

PRODUCT CATALOGUE 2017





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Measuring expertise from Finland

Expertise consists of knowledge and ability to utilize it. Our passion at Nokeval is to be able to provide the best solution for every measurement need. Research and development is the core of our business, along with thorough customer service. We are happy to assist with every measurement need, the bigger the challenge the better. If there's a way, we will find it.

We have been proud to call ourselves measuring specialists for almost 40 years. We believe our drive for quality and a passion for solving any data measurement and collection need are key for achieving great customer satisfaction. Untiring interest in product and service development has kept us among the top players in the business field, and we are keen to keep things that way.

PANEL METER TAKEN TO THE NEXT LEVEL -

SMART METER



Panel meters have always been a key element among Nokeval products. A while ago we felt the basic models just weren't enough anymore. Relentless product development took place in our R&D labs, and as a result universal smart meters were redefined. PM10 and later PM20 with even more combinations and possibilities took measurement into another world. Freely definable inputs and outputs now in one device - modify to your needs with different input and output cards. Utilizing a panel meter has never been this flexible and cost-efficient.

SMART METERS



PM10

- dimensions** 96 X 48 X 115 mm
- digit size** 14.5 mm
- number of digits** 6 digits
- display color** Multicolor LED, red/yellow/green
- number of inputs/outputs** 1-8
 - inputs** mA, mV, V, Ohm, Pt100, Pt1000, thermocouples
 - outputs** 4-20 mA, 0-10V. The outputs can follow inputs directly or processing, calculation, terms, thoughts, table linearization, totalization, taring or holding can be added between them.
- settings** By front keys or MekuWin [PC]
- serial signal** RS485, Modbus RTU, Nokeval SCL
- protection class** Front panel IP65
- power supply** 24 VDC
- note** Freely definable combinations of inputs and outputs. Configuration by MekuWin through MicroUSB-connection.



PM20

- dimensions** 96 X 96 X 115 mm
- digit size** 14.5 mm
- number of digits** 18 digits
- display color** Multicolor LED, red/yellow/green
- number of inputs/outputs** 1-18
 - inputs** mA, mV, V, Ohm, Pt100, Pt1000, thermocouples
 - outputs** 4-20 mA, 0-10V. The outputs can follow inputs directly or processing, calculation, terms, thoughts, table linearization, totalization, taring or holding can be added between them.
- settings** By front keys or MekuWin [PC]
- serial signal** RS485, Modbus RTU, Nokeval SCL
- protection class** Front panel IP65
- power supply** 24 VDC
- note** Freely definable combinations of inputs and outputs. Configuration by MekuWin through MicroUSB-connection.

MEKUWIN CONFIGURATION SOFTWARE FOR PC

MekuWin is a flexible configuration software supporting new and old transmitters. MekuWin loads the structure and the contents of the configuration menu from the target device, so the same MekuWin version can be used with past and forecoming products. There is no need to update this software every time a new product or product version is released.

DISPLAYS

LOW COST SERIES



PANEL METER

model name	PME600, PME610
dimensions	96 X 48 X 70 mm
digit size	14.5 mm
number of digits	4 digits
display color	Red LED
inputs	Thermocouple K: 150...+1200°C RTD: Pt100, -200...+700°C process inputs: 0-20 mA, 4...20 mA, 0...10 V, -70...+70 mV
accuracy	0.05% of span
resolution	1 / 32 000, 15 bit
settings	By front keys
alarms [optional]	Low or high alarm as standard, relays 240 VAC, 3A
output [optional]	PME610: 4-20 mA, max 650 Ohm
protection class	Front panel IP65
power supply	Large range power supply 24...265 VAC/VDC
note	PME600: power supply 12 VDC for 2-wire transmitter PME610: 4-20mA max. 650 Ohm

2000 SERIES



PANEL METER

casing model name	2000
dimensions	96 X 48 X 115 mm
digit size	14.5 mm
number of digits	6 digits
display color	Red LED
number of inputs/outputs	1/2
inputs	2000 series inputs
outputs [optional]	0/4...20 mA, 0...5/10 V
settings	By front keys
alarms [optional]	2...4 relays, 240 VAC, 2A
serial signal	RS232, RS485, Nokeval SCL
sensor supply	24 V [10 V] max. 150 mA
protection class	Front panel IP65
power supply	85...240 VAC, 12...32 VDC / 24 VAC
note	Includes 2000-series input card

Our displays are available in various sizes, forms and types. Along with the smart meters, simplified panel meters and field displays are available. Choose a suitable enclosure, furnish it with desired input and output cards, connect the display and start measuring.



FIELD DISPLAY

casing model name	2800
dimensions	180 X 130 X 80 mm
digit size	20 mm
number of digits	6 digits
display color	Red LED
number of inputs/outputs	1/2
inputs	2000 series inputs
outputs [optional]	0/4...20 mA, 0...5/10 V
settings	By front keys
alarms [optional]	2...4 relays, 240 VAC, 2A
serial signal	RS232, RS485, Nokeval SCL
sensor supply	24 VDC, max. 150 mA
protection class	IP65
power supply	85...240 VAC, 12...32 VDC / 24 VAC
note	Includes 2000-series input card

DISPLAYS



FIELD DISPLAY 57 MM

casing model name 575F5
dimensions 310 X 138 X 96 mm
digit size 57 mm
number of digits 5 digits
display color Red LED
number of inputs/outputs 1/2
inputs 2000 series inputs
outputs [optional] 0/4...20 mA, 0...5/10 V
settings By keys inside casing
alarms [optional] 2...4 relays, 240 VAC, 2A
serial signal RS232, RS485, Nokeval SCL
sensor supply 24 VDC, max. 150 mA
protection class IP65
power supply 85...240 VAC, 12...32 VDC / 24 VAC
note Includes 2000-series input card



FIELD DISPLAY 100 MM

casing model name FD100
dimensions 4 digits: 477 X 191 X 100 mm
 6 digits: 659 X 191 X 100 mm
digit size 100 mm
number of digits 4/6 digits
display color Red LED
number of inputs/outputs 1/2
inputs 2000 series inputs
outputs [optional] 0/4...20 mA, 0...5/10 V
settings By keys inside casing
alarms [optional] 2...4 relays, 240 VAC, 2A
serial signal RS232, RS485, Nokeval SCL
sensor supply 24 VDC, max. 150 mA
protection class IP65
power supply 85...240 VAC, 12...32 VDC / 24 VAC
note Includes 2000-series input card



FIELD DISPLAY 200 MM

casing model name FD200
dimensions 4 digits: 713 X 260 X 120 mm
 6 digits: 1013 X 260 X 120 mm
digit size 200 mm
number of digits 4/6 digits
display color Red LED
number of inputs/outputs 1/2
inputs 2000 series inputs
outputs [optional] 0/4...20 mA, 0...5/10 V
settings By keys inside casing
alarms [optional] 2...4 relays, 240 VAC, 2A
serial signal RS232, RS485, Nokeval SCL
sensor supply 24 VDC, max. 150 mA
protection class IP65
power supply 85...240 VAC, 12...32 VDC / 24 VAC
note Includes 2000-series input card

