 to 50 kPa	

The Pressure Transmitter uses one analog channel. The instrument is self-powered from the Data Logger and consumes 4mA which is approximately 4% of a standard Alkaline battery pack.

2. USING A PRESSURE TRANSMITTER IN A STARLOG SCHEME

The Model 6512 Pressure Transmitter can be connected to a STARLOGGER, Portable or MACRO Data Logger to provide valuable pressure data in a STARLOG Data Logging System.

To use the Pressure Transmitter in a Data Logging System, you first define what and when to log using STARLOG Software. Data sensed by the Instrument is then logged according to the *Data Logging Scheme* you define.

STARLOG Software runs on an IBM-compatible computer and is Windows-based. Using drop-down menus and pop-up menus, you can easily define a Scheme, then load it into a Logger, and sometime later, unload the data to your computer, display it (as a plot or a list) on the screen, or print it out. You can also have a look at data as it is being logged by using Test Mode.

This section explains how to create and use a STARLOG pressure monitoring Scheme using Software Version 3.0. See the STARLOG Users Manual 6245 for more details. (For Version 2 usage notes see Appendix A.)

2.1. Choosing a Data Logger

The Pressure Transmitters (model 6512 series) may be used with either a Portable, STARLOGGER, a MACRO Data Logger (in PDL compatibility mode). You will want to select a correct scaling formula.

2.2. Adding the Pressure Transmitter to a Scheme

When you define your Pressure Data scheme, ensure that you choose the correct transmitter from the list of instruments by checking the Model Number on the Transmitter you are using. This selects the correct range.

```

===== Transducer 1 =====
Description: 50 kPa Gauge Pressure
Output:  Analog Voltage (mV)  [v]   Channel:  a0           [v]
Min:      0
Max:     2550
Scale:    FullScale a to b    [v]
a:        0
b:        50
Formula:  [v]
Title:    Press
Units:    kPa
Using:    ###.#              [v]

      OK      Cancel

```

6512A	Pressure Instrument – 50 kPa Gauge
6512B	Pressure Instrument – 100 kPa Gauge
6512C	Pressure Instrument – 200 kPa Gauge
6512G	Pressure Instrument – 50 kPa Differential
6512J	Pressure Instrument – 500 kPa Gauge
6512K	Pressure Instrument – 1000 kPa Gauge
6512L	Pressure Instrument – 2000 kPa Gauge
6512M	Pressure Instrument – 10 kPa Gauge
6512O	Pressure Instrument – 10 kPa Differential

When you add a Pressure Transmitter to a Scheme, the default channel is: Analog Channel 0 (a0). Each transmitter is logged on an Analog Channel. If you are using several transmitters, select an Analog channel for each one.

The Pressure Transmitter has the following attributes:

Refer to the connections information in the next section for the Data Logger pin

```

===== Transducer 1 =====
Description: 2000 kPa Gauge Pressure
Output:  Analog Voltage (mV)  [v]   Channel:  A0           [v]
Min:      0
Max:     5000
Scale:    FullScale a to b    [v]
a:        0
b:        2000
Formula:  [v]
Title:    Press
Units:    kPa
Using:    ####              [v]

      OK      Cancel

```

and Field Termination Strip terminal assignments for Analog channels.

If you have connected a probe to other channels, then you need to **Edit** a Transducer and change the allocated **Channel**.

The connection details in Section 3 assume you are using these defaults.

2.3. Using a MACRO Data Logger

You can use the default channel settings (for 8 bit analog channels) in a MACRO Data Logger as well. However, if you want to use a high resolution channel, then you must **Edit** a Transducer and change both the default channel and the scaling formula. In the case of a Model 6512L Pressure Transmitter, you would change these to:

3. INSTALLATION

3.1. Mounting

The Pressure Transmitter is housed in a weather-proof enclosure (125mm H, 75mm W, 78mm D) which is attached to a 100mm x 170mm plate (2mm thick). The plate has 4 x 9mm holes in the corners enabling ease of attachment to a wall, post etc.

