

# ADP-DI Dual Input Module

Supplement to be read in conjunction with the ADP15 User Manual



User Manual

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This supplement should be read in conjunction with the ADP15 user manual.  
References will be made to the appropriate chapters throughout.

## Introduction

The ADP15/DI, provides two non-isolated inputs either 4 to 20mA or 0 to 10 volts (This should be specified at time of order).

as:       DIA = 4/20mA  
          DIV = 0/10 volts

These inputs have independent scaling factors IPLA and IPHA for input 'A' and IPLB and IPHB for input 'B'.

The display can be selected from the list of 'A' and 'B' functions as follows, and can be selected under the mnemonic 'Ab'

0 =       A + B  
1 =       A - B  
2 =       A x B  
3 =       A/B  
4 =       A = process input, B = Setpoint (SP1)

Scale factors can be applied to this function using a scale factor 'SF', a division factor 'DF' and a display offset 'OFFS'.

The analogue output, relays and printer take their value from the function selected at 'Ab'.

## Variants to Chapter 3 of the ADP15 User Manual

Mnemonic	Descriptions
InPA	Live display of input 'A'
InPb	Live display of input 'b'
SP1	As ADP15, except when Ab = 4, when SP1 = value set by input 'b'
SP2	As ADP15
HYS	" "
OL	" "
OA	" "
Pb	" "
Ont or It	" "
OFFt or dt	" "
dA or ct	" " except add 400mS to all display update time
IPLA	Input low scale factor for 'A' input (no IPOF)
IPHA	Input high scale factor for 'A' input (no IPSF)
IPLb	Input low scale factor for 'B' input
IPHb	Input high scale factor for 'B' input
SF	Scale factor, unity being 1.0000 except when AB = 3, then unity = 001.00
DF	Division factor, divides result of function x scale factor, by the value set
OFFS	Offset provides a display offset
OPL	As ADP15
OPH	" "
Ab	Sets function of A, and B inputs (0 - 4). See table below
dP-r	As ADP15 (no reset of totaliser count)
dPA	Sets decimal point position for the 'A' input display. (For display purposes only)
dPB	Sets decimal point position for 'B' input display (for display purposes only)
Cp	AS ADP15
SdSt/Lab	" "
Ln	" "
rS	" "
dis	Returns to A,B, function display

<i>Ab</i>	<i>Function</i>
0	A + B
1	A - B
2	A x B
3	A/B
4	Display = Input A, SP1 = Input B

$$\text{Display} = \left[ \frac{(\text{Result of A,B Function})}{\text{DF}} \right] \times \text{SF}$$

## Variants to Chapter 4 of the ADP15 User Manual

### Section 1 Linear Inputs-

Two non isolated input types are available

Input Source	Range		Resolution	Code
	min	max		
DC Current	+4.000mA	+19.999mA	400uA	DIA
DC Voltage	0V	10V	250µV	DIV

The method of calculating IPLA, IPHA, IPLB and IPHB is similar to that described in the ADP15 user manual.

### Connections

Details are shown below:

<i>Input B</i>	<i>+12V</i>	<i>Input A</i>	<i>Input A</i>	<i>OV</i>	<i>Input B</i>
<i>+ve</i>	<i>Unregulated</i>	<i>-ve</i>	<i>+ve</i>	<i>Guard</i>	<i>-ve</i>
	<i>@ 50mA</i>				
1	2	3	4	5	6

Note: Section 2, 3 and 4 are not appropriate to the ADP15/DI, as no Temperature, Rate Totaliser or Quadrature Inputs are available.

## Variants to Chapter 5 of the ADP15 User Manual

Relays take their value from the function set in 'Ab', unless Ab = 4, then display = input 'A' and set point 1 = input 'B'

## Variants to Chapter 6 of the ADP15 User manual

A pulse output module (F1) is not available with ADP15/DI

## Variants to Chapter 7 of the ADP15 user Manual

The protocols for ASCII and Fast Format remain unchanged. The commands have been restructured as follows

### MANTRABUS FORMAT

Command No	HEX	Description
1	1	Full data dump
2	2	Display only
3	3	INPA Read only
4	4	INPB Read only
5	5	SP1
6	6	SP2
7	7	HYS
8	8	OL
9	9	OA
10	A	PB
11	B	IT (ONT)
12	C	DT (OFFT)
13	D	CT (DA)
14	E	IPLA
15	F	IPHA
16	10	IPLB
17	11	IPHB
18	12	SF
19	13	DF
20	14	OFFS
21	15	OPL
22	16	OPH
23	17	AB
24	18	DP r
25	19	DP A
26	1A	DP b
27	1B	CP Read only
28	1C	SDST/LAB Read only
29	1D	LN
30	1E	RS
31	1F	E2ROM ENABLE/DISABLE
32	20	RELAY RESET
33	21	PEAK HOLD RESET

## RESPONSE TO COMMAND 1

<i>BYTE</i>	<i>DESCRIPTION</i>
1	SDST,
2,3	Display only
4,5	INPA
6,7	INPB
8,9	SP1
10,11	SP2
12,13	HYS
14,15	OL
16,17	OA
18,19	PB
20,21	IT (ONT)
22,23	DT (OFFT)
24,25	CT (DA)
26,27	IPLA
28,29	IPHA
30,31	IPLB
32,33	IPHB
34,35	SF
36,37	DF
38,39	OFFS
40,41	OPL
42,43	OPH
44,45	AB
46	PID OUTPUT LEVEL
47	DP r
48,49	DP A
50,51	DP b
52,53	CP Read only
54,55	SDST/LAB Read only
56,57	LN
58,59	RS
60	E2ROM ENABLE/DISABLE
61	RELAY STATUS
62	CHECKSUM

## ***ASCII FORMAT***

<i>LABEL</i>	<i>FUNCTION</i>
DISP	Display only
INPA	INPA Read only
INPB	INPB
SP1	SP1
SP2	SP2
HYS	HYS
OL	OL
OA	OA
PB	PB
IT	IT (ONT)
DT	DT (OFFT)
CT	CT (DA)
IPLA	IPLA
IPHA	IPHA
IPLB	IPLB
IPHB	IPHB
SF	SF
DF	DF
OFFS	OFFS
OPL	OPL
OPH	OPH
AB	AB
DP	DP r
DPAI	DP A
DP bl	DP b
CP	CP Read only
SDST	SDST/LAB Read only
LN	LN
RS	RS
DROM	E2ROM DISABLE
ERRD	E2ROM ENABLE & READ FROM E2ROM
ERWR	E2ROM ENABLE & WRITE TO E2ROM
PID	REQUEST PID POWER LEVEL
RES	RELAY RESET
PKR	PEAK HOLD RESET

## ***Printer***

The printer takes its value from the function set in 'Ab'

## ADP15/DI - Dual Input Specifications

### 4 to 20mA - input

Minimum	+4.000mA
Maximum	+19.999mA
Resolution	400µA
Input Impedance	62R5
Offset Temperature drift /°C	16µA
Drift in month 1/°C	32µA
Subsequent drift per month /°C	1.6µA
Gain temperature drift %/°C	0.015
Linearity %	0.005

### 0 to 10 volt - Input

Minimum	0V
Maximum	10.000V
Resolution	250µV
Input impedance	1M ohm
Offset temperature drift /°C	10µV
Drift in month 1/°C	20µV
Subsequent drift per month /°C	1µV
Gain temperature drift %/°C	0.015
Linearity	0.005

## WARRANTY

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