

8.4 DO486

8.4.1 General Information

The DO486 is a standard digital output module. For output monitoring, the status of each individual channel can be read.

The DO486 offers very high component density using standard 3.5 mm terminal blocks.

8.4.2 Order Data

Model Number	Short Description	Image
3DO486.6	2005 digital output module, 32 transistor outputs 24 VDC, 0.5 A, 2 electrically isolated output groups. Order 2 x TB718 terminal block separately.	
7TB718.9	Accessory terminal block, 18-pin, screw clamp, 1.5 mm ²	
7TB718.91	Accessory terminal block, 18-pin, cage clamp, 1.5 mm ²	
7TB718:90-02	Accessory terminal block, 18-pin, 20 pieces, screw clamp, 1.5 mm ²	
7TB718:91-02	Accessory terminal block, 18-pin, 20 pieces, cage clamp, 1.5 mm ²	
Terminal blocks are not included in the delivery.		

Table 146: DO486 order data

8.4.3 Technical Data

Product ID	DO486	
General Information		
C-UL-US Listed	Yes	
B&R ID Code	\$42	
Module Type	B&R 2005 I/O module	
Can be Installed on		
Main Rack	Yes	
Expansion Rack	Yes	
Static Characteristics		
Number of Outputs		
Total	32	
in 2 Groups of	16	
Design	FET positive switching	
Electrical Isolation		
Output - PLC	Yes	
Group - Group	Yes	
Output - Output	No	
Diagnosis Status		
Voltage monitoring	Supply voltage <18 VDC	
Output Monitoring	Output Status	
Switching Voltage		
Minimum	18 VDC	
Nominal	24 VDC	
Maximum	30 VDC	
Continuous Current per		
Output	Rev. <E0	Rev. ≥E0
Group	Max. 0.5 A	Max. 0.5 A
Module	Max. 6 A	Max. 8 A
	Max. 12 A	Max. 16 A
To increase the output current, outputs can be switched in parallel.		
Leakage Current when Switched Off	<120 µA	
Residual Voltage	<200 mV @ 0.5 A	
Short Circuit - Peak Current	<13 A	
Switching On after Overload Cutoff	Automatically within seconds depending on the module temperature	
Power Consumption		
Internal		
5 V	Max. 1.2 W	
24 V	---	
Total	Max. 1.2 W	
External 24 VDC	Max. 4.4 W	
Protection		
	Thermal cutoff for over-current and short circuit	
	Integrated protection for switching inductances	
	Reverse polarity protection	
Additional Characteristics		
Status Display		
	32 yellow output LEDs	
	2 yellow DCOK LEDs	
	2 red ERROR LEDs	

Table 147: DO486 technical data

Product ID	DO486	
Dynamic Characteristics		
Switching Delay Log. 0 - Log. 1 Log. 1 - Log. 0	Rev. <E0 < 475 µs < 550 µs	Rev. ≥E0 < 225 µs < 330 µs
Switching Frequency Resistive Load Inductive Load	Max. 100 Hz See Section 8.4.10 "Switching Inductive Loads", on page 270 (with 90% duty cycle)	
Braking Voltage when Switching Off Inductive Loads	50 VDC	
Mechanical Characteristics		
Dimensions	B&R 2005 single-width	

Table 147: DO486 technical data (cont.)

8.4.4 Status LEDs

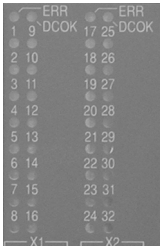
Image	LED	Description
	ERR	The ERR LED is an accumulative indication for all high-side drivers in an output group. This LED is lit if an output which is being controlled has a short circuit or over-temperature or if the module voltage sinks below 18 VDC.
	DCOK	The DCOK LED is controlled by the respective output supply and is lit if the supply voltage is over +18 VDC.
	1 - 32	Control status of the corresponding digital output.

Table 148: DO486 Status LEDs

8.4.5 Connection Elements

Two 18-pin terminal blocks are located next to each other in the lower part of the housing so that all signals can be connected using terminal blocks.

The TB718 terminal blocks are available with screw and cage clamps.