DISPLAY TYPES

2000 SERIES INPUT CARD SPECIFICATIONS

CARDS AVAILABLE FOR CASE TYPES 2000, 2800, 575F5, FD100 & FD200

	PROCESS INPUTS mA/V	2-CHANNEL PANEL METER	TEMPERATURE SENSORS	STRAIN GAUGE SENSORS	FREQUENCY INPUT	RATIO/DIFFERENCE DISPLAY	COUNTER FOR PULSE INPUT	INCREMENTAL SENSORS	TIMER	SERIAL SIGNAL RS232/485	10-CHANNEL MASTER DISPLAY
MODEL	2012	2212	2021	2041	2051	2251	2061	2064	2066	2071	2072
INPUTS	0/4...20 mA, 0..5/10 V, potentiometer 100 Ω...10 kΩ, special input 0...100 VDC on request.	2 input channels, 0/4...20 mA, 0..5/10 V, potentiometer 100 Ω...10 kΩ.	±0...25/2500 mV, ±0...5/10 V, 0/4...20 mA, Pt100, Pt1000, Ni100, thermocouple K, J, L, T, E, B, N, R, S, C, D, G, Chr-C, resistance 100 Ω...5 kΩ.	Strain gauge 4 X 350 Ω. 4 or 6 wires, input 25...50 mV.	Namur, NPN/PNP, contact, pick-up. Frequency range 0.0001...5000 Hz.	2-channel display for two pulse sensors. Namur, NPN/PNP, contact, pick-up. Frequency range 0.0001...5000 Hz.	Namur, NPN/PNP, contact, pick-up. Frequency range 0...5 kHz. Up/down function by external contact.	Direction selection by A and B lines from sensors. Frequency range 0...25 kHz.	Start, stop and pause by external contact. Time displayed by using dots, e.g. 23.59.59.	RS232, RS485, Nokeval SCL protocol, Modbus RTU [slave].	10 display channels for devices with serial RS485 output. Acts as Nokeval SCL master.
ACCURACY	0.05% of span	0.05% + 1 dig.	0.02...0.05% of span	0.05...0.1% of span	0.01% of reading	0.01% of reading			30 ppm		
RESOLUTION	1/64 000, 16 bit	1/64 000, 16 bit	1/64 000, 16 bit	1/64 000, 16 bit					1 second		
SPECIAL FUNCTIONS	Tare or hold by external contact		Min. and max. memory, square root [mA/V input]		Pulse divider 1...64 000	2 channels	Pulse output divider selectable 1...64 000				
SENSOR SUPPLY	24 VDC, max. 150 mA		24 VDC, max. 150 mA		24 V [10 V], max. 150 mA	24 VDC, max. 150 mA	24 VDC, max. 150 mA	24 VDC, max. 150 mA			
NOTE	Two 4...20 mA/0...10 V outputs available.	First digit displays channel. Inputs are not isolated.	Optio cards: output, serial and alarm cards can be installed into slot B or C.	6 wire sensors connection adds measuring accuracy.	Measuring range start exceptionally low.	Typical application: ratio display [%] for two flow meters.	May be used as a batch controller [with alarms].	Moving direction is selected by sensor's lines A and B.	Time range 99.59.59 [hh.mm.ss].	Front keys may be read by serial signal.	The display may read one or multichannel transmitters.

Please note when placing order, the required power supply [12...32 VDC or 80...260 VAC] must be specified. Order code is formed "display type- optional cards - power supply", e.g. 2012-OUT-REL2-230 VAC. Two option card may be installed at the same time, exc. models 2212 & 2251.

INPUT & OUTPUT

CARD OPTIONS FOR 2000 SERIES

These optional input and output cards are applicable to all 2000 series panel meters, 2800 field display series, 575F5 large field display series and FD100/FD200 large field display series. See below for usage with each display type. Option cards may be installed afterwards.

INPUT CARD (SLOT A)	TYPE CODE	DISPLAY TYPE
PROCESS INPUTS, mA/V	2012-IN	2012 process inputs
TEMPERATURE SENSORS AND PROCESS INPUTS	2021-MU	2021 temperature sensors
PROCESS INPUTS, mA/V	2022-SP	2022 setpoint transmitter
WEIGHING SENSORS (STRAIN GAUGE)	2041-SG	2041 strain gauge sensors
FREQUENCY INPUT (PULSE)	2051-PU	2051 frequency input, 2251 ratio input for pulse sensors
COUNTER (PULSE)	2061-CO	2061 counter
INCREMENTAL SENSORS A/B LINES	2064-IE	2064 incremental sensors
SERIAL INPUTS RS232, RS485	2071-RS	2071 serial data input
OUTPUT CARD (SLOT B & C)	TYPE CODE	APPLICABLE DISPLAY TYPE
0/4...20 mA, 0...5/10V, GALVANIC ISOLATION	2000-OUT	2012, 2021, 2041, 2051, 2072, 2251, 2022
SERIAL INPUT RS232/485	2000-RS	2012, 2021, 2041, 2051, 2251, 2061, 2064, 2022
RELAY CARD, 2 RELAYS	2000-REL2	2012, 2021, 2026, 2041, 2051, 2251, 2061, 2064, 2022
RELAY CARD, 3 RELAYS	2000-REL3	2012, 2021, 2041, 2064, 2022
4 RELAYS: 2 RELAY CARDS TO B & C	2 X REL-2	2012, 2021, 2028
I/O CARD, 4 ALARM CARDS, SEMICONDUCTOR	2000-I/O	2021, 2041, 2051, 2061
SPECIAL FUNCTIONS	TYPE CODE	APPLICABLE DISPLAY TYPE
DISPLAY HOLD, EXTERNAL CONTACT		2012, 2021, 2041
DISPLAY RESET/TARE, EXTERNAL CONTACT	2000-I/O	2012, 2026, 2061, 2064, 2066
START/STOP BY EXTERNAL CONTACT	2000-I/O	2066
MIN/MAX MEMORY		2021
DISPLAY MEMORY (ONE WEEK)	2000-MEM	2026, 2061
OUTPUT CONTROL BY FRONT KEYS		2022
TWO mA/V OUTPUTS AT THE SAME TIME		2021, 2022
SPECIAL INPUTS >10V (E.G. INPUT 0-48V)		2012
2 INPUT CHANNELS		2212, 2251

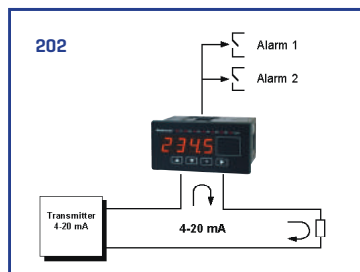
LOOP POWERED

OPERATING POWER FROM INPUT OR OUTPUT LOOP



201, 202

- dimensions** 96 X 48 X 70 mm
- digit size** 14.5 mm
- number of digits** 4 digits
- display color** Red LED
- inputs** 4-20 mA [loop powered]
- accuracy** 0.05% of span
- resolution** 1/32 000, 15 bit
- settings** By front keys
- special functions** Square root
- alarms** 2 relays, 240 VAC, 150 mA
202 low or high alarm
- protection class** Front panel IP65
- voltage drop** Max. voltage drop in current loop
201: < 5 V, 202: <7.5 V



301, 302

- dimensions** 100 X 100 X 57 mm
- digit size** 14.5 mm
- number of digits** 4 digits
- display color** Red LED
- inputs** 4-20 mA [loop powered]
- accuracy** 0.05% of span
- resolution** 1/32 000, 15 bit
- settings** By front keys
- special functions** Square root
- alarms** 2 relays, 240 VAC, 150 mA
302: low or high alarm
- protection class** IP65
- voltage drop** Max. voltage drop in current loop
301: < 5 V, 302: <7.5 V



305

- dimensions** 80 X 82 X 57 mm
- digit size** 14.5 mm
- number of digits** 4 digits
- display color** Red LED
- inputs** 4-20 mA [loop powered]
- accuracy** 0.05% of span
- resolution** 1/32 000, 15 bit
- settings** By front keys
- special functions** square root
- protection class** IP65
- voltage drop** Max. voltage drop in current loop < 5 V



311

- dimensions** 100 X 100 X 57 mm
- digit size** 14.5 mm
- number of digits** 4 digits
- display color** Red LED
- inputs** thermocouples:
T, K, N, J, J/DIN, E, S, R, B, G, C, D
Pt100
- output** 4...20 mA [2-wire]
- accuracy** 0.05% of span
- resolution** 1/64 000, 16 bit
- galvanic isolation** Input isolation >1000V
- settings** By front keys
- special functions** 6 points XY linearization
- protection class** IP65
- power supply range** 10...32 VDC
- note** 2 wire display may be used w/o current output by connecting 13...24 VDC to output terminal

311 WITH GALVANIC ISOLATED OUTPUT 4-20 mA

Pt100, mV
thermocouples
0/4-20 mA
0-15/10V



2-wire output 4-20 mA
or power supply 24 VDC
2-wire display takes 8 mA with 24 VDC power supply if analog output is not used.

TRANSMITTERS



f/I CONVERTER mA/V OUTPUT

6420

inputs	Frequency range 0.00025 Hz...20 kHz, NPN/PNP, pickup, push-pull, Namur
output	0/4...20 mA, 0...5/10 V, pulse divider
alarm	NPN/PNP
programming	MekuWin (PC) / DCS772
power supply	19...28 VDC
accuracy	0.05% of span
linearity	0.05% of span
output load [mA]	650 Ω [24 VDC]
output changing time	300 ms
operating temperature	0...60°C
installation	DIN rail, 35 mm
connectors	2.5 mm ²
dimensions	22.5 X 75 X 98 mm
note	Ramp type output also available. Sensor supply 15 VDC, max. 50 mA.

