

Uputstvo za instalaciju statičkog merača toplotne energije Superstatic 449 Installation guidelines Static Heat Meter Superstatic 449

Uopšteno

Statički senzor protoka može se instalirati samo u uslovima navedeno na natpisnoj pločici, kao i u ovom uputstvu. U slučaju nepridržavanja ovih uputstava garancija je ništavna i proizvođač ne snosi nikakvu odgovornost.

Proizvođač ne odgovara za neodgovarajuću ugradnju. Žig ne sme da odsrtani neovlašćeno lice. Mora se pridržavati uputstva proizvođača, kao i zakonska regulativa države.

Ako je markica žiga oštećena proizvođač ne snosi nikakvu odgovornost za tačnost merenja ili za promenu parametara relevantno na baždarenje. Ako se koristi više merila u istom objektu treba izabrati isti tip i sličan način ugradnje, radi što tačnijeg merenja.

Pre instalacije

- Pre instalacije, cevovod izduvati sa komprimovanim vazduhom, a zatim i vodom bez ugradjenog merila. Ne puštati mulju i peskovitu vodu na merilo.
- Proveriti projekat za datu instalaciju.
- Impulsna vrednost na integratoru kao i na senzoru moraj biti identične. Proveriti natpisne pločice!
- Dozvoljeni temperaturni opseg okoline za integrator 5...55°C.
- Pridržavati se instalacionih i projektnih uputstava.
- Obratiti pažnju da se identifikacione pločice mogu lako pročitati, kao i pristupnost i rad sa integratorom.

Napomene za korektnu instalaciju merila: Uslovi moraju zadovoljiti EU direktivu 2004/22/EU (MID) i za korektnu montažu pogledati stranicu 12

- Računska jedinica je konfigurisana da se merilo protoka postavi u povratni vod. Specijalna parametrizacija je potrebna da se postavi u polazni vod i potrebno naznačiti prilikom narudžbe.
- Kabel između integratora i merača protoka se ne sme skraćivati ili produžavati. Kabel treba zaštititi žigom.
- Celokupno kabliranje mora se izvesti dalje od energetskih ili visokofrekventnih kablova najmanje 300 mm.
- Toplotna radijacija i električno polje mora se izbeći pri instalaciji integratora.
- Integrator se ne sme montirati u blizini cevi za hladjenje.
- Treba obezbediti da voda od kondenzacije ne sme da prodire u integrator preko kablova ili drugih vodova.
- Ako postoji opasnost od vibriranja cevi onda je preporuka da se integrator montira na zid.
- Merač protoka se postavlja između dva zaporna ventila (kuglična).
- Prilikom montaže protokometra senzor se postavlja sa strane (pogledati str. 12).
- Smer strelice na meraču protoka, mora da se podudara sa stvarnim fizičkim smerom samog fluida (Strelica na kućištu).
- Pre montaže obavezno ispirati cevovod da bi se obezbedila čistoća cevovoda bez neželjenih čestica.
- **Merač protoka se montira ispred regulacionih ventila da bi se izbegle neželjeni paraziti uticaji.**
- Za vreme puštanja u rad cevovod mora biti odvazdušen. Vazduh utiče na tačnost merenja.
- Koristiti samo nove zaptivače.
- Zaptivenost se mora proveravati, radi izbegavanja curenja fluida.
- Zaštita od groma nije uradjena, ono se mora izvesti prilikom izgradnje kućne instalacije.

Statični merač toplotne energije je kompaktan i sastoji se od tri celine:

- Senzor sa fluidnim oscilatorom Superstatic
- Računska jedinica Supercal
- Temperaturni davači (2- ili 4-žični) bez ili sa čaurama

Impulsna vrednost na računskoj jedinici i meraču protoka moraju biti isti kao i vrednosti i tip za davače temperature. Proveriti natpisne pločice na računskoj jedinici, meraču protoka i temperaturnim davačima-sondama!

General

The static flow sensor and the integrator may only be operated within the conditions outlined on the identification plate, as well as within the technical specification! In case of ignoring these default conditions, the manufacturer's responsibility is void.

The manufacturer is not liable for inappropriate installation and operation. Seals may not be removed and/or only by authorized persons. The country-specific, local regulations, as well as the manufacturer instructions must be respected!

If the manufacturer's seal has been broken or damaged, the manufacturer cannot be made responsible for the change of the verified and measuring relevant data.

When using several heat meters in an installation unit, one should select, in the interest of a at most possible fair heat consumption measurement, the same types of device and installation positions.

Before installation

- Check the design layout data of the installation.
- The pulse value and the installation location of the flow sensor must match the values indicated on the integrator, consult the identification plate!
- The permissible ambient temperature range of the integrator is 5 - 55 °C.
- The installation and project prescriptions must be followed.
- The readability of the integrator and also the identification plates must be followed.

Remarks on the correct meter installation: Conditions to comply with the directive 2004/22/EU (MID) and correct mounting positions see page 12

- The integrator is by default parameterized for installation into the return flow. Special parameterization is necessary for installation in the supply flow and this must be specified with the order.
- The cable between the flow sensor and the integrator must not be extended or shorted. The cable is be sealed.
- All wiring must be installed with a minimum distance of 300 mm from heavy voltage and high frequency cables.
- Radiated heat and interfering electrical fields close to the integrator must be avoided.
- In general, the integrator should be installed away from the cooling pipes.
- It has to be ensured that no condensed water can run along the wires into the calculator.
- If the danger of vibrations in the piping system exists, the integrator should be installed separately on the wall.
- The flow sensor should be installed between two shut-off valves.
- The flow sensor must be mounted with the measuring head to the side (see page 12).
- The flow direction of the flow sensor must be respected (arrow on the flow sensor).
- Flush the pipe system before installing the flow sensors to guarantee that no foreign particles remain in the pipe.
- **The flow sensor shall be mounted BEFORE any control valve to exclude any potential parasitic influences.**
- During commissioning the pipe system must be purged. Air in the system of the flow sensor may affect the measurement.
- Use only new and appropriate sealing material.
- Water tightness of the different connections should be verified.
- A lightning protection cannot be ensured; this protection has to be guaranteed by the house installation.

The static heat meter Superstatic is a compact unit and consists of the following three partial units:

- Fluid oscillator of flow sensor
- Integrator
- Temperature sensors (2- or 4-wire) with or without pockets

The pulse values of the integrator and of the flow unit, as well as the resistance value of the temperature sensors and the integrator are matched one to the other. Compare the labels of the Devices!

Električno priključivanje

Prilikom priključivanja ulaza i izlaza potrebno je skinuti gornji deo integratora. Priključiti prema sledećem:

Redna stez.	Tip priključenja
1,2	dvožično direktno, polazna temperatura
1,2 und 5,6	četvoržično, polazna temperatura
3,4	dvožično direktno, povratna temperatura
3,4 und 7,8	četvoržično, povratna temperatura
10	(+) Impulsni ulaz senzora 449 (beli provodnik)
11	(-) Impulsni ulaz senzora 449 (zeleni provodnik)
9	Napajanje senzora 449 (smeđi provodnik)
50	(+) Impulsni ulaz dodatnog impulsnog davača 1
51	(-) Impulsni ulaz dodatnog impulsnog davača 1
52	(+) Impulsni ulaz dodatnog impulsnog davača 2
53	(-) Impulsni ulaz dodatnog impulsnog davača 2
16	(+) Open collector-izlaz 1
17	(-) Open collector-izlaz 1 + 2
18	(+) Open collector-izlaz 2
24	M-Bus (Opciono, ugradjen u fabrici)
25	M-Bus (Opciono, ugradjen u fabrici)

Pažnja: Oklopljeni deo kablova mora biti vezan na masu (pogledati Sliku na stanici 12)

Uzemljenje

Mora se obezbediti da sva mesta za uzemljenja moraju biti na istom potencijalu (Mrežni priključak i kućiste senzora protoka).

