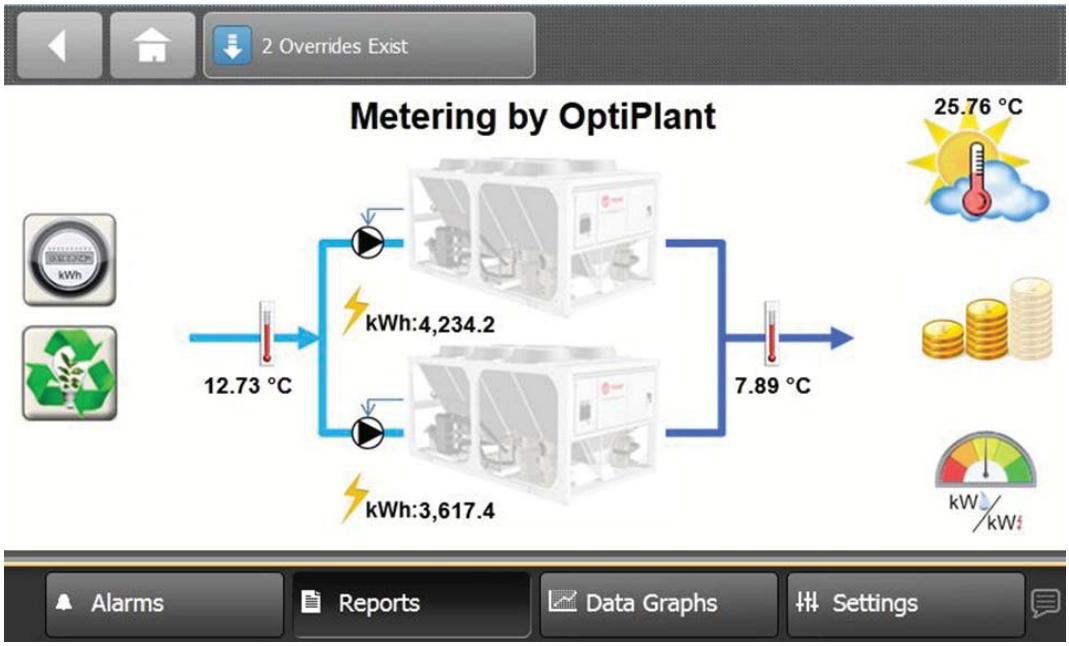
Installation Manual

Stand-Alone Metering for OptiPlant



BAS-SVN019A-GB

Introduction

Copyright

Trademarks

Trane and its logo are trademarks of Trane in the United States and other countries. All trademarks referenced in this document are the trademarks of their respective owners.

Warnings, Cautions, and Notices

Warnings, cautions, and notices are provided in appropriate places throughout this document:

⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE: Indicates a situation that could result in equipment or property-damage-only accidents.

Table of Contents

Overview

The stand-alone metering version of the OptiPlant control panel allows sub-metering of up to two air-cooled or water-cooled chillers. The metering device includes the following features:

- Measure of the electrical energy consumption on each chiller; displayed on a daily, weekly and yearly format on the OptiPlant touch screen
- Calculation and display of the cooling load of the chiller plant, on a daily, weekly and yearly format
- Calculation and indication of the instantaneous efficiency of the chiller plant by comparing the cooling load against the electrical energy consumption
- Ability to synchronize energy meter readings with the OptiPlant display (for instance, in case of a power failure on the OptiPlant panel or any wiring issues)
- Chilled water reset (option), based on outside ambient temperature or system return water temperature - see notes 2 below
- Display on five separate graphs of:
    - The electrical consumption against cooling load
    - The system efficiency against outdoor air temperature
    - Chilled water temperatures (common supply and return plus setpoint) against outdoor air temperature
    - Instantaneous savings (with Chilled Water Reset option)
    - History of the weekly integrated savings over 52 weeks (with Chilled Water Reset option)

NOTES 1:

- Some Trane controllers require an additional card or module to provide Status and Fault feedback information (refer to the section about the connections to chillers).

