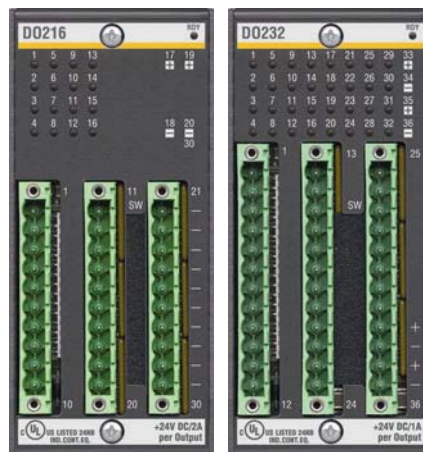


The output modules DO2xx are suitable to operate receivers of digital control signals such as contactors, relays, signal lamps or pneumatic and hydraulic valves.



## Features

- 32 digital output channels
- state indicating LEDs: yellow for *Ready* (RDY) and green for each channel 1
- internal power supply 5 V DC via backplane BS2xx

As many digital output modules as module slots are available, may be used in a controller system. Any combination of DO232 with other input / output modules is allowed. Nevertheless, the maximum capacity of the power supply module must be considered.

Digital Output Module DO2xx	DO232	DO232/48
number of outputs	32	32
output voltage range	+ 18 .. 34 V DC	+ 38 .. 58 V DC
power supply	internal, via backplane BS2xx + external	
power consumption, via backplane	170 mA @ 5 V DC	170 mA @ 5 V DC
output current per channel *)	nominal 1 A max. 1.3 A	nominal 500 mA max. ??? A
total output current per group of outputs	max. 8 A	
outputs parallel connectable	yes, must be switched together	
voltage drop @ 24 V and maximum output current	typ. 0.2 V	???
leaking current	typ. 30 µA	???
switching delay		
log 0 to log 1	typ. 80 µs @ 1 A, resistive load	???
log 1 to log 0	typ. 250 µs @ 1 A, resistive load	???
switching frequency	max. 500 Hz @ pure resistive load	
state indicating LEDs	RDY yellow LED, outputs green LEDs	
output groups, number	2	
output groups, channels	1 .. 16 + 17 .. 32	
isolation between outputs	no, common ground	
isolation outputs / bus	yes, up to 500 V	
state after power on	outputs 0 (inactive), open or high impedance, registers cleared	

\*) derating depending on temperature and frequency must be considered.

**Error messages**

Error messages	Remark	DO232	DO232/48
Overtemperature (channel)	output transistor too hot	$I_{out} > \text{typ. } 1,9 \text{ A}$	$I_{out} > ???$
Cable break (channel)	interruption of the line	$R_{load} > 270 \text{ k}\Omega$	$R_{load} > ???$



**remark:** To fulfill the requirements of IEC 1131-2 regarding ESD the wire breakage detection must be deactivated for unused outputs of DO232 modules.

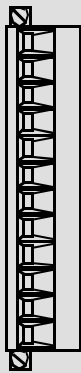


**remark:** Each channel is separately checked for errors with the DO232, however, 2 neighbouring channels are commonly monitored (DO 1+2, DO 3+4,...). With DO232 modules an error message that may occur cannot be assigned to a specific channel.

When analysing the overload / temperature one must take into consideration that with DO232 modules 4 transistors are located in a single housing. After the occurrence of an overload the output is pulsed, that is, as soon as the temperature of the output transistor falls below the critical temperature, the output signal will be available again.

**The line break monitoring is performed with deactivated output. It can be activated / deactivated with DIP switches for channel pairs. See also "Pin Assignments DO232/48"**