ANALOG BASED 2-WIRE

620S

inputs	Pt100, 3 wire. Temperature range -100...+650°C, min. range 10°C. Standard ranges -50...+50°C, 0...+50°C, 0...+100°C, 0...+150°C, 0...+200°C.
output	2 wire 4...20 mA
programming	Factory settings
power supply	10...32 VDC
accuracy	0.05% of span
linearity	0.05% of span
output load [mA]	Depends on power supply
output changing time	200 ms
operating temperature	0...60°C
installation	DIN rail, 35 mm
connectors	2.5 mm ²
dimensions	22.5 X 75 X 98 mm
note	Factory settings for measuring ranges.

HEAD MOUNTING

HTB230

inputs	Pt100, 2-, 3- or 4 wire, -200...+700°C, min. range 10°C. Ni100, Cu10, 0...2 k Ω .
output	2 wire 4...20 mA
programming	HTBPROG / MekuWin (PC)
power supply	6.5...30 VDC
accuracy	0.05% of span
output load [mA]	870 Ω [24 VDC]
operating temperature	-40...+85°C
installation	B- or Bud-head
connectors	1.5 mm ²
dimensions	\emptyset 44 X 22 mm

DIN RAIL BRACKET FOR HTB230



2-WIRE IN FIELD ENCLOSURE

311

inputs	Thermocouples: E, J, K, L, T, N, R, S, C, D, B, G Pt100 -200...+700°C, Pt500 -200...+700°C
output	2 wire 4...20 mA
programming	Keys in the front panel
power supply	12.5...32 VDC
accuracy	RTD: 0.05% of span or 0.2°C
linearity	RTD: 0.05% of span or 0.2°C
output load [mA]	600 Ω [24 VDC]
output changing time	300 ms
operating temperature	-10...+60°C
installation	Wall mounting case
connectors	2.5 mm ²
dimensions	100 X 100 X 57 mm
note	Input isolated from output >1 kV.

MEKUWIN CONFIGURATION SOFTWARE FOR PC

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TRANSMITTERS



2-WIRE 4-20 mA

mA/V OUTPUTS

RS485 OUTPUT

16/8 CHANNEL

6720

6740

7100

RMD680/RMD681

input TRANSMITTERS 6720, 6740 & 7100 ALL HAVE THE SAME INPUTS

Thermocouples: E [-100...+900°C], J [-150...+900°C], K [-150...+1300°C], L [-100...+900°C], T [-150...400°C], N [0...+1300°C], R [0...+1700°C], S [0...+1700°C], C [0...+2200°C], D [0...+2200°C], B [+400...+1700°C], G [+1000...+2000°C]

Resistance sensors: Pt100 [-200...+700°C], Pt500 [-200...+700°C], Pt1000 [-200...+300°C], Ni100 [-60...+175°C], Res. 0...1000 Ω .

mA & mV/V inputs: -100...+100 mV, 0...5 V, 0...10 V, 0...20 mA, 4...20 mA, -20...+20 mA, -10 V...+10 V

Infrared sensors: K type IR sensor, emissivity settings by MekuWin

output 2 wire 4...20 mA

programming MekuWin [PC]

power supply 2 wire 4...20 mA, 10...32 VDC

accuracy Pt100: 0.05% of span

TC: 0.1% of span

mV: 0.05% of span

current consumption Max. 22 mA

input resistance 5 Ω for mA input

1 M Ω for voltage input

operating temperature -10...+60°C

installation DIN rail, 35 mm

terminals 1.5 mm²

dimensions 22.5 X 60 X 75 mm

output 0...20 mA, 4...20 mA, 0...5, 10V

programming MekuWin [PC]

power supply 24 VDC \pm 15%

accuracy Pt100: 0.05% of span

TC: 0.1% of span

mV: 0.05% of span

current consumption 40 mA, with mA output

input resistance 5 Ω for mA input

1 M Ω for voltage input

operating temperature -10...+60°C

installation DIN rail, 35 mm

terminals 1.5 mm²

dimensions 22.5 X 60 X 75 mm

note Suitable for use as galvanic isolator for process signals mA/V.

serial signal RS485, Nokeval SCL

programming MekuWin [PC]

power supply 24 VDC \pm 15%

accuracy Pt100: 0.05% of span

TC: 0.1% of span

mV: 0.05% of span

current consumption 40 mA

input resistance 5 Ω for mA input

1 M Ω for voltage input

operating temperature -10...+60°C

installation DIN rail, 35 mm

terminals 1.5 mm²

dimensions 22.5 X 60 X 75 mm

note Suitable for data acquisition software.

number of channels 8/16

inputs Tc-B [+400...+1800°C]

Tc-C [0...2300°C]

Tc-D [+400...+1800°C]

Tc-E [-100...+900°C]

Tc-G [+1000...+2300°C]

Tc-J [-160...+950°C]

Tc-K [-150...+1370°C]

Tc-L [-150...900°C]

Tc-N [0...+1300°C]

Tc-R [0...+1700°C]

Tc-S [0...+1700°C]

Tc-T [-200...+400°C]

Pt100 [-200...+700°C]

Pt1000 [-200...+300°C]

Cu10/Cuxxx

KTY 83 [-55...+175°C]

0...400 Ω / 4 k Ω / 40 k Ω , \pm 55, \pm 100mV

number of outputs 1 analog + 1 serial

output 0/4...20 mA, RS485, Modbus RTU

protocol, Nokeval SCL protocol

By keys or MekuWin [PC]

programming

isolation voltage >1 kV

power supply 24 VDC \pm 15%

accuracy Pt100: 0.05% of rdg +0.25°C

TC: 0.05% of rdg +1°C

mV: 0.1% of rdg +0.01 mV

input resistance 50 Ω with mA, >1 M Ω with voltage

sampling speed 100 ms / channel

operating temperature -10...+60°C

installation DIN rail, 35 mm

terminals 1.5 mm²

dimensions 150 X 100 X 60 mm

note One of 16 channels can be selected by 4 digital inputs to mA/V output. Serial output is available simultaneously.



DCS772 CONVERTER FOR CONFIGURATIONS

DCS772 converter for USB port can be used for configuration of devices that have a socket in the front panel. POL-cable and MekuWin software are included. POL-3PIN adapter cable can be used for all devices that have 3 pin connector for configuration.

TRANSMITTERS



2 CHANNEL

6821

number of channels	2
inputs	Tc-B [+400...+1700°C] Tc-C [0...2300°C] Tc-D [+400...+1800°C] Tc-E [-100...+900°C] Tc-G [+1000...+2300°C] Tc-J [-160...+950°C] Tc-K [-150...+1370°C] Tc-L [-150...900°C] Tc-N [0...+1300°C] Tc-R [0...+1700°C] Tc-S [0...+1700°C] Tc-T [-200...+400°C] Pt100 [-200...+700°C] Pt1000 [-200...+300°C] Cu10/Cuxxx KTY 83 [-55...+175°C] 0...400 Ω / 4 kΩ / 40 kΩ, ±55, ±100mV
number of outputs	2
output	0/4...20 mA, RS485, Modbus RTU protocol, Nokeval SCL protocol
programming	By keys or MekuWin [PC]
isolation voltage	>2 kV
power supply	24 VDC ±15%, 85...260 VAC
accuracy	Pt100: 0.05% of rdg +0.25°C TC: 0.05% of rdg +1°C mV: 0.1% of rdg +0.01 mV
input resistance	50 Ω with mA, >1 MΩ with voltage
sampling speed	100 ms
operating temperature	-10...+60°C
installation	DIN rail, 35 mm
terminals	2.5 mm ²
dimensions	45 X 100 X 110 mm
note	Write own mathematical and logical functions on channels.