  The availability of these cards or modules should be ensured prior to commissioning of the Trane OptiPlant panel
- For non-Trane chillers:
    - Ensure the Status and Fault feedback information can be collected
    - Ensure the correct sizing of the current transformers for the chillers

NOTES 2:

- The Chilled Water Reset option is only available with Trane air-cooled or water-cooled chillers
- Some Trane controllers require an additional card or module to accept the chilled water setpoint change and reset (refer to the section about the connections to chillers)

  The availability of these cards or modules should be ensured prior to commissioning of the Trane OptiPlant panel
- The OptiPlant application generates a 4-20 mA signal to each chiller for the chilled water setpoint change or reset

Packaged Contents

The package for the stand-alone metering version of the OptiPlant control panel includes:

- One electrical cabinet that houses all the components needed for the operation of the application:
    - One UC600 microprocessor control board, that integrates all the different -preprogrammed functions of the application
    - One TD7 (or 7 inch) touchscreen color display allowing the user to interact with the system
    - Terminals to connect the required wires to external system components (XM30 expansion modules in chiller panel, sensors)
- Two water pipe contact temperature sensors (NTC-10kΩ -Type II) to clamp on the system supply and return water pipes.

  These two contact sensors can be replaced with immersion sensors of same characteristics.
- One outside air temperature sensor (NTC -10kΩ-Type II) to install in an adequate location, e.g. not in direct sunlight and away from a heat source.
- Two metering kits, one per chiller, with each kit containing:
    - One split-core current transformer sized for the chiller
    - One three phase electrical energy meter with pulse output
    - One fuse holder with fuses
    - One expansion module XM30 to communicate with the UC600 microprocessor control board of the OptiPlant panel

Important: *Visually inspect contents for obvious defects or damage. All components have been thoroughly inspected before leaving the factory. Any claims for damage incurred during shipment should be filed immediately with the carrier.*

Additional Local Supply

Cabling

1. Electrical connection

The cable should be long enough to supply:

- Power (220V/50Hz/1ph) to the OptiPlant cabinet.

Caution! The cabinet power supply should be protected: cabinet requirement is 100VA.

- Power in each chiller panel between:
    - The chiller main power supply and the fuse holder
    - The fuse holder and the energy meter
    - The current transformer and the energy meter

  Recommended wire: standard 2.5mm² cable.

2. Connection to devices

The cable length should allow the connection from the OptiPlant cabinet terminals to the following devices:

- OptiPlant system run enabling remote command (if any remote command is required on site)
- Three sensors (temperature readings)

Additional wiring required inside the chiller control panel:

- Current transformer connection to the energy meter in both chillers
- Energy meter pulse output to the XM30 in both chillers
- Chiller Status and Fault feedback information to the XM30 in both chillers
- Chilled water setpoint change or reset signal from the XM30 in both chillers (option)

Recommended wire: 18-22 AWG (1.00mm to 0.65mm diameter), stranded, tinned-copper, shielded, twisted-pair.

3. Communication

The cable length should allow the connection between:

- Both XM30s expansion modules (located on each chiller)
- One XM30 and the OptiPlant panel

Recommended wire: 18-22 AWG (1.00 mm to 0.65 mm diameter), stranded, tinned-copper, shielded, twisted-pair.

Wiring to the chillers can be made with a two pair cable

DIN Rail

Additional DIN rail (approx. length: 20 cm per chiller) may be required to install the fuse holder, energy meter and XM30 expansion modules inside the controls cabinet of each chiller.

Required Tools for Mounting and Wiring

A 1/8 inch, flat-bladed screwdriver is required to perform functions such as setting rotary addressing switches, tightening or loosening screw terminals, and removing or repositioning the different components on DIN rail.

Commissioning

The preprogrammed functions integrated in the controller are:

- Electrical energy monitoring on both chillers
- Calculation and display of the cooling load
- Calculation and display of the system efficiency
- Chilled water reset, based on outside ambient temperature or system return water temperature (option)

These functions require some parameters to be set at startup to manage the specificities of the system under control.

Installation

⚠ WARNING: Hazardous Voltage!

Disconnect all electric power, including remote disconnects, before installing. Follow proper lockout and/or tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before installing could result in serious injury or death.