Moduli za napajanje

Moduli se priključuju na osnovnu pluću preko specijalne utičnice na osnovnu pluću.

Mrežni modul

Mrežni modul od 230V – 45/60 Hz mora se zaštititi sa osiguračem od 1A sa spoljašnje strane. Moduli 230V AC, 24 VAC ili 12 – 24 VDC su snabdeveni sa Backup baterijom. Sa backup baterijom je moguć rad u slučaju nestanka napon napajanja, u štedljivom modu. Merne karakteristike su osigurane jer u ovom slučaju komunikacija nije podržana.

Mrežni modul se isporučuje sa postavljenim mostom (jumper). Ovaj mostić omogućava ili onemogućava aktiviranje ili deaktiviranje baterije. Prilikom isporuke mostić je postavljen i baterija je aktivna. Prema zahtevu moguća isporuka i bez postavljenog mostića.



Električno povezivanje mrežnog modula

Električno povezivanje može da izvrši obučena i kvalifikovana osoba prema važećim propisima i standardima. Električni vodovi ne smeju da dodiruju druge tople vodove (iznad 80°C), ili vodove koji su oštećene. Kontakt električnih provodnika sa vodom treba izbegavati.

Backup baterija za datum i vreme

Gornji deo integratora koji je zadužen za parametre kalibracije i merenja, se isporučuje sa dugmastom baterijom. Ova dugmasta baterija se koristi za sat realnog vremena kao i rad displeja ako je odvojen od donjeg dela. Na displeju se vidi vreme u minutima koji pokazuje koliko je gornji deo bio odvojen od donjeg. Ova baterija može da radi oko 3 meseca ako je odvojen od donjeg dela.

Pažnja: Ako postoji nedostatak napona napajanja koji se vodi od donjeg dela integratora, ono dovodi do potpunog pražnjenja dugmaste baterije.

Prilikom skladištenja paziti da dugmasta baterija nije aktivirana. Po zahtevu može se postaviti zaštitni film u fabrici, da bi se izbeglo pre vremena pražnjenje baterije. Prilikom postavljanja integratora u rad zaštitni film mora se izvući.

Cable connection

To connect the inputs and outputs the integrator's upper part must be removed.. The connections are to be made as follows:

Terminal	connection type
1,2	2-wire direct connection, temperature high
1,2 and 5,6	4-wire, temperature high
3,4	2-wire direct connection, temperature low
3,4 and 7,8	4-wire, temperature low
10	(+) pulse inputs flow sensor 449 (white cable)
11	(-) pulse inputs flow sensor 449 (green cable)
9	supply voltage for the flow sensor 449 (brown cable)
50	(+) Pulse input, additional pulse input 1
51	(-) Pulse input, additional pulse input 1
52	(+) Pulse input, additional pulse input 2
53	(-) Pulse input, additional pulse input 2
16	(+) Open collector-output 1
17	(-) Open collector output 1 + 2
18	(+) Open collector output 2
24	M-Bus (module optional or equipped at factory)
25	M-Bus (module optional or equipped at factory)

Note: Generally, the shielded cables must be grounded with a strain relief! (see picture on page 12)

Grounding

It has to be guaranteed that all grounding connections (line and power mains and chassis of the flow sensor) of the total installation are equipotential.

Power supply modules

The power supply modules are connected by means of a plug-in connector to the main board.

Mains power supply modules

From the installation side, the main power 230V – 45/60 Hz is to be protected with a 1A fuse. The power supply module 230V AC, 24 VAC or 12 - 24 VDC are equipped at the factory with a backup battery. With the emergency power supply via the backup battery, the integrator is operated in a mode to preserve the battery. The instrumentation characteristics are ensured, however the communication options are not supported.

The mains power supply modules are provided ex factory with a jumper. This Jumper permits an activating or a deactivating of the backup battery. At the delivery of the integrator the jumper is always plugged, the battery activated. Per request the power supply module can also be supplied without the jumper.



The electrical connection of the mains power supply modules

The electrical connection has to be done in accordance with valid standards, under consideration of local safety regulations and by an authorized person. The electrical main is to be made in such way that no hot parts (pipes etc. over 80°C) can be touched (danger with damaged isolation). Water contact of the electrical connection must be avoided.

Backup battery for date and time

The calibration and measuring relevant integrator upper part is equipped with a button cell battery. This button cell battery serves as power supply for the date and time function as well as for the LCD display, if the integrator upper part is removed from the lower part. On the LCD display appears in this case the cumulated running time of the battery in minutes. The back up button cell battery suffices for up to 3 months cumulated time where the upper part is separated from the lower part.

Note: With missing voltage supply module from the lower part of integrator the button cell battery in the upper part of the integrator is emptied prematurely.

With the storage of the integrator make sure that the back-up battery is not activated. On request a protective film can be installed at the factory, in order to protect the battery from an early discharge. Make sure to remove the protective film before commissioning.

Sigurnosne instrukcije

Integrator je napravljen i testiran prema standardu EN61010 sigurnosna kontrola mehaničkih uređaja, i napustio je fabriku u izuzetno bezbednom tehničkom stanju. Da bi se sačuvalo ovo stanje i garantovao bezbedan rad integratora, korisnik mora se pridržavati ovog uputstva. Kad se otvara kućište, ili se odstanjuje neki deo, delovi pod naponom se mogu dodirnuti, kao i priključna letva je pod naponom. Svaka popravka je dozvoljena samo ovlašćenom licu. Ako je kućište i/ili kablovi su oštećeni, integrator se demontira i osigurava se da ne dodje do neželjenog ponovnog priključenja. U celini treba izbegavati instalacije gde može doći do akumulacije toplote iznad prosečne. Prekoračenje prosečne temperature utiče na životni vek integratora i baterije. **Merilo toplotne energije je merni instrument i mora se pažljivo rukovati sa njim.**

Da bi se instrument zaštitio od oštećenja i prljanja, vaditi ga neposredno pre montaže iz zaštitne kutije. Za čišćenje koristiti vlažnu krpnu, a nikako benzin ili razredjivač.

Prilikom priključenja kablova nikako ne pričvrstiti kablove uz cevovod i stavljati pod izolaciju.

Test funkcionalnosti

Posle orvaranja zapornih ventila instalaciju ipitati na curenje. Posle nekoliko pritiska na narandžaste dugmad mogu se očitati na LCD displeju trenutni parametri: protok, snaga, polazna i povratna temperatura. Indikator komunikacije prikazuje polaznu ili dolaznu komunikaciju (strelice u otvorenom pravougaoniku). Sa softverom prog 449 moguće je simulirati rad komunikacije. Prikazivanje protoka (ima-nema) je izvedeno na indikatoru protoka. Trenutno ponašanje protoka može se testirati pomoću displeja trenutni protok i indikatora protoka.