STRAIN GAUGES

6841

number of channels	1
inputs	Strain gauge sensors, 4 or 6 wire connection. Measuring range -40...+100 mV. Sensor voltage 10 VDC, max. 150 mA [68 Ω]. Includes several weighing sensor calibration methods. May be used together with summing unit 20SA-4.
number of outputs	1
output	0/4...20 mA, RS485, Modbus RTU protocol, Nokeval SCL protocol
programming	By keys or MekuWin [PC]
isolation voltage	>1 kV
power supply	24 VDC ±15%, 85...260 VAC
accuracy	<0.05% of span
sampling speed	250 ms
operating temperature	-10...+60°C
installation	DIN rail, 35 mm
terminals	2.5 mm ²
dimensions	45 X 100 X 110 mm
note	Several ways for sensor calibration: entering mV values, teaching or giving known weighing values.

UNIVERSAL INPUTS

RMC685

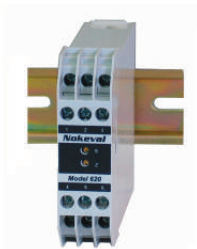
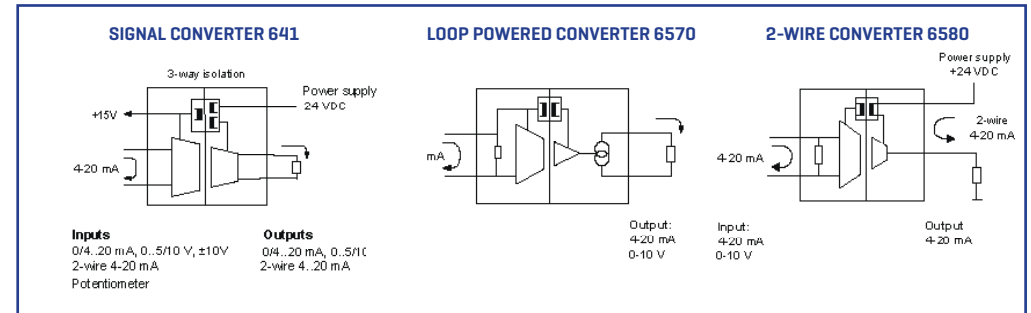
number of channels	1
inputs	Tc range ±lin. error°C Tc-B [+400...+1700°C±0.3] Tc-C [0...2300°C ±0.5] Tc-D [0...+2300°C ±1] Tc-E [-100...+900°C ±0.2] Tc-G [1000...+2300°C ±2] Tc-J [-160...+950°C ±1] Tc-K [-150...+1370°C ±0.5] Tc-L [-150...+900°C ±0.5] Tc-N [0...+1300°C ±0.1] Tc-R [0...+1700°C ±0.5] Tc-S [0...+1700°C ±0.5] Pt100 [-200...+700°C] Ni100 [-60...+180°C] mV ±55 and ±100 mV 0...40 000 Ω, pyrometer, potentiometer
number of outputs	1
output	0-20 mA, 4...20 mA, 0-5 V, 0-10 V, Modbus RTU protocol, Nokeval SCL protocol
programming	By keys or MekuWin [PC]
isolation voltage	>1,5 kV
power supply	24 VDC ±15%
accuracy	Pt100: 0.05% of rdg +0.25°C TC: 0.05% of rdg +1°C mV: 0.1% of rdg +0.01 mV
input resistance	50...80 Ω with mA, >1 MΩ with voltage
sampling speed	Analog output 125 ms, serial output 20 ms
operating temperature	-10...+60°C
installation	DIN rail, 35 mm
terminals	2.5 mm ²
dimensions	22.5 X 100 X 120 mm
note	Two rows alphanumeric display for settings. 50 samples per second with RS485 bus. Mathematical functions.

UNIVERSAL INPUTS

RTC685

number of channels	1
inputs	Tc range ±lin. error°C Tc-B [+400...+1700°C±0.3] Tc-C [0...2300°C ±0.5] Tc-D [0...+2300°C ±1] Tc-E [-100...+900°C ±0.2] Tc-G [1000...+2300°C ±2] Tc-J [-160...+950°C ±1] Tc-K [-150...+1370°C ±0.5] Tc-L [-150...+900°C ±0.5] Tc-N [0...+1300°C ±0.1] Tc-R [0...+1700°C ±0.5] Tc-S [0...+1700°C ±0.5] Pt100 [-200...+700°C] Ni100 [-60...+180°C] mV ±55 and ±100 mV 0...40 000 Ω, pyrometer, potentiometer
number of outputs	1
output	0-20 mA, 4...20 mA, 0-5 V, 0-10 V, Modbus RTU protocol, Nokeval SCL protocol
programming	By keys or MekuWin [PC]
isolation voltage	>1,5 kV
power supply	24 VDC ±15%
accuracy	Pt100: 0.05% of rdg +0.25°C TC: 0.05% of rdg +1°C mV: 0.1% of rdg +0.01 mV
input resistance	50...80 Ω with mA, >1 MΩ with voltage
sampling speed	Analog output 125 ms, serial output 20 ms
operating temperature	-10...+60°C
installation	DIN rail, 35 mm
terminals	2.5 mm ²
dimensions	22.5 X 100 X 120 mm
note	A low-cost version of RMC685. 50 samples per second with serial RS485 bus. Mathematical functions.

CONVERTERS



ISOLATOR AND SIGNAL CONVERTER

641

inputs	0/4...20mA, 20...4 mA, 0...5/10 V, 10...0 V ±10 V, 2 wire 4...20 mA potentiometer, 100Ω...1 mΩ
outputs	0...20 mA, 4...20 mA 20...4 mA [reverse] 0...5 V, 0...10 V 10/5...0 V [reverse] ±10 V 2 wire 4...20 mA
programming	DIP switches or factory settings
galvanic isolation	>1 kV, three way isolation
power supply	22...30 VDC
current consumption	40 mA for V output 60 mA for mA output 80 mA with sensor supply
accuracy	<0.05% of span
linearity	<0.05% of span
input resistance	50 Ω for mA input 1 MΩ for voltage input
output load [mA]	600 Ω, mA output
damping	1, 250, 500, 700 ms
operating temperature	0...60°C
installation	DIN rail, 35 mm
connectors	2.5 mm2
dimensions	22.5 X 82 X 99 mm
note	All ranges can be selected by DIP switches, after which calibration is needed.



2-WIRE ISOLATOR

6580

inputs	0...20 mA 4...20 mA 0...10 V
outputs	2 wire 4...20 mA Operating energy is taken from output current loop.
programming	Factory settings
galvanic isolation	>1 kV
power supply	2 wire (10...32 VDC)
accuracy	<0.05% of span
linearity	<0.05% of span
input resistance	50 Ω for mA input 1 MΩ for voltage input
output load [mA]	2 wire output*
damping	100 ms
operating temperature	0...60°C
installation	DIN rail, 35 mm
connectors	2.5 mm2
dimensions	9.5 X 81 X 58 mm
note	*) Loading depend on the power supply voltage, e.g. [24V-10V]20mA=700 Ω.



LOOP POWERED ISOLATOR

6570B

inputs	4...20 mA Operating energy is taken from input current loop.
outputs	0...20 mA 4...20 mA 0...10 V
programming	Factory settings
galvanic isolation	>2 kV
power supply	from input loop
current consumption	Voltage drop 7 V + output current voltage drop
accuracy	<0.05% of span
linearity	<0.05% of span
input resistance	350 Ω
output load [mA]	max. 300 Ω
damping	100 ms
operating temperature	0...60°C
installation	DIN rail, 35 mm
connectors	2.5 mm2
dimensions	22,5 X 60 X 75 mm

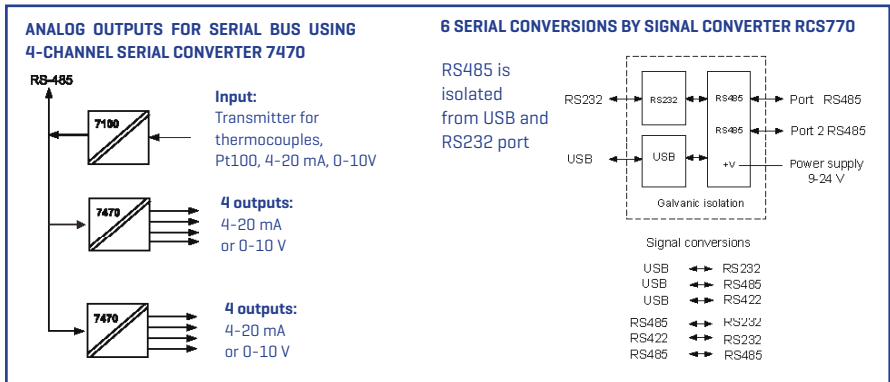


UNIVERSAL ISOLATOR AND CONVERTER

6740

inputs	0...20 mA, -20...+20 mA, 4...20 mA, 0...5 V, 0...10 V, -10...+10 V 0...10 mV, -100...+100 mV pot. 0...1 kΩ
outputs	0...20 mA 4...20 mA 0...5 V 0...10 V
programming	MekuWin (PC)
galvanic isolation	>2kV, three way isolation
power supply	22...30 VDC
current consumption	40 mA for V output 60 mA for mA output
accuracy	<0.05% of span
linearity	<0.05% of span
input resistance	5 Ω for mA input 1 MΩ for voltage input
output load [mA]	600 Ω, mA output
damping	200 ms
operating temperature	-10...+60°C
installation	DIN rail, 35 mm
connectors	1.5 mm2
dimensions	22,5 X 60 X 75 mm
note	Supports also temperature sensors. All ranges are factory calibrated.

