

Installation Guide

Industrial Transmitters

Stratos Multi E471N

EtherNet/IP





Read before installation Keep for future use.

3 Commissioning

Dimension Drawings

Note: All dimensions are given in millimeters [inches].



1 Safety

Also read the user manual and safety guide, and follow the safety instructions.

Intended Use

Stratos Multi E471N is an industrial transmitter in 4-wire technology for EtherNet/IP communication. It features an RJ45 socket and can therefore be connected in a star topology. In the field of liquid analysis, the device can measure pH values, ORP, conductivity (contacting or inductive), and oxygen content, both dissolved and in the gaseous phase.

The defined rated operating conditions must be observed when using this product. These conditions are set out in full in the Specifications chapter of the user manual, as well as in parts of this installation guide.

Function Check Mode (HOLD Function)

When you open the Parameter Setting, Calibration, or Maintenance menus, Stratos Multi switches to the function check (HOLD) mode. EtherNet/IP communication and the relay contacts/current outputs behave in accordance with the parameter settings. The state transmitted via EtherNet/IP is in part dependent on the operating mode.

Operations must not be carried out while the device is in function check (HOLD) mode, as the system may behave unexpectedly and put users at risk.

Inputs and Outputs (SELV, PELV)

All inputs and outputs must be connected to SELV/PELV circuits.

Connections

Rear of front unit



- 2 RJ45 socket for EtherNet/IP 6 Terminal plate 7 Module plate for analog sensors;
- the instructions for installing the memory card
- 4 RS-485 interface: Sensor connection 8 Module slot for measuring modules for Memosens or digital sensors

example for pH module

2 Product

Package Contents

- Stratos Multi basic unit
- Bag containing small accessory parts (2x plastic sealing plugs, 1x hinge pin, 2x insertable jumpers, 1x reduction sealing insert, 1x multiple sealing insert, 2x blanking plugs, 5x cable glands and M20x1.5 hex nuts)
- Test Report 2.2 acc. to EN 10204
- Installation Guide
- Safety Guide

Note: Check all components for damage upon receipt. Do not use damaged parts.

Nameplate



Note: The MAC address (00:19:10:xx:xx:xx) is located on a separate label.

Electrical Installation

A WARNING! The transmitter does not have a power switch. An appropriately arranged and accessible disconnecting device for the transmitter must be present in the system installation. The disconnecting device must disconnect all non-grounded, current-carrying wires and be labeled such that the associated transmitter can be identified. Before commencing with the installation, make sure that all lines to be connected are de-energized.

A CAUTION! Risk of losing the specified ingress protection. Fasten the cable glands and screw together the housing correctly. Observe the permissible cable diameters and tightening torques. Only use original accessories and spare parts.

NOTICE! Strip the insulation from the wires using a suitable tool to prevent damage.

- 01. Wire the connections. Deactivate unused current outputs in the parameter settings or use jumpers.
- 02. Connect the power supply (for ratings, see specifications).
- 03. When measuring with analog sensors: Insert the measuring module into the module slot.
- 04. Connect the sensor.
- 05. Check whether all connections are correctly wired.
- 06. Close the housing and successively tighten the enclosure screws in a diagonal pattern.
- 07. Before switching on the power supply, make sure its voltage is within the specified range.
- 08. Switch on the power supply.

A CAUTION! Incorrect parameter settings or adjustments can result in incorrect outputs. Stratos Multi must therefore be commissioned by a system specialist, all its parameters must be set, and it must be fully adjusted.

3 Slot for the memory card. Follow

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TI-212.512-KNEN01

Connecting the Power Supply

The power line may carry dangerous touch voltages. It is connected to terminals 17 and 18. Touch protection must be ensured by proper installation.

Te	rm	in	a

Power supply, reverse polarity protected, see specifications 17, 18

RJ45 Ethernet Socket Wiring

Pin	Name	Description	
1	TD+	Transmitted data +	
2	TD-	Transmitted data -	
3	RD+	Received data +	
6	RD-	Received data -	

Accessories

Accessories	Order no.
RJ45 socket	ZU1072
Adapter cable RJ45/M12 D-type	ZU1073

System Integration

An EtherNet/IP EDS file (electronic data sheet) is required for system integration.

The latest version of the EDS file, "E471N-Vxxxxx.eds", is available to download from the Knick website.

Network Settings

Network settings can be adjusted via the Ethernet interface or via local operation.

