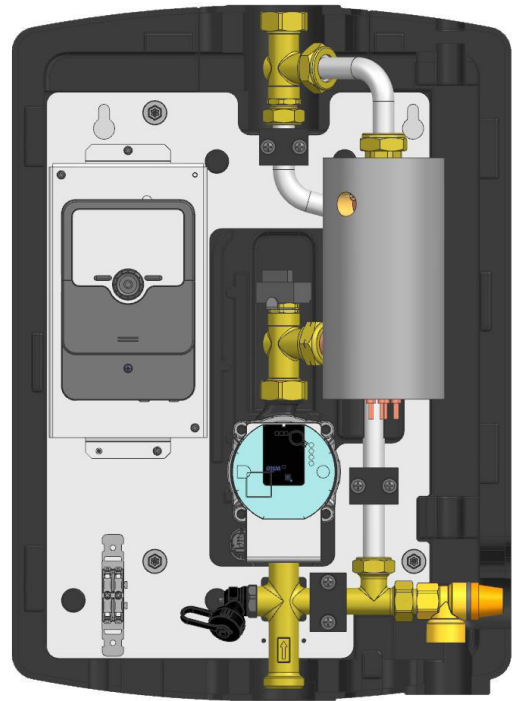




## tubra<sup>®</sup> - eTherm P3+

Montage- und Bedienungsanleitung

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# 1 Einführung

Diese Anleitung beschreibt die Montage der elektrothermischen Station **tubra®-eTherm P3+** sowie die Bedienung und die Wartung.

Die Anleitung richtet sich an ausgebildete Fachhandwerker, die entsprechende Kenntnisse im Umgang mit Heizungsanlagen, Wasserleitungsinstallationen und mit Elektroinstallationen haben. Die Installation und Inbetriebnahme darf nur durch ausgebildetes Fachpersonal vorgenommen werden.

Die Station darf nur in frostgeschützten, trockenen Räumlichkeiten montiert und betrieben werden. Lesen Sie diese Anleitung vor Beginn der Montagearbeiten sorgfältig durch. Bei Nichtbeachtung entfallen sämtliche Garantie- und Gewährleistungsansprüche.

Abbildungen sind symbolisch und können vom jeweiligen Produkt abweichen.  
Technische Änderungen und Irrtümer vorbehalten.

Diese Montage- und Bedienungsanleitung darf ohne schriftliche Genehmigung weder vervielfältigt noch Dritten zugänglich gemacht werden (§ 2 UrhG, § 823 BGB).

## 1.1 Verwendungszweck

Die elektrothermische Station **tubra®-eTherm P3+** dient ausschließlich zur Erwärmung von Wasser mittels Elektroheizelement im Durchflussprinzip. Es darf nur Heizungswasser (HW) nach VDI 2035 erwärmt werden.

## 1.2 Sicherheitshinweise

Neben länderspezifischen Richtlinien und örtlichen Vorschriften sind folgende Regeln der Technik zu beachten:

- DIN 1988 Technische Regeln für die Trinkwasserinstallation
- DIN 18 380 Heizanlagen und zentrale Wassererwärmungsanlagen
- VDI 2035 Steinbildung in Trinkwassererwärmungsanlagen und Warmwasserheizungsanlagen
- DIN 4753 Wassererwärmer und Wassererwärmungsanlagen für Trink- und Betriebswasser
- DIN EN 60335-1 Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke Teil 1: Allgemeine Anforderungen
- DIN EN 60335-2 Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke Teil 2: Besondere Anforderungen
- BGV Berufsgenossenschaftliche Vorschrift (Unfallverhütungsvorschriften)
- VDE 0100 Normenreihe Errichtung elektrischen Anlagen
- EN 806-2 Technische Regeln für Trinkwasserinstallationen – Anforderungen an Bauteile, Apparate und Werkstoffe
- Bestimmungen der örtlichen Energie- und Wasserversorgungsunternehmen
- Angaben auf Typenschild
- Technische Daten



Da Temperaturen an der Anlage > 60 °C entstehen können, besteht Verbrühungsgefahr und eventuell Verbrennungsgefahr an den Komponenten.

## Zielgruppe

Diese Bedienungsanleitung richtet sich an die Benutzer der Heizungsanlage. Dieses Gerät kann von Kindern ab 3 Jahren und darüber und von Personen mit eingeschränkten körperlichen, sensorischen oder geistigen Fähigkeiten oder Personen mit mangelnder Erfahrung und mangelnden Kenntnissen benutzt werden, wenn sie beaufsichtigt oder bezüglich des sicheren Gebrauchs des Geräts unterwiesen wurden und die daraus resultierenden Gefahren verstanden haben.

|                                                                                              |                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Achtung | Kinder in der Nähe des Geräts beaufsichtigen. <ul style="list-style-type: none"> <li>- Kinder dürfen nicht mit dem Gerät spielen.</li> <li>- Reinigung und Benutzerwartung dürfen nicht von Kindern ohne Beaufsichtigung durchgeführt werden.</li> </ul> |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Anschluss des Geräts

Diese Bedienungsanleitung richtet sich an die Benutzer der Heizungsanlage.

- Das Gerät darf nur von autorisierten Fachkräften angeschlossen und in Betrieb genommen werden.
- Die vorgegebenen elektrischen Anschlussbedingungen einhalten.
- Änderungen an der bestehenden Installation dürfen nur von autorisierten Fachkräften durchgeführt werden.

|                                                                                             |                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | Unsachgemäß durchgeführte Arbeiten an der Heizungsanlage können zu lebensbedrohenden Unfällen führen. <ul style="list-style-type: none"> <li>- Elektroarbeiten dürfen nur von Elektrofachkräften durchgeführt werden.</li> </ul> |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Arbeiten am Gerät

- Einstellungen und Arbeiten am Gerät nur nach den Vorgaben in dieser Bedienungsanleitung ausführen. Weitere Arbeiten am Gerät dürfen nur von autorisierten Fachkräften ausgeführt werden.
- Gerät nicht öffnen.
- Das Gehäuse nicht abnehmen.
- Installiertes Zubehör oder Anbauteile nicht verändern oder entfernen.
- Rohrverbindungen nicht öffnen oder nachziehen.

|                                                                                               |                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | Heiße Oberflächen und Flüssigkeiten können zu Verbrennungen oder Verbrühungen führen. <ul style="list-style-type: none"> <li>- Gerät nicht öffnen.</li> <li>- Heiße Oberflächen an ungedämmten Rohren und Armaturen nicht berühren.</li> </ul> |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Beschädigungen am Gerät

|                                                                                               |                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | Beschädigte Geräte gefährden Ihre Sicherheit. <ul style="list-style-type: none"> <li>- Gerät auf äußere Schäden prüfen.</li> <li>- Ein beschädigtes Gerät nicht in Betrieb nehmen.</li> </ul> |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Wasseraustritt aus dem Gerät

|                                                                                               |                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | Bei Wasseraustritt aus dem Gerät besteht die Gefahr eines Stromschlags. <ul style="list-style-type: none"> <li>- Die Heizungsanlage an der externen Trennvorrichtung (z. B. Sicherungskasten, Hausstromverteilung) ausschalten.</li> <li>- Heizungsfachbetrieb benachrichtigen.</li> </ul> |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                               |                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | Wenn Wasser aus dem Gerät austritt, besteht Verbrühungsgefahr. <ul style="list-style-type: none"> <li>- Heißes Heizwasser nicht berühren.</li> </ul> |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|



## Verhalten bei Störungen an der Heizungsanlage

|                                                                                             |                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | <p>Störungsmeldungen weisen auf Defekte an der Heizungsanlage hin. Nicht behobene Störungen können lebensbedrohliche Folgen haben.</p> <ul style="list-style-type: none"> <li>- Störungsmeldungen nicht mehrmals in kurzen Abständen quittieren.</li> <li>- Fachbetrieb benachrichtigen, damit dieser die Ursache analysieren und den Defekt beheben kann.</li> </ul> |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Anforderungen an den Aufstellort

|                                                                                             |                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | <p>Keine nachträglichen Änderungen der baulichen Gegebenheiten vornehmen, die Auswirkungen auf den sicheren Betrieb haben können (z. B. Leitungsverlegung, Verkleidungen oder Trennwände).</p> |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                             |                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Gefahr | <p>Leicht entflammbare Flüssigkeiten und Materialien (z. B. Benzin, Lösungs- und Reinigungsmittel, Farben oder Papier) können Verpuffungen und Brände auslösen. Solche Stoffe nicht im Heizraum und nicht in unmittelbarer Nähe der Heizungsanlage lagern oder verwenden.</p> |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Achtung | <p>Unzulässige Umgebungsbedingungen können Schäden an der Heizungsanlage verursachen und einen sicheren Betrieb gefährden.</p> <ul style="list-style-type: none"> <li>- Umgebungstemperatur zwischen 0 °C und 35 °C gewährleisten.</li> <li>- Luftverunreinigungen durch Halogenkohlenwasserstoffe (z. B. enthalten in Farben, Lösungs- und Reinigungsmitteln) und starken Staubanfall (z. B. durch Schleifarbeiten) vermeiden.</li> <li>- Dauerhaft hohe Luftfeuchtigkeit (z. B. durch permanente Wäschetrocknung) vermeiden.</li> </ul> |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Zusatzkomponenten, Ersatz- und Verschleißteile

|                                                                                                |                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Achtung | <p>Komponenten, die nicht mit der Heizungsanlage geprüft wurden, können Schäden an der Heizungsanlage hervorrufen oder deren Funktionen beeinträchtigen. Anbau oder Austausch ausschließlich durch den Fachbetrieb ausführen lassen.</p> |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 1.3 Mitgeltende Unterlagen

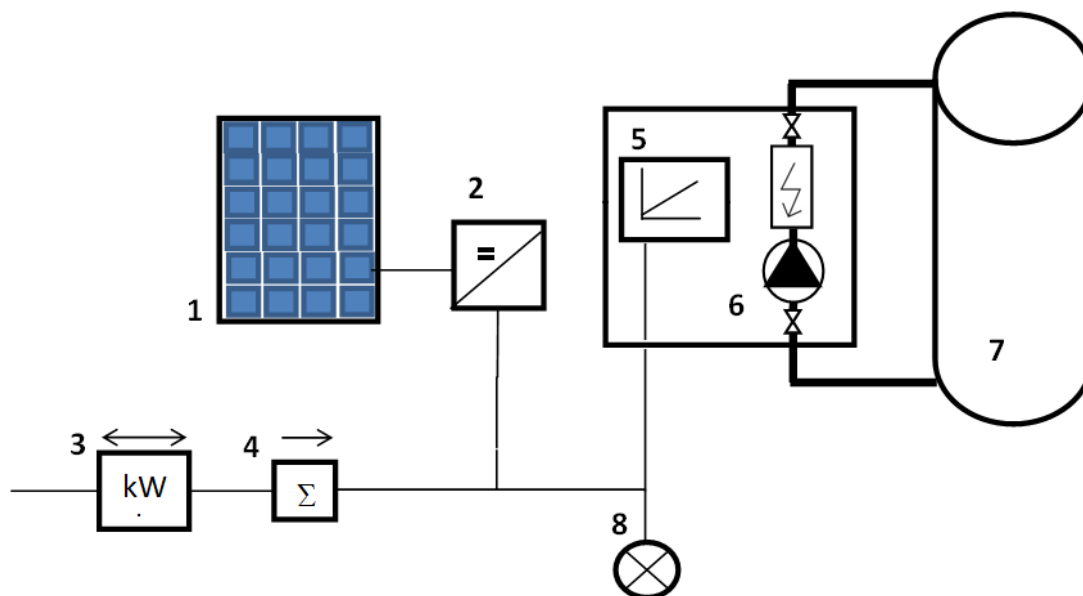
Beachten Sie auch die Montage- und Bedienungsanleitungen der verwendeten Komponenten wie z.B. der Regelung.

## 1.4 Lieferung und Transport

Überprüfen Sie unmittelbar nach Erhalt der Lieferung die Ware auf Vollständigkeit und Unversehrtheit. Eventuelle Schäden oder Reklamationen sind umgehend zu melden.

## 2 Funktionsbeschreibung

### 2.1 Systemaufbau in der Installation



- 1 Photovoltaikanlage
- 2 Wechselrichter
- 3 Stromzähler (Bezug, Einspeisung)
- 4 tubra®-eTherm P3+ sensor (Leistungsmessung Einspeisung)
- 5 tubra®-eTherm P3+ power (Leistungsmodulation)
- 6 tubra®-eTherm P3+ mit tubra®-eTherm controller P
- 7 Thermischer Speicher
- 8 Haushaltsverbraucher (Licht, Standby, ...)

### 2.2 Funktionsbeschreibung

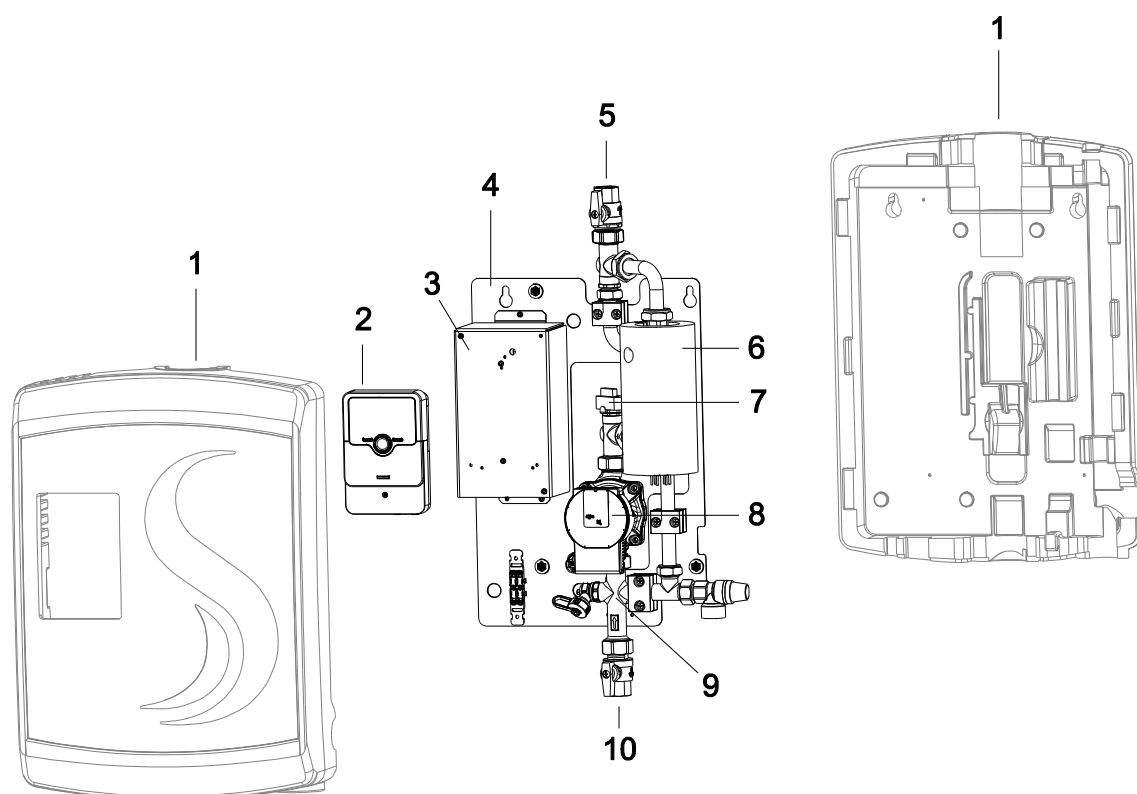
Die **tubra®-eTherm P3+** ist eine elektrothermische Station zur Umwandlung von Photovoltaikstrom in Wärme und zur Speicherung dieser Wärme in Pufferspeichern. Mit der stufenlosen Leistungsregelung der **tubra®-eTherm P3+** können Stromüberschüsse optimal verwertet werden. Über die drehzahlgeregelte Ladepumpe wird der Speicher mit einem sofort nutzbaren Temperaturniveau beladen. Wenn die Speichermaximaltemperatur erreicht ist, wird die Beladung beendet.

Vorteile sind:

- Optimale Anpassung durch stufenlos modulierende Leistung bis 3000 W
- Geschichtete Speicherbeladung auch bei der Nachrüstung an vorhandenen Speicher
- Zieltemperatur einstellbar
- Sofort nutzbare Wärme auch bei geringer Solarstrahlung
- Nachrüstbar an jedem Pufferspeicher
- Unabhängig vom PV-Wechselrichter, Energiemanager und Stromzähler

Die Regelung besteht aus dem Regler der eTherm P3+ sowie der Leistungseinheit und einem Messteil. Das Messteil ermittelt die überschüssige Leistung der Photovoltaikanlage unmittelbar vor dem Stromzähler und gibt diese zur elektrischen Warmwasserbereitung frei. Der Regler regelt über das Leistungsteil die Leistungsstufen in der elektrothermischen Station zur Beheizung des Speichers und passt die Drehzahl der Pumpe entsprechend der verfügbaren Leistung an. Das Heizelement der eTherm P3+, das nach dem Durchlauferhitzer-Prinzip arbeitet, kann somit bereits bei geringer Heizleistung, beispielsweise an bewölkten Tagen, Wärme auf einem hohen Temperaturniveau in den Speicher einschichten.