SERIAL BUS



4-CHANNEL RS232/485 mA/V

7470

inputs RS232/485
outputs 4 X 0/4...20 mA, 0...10 V
baud rate 300...19200 baud
galvanic isolation >1kV [RS485]
power supply 24 VDC ±15%
settings MekuWin [PC]
terminals RS232/485 2.5 mm²
installation DIN rail, 35 mm / desktop
dimensions 70 X 85 X 60 mm
note 4 analog outputs for RS232/485. Modbus RTU, Nokeval SCL protocol or ASCII. Suitable for Vaisala's weather stations.



USB-RS485 SERIAL CONVERTER

DCS770

inputs USB
outputs RS485
baud rate 300...115200 baud
power supply from USB
terminals RS485 1.5 mm²
 USB/B [female]
indicators 3 LED lamps
installation desktop
dimensions 31 X 24 X 56 mm
note Removable terminals for RS485



USB-RS485-RS232 SERIAL CONVERTER

RCS770

inputs USB, RS232/485
outputs USB, RS232, RS485
baud rate 1200...115200 baud
power supply 9...24 VDC or from USB
settings by jumpers
terminals RS485 1.5 mm²
 RS232 9 pin. D conn. [female]
 USB/B [female]
indicators 3 LED lamps
installation DIN rail, 35 mm / desktop
dimensions 70 X 85 X 60 mm
note Conversions: USB-485, USB-422, USB-232, 485-232, 422-232, 485-485 [repeater]. USB, 232 and 485 are galvanically isolated.



PROGRAMMING ADAPTER

DCS772

DCS772 converter for USB port can be used for configuration of devices that have a socket in the front panel. POL-cable and MekuWin software are included.
 POL-3PIN adapter cable can be used for all devices that have 3 pin connector for configuration such as wireless transmitters together with POL-RS232 cable or DCS772.

MTR SERIES

WIRELESS TRANSMITTERS 433.92 MHz



INTERNAL TEMPERATURE SENSOR

FT10-RT433-IS



EXTERNAL TEMPERATURE SENSOR

FT10-RT433-ES



EXTERNAL TEMPERATURE SENSOR

FT10-RT433-CS



HUMIDITY AND TEMPERATURE

FT10-RT433-RHT

number of channels 1
inputs Internal Pt100 sensor within the replaceable measuring module.
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+60°C
maximum range 1000 m [open space]
accuracy Temperature $\leq \pm 0.5^\circ\text{C}$
configuration DCS772 + MekuWin [PC]
transmitting interval 5 s...5 min
sensor connection Internal sensor
power supply 1.5V alkaline battery size LR6 [AA]
battery life Typically > 3 years
dimensions 60 X 352 X 33 mm
protection class IP66 [when connected]
note Originally developed for regular calibration demands in cold rooms and freezers. Response time 15 min.

number of channels 1
inputs External 4-wire RTD cable sensor connected to the measuring module.
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+60°C
maximum range 1000 m [open space]
accuracy Temperature $\leq \pm 0.5^\circ\text{C}$
configuration DCS772 + MekuWin [PC]
transmitting interval 5 s...5 min
sensor connection External cable sensor
power supply 1.5V alkaline battery size LR6 [AA]
battery life Typically > 3 years
dimensions 60 X 374 X 33 mm
protection class IP65 [when connected]
note Internal terminal block to connect RTD probe or cable sensor

number of channels 1
inputs External 4-wire RTD cable sensor or M12 probe connected to the measuring module.
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+60°C
maximum range 1000 m [open space]
accuracy Temperature $\leq \pm 0.5^\circ\text{C}$
configuration DCS772 + MekuWin [PC]
transmitting interval 5 s...5 min
sensor connection External sensor in M12
power supply 1.5V alkaline battery size LR6 [AA]
battery life Typically > 3 years
dimensions 60 X 435 X 33 mm
protection class IP65 [when connected]
note External M12 connector to connect RTD probe or cable sensor

number of channels 1
inputs Internal Pt100 sensor and humidity sensor
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+60°C
humidity range 0...100% Rh
maximum range 1000 m [open space]
accuracy Temperature $\leq \pm 0.5^\circ\text{C}$
Humidity $\pm 5\%$ on the range
configuration DCS772 + MekuWin [PC]
transmitting interval 5 s...5 min
sensor connection Internal sensor
power supply 1.5V alkaline battery size LR6 [AA]
battery life Typically > 3 years
dimensions 60 X 392 X 33 mm
protection class IP40 [when connected]
note Sintered filter. Other types available as an option.

MTR SERIES

WIRELESS TRANSMITTERS 433.92 MHz



TRANSMITTER WITH M12 CONNECTOR

MTR265B



TRANSMITTER WITH UNIVERSAL INPUT

FTR262



LABORATORY TRANSMITTER

MTR262



MULTICHANNEL TRANSMITTER

MTR264

number of channels 1
inputs Pt100, thermocouple K, J, T, E, L, N
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+70°C
maximum range 300 m [open space]
accuracy Temperature $\leq \pm 0.2^\circ\text{C}$ Pt100 sensor
 $\leq \pm 0.75^\circ\text{C}$ or $\leq \pm 1.5^\circ\text{C}$ TC**
configuration DCS772 + POL-3PIN + MekuWin [PC]
transmitting interval 5 s...5 min
sensor connection External sensor in M12
power supply 1.5V alkaline battery size LR3 [AAA]
battery life Typically > 1,5 years
dimensions 172 X Ø 29 mm
protection class IP65
note Wall mounting bracket included

number of channels 1
inputs Pt100, thermocouple K, J, T, E, L, N,
 0...2000 mV, 0...10 V, 0...100 V, 0/4...20
 mA
output MTR wireless
radio signal frequency 433.92 MHz
operating range -30...+60°C
maximum range 1000 m [open space]
accuracy $\pm 0.2^\circ\text{C}$ Pt100 sensor
 $\pm 0.75^\circ\text{C}$ or $\pm 1.5^\circ\text{C}$ TC**
transmitting interval 5 s...5 min
sensor connection Screw terminal 1,5 mm2
power supply 1.5V alkaline battery size LR6 [AA] X 2
battery life Typically > 3 years
dimensions 80 X 130 X 60 mm
protection class IP65
note Sensor type is easy to change by
 configuration software MekuWin.
 Battery or external power supply
 selectable by jumper

number of channels 1
inputs Pt100, thermocouple K, J, T, E, L,
 N, 0...2000 mV, 0...10 V, 0...100 V,
 0/4...20 mA
output MTR wireless
radio signal frequency 433.92 MHz
operating range 0...+60°C
maximum range 20...100 m
accuracy $\pm 0.2^\circ\text{C}$ Pt100 sensor
 $\pm 0.75^\circ\text{C}$ or $\pm 1.5^\circ\text{C}$ TC**
transmitting interval 5 s...5 min
sensor connection Screw terminal 1,5 mm2
power supply 3V lithium battery size CR2032
battery life Typically 1 year
dimensions 78 X 45 X 18 mm
protection class IP20
note Field enclosure to IP65 as
 an option. No thermocouple
 linearization. Measurement result
 in mV + cold junction temperature.
 Receiver xxx970 handles
 conversion. Not Ovaport compliant.
 with thermocouples.

number of channels 4
inputs Thermocouple K, J, T, E, L, N,
 0...2000 mV
output MTR wireless
radio signal frequency 433.92 MHz
operating range 0...+60°C
maximum range 20...100 m
accuracy $\pm 0.75^\circ\text{C}$ or $\pm 1.5^\circ\text{C}$
transmitting interval 5 s...5 min
sensor connection Screw terminal 1,5 mm2
power supply 3V lithium battery size CR2032
battery life Typically 9 months
dimensions 78 X 45 X 18 mm
protection class IP20
note Field enclosure to IP65 as
 an option. No thermocouple
 linearization. Measurement
 result in mV + cold junction
 temperature. Receiver xxx970
 handles conversion. Not Ovaport
 compliant.