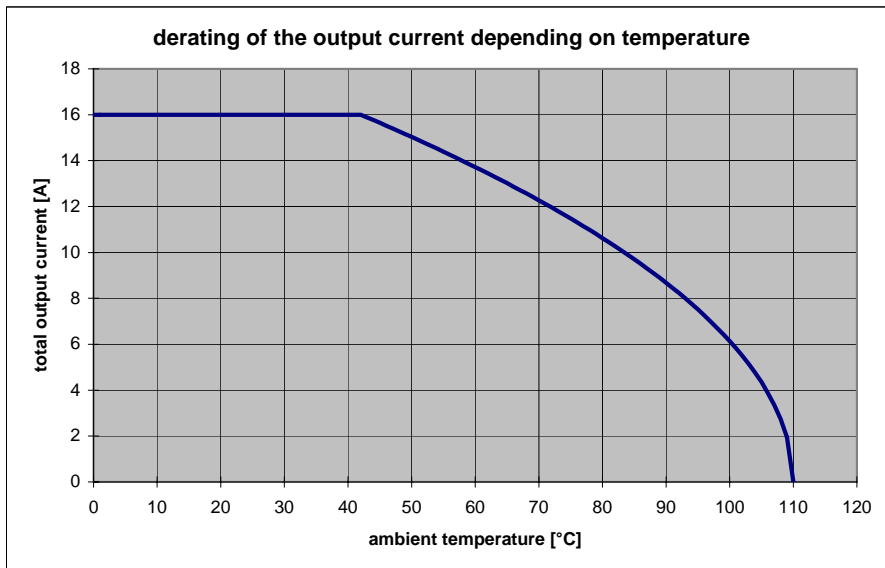
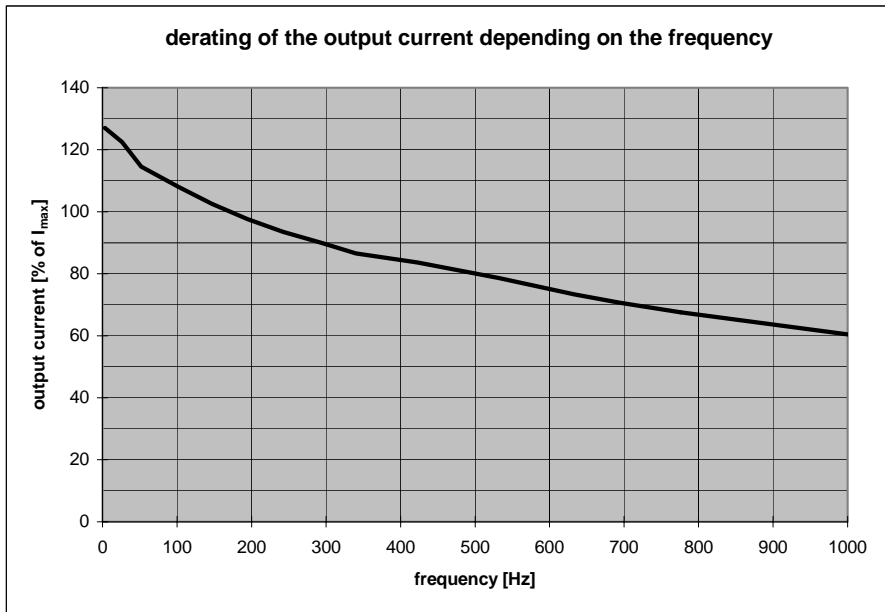
		Connector 1/2/3	Pin	Signal	Pin	Signal	Pin	Signal	Des
1	DO 1	13	DO 13	25	DO 25				
2	DO 2	14	DO 14	26	DO 26				
3	DO 3	15	DO 15	27	DO 27				
4	DO 4	16	DO 16	28	DO 28				
5	DO 5	17	DO 17	29	DO 29				
6	DO 6	18	DO 18	30	DO 30				
7	DO 7	19	DO 19	31	DO 31				
8	DO 8	20	DO 20	32	DO 32				
9	DO 9	21	DO 21	33	48V_1	48 V outputs 1 .. 16			
10	DO 10	22	DO 22	34	0V	ground for outputs 1 .. 32			
11	DO 11	23	DO 23	35	48V_2	48 V outputs 17 .. 32			
12	DO 12	24	DO 24	36	0V	ground for inputs. 1 .. 32			



DIP Switch for Error Monitoring".

**Derating of the Output Current**

The total maximum output current of the modules reduces with increasing temperature and frequency. This has to be considered when designing a controller system.



### Pin Assignments DO232

Connector 1/2/3	Pin	Signal	Pin	Signal	Pin	Signal	Description
	1	DO 1	13	DO 13	25	DO 25	
	2	DO 2	14	DO 14	26	DO 26	
	3	DO 3	15	DO 15	27	DO 27	
	4	DO 4	16	DO 16	28	DO 28	
	5	DO 5	17	DO 17	29	DO 29	
	6	DO 6	18	DO 18	30	DO 30	
	7	DO 7	19	DO 19	31	DO 31	
	8	DO 8	20	DO 20	32	DO 32	
	9	DO 9	21	DO 21	33	24V_1	24 V outputs 1 .. 16
	10	DO 10	22	DO 22	34	0V	ground for outputs 1 .. 32
	11	DO 11	23	DO 23	35	24V_2	24 V outputs 17 .. 32
	12	DO 12	24	DO 24	36	0V	ground for inputs. 1 .. 32