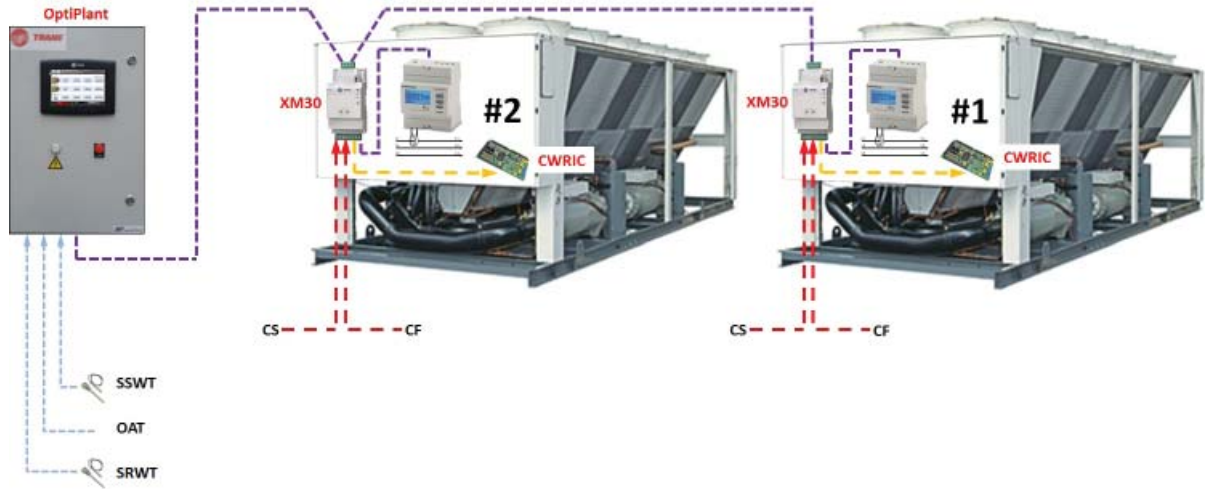
Do not power the chiller back until installation and connections have been completed.

Please ensure all work is compliant to good engineering practices and local regulations, and is performed by qualified personnel.

1. Overview of the installation:
   - Install all items as described in this section and shown in Figure 1
   - Connect all items as described in the Connections section

     Refer to the OptiPlant (BAS-SVE-001) and metering option (BAS-SVE-003) wiring diagrams for more information.

Figure 1 - Overview of the installation

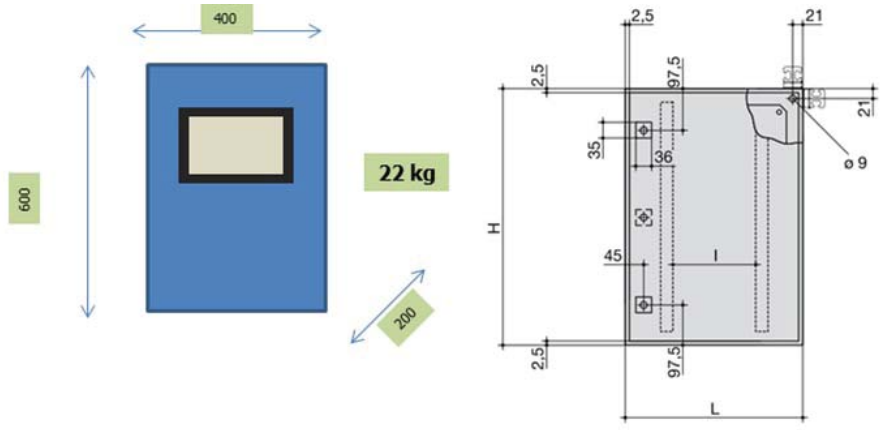


CS: Chiller Status
CF: Chiller Fault
CWRIC: Chilled Water Reset interface card (Option)

SSWT: System Supply Water Temperature
OAT: Outside Air Temperature
SRWT: System Return Water Temperature

2. Install the electrical cabinet in a convenient location

Figure 2 - Panel dimensions



The cabinet is supplied with wall mounting brackets.
Operating range: -18°C to 50°C
Cabinet is IP55 and can be installed outside. Shading device may be required.

3. Install the two water temperature sensors in appropriate locations on the water piping, as shown below.

Two water pipe contact temperature sensors (NTC-10kΩ -Type II) are provided as standard supply.

