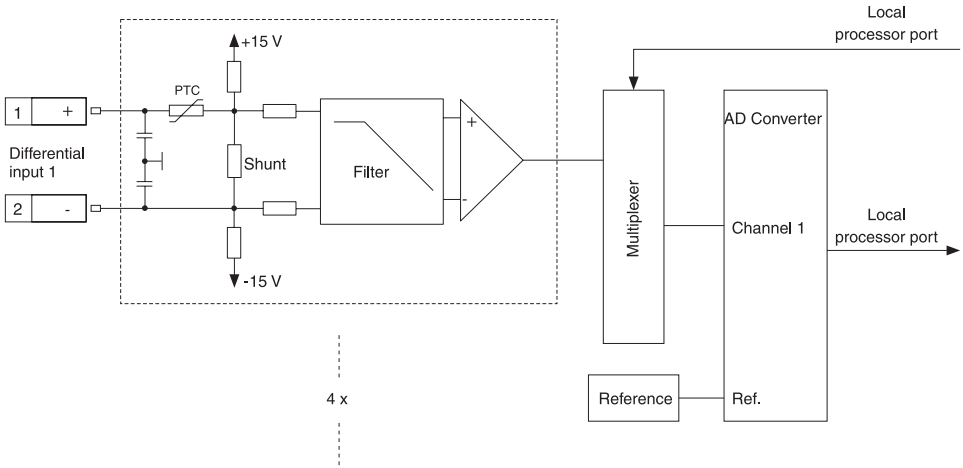
10.8 AI774

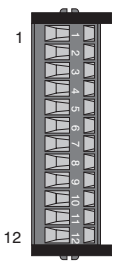
10.8.1 Technical Data

Module ID	AI774
General Information	
Model Number	7AI774.70
Short Description	2003 Analog Input Module, 4 inputs, 0 to 20 mA, 12 Bit, screw-in module, Order TB712 terminal block separately!
C-UL-US Listed	Yes
B&R ID Code	$06
Slot	AF101 adapter module, CP interface
Static Characteristics	
Module Type	B&R 2003 screw-in module
Number of Inputs	4 differential inputs
Input Signal	0 - 20 mA (also ±20 mA)
Digital Converter Resolution	12 Bit
Differential Input Resistance (load)	130 - 200 Ω
Measurement Precision at 25 °C Offset Gain Linearity Error	 Max. ±5 µA Max. 0.05 % of final value Max. 0.05 % of final value
Temperature Drift	±0.012 %/°C ±0.4 µA/°C
Power Consumption	Max. 0.4 W
Dynamic Characteristics	
Input Filter Cut-off Frequency Attenuation	 225 Hz 60 dB
Operating Characteristics	
Electrical Isolation Input - PCC Input - Input	 No No
Mechanical Characteristics	
Dimensions	B&R 2003 screw-in module

10.8.2 Input Circuit Diagram



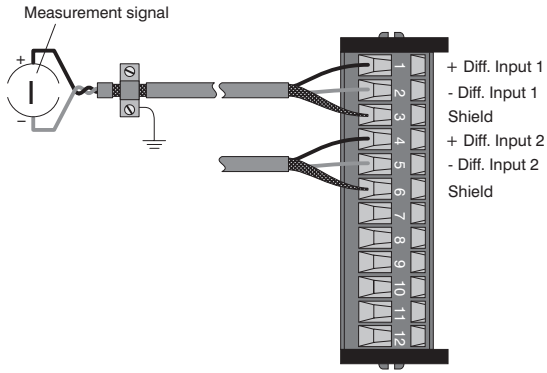
10.8.3 Connections



TB712

Pin	Assignment
1	+ differential input 1
2	- differential input 1
3	Shield
4	+ differential input 2
5	- differential input 2
6	Shield
7	+ differential input 3
8	- differential input 3
9	Shield
10	+ differential input 4
11	- differential input 4
12	Shield

10.8.4 Connection Example



10.8.5 Variable Declaration

The variable declaration is valid for the following controllers:

- 2003 PCC CPU
- Remote I/O Bus Controller
- CAN Bus Controller

The variable declaration is made in PG2000. The variable declaration is described in Chapter 4, "Module Addressing".

Automation Studio™ Support: See Automation Studio™ Help starting with V 1.40

Accessing screw-in modules is also explained in the sections "AF101" and "CPU".