### 3 Aufbau – Lieferumfang



| Pos. | Bezeichnung                                                  |
|------|--------------------------------------------------------------|
| 1    | Dämmschale                                                   |
| 2    | Regelung                                                     |
| 3    | Anschlussbox mit STB und Leistungselektronik                 |
| 4    | Grundplatte                                                  |
| 5    | Vorlauf Kugelhahn                                            |
| 6    | Elektroheizelement 3kW (0,8 kW, 0,8 kW, 1,4 kW) + Dämmschale |
| 7    | Drucksensor                                                  |
| 8    | Pumpe                                                        |
| 9    | Kreuzstück mit Sicherheitsventil 3bar und Schwerkraftbremse  |
| 10   | Rücklauf Kugelhahn                                           |

## 4 Technische Daten

### 4.1 Allgemein

| Bezeichnung / Typ              | tubra®-eTherm P3+        |
|--------------------------------|--------------------------|
| Nennleistung / -strom          | 0 – 3 kW (13 A)          |
| Elektroanschluss               | 1/PE 230 V AC 50 – 60 Hz |
| Erforderl. Leitungsquerschnitt | 2,5 mm <sup>2</sup>      |
| Nenninhalt                     | 0,2 l                    |
| Heizelement                    | 0,8 kW / 0,8 kW / 1,4 kW |
| Durchfluss                     | 2 l/h – 300 l/h          |
| Druckverlust                   | 0,6 bar bei 300 l/h      |
| Ladetemperatur                 | 45-75°C                  |
| Speichermaximaltemperatur      | 80°C                     |
| Wasseranschluss                | Rp 3/4" IG               |
| Gewicht (mit Wasserfüllung)    | 14 kg                    |
| Schutzart eTherm power         | IP 22                    |

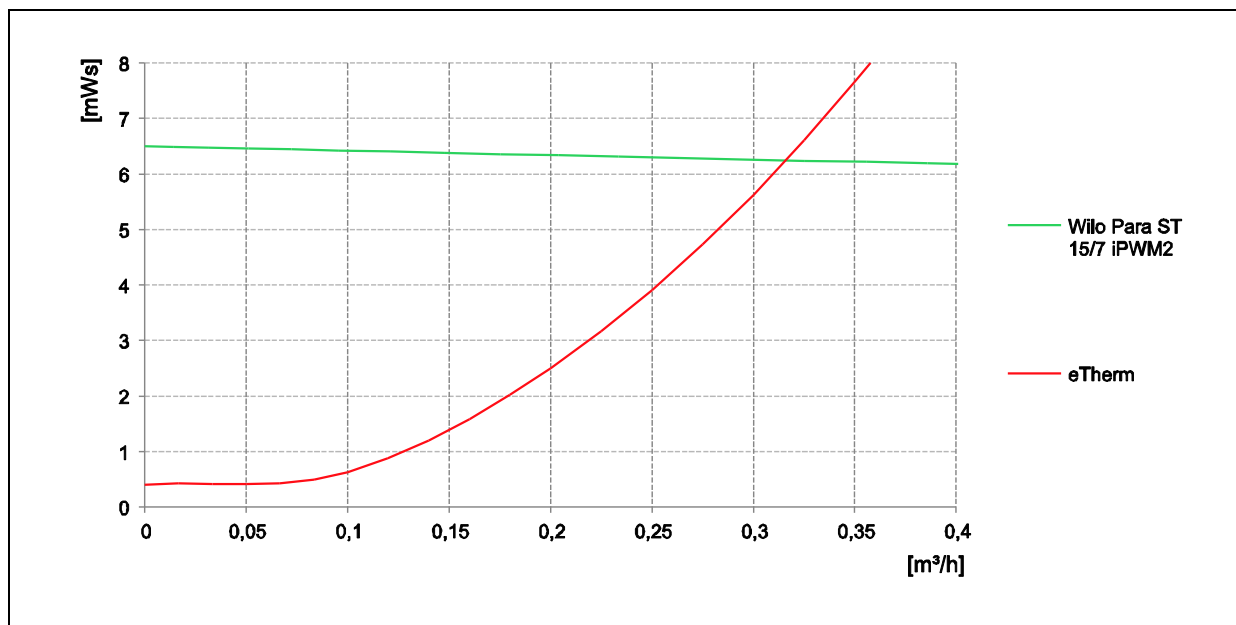
| Bezeichnung / Typ       | tubra®-eTherm P3+<br>951.15.00.00                    |
|-------------------------|------------------------------------------------------|
| Ausführung              | Heizungswasser                                       |
| Min. Betriebsdruck      | 0,8 bar (Werkseinstellung)                           |
| Max. Betriebsdruck      | 3 bar                                                |
| Max. Betriebstemperatur | 85 °C                                                |
| Umwälzpumpe             | Wilo Para ST 15/7 iPWM2<br>Leistungsaufnahme: 3-45 W |

| Werkstoffe | Gehäuse/ Anschlussteile | CW617N (2.0402)        |
|------------|-------------------------|------------------------|
|            | Heizelement             | Kupfer                 |
|            | Dichtungen              | EPDM                   |
|            | Dämmung                 | EPP- Schaum 0,038 W/mK |





## 4.2 Druckverlust / Pumpenkennlinie

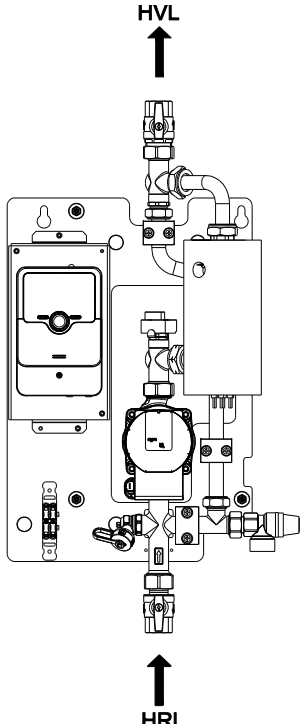


## 4.3 Korrosionsschutz

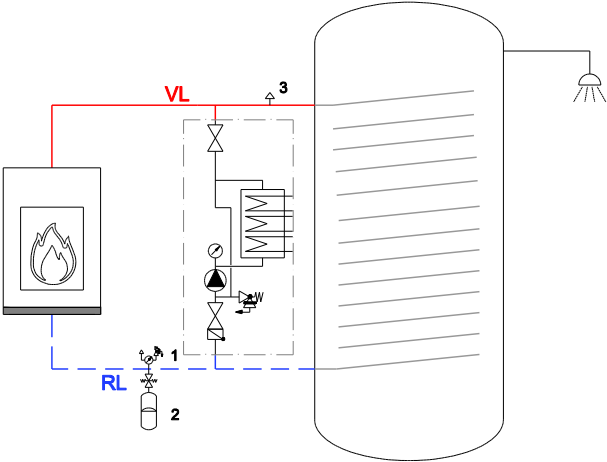
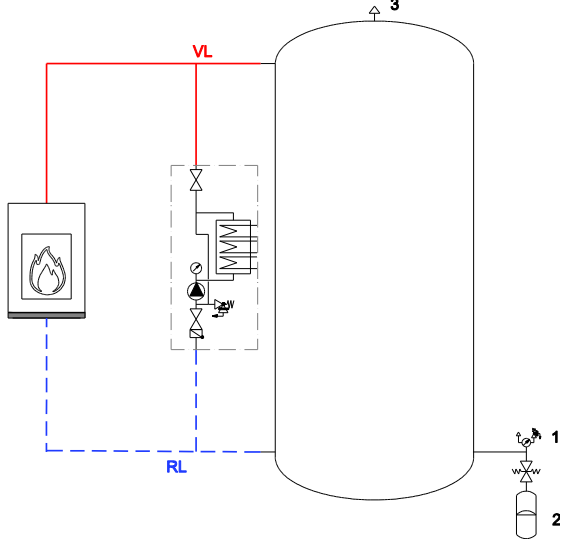
Zur Verhinderung von Korrosionsschäden am Heizelement ist Heizungswasser nach VDI 2035 zu verwenden.

## 5 Hydraulischer Anschluss

### 5.1 Stationsanschlüsse

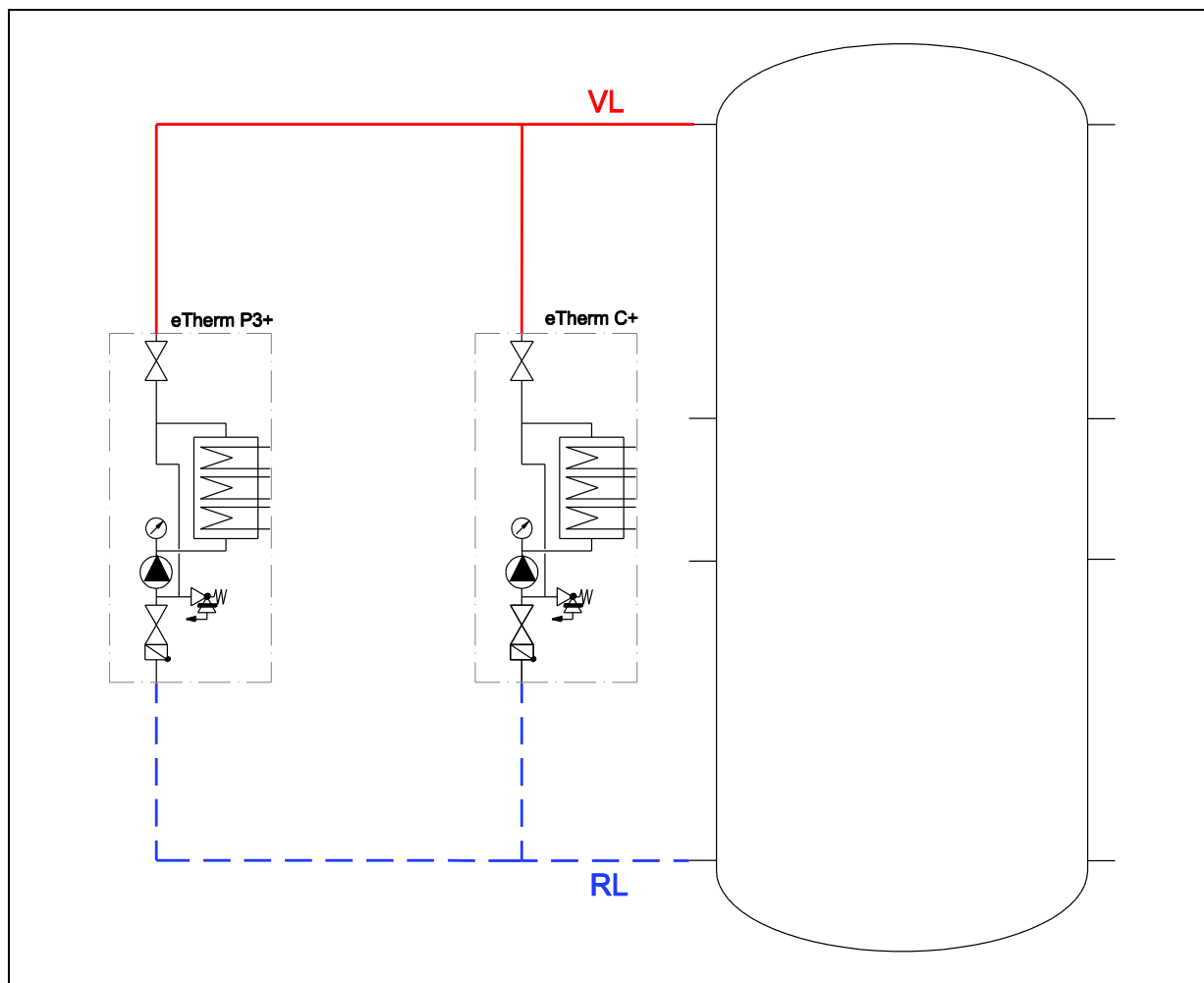
|                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>The diagram shows a heating station with two main vertical connections. The top connection is labeled 'HVL' with an upward arrow, and the bottom connection is labeled 'HRL' with an upward arrow. The station includes a control panel, a pump, and various valves and pipes.</p> | <p>HVL Heizungspuffer Vorlauf Rp 3/4" IG<br/>HRL Heizungspuffer Rücklauf Rp 3/4" IG</p> <p>Bitte beachten:<br/>In der Verbindungsleitung zum Pufferspeicher dürfen keine Rückschlagventile oder Schwerkraftbremsen installiert werden. Der Leitungsquerschnitt muss mindestens DN20 betragen. Eine automatische Entlüftung der Rohrleitung ist sicherzustellen. Die Anschlussleitungen der eTherm sollten einen Druckverlust von 100mbar nicht überschreiten.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 5.2 Hydraulischer Anschluss Pufferspeicher

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>tubra®-eTherm P3+</b><br>mit Trinkwasserspeicher                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>tubra®-eTherm P3+</b><br>mit Pufferspeicher                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  <p>The diagram shows a heating system with a boiler on the left and a large cylindrical tank (Trinkwasserspeicher) on the right. A red line (VL) connects the boiler to the tank, and a blue line (RL) returns from the tank to the boiler. The tank has a vent (3) at the top and a safety valve (1) and expansion vessel (2) at the bottom. A pump and control panel are shown between the boiler and the tank.</p> |  <p>The diagram shows a heating system with a boiler on the left and a large cylindrical tank (Pufferspeicher) on the right. A red line (VL) connects the boiler to the tank, and a blue line (RL) returns from the tank to the boiler. The tank has a vent (3) at the top and a safety valve (1) and expansion vessel (2) at the bottom. A pump and control panel are shown between the boiler and the tank.</p> |
| Beispieldarstellung, erhebt keinen Anspruch auf Vollständigkeit und ersetzt keine fachmännische Planung.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Rohrleitung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Beschreibung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| VL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Vorlauf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| RL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Rücklauf                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Der angeschlossene Wasserkreislauf für das Heizregister oder den Pufferspeicher muss bauseits mit Sicherheitsventil (1), Ausdehnungsgefäß (2) und Entlüfter (3) ausgestattet sein.

### 5.3 Hydraulischer Anschluss – Kaskadierung eTherm P3+



|         | eTherm P3+ | eTherm C9+           |                      |                |
|---------|------------|----------------------|----------------------|----------------|
|         |            | Relais R3<br>von P3+ | Relais R2<br>von P3+ |                |
|         |            | Heizelement L1       | Heizelement L2       | Heizelement L3 |
| 0-3 kW  | x          |                      |                      |                |
| 0-6 kW  | x          | x                    |                      |                |
| 0-9 kW  | x          |                      | x                    | x              |
| 0-12 kW | x          | x                    | x                    | x              |

Als Kaskade **tubra®-eTherm P3+** und **tubra®-eTherm C+** können bis zu 12.000 W thermische Leistung in den Hydraulikeinheiten umgesetzt werden.

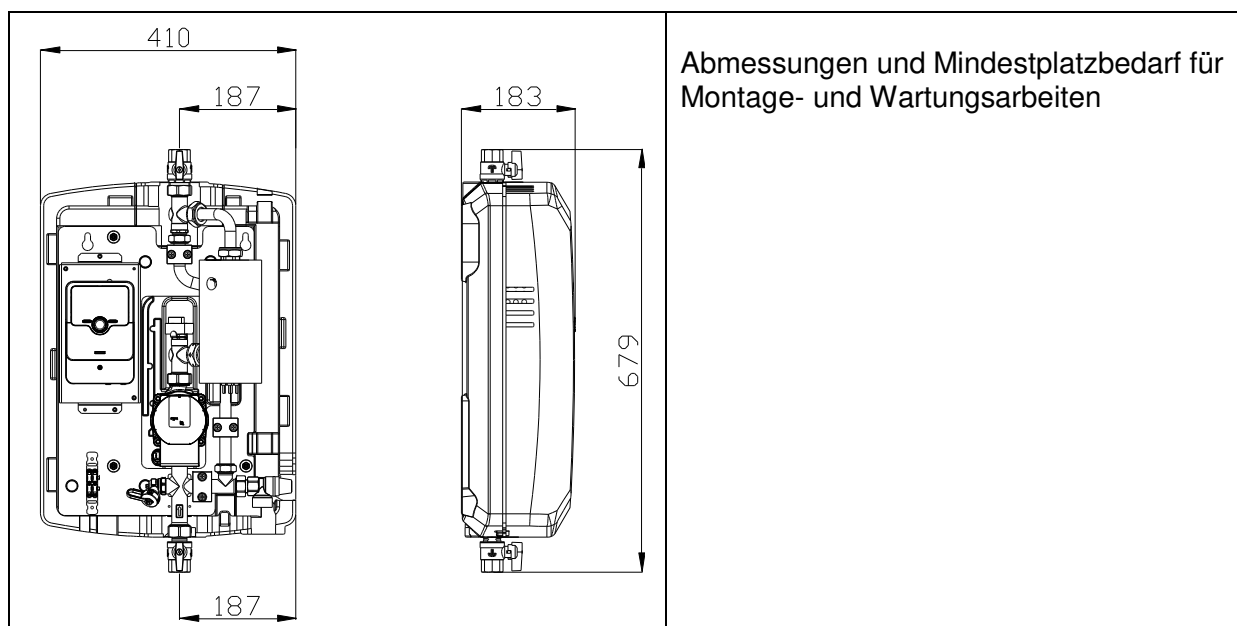
Reglereinstellung P3+ bei Kaskadierung:

Wahlfunktion externer Verbraucher: Relais R3 mit 3 kW

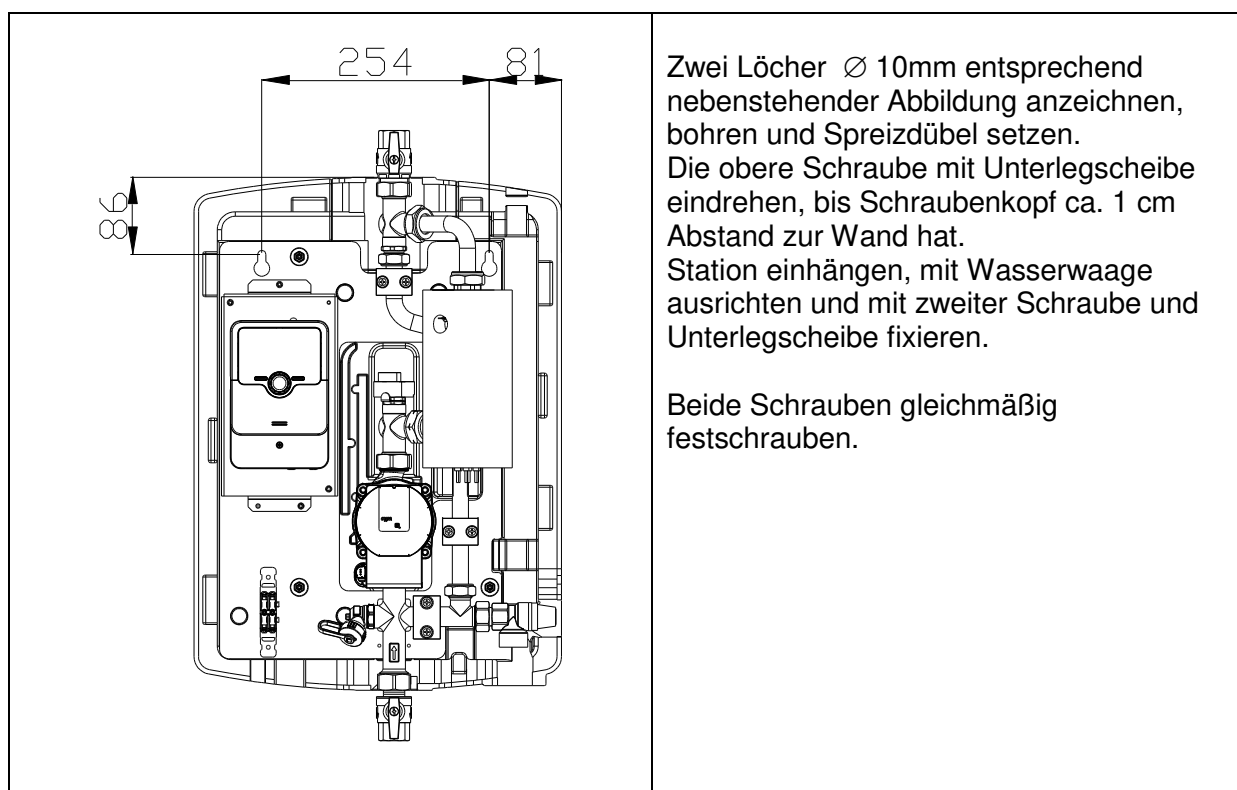
Wahlfunktion externer Verbraucher 2: Relais R2 mit 3 kW oder 6 kW

## 6 Montage

### 6.1 Abmessungen / Platzbedarf



### 6.2 Wandmontage



## 7 Elektrischer Anschluss

### 7.1 Allgemein

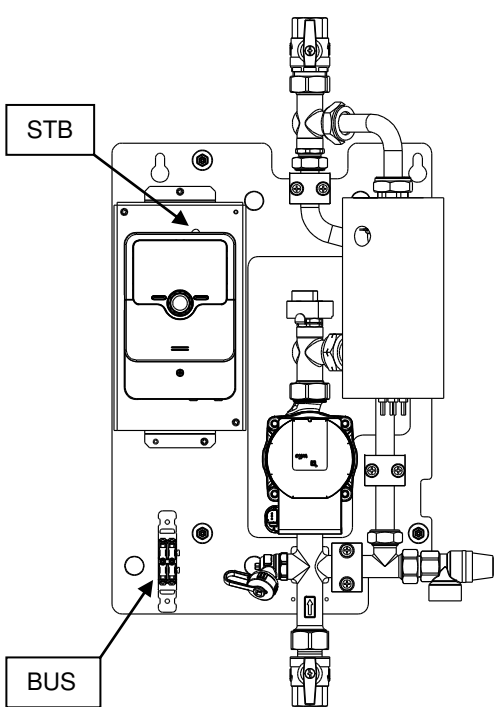
Arbeiten an der elektrischen Anlage sowie das Öffnen von Elektrogehäusen darf nur in spannungsfreiem Zustand und nur von autorisiertem Fachpersonal durchgeführt werden. Bei den Anschlüssen auf richtige Klemmenbelegung und Polarität achten. Die Regelung und die elektrischen Bauteile vor Überspannung schützen.