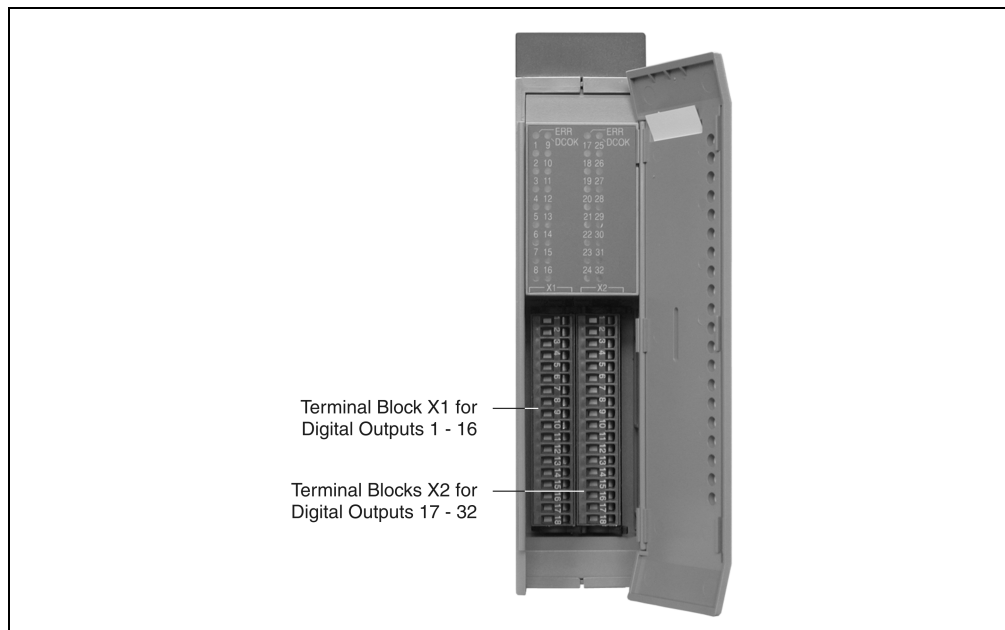


Figure 105: DO486 connection elements

8.4.6 Pin Assignments

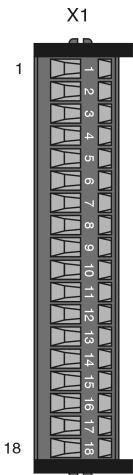
Left 18-pin Terminal Block	Connection	Assignment
 X1 1 18 TB718	1	Output 1
	2	Output 2
	3	Output 3
	4	Output 4
	5	Output 5
	6	Output 6
	7	Output 7
	8	Output 8
	9	Output 9
	10	Output 10
	11	Output 11
	12	Output 12
	13	Output 13
	14	Output 14
	15	Output 15
	16	Output 16
	17	+24 VDC
	18	GND

Table 149: DO486 pin assignments for terminal block X1

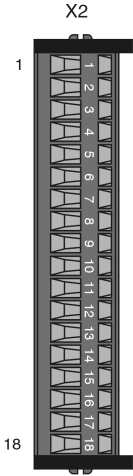
Right 18-pin Terminal Block	Connection	Assignment
	1	Output 17
	2	Output 18
	3	Output 19
	4	Output 20
	5	Output 21
	6	Output 22
	7	Output 23
	8	Output 24
	9	Output 25
	10	Output 26
	11	Output 27
	12	Output 28
	13	Output 29
	14	Output 30
	15	Output 31
	16	Output 32
	17	+24 VDC
	18	GND