MTR SERIES

WIRELESS TRANSMITTERS 433.92 MHz



HUMIDITY AND TEMPERATURE

BEAT10-T, BEAT10-RHT

MULTICHANNEL TRANSMITTER

FTR264

MULTICHANNEL TRANSMITTER

FTR264-TCK

number of channels	1
inputs	BEAT10-T: temperature BEAT10-RHT: temperature, humidity
output	MTR wireless
radio signal frequency	433.92 MHz
operating range	-30...+60°C
humidity range	0...100% Rh
accuracy	<±0.5°C, on temperature range 0-30°C. Rh ±3% on temperature range +5...50°C
transmitting interval	5 s...5 min
power supply	1.5V alkaline battery size LR03 (AAA)
battery life	Typically > 1,5 years
dimensions	60 X 352 X 33 mm
protection class	IP20
note	Typical application is temperature measurement in apartments

number of channels	4
inputs	Thermocouple B, C, D, E, G, J, K, L, N, R, S, T, -30...2000 mV
output	MTR wireless
radio signal frequency	433.92 MHz
operating range	-30...+60°C
maximum range	20...100 m
accuracy	0.05% rdg +0.01 mV 0.05% rdg +0.6°C + lin.
transmitting interval	5 s...5 min
sensor connection	Screw terminal 1,5 mm2
power supply	1.5V alkaline battery size LR6 (AA)
battery life	Typically > 3 years
dimensions	102 X 135 X 35 mm
protection class	IP65
note	Typically utilized for measuring temperature in concrete structures

number of channels	4
inputs	Thermocouple K
output	MTR wireless
radio signal frequency	433.92 MHz
operating range	-30...+60°C
maximum range	20...100 m
accuracy	0.05% rdg +0.01 mV 0.05% rdg +0.6°C + lin.
transmitting interval	5 s...5 min
sensor connection	Screw terminal 1,5 mm2
power supply	1.5V alkaline battery size LR6 (AA)
battery life	Typically > 3 years
dimensions	102 X 135 X 35 mm
protection class	IP65
note	Typically utilized for measuring temperature in concrete structures. Thermocouple K cable is delivered with the device.

MTR SERIES

WIRELESS RECEIVERS 433.92 MHz



RECEIVER

FTR970B, FTR970B-PRO



RECEIVER FOR DIN RAIL

RTR970B, RTR970B-PRO



RECEIVER / REPEATER

FT20-RTC433-RECEIVER / REPEATER



RECEIVER FOR OVA CLOUD SERVICE

WAVE

number of channels FTR970B-PRO: up to 90
inputs Radio signal, 433.92 MHz
non-volatile memory FTR970B-PRO: 150 000 samples
data processing PLC
serial data / output RS232, RS485, USB
protocol Nokeval SCL, Modbus RTU
operating range -30...+60°C
configuration MekuWin [PC]
power supply 8...30 VDC
installation Field enclosure
dimensions 70 X 130 X 60 mm
protection class IP65
note Data processing by PLC. The PRO-version operates independently without realtime data processing in PC.

number of channels RTR970-PRO: up to 90
inputs Radio signal, 433.92 MHz
non-volatile memory RTR970B-PRO: 150 000 samples
data processing PLC
serial data / output RS232, RS485, USB
protocol Nokeval SCL, Modbus RTU
operating range -30...+60°C
configuration MekuWin [PC]
power supply 8...30 VDC
installation DIN rail, 35 mm
dimensions 70 X 85 X 60 mm
protection class IP20
note Data processing by PLC. The PRO-version operates independently without realtime data processing in PC.

number of channels up to 100
inputs Radio signal, 433.92 MHz
data processing Receiver: PLC
serial data / output RS232, RS485
operating range -30...+60°C
configuration MekuWin [PC]
power supply 8...30 VDC
note Data processing by PLC with FT20-RTC433-receiver. FT20-RTC433-repeater used for radio range extension.

inputs Radio signal, 433.92 MHz & 2.4 GHz
non-volatile memory Data storing for 2 years [web]
data processing Ovaport [web]
serial data RS485
output 2G/3G, Ethernet
protocol Nokeval SCL, Modbus RTU [master]
operating range -30...+60°C
configuration Ovaport [web]
power supply 9...28 VDC
installation Field enclosure with TFT display
dimensions 134 X 212 X 53 mm
protection class IP65
note Ova-license mandatory

OVAZONE SERIES

WHAT IS OVAZONE?

- AN ALTERNATIVE WAY TO BUILD AN ENTIRE WIRELESS NETWORK.

WHAT DOES IT MEAN?

- IT'S A BI-DIRECTIONAL RADIO COMMUNICATION NETWORK, WHICH AUTOMATICALLY BUILDS AND REBUILDS CONNECTIONS IN 2.4 GHz ISM BAND.

HOW DOES IT WORK?

- IT'S FULLY AUTOMATIC, ROUTING, RE-ROUTING, BALANCING, BUFFERING, REDUNDANT AND FREE CHANNEL SCANNING. IT HAS VIRTUALLY UNLIMITED COVERAGE AND NODE COUNT.

HOW DOES IT REACT TO OTHER NETWORKS?

- IT CAN USE DIFFERENT CHANNELS LOCALLY AND ENABLES MULTIPLE PARALLEL NETWORKS TO COEXIST, SO THERE'S NO HARM IN HAVING OTHER SYSTEMS SIMULTANEOUSLY.

HOW OFTEN I HAVE TO CHARGE IT?

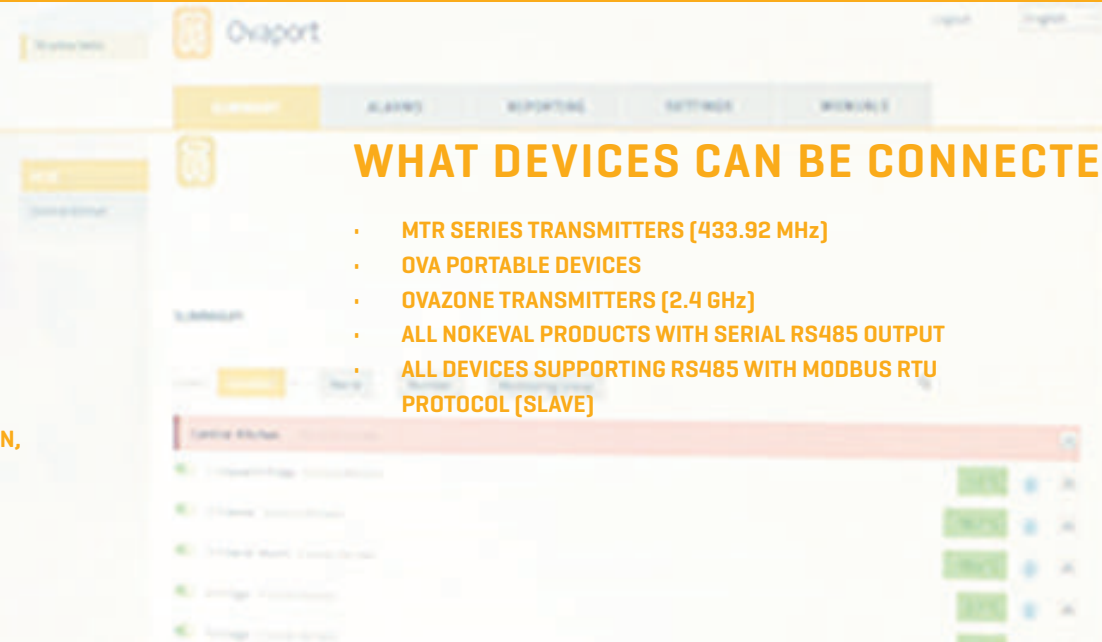
- EACH NODE HAS ITS OWN BATTERY AS A POWER SUPPLY. BATTERY LIFE IS ALWAYS SEVERAL YEARS, SO THERE'S NO NEED FOR CHARGING.