### Pin Assignments DO232/48

Connector 1/2/3	Pin	Signal	Pin	Signal	Pin	Signal	Description
	1	DO 1	13	DO 13	25	DO 25	
	2	DO 2	14	DO 14	26	DO 26	
	3	DO 3	15	DO 15	27	DO 27	
	4	DO 4	16	DO 16	28	DO 28	
	5	DO 5	17	DO 17	29	DO 29	
	6	DO 6	18	DO 18	30	DO 30	
	7	DO 7	19	DO 19	31	DO 31	
	8	DO 8	20	DO 20	32	DO 32	
	9	DO 9	21	DO 21	33	48V_1	48 V outputs 1 .. 16
	10	DO 10	22	DO 22	34	0V	ground for outputs 1 .. 32
	11	DO 11	23	DO 23	35	48V_2	48 V outputs 17 .. 32
	12	DO 12	24	DO 24	36	0V	ground for inputs. 1 .. 32

### DIP Switch for Error Monitoring

Switch S1	DO232	Switch S2	DO232
Monitoring	per Pair of Channels	Monitoring	per Pair of Channels
	S1 DO 1 + DO 2		S 9 DO 17 + DO 18
	S2 DO 3 + DO 4		S10 DO 19 + DO 20
	S3 DO 5 + DO 6		S11 DO 21 + DO 22
	S4 DO 7 + DO 8		S12 DO 23 + DO 24
	S5 DO 9 + DO 10		S13 DO 25 + DO 26
	S6 DO 11 + DO 12		S14 DO 27 + DO 28
	S7 DO 13 + DO 14		S15 DO 29 + DO 30
	S8 DO 15 + DO 16		S16 DO 31 + DO 32

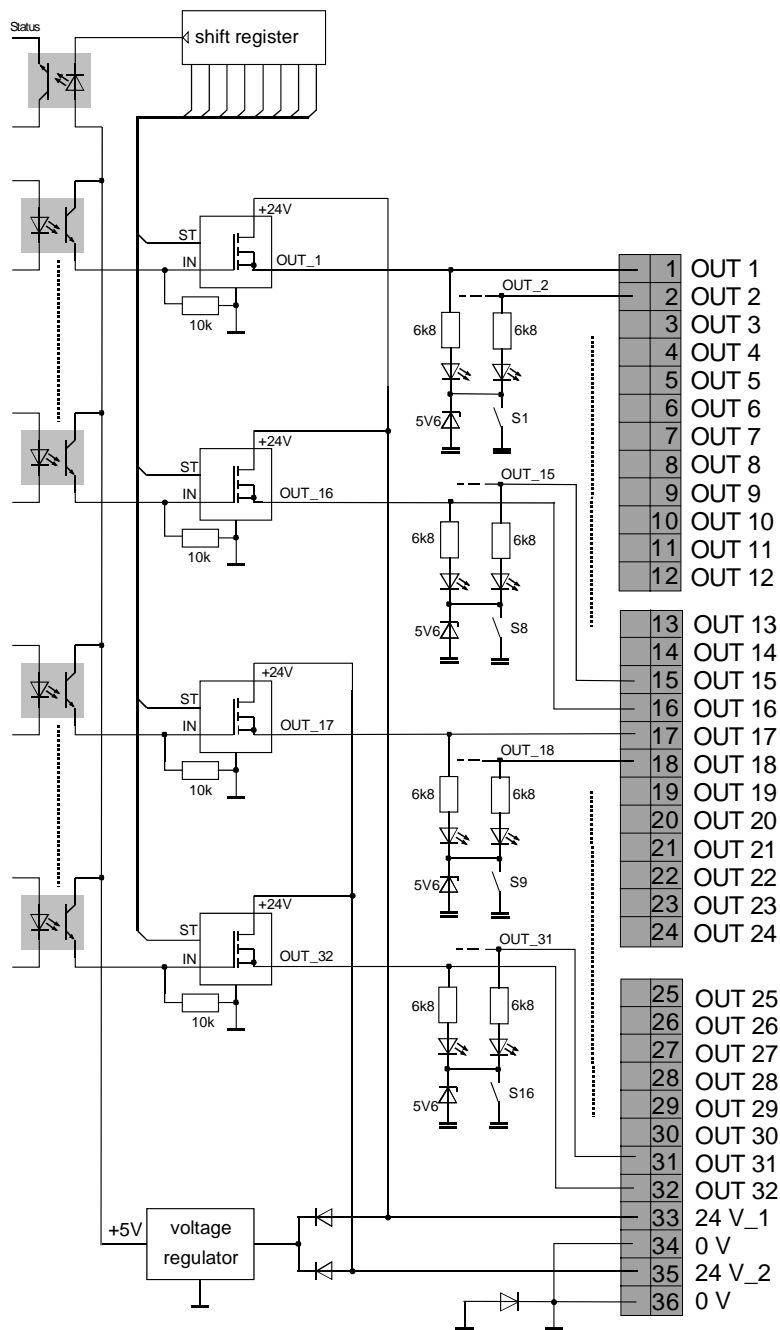


**remark:** Die The DIP switches 1 and 2 are located under the soft foam cover between the connectors 2 and 3. Error monitoring is activated, if the switch is in *Off* position. At the DO232 module, outputs are monitored in pairs.