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Gefahr!</b> | <p>Bei unsachgemäßem elektrischen Anschluss besteht Lebensgefahr durch Stromschlag.</p> <ul style="list-style-type: none"> <li>→ Elektrischen Anschluss nur durch vom örtlichen Energieversorger zugelassenen Elektroinstallateur und entsprechend den örtlich geltenden Vorschriften ausführen lassen.</li> <li>→ Der Elektroanschluss muss nach VDE Vorgaben mit Fehlerstrom- (FI) und Leitungsschutzschalter (LS) ausgeführt werden.</li> <li>→ Vor dem Arbeiten die Versorgungsspannung trennen.</li> </ul> |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

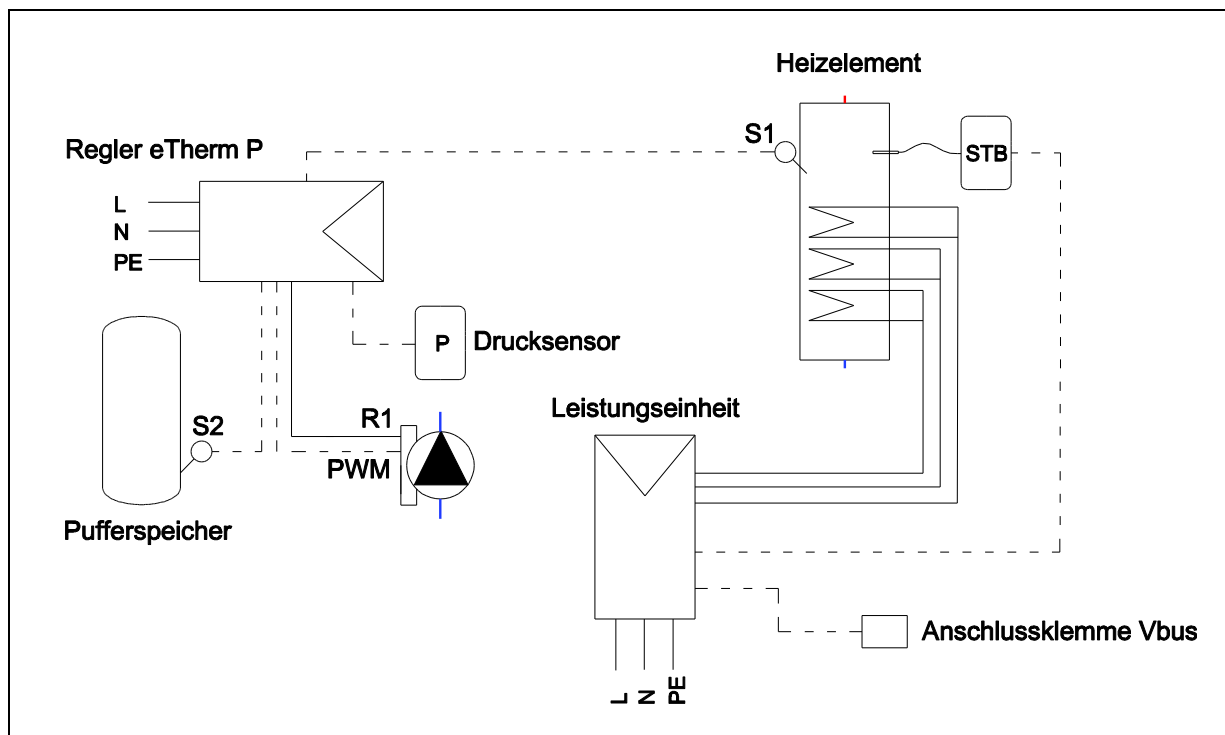
Die Station ist werksseitig komplett vormontiert und vorverdrahtet. Zur Inbetriebnahme erst das System mit Wasser füllen und entlüften, dann den Netzstecker für den eTherm Regler einstecken. Anschließend den 3-poligen Stecker für die externe Energieversorgung anklemmen und einstecken.

|                                                                                                    |                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Gefahr</b> | <p>Das System muss vor der ersten elektrischen Inbetriebnahme mit Wasser gefüllt und entlüftet werden. Es besteht die Gefahr der Zerstörung der Heizelemente durch Trockenheizen.</p> |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.2 Sicherheitstemperaturbegrenzer

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Der Sicherheitstemperaturbegrenzer unterbricht im Fehlerfall die elektrische Stromversorgung des Heizelementes wenn dieses heißer als 110°C wird. Diese Unterbrechung ist blockierend und muss durch ein Fachunternehmen nach Beseitigung der ursächlichen Störung zurückgesetzt werden.</p> <p>Sicherheitstemperaturbegrenzer nach Auslösen durch kräftiges Drücken zurücksetzen (siehe Bild).</p> |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.3 Elektrischer Anschluss eTherm



|      |                                                 |
|------|-------------------------------------------------|
| S1   | Temperaturfühler eTherm                         |
| S2   | Temperaturfühler Speicher unten                 |
| STB  | Temperaturfühler Sicherheitstemperaturbegrenzer |
| R1   | Pumpe                                           |
| Vbus | Kommunikationsleitung zum Sensormodul           |
| P    | Drucksensor                                     |

## 7.4 Sensorpositionierung

Der Temperatursensor S2 der eTherm dient der Erfassung der Temperatur im unteren Pufferspeicher. Erreicht das Medium die eingestellte Speichermaximaltemperatur, bedeutet dies, dass der Pufferspeicher komplett durchgeladen wurde und somit die eTherm ihren Betrieb einstellen kann. Die Positionierung des Speicherfühlers S2 sollte etwa 5 cm oberhalb des Rücklaufanschlusses der eTherm P3+ erfolgen oder alternativ in der untersten Tauchhülse des Pufferspeichers installiert werden, um eine vollständige Durchladung des Pufferspeichers sicherzustellen.

## 7.5 Anschluss des Smartmeter

Die Stromsensoren müssen wie folgt am Smartmeter phasengleich angeschlossen werden:

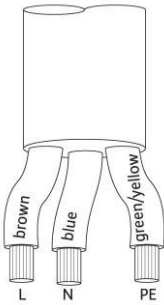
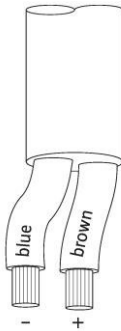
Angelegter Stromsensor an L1 -> Anschluss am Smartmeter CTL1 -> Polung rot/schwarz  
 Angelegter Stromsensor an L2 -> Anschluss am Smartmeter CTL2 -> Polung rot/schwarz  
 Angelegter Stromsensor an L3 -> Anschluss am Smartmeter CTL3 -> Polung rot/schwarz

Die Polung an CTL 1/2/3 ist zu beachten.

Alle 3 Phasen müssen am Smartmeter angeschlossen werden und müssen über einen 3-phasigen Leistungsschutzschalter 16A abgesichert werden.

Die Stromsensoren haben eine vorgegebene Einbaurichtung. Bitte die aufgeprägte Pfeilrichtung auf den Stromsensoren beachten. Diese müssen in Richtung Verbraucher zeigen.

## 7.6 Umwälzpumpe

| Elektrischer Anschluss Pumpe                                                                                                       | Anschluss PWM                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  <p>L = braun<br/>N = blau<br/>PE = grün/gelb</p> |  <p>+ = braun<br/>- = blau</p> |

## 8 Inbetriebnahme

Voraussetzung für die Inbetriebnahme ist eine vollständige fachgerechte Installation aller hydraulischen und elektrischen Komponenten, einschließlich der erforderlichen elektrischen und mechanischen Sicherheits- und Schutzeinrichtungen.

Die Inbetriebnahme darf nur durch einen autorisierten Fachhandwerker erfolgen.

### 8.1 Dichtheitsprüfung und Füllen der Anlage

Alle Bauteile der Anlage inkl. aller werksseitig vorgefertigten Elemente und Stationen auf Dichtheit überprüfen und bei eventuellen Undichtigkeiten entsprechend abdichten. Dabei den Prüfdruck und die Prüfdauer dem jeweiligen Verrohrungssystem und dem jeweiligen Betriebsdruck anpassen.

Das Heizungssystem (HW) nur mit filtriertem, aufbereitetem Wasser nach VDI 2035 befüllen und Anlage vollständig entlüften.



Hinweis

Zur Verhinderung von Fehlzirkulationen ist eine Schwerkraftbremse (SKB) im unteren Kreuzstück (RL) integriert

### 8.2 Erstinbetriebnahme

Bitte beachten Sie hierzu die entsprechende Anleitung der Regelung.



Gefahr!

Das System muss vor der ersten elektrischen Inbetriebnahme mit Wasser gefüllt und entlüftet werden.

| Arbeitsschritt             | Vorgehensweise                                                                                                                                                                                                           | OK                                                                               |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Vorbereitung und Kontrolle | <ul style="list-style-type: none"> <li>• Optische Kontrolle der Installation.</li> <li>• Sind alle Fühler an der richtigen Stelle installiert und angeschlossen?</li> <li>• Sind alle Ausgänge angeschlossen?</li> </ul> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> |
| Regler einschalten         | Den Regler mit Spannung versorgen.                                                                                                                                                                                       | <input type="checkbox"/>                                                         |
| Regler einstellen          | Bitte Anleitung der Regelung beachten. <ul style="list-style-type: none"> <li>• Zieltemperatur wählen</li> <li>• Speichermaximaltemperatur wählen</li> <li>• Inbetriebnahme-Routine starten</li> </ul>                   | _____<br>_<br>_____<br>_____                                                     |

## 9 Reglereinstellung

### 9.1 Regelung

Beachten Sie hierzu die Montage- und Bedienungsanleitung der verwendeten Regelung.





## 10 Störungen, Ursachen und Beseitigung

Liegt eine Fehlermeldung vor, wird diese im Display der Regelung angezeigt.  
Bitte beachten Sie hierzu die entsprechende Anleitung der Regelung.

| Störung                                        | Mögliche Ursache                                            | Behebung                                                                                                                                                                                                     |
|------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Zu geringer Volumenstrom ( $\Delta t$ zu hoch) | Elektroheizelement verschmutzt / verkalkt                   | Reinigen, ggf. entkalken oder austauschen                                                                                                                                                                    |
|                                                | Pumpe defekt                                                | Pumpe austauschen                                                                                                                                                                                            |
|                                                | Regellogik der Pumpe nicht in Ordnung                       | Sensorpositionen und Funktion prüfen, ggf. austauschen                                                                                                                                                       |
| Zieltemperatur nicht erreicht                  | Sensor defekt                                               | Sensoren prüfen, ggf. ersetzen                                                                                                                                                                               |
| Keine Erwärmung des Heizelements               | Speichermaximaltemperatur erreicht                          | System beobachten, Wiedereinschalten abwarten                                                                                                                                                                |
|                                                | Drucksensor ausgelöst                                       | Betriebsdruck auf > 1,2 bar erhöhen                                                                                                                                                                          |
|                                                | STB ausgelöst                                               | Zurücksetzen<br>Sollte der STB ausgelöst werden muss die Ursache durch einen Fachhandwerker ermittelt werden. Anschließend ist eine vollständige Inbetriebnahme mit Kontrolle aller Funktionen erforderlich. |
|                                                | Fühler S1 defekt → Fühler S1 ersetzen                       |                                                                                                                                                                                                              |
|                                                | Heizstab defekt                                             | Heizstab prüfen, ggf. austauschen                                                                                                                                                                            |
| Siedegeräusche des Heizelements                | Keine Erwärmung des Heizelements -> Sicherung hat ausgelöst | Elektrik prüfen, Sicherung wieder einschalten.                                                                                                                                                               |
|                                                | Heizstab verkalkt                                           | Heizstab entkalken                                                                                                                                                                                           |
|                                                | Luft in der Anlage                                          | Automatikentlüfter installieren                                                                                                                                                                              |
|                                                | Druckverlust zum Pufferspeicher zu hoch                     | Nicht erforderliche Armaturen entfernen bzw. Rohrleitungsdimension erhöhen                                                                                                                                   |

| LED                 | Bedeutung                                  | Betriebszustand                                                          | Ursache                                                                  | Beseitigung                                                              |
|---------------------|--------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| leuchtet grün       | Pumpe in Betrieb                           | Pumpe läuft entsprechend ihrer Einstellung                               | Normalbetrieb                                                            |                                                                          |
| blinkt schnell grün | PWM Version                                | Pumpe im Standby                                                         | Normalbetrieb                                                            |                                                                          |
| blinkt rot/grün     | Pumpe ist betriebsbereit, läuft aber nicht | Pumpe läuft eigenständig wieder an, sobald der Fehler nicht mehr ansteht | 1. Unterspannung $U < 160 \text{ V}$<br>Überspannung $U > 253 \text{ V}$ | 1. Spannungsversorgung überprüfen<br>$195 \text{ V} < U < 253 \text{ V}$ |
|                     |                                            |                                                                          | 2. Modul-Übertemperatur: Motortemperatur zu hoch                         | 2. Medien- und Umgebungstemperatur überprüfen                            |
| blinkt rot          | Pumpe außer Funktion                       | Pumpe steht (blockiert)                                                  | Pumpe läuft nicht eigenständig wieder an                                 | Pumpe austauschen                                                        |
| LED aus             | Keine Spannungsversorgung                  | Elektronik hat keine Spannung                                            | 1. Verbindung Regler zu Pumpe unterbrochen                               | 1. Kabelanschluss überprüfen                                             |
|                     |                                            |                                                                          | 2. LED ist defekt                                                        | 2. Prüfen, ob die Pumpe läuft                                            |
|                     |                                            |                                                                          | 3. Elektronik ist defekt                                                 | 3. Pumpe austauschen                                                     |



## 11 Wartung / Service

Der Hersteller empfiehlt eine jährliche Wartung in Form einer Funktions- und Sichtkontrolle. Wartungen, Störungssuche und Reparaturen dürfen ausschließlich von qualifiziert geschultem Fachpersonal durchgeführt werden.

## 12 Außerbetriebnahme

### Vorübergehend

Bleibt die elektrothermische Station **tubra®-eTherm P3+** über längere Zeit außer Betrieb und in einem frostgefährdeten Raum, muss die Stromversorgung unterbrochen und die Anlage vollständig entleert werden. Dazu lösen Sie die untere Verschraubung des Heizelements und die untere Pumpenverschraubung, um diese vollständig zu entleeren.

### Endgültig

Wird die elektrothermische Station **tubra®-eTherm P3+** endgültig außer Betrieb genommen, so ist die Stromversorgung aller betroffenen Anlagenteile zu unterbrechen und alle betroffenen Leitungen und Anlagenteile sind vollständig zu entleeren. Dazu lösen Sie die untere Verschraubung des Heizelements und die untere Pumpenverschraubung, um diese vollständig zu entleeren.

Eine endgültige Außerbetriebnahme, Demontage und Entsorgung darf nur durch ausgebildetes Fachpersonal durchgeführt werden. Bauteile und Materialien müssen entsprechend den aktuellen Vorschriften entsorgt werden.



# Konformitätserklärung Declaration of Conformity

**Hersteller:**  
Manufacturer:  
D – 33659 Bielefeld

**Gebr. Tuxhorn GmbH & Co.KG**  
Senner Straße 171



**Produktbezeichnung:**  
Product description:

tubra®-eTherm P3+/P9+  
(controller / power / sensor)  
tubra®-eTherm C3+/C9+; tubra®-eTherm S3/S9

**EU-Richtlinien:**  
EC-Directives:

Directive 2014/30/EU - EMC  
Directive 2014/35/EU  
Directive 2009/125/EC  
Directive 2011/65/EU

electromagnetic compatibility  
electrical equipment designed for use within certain voltage limits  
ecodesign requirements for energy-related products  
certain hazardous substances in electrical and electronic equipment RoHS

**Angewendete Normen:**

**Pumpe / Regler / Heizelement**

Standards:

**DIN EN 16297-1/3:2013-04**

**Pumps - Rotodynamic pumps - Glandless circulators - Part 1/3**

**EN 55014-1:2021**

Electromagnetic compatibility - Part 1

**EN 55014-2:2021**

Electromagnetic compatibility - Part 2

**EN 60335-1:2024; VDE 0700-1:2024**

Household and similar electrical appliances

+AC:2014+A11:2014+A13:2017+A1:2019  
+A2:2019+A14:2019+A15:2021+A16:2023

**DIN EN 60335-2-35 VDE 0700-**

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke, Besondere Anforderungen für Durchflusserwärmer

**35:2022-10 + A1:2019 + A2:2021**

**DIN EN 60730-1 VDE 0631-1:2021-06**

Automatic electrical controls

**DIN EN IEC 60730-2-9**

Automatic electrical controls - Part 2-9

**VDE 0631-2-9:2021-01**

**EN ICE 61000-6-3:2021**

Electromagnetic compatibility (EMC) - Part 6-3

**EN ICE 61000-6-4:2019**

Electromagnetic compatibility (EMV) - Teil 6-4

**EN IEC 61000-6-1/2:2019**

Electromagnetic compatibility (EMC) - Part 6-1 / Part 6-2

**DIN EN ISO 9001:2015-11**

Quality management systems - Requirements (ISO 9001:2015)

**DIN EN IEC 63000:2019-05**

Assessment of electronic products with respect to the restriction of hazardous substances

**VDE 0042-12:2019-05**

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We, Gebr. Tuxhorn GmbH & Co. KG, hereby declare that the above-mentioned products comply with the provisions listed. This declaration becomes invalid if the product is modified without our agreement. The safety instructions in the operating instructions must be observed.

Bielefeld, 08.07.2024

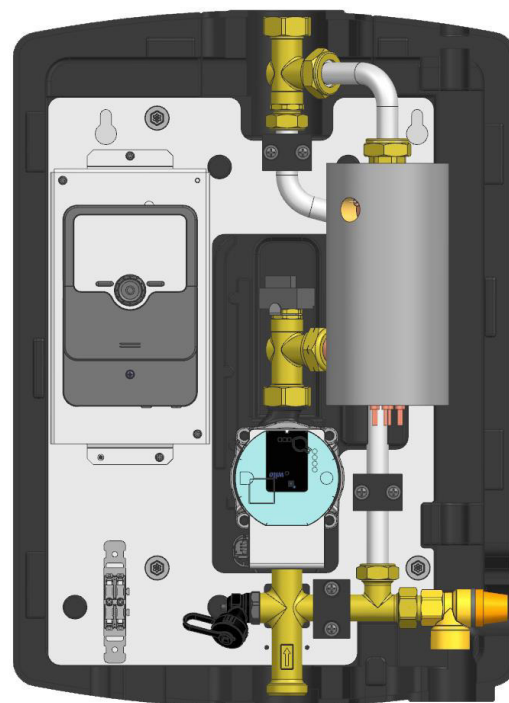
  
Stephan Krebs  
Geschäftsführer

  
i.A. Frank Thole  
Leiter Produktmanagement

Diese Erklärung beinhaltet keine Zusicherung von Eigenschaften.  
This declaration does not include any guarantee of product properties

|         |                                                                                      |
|---------|--------------------------------------------------------------------------------------|
| Händler |  |
|---------|--------------------------------------------------------------------------------------|

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## tubra<sup>®</sup> - eTherm P3+

Montage- und Bedienungsanleitung

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# 1 Introduction

This manual describes the installation process for the **tubra®-eTherm P3+** electro-thermal station, as well as its operating and maintenance procedures.

This manual is intended for trained specialists with an adequate level of expertise in handling heating systems, water pipe installations and electrical installations. The installation and commissioning procedures should only be conducted by qualified, specialist personnel.

The station must only be installed and operated in dry areas that are protected from frost. Read this manual carefully before starting any installation work. Non-compliance will invalidate all claims under the guarantee and warranty.

Illustrations are symbolic and may differ from product to product. Subject to technical changes and errors.

This installation and operating manual must not be reproduced or made available to third parties without prior written consent (section 2 German Copyright Act, section 823 Civil Code).

## 1.1 Intended purpose

The **tubra®-eTherm P3+** electro-thermal station is exclusively used to heat water with an electrical heating element in a through-flow circuit. Only heating water (HW) as per VDI 2035 may be heated.