Nekoliko displeja služe za kontrolu instrumenta i/ili podešavanje instalacije. Treba da vodite računa da se ne dostignu granične vrednosti koji su dati u uputstvu (temperature i protoci). Za bolju funkcionalnu analizu sistema i instrumenta, treba koristiti optičku glavu i softver za čitanje izmerenih vrednosti.

Safety instructions

The integrator is manufactured and tested according to EN 61010 safety control for measuring units and left the factory in perfect safety technical condition. To maintain this status and to guarantee safe operation of the integrator, the user must respect the instructions contained in this document. When opening covers or removing parts, parts under power can be accessed. Further connection terminals can be under power. All repair and maintenance work may be only implemented by a trained and an authorized specialist. If the housings and/or the connecting cable show any damage, the integrator unit should be disconnected and secured against accidentally reset up – put in operation. Generally, avoid an installation situation with an accumulation of heat above average. An above average heat buildup affects substantially the lifetime of the electronic components.

Heat meters are measuring devices and must be handled with care. To protect the unit against damage and contamination, the packing should be only removed at the moment of installation.

For cleaning just use water moistened cloth and no solvent. The connecting and connection cable may not be fastened on the pipe and under no circumstances be isolated together with the pipe.

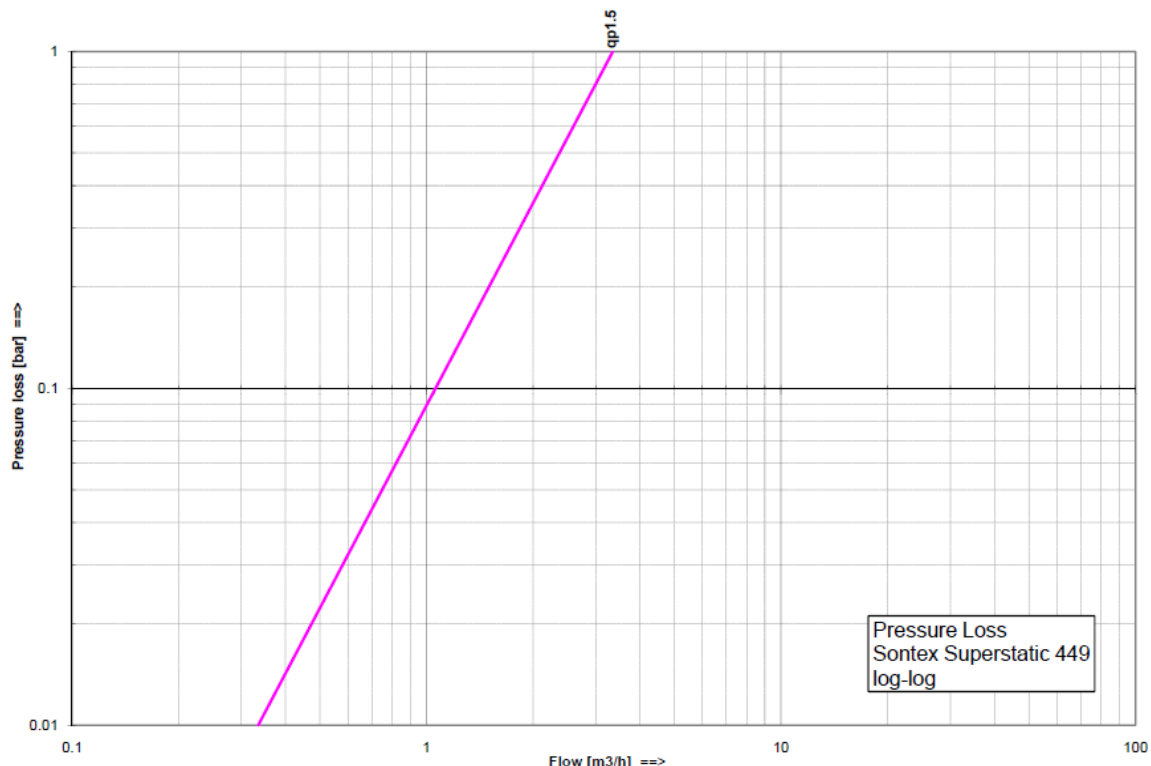
Function test

After opening the shutoff devices the installation must be examined for any leakage. By repeated pressing of the orange user button, various operating parameters e.g. flow, power, as well as supply and return temperature can be read from the LCD display of the integrator unit. The communication indicator on the LCD display serves for the test of the communication input or output. With the software Prog449 the communication outputs can be simulated. The flow can be tested with the help of the flow indicator. The dynamics of the flow measurement can be tested with the help of the current flow display in connection with a flow control.

Several displayed parameters serve to control the meters and/or to adjust the installation. It has to be verified that the established flow of the system does not exceed the maximum permitted flow of the meter. For a comprehensive functional analysis, it is recommended to read the startup protocol by means of the optical interface and reading software

Kriva pada pritiska

Pressure Loss Curve

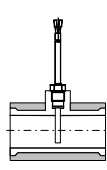
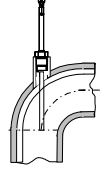
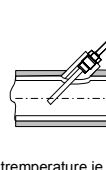


Montaža temperaturnih senzora

Tip temperaturnih senzora mora se poklapati sa tipom na natpisnoj ploči. Temperaturni senzori su uvek upareni. Samo se upareni isporučuju i ne mogu se rastavljati produživati ili skraćivati, pošto utiču na tačnost merenja. Za temperaturne senzore duže od 3 metara, preporučuje se korišćenje oklopljenih kablova. U ovom slučaju oklop mora biti pravilno instaliran. Ako se montiraju u zaštitnu čauru temperaturni senzori moraju se postaviti do kraja i zatim pričvstiti. Ako su dužina kablova različita ili su duži od 6m preporučuje se četvorožično povezivanje istih. Temperaturni senzori se mogu ugraditi u zaštitne čaure ili direktno u medij, ali uvek na isti način. **Asimetrično montiranje, jedan senzor direktno a drugi u zaštitnu čauru je zabranjeno.** Merno aktivan deo senzora mora se postaviti u centar strujanja fluida.