Figure 3 - Non decoupled system

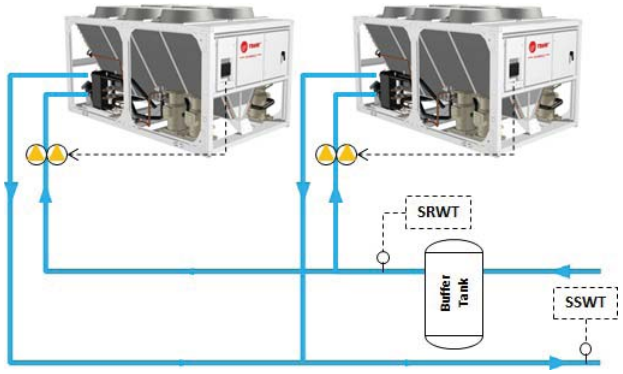
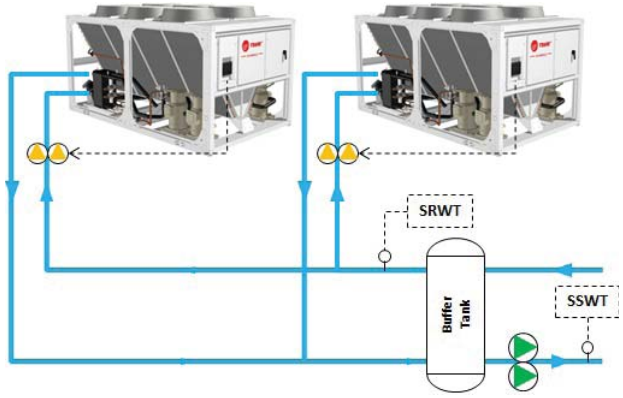


Figure 4 - Decoupled system

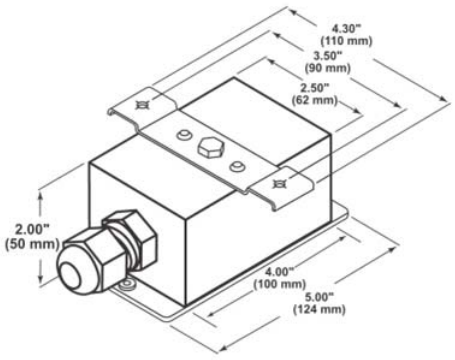


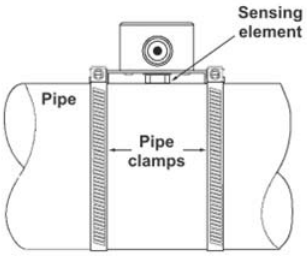
SSWT: System Supply Water Temperature
SRWT: System Return Water Temperature

Standard supply is water pipe contact temperature sensors.

If installed outside, protect these sensors from sun influence.

Figure 5 - Water sensor





Refer to the installation instructions provided with the sensors or proceed as follow:

- Scrape any rust or scale off the pipe surface
- Apply a thin layer of thermal compound to the sensing element
- Position the sensor's sensing element so that it makes contact with the pipe and fasten with two pipe clamps (not provided)
- Loosen the cover screws and rotate the cover out of the way
- Make the wiring connections
- Rotate and screw the cover back into place

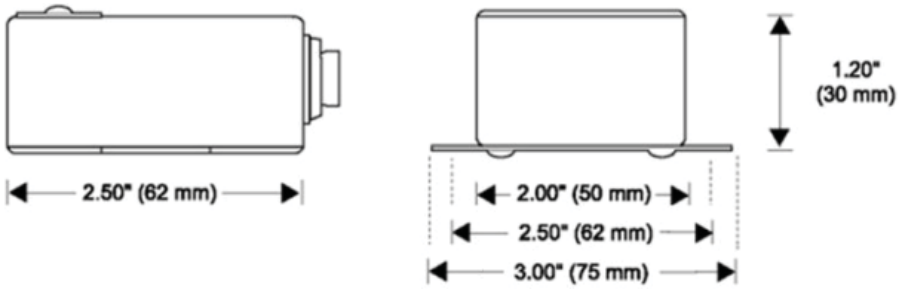
If required, the contact sensors can be replaced with immersion sensors of the same type.

Installation

4. Install the outside air temperature sensor in an appropriate location.

   Protect this sensor from sun influence.

