

4–20mA to Catalytic Input Converter 04200-A-1201

Helping to make a Safer World

Ensure that you read and understand these Operating Instructions **BEFORE** operating the equipment.

Please pay particular attention to the Safety Warnings.

WARNINGS



1. Not designed or certified for use in hazardous areas.
2. For indoor use only.
3. Do not expose to rain or moisture.

IMPORTANT

Zellweger Analytics have endeavoured to ensure that this 4 - 20mA to Catalytic Input Converter is compatible with standard bridge input circuits.

Since Zellweger Analytics, however, have no control or full knowledge of the design of all bridge input control cards, should difficulties be experienced using the converter please contact Zellweger Analytics or their agent.

If any further details are required which do not appear in this manual, contact Zellweger Analytics Limited or their agent.

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1. INTRODUCTION

The Signal Converter Module has been designed specifically to interface between a bridge input circuit, which is typical of several control systems, and a Searchpoint Optima 4 to 20mA output.

While this manual covers the use of the Signal Converter Module with the Searchpoint Optima Infrared Detector, the Signal Converter Module can equally be used to interface between other types of 4 - 20mA output detectors and a bridge input control system.

The module allows users of an existing installation of catalytic detectors to retrofit them with Searchpoint Optima Infrared Detectors without the need to replace field cables or the control system.

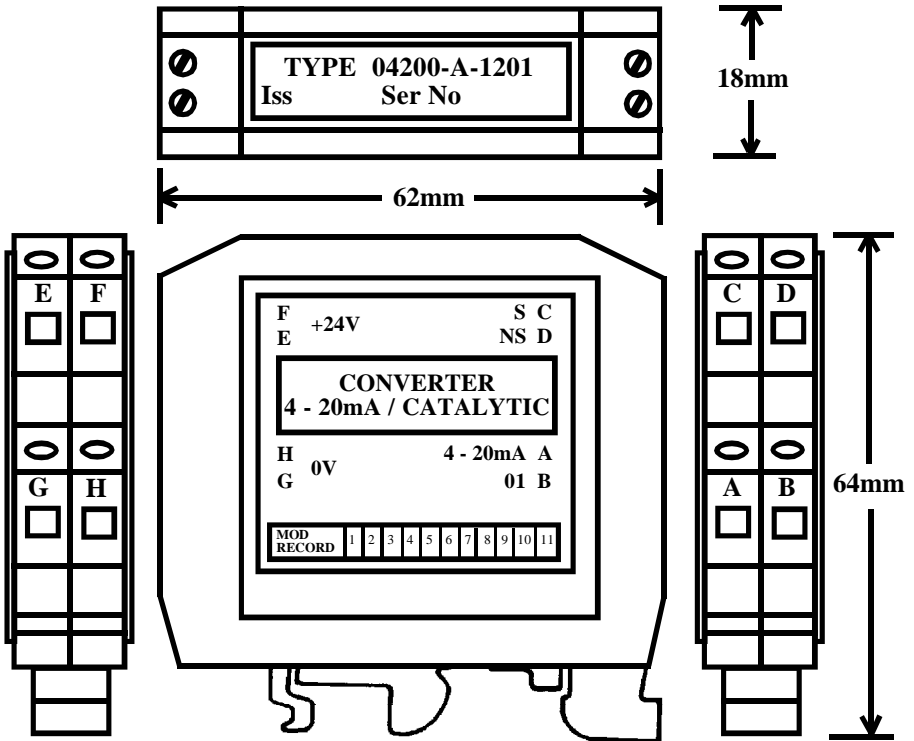
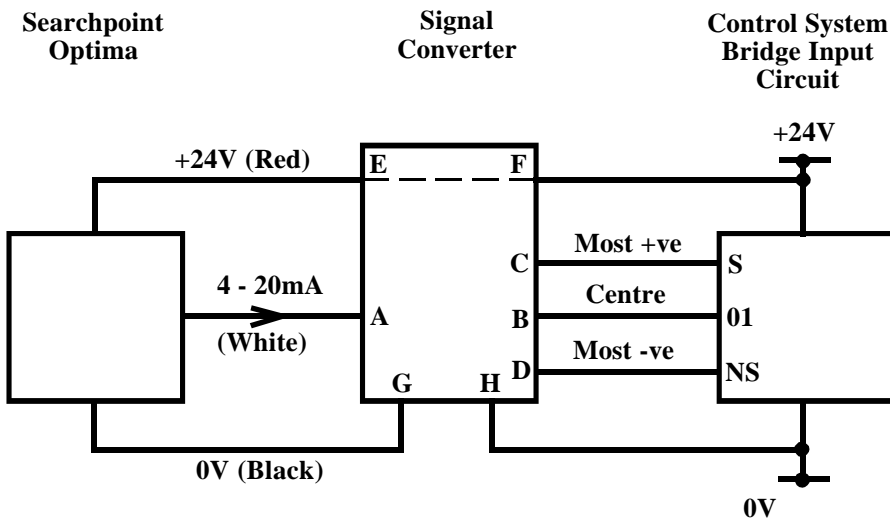