3.2. Cabling

The recommended cable is three core shielded low voltage data cable. See the following section for connections.

The cable length, from the instrument to the Data Logger, should be kept to a minimum to avoid electrical noise and signal fading. (A maximum of 30 metres is recommended).

3.3. Connections

The Pressure Instrument is connected to a Data Logger via three input/output wires. These wires must be connected from Logger to terminals located inside the instrument (see figures 4.1 and 4.2 on pages 8 and 9). Pressure Instruments with a range of more than 200 kPa have 4 additional terminals to which are wired the connections for the Druck transducer.

3.3.1. Pressure Transmitters (up to 200 kPa)

Pressure Transmitter			STARLOGGER & PDL		MACRO Data Logger	
Term	Function	Channel	Pin	Term	Pin	Term
1	signal output	a0	1	39	20	39
2	Common		23	38	1	40
3	+5V Power supply		13	15/16/17	18	49

3.3.2. Pressure Transmitters (more than 200 kPa)

Pressure Transmitter			STARLOGGER & PDL		MACRO Data Logger	
Term	Function	Channel	Pin	Term	Pin	Term
5	signal output	a0	1	39	20	39
6	Common		23	38	1	40
7	+5V Power supply		13	15/16/17	18	49
DRUCK Connections					Wire Colour	

