MultiCONT

MULTICHANNEL PROCESS CONTROLLER

5 YEARS WARRANTY

NIVELCO

SYSTEM COMPONENTS

MAIN FEATURES

- As a Universal Process Controller provides for a flexible solution for commissioning a process control system consisting of any HART®-based intelligent (level, temperature or pressure) transmitters
- Galvanically isolated 4 – 20 mA outputs for transmitters
- Depending on the type of the transmitters 1 to 15 (standard) or 1 to 4 (Ex ia) channels
- Highly informative 128 x 64 pixel large LCD / OLED display
- Intrinsically safe version
- Simple 6-button programming
- Trend logging into internal memory or SD memory card
- USB connector for downloading data from internal FLASH memory
- Expandable with Universal Interface Modules via RS485 line
- Echo Map for **EchoTREK** and **EasyTREK** ultrasonic transmitters

APPLICATIONS

- Remote programming, display for transmitters
- Power supply for 2-wire transmitters
- Process controller for HART® capable transmitters
- Displaying measurement data numerical and in bargraph mode
- Data transmission on RS485 line (with HART® or Modbus® protocol)
- Simple datalogging
- Trend logging or logging of flow measurement

GENERAL DESCRIPTION

The **MultiCONT** unit is a universal interface between NIVELCO's HART®-capable intelligent level transmitters and the other elements of the process control system like the PC-s, PLC-s, displays and the actuators. Besides its role as an interface, the **MultiCONT** ensures the powering of the 2-wire transmitters while being capable of complex control tasks. The **MultiCONT** unit supports communication with a maximum of 15 standard or 4 Ex ia certified NIVELCO's HART®-capable 2- and / or 4-wire transmitters. If **MultiCONT** is used with NIVELCO's **MicroTREK** or **PiloTREK** microwave level transmitters the maximum number of transmitters in a loop should not exceed 6 pcs. for normal transmitters and 2 pcs. for Ex version transmitters. If a system contains more transmitters than one **MultiCONT** can handle, further **MultiCONT** units can be wired in series via an RS485 line. Remote programming of the transmitters and downloading of the parameters and measured data is possible using the **MultiCONT**. The various outputs such as 4 – 20 mA, relays and digital outputs can be controlled using measured values and new values calculated from the measured values. The internal current outputs (max. 2 pcs.) of the **MultiCONT** can transfer and even modify information supplied by the transmitters. The built-in relays (max. 5 pcs.) can be freely programmed and assigned to the transmitters. The large LCD or OLED dot-matrix display allows visualisation of a wide range of informative display functions. One special feature is the "Echo Map" visualisation when communicating with NIVELCO's **EchoTREK** and **EasyTREK** transmitters.

SPECIAL FEATURES

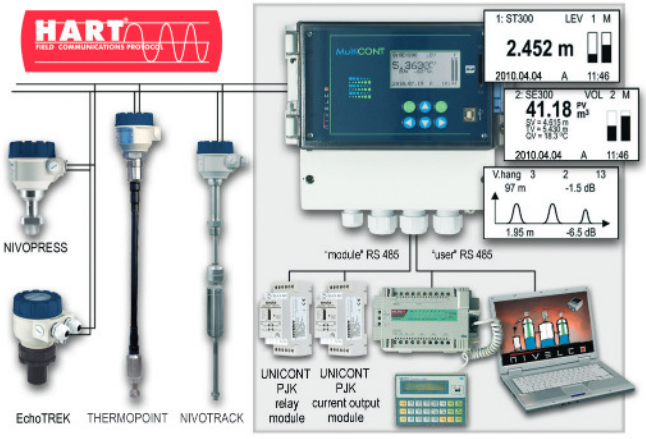
Data logging (optional)

Types with Datalogger feature can store measurement values and three additional parameters of the connected transmitters into the internal Flash memory or an SD memory card. User can select between the two available logging modes: "Time controlled" and "Event controlled". The Datalogger records the selected values out of a dozen process variables and highest flow values over a time period if NIVELCO's ultrasonic level trasnmitters are used for flow measurement. Capacity of the internal memory is cca. 65 000 entries while SD cards can be used up to 64 GB capacity.

NIVISION (optional) – Process Visualisation Software

MultiCONT(s) in system with **NIVISION** software use RS485 physical layer and Modbus® RTU communication protocol to visualize the measurement data in numerical and graphical display modes on a control PC. Beside visualizing the process, measured values and calculated values **NIVISION** performs datalogging (database handling), trend monitoring or alarm indication. The software is sold as a custom-tailored product.

