MultiCONT

MULTICHANNEL PROCESS CONTROLLERS

NIVELCO

OUR PROFESSION IS YOUR LEVEL

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*
- *1 to 15 (standard) or 1 to 4 (Ex ia) channels*
- *Highly informative large 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*
- *Expanding with Universal Interface Modules via RS 485 line*
- *Echo Map for EchoTREK and EasyTREK ultrasonic transmitters*

APPLICATIONS

- *Remote programming, displaying of transmitters*
- *Power supply for 2-wire transmitters*
- *Process controller for HART capable transmitters*
- *Displaying measurement data numerical and in bargraph mode*
- *Data transmission on RS 485 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 likewise capable of realizing 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** microwave level transmitters the maximum number of transmitters in a loop should not exceed 8 pcs. for normal transmitters and 2 pcs. for Ex ia version transmitters. 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. If a system contains more transmitters than one **MultiCONT** can handle, further **MultiCONT** units can be organised in chain via RS485 interface. The large 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

Trend logging (optional)

Onboard logging capable versions of **MultiCONT** are able to store measurement values and three additional parameters of the connected transmitters in a measurement system into the internal FLASH memory or an SD memory card. The two modes, time-controlled and event-controlled logging modes can be used simultaneously. Monitoring the average, minimum and maximum value or highest values of the flow can be used only for **NIVELCO** manufactured transmitters used in flow-metering mode. Content of the internal memory is retrievable through USB port, within the capacity of 65000 entries. Maximal capacity of the applicable SD card is 2 GB.

NIVISION (optional) Process Visualisation Software

RS 485 capable versions of **MultiCONT** are able to communicate with **NIVELCO's NIVISION** process visualization software to indicate parameters of a process control system graphically on a process controller PC. The process, the measured values or any further processed values can be visualized also in tabular form with **NIVISION**. The **NIVISION** performs data logging, trend monitoring, database handling and various other tasks in addition to a basic visualization. The software is sold as a custom-tailored product.

TYPICAL NETWORK CONTROLLED BY MultiCONT
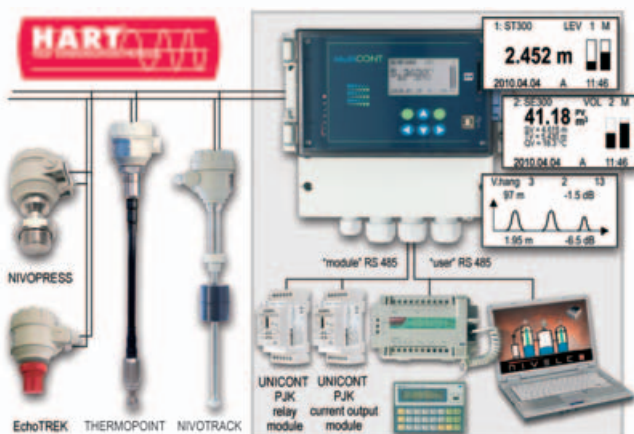
OUTPUT TYPE SELECTION

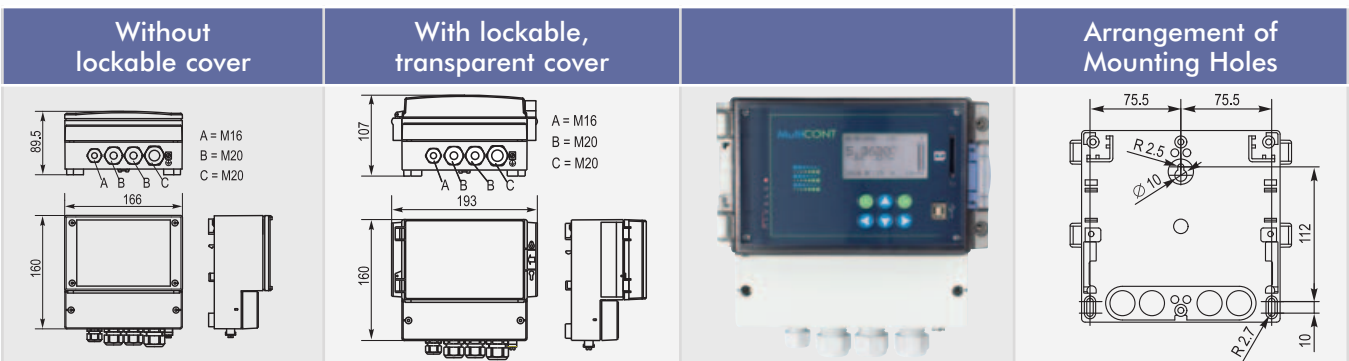| Outputs	Only display (w.o. relay)	1 relay	2 relays	3 relays	4 relays	5 relays
Only display (without RS 485 Interface or Current output)	■	■	■	■	■	■
RS 485 Interface	■	■	■	■	■	■
1x 4-20 mA output	■	■	■	■	■	
2x 4-20 mA outputs	■	■	■	■	■	
RS 485 + 1x 4-20 mA analogue output	■	■	■	■	■	
RS 485 + 2x 4-20 mA analogue outputs	■	■	■	■		