Figure 6 - Air sensor

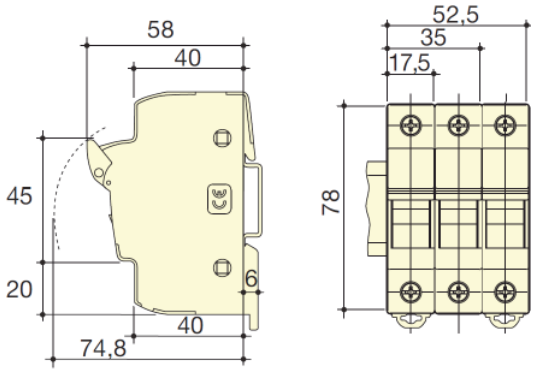


   Refer to the installation instructions provided with the sensor or proceed as follow:

   - Hold the sensor against the supporting fixture where it will be installed and use the flange as a guide to mark and drill two holes
   - Remove the screw from the sensor cover and pull the cover off. Set the screw and cover aside
   - Connect the wires to the screw terminal block
   - Reattach the sensor cover and tighten the screw
   - Fasten the sensor to the outside wall using two screws

5. On the control side of each chiller panel, install the fuse disconnect switches on a DIN rail and insert the provided fuses 0.5 A gG.

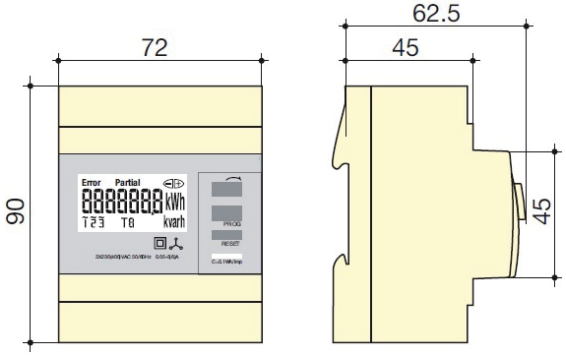
Figure 7 - Fuse disconnect switches



6. On the controls side of each chiller panel, install one energy meter on a DIN rail.

   Refer to the installation instructions provided with the energy meter for more details.

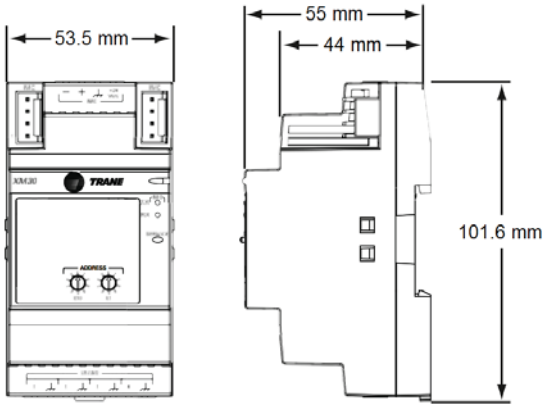
Figure 8 - Energy meter



7. On the controls side of each chiller panel, install one XM30 expansion module on a DIN rail.

Refer to the installation instructions X39641148 provided with the expansion module for more details.

Figure 9 - XM30 expansion module

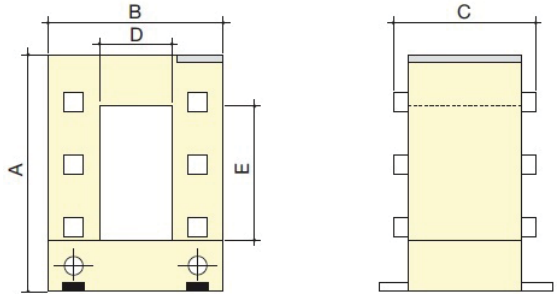


8. On each chiller, install the split-core current transformer in a convenient location, taking care of the following:
   - Check the value on the current transformer of the primary current (see label - range from 100 to 500A) and ensure the maximum current drawn by the chiller does not exceed 120% of the primary current
   - The current transformer must be installed on one of the two phases connected to the chiller panel transformer
   - Current transformers are polarized and must be fitted the correct way round
     - The marks K-P1 and L-P2 indicate which way they should be fitted around the cable
     - The side marked K-P1 must point towards the generator (main electricity supply), and L-P2 must point towards the load (chiller)
   - Current transformers do not have to be installed 90° to the conductor run (the wires can go through the

CT at any angle), held them in place with plastic tie wraps or other similar devices

Refer to the installation instructions provided with the current transformer for more details.