Temperature sensors mounting

The temperatures indicated on the identification plate of the temperature sensors are to be observed. The temperature sensors are always paired. Only matched pairs are supplied and may not be separated, extended or shortened, since this affects the measuring accuracy. With temperature sensor pairs with a cable length longer than 3 m, we exclusively recommend the use of shielded temperature sensor pairs. In this case, the shields must be installed correctly. Temperature sensors with protection pockets must be inserted up to the stall – and fixed afterwards. With unequal cable lengths or longer than 6 m we recommend exclusively the use of four-wire technology. The temperature sensors can be installed alternatively in protection pockets or directly in the heating and/or cooling agent however always both in the same way. **Asymmetrical mounting, one sensor direct the other with pockets, is NOT permitted** The measuring tip of the temperature sensor part must be positioned in the center of the cross section of the pipe

<p>DN15, 20, 25</p> <p>Ugradnja u T komad Installation in T-fitting</p>  <p>Senzor temperature okomit na strujanje fluida i istom nivou Temperature sensor perpendicularly to the axis of the piping in the same level</p>	<p>≤ DN 50</p> <p>Ugradnja u koleno 90° i muf za zavarivanje Installation with welding sleeve 90°</p>  <p>Senzor temperature je u istoj osi sa strujanjem fluida, kolinearano Temperature sensor axle coincide with the tubing axle</p>	<p>≤ DN 50</p> <p>Ugradnja u muf za zavarivanje od 45° Installation with welding sleeve 45°</p>  <p>Senzor temperature je uronjen do centra strujanja fluida Temperature sensor measuring element submerged onto the tubing axle</p>
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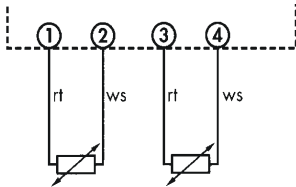
Tipovi senzora / Allocation list sensor pockets

Senzor temperature Temperature sensor	Tipovi Versions	Čaura Pocket	Narudž broj Part number	Materijal	Temperaturni opseg Temperature range
Ø 6x31mm	Pt100, Pt500	G3/8"	0460A202	Mesing/Brass	0...100 °C
Ø 6x31mm	Pt100, Pt500	G1/2"	0460A206	Mesing/Brass	0...100 °C

Prirključni dijagram za temperaturne senzore / Temperature sensors connections

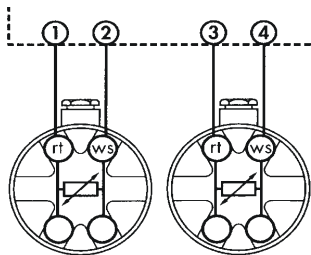
2-žično / 2 wire cable sensor

1 / 2 Polazna temperatura / temperature high
3 / 4 Povratna temperatura / temperature low



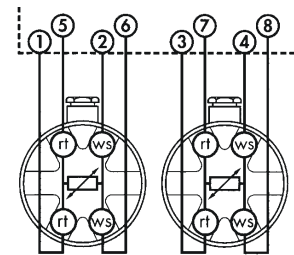
**4-žični senzor sa 2-žičnim integratorom
4 wire sensor with 2 wire integrator**

1 / 2 Polazna temperatura / temperature high
3 / 4 Povratna temperatura / temperature low



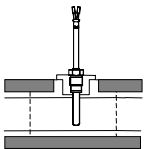
**4-žični senzor sa 4-žičnim integratorom
4 wire sensor with 4 wire integrator**

1 / 5 + 2 / 6 Polazna temp. / temperature high
3 / 7 + 4 / 8 Povratna temp. / temperature low

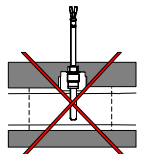


Poprečni presek žica ≥ 0,5 mm² (EN 1434-2) / Wire cross section for head sensors ≥ 0,5 mm² (EN 1434-2)

Montaža temp. senzora u instalacije hlađenja

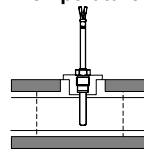


Isolacija može da se postavlja do navoja čaura.

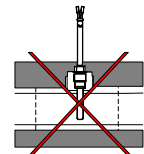


! Navojni priključak temperaturnog senzora se ne sme izolovati. Ovo se ne sme uraditi ni onda ako se temperaturni senzor montira u sam merač protoka.

Temperature sensor installation with cooling applications




The isolation may be made only up to the temperature sensor screw connection.




! The screw connection of the temperature sensors may in no case be isolated with. This applies even if the temperature sensor is installed directly in the flow sensor.

Poruke o greškama

Prilikom javljanja grešaka pojavljuje se Err znak na LCD displeju i broj greške. Ako ima više grešaka brojevi se sabiraju.

Err1	Polazni senzor u prekidu ili u kratkoj vezi
Err2	Povratni senzor je u prekidu ili kratkoj vezi
	Mesta temperaturnih senzora su pomešana, temperatura u povratnoj grani je veća nego u polaznoj grani
Err4	Protok je previsok
Err8	Greška EEPROM-a u donjem delu (aktivan posle drugog javljanja greške)
Err16	Greška EEPROM-a u mernom (gornjem) delu (aktivan posle drugog javljanja greške)
Err32	Greška u konfiguraciji, EEPROM u mernom i kalibracionom delu
Err64	Greška u konfiguraciji, EEPROM u donjem - baznom delu
Err128	Unutrašnji kvar elektronike, vratiti proizvođaču
Err256	Pad ili nedostatak mrežnog napona (Mrežno ili Bus napajanje)
Err512	Pokvaren komunikacioni modul na mestu 1
Err1024	Pokvaren komunikacioni modul na mestu 2
Err2048	Greška ulaznog impulsa dodatnog merača A1
Err4096	Greška ulaznog impulsa dodatnog merača A2
Err8192	Unutrašnji kvar elektronike, vratiti proizvođaču

Ako je greška bila prisutna više od jednog sata, ona će biti registrovana, sa datumom i vremenom (početak) i trajanjem (u minutima). Ako je trajanje greške bilo kraće od jednog sata onda se ono ne evidentira, i automatski se briše.

Dvostruki indikator temperature  se pojavljuje kod akumulisanje energije na glavnom meniju kad:

- Temperaturni senzori su zamenjeni ⇒ ova greška se javlja u mnogim instalacijama tokom letnjeg perioda
- Temperatura u povratnom vodu je viša nego u polaznom vodu.

Ova poruka o grešci se automatski briše sa LCD displeja nakon 60 sekundi od nestanka greške.

Opcione komunikacijske mogućnosti

U integrator je moguće postaviti do dva modula za razne komunikacije. Komunikacijski moduli se mogu naknadno ugraditi bez oštećenja žiga o baždarenju. Opcioni moduli nemaju uticaja na metrološki deo koji je smešten u gornjem poklopcu. Posle instalacije modula najkasnije za 10 sekundi, integrator prepoznaje modul i on je funkcionalno spreman za rad. Prilikom postavljanja opcionih modula pročitati uputstvo koji se isporučuje uz modul.

Parametrizacija

Prilikom postavljanje mostića na mesto JP1 na donjem delu integratora, ulazi se u mod testiranja i parametriranja. Pomoću dva tastera moguće je posediti vreme i datum, korisnički broj, i M-bus primay address. U parametarskom modu potrošnja električne energije je mnogo veća, i zbog toga je potrebno skidanje mostića u redovnoj eksploataciji.


Ostali parametri se mogu menjati sa softverom Prog449 zavisno od prava korisnika ali bez postavljenog mostića.

Fluid za hlađenje (Glikol)


Za instalacije hlađenja sa mešavinom vode i glikola koristiti isključivo Superstatic 440.

Error messages

The integrator indicates occurring errors by displaying on the LCD the Err-sign together with a numbered code. If several errors occur at the same time, the numbers of the error codes are added.