Table 150: DO486 pin assignments for terminal block X2

8.4.7 Connection Example

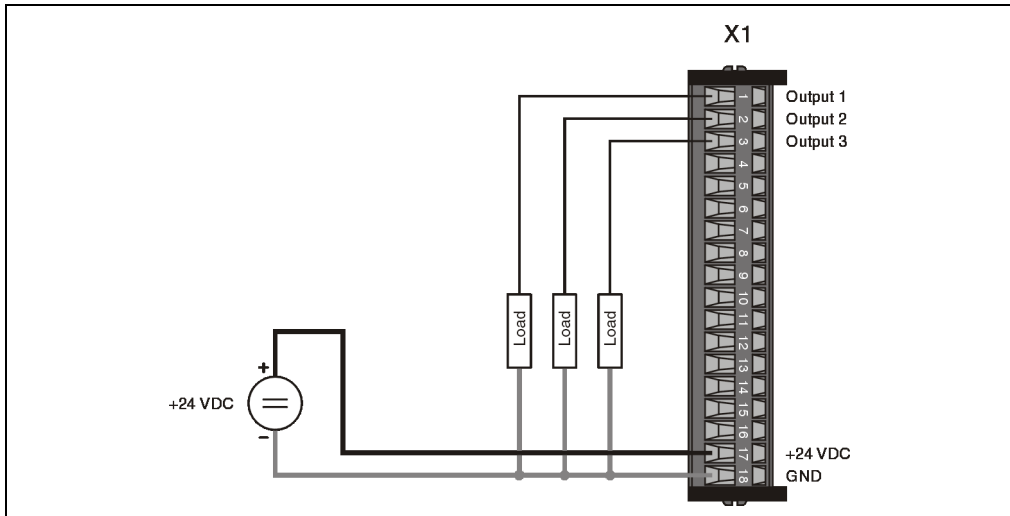


Figure 106: DO486 connection example

8.4.8 Output Circuit Diagram

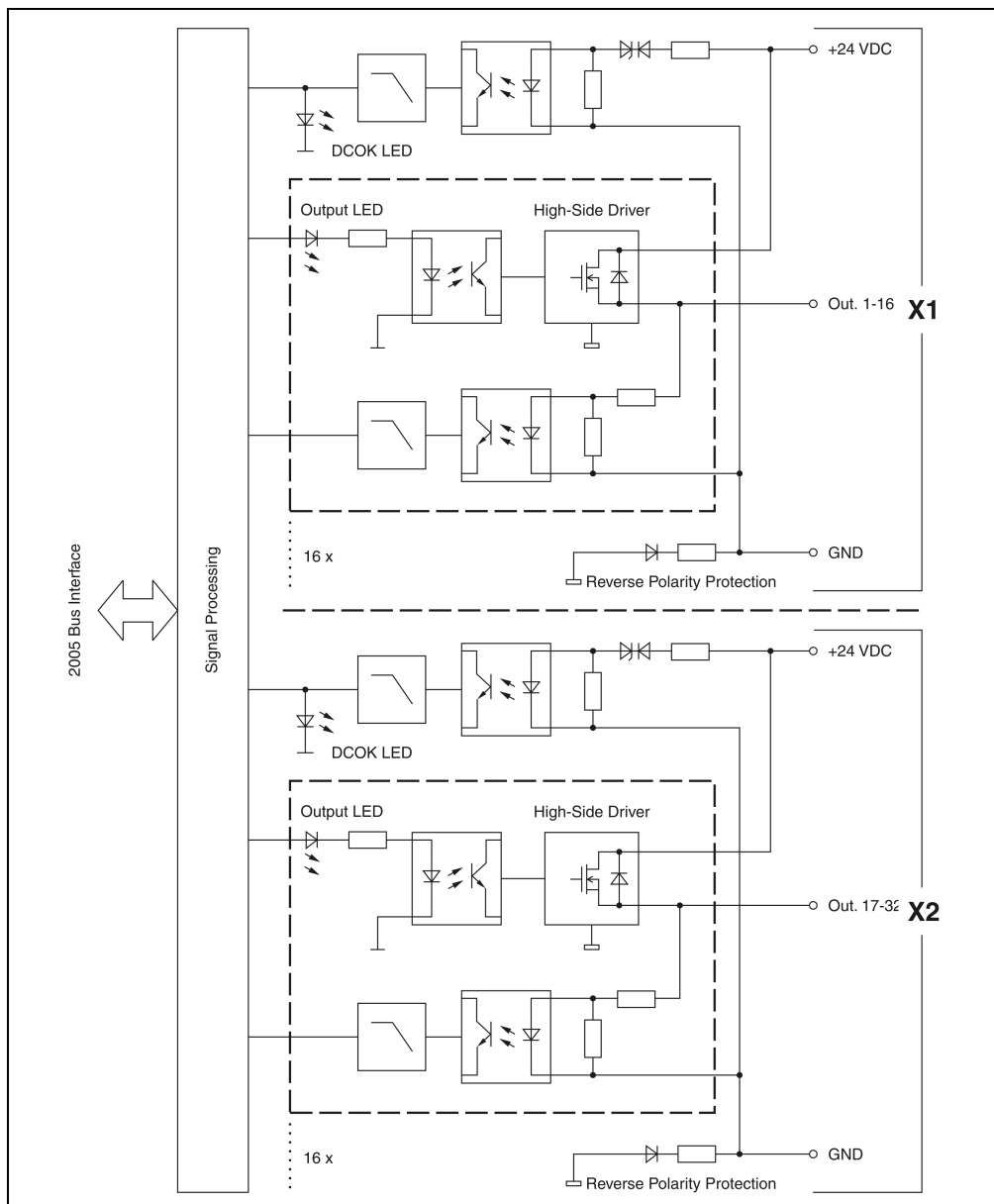


Figure 107: DO486 output circuit diagram

8.4.9 Output Monitoring

The output states are compared to the set values on the module. The output driver is used to control desired states. Output monitoring is only active if the supply voltage for the group is in the valid range.

