

SIMATIC S7-1500, F digital input module, F-DI 16x 24 V DC
 PROFIsafe; 35 mm width; up to PL E (ISO 13849-1)/ SIL 3 (IEC
 61508)



General information	
Product type designation	F-DI 16x24VDC
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated as of version 	V13 SP1 with HSP 0086
Operating mode	
<ul style="list-style-type: none"> DI 	Yes
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	50 mA

Encoder supply	
Number of outputs	4
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
24 V encoder supply	
<ul style="list-style-type: none"> • 24 V 	Yes; min. L+ (-1.5 V)
<ul style="list-style-type: none"> • Short-circuit protection 	Yes
<ul style="list-style-type: none"> • Output current, max. 	300 mA; Max. 100 mA when mounted vertically
Power	
Power available from the backplane bus	0.9 W
Power loss	
Power loss, typ.	4.6 W
Address area	
Address space per module	
<ul style="list-style-type: none"> • Address space per module, max. 	9 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> • Electronic coding element type F 	Yes
Digital inputs	
Number of digital inputs	16
Source/sink input	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • for signal "0" 	-30 to +5V
<ul style="list-style-type: none"> • for signal "1" 	+15 to +30 V
Input current	
<ul style="list-style-type: none"> • for signal "1", typ. 	3.7 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes
— at "0" to "1", min.	0.4 ms
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	0.4 ms
— at "1" to "0", max.	20 ms
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m
<ul style="list-style-type: none"> • unshielded, max. 	500 m
Interrupts/diagnostics/status information	
Diagnostics function	Yes

Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	No
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
— Low demand mode: PFDavg in accordance with SIL3	< 5.00E-05
— High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	

Weight, approx.

280 g

last modified:

02/14/2020