TECHNICAL DATA

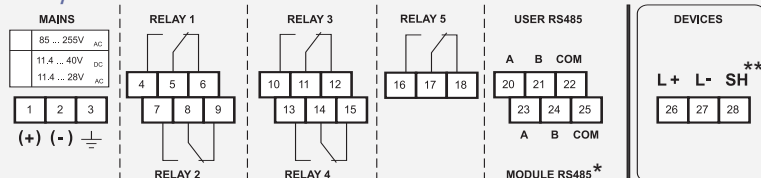| Type	MultiCONT P□□ – 2□□ – □
Power supply / power consumption / maximal supply voltage	85 … 255 V AC 50 … 60 Hz / 12 VA / 255 V_{eff} ; 11,4 … 28 V AC 50 … 60 Hz / 12 VA / 28 V_{eff} ; 11,4 … 40 V DC / 11 W / 40 V DC
Transmitter power supply voltage	30 V DC / 60 mA
Display	128 x 64 dot-matrix
Relay	Max. 5 pcs. SPDT 250 V AC, AC1, 5 A
Analogue output	Max. 2 pcs., galvanically isolated 4 … 20 mA, Max. load of 500 Ω, with overvoltage protection
Number of powered transmitters	Max. 15 pcs. standard, or max. 4 pcs. Ex ia
RS 485 interface — "user"	Galvanically isolated, HART / MODBUS protocol
RS 485 interface — "module"	Galvanically isolated, HART protocol
Logger unit	Capacity: FLASH = 65000 entry; SD card = depends on the card! (max. 2 GB)
Housing material	Polycarbonate (PC)
Mounting	Wall mounted
Ambient temperature	−20 °C … +50 °C
Ingress Protection	IP 65
Electrical protection	Class I / III
Mass	0.9 kg
Special data for Ex certified models	
Ex marking	ATEX ⟨Ex⟩ II (1) G [Ex ia Ga] II B
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
Transmitter power supply voltage	25 V DC / 22 mA
Ambient temperature	-20 °C … +50 °C

DIMENSIONS

Without lockable cover	With lockable, transparent cover		Arrangement of Mounting Holes

89,5
A = M16
B = M20
C = M20
A B B C
166
160

107
A = M16
B = M20
C = M20
A B B C
193
160

75.5   75.5
R 2.5
Ø 10
112
R 2.7
10

WIRING

4-relay version

MAINS
85 … 255V AC
11,4 … 40V DC
11,4 … 28V AC
1 2 3
(+) (−) ⏚

RELAY 1
4 5 6
7 8 9
RELAY 2

RELAY 3
10 11 12
13 14 15
RELAY 4

CURRENT OUT 1
16 17
18 19
CURRENT OUT 2

USER RS485
A B COM
20 21 22
23 24 25
A B COM
MODULE RS485 *

DEVICES
L+ L- SH **
26 27 28

5-relay version

MAINS
85 … 255V AC
11,4 … 40V DC
11,4 … 28V AC
1 2 3
(+) (−) ⏚

RELAY 1
4 5 6
7 8 9
RELAY 2

RELAY 3
10 11 12
13 14 15
RELAY 4

RELAY 5
16 17 18

USER RS485
A B COM
20 21 22
23 24 25
A B COM
MODULE RS485 *

DEVICES
L+ L- SH **
26 27 28

* 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	1900	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

