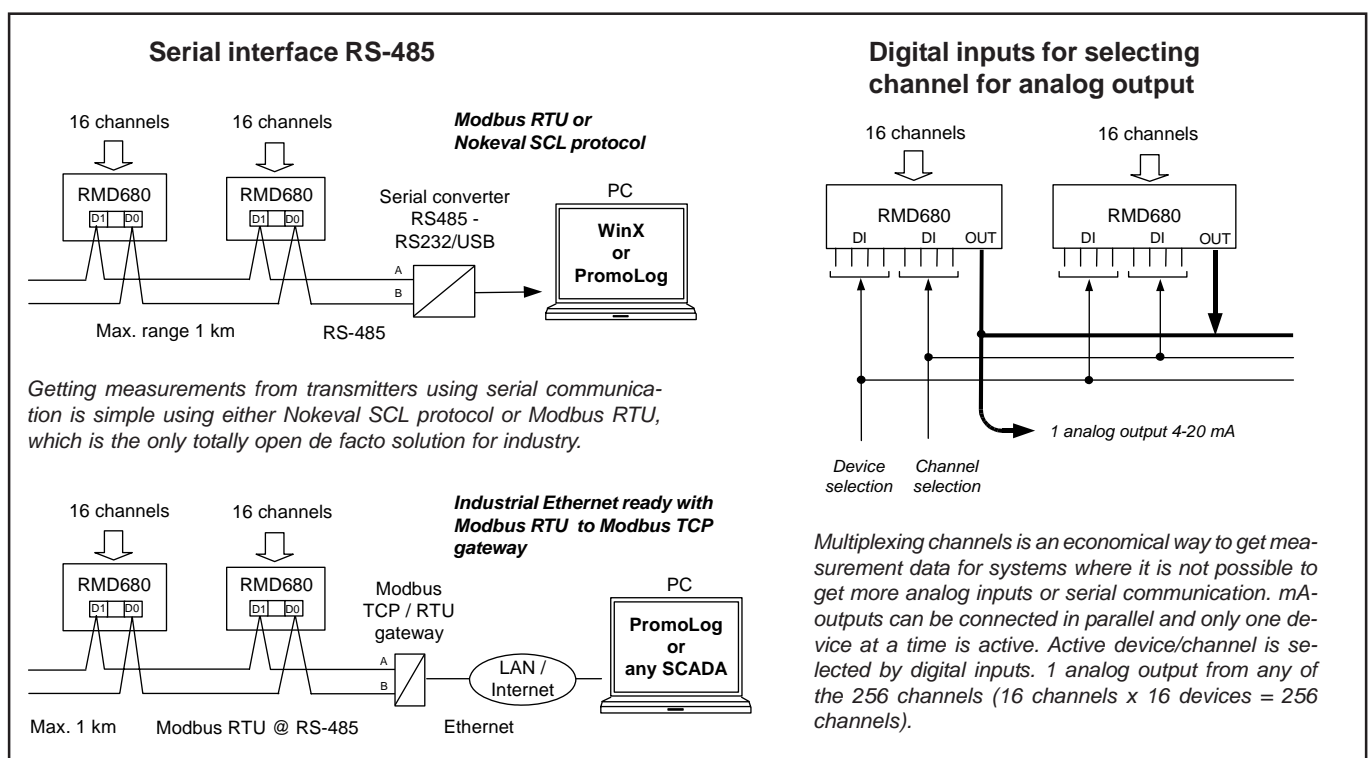# RMD680 8/16-channel universal input transmitter and multiplexer with serial output RS-485

- **Process inputs: 0/4..20mA, -20..+20mA, 0..10V, -10..+10V**
- **mV input range: -100..+100mV**
- **Thermocouples: B,C,D,E,G,J,K,L,N,R,S,T**
- **RTD sensors: Pt100, Pt1000, Ni, Cu, KTY83**
- **Resistance input range: 0..40000 ohm**

- **1 analog output 0/4..20 mA or 0..10V, channel selection with digital inputs or min/max value**
- **2 alarm relays, with common alarms**
- **Display on front panel**
- **Programming with front panel keys or with serial interface RS-485**
- **Modbus RTU and Nokeval SCL serial protocols**
- **Power supply 24 VDC, galvanically isolated from inputs**

Multichannel transmitter RMD680 has been designed for applications where lots of inputs have to be measured and transferred economically either to PC or PLC. Transmitter has 16 input channels, which can be programmed individually for different sensors. Measurement rate is 12 channels per second. Measurements can be read either by serial interface RS-485 using Modbus RTU or Nokeval SCL protocol or with one analog output. Up to 32 devices can be connected to the same serial bus without repeaters. It takes 30ms to read all channels from one device, thus 512 channels can be read in less than second. When analog output is used, output channel is selected with a 4-bit digital input. Transmitter has also 4-bit digital input for enabling its analog output thus total channel count can be increased to a maximum of 256 channels by connecting mA outputs of several devices in parallel. This way all channels from one device can be read in less than one second.

Every channel can be configured totally individually. Channel inputs are differential thus channels don't affect on each other. Transmitter has two alarm relays, that can work as common alarms: if any channel passes alarm limit, the relay activates. Device can be configured either with front panel keys or with serial interface using Mekuwin configuration software. Transmitter is compatible with WinX and PromoLog data-acquisition software and any third party software with Modbus communication.