Parameter Setting
 EtherNet/IP
 Usage : On

IPv4 Address Mode : DHCP or Custom

If you select the "Custom" IPv4 address mode, also enter the IPv4 address, the subnet mask, and the standard gateway. Enter the IPv4 address 0.0.0.0 if no gateway is available.

Display the current IP and MAC addresses:

Menu Selection Diagnostics Network Information

Connecting Digital Sensors

Memosens sensors and the SE740 (LDO) optical oxygen sensor are connected to the RS-485 interface of the Stratos Multi. Next, select the relevant process variable for the connected sensor in the parameter settings.

Menu > Parameter Setting > Sensor Selection [I] [II] > Sensor Selection [I]

Terminal	Wire color	Memosens cable or M12 cable	Terminal plate
1	Brown	+3V	6 5 4 3 2 1
2	Green LDO: Gray	RS-485 A	wer Out Shield GND RS485 B RS485 A RS485 A 3 V
3	Yellow LDO: Pink	RS-485 B	≧ Sensor]
4	White LDO: Brown	GND LDO: Shield	
5	Transparent	Shield	
6	LDO: White	LDO: Power Out	

Memosens Module Terminal Assignments

A second Memosens sensor can be connected to the MK-MS095N Memosens module.

Termi- nal	Wire color	Memosens cable	Terminal plate
A	Brown	+3V	RS 485
В	Green	RS-485 A	
С	Yellow	RS-485 B	
D	White	GND	3 A B GNI
E	Transparent	Shield	EDCBA

Connecting Analog Sensors

pH/ORP measuring module	MK-PH015N
Oxygen measuring module	MK-OXY046N
Module for contacting conductivity measurement	MK-COND025N
Module for inductive conductivity measurement	MK-CONDI035N
Module for dual conductivity measurement	MK-CC065N

Terminal Assignments for Measuring Modules

		рН	ORP		Ox (Ampe	ygen rometic)
A	Meas	Coax core		A	Cathode	Coax core transparent
В	Ref	Coax shield	Coax shield	В	Reference	7
С	SG		Coax core	с	Anode	Coax shield red
D	+ 3 V source			D	Guard	Gray + green
E	+ 3 V drain			E	ISM (GND)	
F	ISM (GND)			F	ISM (DATA)	
G	ISM (DATA)			G	RTD (GND)	Green
н	RTD (GND)	Temperature probe	Temperature probe	н	RTD	White
I	RTD	Temperature probe	Temperature probe	I	Shield	Cable shield yellow/green
к	Shield	Cable shield	Cable shield			

4 Operation and Use

Display, Keypad



5 Messages/Troubleshooting (Excerpt)

Messages/Troubleshooting (Excerpt)

Error	Message		Remedy			
	Display is blan	ık	Press any key to wake the display following a possible auto-off. Check the voltage supply.			
	No measurement, no error message		Check the sensor connection/install the module properly. Configure the measurement display.			
	No connection EtherNet/IP	n via	Check the RJ45 connection. Ping the device in the local network.			
	Sensoface		Calibrate and adjust the sensor, check the sensor connection, clean the sensor and replace if necessary, replace the sensor cable.			
B073/ B078	Current I1/I2 L	oad Error	Check the current loop, deactivate or short-circuit unused current outputs.			
Note:	For other me	ssages, s	ee the user manual			
6 Snd	cification	s (Exce	rnt)			
Power			190			
Power : termina	supply, als 17, 18	80 V (- 15 24 V (- 15	80 V (- 15 %) 230 (+ 10 %) V AC; approx. 15 VA; 45 65 Hz 24 V (- 15 %) 60 (+ 10 %) V DC; 10 W			
		Overvolta	Overvoltage category II, protection class II, pollution degree 2			
Test vo	ltage	Type test	Type test 3 kV AC 1 min after moisture pre-treatment			
		Routine te	Routine test 1.4 kV for 2 s			
Etherl	Net/IP					
Standa	rds	IEEE 8	02.3, IEC 61784-1			
ODVA v	/endor ID	1593	1593			
ODVA o	device ID	Gener	Generic Device (43)			
ODVA r	name of station	Strato	Stratos Multi E471N			
Terminals		1x RJ4	1x RJ45			
RJ45 communication		10 Mb	10 Mbit/s (10BASE-T), 100 Mbit/s (100BASE-TX)			
Cable r	ecommendatio	n CAT 5,	CAT 5, CAT 5e, CAT 6			
Galvan	ic isolation	Shield	to ground			
Insulati	ion strength	2250\	250 V DC 250 V /1,5 kV AC (50/60 Hz) for 60 s			