Err1	The supply sensor is short circuited or disconnected
Err2	The return sensor is short circuited or disconnected
	The temperature sensors are switched; the temperature sensor in the cooler line is higher than the temperature sensor in the warmer line
Err4	Flow rate too high
Err8	EEPROM error in the integrator base (only active after the second incident)
Err16	EEPROM error in the measurement and calibration part (only active after the second incident)
Err32	Configuration error into the measurement and calibration part
Err64	Configuration error into the integrator base
Err128	Internal electronic failure, return to manufacturer
Err256	Tension drop (by mains supply or bus supply)
Err512	Defective communication module connection place 1
Err1024	Defective communication module connection place 2
Err2048	Error pulse inputs additional meter A1
Err4096	Error pulse inputs additional meter A2
Err8192	Internal electronic failure, return to manufacturer

If an error lasts longer than an hour the error will be registered in the error register with its date and time (beginning) and duration (in minutes). When an error lasts less than 60 minutes the error will be automatically deleted without being memorized.

The two temperature indicators  are displayed on the cumulated energy by the main menu when:

- Temperature sensors are switched ⇒ this installation error mode happen with most installations during the summer time
 - Temperature in the cooler line is higher than the one in the warmer line.
- These error messages are automatically deleted from the LCD display 60 seconds after the error has been removed.

Communication options

The integrator can be fitted with up to two different optional communication modules. The optional communication modules can be equipped afterwards, without damaging the verification. The optional modules have no influence on the verified relevant part in the cover of the integrator unit. At the latest 10 seconds after the installation, the integrator unit recognizes the plugged in optional modules and the functions are freely available. When connecting the communication modules, the installation guidance - supplied with the unit - is to be considered.

Parameter mode

By plugging a jumper on the main board, position JP1, the parameter and test mode is activated. With the 2 buttons on the integrator date and time, customer number and the M-Bus primary address can be modified. The current consumption is higher with the parameter and test mode than in the normal mode, thus it's important to remove the jumper after the parameterisation.

Additional parameters can be modified with the software Prog449 depending on the user rights but without plugging the jumper.

Cooling liquids (Glycols)

For cooling applications with cooling liquids water mixtures exclusively use the Superstatic 440.

Displej

Integrator ima sledeći raspored menija:

Pogledati natpisnu pločicu:

- **Favoriti meni (ako je aktiviran)**
- **Glavni meni (podaci za obračun)**
- **Postavljeni dani**
- **Mesečne vrednosti**
- **Srednje vrednosti**
- **Maksimalne vrednosti**
- **Konfiguracija**
- **Servis**

Prikazivanje na displeju se mogu po želju da menjati. Po želji se mogu i zabraniti opsezi prikazivanja i redosled prikaza.

LCD-kontrola i korišćenje



Sa tasterom strelice moguće je odabir menija u nizu, ili pozicije unutar menija. U modu testiranja ili verifikacije moguće je povećavati brojeve od 0...9.



Sa tasterom enter moguće izabrati željeni meni ili pozicija.

Kad je taster enter pritisnut možemo pritisnuti taster strelicu (kod svake pozicije i/ili meniju) za vraćanje u prethodni nivo menija ili istovremenom pritiskom enter tastera i strelice se vraća na prethodni meni.

Posle 3 minuta LCD pokazivač integratora se vraća u glavni meni.

Display

The integrator Supercal has the following display sequence:

See label below the display

- **Favorite menu (if activated)**
- **Main menu (Billing relevant data)**
- **Set days**
- **Monthly values**
- **Average values**
- **Maximal values**
- **Configuration**
- **Service**

The display levels can be customized; in number and in order of the display sequences. For this reason deviations can be possible in the range of the display levels and the order of the display sequences.

LCD control concept



With the arrow key you can address the different menus or the positions within a menu. In the verification mode you can also increment with the arrow key the digits from 0...9.



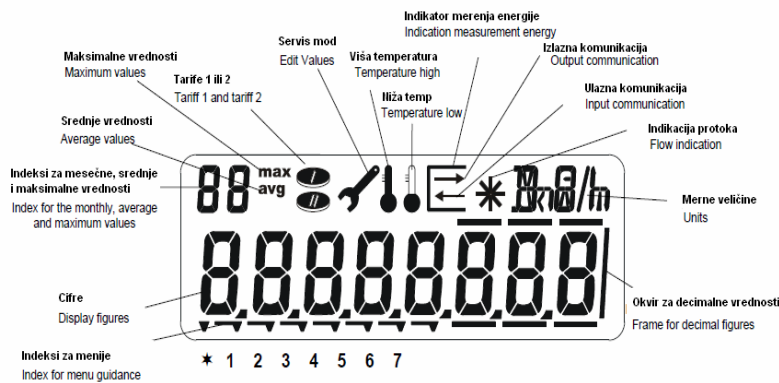
By pressing the enter key you can confirm the menu or the position.

When you keep pressing the enter key, you can by pressing the arrow key (at any Pos. and/or menu) get back to the different levels or by simultaneously pressing the enter key and the arrow key you can get back to the previous menu position.

After 3 minutes the display of the integrator switches automatically back to the main menu.

LCD (Liquid Crystal Display)

Statički merač toplotne energije Superstatic 449 Static Heat Meter Superstatic 449



**Glani meni
Main menu**

000432i.0 kWh
*1 2 3 4 5 6 7
Kumulierte Energie
Cumulated energy

000382.00 M³
Kumuliertes Volumen
Cumulated volume

000i38i.0 kWh
Kumulierte Energie Tarif 1
Cumulated energy tariff 1

000382.00 M³
Kumuliertes Volumen Tarif1
Cumulated volume tariff 1

00003i2.0 kWh
Kumulierte Energie Tarif 2
Cumulated energy tariff 2

000332.00 M³
Kumuliertes Volumen Tarif 2
Cumulated volumen tariff 2

000002.0 A1
Kum. Wert Impulseingang 1
Cum value pulse input 1

003280.90 A2
Kum. Wert Impulseingang 2
Cum value pulse input 2

80.3 20.1 °C
Temperatur hoch / tief
Temperature high / low

60.20 K
Temperaturdifferenz
Temperature difference

23.900 W
Leistung
Power

42.355 M³/h
Durchfluss
Flow

LC F t
-y 0
Glykol Kurve Einbauort
Glycol curve Mounting position

88 88888.888
Segmenttest
Segment test

**Postavljeni dani
Set day menu**

Si DA 0i.07.2005 Datum Stichtag 1 Date set day 1	S2 DA 0i.0i.2006 Datum Stichtag 2 Date set day 2
Si kWh 000432i.0 Energie Stichtag 1 Energy set day 1	S2 kWh 000832i.0 Energie Stichtag 2 Energy set day 2
Si M³ 000382.00 Volumen Stichtag 1 Volume set day 1	S2 M³ 00i282.00 Volumen Stichtag 2 Volume set day 2
Si kWh 000i38i.0 Energie Tarif 1 Stichtag1 Energy tariff 1 set day 1	S2 kWh 000i87i.0 Energie Tarif 1 Stichtag2 Energy tariff 1 set day 2
Si M³ 000382.00 Volumen Tarif1 Stichtag1 Volume tariff 1 set day1	S2 M³ 000562.00 Volumen Tarif1 Stichtag2 Volume tariff 1 set day 2
Si kWh 00003i2.0 Energie Tarif 2 Stichtag 1 Energy tariff 2 set day 1	S2 kWh 00004i2.0 Energie Tarif 2 Stichtag 2 Energy tariff 2 set day 2
Si M³ 000332.00 Volumen Tarif2 Stichtag1 Volume tariff 2 set day1	S2 M³ 00i232.00 Volumen Tarif 2 Stichtag2 Volume tariff 2 set day 2
Si A1 0000382i Impulseingang1 Stichtag1 Pulse input 1 set day1	S2 A1 000053i0 Impulseingang1 Stichtag2 Pulse input 1 set day 2
Si A2 00328090 Impulseingang 2 Stichtag 1 Pulse input 2 set day1	S2 A2 00648090 Impulseingang 2 Stichtag 2 Pulse input 2 set day 2