Serial interface RS-485

Getting measurements from transmitters using serial communication is simple using either Nokeval SCL protocol or Modbus RTU, which is the only totally open de facto solution for industry.

Digital inputs for selecting channel for analog output

Multiplexing channels is an economical way to get measurement data for systems where it is not possible to get more analog inputs or serial communication. mA-outputs can be connected in parallel and only one device at a time is active. Active device/channel is selected by digital inputs. 1 analog output from any of the 256 channels (16 channels x 16 devices = 256 channels).

Technical specification:

RTD sensors:
Sensors	Pt100, Pt1000 or Ptxxx (xxx = selectable)
Range	-200..+700°C
Accuracy (Pt100)	0.05% of reading + 0.25°C
Temperature coefficient	0.02°C / °C
Sensor connection	3-wire
Measurement current	0,25 mA, multiplexed
Sensor error correction	Adjustable for each channel

Sensors	Ni100 or Nixx (xx = selectable)
Range	-60..+180°C
Accuracy	0.05% of reading + 0.25°C
Sensors	Cu10 or Cuxx (xx = selectable)
Range	-200..+260°C
Sensor	KTY83
Range	-55..+175°C

Thermocouples:
Sensor	Range	Linearization error
B	400..1800°C	±0.3°C
C (W5)	0..2300°C	±0.5°C
D (W3)	400..1800°C	±1.0°C
E	-100..900°C	±0.2°C
G (W)	1000..2300°C	±2.0°C
J	-160..950°C	±1.0°C
K	-150..1370°C	±0.5°C
L	-150..900°C	±0.5°C
N	0..1300°C	±0.1°C
R	0..1700°C	±0.5°C
S	0..1700°C	±0.5°C
T	-200..400°C	±1.0°C
Accuracy	0.05% of reading + 1°C + linearization error	
Line resistance effect	< 1 kΩ, no effect	
Cold junction error	0.02°C/°C	

Process inputs (freely scalable):
mA-inputs	0/4..20mA, ±20mA
Accuracy	0.008mA
Input resistance	about 70Ω

V-inputs	±1V, 2.5V(-1..+2.5V), ±10V
Accuracy	0.05% of reading + 0.01V
Input resistance	>500kΩ (1, 2.5V) , >1 MΩ (10V)

Other inputs (freely scalable):
mV-inputs	±55, ±100mV
Accuracy	0,1% of reading + 0.01mV
Input resistance	>1 MΩ

Resistance inputs	0..400 Ω / 4 kΩ / 40 kΩ
Accuracy	1% of FS

Serial interface:
Connection	RS-485 (2-wire)
Protocols	Modbus RTU, Nokeval SCL and Meku
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600
Bits	SCL:8N1 Modbus: 8E1, 8O1, 8N2
Reaction time	SCL: < 40ms Modbus: < 4ms
16 channel read	SCL: 110ms Modbus: 30ms @ 38400
Maximum range	1000 m

Alarms:
2 alarm relays, max 250VAC, 2A resistive
General alarms selectable

Digital inputs:
Output- and/or display channel selection
4 bits for device address, 4 bits for channel

Analog output:
	0/4-20mA and 0-10V (freely scalable)
Accuracy	0.05%, resolution 12 bits
mA output load	600Ω
Reaction time	<40 ms after channel change

Programming:
With serial interface RS-485 (PC) Meku
protocol or directly with front panel keys

General information:
Channel count	16 input channels, differential input
Digital display	5 digit red LED display, height 7.5 mm and 2 digit channel display
Galvanic isolation	Input / Output 1 kV / 1 min
Measurement rate	12 (25 at maximum rate) channels / s
AD resolution	16 bits (±32767)
Differential input	mV in: -0.15..+0.95V V,mA in: -1..3V

EMC immunity	EN 61326
EMC emissions	EN 61326 class B

|	
Operating temperature	-10..60 °C
Storage temperature	-30..+70 °C
Humidity	0..95 % non condensing
Enclosure material	Plastic Lexan 940 / Noryl VO 1550
Installation	DIN-rail, 35 mm
Terminals connectors	Detachable, 1.5 mm^2
Weight	320g
Power supply	24 VDC ±15 %, <100 mA

How to order: **RMD680-16-24V**

Model
8 or 16 channels

Options:
Configuration software MekuWin (PC software)
USB-RS485 converter DCS770

Connections and dimensions:
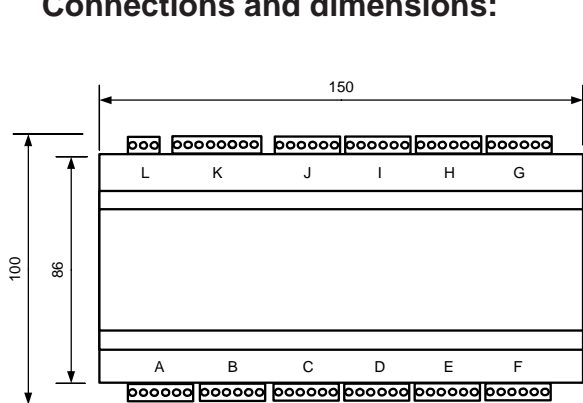
Every 6 pin connector has two channels. Connection diagram shows only first and last channel pairs.

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