AM351

Order Data

Model Number	Short Description	Image
7AM351.70	B&R 2003 Analog mixed module, 1 AI, +/- 10V, 16 bit, 1 AO, +/- 10V, 16 bit, screw-in module. Order terminal block TB712 separately !	
7TB712.9	2003 terminal block, 12 pin, screw clamp	
7TB712.91	2003 terminal block, 12 pin, cage clamp	
7TB712:90-2	2003 terminal block, 12 pin, screw clamp, 20 pieces	
7TB712:91-02	2003 terminal block, 12 pin, cage clamp, 20 pieces	

Technical Data

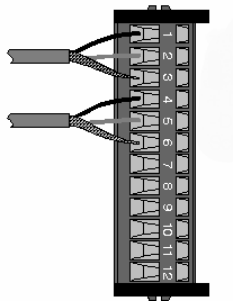
Module ID	AM351
General	
C-UL-US listed	YES
Slot	AF101 and AF104 Adapter module, CP-Interface
B&R ID-code	$4E
Static Characteristics	
Module type	B&R 2003 screw-in module
Number of inputs	1
Number of outputs	1
Power consumption	max. 1,4 W
Input	
Number of inputs	1
Digital converter resolution	16 Bit
Data format in application	INT 16
Input signal	± 10V
Differential input resistance	20 MΩ
Input filter Cutoff frequency Attenuation	 1 kHz 60 dB
Accuracy at 24°C Linearity error	+/- 0.02 %[1] +/- 0.9 mV +/- 3 LSB
Temperature drift Offset Gain	 +/- 80 µV / °C +/- 50 ppm / °C[1]

[1]) referred to the current measuring value.

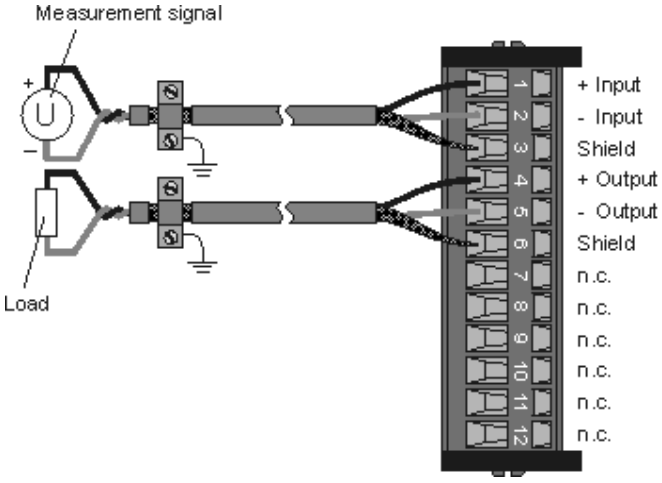
Output	
Number of Outputs	1
Digital converter resolution	16 Bit
Data format in application	INT 16
Output signal	± 10V
Load	max. 10mA
Load impedance	≥ 1kΩ
Accuracy at 24°C	+/- 0.02 %² +/- 1.2 mV
Temperature drift Offset Gain	 +/- 450 µV / °C +/- 60 ppm / °C²
Operating characteristics	
Isolation Input – PCC Input – Output Output – PCC	 Yes No Yes
Mechanical characteristics	
Dimensions	B&R 2003 screw-in module

²) referred to the current output value.

Terminal Block Connections

Pin	Description	Figure
1	+ Differential Input	
2	- Differential Input	
3	Shield	
4	+ Output	
5	⊥ Output	
6	Shield	
7	n.c.	
8	n.c.	
9	n.c.	
10	n.c.	
11	n.c.	
12	n.c.	7TB712.91

Connection Example



Variable declaration

The variable declaration takes place using the programming software

The variable declaration is described in the B&R SYSTEM 2003 User's Manual in chapter 4 - "Module Addressing".

Data acces in normal operation takes place using data words and configuration words. Following table shows an overview of the registers used for an AM351 module.

Daten access	VD Data type	VD Module type	VD channel	Read	Write	Description
Data word 0	INT16	Analog IN	1	x		Analog input
	INT16	Analog OUT	1		x	Analog ouput
Configuration word 14	WORD	Transp. IN	28	x		Module type
	WORD	Transp. OUT	28		x	Module configuration

Register Description

Configuration word 14 (write access)

The Am351 is configured using the configuration word 14

Bit	Description
15	Operation mode 0 ... Normal operation 1 ... TPU – operation TPU operation is only availible on a CP474 or a CP476 and the AM351 must be used in Slot 1 – 4 of the CP-Interfacfe !
14 – 0	Reserved, must be set to 0

Configuration word 14 (read access)

The High Byte of the configuration word contains the Module ID of the AM351

Bit	Beschreibung
15 – 8	Module ID of the AM351 = $4E
7 - 0	Not defined, mask out

Data word 0 (read / write access)

Contains Analog input / Analog output value in 16Bit 2´s complement format

Relationship between input / output voltage and numeric value:

Numeric value		Voltage
hexadecimal	decimal	
0x 8001	- 32767	-10 V
0x C001	- 16383	- 5 V
0x FFFF	- 1	- 305 µV
0x 0000	0	0 V
0x 0001	1	305 µV
0x 3FFF	16383	5 V
0x 7FFF	32767	10 V

Following values are displayed for the measurement range monitoring

Open input	0x7FFF
Measurement range overflow	0x7FFF
Measurement range underflow	0x8001

Access via CAN-Identifier

Access via CAN Identifiers is used if the slave is controlled by a non-B&R device.
Access via CAN Identifiers is described in the B&R SYSTEM 2003 User´s Manual in chapter 4 "Module Addressing".

The AM351 can transfer data in packed or unpacked format.
In the following example the AM351 is accessed via the slave with node number 1.

CAN-ID packed

Only one CAN object is transferred in packed data transfer mode.

Analog IN

CAN-ID	Slot 1		Slot 2		Slot 3		Slot 4	
542	SCRM 1L	SCRM 1H	SCRM 2L	SCRM 2H	SCRM 3L	SCRM 3L	SCRM 4L	SCRM 4H
543	Free							
544	Free							
545	Free							

Analog OUT

CAN-ID	Slot 1		Slot 2		Slot 3		Slot 4	
1054	SCRM 1L	SCRM 1H	SCRM 2L	SCRM 2H	SCRM 3L	SCRM 3L	SCRM 4L	SCRM 4H
1055	Free							
1056	Free							
1057	Free							

CAN-ID unpacked

One CAN Object is returned per ScrewIn Module in unpacked data transfer mode.

Analog IN

Slot	CAN-ID	Word 1		Word 2	Word 3	Word 4
1	542	SCRM 1L	SCRM 1H	Not used		
2	543	SCRM 2L	SCRM 2H	Not used		
3	544	SCRM 3L	SCRM 3H	Not used		
4	545	SCRM 4L	SCRM 4H	Not used		

Analog OUT

Slot	CAN-ID	Word 1		Word 2	Word 3	Word 4
1	1054	SCRM 1L	SCRM 1H	Not used		
2	1055	SCRM 2L	SCRM 2H	Not used		
3	1056	SCRM 3L	SCRM 3H	Not used		
4	1057	SCRM 4L	SCRM 4H	Not used		

B&R 2000 Users have to exchange the data so that the Most significant Byte is first ! (Motorola-Format)