Figure 10 - Current transformer



Dimensions (mm)

Type	A	B	C	D	E	Comments
TO23	106	93	58	23	33	Primary current: 100, 150, 200, 250, 300 and 400A
TO58	158	125	58	55	85	Primary current: 500A

Connections

Recommendations

- *Refer to the OptiPlant (BAS-SVE-001) and metering option (BAS-SVE-003) wiring diagrams for more information.*
- Use standard 2.5mm² cable for power supply
- Use 18–22 AWG (1.00 mm to 0.65 mm diameter) stranded, tinned-copper, shielded, twisted-pair wire for connections to devices
- Connect the shield to the earth bar of the OptiPlant panel and tape it back at the input device (sensor, chiller controller terminals…)
- Limit wiring length to:

	Maximum Wire Lengths (m)			
Type	**Input**		**Output**	
Binary	**BI**	300m	Not applicable	
0–20 mA	Not applicable		**AO**	300m
Thermistor/Resistive	**AI**	100m	Not applicable	
Connection between current transformer and energy meter	2m			
Connection between both XM30s and OptiPlant panel	150m			

OptiPlant cabinet input/output

All the connections are made on the terminal blocks.

ID	Terminals	Designation	IO type	Note
System				
I-EN	X33 - X34	Run Enable (System)	BI	1
Sensors				
S-WST	X27 - X28	Water Supply Temperature	AI	
S-WRT	X29 - X30	Water Return Temperature	AI	
S-OAT	X31 - X32	Outside Air Temperature	AI	

Note:

1. External command for enabling the OptiPlant application.
   Closed contact enables the OptiPlant application.
   If no external command installed for enabling the OptiPlant application, a jumper must be put on terminals X33 - X34.
   Jumpers are provided with the OptiPlant panel.

Powering the OptiPlant panel

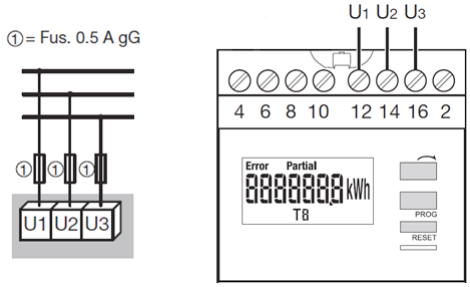
Provide a protected 220V/50hz/1ph power supply to the cabinet, to terminals X1-X2 (+earth).

Note: Alternatively 400V/50Hz/1ph could be provided on the appropriate control transformer terminals.

Powering the energy meter

Using 2.5mm² cable, connect the power supply from the chiller to the fuse disconnect switches and the energy meter (terminals 12, 14 & 16) as per the figure below.
Note: Ensure the phase connected to terminal 12 is the one having the current transformer installed on it.

Figure 11 - Power supply to the energy meter

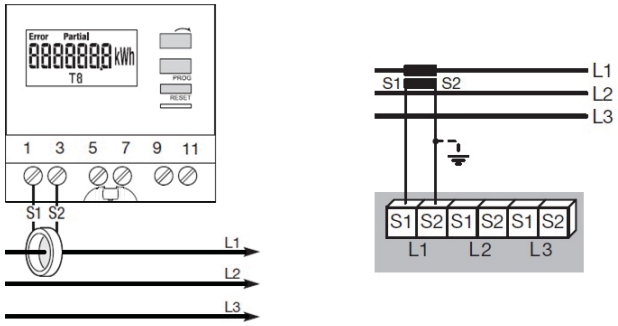


Current transformer to energy meter

Using 2.5mm² cable, connect the current transformer secondary to the energy meter by proceeding as follow:

- Secondary terminals are marked S1 and S2 and must be connected to the correct terminals on the energy meter
- Connect S1 to terminal #1 and S2 to terminal #3 of meter as shown on figure 12
- Connect the CT secondary lead S2 wire to earth as shown on figure 12