## 1.2 Safety instructions

In addition to country-specific guidelines and local directives, the following technical regulations must also be taken into account:

- DIN 1988 Technical rules for drinking water installations
- DIN 18 380 Heating systems and central water heating systems
- VDI 2035 Scale formation in drinking water heating systems and hot water systems
- DIN 4753 Water heaters and water heating installations for drinking water and service water
- DIN EN 60335-1 Household and similar electrical appliances - Safety Part 1: General requirements
- DIN EN 60335-2 Household and similar electrical appliances - Safety Part 2: Particular requirements
- BGV Accident prevention regulations of workers' compensation associations
- VDE 0100 Series of standards on the use of electrical equipment of machines
- EN 806-2 Technical regulations for drinking water installations – requirements for components, equipment and materials
- Local energy and water suppliers' rules
- Details on the type plate
- Technical specifications



As the system can reach temperatures > 60°C, there is a risk of scalding and burning through contact with the components.



## Target group

These instructions are intended for users of the heating system.

This device can be used by children aged from 3 years and above and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

|                                                                                              |                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Caution | Supervise children in the vicinity of the appliance. <ul style="list-style-type: none"> <li>- Children must not play with the appliance.</li> <li>- Cleaning and user maintenance must not be carried out by children without supervision.</li> </ul> |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Connecting the device

This user manual is intended for users of the heating system.

- The device may only be connected and put into operation by authorized specialists.
- Observe the specified electrical connection conditions.
- Changes to the existing installation may only be carried out by authorized specialists.

|                                                                                             |                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Improperly performed work on the heating system can lead to life-threatening accidents. <ul style="list-style-type: none"> <li>- Electrical work may only be carried out by qualified electricians.</li> </ul> |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Working on the system

- Only carry out settings and work on the appliance in accordance with the specifications in these operating instructions. Further work on the appliance may only be carried out by authorized specialists.
- Do not open the appliance.
- Do not remove the housing.
- Do not modify or remove installed accessories or attachments.
- Do not open or tighten pipe connections.

|                                                                                               |                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Hot surfaces and fluids can cause burns or scalding. <ul style="list-style-type: none"> <li>- Do not open the appliance.</li> <li>- Never touch hot surfaces on the appliance, fittings or pipework.</li> </ul> |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Damage at the appliance

|                                                                                               |                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Damaged appliances endanger your safety. <ul style="list-style-type: none"> <li>- Check the appliance for external damage.</li> <li>- Do not operate a damaged appliance.</li> </ul> |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Water leaking from the appliance

|                                                                                               |                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | If water escapes from the appliance there is a risk of electric shock. <ul style="list-style-type: none"> <li>- Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).</li> <li>- Notify a specialist heating company.</li> </ul> |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                               |                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | If water escapes from the appliance there is a risk of scalding. <ul style="list-style-type: none"> <li>- Never touch hot heating water.</li> </ul> |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|





## Procedure in the event of faults in the heating system

|                                                                                             |                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Fault messages indicate defects on the heating system.<br>Faults that are not rectified can have life-threatening consequences. <ul style="list-style-type: none"> <li>- Do not acknowledge fault messages several times at short intervals.</li> <li>- Notify a specialist company so that they can analyze the cause and rectify the fault.</li> </ul> |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Requirements for the installation site

|                                                                                             |                                                                                                                                                     |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Do not make any subsequent changes to the structural conditions that could affect safe operation (e.g. cable routing, cladding or partition walls). |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                             |                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Danger | Highly flammable liquids and materials (e.g. petrol, solvents and cleaning agents, paints or paper) can cause deflagrations and fires.<br>Do not store or use such substances in the boiler room or in the immediate vicinity of the heating system. |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Caution | Impermissible ambient conditions can cause damage to the heating system and jeopardize safe operation. <ul style="list-style-type: none"> <li>- Ensure an ambient temperature between 0 °C and 35 °C.</li> <li>- Avoid air pollution from halogenated hydrocarbons (e.g. contained in paints, solvents and cleaning agents) and heavy dust accumulation (e.g. from sanding work).</li> <li>- Avoid permanently high humidity (e.g. due to permanent drying of laundry).</li> </ul> |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Auxiliary components, spare and wearing parts

|                                                                                                |                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Caution | Components that have not been tested with the heating system can cause damage to the heating system or impair its functions. Installation or replacement must only be carried out by a specialist company. |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 1.3 Applicable documents

Please also observe the installation and operating instructions for the components used, e.g. the control unit.

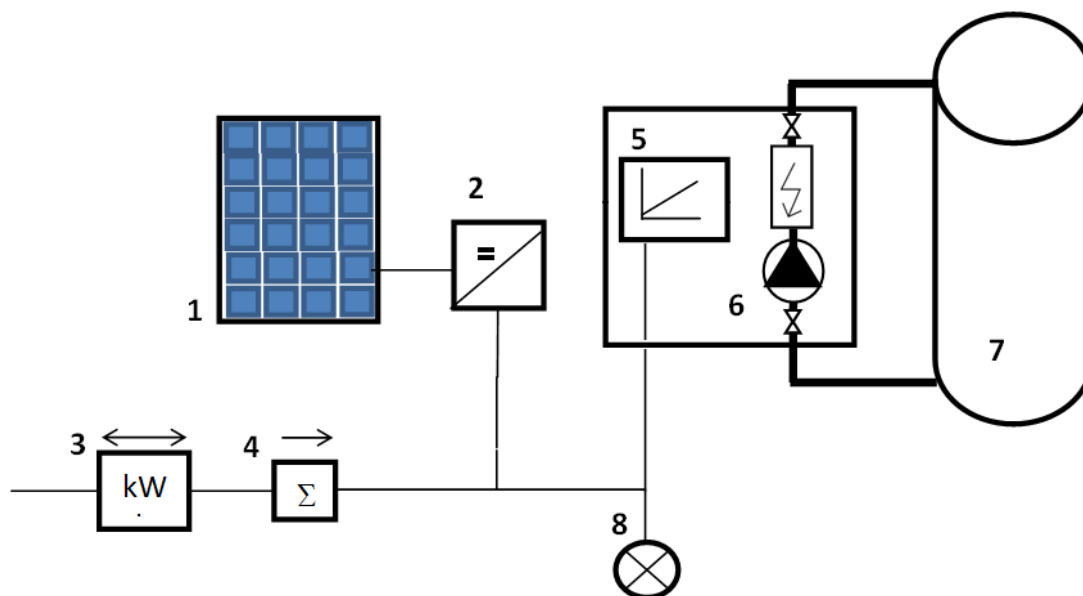
## 1.4 Delivery and transport

Check to make sure the product is complete and undamaged immediately after receipt. Any damage or complaints must be reported immediately.



## 2 Functional description

### 2.1 System setup in the installation



- 1 Photovoltaic system
- 2 Inverter
- 3 Electricity meter (draw, infeed)
- 4 tubra®-eTherm P3+ sensor (infeed power measurement)
- 5 tubra®-eTherm P3+ power (power modulation)
- 6 tubra®-eTherm P3+ with tubra®-eTherm controller P
- 7 Thermal storage tank
- 8 Domestic consumers (light, standby, ...)

### 2.2 Functional description

The **tubra®-eTherm P3+** is an electrothermal station for converting photovoltaic electricity into heat and storing this heat in buffer tanks.

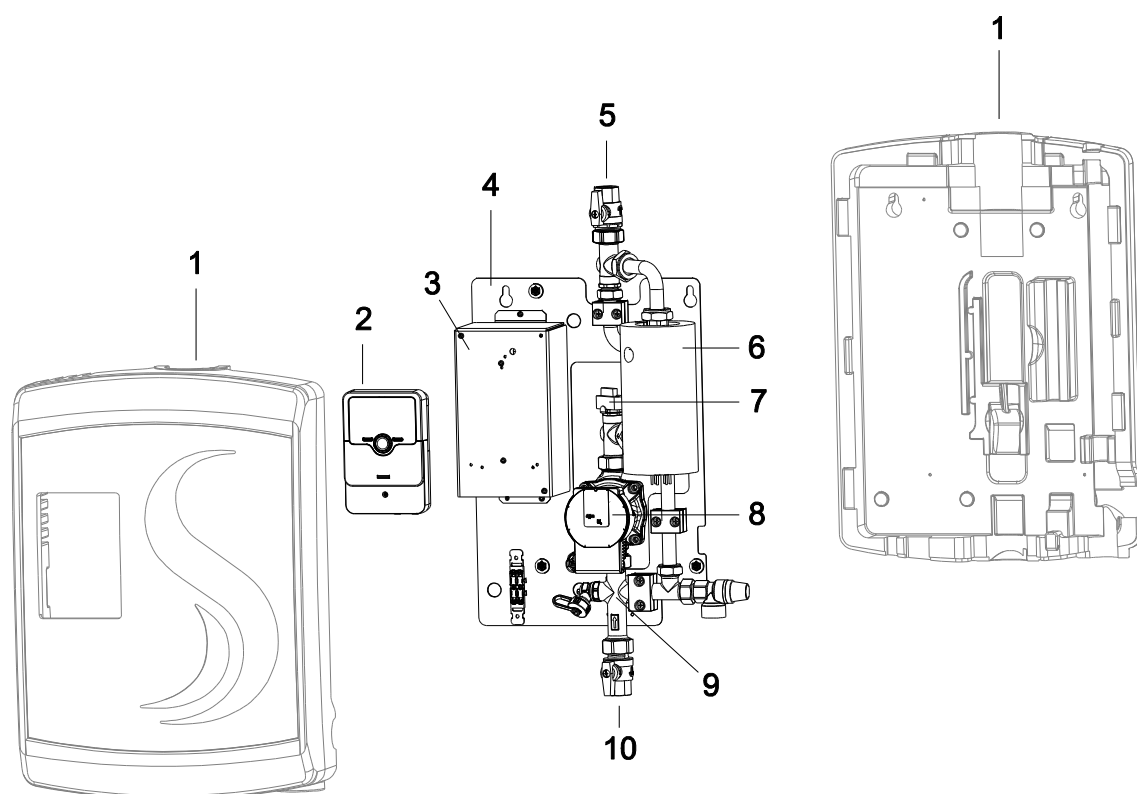
With the infinitely variable power control of the **tubra®-eTherm P3+**, surplus electricity can be optimally utilized. The storage tank is charged with an immediately usable temperature level via the speed-controlled charging pump. When the maximum cylinder temperature is reached, charging is terminated.

The advantages are:

- Optimal adjustment thanks to continuously modulating output up to 3000 W
- Layered storage tank loading, even when retrofitting to existing cylinders
- Adjustable target temperature
- Immediately usable heat even with low solar radiation
- Can be retrofitted to any buffer cylinder
- Independent of the PV inverter, energy manager and electricity meter

The control system consists of the eTherm P3+ controller, the power unit and a measuring unit. The measuring unit determines the surplus power from the photovoltaic system directly in front of the electricity meter and releases it for electric water heating. The controller uses the power unit to regulate the power levels in the electrothermal station for heating the storage tank and adjusts the speed of the pump according to the available power. The heating element of the eTherm P3+, which works according to the instantaneous water heater principle, can thus layer heat into the storage tank at a high temperature level even when the heating output is low, for example on cloudy days.

### 3 Layout – scope of delivery



| Item | Designation                                                              |
|------|--------------------------------------------------------------------------|
| 1    | Insulating shell                                                         |
| 2    | Control unit                                                             |
| 3    | Connection box with safety temperature limiter and contactors            |
| 4    | Base plate                                                               |
| 5    | Ball valve supply line (VL)                                              |
| 6    | Electric heating element 3kW (0.8 kW, 0.8 kW, 1.4 kW) + insulating shell |
| 7    | Pressure switch                                                          |
| 8    | Pump                                                                     |
| 9    | Cross piece with safety valve 3bar and backflow preventer                |
| 10   | Ball valve return line (RL)                                              |

## 4 Technical specifications

### 4.1 General

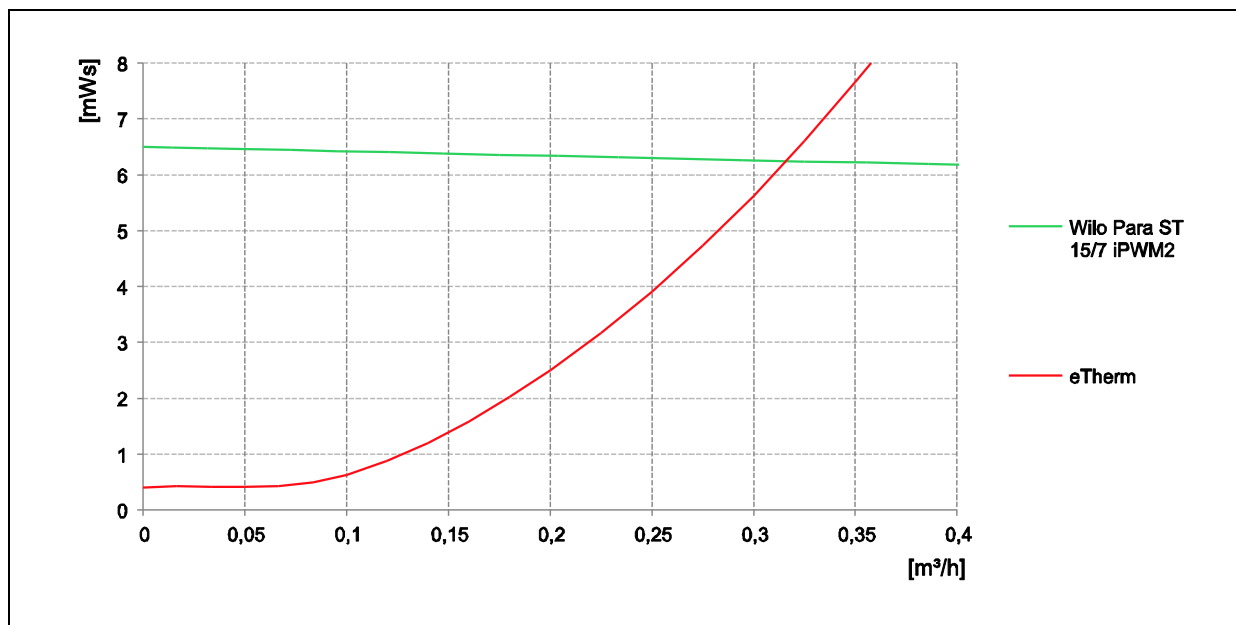
| Designation / type               | tubra®-eTherm P3+        |
|----------------------------------|--------------------------|
| Rated output/current             | 0 – 3 kW (13 A)          |
| Electrical connection            | 1/PE 230 V AC 50 – 60 Hz |
| Required cable cross-section     | 2,5 mm <sup>2</sup>      |
| Rated capacity                   | 0,2 l                    |
| Heating element                  | 0,8 kW / 0,8 kW / 1,4 kW |
| Flow rate                        | 2 l/h – 300 l/h          |
| Pressure loss                    | 0,6 bar at 300 l/h       |
| Charging temperature             | 45-75°C                  |
| Maximum storage tank temperature | 80 °C                    |
| Water connection                 | Rp 3/4" IG               |
| Weight (with water fill)         | 14 kg                    |
| Degree of protection             | IP 22                    |

| Designation / type         | tubra®-eTherm P3+<br>951.15.00.00                    |
|----------------------------|------------------------------------------------------|
| Version                    | Heating water                                        |
| Min. operating pressure    | 0,8 bar (factory setting)                            |
| Max. operating pressure    | 3 bar                                                |
| Max. operating temperature | 85 °C                                                |
| Circulation pump           | Wilo Para ST 15/7 iPWM2<br>Power consumption: 3-45 W |

|                  |                               |                      |
|------------------|-------------------------------|----------------------|
| <b>Materials</b> | Housing/connecting components | CW617N (2.0402)      |
|                  | Heating element               | Copper version       |
|                  | Seals                         | EPDM                 |
|                  | Insulation                    | EPP- foam 0,038 W/mK |



## 4.2 Pressure loss / characteristic curve

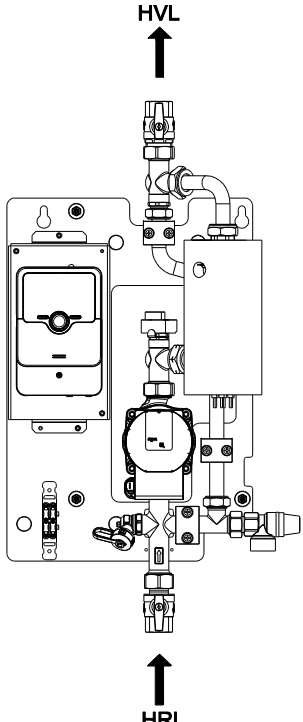


## 4.3 Corrosion protection

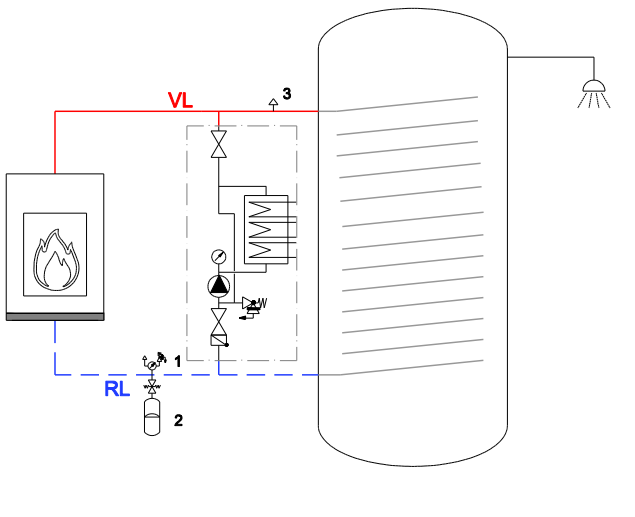
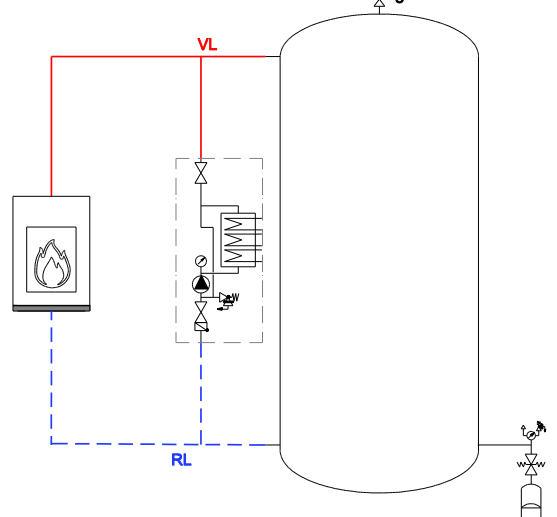
To prevent corrosion damage to the heating element, heating water in accordance with VDI 2035 must be used.