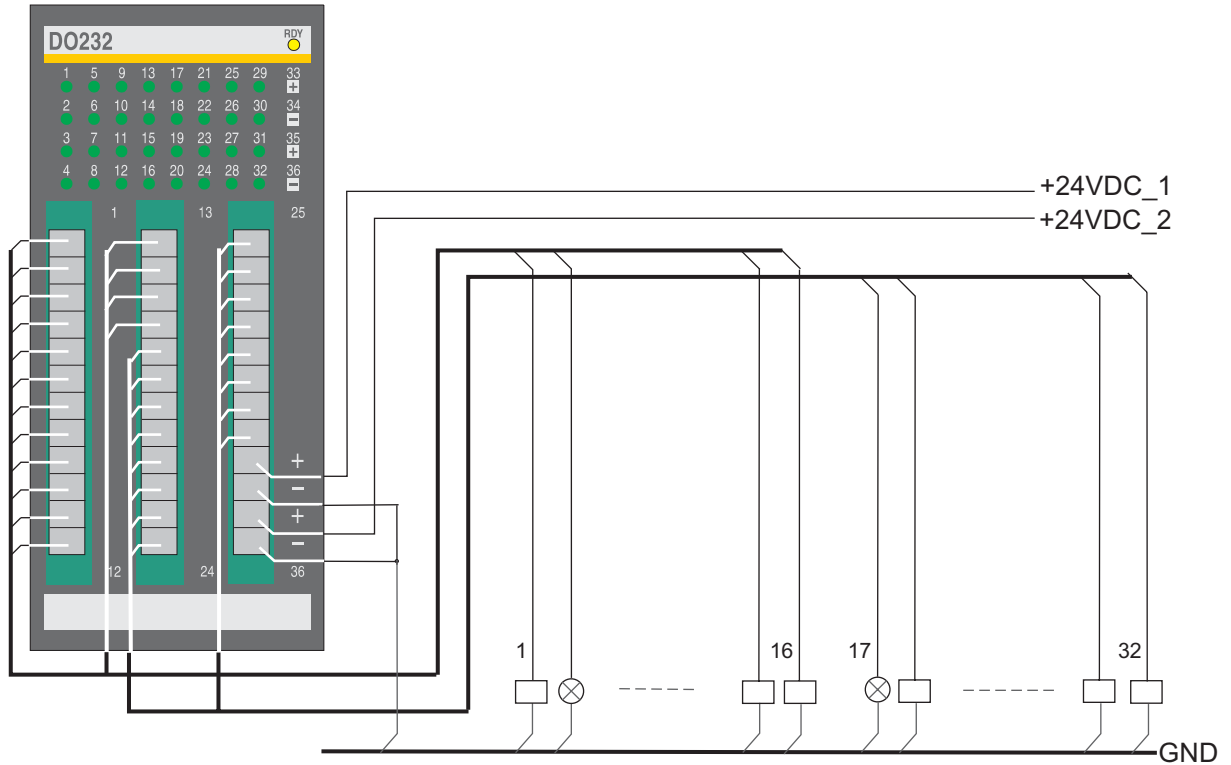
### Order Codes for Modules and Accessories

Order Code	Order #	Description
RMDO232	0067556.024	dig. output module 32x24 V 1.0 A (16 A total 2 groups isolated)
RMDO232.48	0067556.048	dig. output module 32x24 V 1.0 A (16 A total 2 groups isolated)
KZ-DO232	0067557.001	terminal set Phönix cage clamp (3x KZ 51/12)

### Output Circuit DO232



### Wiring Example DO232



Rittmeyer AG  
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CH-6302 Zug

Rittmeyer GmbH  
Postfach 1908  
DE-70709 Fellbach  
Raiffeisenplatz 6  
DE-70736 Fellbach

Rittmeyer Ges.m.b.H  
Walkürengasse 11/2/1  
Postfach 73  
AT-1152 Wien

Rittmeyer Italiana s.r.l.  
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IT-24010 Ponteranica (BG)

Rittmeyer S.A.  
Calle Julián Camarillo 26-3<sup>o</sup>  
Apartado 35145  
ES-28037 Madrid