**Mesečne vrednosti
Monthly values**

01 DA
0i.-.-
Speichertag Monatswerte
Storage day monthly values

01 kWh
000832i.0
Letzter Monatswert Energie
Last monthly value energy

02 kWh
00i872i.0
Energie vor einem Monat
Energy one month ago

01 M³
000782.00
Letzter Monatswert Volumen
Last monthly value volume

02 M³
000862.00
Volumen vor einem Monat
Volume one month ago

01 kWh
000232i.0
Letzter Monatsw. Energie Tarif 1
Last monthly value energy tariff 1

02 kWh
000i32i.0
Energie Tarif 1 vor einem Monat
Energy tariff 1 one month ago

01 M³
000382.00
Letzter Monatsw. Volumen Tarif 1
Last monthly value volume tariff 1

02 M³
000682.00
Volumen Tarif 1 vor einem Monat
Volume tariff 1 one month ago

01 kWh
00003i2.0
Letzter Monatsw. Energie Tarif 2
Last monthly value energy tariff 2

02 kWh
00003i2.0
Energie Tarif 2 vor einem Monat
Energy tariff 2 one month ago

01 M³
000332.00
Letzter Monatsw. Volumen Tarif 2
Last monthly value volume tariff 2

02 M³
00i232.00
Volumen Tarif 2 vor einem Monat
Volume tariff 2 one month ago

01 A1
00002i30
Letzter Monatsw. Impulseingang 1
Last monthly value pulse input 1

02 A1
00i653i0
Impulseingang 1 vor einem Monat
Pulse input 1 one month ago

01 A2
000032i0
Letzter Monatsw. Impulseingang 2
Last monthly value pulse input 2

02 A2
00648090
Impulseingang 2 vor einem Monat
Pulse input 2 one month ago

**Legende
Legend**

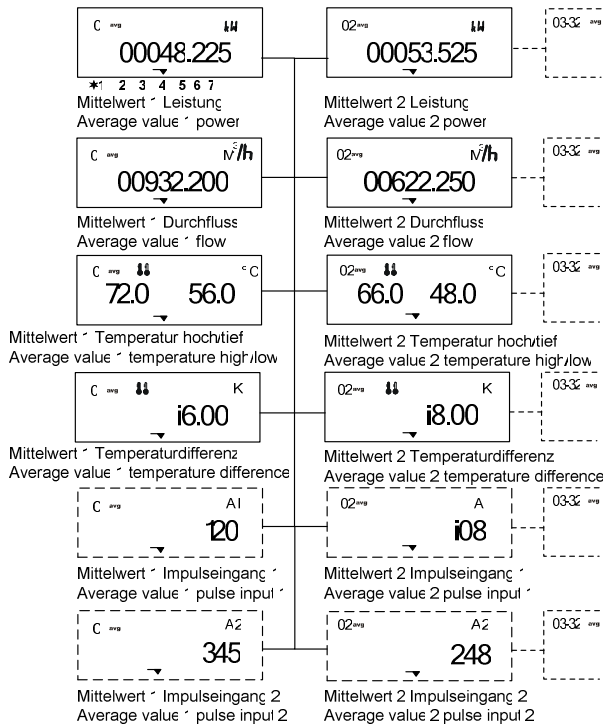
Standardanzeige
Standard indication

Wird nur angezeigt wenn die Option verfügbar ist
Only indicated if the option is available

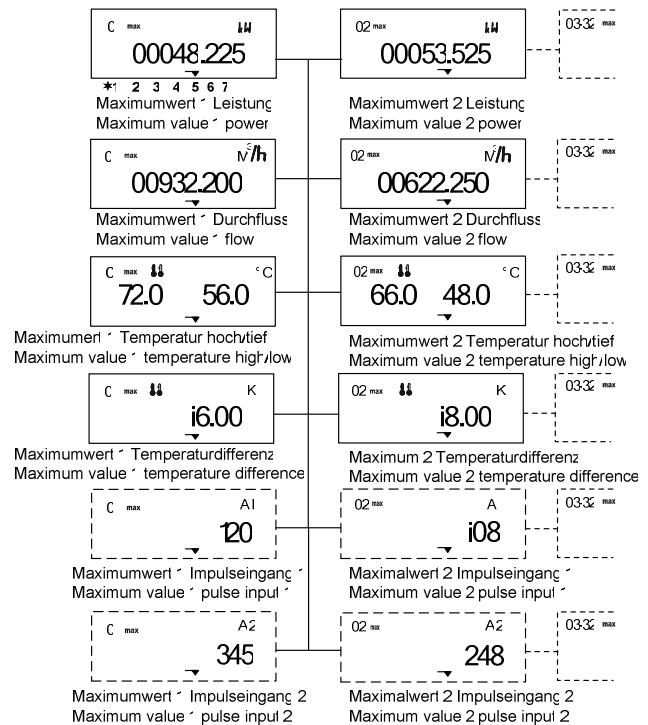
Weitere Werte innerhalb des Menüs abrufbar:
3 - 15 Monatswert
3 - 32 Mittelwert
3 - 32 Maximalwert

Further values within the menu available:
3 - 15 monthly values
3 - 32 average values
3 - 32 maximum values

Osrednjene vrednosti Average values



Maksimalne verdnosti Maximum values



Osiguranje tačnosti merenja

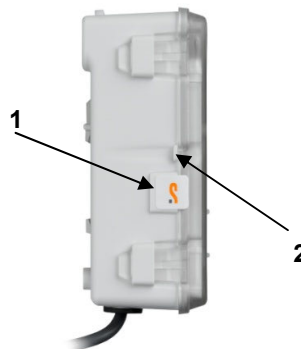
Zaštitni žig

Plombiranje, lepljenje zaštitnog žiga, je specifično za datu zemlju, i lokalni zakoni moraju se poštovati. Protiv nemogućnosti manipulacije, merilo toplotne energije, viljci, kao i temperaturni senzori i čaure, moraju se zaštititi sa žigovima isporučioča toplotne energije. Žigovi mogu odstraniti samo za to ovlašćene osobe. U slučaju nepoštovanje ovih odredaba garancija ne važi. Važno je da žica žiga mora da bude što kraća i dobro zategnuta prema žigu. Samo na ovaj način žig je obezbeđen od neovlašćene manipulacije.