## 5 Hydraulic connection

### 5.1 Station connections

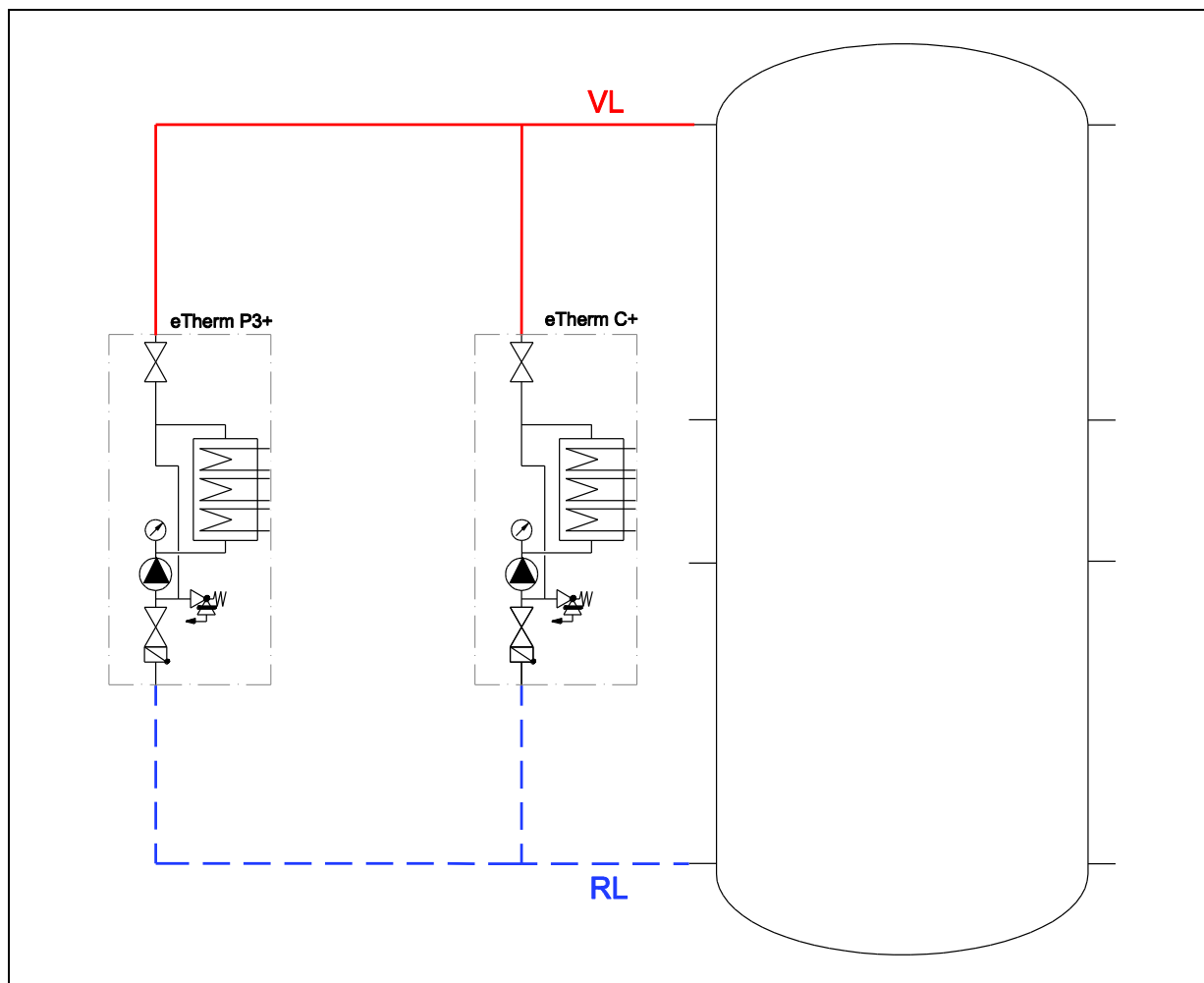
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>HVL Heating buffer flow Rp 3/4" IG<br/>HRL Heating buffer return Rp 3/4" IG</p> <p>Please note:<br/>No non-return valves or gravity brakes may be installed in the connecting pipe to the buffer tank.<br/>The pipe cross-section must be at least DN20.<br/>Automatic venting of the pipe must be ensured.<br/>The connecting pipes of the eTherm should not exceed a pressure loss of 100 mbar.</p> |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 5.2 Hydraulic connection buffer storage tank

| tubra®-eTherm P3+<br>with drinking water storage tank                                                                | tubra®-eTherm P3+<br>with buffer storage tank                                        |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                   |  |
| <p>This is a sample illustration which does not claim to be exhaustive; it does not replace specialist planning.</p> |                                                                                      |
| Designation                                                                                                          | Description                                                                          |
| VL                                                                                                                   | Supply                                                                               |
| RL                                                                                                                   | Return side                                                                          |

The connected water circuit for the heating coil or the buffer tank must be equipped on site with a safety valve (1), expansion vessel (2) and deaerator (3).

### 5.3 Hydraulic connection – cascading eTherm P3+



|         | eTherm P3+ | eTherm C9+            |                       |                       |
|---------|------------|-----------------------|-----------------------|-----------------------|
|         |            | Relay R3<br>of P3+    | Relay R2<br>of P3+    |                       |
|         |            | Heating element<br>L1 | Heating element<br>L2 | Heating element<br>L3 |
| 0-3 kW  | x          |                       |                       |                       |
| 0-6 kW  | x          | x                     |                       |                       |
| 0-9 kW  | x          |                       | x                     | x                     |
| 0-12 kW | x          | x                     | x                     | x                     |

By cascading the tubra®-eTherm P3+ station with three further tubra®-eTherm C+ stations, up to 12000 W thermal output can be implemented in the hydraulic units.

Controller setting P3+ for cascading:

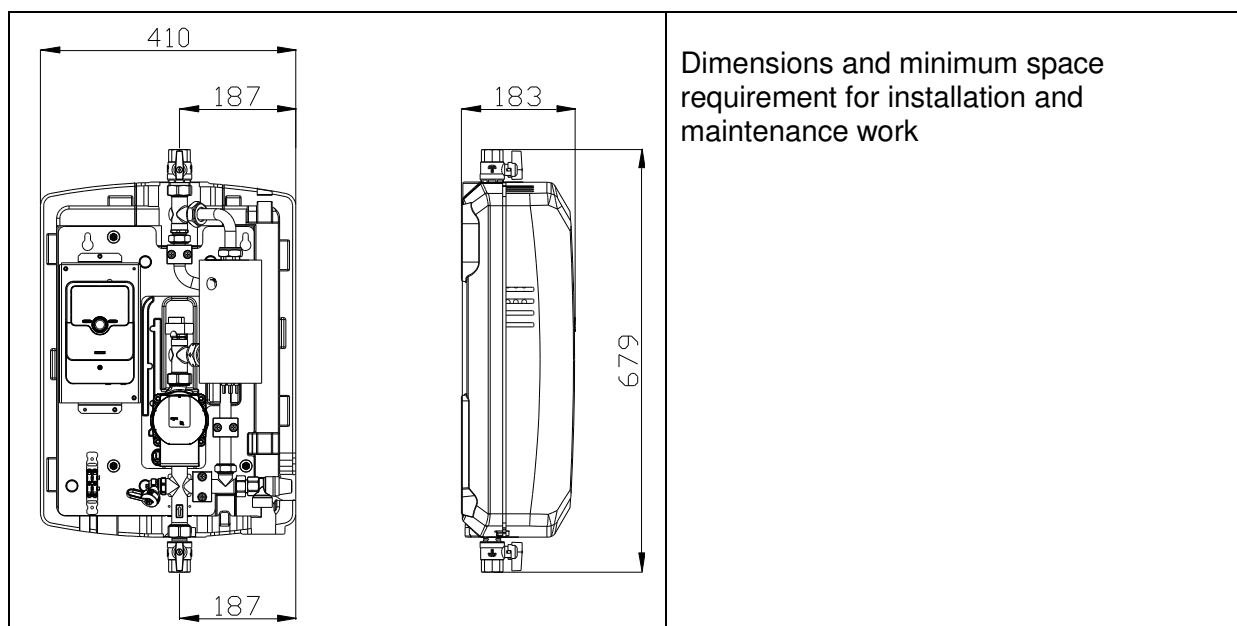
Selector function external consumer: Relay R3 with 3 kW

Selector function external consumer 2: Relay R2 with 3 kW or 6 kW

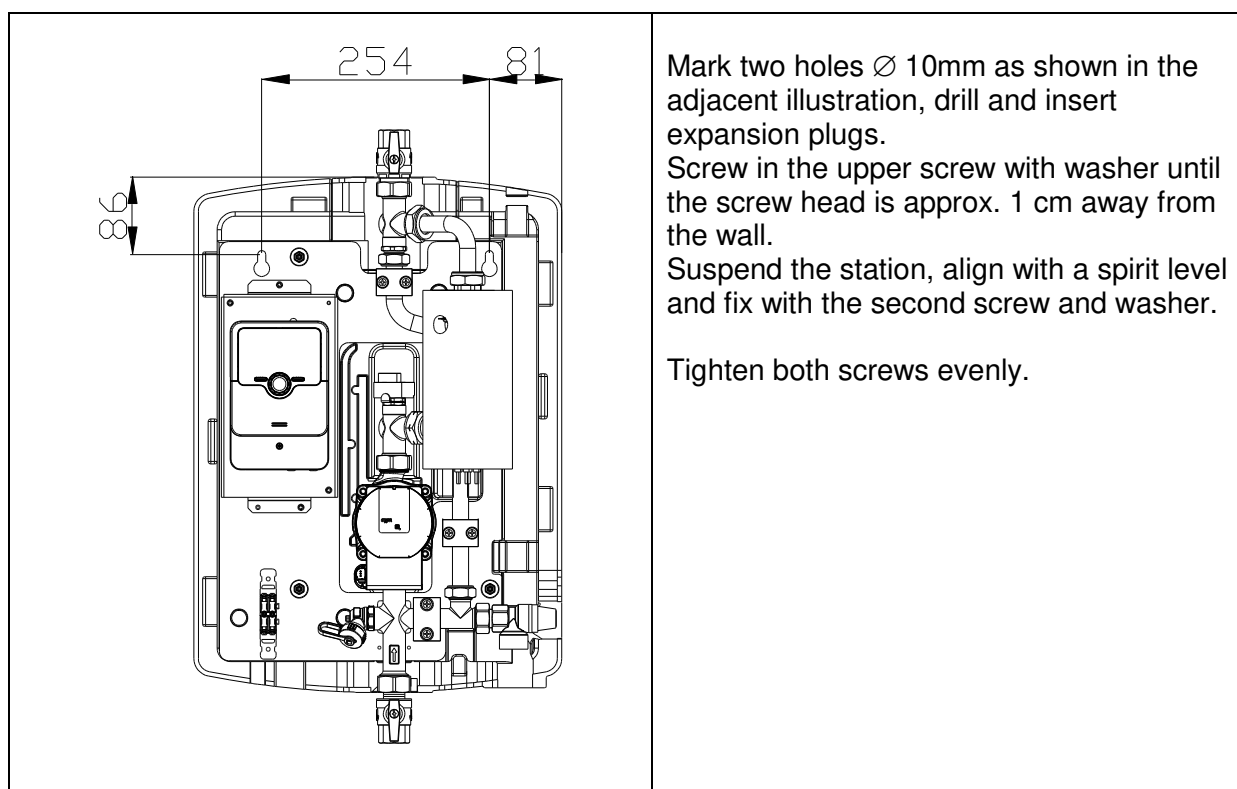


## 6 Assembly

### 6.1 Dimensions / required space



### 6.2 Wall-mounted assembly





## 7 Electrical connection

### 7.1.1 General

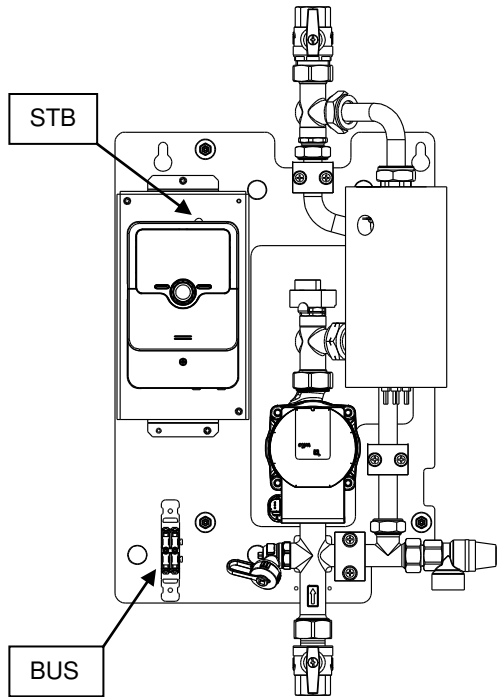
Work on the electrical system and the opening of electrical enclosures may only be carried out when the power supply is switched off and only by authorized specialist personnel. Ensure correct terminal assignment and polarity for the connections. Protect the control unit and electrical components from overvoltage.

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Danger!</b> | <p>Risk of fatal electric shock as a result of incorrect electrical connections.</p> <ul style="list-style-type: none"> <li>→ Electrical connections must exclusively be created by electricians approved by energy suppliers and as per the locally applicable regulations.</li> <li>→ The electrical connection must be implemented in accordance with VDE specifications with residual current circuit breakers (RCD) and miniature circuit breakers (MCB).</li> <li>→ Disconnect the supply voltage prior to conducting any work.</li> </ul> |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

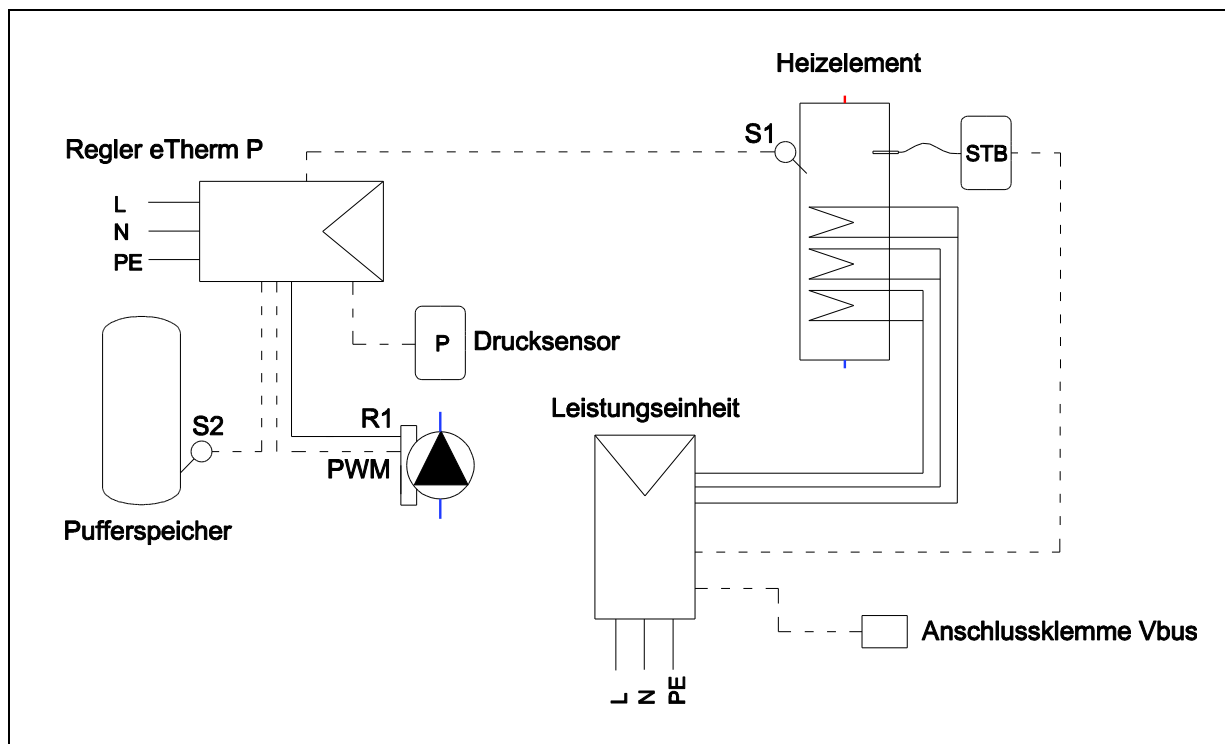
The station is completely pre-assembled and pre-wired at the factory. For commissioning, first fill the system with water and vent it, then plug in the mains plug for the eTherm controller. Then connect and plug in the 3-pin plug for the external power supply.

|                                                                                                    |                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Danger</b> | <p>The system must be filled with water and vented before the first electrical start-up, as there is a risk of the heating elements being destroyed by dry heating.</p> |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.2 Safety temperature limiter

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>In the event of a fault, the safety temperature limiter interrupts the electrical power supply to the heating element if it becomes hotter than 110°C. This interruption is blocking and must be reset by a specialist company after the cause of the fault has been rectified.</p> <p>Reset the safety temperature limiter after triggering by pressing firmly (see picture).</p> |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.3 Electrical connection eTherm



- S1 Temperature sensor eTherm
- S2 Temperature sensor storage tank bottom
- STB Temperature sensor Safety temperature limiter
- R1 Pump
- Vbus Communication line to the sensor module
- P Pressure sensor

## 7.4 Sensor positioning

The temperature sensor S2 of the eTherm is used to detect the temperature in the lower buffer tank. If the medium reaches the maximum storage temperature, this means that the buffer tank has been fully charged and the eTherm can stop operating. The storage tank sensor S2 should be positioned about 5 cm above the return connection of the eTherm P3+ or alternatively installed in the lowest immersion sleeve of the buffer tank to ensure that the buffer tank is fully charged.

## 7.5 Connecting the Smartmeter

The current sensors must be connected to the Smartmeter in phase as follows:

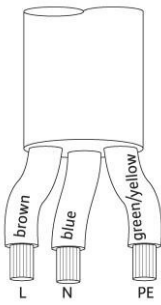
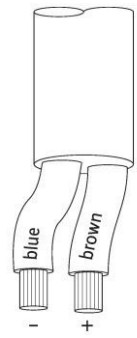
- Current sensor connected to L1 -> connection to Smartmeter CTL1 -> polarity red/black
- Current sensor connected to L2 -> connection to Smartmeter CTL2 -> polarity red/black
- Current sensor connected to L3 -> connection to Smartmeter CTL3 -> polarity red/black

The polarity at CTL 1/2/3 must be observed.

All 3 phases must be connected to the Smartmeter and must be fused via a 3-phase 16A circuit breaker.

The current sensors have a predetermined installation direction. Please observe the direction of the arrow on the current sensors. These must point in the direction of the consumer.

7.6      Circulation pump

|                                                                                                                                                                                |                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Electrical connection pump</b></p>  <p>L = brown<br/>N = blue<br/>PE = green/yellow</p> | <p><b>PWM connection</b></p>  <p>+ = brown<br/>- = blue</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|



## 8 Commissioning

A prerequisite for commissioning is the complete professional installation of all hydraulic and electrical components, including the necessary electrical and mechanical safety and protective equipment.

Commissioning may only be carried out by an authorized specialist installer.

### 8.1 Leak testing and filling the system

Check all system components, including all pre-fabricated elements and stations, to ensure they are leak-tight; seal any detected leaks accordingly. When doing so, adapt the test pressure and test duration to match the respective piping system and the respective operating pressure.

Only fill the heating system with filtered, possibly treated water as per VDI 2035 and completely bleed the system.



A gravity brake (SKB) is integrated in the lower crosspiece (RL) to prevent miscirculation

### 8.2 Initial commissioning

Please observe the corresponding instructions for the control unit.



The system must be filled with water and ventilate before initial electrical start-up.

| Step                     | Procedure                                                                                                                                                                                              | OK                                                                               |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Preparation and control  | <ul style="list-style-type: none"> <li>Visual inspection of the installation.</li> <li>Are all sensors installed and connected in the correct position?</li> <li>Are all outputs connected?</li> </ul> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> |
| Switch on the controller | Supply the controller with voltage.                                                                                                                                                                    | <input type="checkbox"/>                                                         |
| Set controller           | Please follow the control instructions. <ul style="list-style-type: none"> <li>Select target temperature</li> <li>Select maximum cylinder temperature</li> <li>Start commissioning routine</li> </ul>  | _____<br>_____<br>—                                                              |

## 9 Controller setting

### 9.1 Control unit

Observe the installation and operating instructions for the control unit used.



## 10 Malfunctions, causes and troubleshooting

If an error message is output, it appears on the control unit display.