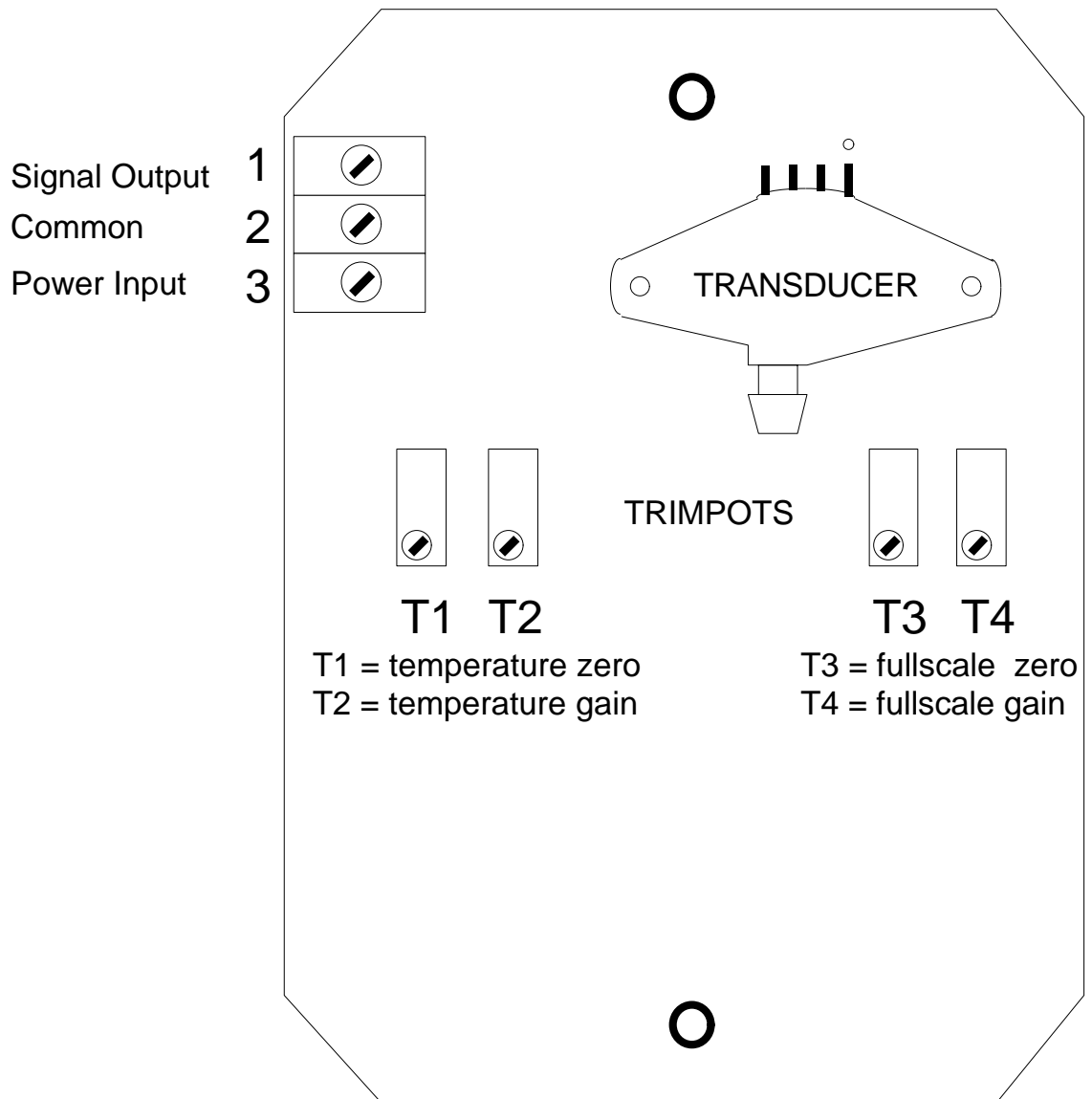


Figure 4.1 – Pressure Transmitter (up to 200kPa)

1	Gnd to Transducer	white
2	Output +ve	yellow
3	Power to transducer	red
4	Output -ve	blue

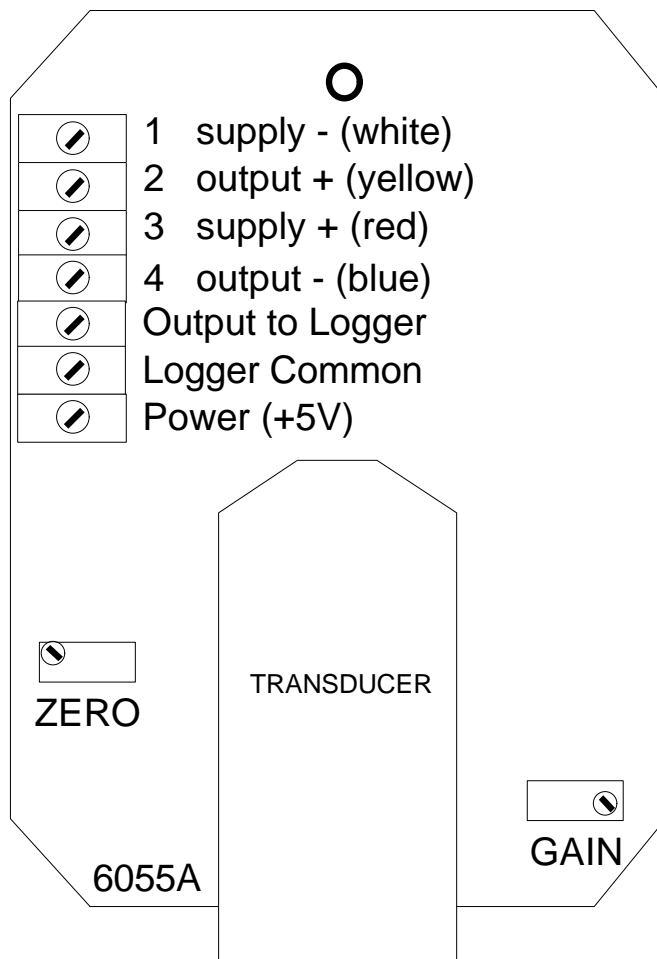


Figure 4.2 – Pressure Transmitter (over 200kPa)

4. CALIBRATION

Some user calibration of the Pressure Transmitter unit is possible. The low pressure models (up to 200 kPa) have four adjustment potentiometers (see figure 4.1). The zero and gain may be adjusted by the user if deemed necessary. The other two are for temperature compensation purposes and should not be adjusted. Each adjustment trimpot is clearly labelled on the printed circuit board.