Figure 1 Signal Converter Module

The module is designed for use in safe areas only and is contained in a rugged plastic enclosure which clips onto a standard 35mm DIN rail. It replaces the set of three 6mm wide DIN rail mounted terminals S, NS and 01 so that it requires no extra space at the back of the control cabinet or rack.

The module operates at a supply current of 200 to 300mA drawn from the control card supply which would normally be used to power the catalytic sensor.

The module contains three user configured links which must be set prior to commissioning. These links set the ground reference for the control current and the polarity of the mV output signal. The position of these links are shown in Figure 3.



Note: Terminals E and F provide a convenient straight through wiring connection for the external transducer and have no connection to the converter internal circuitry.

Figure 2 Interconnecting Diagram

2. INSTALLATION

2.1 CONNECTIONS

Four pairs of terminals are provided to allow connections to the detector and to the control system bridge input circuit. These are:

Terminal	Signal	Description
A	4 - 20mA	4 - 20mA input from the detector.
B	01	Centre output to the control system bridge circuit.
C	S	Most positive output to the control system bridge circuit.
D	NS	Most negative output to the control system bridge circuit.
E	+24V Out	+24V to the detector.
F	+24V In	+24V from the control system bridge circuit.
G	0V Out	0V to the detector.
H	0V In	0V from the control system bridge circuit.

Figure 2 shows a block diagram of these connections while the location of these terminals are shown in Figure 3.

2.2 LINK SETTINGS

CAUTION

Never apply power to the module with **BOTH LK1 and LK2** fitted. Only fit **ONE** of these two links.

There are three links on the module which need to be configured before commissioning the system. These are:

- LK1 - When fitted, sets the input signal reference to the supply 0V.
- LK2 - When fitted, sets the input signal reference to the most negative or non sensitive (NS) line of the bridge circuit.
- LK3 - This is a dual link which determines the polarity of the output signal voltage. This pair of links is always fitted and are fitted either in a horizontal or vertical position dependent upon the required polarity of the output signal.

To access the above links, remove the module front cover using a screwdriver to prise the cover off the module.

2.3 INSTALLING

To install the Signal Converter Module, proceed as follows:

- (1) Ensure that the Control System channel Control Card to be converted is of the bridge input type and its sensitivity is compatible with the converted signal voltage of the Signal Converter Module.
- (2) Ensure that the Searchpoint Optima, or 4 to 20mA output device, is of the current source type.
- (3) Inhibit the alarms at the control room.
- (4) Withdraw the associated channel Control Card to remove the power to the circuit to be modified.
- (5) Install the Searchpoint Optima, or 4 - 20mA output device, as described in their associated manual.
- (6) Ensure that the 0V line for the Searchpoint Optima, or 4 - 20mA device, is common with the control system supply or is derived from the control system control card.
- (7) Remove the Signal Converter Module front cover by prising the cover off with a screwdriver.
- (8) Locate the links LK1, LK2 and LK3 and set the links to the required positions as indicated below:

Control Card Make and Model	LK1	LK2	LK3	Supply Adjust
GP Elliot Type GP120	Out	In	Vertical	VR1501
GP Elliot Type SO242	Out	In	Vertical	VR6
ICS Type 200211	In	Out	Vertical	VR4
ICS Type 406675	Out	In	Horizontal	VR4
Sieger 5700	In	Out	Horizontal	RV1
Albion Controls SCE002	In	Out	Horizontal	RV1
IGD 605CC	In	Out	Vertical	R54

- (9) Replace the module front cover.
- (10) Disconnect any redundant sensor wiring to the Control Card input.
- (11) Remove the three DIN terminal blocks for the old sensor connections. ie. Most positive or S, centre or 01 and most negative or NS.