Please observe the corresponding instructions for the control unit.

| Malfunction                                     | Possible cause                                       | Remedy                                                                                                                                                              |
|-------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Volume flow rate too low ( $\Delta t$ too high) | Electric heating element dirty / calcified           | Clean, descale or replace if necessary                                                                                                                              |
|                                                 | Pump faulty                                          | Replace pump                                                                                                                                                        |
|                                                 | Control logic of the pump not in order               | Check sensor positions and function, replace if necessary                                                                                                           |
| Target temperature not reached                  | Sensor faulty                                        | Check sensors, replace if necessary                                                                                                                                 |
| Heating element not heating up                  | Maximum storage tank temperature reached             | Monitor system, wait for restart                                                                                                                                    |
|                                                 | Pressure sensor triggered                            | Increase operating pressure to $> 1.2$ bar                                                                                                                          |
|                                                 | STB triggered                                        | Reset<br>If the STB is triggered, the cause must be determined by a specialist technician. A complete commissioning with a check of all functions is then required. |
|                                                 | Sensor S1 faulty → Replace sensor S1                 |                                                                                                                                                                     |
|                                                 | Heating element faulty                               | Check heating element, replace if necessary                                                                                                                         |
| Boiling noises from the heating element         | No heating of the heating element → fuse has tripped | Check electrical system, switch fuse back on.                                                                                                                       |
|                                                 | Heating element calcified                            | Descal the heating element                                                                                                                                          |
|                                                 | Air in the system                                    | Install an automatic air vent                                                                                                                                       |
|                                                 | Pressure loss to buffer tank too high                | Remove unnecessary fittings or increase pipe dimensions                                                                                                             |

| LED                 | Meaning                                      | Operating state                                                    | Cause                                                                      | Elimination                                                  |
|---------------------|----------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------|
| Lit green           | Pump operational                             | Pump running as configured                                         | Normal operation                                                           |                                                              |
| Flashing fast green | PWM version                                  | Pump in standby mode                                               | Normal operation                                                           |                                                              |
| Flashing red/green  | Pump is ready for operation, but not running | Pump will automatically restart once the fault has been eliminated | 1. Undervoltage<br>$V < 160\text{ V}$<br>Overvoltage<br>$V > 253\text{ V}$ | 1. Check voltage supply<br>$195\text{ V} < V < 253\text{ V}$ |
|                     |                                              |                                                                    | 2. Module overtemperature: Motor temperature too high                      | 2. Check media and ambient temperature                       |
| Flashing red        | Pump not working                             | Pump stopped (blocked)                                             | Pump will not automatically restart                                        | Replace pump                                                 |
| LED off             | No voltage supply                            | Electronics without voltage                                        | 1. Controller to pump connection interrupted                               | 1. Check cable connection                                    |
|                     |                                              |                                                                    | 2. LED is defective                                                        | 2. Check whether the pump is running                         |
|                     |                                              |                                                                    | 3. Electronics are defective                                               | 3. Replace pump                                              |



## 11 Maintenance / service

The manufacturer recommends annual maintenance in the form of a functional and visual inspection. Maintenance, troubleshooting and repairs may only be carried out by qualified and trained personnel.

## 12 Decommissioning

### Temporary

If the **tubra®-eTherm P3+** electro-thermal station is decommissioned for a prolonged period and kept in an area that is prone to frost, the power supply must be disconnected and the system drained completely. To do this, loosen the lower screw connection on the heating element and the lower pump screw connection in order to drain them completely.

### Final

If the **tubra®-eTherm P3+** electro-thermal station is being decommissioned once and for all, the power supply for all of the corresponding system components must be disconnected and all of the relevant lines and components drained completely. To do this, loosen the lower screw connection on the heating element and the lower pump screw connection in order to drain them completely.

The decommissioning, dismantling and disposal processes should only be conducted by qualified, specialist personnel. Components and materials must be disposed of in accordance with the current applicable regulations.



# Konformitätserklärung Declaration of Conformity

**Hersteller:**  
Manufacturer:  
D – 33659 Bielefeld

**Gebr. Tuxhorn GmbH & Co.KG**  
Senner Straße 171



**Produktbezeichnung:**  
Product description:

tubra®-eTherm P3+/P9+  
(controller / power / sensor)  
tubra®-eTherm C3+/C9+; tubra®-eTherm S3/S9

**EU-Richtlinien:**  
EC-Directives:

Directive 2014/30/EU - EMC  
Directive 2014/35/EU  
Directive 2009/125/EC  
Directive 2011/65/EU

electromagnetic compatibility  
electrical equipment designed for use within certain voltage limits  
ecodesign requirements for energy-related products  
certain hazardous substances in electrical and electronic equipment RoHS

**Angewendete Normen:**

**Pumpe / Regler / Heizelement**

Standards:

**DIN EN 16297-1/3:2013-04**

**Pumps - Rotodynamic pumps - Glandless circulators - Part 1/3**

**EN 55014-1:2021**

Electromagnetic compatibility - Part 1

**EN 55014-2:2021**

Electromagnetic compatibility - Part 2

**EN 60335-1:2024; VDE 0700-1:2024**

Household and similar electrical appliances

+AC:2014+A11:2014+A13:2017+A1:2019

+A2:2019+A14:2019+A15:2021+A16:2023

**DIN EN 60335-2-35 VDE 0700-**

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche

**35:2022-10 + A1:2019 + A2:2021**

Zwecke, Besondere Anforderungen für Durchflusserwärmer

**DIN EN 60730-1 VDE 0631-1:2021-06**

Automatic electrical controls

**DIN EN IEC 60730-2-9**

Automatic electrical controls - Part 2-9

**VDE 0631-2-9:2021-01**

**EN ICE 61000-6-3:2021**

Electromagnetic compatibility (EMC) - Part 6-3

**EN ICE 61000-6-4:2019**

Electromagnetic compatibility (EMV) - Teil 6-4

**EN IEC 61000-6-1/2:2019**

Electromagnetic compatibility (EMC) - Part 6-1 / Part 6-2

**DIN EN ISO 9001:2015-11**

Quality management systems - Requirements (ISO 9001:2015)

**DIN EN IEC 63000:2019-05**

Assessment of electronic products with respect to the restriction

**VDE 0042-12:2019-05**

of hazardous substances

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Bielefeld, 08.07.2024

  
Stephan Krebs  
Geschäftsführer

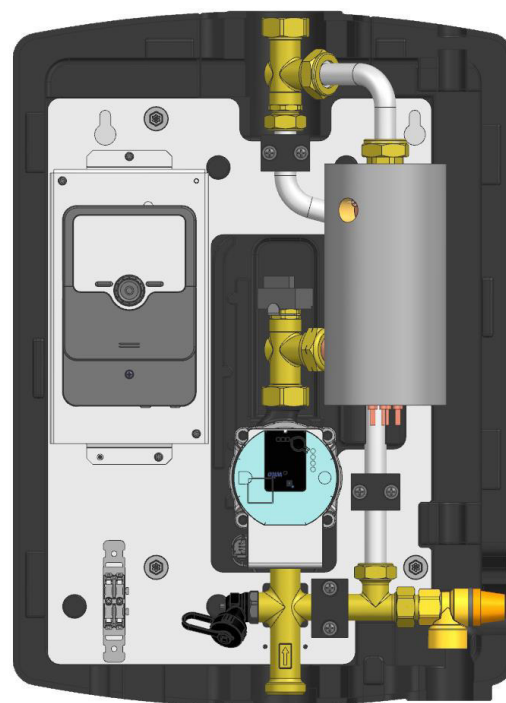
  
i.A. Frank Thole  
Leiter Produktmanagement

Diese Erklärung beinhaltet keine Zusicherung von Eigenschaften.  
This declaration does not include any guarantee of product properties

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## tubra<sup>®</sup> - eTherm P3+

Istruzioni di assemblaggio e d'uso

## Indice

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# 1 Introduzione

Le presenti istruzioni descrivono il montaggio della stazione elettrotermica **tubra®-eTherm P3+** come anche il suo impiego e la sua manutenzione.

La presente guida si rivolge a personale specializzato che dispone delle rispettive nozioni del settore, permettendogli l'esecuzione di lavori che interessano impianti di riscaldamento, condotte d'acqua ed installazioni elettriche. L'installazione e la messa in funzione possono essere effettuate solamente da personale specializzato qualificato.

La stazione può essere montata e azionata solamente in locali asciutti e protetti dal gelo. Leggere attentamente queste istruzioni prima di iniziare i lavori di installazione. La mancata osservanza di queste istruzioni invaliderà tutti i diritti di garanzia.

Le figure sono esemplificative e possono divergere dal prodotto acquistato. Con riserva di modifiche tecniche ed errori.

Non è permesso né duplicare né rendere accessibile a terzi la presente guida di montaggio e d'uso (§ 2 della legge sulla tutela dei diritti d'autore federale - abbreviata UrhG, § 823 del codice civile federale - abbreviato BGB).

## 1.1 Scopo d'utilizzo

La stazione elettrotermica **tubra®-eTherm P3+** serve esclusivamente al riscaldamento di acqua tramite elemento di riscaldamento elettronico durante il suo flusso. Va riscaldata solamente acqua sanitaria a norma VDI 2035.

## 1.2 Avvertenze di sicurezza

Oltre alle direttive proprie di ogni paese e alle norme locali, devono essere osservate le seguenti regole tecniche:

- DIN 1988 Regole tecniche per l'installazione di impianti di acqua potabile
- DIN 18 380 Impianti di riscaldamento e impianti centralizzati di riscaldamento dell'acqua
- VDI 2035 Formazione di detriti in impianti di riscaldamento di acqua potabile ed impianti di riscaldamento ad acqua calda
- DIN 4753 Riscaldatori dell'acqua ed impianti di riscaldamento dell'acqua per acqua potabile ed acqua di processo
- DIN EN 60335-1 Sicurezza degli apparecchi elettrici per uso domestico e similare Parte 1: Norme generali
- DIN EN 60335-2 Sicurezza degli apparecchi elettrici per uso domestico e similare Parte 2: Requisiti speciali
- BGV, ossia Norme antinfortunistiche dell'associazione di categoria professionale
- VDE 0100 Serie di norme Installazione di impianti elettrici
- EN 806-2 Istruzioni tecniche per installazioni riguardanti acqua potabile - Requisiti per elementi costruttivi, apparecchi e materiale costruttivo
- Direttive degli enti fornitori di energia e acqua
- Indicazioni sulla targhetta
- Dati tecnici



Poiché sull'impianto possono verificarsi temperature > 60 °C, sussiste pericolo di scottature ed eventualmente pericolo di ustioni per contatto con i componenti.



## Gruppo di riferimento

Le presenti istruzioni per l'uso sono destinate agli utenti dell'impianto di riscaldamento. Questo dispositivo può essere utilizzato da bambini di età pari o superiore a 3 anni e da persone con ridotte capacità fisiche, sensoriali o mentali o con mancanza di esperienza e conoscenza, a condizione che abbiano ricevuto supervisione o istruzioni sull'uso dell'apparecchio in modo sicuro e che comprendano i pericoli connessi.

|                                                                                                        |                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Attenzione</b> | <p>Sorvegliare i bambini in prossimità del dispositivo.</p> <ul style="list-style-type: none"> <li>- I bambini non devono giocare con il dispositivo.</li> <li>- La pulizia e la manutenzione da parte dell'utente non devono essere eseguite da bambini senza supervisione.</li> </ul> |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Collegamento del dispositivo

Le presenti istruzioni per l'uso sono destinate agli utenti dell'impianto di riscaldamento.

- Il collegamento e la messa in funzione del dispositivo devono essere eseguiti esclusivamente da personale specializzato autorizzato.
- Rispettare le condizioni di collegamento elettrico specificate.
- Le modifiche all'impianto esistente possono essere effettuate solo da personale specializzato.

|                                                                                                      |                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>Un intervento non corretto sull'impianto di riscaldamento può causare incidenti mortali.</p> <ul style="list-style-type: none"> <li>- I lavori elettrici possono essere eseguiti solo da elettricisti qualificati.</li> </ul> |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Lavorare sul dispositivo

- Eseguire le impostazioni e gli interventi sul dispositivo solo in conformità alle indicazioni contenute nelle presenti istruzioni per l'uso. Ulteriori interventi sull'apparecchio possono essere eseguiti solo da personale specializzato autorizzato.
- Non aprire il dispositivo.
- Non rimuovere l'involucro.
- Non modificare o rimuovere gli accessori installati.
- Non aprire o stringere le connessioni dei tubi.

|                                                                                                        |                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>Le superfici e i liquidi caldi possono provocare ustioni o scottature.</p> <ul style="list-style-type: none"> <li>- Non aprire il dispositivo.</li> <li>- Non toccare le superfici calde di tubi e raccordi non isolati.</li> </ul> |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Danni al dispositivo

|                                                                                                        |                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>Gli apparecchi danneggiati mettono a rischio la vostra sicurezza.</p> <ul style="list-style-type: none"> <li>- Controllare che l'apparecchio non presenti danni esterni.</li> <li>- Non mettere in funzione un apparecchio danneggiato.</li> </ul> |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Perdita d'acqua dal dispositivo

|                                                                                                        |                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>Se l'acqua fuoriesce dal dispositivo c'è il rischio di scosse elettriche.</p> <ul style="list-style-type: none"> <li>- Spegnere l'impianto di riscaldamento dall'esterno (ad es. scatola dei fusibili, distribuzione elettrica domestica).</li> <li>- Avvisare un'azienda specializzata in riscaldamento.</li> </ul> |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                        |                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>Se l'acqua fuoriesce dal dispositivo, c'è il rischio di scottature.</p> <ul style="list-style-type: none"> <li>- Non toccare l'acqua calda di riscaldamento.</li> </ul> |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Comportamento in caso di guasti all'impianto di riscaldamento

|                                                                                               |                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Pericolo | <p>I messaggi di guasto indicano difetti nell'impianto di riscaldamento. I guasti non eliminati possono avere conseguenze letali.</p> <ul style="list-style-type: none"> <li>- Non riconoscere i messaggi di guasto più volte a brevi intervalli.</li> <li>- Avvisare una ditta specializzata affinché analizzi la causa ed elimini il guasto.</li> </ul> |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Requisiti del sito di installazione

|                                                                                               |                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Pericolo | <p>Non apportare modifiche successive alle condizioni strutturali che potrebbero influire sulla sicurezza di funzionamento (ad es. passaggio dei cavi, rivestimenti o pareti divisorie).</p> |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                               |                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Pericolo | <p>Liquidi e materiali altamente infiammabili (ad esempio benzina, solventi e detergenti, vernici o carta) possono provocare deflagrazioni e incendi. Non conservare o utilizzare tali sostanze nel locale caldaia o nelle immediate vicinanze dell'impianto di riscaldamento.</p> |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Attenzione | <p>Le condizioni ambientali non consentite possono danneggiare l'impianto di riscaldamento e comprometterne la sicurezza di funzionamento.</p> <ul style="list-style-type: none"> <li>- Assicurare una temperatura ambiente compresa tra 0 °C e 35 °C.</li> <li>- Evitare l'inquinamento dell'aria dovuto agli idrocarburi alogenati (ad esempio contenuti nelle vernici, nei solventi e nei detergenti) e l'accumulo di polveri pesanti (ad esempio dovute a lavori di carteggiatura).</li> <li>- Evitare un'umidità costantemente elevata (ad esempio a causa dell'asciugatura permanente della biancheria).</li> </ul> |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Componenti aggiuntivi, parti di ricambio e di usura

|                                                                                                 |                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>Pericolo | <p>I componenti che non sono stati testati con l'impianto di riscaldamento possono causare danni all'impianto di riscaldamento o comprometterne le funzioni. L'installazione o la sostituzione deve essere effettuata solo da una ditta specializzata.</p> |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 1.3 Documentazione associata

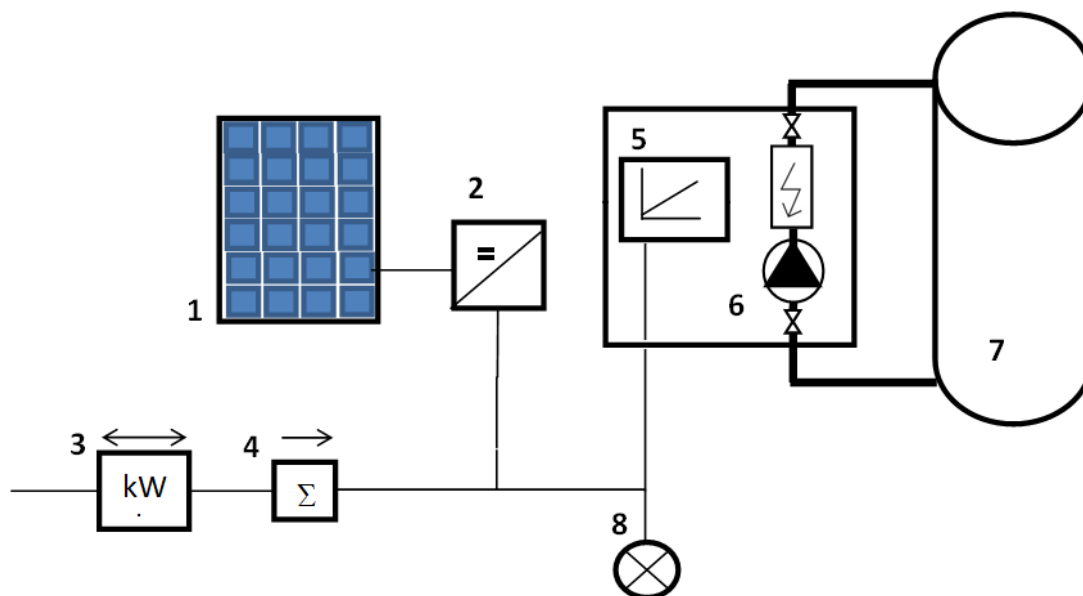
Osservare anche le istruzioni per l'installazione e il funzionamento dei componenti utilizzati, ad esempio l'unità di controllo.

## 1.4 Fornitura e trasporto

Verificare la completezza e l'integrità della merce immediatamente dopo il ricevimento. Comunicare immediatamente eventuali danni o reclami.

## 2 Descrizione funzionale

### 2.1 Struttura del sistema nell'installazione



- 1 Impianto fotovoltaico
- 2 Invertitore
- 3 Contatore elettrico (fonte, alimentazione)
- 4 tubra®-eTherm P3+ sensor (rilevamento prestazione alimentazione)
- 5 tubra®-eTherm P3+ power (modulazione della prestazione)
- 6 tubra®-eTherm P3+ mit tubra®-eTherm controller P
- 7 Bollitore termico
- 8 Consumatore casalingo (luce, standby, ...)

### 2.2 Descrizione funzionale

Il **tubra®-eTherm P3+** è una stazione elettrotermica che converte l'elettricità fotovoltaica in calore e lo accumula in serbatoi tampone.

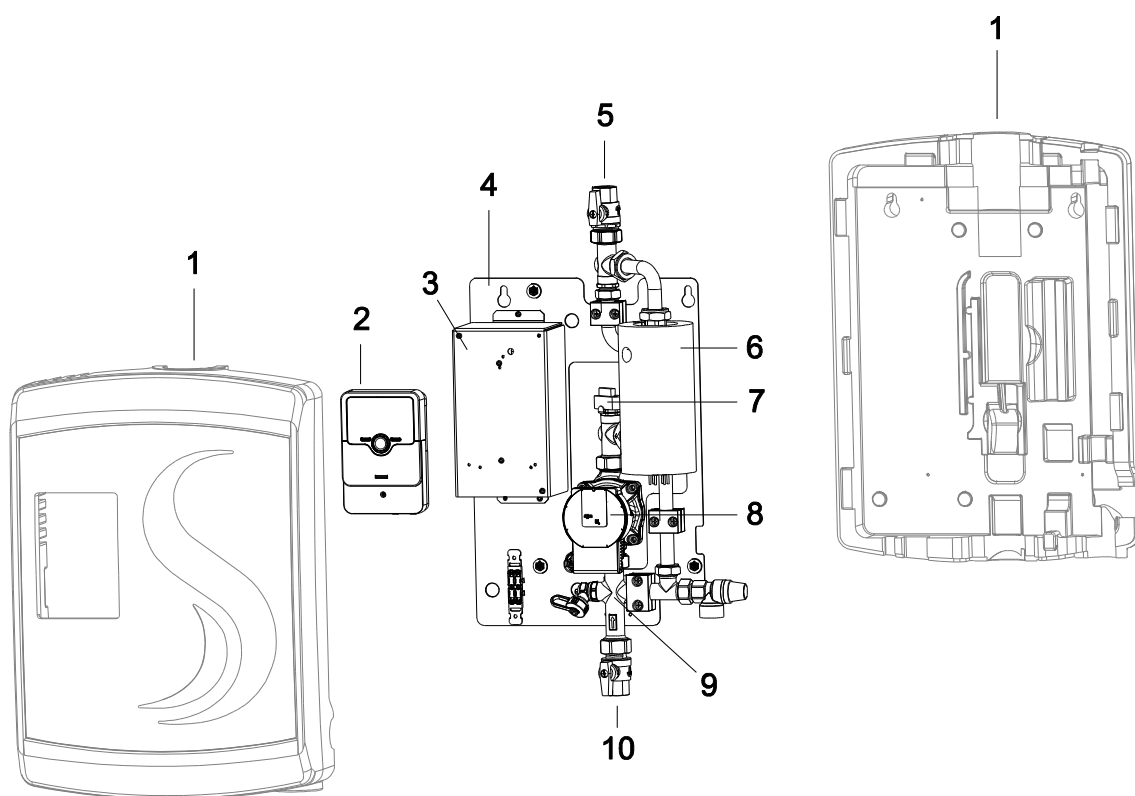
Grazie alla regolazione continua della potenza del **tubra®-eTherm P3+**, l'elettricità in eccesso può essere utilizzata in modo ottimale. La pompa di carica a velocità controllata carica il bollitore a un livello di temperatura immediatamente utilizzabile. Quando viene raggiunta la temperatura massima della bombola, la carica viene interrotta.