SYSTEM SET-UP

There is a Master-Slave relation between **MultiCONT** and the connected transmitters. Through the **MultiCONT** the transmitters can be programmed or their parameters checked and modified. Reading the process values of the transmitters is easy to do by the **MultiCONT**. In case of using **MultiCONT** with multiple transmitters, the units should be addressed with numbers (Short address) differing from zero. Using two transmitters with the same Short address is not possible. **MultiCONT** can handle a number of max. 15 transmitters with HART communication. When using 2-wire transmitters, the current output of the transmitters will be limited to 4 mA, because of the capacity of the **MultiCONT**'s power supply, which is rated at 60 mA with standard transmitters.
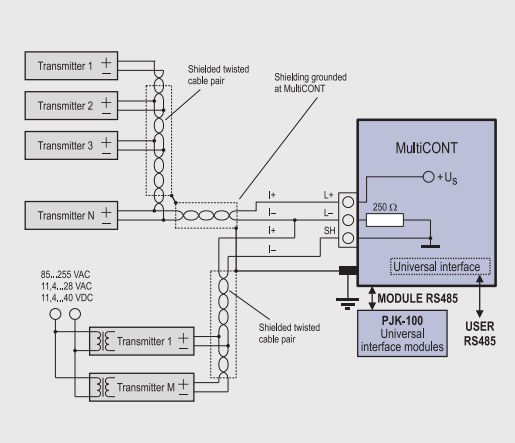
Wiring of 2-wire Transmitters
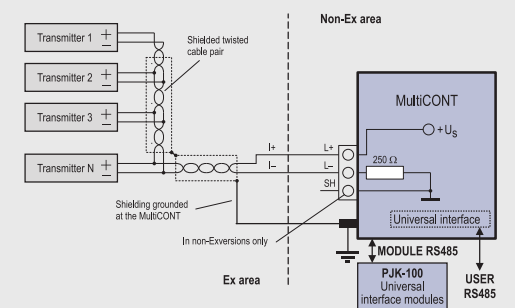
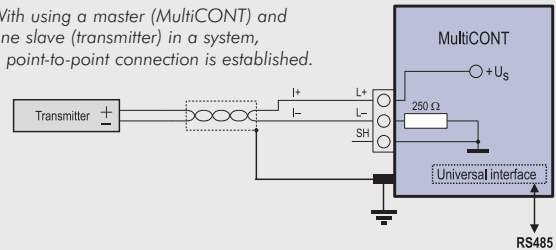### Wiring of 4-wire Transmitters
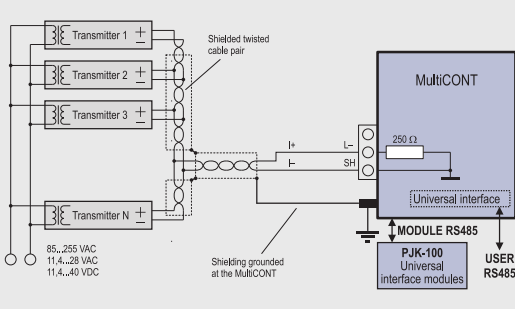
Wiring of Combined Systems (containing both 2- & 4-wire transmitters)

## 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 differing from zero).
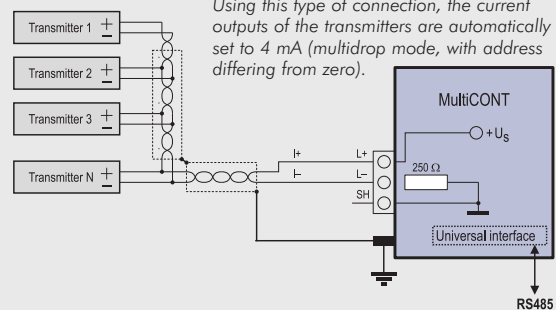
PROGRAMMING OF MultiCONT

During programming the following operations can be performed:

- *Automatic detection of devices (transmitters) connected to the **MultiCONT**, and putting them into the list of devices*
- *Activation, inactivation 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. Inactivation can be used for disable devices temporarily from the system.
- *Activation, inactivation of relays and current outputs and assignment to devices (transmitters)*
- *Formation of 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***

PUTTING A NETWORK INTO OPERATION WITH MultiCONT

Recommended steps of putting the MultiCONT into operation:

- *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 into the device list*
- *Configuration of the state of the transmitters*
  Devices (transmitters) placed in the device list during the detection process automatically become active therefore the MultiCONT queries them constantly. This can be avoided by setting their state to be inactive.
- *Detecting Universal Interface Modules (relay / current output) and adding them into 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 and then it should finally be activated.
- *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 then it should finally be activated.

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TRANSMITTERS OPERATING WITH MultiCONT

- **EchoTREK / EasyTREK** 2- or 4-wire ultrasonic level transmitters
- **MicroTREK** 2-wire guided microwave level transmitters
  (maximum 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
- **AnaCONT** 2-wire liquid analytical transmitters
- **NIVOCAP** 2-wire capacitive level transmitters
- **THERMOPOINT** 2-wire multipoint temperature 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 **MultiCONT** must not exceed 64, the sum of analogue outputs (4…20mA) must not exceed 16. There is a universal module with both relay and current output in the variety of the **UNICONT PJK** series. Max. number of these modules may be 32. Programming of the modules is done by **MultiCONT**.

ORDER CODES (Not all combinations avaliable)

MultiCONT multichannel process controller

MULTICONT P ☐☐ – 2 ☐☐ – ☐ (1)

Expansion	Code
Expandable (2)	R
Standard	E

Enclosure	Code
IP 65 wall enclosure	W
IP 65 wall enclosure + transparent cover	C
IP 65 wall enclosure + transparent cover + logger	D

Input	Code
1 pc. 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

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

(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

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

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

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

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

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

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
EView Software	SAS-302
NIVISION Process Visualisation Software	