TYPICAL NETWORK CONTROLLED BY MultiCONT



OUTPUT TYPE SELECTION

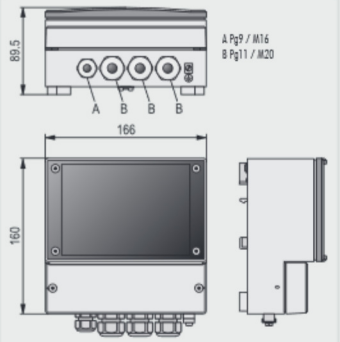
Outputs	Only display (w.o. relay)	1 relay	2 relays	3 relays	4 relays	5 relays
Only display (without RS485 Interface or current output)	■	■	■	■	■	■
RS485 Interface	■	■	■	■	■	■
1x 4 – 20 mA output	■	■	■	■	■	■
2x 4 – 20 mA outputs	■	■	■	■	■	
RS458 + 1x 4 – 20 mA analogue output	■	■	■	■	■	■
RS458 + 2x 4 – 20 mA analogue output	■	■	■	■	■	

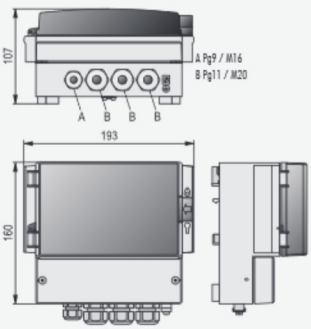
TECHNICAL DATA

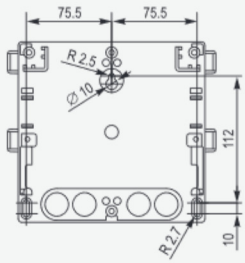
Type		MultiCONT P□□–2□□–□
Power supply (power consumption) maximal supply voltage		85 – 255 V AC 50 – 60 Hz / 12 VA / 255 V_{eff}; 11.4 – 28 V AC 50 – 60 Hz / 12 VA / 28 V_{eff} ; 11.4 – 40 V DC / 11 W / 40 V DC
Transmitter power supply voltage		30 V DC / 60 mA
Display		128 x 64 dot-matrix
Relay		Max. 5 pcs. SPDT 250 V AC, AC1, 5 A
Analogue output		Max. 2 pcs., galvanically isolated 4 – 20 mA, max. load of 500 Ohm, with overvoltage protection
Number of powered transmitters		Max. 15 pcs. standard, or max. 4 pcs. Ex ia
RS485 interface	"user"	Galvanically isolated, HART® / Modbus® protocol
	"module"	Galvanically isolated, HART® protocol
Logger unit		Capacity: FLASH = 65 000 entry; SD card = depends on the card! (max. 64 GB)
Housing material		Polycarbonate (PC)
Mounting		Wall mounted
Ambient temperature		-20 °C … +50 °C (-4 °F … +122 °F)
Ingress protection		IP65
Electrical protection		Class I / III
Mass		0.9 kg (1.98 lb)
Special data for Ex certified models		
Ex marking		⟨Ex⟩ II (1) G [Ex ia Ga] IIB, ⟨Ex⟩ II (1) D [Ex ia Da] IIIC
Intrinsically safe output limitation data		U_0 = 30 V I_0 = 140 mA P_0 = 1 W L_0 = 4 mH C_0 = 200 nF U_m = 253 V
Transmitter power supply voltage		25 V DC / 22 mA
Ambient temperature		-20 °C … +50 °C (-4 °F … +122 °F)

DIMENSIONS

Without lockable cover	With lockable, transparent cover		Arrangement of mounting holes

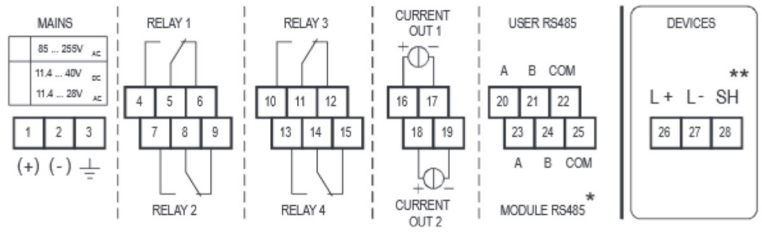




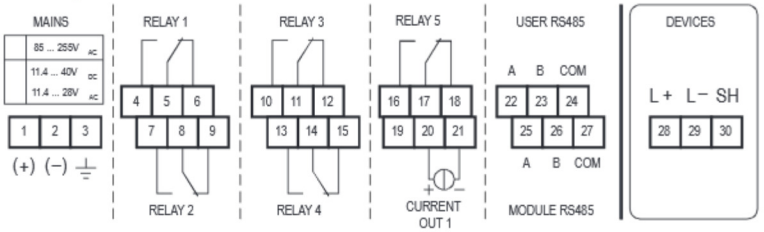


WIRING

4-relay version



5-relay version



*Only for UNICONT modules. **Only for non-Ex versions.