- Predlozi za postavljanje žigova



Žigosan u fabrici - Ex factory seals



1: Žig-nalepnica / Sticker seal
2: Žig sa žicom i olovom / Wire seal

Safety Measures

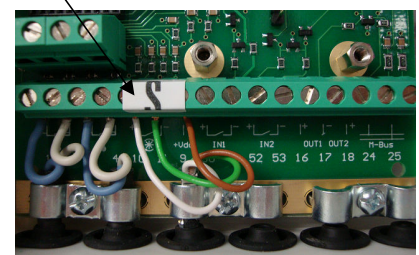
Security seals

Seals are country specific; the local regulations must be respected. Against possible manipulation or unauthorized dismantling, the heat meters, the screw connections, as well as the temperature sensors and pockets must be protected with user seals. The seals may be removed only by authorized persons. By neglecting this precaution the guarantee obligation is void. It is important that the seal wires are kept as short as possible and are well strained towards the seals. Only this way, the seal is protected against unauthorized interference.

- Recommendations for sealing



Žigosan u fabrici - Ex factory seals



Konfiguracija Configuration

DA i7.03.2006 *1 2 3 4 5 6 7 Aktuelles Datum Actual date	
Hr i5.02 Aktuelle Zeit Actual time	
P 95.0 Impulswertigkeit Pulse value	
N a i 0.0i Einheit Impulseingang A* Unit pulse input A*	N ε 2 0.0i Einheit Impulseingang A2 Unit pulse input A2
N A i 1.0000 Impulswertigkeit Eingang A* Pulse value input A*	N A2 i 1.0000 Impulswertigkeit Eingang A2 Pulse value input A2
N B i 1.0000 Impulswertigkeit Ausgang E* Pulse value output E*	N E2 i 1.0000 Impulswertigkeit Ausgang E2 Pulse value output E2
m n 60 Integrationszeit Mittelwert Integration time average value	
h 24 Integrationszeit Maximalwert Integration time maximum value	
R d 249 M-Busadresse M-Bus address	
B r 9600 M-Bus Baudrate address M-Bus baud rate	
P d 60525623 Funkadresse Radio address	

Servisni mod Service

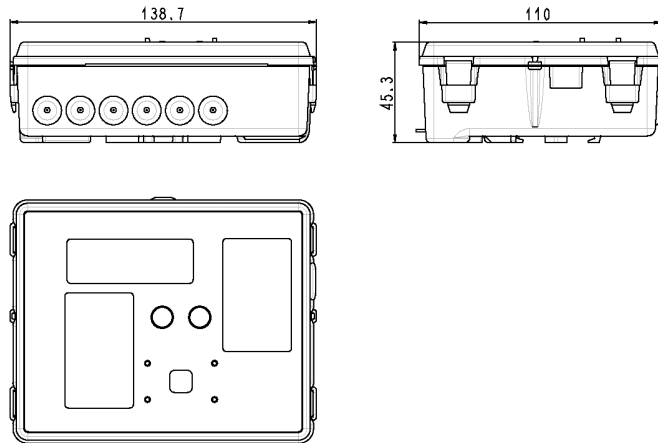
C n 60525623 *1 2 3 4 5 6 7 Identifikationsnummer Identification number	
H F n 60525622 Nummer Rechenweroberteil Number upper part integrator	
C F n 60525622 Nummer Rechenwerkunterteil Number lower part integrator	
S M 4.i Softwareversion Software version	
H W 4.2 Hardwareversion Hardware version	
O P n 00000000 Impulswertigkeit Eingang A* Pulse value input A*	
P t 500 Temperaturfühler Typ Typ temperature sensor	
r h 45698 Betriebsstunden Running hours	
D F 249 Tage ohne Durchfluss Days without flow	
D E 249 Tage ohne Energie Days without energie	
err 259 Fehlermeldung Error code	
E r m 34256 Aktuelle Fehlerdauer in Minuten Actual duration of error in minutes	
O i E H err 259 Fehlermeldung Error code	O z E H err 259 Fehlermeldung Error code
O i m i n err 238 Fehlerdauer in Duration of Error duration in minutes	O z m i n err 238 Fehlerdauer in Duration of Error duration in minute
O i DA 28.i2.2006 Startdatum Fehler 1 Start date error *	O z DA 28.i2.2006 Startdatum Fehler * Start date error *
O i H r 8.i0 Startzeit Fehler 1 Start time error *	O z H r 8.i0 Startzeit Fehler 2 Start time error 2

Test mod Test mode

5 t 00000000 *1 2 3 4 5 6 7 Start Rechenwerkprüfung Start integrator test
M³ 2.0000000 Volumen für die Simulator Volume for simulation
M³h 0.0000 Simulierte Energie Simulated energy
K i0.i0 Temperaturdifferenz Temperature difference
°C 60.i2 50.02 Temperatur hoch / tief Temperature high / low
M³ 0.0000000 Simulierte Volumen Simulated volume
M³h 0.0000000 Aktueller Durchfluss Actual flow

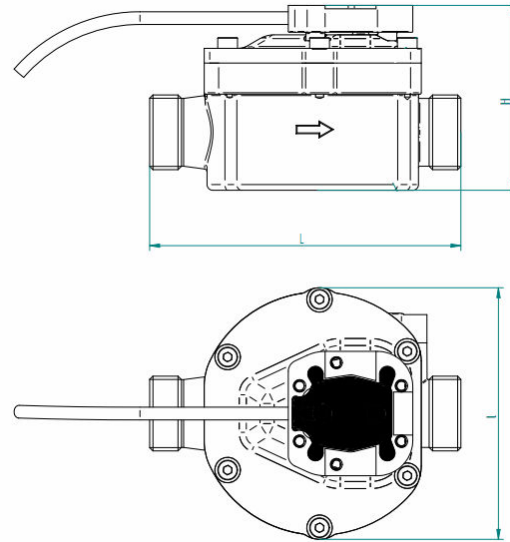
Statički merač Superstatic 449 sa merama

Integrator / Integrator



Dimensions heat meter Superstatic 449

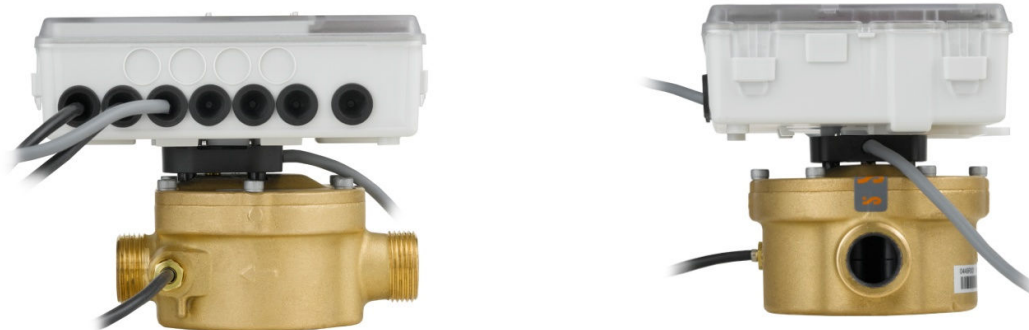
Fluidni oscilator / Fluid oscillator flow sensor



qp	G	PN	l (mm)	H (mm)	L(mm)
*0.6 m ³ /h	¾"	16	70	60	110
*1.5 m ³ /h	¾"	16	89	65	110
1.5 m³/h	1"	16	89	65	130
*1.5 m ³ /h	1"	16	89	65	190
*2.5 m ³ /h	1"	16	89	65	130
*2.5 m ³ /h	1"	16	89	65	190