Data access takes place using data and configuration words. The following table provides an overview of which data and configuration words are used for this module.

Data Access	VD Data Type	VD Module Type	VD Chan.	R	W	Description
Data word 0	INT16	Analog In	1	●		Analog input value channel 1
Data word 1	INT16	Analog In	2	●		Analog input value channel 2
Data word 2	INT16	Analog In	3	●		Analog input value channel 3
Data word 3	INT16	Analog In	4	●		Analog input value channel 4
Configuration word 8	INT16	Transp. Out	16		●	Switching level for threshold value switch
Configuration word 12	WORD	Transp. In	24	●		Module status
Configuration word 14	WORD	Transp. In	28	●		Module type
	WORD	Transp. Out	28		●	Module configuration

10.8.6 Access using CAN Identifiers

Access via CAN Identifiers is used if the slave is being controlled by a device from another manufacturer. Access via CAN Identifiers is described in an example in Chapter 4, "Module Addressing". The transfer modes are explained in Chapter 5, "CAN Bus Controller Functions".

Data cannot be packed on the AI774. Therefore one CAN object is transferred per screw-in module. If an adapter module AF101 is equipped with a four AI774 modules, the CAN object has the following structure:

Slot	CAN ID [1]	Word 1		Word 2		Word 3		Word 4	
1	542	Chan. 1L	Chan. 1H	Chan. 2L	Chan. 2H	Chan. 3L	Chan. 3H	Chan. 4L	Chan. 4H
2	543	Chan. 1L	Chan. 1H	Chan. 2L	Chan. 2H	Chan. 3L	Chan. 3H	Chan. 4L	Chan. 4H
3	544	Chan. 1L	Chan. 1H	Chan. 2L	Chan. 2H	Chan. 3L	Chan. 3H	Chan. 4L	Chan. 4H
4	545	Chan. 1L	Chan. 1H	Chan. 2L	Chan. 2H	Chan. 3L	Chan. 3H	Chan. 4L	Chan. 4H

[1] CAN ID = 542 + (nd - 1) x 16 + (ma - 1) x 4 + (sl - 1)

nd ..... Node number of the CAN slave = 1

ma .... Module address of the AF101 = 1

sl ..... Slot number of the screw-in module on the AF101 (1 - 4)

B&R 2000 users have to exchange the data so that the high data is first (Motorola format)!

For more information on ID allocation, see Chapter 5, "CAN Bus Controller Functions".

10.8.7 Description of Data and Configuration Words

Data word 0, 1, 2, 3 (read)

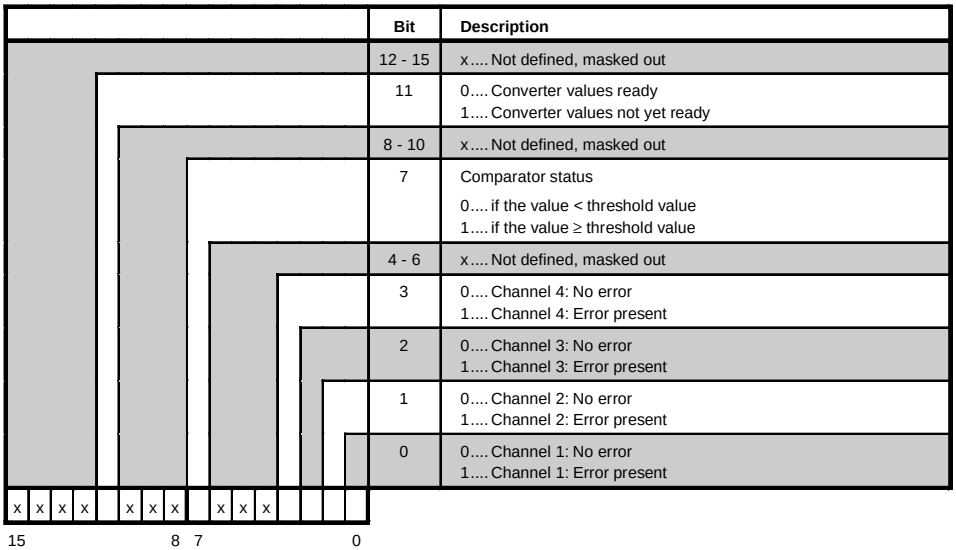
16 bit standardized current value.

