

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7288-2DR16-0AA0

EM DR16 Digital I/O Module

OFFICIAL SOURCE

S7-200 SMART System Manual, V2.8

A5E03822230-AL

Selected official Siemens pages follow this cover

Table A-85 Connector pin locations for EM QT16 Digital 16 x Outputs Transition (6ES7288-2QT16-0AA0)

Pin	X10	X11	X12	X13
1	No connection	1L / 24 V DC	4L / 24 V DC	No connection
2	DQ a.0	1M / 24 V DC	4M / 24 V DC	DQ b.2
3	DQ a.1	Functional Earth	No connection	DQ b.3
4	DQ a.2	2L / 24 V DC	3L / 24 V DC	DQ b.4
5	DQ a.3	2M / 24 V DC	3M / 24 V DC	DQ b.5
6	DQ a.4	DQ a.6	DQ b.0	DQ b.6
7	DQ a.5	DQ a.7	DQ b.1	DQ b.7

A.3.3 EM DT16, EM DR16, EM DT32, and EM DR32 digital input/output specifications

Table A-86 General specifications

Model	EM Digital 8 x Inputs/ Digital 8 x Outputs (EM DT16)	EM Digital 8 x Inputs/ 8 x Relay Outputs (EM DR16)	EM Digital 16 x Inputs/ Digital 16 x Out- puts (EM DT32)	EM Digital 16 x Inputs / 16 x Relay Outputs (EM DR32)
Article number	6ES7288-2DT16-0A A0	6ES7288-2DR16-0A A0	6ES7288-2DT32-0A A0	6ES7288-2DR32-0AA 0
Dimensions W x H x D (mm)	45 x 100 x 81	45 x 100 x 81	70 x 100 x 81	70 x 100 x 81
Weight	179.7g grams	201.9 grams	257.3 grams	295.4 grams
Power dissipation	2.5 W	5.5 W	4.5 W	10 W
Current consumption (SM Bus)	145 mA	145 mA	185 mA	180 mA
Current consumption (24 V DC)	4 mA / Input used 11 mA / Relay coil used	4 mA / Input used 11 mA / Relay coil used	4 mA / Input used	4 mA / Input used

Table A-87 Digital inputs

Model	EM Digital 8 x Inputs/ Digital 8 x Outputs (EM DT16)	EM Digital 8 x Inputs/ 8 x Relay Outputs (EM DR16)	EM Digital 16 x Inputs/ Digital 16 x Outputs (EM DT32)	EM Digital 16 x Inputs / 16 x Relay Outputs (EM DR32)
Number of inputs	8	8	16	16
Type	Sink/Source (IEC Type 1 sink)	Sink/Source (IEC Type 1 sink)	Sink/Source (IEC Type 1 sink)	Sink/Source (IEC Type 1 sink)
Rated voltage	24 V DC at 4 mA, nominal	24 V DC at 4 mA, nominal	24 V DC at 4 mA, nominal	24 V DC at 4 mA, nom- inal
Continuous permissible voltage	30 V DC max.	30 V DC max.	30 V DC max.	30 V DC max.
Surge voltage	35 V DC for 0.5 sec.	35 V DC for 0.5 sec.	35 V DC for 0.5 sec.	35 V DC for 0.5 sec.

A.3 Digital inputs and outputs expansion modules (EMs)

Model	EM Digital 8 x Inputs/ Digital 8 x Outputs (EM DT16)	EM Digital 8 x Inputs/ 8 x Relay Outputs (EM DR16)	EM Digital 16 x Inputs/ Digital 16 x Outputs (EM DT32)	EM Digital 16 x Inputs / 16 x Relay Outputs (EM DR32)
Logic 1 signal (min.)	15 V DC	15 V DC	15 V DC	15 V DC
Logic 0 signal (max.)	5 V DC	5 V DC	5 V DC	5 V DC
Isolation (field side to logic)	500 V AC for 1 minute	500 V AC for 1 minute	500 V AC for 1 minute	500 V AC for 1 minute
Isolation groups	2	2	2	2
Filter times	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of 4	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of 4	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of 4	0.2, 0.4, 0.8, 1.6, 3.2, 6.4, and 12.8 ms, selectable in groups of 4
Number of inputs on simultaneously	8	8	16	16
Cable length (max.), in meters	Shielded: 500 m normal inputs Unshielded: 300 m normal inputs	Shielded: 500 m normal inputs Unshielded: 300 m normal inputs	Shielded: 500 m normal inputs Unshielded: 300 m normal inputs	Shielded: 500 m normal inputs Unshielded: 300 m normal inputs