Ensure that you do not adjust the trimming potentiometers labelled T1 and T2 in this diagram as they change the temperature calibration.

The procedure for zero and gain adjustment is as follows:

1. Using the Field Test Unit (Model 6401B), the reading obtained on the input channel should be tuned to read between 0 and 1 when no pressure is applied to the input.
2. Now with the rated full scale pressure applied to the input, adjust the gain such that the reading obtained is 255.
3. Repeat step 1 and step 2 until these outputs are obtained.

Calibration of the high pressure models (over 200 kPa) is similar to that of the low pressure models but with no temperature compensation adjustments. The position of the gain and zero adjustments is as shown in the following diagram. Calibrate the device as described in steps 1 to 3 above.

5. SPECIFICATIONS

Range

Model 6512A	0 to 50 kPa	Gauge
Model 6512B	0 to 100 kPa	Gauge
Model 6512C	0 to 200 kPa	Gauge
Model 6512G	0 to 50 kPa	differential
Model 6512J	0 to 500 kPa	Gauge
Model 6512K	0 to 1000 kPa	Gauge
Model 6512L	0 to 2000 kPa	Gauge
Model 6512M	0 to 10 kPa	Gauge
Model 6512O	0 to 10 kPa	differential

Operating Temperature Ranges

Model 6512

A/B/C/G/M/O:	0°C to 85°C	±1%
	-25°C to 125°C	±2%

Model 6512J/K/L:	-20°C to 80°C	±2%
------------------	---------------	-----

Resolution: maximum range of model divided by 256

Accuracy: ±0.5% (-0 to 60°C)

Linearity: ±0.1% of fullscale

Response Time: 1 ms for 10% to 90% change of full scale

Output: 0 to 2.55 Volts DC full scale (offset adjustable)

Input: 5V (ex Data Logger)
common (ex Data Logger)

Power Consumption: 4 mA from Data Logger (4% of alkaline battery life)

Size: 125mm H, 75mm L, 75mm D

Weight: 450 g

Enclosure: Polycarbonate top and bottom, IP67 rating,
hoseproof, dustproof. Top fitted to base with
4 plastic screws.

Cable Glands: 1 x 13mm cable gland supplied fitted

Input Tube Gland: 1 x 13mm gland supplied fitted

Connector: 1 x 25 pin 'D' connector supplied

Mounting Available: Instrument housing attached to 2mm metal plate
One 9mm hole available in each corner of plate
for mounting purposes.

Recommended Cabling

Model 6600A 2 core shielded cable [not supplied]

This page intentionally left blank.

Appendix A – Using Version 2 Software

When you add a Pressure Transmitter to a Scheme, the default channel is: Analog Channel 0 (a0). Each transmitter is logged on an Analog Channel. If you are using several transmitters, select an Analog channel for each one.

The Pressure Transmitter has the following attributes:

Transducer Description	50 kPa Gauge Press	
Input Channel	a0	analog 0 (8 bit)
Input Channel Range mV	0 to 2550	
Transducer Range mV	0 to 2550	
Transducer Scaling/Formula	0 to 50	
Title for Reports	Press	
Units of Result	kPa	
Using String	###	

If you have connected a probe to other channels, then you need to **Edit a Transducer** and change its **Input Channel** to the appropriate one.

A.1. Using a MACRO Data Logger

You can use the default channel settings (for 8 bit analog channels) in a MACRO Data Logger as well. However, if you want to use a high resolution channel, then you must **Edit a Transducer** and change both the default channel and the scaling formula. In the case of a Model 6512L Pressure Transmitter, you would change these to:

Transducer Description	2000 kPa Gauge Press	
Input Channel	h0	analog 0 (16 bit)
Input Channel Range mV	0 to 5000	
Transducer Range mV	0 to 5000	
Transducer Scaling/Formula	0 to 2000	
Title for Reports	Press	
Units of Result	kPa	
Using String	####	

This page intentionally left blank.