Inputs and Outputs (SELV, PELV)

= Insert jumper

Sensor input 1	for Memosens/optical sensors (SE 740), galvanically isolated
Data In/Out	Asynchronous interface RS-485, 9600/19200 Bd
Sensor input 2	For measuring module or analog/ISM ¹⁾ measuring module, galvanically isolated
Data In/Out	Asynchronous interface RS-485, 9600 Bd
Input OK1	Galvanically isolated (optocoupler)
	Switching between parameter sets A/B, flow measurement, function check
Power Out	Power supply output, short circuit-proof, 0.5 W, for operating the SE740 sensor
	Off; 3.1 V (2.99 3.25 V); 14 V (12.0 16.0 V); 24 V (23.5 24.9 V)
Output 1, 2 Out 1, Out 2	0/4 20 mA, floating, load resistance up to 500 $\Omega,$ galvanically connected
	When using the current outputs, neither Ethernet nor the relay contacts can be used.
Failure message	3.6 mA or 22 mA, adjustable
Active	Max. 11 V
Passive	Supply voltage 3 24 V
Contact REL1, REL2	Relay contact, floating
Contact rating	$AC < 30 V_{rms} / < 15 VA$
with ohmic load	DC < 30 V / < 15 W
Max. switching current	3 A, max. 25 ms
Max. continuous current	500 mA
Device	
Display	Graphical TFT color display, 4.3", white backlighting
Resolution	480 x 272 pixels

1) ISM with TAN option FW-E053

Conductivity (Contacting)

		4-Electrode Sensor		2-Electrode Coax Sensor
А	l _{hi}	Current electrode Hi		
В	U _{hi}	Voltage electrode Hi		Electrode 1
С	U _{lo}	Voltage electrode Lo		Electrode 2
D	I _{lo}	Current electrode Lo		
Е	RTD GND	Temperature probe		Temperature probe
F	RTD	 Temperature probe	•••	Temperature probe
G	RTD (SENSE)	 Temperature probe		Temperature probe
Н	Shield	Cable shield		Cable shield

	Conducti SE 6	vity (Ind 55 / SE 6	luctive) 56		Conducti 2 x 2-Elect	vity (Dual) rode Sensor
А	Hi receive	Coax	Core (blue)	A	A CELL	
В	LO receive	red	Shield (red)	В	A CELL (GND)	Cable shield
С	LO send	Coox	Shield (red)	С	RTD	Temperature probe
D	HI send	white	Core (blue)	D	A RTD (GND)	Temperature probe
Е	RTD GND	Green			A Shield	
F	RTD	White		F	B CELL	
G	RTD (SENSE)		Yellow		B CELL (GND)	Cable shield
н	Shield	Cable shield green/yellow			B RTD	Temperature probe
				I	B RTD (GND)	Temperature probe
				К	B Shield	



= Jumper if only 2-wire temperature probe is used

Housing	
Molded enclosure	Glass fiber reinforced Front unit material: PBT Rear unit material: PC
Protection	IP66/IP67/TYPE 4X outdoor (with pressure compensation) when the device is closed
Flammability	UL 94 V-0 for external parts
Weight	1.2 kg (1.6 kg incl. accessories and packaging)
Terminals	
Screw terminals	For single and stranded wires 0.2 \dots 2.5 mm ²
Tightening torque	0.5 0.6 Nm
Wiring	
Stripping length	Max. 7 mm
Temperature resistance	> 75 °C / 167 °F
Rated Operating O	Conditions
Climatic class	3K5 according to EN 60721-3-3
Location class	C1 according to EN 60654-1
Ambient temperature	-20 60 °C / -4 140 °F
Altitude of installation site	Max. 60 V DC power supply at altitudes above 2000 m (AMSL)
Relative humidity	5 95 %
Transport and Sto	rage
Transport/storage temperature	-30 70 °C / -22 158 °F
EMC	
Emitted interference	Class A (industrial applications) ²⁾
Interference immunity	Industrial applications

²⁾ This equipment is not designed for domestic use, and is unable to guarantee adequate protection of the radio reception in such environments.