Table A-88 Digital outputs

Model	EM Digital 8 x Inputs/ Digital 8 x Outputs (EM DT16)	EM Digital 8 x Inputs/ 8 x Relay Outputs (EM DR16)	EM Digital 16 x Inputs/ Digital 16 x Outputs (EM DT32)	EM Digital 16 x Inputs/ 16 x Relay Outputs (EM DR32)
Number of outputs	8	8	16	16
Type	Solid state-MOSFET (sourcing)	Relay, dry contact	Solid state-MOSFET (sourcing)	Relay, dry contact
Voltage range	20.4 to 28.8 V DC	5 to 30 V DC or 5 to 250 V AC	20.4 to 28.8 V DC	5 to 30 V DC or 5 to 250 V AC
Logic 1 signal at max. current	20 V DC, min.	--	20 V DC, min.	--
Logic 0 signal with 10 K Ω load	0.1 V DC, max.	--	0.1 V DC, max.	--
Rated current per point (max.)	0.75 A	2 A	0.75 A	2 A
Rated current per common (max.)	3 A	8 A	6 A	8 A
Lamp load	5 W	30 W DC/200 W AC	5 W	30 W DC/200 W AC
ON state contact resistance	0.6 Ω max.	0.2 Ω max. when new	0.6 Ω max.	0.2 Ω max. when new
Leakage current per point	10 μ A max.	--	10 μ A max.	--
Surge current	8 A for 100 ms max.	7 A with contacts closed	8 A for 100 ms max.	7 A with contacts closed
Overload protection	No	No	No	No
Isolation (field side to logic)	500 V AC for 1 minute	1500 V AC for 1 minute (coil to contact) None (coil to logic)	500 V AC for 1 minute	1500 V AC for 1 minute (coil to contact) None (coil to logic)
Isolation resistance	--	100 M Ω min. when new	--	100 M Ω min. when new

A.3 Digital inputs and outputs expansion modules (EMs)

Model	EM Digital 8 x Inputs/ Digital 8 x Outputs (EM DT16)	EM Digital 8 x Inputs/ 8 x Relay Outputs (EM DR16)	EM Digital 16 x Inputs/ Digital 16 x Outputs (EM DT32)	EM Digital 16 x Inputs/ 16 x Relay Outputs (EM DR32)
Isolation between open contacts	--	750 V AC for 1 minute	--	750 V AC for 1 minute
Isolation groups	2	2	3	4
Inductive clamp voltage	Minus 48 V	--	Minus 48 V	--
Switching delay	50 μ s max., off to on 200 μ s max., on to off	10 ms max.	50 μ s max., off to on 200 μ s max., on to off	10 ms max.
Lifetime mechanical (no load)	--	10,000,000 open/ close cycles	--	10,000,000 open/ close cycles
Lifetime contacts at rated load	--	100,000 open/close cycles	--	100,000 open/close cycles
Output behavior in STOP	Last value or substitute value (default value 0)	Last value or substitute value (default value 0)	Last value or substitute value (default value 0)	Last value or substitute value (default value 0)
Number of outputs on simultaneously	8	8	16	16
Cable length (max.), in meters	Shielded: 500 m Unshielded: 150 m	Shielded: 500 m Un- shielded: 150 m	Shielded: 500 m Un- shielded: 150 m	Shielded: 500 m Un- shielded: 150 m

A.3 Digital inputs and outputs expansion modules (EMs)

Table A-89 Wiring diagrams for the EM DT16 Digital 8 x Inputs / Digital 8 x Outputs (6ES7288-2DT16-0AA0) and EM DR16 Digital 8 x Inputs / 8 x Relay Outputs (6ES7288-2DR16-0AA0)

