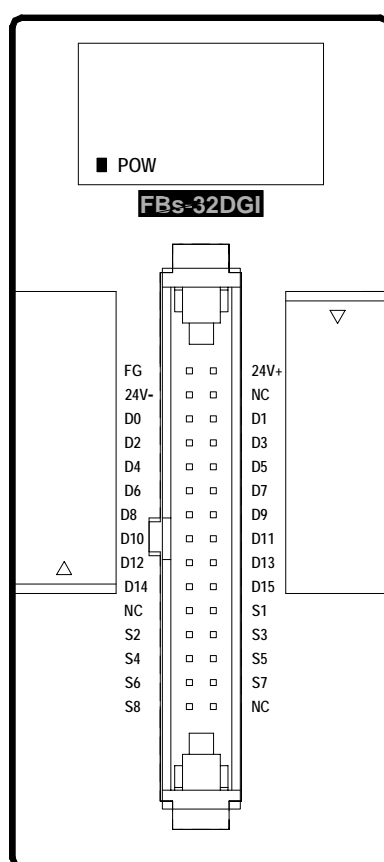


Chapter 17 Thumbwheel Switch Input Module

FBs-32DGI is a multiplex input module. One 32DGI module can support up to 32 digits thumbwheel switch or 128 discrete switch inputs. Thanks to the I/O control chip that incorporated in this module, the update rate of the input status is irrelevant to CPU scan time. The input refresh time of this module is mere 10 mS. Owing to the scan nature of PLC, though the multiplex input task is not performed by CPU, the over-all refresh time of this input module is still constrained by the CPU scan time if the scan time is larger than 10 mS.

Appearance

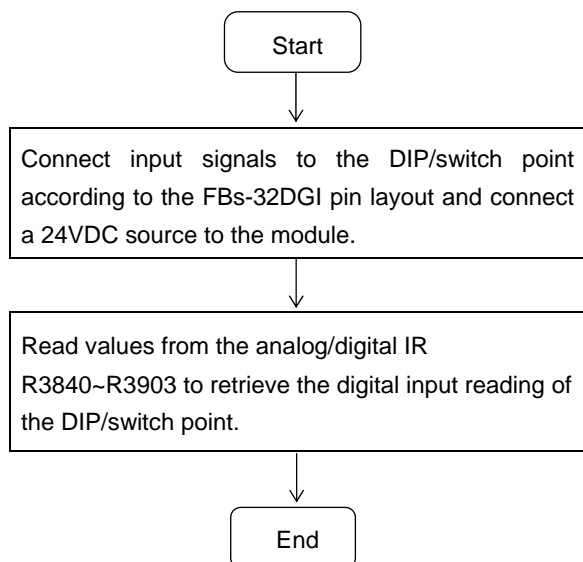


By using the multiplex input, users only need to connect the FBs-32DGI with 24 wires to achieve 32-digit inputs (or 128 switch points). While FBs-32DGI is only 4cm wide, it is a truly high-density, low-cost and labor-saving solution.

17.1 FBs-32DGI Specifications

Item	Specification	Remarks
Input points	32-digit DIP/128 independent switch points	
Occupied Resources	8 IRs	
Connector	30-pin boxed header	
Control signal	Column Output– 8 dots SINK (NPN) output Row Output– 16 dots SOURCE output	
Refresh rate	10mS	
Insulation	Transformer (power) and optical separation (contact signal)	
Status indicator	5V PWR LED indicator	
Power supply and consumption	24V-15%/+20%, 40mA	
Internal current	5V, 14mA	
Working temperature	0 - 60°C	
Storage temperature	20 - 80°C	
Dimensions	40(W)×90(H)×80(D) mm	

17.2 The Procedure of Using FBs-32DGI Module

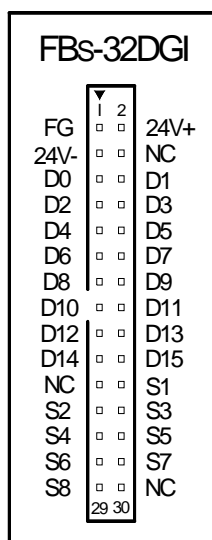


17.3 FBs-32DGI I/O Address

Each FBs-32DGI module occupies 8 IRs (R3840~R3903) for I/O address. In general, WinProladder will automatically detect and calculate the actual I/O address occupied by the module installed on the system after connecting to the PLC. Users may refer to the I/O Module Number Configuration provided by WinProladder in order to find out the exact I/O address of each expansion module to facilitate programming.

17.4 FBs-32DGI Hardware Description

FBs-32DGI pin layout



[Aerial View]

Pin	Signal Name	Pin	Signal Name
1	FG	2	24V+(external)
3	24V-(external)	4	No Connection
5	D0	6	D1
7	D2	8	D3
9	D4	10	D5
11	D6	12	D7
13	D8	14	D9
15	D10	16	D11
17	D12	18	D13
19	D14	20	D15
21	No Connection	22	S1
23	S2	24	S3
25	S4	26	S5
27	S6	28	S7
29	S8	30	No Connection

The I/O control chip built in the module multiplexes the 32 digits of thumbwheel switch or 128 discrete switch inputs by eight times scan, each scan reads in 4 digits of thumbwheel switch or 16 discrete switch inputs. The input selection signals S1~S8 listed in the above table are all low active output signal(NPN output). The multiplex data input signals D0~D15 are sink type input signals. Each times of scan, data are read from D0~D15 inputs and stored in I/O control chip.

The status of 32 digits of thumbwheel switch or 128 discrete switch inputs are directly mapped to 8 input registers as shown in following table. The IR is the first input register allocated for corresponding module (IR's range is R3840~R3903).

DIP switch input

IR	D15-D12	D11-D8	D7-D4	D3-D0
IR+0	DIG3	DIG2	DIG1	DIG0
IR+1	DIG7	DIG6	DIG5	DIG4
IR+2	DIG11	DIG10	DIG9	DIG8
IR+3	DIG15	DIG14	DIG13	DIG12
IR+4	DIG19	DIG18	DIG17	DIG16
IR+5	DIG23	DIG22	DIG21	DIG20
IR+6	DIG27	DIG26	DIG25	DIG24
IR+7	DIG31	DIG30	DIG29	DIG28

Single point switch input

IR	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
IR+0	I15	I14	I13	I12	I11	I10	I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
IR+1	I31 - I16															
IR+2	I47 - I32															
IR+3	I63 - I48															
IR+4	I79- I64															
IR+5	I95 - I80															
IR+6	I111- I96															
IR+7	I127 - I112															

17.5 FBs-32DGI Input Circuit Diagram

Thumbwheel switch module