Number of transmitters	Cable capacitance (pF/m)			
	65	95	160	225
1	2800	2000	1300	1000
5	2500	1800	1100	900
10	2200	1600	1000	800
15	1850	1400	900	700

After loosening and removing screws fastening the cover the cables can be connected. The same cable should not be used for AC and DC as well as for SELV and mains voltage.

For wiring of the transmitters shielded, twisted cable pair (STP) should be used with the length depending on the number of connected units and the electrical properties of cable.

RS485 interface: **A:** **TRD+**
B: **TRD-**
COM: **shielding**

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TRANSMITTERS OPERATING WITH MultiCONT

- **EchoTREK / EasyTREK** – 2- or 4-wire ultrasonic level transmitters
- **MicroTREK** – 2-wire guided microwave level transmitters (max. 8 pcs. standard or max. 2 pcs. Ex ia version unit can be connected into one loop)
- **NIVOTRACK** – 2-wire magnetostrictive level transmitters
- **NIVOPRESS** – 2-wire hydrostatic level transmitters
- **THERMOCONT** – 2-wire temperature transmitters
- **THERMOPOINT** – 2-wire multipoint temp. transmitters
- **AnaCONT** – 2-wire liquid analytical transmitters
- **NIVOCAP** – 2-wire capacitive level transmitters
- **PiloTREK** – Non-contact microwave level transmitters

EXPANDING THE MultiCONT

If the number of the built-in relays or current generators is not enough, **MultiCONT** can be expanded with external modules using the "module" RS485 interface. The sum of relays in **UNICONT PJK-100** extension modules and the **MultiCONT** must not exceed 64, the sum of analogue outputs (4 – 20 mA) must not exceed 16. There is a special module with both relay and current output in the variety of the **UNICONT PJK-100** series. The maximal number of these modules may be 32. The programming of the **UNICONT PJK** modules can be done by **MultiCONT**.

ORDER CODES (NOT ALL COMBINATIONS AVALIABLE)

MultiCONT multichannel process controller

MultiCONT P■■–2■■–■ (1)

Expansion	Code
Expandable (2)	R
Standard	E

Input	Code
1 pcs. HART® unit	1
2 pcs. HART® units	2
4 pcs. HART® units	4
8 pcs. HART® units	8
15 pcs. HART® units	M

Output	Code
Only display	0
1 relay	1
2 relays	2
3 relays	3
4 relays	4
5 relays	D

Power supply	Code
85 – 255 V AC	1
24 V AC / DC	2
85 – 255 V AC Ex ia	5
24 V AC / DC Ex ia	6

Enclosure		Code
IP65 enclosure	LCD	W
	Transparent cover / LCD	C
	Transparent cover + logger / LCD	D
	OLED	L
	Transparent cover / OLED	K
	Transparent cover + logger / OLED	N

(1) *The order code of an Ex version should end in "Ex".*
(2) *The system can be expanded using relay, analogue and Universal Interface Modules.*

2x 4 – 20 mA analogue output		G
2x 4 – 20 mA analogue output	+1 relay	H
	+2 relays	J
	+3 relays	K
	+4 relays	9

2x 4 – 20 mA + RS485 interface		U
2x 4 – 20 mA analogue output + RS485 interface	+1 relay	V
	+2 relays	W
	+3 relays	X
	+4 relays	Y

RS485 interface		A
RS485 interface	+1 relay	L
	+2 relays	M
	+3 relays	N
	+4 relays	P
	+5 relays	E

1x 4 – 20 mA analogue output		F
1x 4 – 20 mA analogue output	+1 relay	5
	+2 relays	6
	+3 relays	7
	+4 relays	8
	+5 relays	Q

1x 4 – 20 mA + RS485 interface		B
1x 4 – 20 mA analogue output + RS485 interface	+1 relay	R
	+2 relays	C
	+3 relays	S
	+4 relays	T
	+5 relays	Z

ACCESSORIES

UNICONT – Universal Interface Modules	Order code
2 relay outputs	UNICONT PJK-102-4
1 relay output, 1 current output	UNICONT PJK-111-4
1 current output	UNICONT PJK-110-4
2 current outputs	UNICONT PJK-120-4
EView2 – HART® configuration software	
NIVISION – process visualisation software	