*u pripremi / under way

Radna temperatura, dugotrajna/ Operating Temperature, permanent	90°C
Ravne deonice-ulaz / Inlet straight section (EN 1434)	3D za / for : L=110mm 3D za / for : L=130mm; 0D za / for : L=190mm
Dužina između merača protoka i integratora Connection between flow sensor and integrator	0.8 m; fiksno / fix



Superstatic 449: Max. 140 x 110 x 112 [mm]

Tehnički podaci za merač protoka Superstatic 449

Technical Data Flow Sensor Superstatic 449

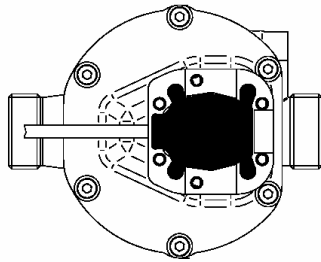
qp	Navojni priključak		Ugradbe na dužina	Mat.	PN	Maksimalni protok qs	Minimalni protok qi	Najmanji protok (50°C)	Navojna rupa za temp senzor	Masa	Pad pritiska pri qp
qp	Threaded connection		Length	Mat.	PN	Maximal Durchfluss qs	Minimal Durchfluss qi	Low flow threshold value (50°C)	Threaded hole for sensor	wt.	Pressure loss at qp
m ³ /h	G"	DN	mm		PN	m ³ /h	l/h	l/h		kg	bar
*0.6	(EN ISO 228-1) 3/4"	(15)	110	Mesing	16	1,2	6	-	Da	-	-
1.5	3/4"	(15)	110	Mesing	16	3	15	10	Da	1.3	0.2
*1.5	1"	(20)	130	Mesing	16	3	15	10	Da	-	-
*1.5	1"	(20)	190	Mesing	16	3	15	10	Da	1.4	0.2
*2.5	1"	(20)	130	Mesing	16	5	25	-	Da	-	-
*2.5	1"	(20)	190	Mesing	16	5	25	-	Da	-	-

* u pripremi / under way

Superstatic 449 može da radi od 0.8 bar pritiska u cevovodu.

The flow sensor Superstatic 449 can be operated from 0.8 bar pipe pressure.

Horizontalna ugradnja - Horizontal mounting position



Horizontalna ugradnja

Merna glava mora da bude postavljena sa strane +/- 45° u odnosu na osu cevovoda, da bi se izbegli uticaji vazduha (gore) ili prljavštine (dole).

Horizontal Mounting position

The sensor head **MUST** be placed to the side +/- 45° in relation to the pipe axis to avoid influences of air inclusions (top) or dirt (bottom).

Vertikalna ugradnja

Moguća ugradnja u uzlazne i silazne vodove.

Opšte napomene:

Nakon ugradnje i pre puštanja u rad najmanje 10min čistiti sistem da bi se izbegli mehurići.

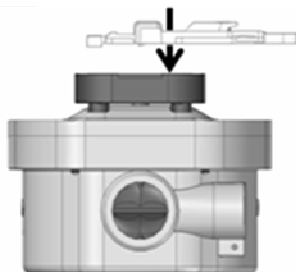
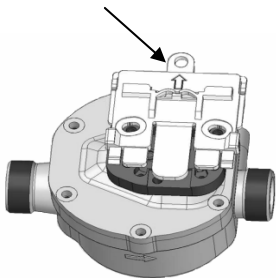
Uslovi za zadovoljavanje EU direktive 2004/22/EU (MID)

- Temperaturni davači se postavljaju simetrično u polaz i povrat i po mogućnosti bez čaura. Ako se montiraju u zaštitnu čauru, mora se zadovoljiti izjava o saobraznosti. Polazni i povratni senzor moraju da dodirnu dno čaure. Simetrična instalacija mora se odnositi i na senzor u polaznom vod. **Asimetrična montaža temperaturnih senzora NIJE dozvoljena.**
- Za temperaturni par senzora prema MID-u maksimalna dužina je 15m. Prečnik vodova teperaturnih senzora prema EN 1434-2. Priključivanje teperaturnih senzora na priključke integratora prema stranici 2, pri poštovanju o tipu temp. senzora i natpisne ploče integratora, da se radi o Pt 100 ili Pt 500 (moraju se podudarati).
- Mora se ispoštovati ravan deo cevovoda ispred merača 3D (samo za 130mm) prema tabeli.
- Odabir baterijskog napajanja je moguće ako ono obezbedjuje barem još jednu godinu skladišnog perioda, nakon garantovanog perioda rada.
- Informacije o stabilnosti merenja je opisan u uslovima AGFW - FW 510 uslovima. U slučaju ostupanja, merilo se mora poslati na periodične preglede prema Sontex-ovim upustvima.

Montaža integratora-računske jedinice

Montaža integratora na meraču protoka, 2 vijlaka se isporučuju u kutiji koji obezbedjuje montažu u 4 različite pozicije, okrenute po 90°. Držać se montira na merilo protoka tako da **strelica** na držaću mora biti vidljiva.

Strelica / Arrow



Vertical mounting position

Mounting in riser or down pipes possible.

General notice for mounting:

After mounting and before commissioning purge system > 10 min to avoid air bubbles.

Conditions to comply with the directive 2004/22/EU (MID)

- The temperature sensors have to be mounted symmetrically in flow and return and preferably without pockets. If using pockets they must be in accordance with the conformity declaration. Flow and return sensors must be mounted to the bottom of the pockets. Installation places in the flow sensor can be used with the symmetrical installation of the temperature sensor pair. **Asymmetrical mounting of the temperature sensor is NOT permitted.**
- For the exchangeable temperature sensor pairs according to MID the maximum equal length is 15 m. The wire cross section is according to EN 1434-2. The connection to the integrator according to terminal connection on page 2 by respecting the electrical compatibility Pt 100 and Pt 500 of the integrator.
- A straight section of piping of 3 DN in flow of any flow meter must be respected.
- The selection of the battery has to take placed in such a way that it permits at least a supply of auxiliary energy over the duration of the application plus 1 year storage period.
- Information about the measuring stability is described in the conditions for water measurement in accordance with AGFW requirements FW 510. In case of deviating compositions the measuring instrument must be submitted to periodic control according to the guidelines of Sontex.

Mounting of integrator

To mount the integrator on the flow sensor 2 screws are included in the delivery whereby the bracket in the back of the integrator can be mounted in 4 different positions, turned by 90° respectively. The bracket must be mounted on the flow sensor that the **arrow** on the bracket is visible

2 vijlka / 2 Screws



0449P300

Tehnička podrška

Za tehničku podršku zvati EKO-TERM ili Sontex direktno.

Hotline Eko-term:

info@eko-term.co.rs

+381 (0)24 812 445

Hotline Sontex:

sontex@sontex.ch

+41 32 488 30 04

Tehničke promene su moguće bez prethodne najave

Technical support

For technical support contact your local Sontex agent or Sontex SA directly.

Hotline Ekoterm:

info@eko-term.co.rs

+381 (0)24 812 445

Hotline Sontex:

sontex@sontex.ch

Technical modifications subject to change without notice

CE Deklaracija o konformnosti
Declaration of conformity

Detaljuna deklaracija o konformnosti se može naći na internet stranici i skinuti sa www.sontex.ch/
The detailed declaration of conformity can be found and downloaded on our homepage www.sontex.ch