- (12) Fit the Signal Converter Module to the DIN rail in the position vacated by the three DIN terminal blocks.
- (11) Connect the Searchpoint Optima, or 4 - 20mA device, field wiring and control card input as shown in Figure 2.

2.4 BRIDGE SUPPLY ADJUSTMENT

The following procedure is written for use with the Searchpoint Optima, however a similar procedure is suitable for other 4 - 20mA sensor devices.

To complete the installation of the Signal Converter Module, continue as follows:

- (1) Inhibit the control system alarm/fault relays.
- (2) Connect the Control Card to the control system by means of a suitable extension lead. This will automatically reconnect power to the Searchpoint Optima and Signal Converter Module.
- (3) Using a DVM and with 0mA applied to the converter, measure the dc voltage between the Signal Converter Module terminals C and D which should be between 2.9V and 3.0V.
- (4) If the DVM readings is outside the 2.9V to 3.0V limits, adjust the associated Control Card adjustment to bring the reading within limits.

Note: Ensure the 300mA maximum rating for the converter is not exceeded.

- (5) Disconnect the Control Card extension lead and re-insert the Control Card into the System.
- (6) Allow at least 20 seconds for initialisation to occur.

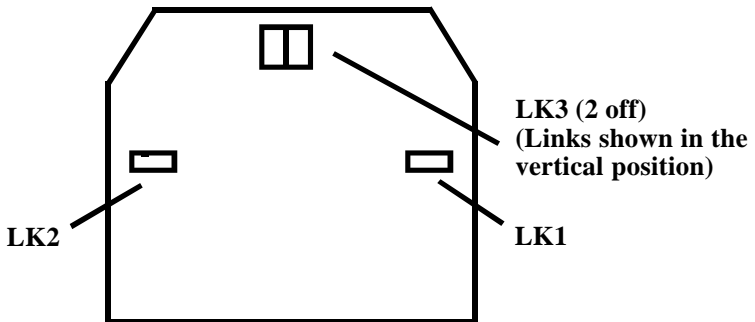


Figure 3 Link Locations

- (7) Adjust the Control Card ZERO adjustment for zero reading on the Control Card display.
- (8) Leave the Searchpoint Optima to stabilise for one hour and then readjust the ZERO adjustment again for a zero reading on the Control Card display.
- (9) Following the procedure as detailed in the Searchpoint Optima Manual, either:
 - a. Apply a known concentration of gas to the Searchpoint Optima or,
 - b. Using the Optima Hand-Held Interrogator, inject a signal of between 4 and 20mA (12mA = 50% fsd).
- (10) Adjust the Control Card SPAN adjustment to set the Control Card display to the correct reading.

- Notes:*
1. *If the display shows a negative reading during Steps (8) and (9), change the position of the LK3 connections.*
 2. *A degree of drift may be experienced while the Control Card stabilises.*

3. ORDERING DETAILS

04200-A-1201 Signal Converter Module, 4 to 20mA.

4. SPECIFICATION

Input Signal:	0 to 25mA.	
Output Signal:	0 to 70mV (for a 4 to 20mA input signal).	
Repeatability:	±1% fsd.	
Zero Drift:	Less than ±1% fsd.	
Span Drift:	Less than ±1% fsd.	
Response time:	200ms.	
EMC Protection:	Conforms to:	BS EN 50082-1:1992. BS EN 50081-1:1992.
		Additional radiated immunity test level of 10V/m.
CE	Complies with:	89/336/EEC. 93/68/EEC(d).
Operating Temperature:	-10°C to +40°C.	
Storage Temperature:	-40°C to +75°C.	
Weight:	44 grams	
Connections:	Screw down terminals for up to 2.5mm ² stranded conductors.	
Power Supply:	2.9V to 3.0V at 200mA to 300mA. Derived from the original catalytic sensor power source on the control card.	

Find out more

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