I vantaggi sono:

- Adattamento ottimale grazie alla potenza modulante a variazione continua fino a 3000 W
- Caricamento stratificato del bollitore, anche in caso di montaggio successivo su bollitori esistenti
- Temperatura nominale regolabile
- Calore immediatamente utilizzabile anche in caso di basso irraggiamento solare
- Può essere installato in un secondo momento su qualsiasi bollitore
- Indipendente dall'inverter fotovoltaico, dall'energy manager e dal contatore

Il sistema di controllo è composto dal regolatore eTherm P3+, dall'unità di potenza e da un'unità di misura. L'unità di misura determina l'energia in eccesso dell'impianto fotovoltaico direttamente a monte del contatore elettrico e la rilascia per il riscaldamento elettrico dell'acqua. Il controller utilizza l'unità di potenza per regolare i livelli di potenza nella stazione elettrotermica per il riscaldamento del bollitore e regola la velocità della pompa in base alla potenza disponibile. L'elemento riscaldante di eTherm P3+, che funziona secondo il principio dello scaldacqua istantaneo, può quindi accumulare calore a un livello di temperatura elevato nel bollitore anche quando la potenza di riscaldamento è bassa, ad esempio nelle giornate nuvolose.

### 3 Struttura – Fornitura



| Pos. | Denominazione                                                              |
|------|----------------------------------------------------------------------------|
| 1    | Guscio isolante                                                            |
| 2    | Regolamento                                                                |
| 3    | Scatola di collegamento con STB e contattori                               |
| 4    | Piastra                                                                    |
| 5    | Rubinetto a sfera Mandata                                                  |
| 6    | Termoelemento 3kW (0,8 kW, 0,8 kW, 1,4 kW) + Guscio isolante               |
| 7    | Sensore di pressione                                                       |
| 8    | Pompa                                                                      |
| 9    | Elemento a croce con valvola di sicurezza a 3 bar e valvola di non ritorno |
| 10   | Rubinetto a sfera Ritorno                                                  |

## 4 Dati tecnici

### 4.1 Generale

| Descrizione / Tipo                     | tubra®-eTherm P3+        |
|----------------------------------------|--------------------------|
| Corrente e potenza nominale            | 0 – 3 kW (13 A)          |
| Collegamento elettrico                 | 1/PE 230 V AC 50 – 60 Hz |
| Richiesto Sezione trasversale condotto | 2,5 mm <sup>2</sup>      |
| Contenuto nominale                     | 0,2 l                    |
| Termoelemento                          | 0,8 kW / 0,8 kW / 1,4 kW |
| Flusso                                 | 2 l/h – 300 l/h          |
| Caduta di pressione                    | 0,6 bar a 300 l/h        |
| Temperatura di carica                  | 45-75°C                  |
| Temperatura massima del bollitore      | 80 °C                    |
| Collegamento dell'acqua                | Rp 3/4" IG               |
| Peso (pieno d'acqua)                   | 14 kg                    |
| Tipo di protezione eTherm power        | IP 22                    |

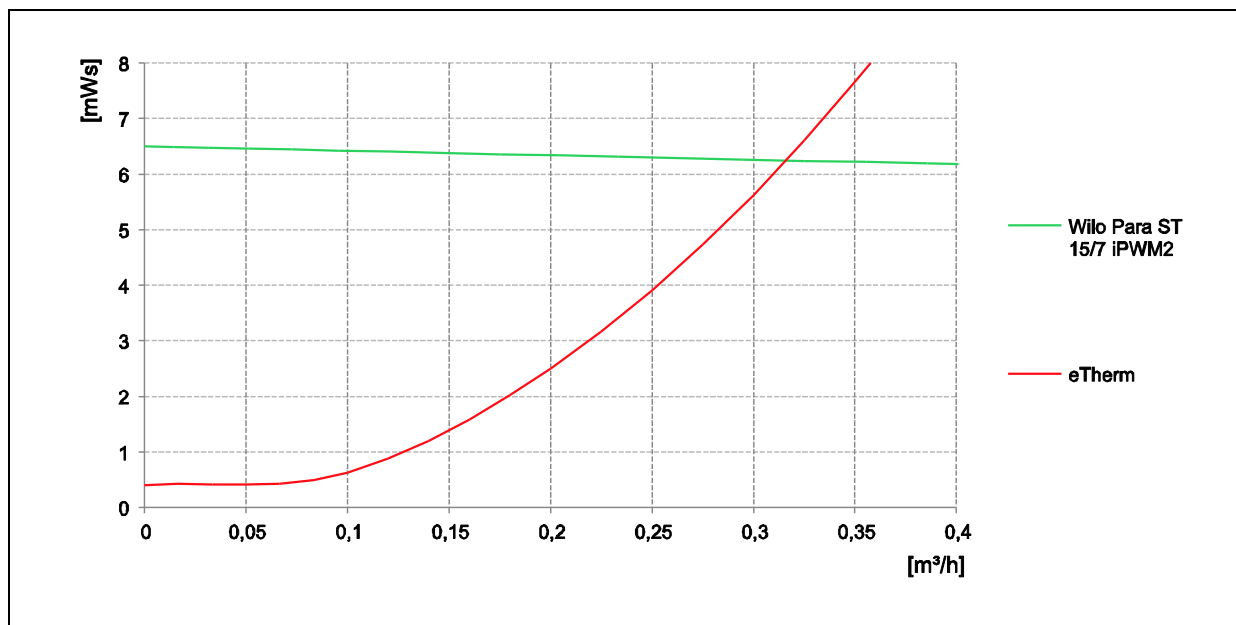
| Descrizione / Tipo            | tubra®-eTherm P3+<br>951.15.00.00                    |
|-------------------------------|------------------------------------------------------|
| Modello                       | Acqua sanitaria                                      |
| Min. pressione di esercizio   | 0,8 bar (impostazione di fabbrica)                   |
| Max. pressione di esercizio   | 3 bar                                                |
| Max. temperatura di esercizio | 95 °C                                                |
| Pompa di circolazione         | Wilo Para ST 15/7 iPWM2<br>Potenza assorbita: 3-45 W |

|           |                                         |                        |
|-----------|-----------------------------------------|------------------------|
| Materiali | Alloggiamento/ Raccordi di collegamento | CW617N (2.0402)        |
|           | Termoelemento                           | Rame                   |
|           | Guarnizioni                             | EPDM                   |
|           | Isolamento                              | Schiuma EPP 0,038 W/mK |





## 4.2 Perdita di pressione / Curva caratteristica della pompa

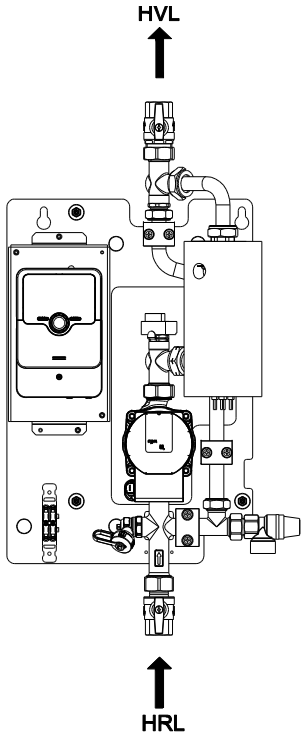


## 4.3 Protezione dalla corrosione

Per evitare danni da corrosione all'elemento riscaldante, è necessario utilizzare acqua di riscaldamento conforme alla norma VDI 2035.

5 Collegamento idraulico

5.1 Raccordi della stazione



HVL

HRL

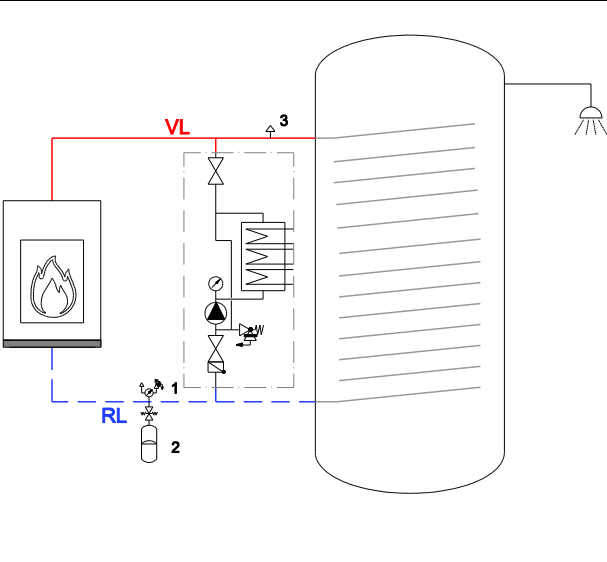
HVL    Mandata del buffer di riscaldamento  
Rp 3/4" IG

HRL    Ritorno del buffer di riscaldamento  
Rp 3/4" IG

Si prega di notare che:  
Nel tubo di collegamento al cilindro tampone non devono essere installate valvole di non ritorno o freni a gravità. La sezione del tubo deve essere almeno DN20.  
È necessario garantire lo sfiato automatico delle tubazioni.  
Le tubazioni di collegamento dell'eTherm non devono superare una perdita di pressione di 100 mbar.

5.2 Collegamento idraulico serbatoio di accumulo

**tubra®-eTherm P3+**  
con serbatoio acqua potabile



**tubra®-eTherm P3+**  
con serbatoio di accumulo

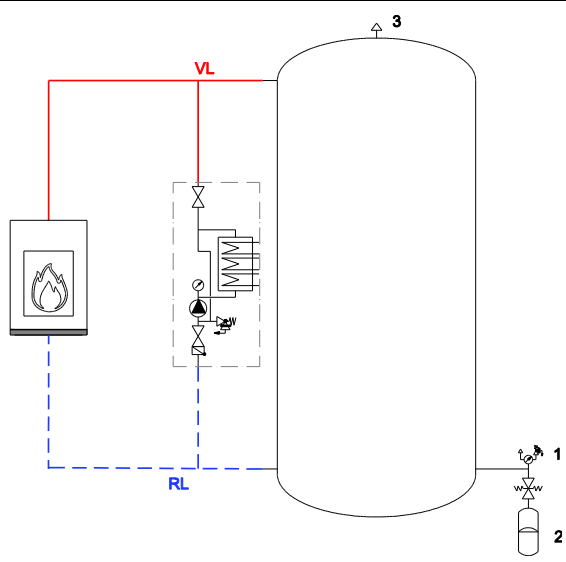


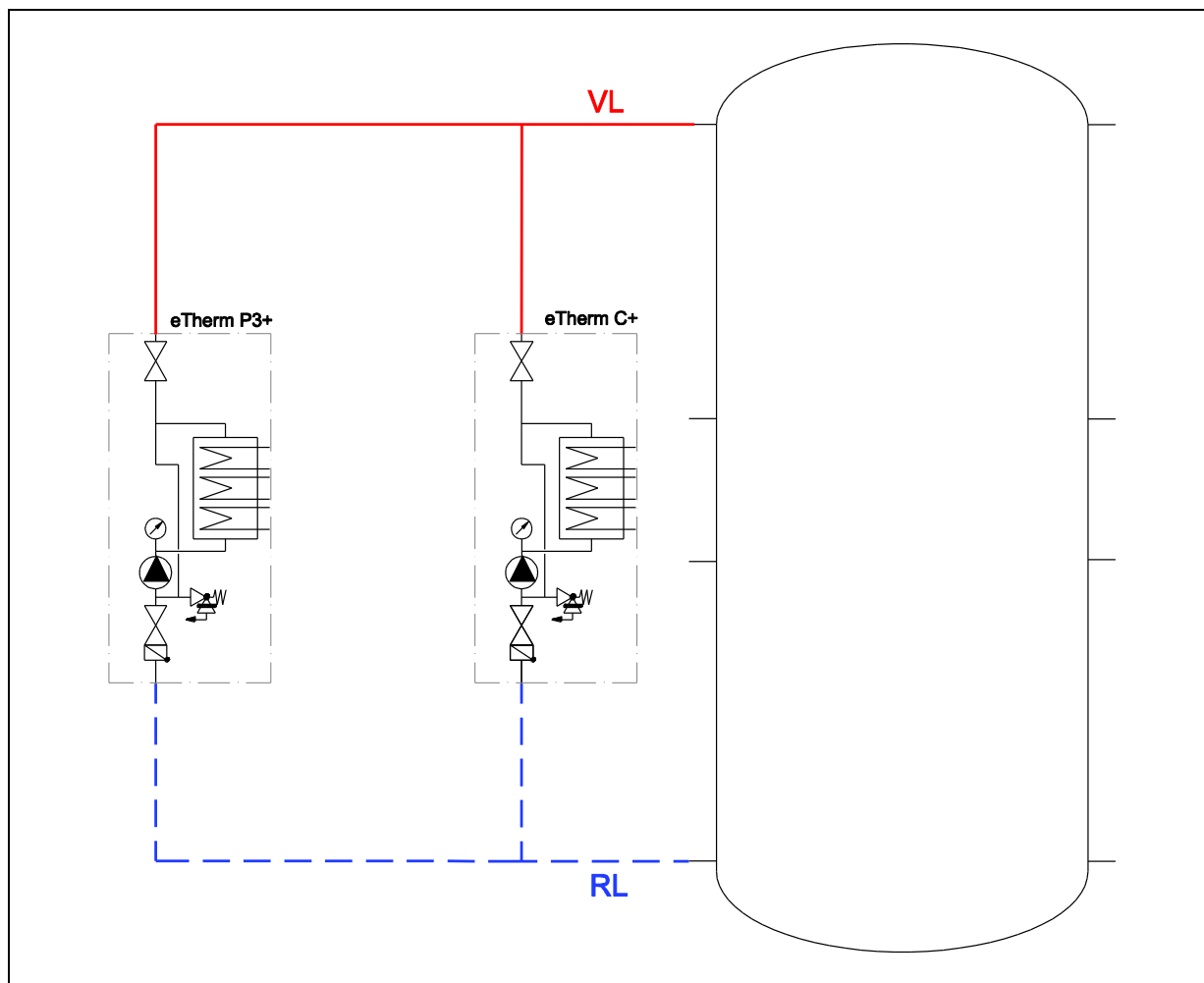
Illustrazione esemplificativa, non ha alcuna pretesa di completezza e non sostituisce la progettazione a regola d'arte.

| Denominazione | Descrizione |
|---------------|-------------|
| VL            | Mandata     |
| RL            | Ritorno     |

Il circuito dell'acqua collegato alla batteria di riscaldamento o al bollitore deve essere dotato di valvola di sicurezza (1), vaso di espansione (2) e disaeratore (3) in loco.



### 5.3 Collegamento idraulico – eTherm P3+ a cascata



|         | eTherm P3+ | eTherm C9+          |                     |                     |
|---------|------------|---------------------|---------------------|---------------------|
|         |            | Relè R3<br>dal P3+  | Relè R2<br>dal P3+  |                     |
|         |            | Termoelemento<br>L1 | Termoelemento<br>L2 | Termoelemento<br>L3 |
| 0-3 kW  | x          |                     |                     |                     |
| 0-6 kW  | x          | x                   |                     |                     |
| 0-9 kW  | x          |                     | x                   | x                   |
| 0-12 kW | x          | x                   | x                   | x                   |

Come cascata **tubra®-eTherm P3+** in cascata **e tubra®-eTherm C+**, fino a 12.000 W di potenza termica possono essere implementati nei gruppi idraulici.

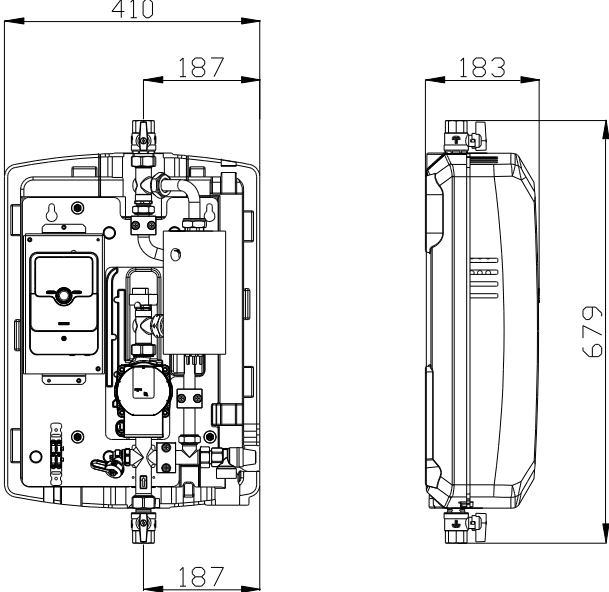
Impostazione del regolatore P3+ per il collegamento in cascata:

Funzione di selettore di utenze esterne: Relè R3 con 3 kW

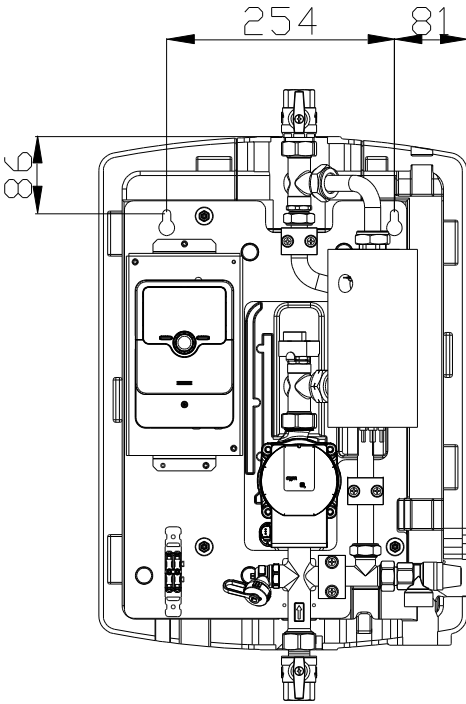
Funzione di selettore di utenze esterne 2: Rele R2 con 3 kW o 6 kW

## 6 Montaggio

### 6.1 Dimensioni / Ingombro

|                                                                                   |                                                                             |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|  | <p>Dimensioni ed ingombro minimo<br/>Lavori di montaggio e manutenzione</p> |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

### 6.2 Montaggio a parete

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Contrassegnare ed eseguire 2 fori da <math>\varnothing 10\text{mm}</math> secondo il disegno a lato ed inserire dei tasselli ad espansione.<br/>Avvitare la vite superiore con la rondella fino a che la testa della vite si trova ad una distanza di 1 cm dalla parete.<br/>Agganciare la stazione, allinearla con una livella a bolla e fissarla con la seconda vite e rondella.</p> <p>Serrare entrambe le viti in maniera uniforme.</p> |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7 Allacciamento elettrico