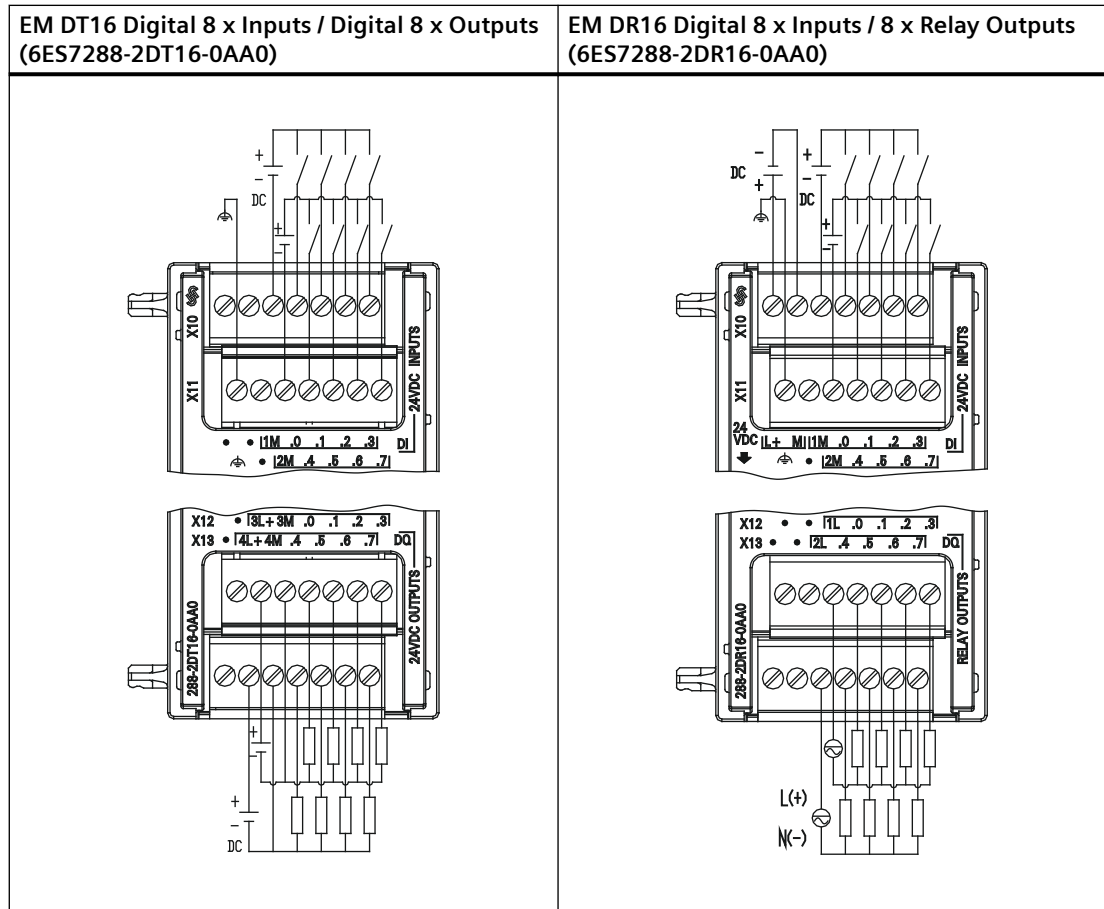


Table A-90 Connector pin locations for EM DT16 Digital 8 x Inputs / Digital 8 x Outputs (6ES7288-2DT16-0AA0)

Pin	X10	X11	X12	X13
1	No connection	Functional Earth	No connection	No connection
2	No connection	No connection	3L+ / 24 V DC	4L+ / 24 V DC
3	1M	2M	3M / 24 V DC	4M / 24 V DC
4	DI a.0	DI a.4	DQ a.0	DQ a.4
5	DI a.1	DI a.5	DQ a.1	DQ a.5
6	DI a.2	DI a.6	DQ a.2	DQ a.6
7	DI a.3	DI a.7	DQ a.3	DQ a.7