WHAT DOES IT INCLUDE?

- **HARDWARE, SOFTWARE & SERVICES:**
 - OVAPOINT NETWORK SERVICE (WEB & MOBILE APP)
 - MEASURING TRANSMITTERS
 - DATA COLLECTION BASE STATIONS
 - DATA COLLECTION TERMINALS & PORTABLE SENSORS
 - OVAHYGI SURFACE HYGIENE MEASURING DEVICES
 - NEEDS ASSESSMENT, INSTALLATION, IMPLEMENTATION, TRAINING & CALIBRATION

WHAT DEVICES CAN BE CONNECTED?

- MTR SERIES TRANSMITTERS (433.92 MHz)
- OVA PORTABLE DEVICES
- OVAZONE TRANSMITTERS (2.4 GHz)
- ALL NOKEVAL PRODUCTS WITH SERIAL RS485 OUTPUT
- ALL DEVICES SUPPORTING RS485 WITH MODBUS RTU PROTOCOL (SLAVE)



HUMIDITY MEASUREMENT

LIKE NEVER SEEN BEFORE



OVAZONE-FLEX-SENS

inputs	Internal sensor
output	Ovanet wireless
radio signal frequency	2.4 GHz worldwide license free ISM band
operating temperature	-20...+80°C
measuring range	Humidity: 0...100%Rh Temperature: -20...+ 80°C
measurement accuracy (incl. reproducibility and hysteresis)	Humidity: 15...30°C typical $\pm 0.5\%$ RH 0...50°C typical $\pm 0.8\%$ RH -20...+80°C typical $\pm 2.5\%$ RH Temperature: 0...+70°C typical $\pm 0.1K$ -20...+80°C typical $\pm 0.2K$
maximum range	300 m (open space)
sensor connection	Internal sensor
power supply	One AA Size 3.6V Li-SOCI2 battery
battery life	Typically up to 2 years
antenna	Dedicated antenna inside casing
dimensions	171 X 60 X 32.5 mm
protection class	IP40

OVAZONE SERIES

AUTOMATICALLY SELF-ORGANIZING
EXPANDABLE NETWORK 2.4 GHz

Accuracy, speed and precision now in one package for challenging humidity measurements. The nSens sensor combined with Ovazone-Flex-transmitter enables accurate relative humidity measurement wirelessly in wide range. As with all Nokeval transmitters, data is collected automatically by our Ovaport service. No more errors caused by sensor inaccuracy or delay in measuring process due to linear response characteristic. Calibration data is stored directly onto the sensor, which ensures quick probe replacement on site and eliminates long breaks in data collecting.



OVAZONE SERIES

AUTOMATICALLY SELF-ORGANIZING EXPANDABLE NETWORK 2.4 GHz



AIR QUALITY CORE

number of channels	1-3
inputs	Internal sensors: temperature, humidity, illuminance, CO2
output	Radio signal frequency 2,4 GHz
operating range	+5...+60°C
humidity range	5...95% Rh non-condensing
maximum range	300 m (open range)
accuracy	Temperature: ±0.5°C [+15...+35°C] Humidity: ±5% Rh [+5...+55°C] Illumination 0...2000 lx CO2 ±50 ppm + 3% of reading
power supply	D alkaline battery (duration several months up to 7 years)
dimensions	100 X 160 X 46 mm
protection class	IP30



OVAZONE SERIES

AUTOMATICALLY SELF-ORGANIZING EXPANDABLE NETWORK 2.4 GHz



INTERNAL TEMPERATURE SENSOR

EXTERNAL TEMPERATURE SENSOR

EXTERNAL TEMPERATURE SENSOR

HUMIDITY AND TEMPERATURE

OVAZONE-FLEX-T

OVAZONE-FLEX-ES

OVAZONE-FLEX-CS

OVAZONE-FLEX-T-RH

inputs Integrated Pt100 sensor
output Ovanet wireless
radio signal frequency 2.4 GHz worldwide license free ISM band
operating temperature -30...+60°C
measuring range -30...+60°C
maximum range 300 m [open space]
accuracy ±0,5 °C in range of -30...+50°C
response time 15 min, 90%
power supply One AA Size 3.6V Li-SOCl₂ battery
battery life Typically up to 2 years
antenna Internal antenna inside casing
dimensions 171 X 60 X 32.5 mm
protection class IP66

inputs External Pt100 4-wire sensor connected to the measuring module
output Ovanet wireless
radio signal frequency 2.4 GHz worldwide license free ISM band
operating temperature -30...+60°C
measuring range -200...+600°C
maximum range 300 m [open space]
accuracy 0.05% rdg + 0.2°C at 25°C
sensor connection External sensor
power supply One AA Size 3.6V Li-SOCl₂ battery
battery life Typically up to 2 years
antenna Internal antenna inside casing
dimensions 171 X 60 X 32.5 mm
protection class IP66

inputs External Pt100 4-wire sensor or M12 probe connected to the measuring module
output Ovanet wireless
radio signal frequency 2.4 GHz worldwide license free ISM band
operating temperature -30...+60°C
measuring range -200...+600°C
maximum range 300 m [open space]
accuracy 0.05% rdg + 0.2°C at 25°C
sensor connection External sensor
power supply One AA Size 3.6V Li-SOCl₂ battery
battery life Typically up to 2 years
antenna Internal antenna inside casing
dimensions 171 X 60 X 32.5 mm
protection class IP66

inputs Integrated Pt100 sensor, external capacitive element
output Ovanet wireless
radio signal frequency 2.4 GHz worldwide license free ISM band
operating temperature -30...+60°C
measuring range 0...100 %Rh, non-condensing
total error band ±5 %Rh in range of 10...90%Rh and +5...+50°C
accuracy ±5 %Rh in range of 0...+50°C
response time 10 min 63%, 25 min 90%
maximum range 300 m [open space]
sensor connection Internal & external sensor
power supply One AA Size 3.6V Li-SOCl₂ battery
battery life Typically up to 2 years
antenna Internal antenna inside casing
dimensions 171 X 60 X 32.5 mm
protection class IP40

OVAZONE SERIES

BLUETOOTH® DEVICES



WIRELESS SENSOR HANDLE

WIRELESS ATP LUMINOMETER

OVASENSE NEO

OVAHYGI NEO



inputs Pt100: $\pm 0.5^{\circ}\text{C}$ in range $-30... 100^{\circ}\text{C}$
Sensor type Pt100
Sensor length 80 mm
Sensor diameter 2.0 mm
Sensor tip structure: needle tip

output Bluetooth 4.1
low energy

configuration Ovaport

sensor connection Integrated sensor

dimensions 224 X 28 X 23 mm

protection class IP65

note Used with OVA mobile application



inputs Fast, under 1 minute measurement cycle. Uses Hygiene Ultraspab swabs. Direct result read-out, very easy to operate. Seamless integration with Ovaport service. Battery powered, endurance up to 3 years.

output Bluetooth 4.1 low energy

configuration Ovaport

sensor connection External swab

dimensions 198 X 47 X 27 mm

protection class IP20

note Used with OVA mobile application

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Nokeval is under license. Other trademarks and trade names are those of their respective owners.

NORDIC COUNTRIES: Hand held devices utilizing 433.92 MHz radio signal frequency are also available for use with Ovaterm portable device instead of Ova mobile app.

OVAZONE SERIES

AUTOMATICALLY SELF-ORGANIZING EXPANDABLE NETWORK 2.4 GHz



LINK STATION MULTIPLE RECEIVER

WAVE

inputs	Radio signal frequency 433.92 MHz MTR & 2,4 GHz Ovanet
output	2G/3G, Ethernet
number of channels	Unlimited node count
non-volatile memory	Buffer memory, data storing for 2 years [web]
data processing	Ovaport [web]
serial data	RS485
protocol master	Nokeval SCL, Modbus RTU
operating range	-20...+45°C
power supply	8...28 VDC
installation	Field enclosure [PC+ABS]
protection class	IP65



LINK STATION RECEIVER / REPEATER

CELL

inputs	Radio signal frequency 433.92 MHz MTR & 2,4 GHz Ovanet
output	2G/3G
number of channels	Unlimited node count
non-volatile memory	Buffer memory, data storing for 2 years [web]
data processing	Ovaport [web]
serial data	RS485
protocol master	Nokeval SCL, Modbus RTU
operating range	-20...+45°C
power supply	8...28 VDC, 2 X D battery backup
installation	Field enclosure [PC+ABS]
protection class	IP65

OVAPORT CLOUD & OVA MOBILE APP

OVAPORT IS A WEB SERVICE THAT COLLECTS MEASUREMENT DATA AND PRESENTS IT IN EASILY ACCESSIBLE FORM. THE SERVICE CAN BE USED ON A COMPUTER OR IN A MOBILE APP. OVAPORT CONNECTS WITH BOTH MTR AND OVAZONE SERIES TRANSMITTERS VIA A BASE STATION.