### 7.1 Generale

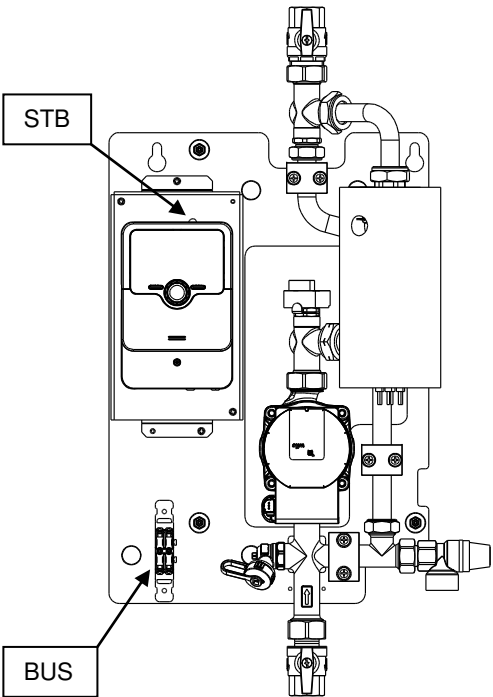
I lavori sull'impianto elettrico e l'apertura delle custodie dei componenti elettrici possono essere effettuati solamente a corrente elettrica scollegata e solo da personale specializzato opportunamente autorizzato. Negli attacchi verificare la corretta polarità e il corretto collegamento dei morsetti. Proteggere il dispositivo di regolazione e i componenti elettrici dalla sovratensione.

|                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo!</b> | <p>In caso di un collegamento elettrico non a regola d'arte sussiste pericolo di vita a causa di una scossa elettrica.</p> <ul style="list-style-type: none"> <li>→ Eseguire il collegamento elettrico solo attraverso un perito elettrico autorizzato dal fornitore di energia locale e attenendosi alle norme vigenti "in loco".</li> <li>→ Il collegamento elettrico deve essere eseguito in conformità alle specifiche VDE con interruttori differenziali (RCD) e interruttori miniaturizzati (MCB).</li> <li>→ Prima di eseguire dei lavori, disconnettere dalla fonte di alimentazione elettrica.</li> </ul> |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

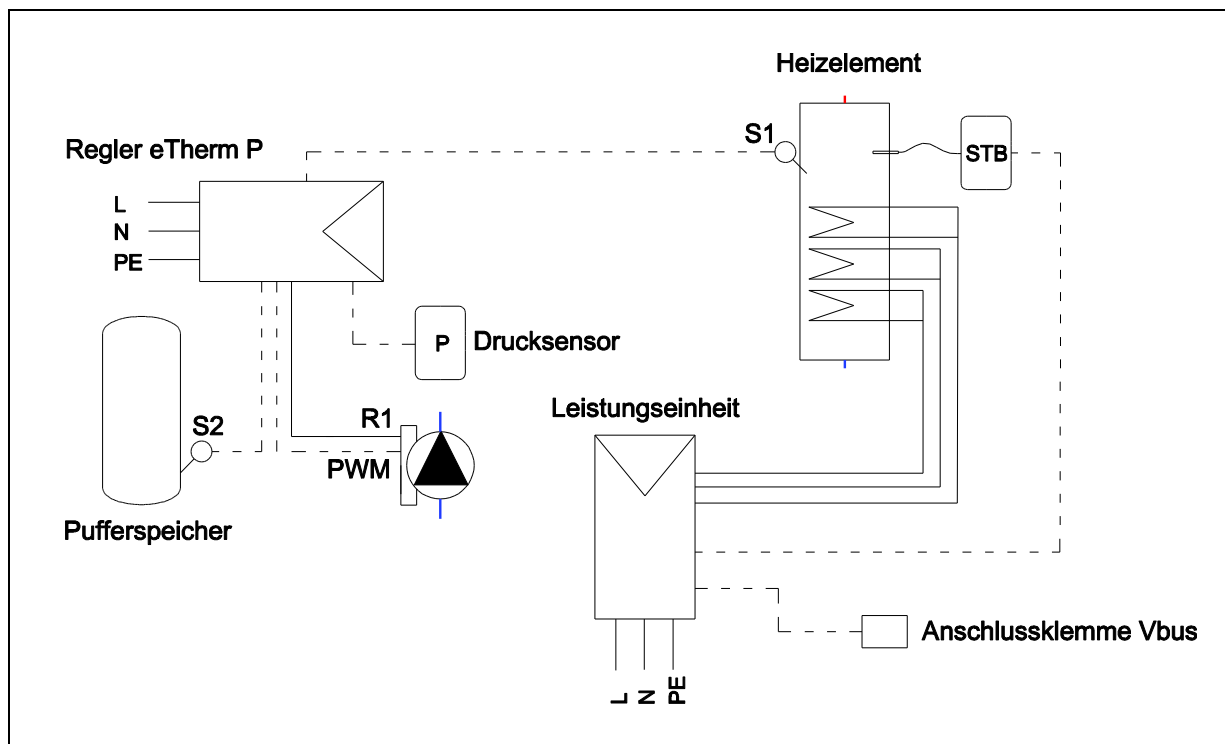
La stazione è completamente preassemblata e precablata in fabbrica. Per la messa in funzione, riempire il sistema con acqua e sfiatarlo, quindi collegare la spina di rete del controller eTherm. Quindi collegare e inserire la spina a 3 poli per l'alimentazione esterna.

|                                                                                                       |                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Pericolo</b> | <p>L'impianto deve essere riempito d'acqua e sfiato prima della prima messa in funzione elettrica, poiché il riscaldamento a secco rischia di distruggere gli elementi riscaldanti.</p> |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 7.2 Limitatore di temperatura di sicurezza

|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>The diagram shows a cross-section of a heating unit. A label 'STB' points to a rectangular component on the left side of the unit. Another label 'BUS' points to a terminal block at the bottom left. Various pipes, valves, and electrical connections are visible within the unit's housing.</p> | <p>In caso di guasto, il limitatore di temperatura di sicurezza interrompe l'alimentazione elettrica dell'elemento riscaldante se la temperatura supera i 105°C. di sicurezza interrompe l'alimentazione elettrica all'elemento riscaldante se questo supera i 110°C. Questa interruzione è bloccante e deve essere ripristinata da un'azienda specializzata dopo aver eliminato la causa del guasto.</p> <p>Resetare il limitatore di temperatura di sicurezza dopo l'attivazione premendo con forza (vedi figura).</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7.3 Allacciamento elettrico eTherm



|      |                                                               |
|------|---------------------------------------------------------------|
| S1   | Sensore di temperatura eTherm                                 |
| S2   | Sensore di temperatura del fondo del bollitore                |
| STB  | Sensore di temperatura Limitatore di temperatura di sicurezza |
| R1   | Pompa                                                         |
| Vbus | Linea di comunicazione con il modulo sensore                  |
| P    | Sensore di pressione                                          |

## 7.4 Posizionamento del sensore

Il sensore di temperatura S2 dell'eTherm rileva la temperatura nel cilindro tampone inferiore. Se il fluido raggiunge la temperatura massima di accumulo, significa che il bollitore tampone è stato completamente caricato e l'eTherm può quindi cessare di funzionare. Il sensore del serbatoio di accumulo S2 deve essere posizionato a circa 5 cm sopra il raccordo di ritorno dell'eTherm P3+ o, in alternativa, installato nel manicotto di immersione più basso del serbatoio di accumulo per garantire che il serbatoio di accumulo sia completamente carico.

## 7.5 Collegamento dello Smartmeter

I sensori di corrente devono essere collegati allo Smartmeter in fase come segue:

Sensore di corrente collegato a L1 -> collegamento allo Smartmeter CTL1 -> polarità rosso/nero

Sensore di corrente collegato a L2 -> collegamento allo Smartmeter CTL2 -> polarità rosso/nero

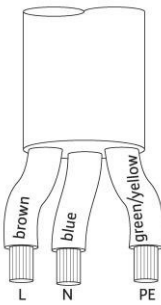
Sensore di corrente collegato a L3 -> collegamento allo Smartmeter CTL3 -> polarità rosso/nero

La polarità di CTL 1/2/3 deve essere rispettata.

Tutte e 3 le fasi devono essere collegate allo Smartmeter e devono essere protette da un interruttore trifase da 16A.

I sensori di corrente hanno una direzione di installazione predeterminata. Osservare la direzione della freccia sui sensori di corrente. Queste devono essere rivolte in direzione dell'utenza.

## 7.6 Pompa di circolazione

| <b>Allacciamento elettrico pompa</b>  | <b>Collegamento PWM</b>  |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <p>L = marrone<br/>N = blu<br/>PE = verde/giallo</p>                                                                   | <p>+ = marrone<br/>- = blu</p>                                                                              |

## 8 Messa in funzione

Un prerequisito per la messa in funzione è l'installazione completa e professionale di tutti i componenti idraulici ed elettrici, compresi i necessari dispositivi di sicurezza e protezione elettrici e meccanici.

La messa in funzione può essere effettuata solo da un installatore specializzato autorizzato.

### 8.1 Controllo della tenuta e riempimento dell'impianto

Verificare la tenuta di tutti i componenti dell'impianto inclusi tutti gli elementi e le stazioni prefabbricati in stabilimento e in caso di mancanze di tenuta sigillare opportunamente. Durante questa operazione adattare la pressione di prova e la durata della prova al relativo sistema di tubazioni e alla relativa pressione di esercizio.

Riempire il sistema di riscaldamento esclusivamente con acqua filtrata ed eventualmente trattata secondo la norma VDI 2035 e sfiatare completamente l'impianto.



Nota

Un freno a gravità (SKB) è integrato nella traversa inferiore (RL) per evitare un'errata circolazione.

### 8.2 Prima messa in funzione

Rispettare al proposito le relative istruzioni del dispositivo.



Pericolo!

Il sistema va prima della prima messa in funzione elettrica riempito con acqua e spurgato.

| Fase di lavoro                              | Procedura                                                                                                                                                                                                                                                     | OK                                                                                           |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Preparazione e controllo                    | <ul style="list-style-type: none"> <li>Controllo visivo dell'installazione</li> <li>Tutti i sensori sono stati installati e collegati correttamente?</li> <li>Tutte le uscite sono state collegate?</li> </ul>                                                | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>             |
| Attivare il dispositivo di regolazione      | Mettere sotto tensione il dispositivo di regolazione.                                                                                                                                                                                                         | <input type="checkbox"/>                                                                     |
| Impostazione del dispositivo di regolazione | Rispettare le istruzioni del dispositivo di regolazione. <ul style="list-style-type: none"> <li>Selezionare temperatura obiettivo</li> <li>Selezionare temperatura max accumulatore</li> <li>Avviare procedura di messa in funzione standardizzata</li> </ul> | <input type="text"/><br><input type="text"/><br><input type="text"/><br><input type="text"/> |

## 9 Impostazione del regolatore

### 9.1 Dispositivo di regolazione

Rispettare al proposito le istruzioni di montaggio e d'uso del dispositivo di regolazione impiegato.





## 10 Guasti, cause e la loro eliminazione

Gli eventuali messaggi di errore vengono visualizzati sul display del dispositivo di regolazione. Rispettare al proposito le relative istruzioni del dispositivo.

| Guasto                                                      | Possibile causa                                                         | Correzione                                                                                                                                                                   |
|-------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tropo basso il flusso volumetrico ( $\Delta t$ troppo alto) | Elemento riscaldante elettrico sporco / calcificato                     | Pulire, decalcificare o sostituire se necessario                                                                                                                             |
|                                                             | Pompa difettosa                                                         | Sostituire la pompa                                                                                                                                                          |
|                                                             | Logica di controllo della pompa non funzionante                         | Controllare la posizione e il funzionamento dei sensori, se necessario sostituirli                                                                                           |
| Temperatura obiettivo non raggiunta                         | Temperatura target non raggiunta                                        | Controllare i sensori, se necessario sostituirli                                                                                                                             |
| Nessun riscaldamento dell'elemento riscaldante              | Raggiunta la temperatura massima del bollitore                          | Monitorare il sistema, attendere il riavvio                                                                                                                                  |
|                                                             | Sensore di pressione attivato                                           | Aumentare la pressione di esercizio a > 1,2 bar                                                                                                                              |
|                                                             | STB attivato                                                            | Ripristino                                                                                                                                                                   |
|                                                             | Fühler S1 difettoso → Sostituire il sensore S1                          | Se l'STB viene attivato, la causa deve essere determinata da un tecnico specializzato. È quindi necessaria una messa in funzione completa con verifica di tutte le funzioni. |
|                                                             | Elemento riscaldante difettoso                                          | Controllare l'elemento riscaldante, se necessario sostituirlo                                                                                                                |
|                                                             | Nessun riscaldamento dell'elemento riscaldante → il fusibile è scattato | Controllare l'impianto elettrico, riattivare il fusibile.                                                                                                                    |
| Rumori di ebollizione dall'elemento riscaldante             | Asta di riscaldamento calcificata                                       | Decalcificazione dell'elemento riscaldante                                                                                                                                   |
|                                                             | Aria nel sistema                                                        | Installare lo sfiato automatico dell'aria                                                                                                                                    |
|                                                             | Perdita di pressione nel bollitore troppo elevata                       | Eliminare i raccordi non necessari o aumentare le dimensioni delle tubazioni                                                                                                 |

| LED                            | Significato                                | Stato di funzionamento                                                      | Causa                                                             | Eliminazione                                                       |
|--------------------------------|--------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|
| lampeggia in verde             | Pompa in funzione                          | La pompa gira secondo le impostazioni fatte                                 | Funzionamento normale                                             |                                                                    |
| lampeggia in verde velocemente | Versione PWM                               | Pompa in stand-by                                                           | Funzionamento normale                                             |                                                                    |
| lampeggia verde/rosso          | La pompa è pronta all'impiego, ma non gira | La pompa inizia autonomamente a girare non appena l'errore non sussiste più | 1. Sottotensione<br>U < 160 V<br>Sovratensione<br>U > 253 V       | 1. Verificare alimentazione di tensione<br>195 V < U < 253 V       |
|                                |                                            |                                                                             | 2. Modulo-<br>sovratemperatura:<br>temperatura motore troppo alta | 2. Controllare temperatura dei liquidi e dell'ambiente circostante |
| lampeggia in rosso             | Pompa guasta                               | Pompa bloccata                                                              | La pompa non si aziona nuovamente in modo autonomo                | Sostituire la pompa                                                |
| LED spento                     | Nessuna alimentazione di tensione          | Sistema elettronico privo di tensione                                       | 1. Collegamento tra regolatore e pompa interrotto                 | 1. Verificare collegamento cavi                                    |
|                                |                                            |                                                                             | 2. LED è guasto                                                   | 2. Verificare se la pompa gira                                     |
|                                |                                            |                                                                             | 3. Sistema elettronico guasto                                     | 3. Sostituire pompa                                                |



## 11 Manutenzione / Servizio

Il produttore raccomanda la manutenzione sotto forma di un'ispezione funzionale e un controllo visivo da parte del personale autorizzato e specializzato. La manutenzione, la risoluzione dei problemi e le riparazioni possono essere eseguite solo da personale qualificato e addestrato.

## 12 Messa fuori funzione

### Temporanea

Se la stazione elettrotermica **tubra®-eTherm P3+** rimane fuori servizio per lungo tempo in un locale a rischio di gelo, sarà necessario interrompere l'alimentazione di corrente e svuotare completamente l'impianto. A tal fine allentare l'avvitamento in basso del termoelemento e l'avvitamento della pompa in basso per svuotarla completamente.

### Definitiva

Se la stazione solare **tubra®-eTherm P3+** viene messa definitivamente fuori servizio, interrompere l'alimentazione di corrente a tutte le parti interessate dell'impianto e svuotare completamente tutte le tubazioni interessate e tutte le parti dell'impianto. A tal fine allentare l'avvitamento in basso del termoelemento e l'avvitamento della pompa in basso per svuotarla completamente.

La messa fuori servizio definitiva, lo smontaggio e lo smaltimento devono essere effettuati solamente da personale specializzato opportunamente qualificato. I componenti e i materiali devono essere opportunamente smaltiti in conformità alle norme vigenti.



Konformitätserklärung  
Declaration of Conformity

Hersteller:  
Manufacturer:  
D – 33659 Bielefeld

Gebr. Tuxhorn GmbH & Co.KG  
Senner Straße 171



Produktbezeichnung:  
Product description:  
tubra®-eTherm P3+/P9+  
(controller / power / sensor)  
tubra®-eTherm C3+/C9+; tubra®-eTherm S3/S9

EU-Richtlinien:  
EC-Directives:  
Directive 2014/30/EU - EMC  
Directive 2014/35/EU  
Directive 2009/125/EC  
Directive 2011/65/EU  
electromagnetic compatibility  
electrical equipment designed for use within certain voltage limits  
ecodesign requirements for energy-related products  
certain hazardous substances in electrical and electronic equipment RoHS

|                                                                                                               |                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Angewendete Normen:                                                                                           | Pumpe / Regler / Heizelement                                                                                            |
| Standards:                                                                                                    |                                                                                                                         |
| DIN EN 16297-1/3:2013-04                                                                                      | Pumps - Rotodynamic pumps - Glandless circulators - Part 1/3                                                            |
| EN 55014-1:2021                                                                                               | Electromagnetic compatibility - Part 1                                                                                  |
| EN 55014-2:2021                                                                                               | Electromagnetic compatibility - Part 2                                                                                  |
| EN 60335-1:2024; VDE 0700-1:2024<br>+AC:2014+A11:2014+A13:2017+A1:2019<br>+A2:2019+A14:2019+A15:2021+A16:2023 | Household and similar electrical appliances                                                                             |
| DIN EN 60335-2-35 VDE 0700-35:2022-10 + A1:2019 + A2:2021                                                     | Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke, Besondere Anforderungen für Durchflusserwärmer |
| DIN EN 60730-1 VDE 0631-1:2021-06                                                                             | Automatic electrical controls                                                                                           |
| DIN EN IEC 60730-2-9 VDE 0631-2-9:2021-01                                                                     | Automatic electrical controls - Part 2-9                                                                                |
| EN ICE 61000-6-3:2021                                                                                         | Electromagnetic compatibility (EMC) - Part 6-3                                                                          |
| EN ICE 61000-6-4:2019                                                                                         | Electromagnetic compatibility (EMV) - Teil 6-4                                                                          |
| EN IEC 61000-6-1/2:2019                                                                                       | Electromagnetic compatibility (EMC) - Part 6-1 / Part 6-2                                                               |
| DIN EN ISO 9001:2015-11                                                                                       | Quality management systems - Requirements (ISO 9001:2015)                                                               |
| DIN EN IEC 63000:2019-05 VDE 0042-12:2019-05                                                                  | Assessment of electronic products with respect to the restriction of hazardous substances                               |

Wir, die Gebr. Tuxhorn GmbH & Co.KG, erklären hiermit, dass die oben genannten Produkte den aufgeführten Bestimmungen entsprechen. Bei einer nicht mit uns abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit. Die Sicherheitshinweise in der Betriebs- und Bedienungsanleitung sind zu beachten.

We, Gebr. Tuxhorn GmbH & Co. KG, hereby declare that the above-mentioned products comply with the provisions listed. This declaration becomes invalid if the product is modified without our agreement. The safety instructions in the operating instructions must be observed.

Bielefeld, 08.07.2024

  
Stephan Krebs  
Geschäftsführer

  
i.A. Frank Thole  
Leiter Produktmanagement

Diese Erklärung beinhaltet keine Zusicherung von Eigenschaften.  
This declaration does not include any guarantee of product properties



|             |                                                                                      |
|-------------|--------------------------------------------------------------------------------------|
| Rivenditore |  |
|-------------|--------------------------------------------------------------------------------------|

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