Configuration Word 8 (write)

Value of the switching level for the threshold value switch (16 bit, signed).

Configuration Word 12 (read)

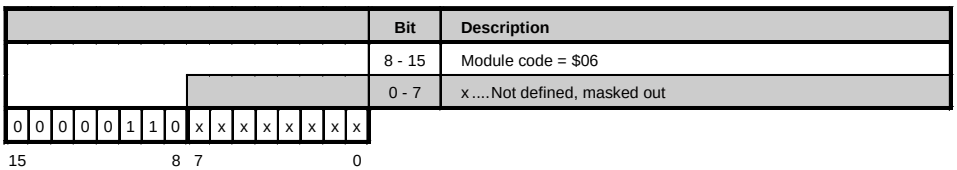
Configuration word 12 contains the module status.



Bit	Description
12 - 15	x .... Not defined, masked out
11	0 .... Converter values ready 1 .... Converter values not yet ready
8 - 10	x .... Not defined, masked out
7	Comparator status 0 .... if the value < threshold value 1 .... if the value ≥ threshold value
4 - 6	x .... Not defined, masked out
3	0 .... Channel 4: No error 1 .... Channel 4: Error present
2	0 .... Channel 3: No error 1 .... Channel 3: Error present
1	0 .... Channel 2: No error 1 .... Channel 2: Error present
0	0 .... Channel 1: No error 1 .... Channel 1: Error present

Configuration Word 14 (read)

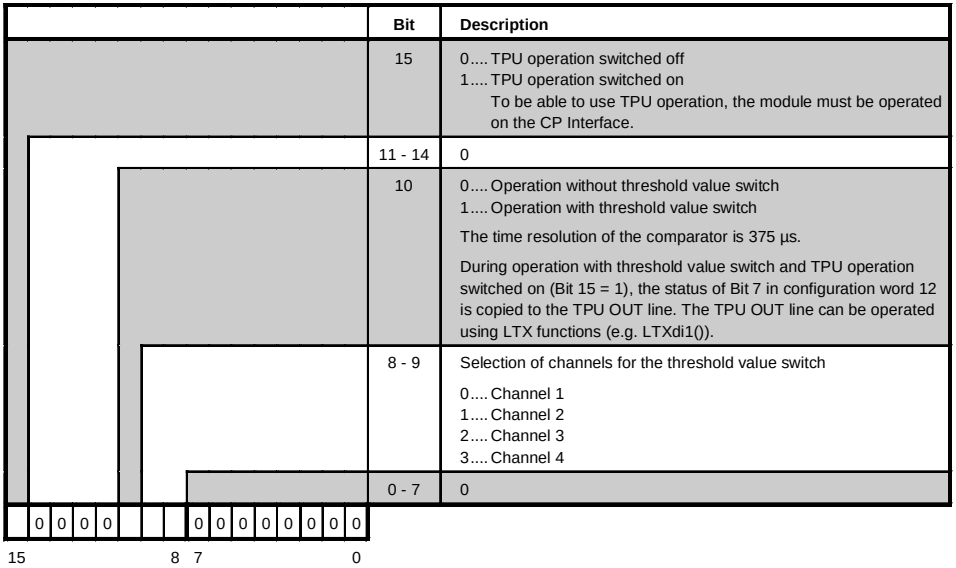
The High Byte of configuration word 14 defines the module code.



Bit	Description
8 - 15	Module code = $06
0 - 7	x .... Not defined, masked out

Configuration Word 14 (write)

The module is configured using configuration word 14.



Bit	Description
15	0.... TPU operation switched off 1.... TPU operation switched on To be able to use TPU operation, the module must be operated on the CP Interface.
11 - 14	0
10	0.... Operation without threshold value switch 1.... Operation with threshold value switch The time resolution of the comparator is 375 µs. During operation with threshold value switch and TPU operation switched on (Bit 15 = 1), the status of Bit 7 in configuration word 12 is copied to the TPU OUT line. The TPU OUT line can be operated using LTX functions (e.g. LTXdi1()).
8 - 9	Selection of channels for the threshold value switch 0.... Channel 1 1.... Channel 2 2.... Channel 3 3.... Channel 4
0 - 7	0