

RTU7M – Combined Cards of Digital Inputs and Outputs

General Description

The card provides 10 digital inputs, 5 relay outputs with 4 normally open contacts and 1 changeover contact. It is also available in version with passive or active DI.

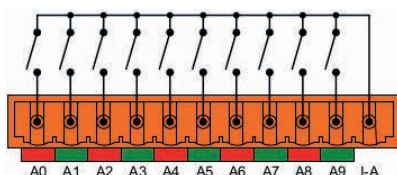
The card has its own CPU and time stamps are assigned directly on card. New versions of card (from Y2019) support new high-speed bus, which enables to use automation functions. There is also available backward reading of relay status.



Combined card of digital I/O

Active DI – Dry Contact

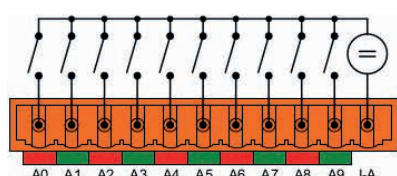
The card is equipped with its own galvanically isolated voltage source. Input is excited after connection of input pin with external shared pin via external contact.



Active inputs connection

Passive DI – Wet Contact

These inputs do not have the voltage source fitted. They are activated after connection of external voltage.

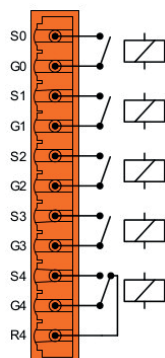


Passive inputs connection

Basic Features

Inputs

- ❑ 10 × digital input with indication of input excitation,
- ❑ isolation 3.75 kV AC,
- ❑ time filter can be set up by SW for both logical levels,
- ❑ optional double-bit signaling,
- ❑ configurable maximal allowed number of changes on input per time interval,
- ❑ input sampling with period 1 ms,
- ❑ impulse counter and period measuring with data storage into memory with backup.



Outputs connection

Outputs

- ❑ 5 × relay 8 A@250 V AC / 8 A@24 V DC,
- ❑ 4 × normally open contact, 1 × changeover contact,
- ❑ HW and SW protection against accidental switching,
- ❑ adjustable time of closed contact,
- ❑ interference protection during switching of relay contact,
- ❑ special functions (thermostat control, protection relay).

Processing of Input Digital Signals

DI are sampled with the period of 1 ms. The following step is filtration of the signal changes. The time filter can be set for both logical levels. If the change on the DI lasts the stated time, the stated logical level is declared valid and sent to the master system, if required. With each change, it is monitored the exceeding of the maximal set number of changes per minute. If the maximal number of changes is exceeded, the value is transferred with a telemetric error. This prevents the useless transfer of oscillating values. The card can be parameterized also for usage with AC signaling voltage.

Cards can be used as DI with one or double-bit signaling and can also be used for reading of impulses and measuring of the period with the storage of the status into the memory with backup (ex. for consumption metering applications).

Security of Digital Outputs

Great attention is focused on protection against accidental switching of the DO. It is resolved at two levels:

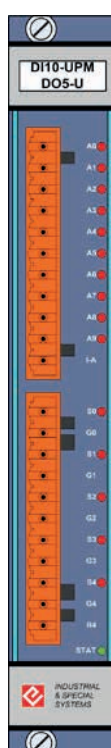
- ❑ SW level – a two-phase control of the relay switching. To be the command executed, the unit must receive two identical commands for switching of a relay in the stated time interval.
- ❑ HW level – each relay is controlled by two exciters. To perform the switching, both exciters must be activated at the same time. Each exciter is controlled by its own processor.

Special Functions

Depending on the type of FW, some DO may have a reserved function. An example is the switching of the heating in the switchboard cabinet depending on the temperature measured by the external sensor, function for controlling of the power switch during the evaluation of the fault on the line, etc.

Technical Specification of Combined DI and DO Cards

Card	DI10-UAM DO05-U	DI10-UPS DO05-U	DI10-UPM DO05-U	DI10-UPL DO05-U	DI10-UPX DO05-U	DI10-UPXL DO05-U
Inputs number	10					
Inputs type	Active (switching by dry contact)	Passive (switching by external voltage, both polarities)				
Level H	Closed	9 ÷ 25 V	20 ÷ 60 V	35 ÷ 60 V	75 ÷ 150 V	150 ÷ 300 V
Level L	Open	0 ÷ 4 V	0 ÷ 10 V	0 ÷ 17 V	0 ÷ 20 V	0 ÷ 60 V
Current in inputs	2.4 mA	2.5 ÷ 7 mA	1.9 ÷ 6 mA	1.7 ÷ 3 mA	1.3 ÷ 2.7 mA	1 ÷ 2 mA
SW filter for level H and L	0 ÷ 16777.215 seconds, step 1 ms					
Allowed number of changes per minute	0 ÷ 255					
Isolation voltage	3.75 kV AC for 1 minute					
Outputs number	4 × relay (NO contact), 1 × relay (changeover contact)					
Time of closed contact	10 ms ÷ 655 s with step, 10 ms					
Isolation contact-coil	5 kV AC for 1 minute					
Isolation between open contacts	1 kV AC for 1 minute					
Contacts load	8 A / 250 V AC, 8 A / 24 V DC					
Durability	2 × 10 ⁷ cycles					
Relay switching	Protected against accidental switching. Controlled via digital signals from main CPU.					
Consumption	Max. 2.5 W	Max. 2 W				
Connectors	2 × WAGO 231-311/026-000, part of delivery					
Wire cross-section	0.08 ÷ 2.5 mm ²					
Position in bus	Any					



Front panel of combined DIO card