OVAPORT OVERVIEW

AUTOMATIC DATA COLLECTION

OVAPORT STORES THE MEASUREMENT DATA FROM ALL CONNECTED TRANSMITTERS AND PRESENTS IT IN ACCESSIBLE FORM. OVAPORT ENABLES VIEWING THE DATA IN A REAL TIME OVERVIEW OR BY INDIVIDUAL MEASUREMENT POINT. INDIVIDUAL MEASUREMENT POINT HISTORY DATA IS ALSO AVAILABLE. THE MEASUREMENT DATA IS STORED AS MEASUREMENT POINT AVERAGES OVER A CONFIGURABLE TIME PERIOD.

SURVEILLANCE DATABASE

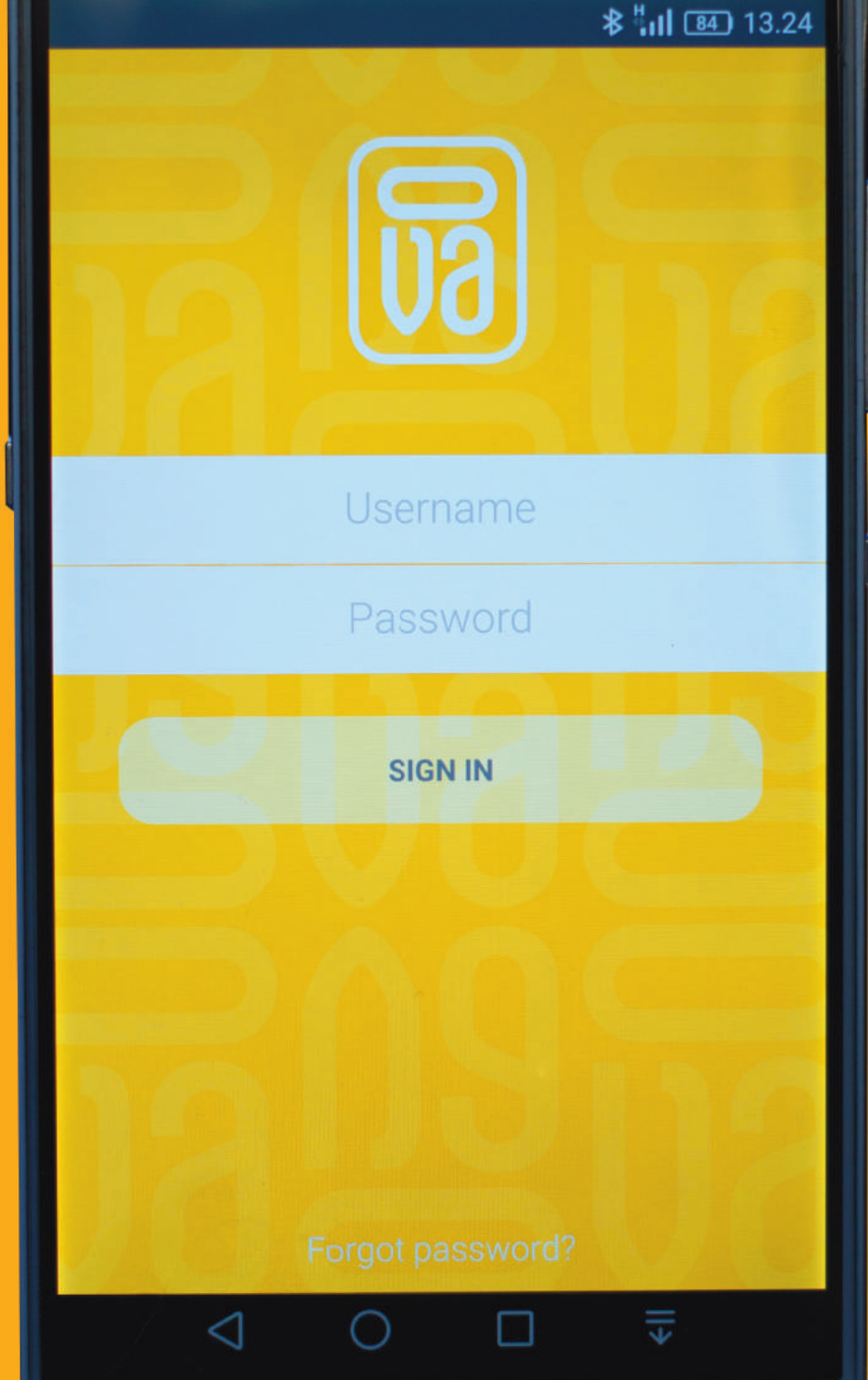
OVAPORT ENABLES ATTACHING ADDITIONAL INFORMATION TO INDIVIDUAL MEASUREMENT POINTS BUT ALSO ON AN ORGANIZATIONAL LEVEL. A SINGLE MEASUREMENT POINT WILL STORE INFORMATION ON OPERATING PROCEDURES, REMINDERS OF FUTURE TASKS, ALARM LIMITS, MEASUREMENT DATA AND EXCEPTION HANDLING. ON THE ORGANIZATIONAL LEVEL, AN IN-HOUSE CONTROL PLAN OR TECHNICAL MANUALS CAN BE STORED, FOR EXAMPLE.

REPORTING

SEVERAL DIFFERENT TYPES OF REPORTS ARE AVAILABLE. THE COLLECTED DATA CAN BE REPORTED BY DESIRED MEASUREMENT POINTS, TIME PERIODS AND DATA TYPES, SUCH AS EVENTS AND EXCEPTIONS FOR EXAMPLE. REPORTS CAN BE EXPORTED AS EXCEL AND PDF DOCUMENTS.

ALARMS

OVAPORT IS ABLE TO AUTOMATICALLY SEND ALARMS OF INCIDENTS, ENSURING QUICK RESPONSE TIMES IN THESE SITUATIONS. ALARMS CAN BE SENT TO DESIGNATED RECEIVERS ACCORDING TO CONFIGURABLE SCHEDULES. BOTH SMS AND EMAIL ALARMS ARE SUPPORTED. WITH AN ACKNOWLEDGEMENT OF AN ALARM, OVAPORT WILL STORE INFORMATION ON THE REASONS AND REQUIRED ACTIONS OF THE INCIDENT.



We design and manufacture high-quality measuring instruments. We also offer a wide variety of accessories for measuring devices. Some examples are listed below, a wider collection is showcased at nokeval.com.

ACCESSORIES



Sensors with various thermoelement types, Pt100 and Pt1000 types, and cable types. Some models include attached connector. Great variety on sensor lengths and diameters. Various cable lengths also available.



Sensors with various thermoelement types, Pt100 and Pt1000 types, and with R $\frac{1}{2}$ " process connection. Typical sensor element connections are transmitter mounting plate or coupling ring. Various sensor lengths and diameters.



Thermocouple extension cables for various thermocouple types. Various cable materials. Connectors available in standard and miniature sizes.



Protection tubes made e.g. of steel or brass. Various models and sizes. Mounting flanges and rail brackets also available.



Pt100 and magnetic surface sensors. Various fastening types.



Pt100 or Pt1000 sensors. Temperature range depends upon the chosen sensor type.



For multiple purposes, very short stabilization time. Available various sensor lengths and diameter. Maximum temperature for the sensors depends about the sensor type, list is showcased at nokeval.com.



Mounting brackets, whip and helical antennas, cables, measuring and transmitting modules, batteries & connectors, just to name a few.

INTERESTED? FIND OUT MORE AT [NOKEVAL.COM](https://www.nokeval.com) OR CONTACT US FOR ADDITIONAL INFORMATION

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