The status of each individual channel can be read using a register. Additionally, an accumulative bit for output monitoring is created. The status of the supply voltage can also be read.

8.4.10 Switching Inductive Loads

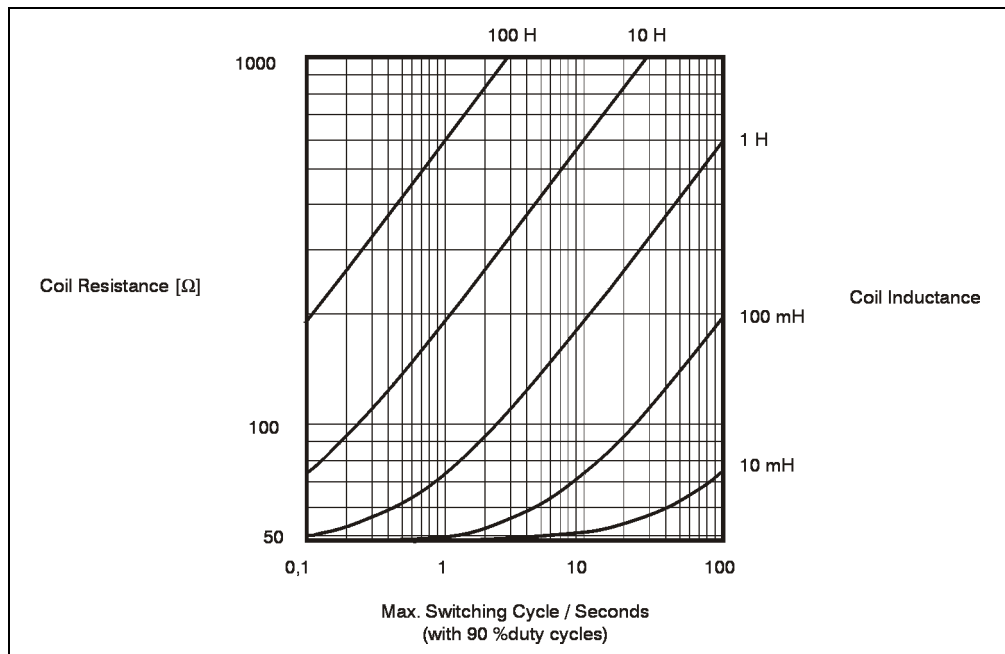


Figure 108: DO486 switching inductive loads

8.4.11 Variable Declarations

The variable declaration is made in B&R Automation Studio™:

Function	Variable Declarations				
	Scope	Data Type	Length	Module Type	Chan.
Single digital output (channel x)	tc_global	BOOL	1	Digit. Out	1 ... 32
Single output status (channel x)	tc_global	BOOL	1	Digit. In	65 ... 96
Status register	tc_global	USINT	1	Status In	0

Table 151: DO486 variable declaration

Status Register

Status Register	Bit	Description
	7	DCOK_2 - Supply voltage for output group 2 in the valid range
	6	DCOK_1 - Supply voltage for output group 1 in the valid range
	5	ERR_2 - Error occurred in output group 2
	4	ERR_1 - Error occurred in output group 1
	3	x
	2	x
	1	x
	0	x
7 6 5 4 3 2 1 0		

- ERR_1 0.....Outputs for group 1 working correctly
 1.....A controlled output for group 1 has short circuited or has an over-temperature status, or the module voltage has dropped below 18 VDC
- ERR_2 0.....Outputs for group 2 working correctly
 1.....A controlled output for group 2 has short circuited or has an over-temperature status, or the module voltage has dropped below 18 VDC
- DCOK_1 0.....No supply voltage or supply voltage too low for output group 1
 1.....Supply voltage for output group 1 in the valid range
- DCOK_2 0.....No supply voltage or supply voltage too low for output group 2
 1.....Supply voltage for output group 2 in the valid range