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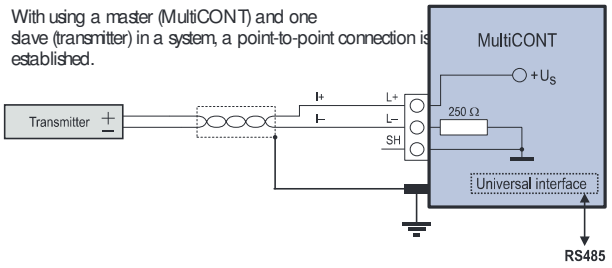
COMMUNICATION BETWEEN MultiCONT AND TRANSMITTERS

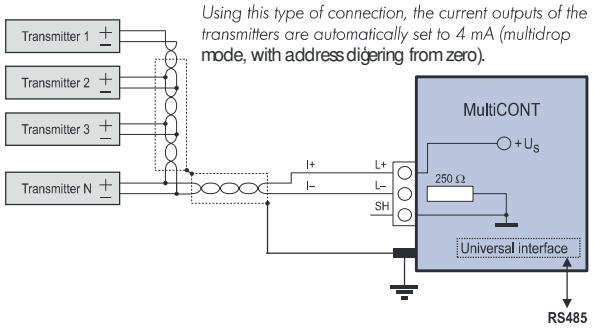
Point-To-Point connection

With using a master (MultiCONT) and one slave (transmitter) in a system, a point-to-point connection is established.



Multipoint connection (Multidrop). Multiple slaves connected in parallel

Using this type of connection, the current outputs of the transmitters are automatically set to 4 mA (multidrop mode, with address digering from zero).



PROGRAMMING OF MultiCONT

During programming the following operations can be performed:

- Automatic detection of devices (transmitters) connected to the **MultiCONT**.
- Activation, deactivation of listed devices (transmitters) In deed all devices in the system should be operating whether they are in the list or not. Devices in the list automatically become active. Deactivation can be used for disable devices temporarily from the system.
- Activation, deactivation of relays and current outputs and assignment to devices (transmitters).
- Setting up functional values (difference of 2 measured values, sum or average of 2 or more measured values).
- Remote programming of devices, although it is practical to program the devices before installation and wiring.
- Programming outputs of **MultiCONT**.

STEPS OF PUTTING INTO OPERATION A MultiCONT NETWORK

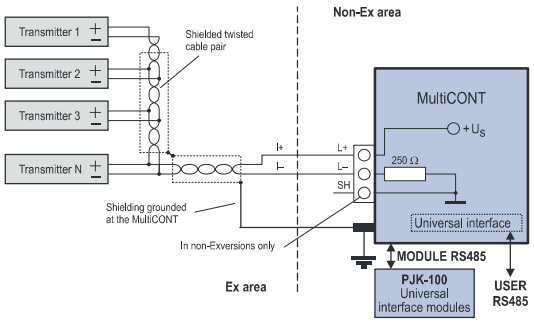
- Preparing transmitters and Universal Interface Modules: Transmitters should be given a unique „Short address". If there are multiple transmitters, then the address should not be zero!
- Adding the devices in the loop to the device list.
- Detecting Universal Interface Modules (relay / current output) and adding them to the list
- Relay configuration: the relay should be assigned to one or more transmitters (sources), the mode of operation (function) should be specified, the switching points should be configured.
- Current output configuration: first a transmitter (source) should be assigned to a current generator and then setting of the operation mode (function) and parameters is needed.

SYSTEM SET-UP

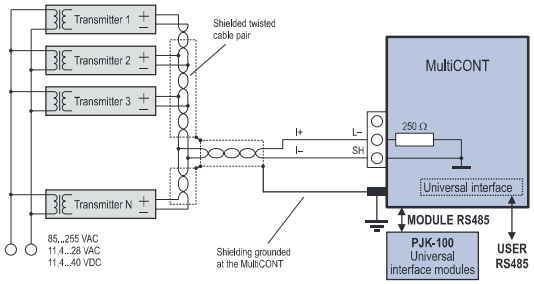
There is a Master-Slave relation between **MultiCONT** and the connected transmitters. **MultiCONT** queries the transmitters for their measured values and programs the transmitters remotely. In HART® multidrop mode when there are several transmitters connected to **MultiCONT** the transmitters have to be set to different polling addresses that differ from zero. This setting should be done one by one prior to the final wiring.

In systems involving several **MultiCONT**s chained to one RS485 line all units have to have different polling addresses too.

Wiring of 2-wire transmitters



Wiring of 4-wire transmitters (units with separate power supply)



Wiring of Combined Systems (containing both 2- & 4-wire transmitters)