Figure 12 - Connecting the current transformer to the energy meter



XM30 expansion module input/output

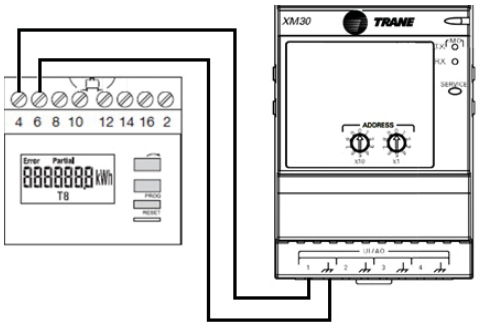
On each chiller, connect the XM30 as follow:

Terminals	Designation	IO type	Note
UI/AO1	Pulse Input from energy meter	Pulse	1
UI/AO2	Chiller - Fault	BI	2
UI/AO3	Chiller - Status	BI	3
UI/AO4	Chiller - Reset Signal (mA)	AO	4

Notes:

1. Using 18-22 AWG wire, connect terminals 4 and 6 of the energy meter to the UI#1 of the XM30 as shown below:

Figure 13 - Connecting the energy meter to the XM30 expansion module



   Refer to the installation instructions X39641148 of the XM30 expansion module for more details

2. Fault of chiller1, chiller 2
   A closed contact indicates a fault
3. Status of chiller1, chiller 2
   A closed contact indicates chiller running
4. Optional: Chilled water temperature change or reset signal (in mA) to chiller1 or to chiller 2

Connections

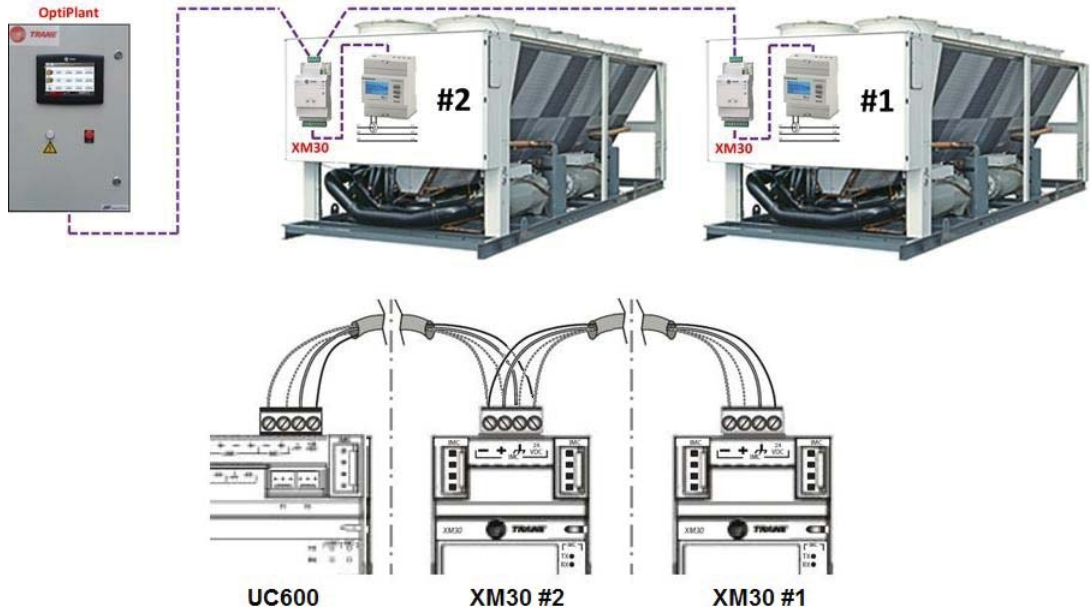
XM30 expansion modules to OptiPlant

Using 18-22 AWG wire and screw terminals for remote connection on XM30 expansion modules:

- Connect both XM30s together
- Connect the XM30 on chiller #2 to the UC600 of the OptiPlant panel as shown below

Refer to the installation instructions X39641148 of the XM30 expansion module for more information

Figure 14 - Connecting the XM30 expansion modules to the Optiplant



Chillers

Chillers can be equipped with CH532 or CH530 or UCM-CLD or UC800 unit controllers.

a) CH532

The CH532 controller is installed on air-cooled scroll chillers with one or two refrigerant circuit.

The CH532 controller natively integrates all the capabilities to accept external commands (setpoint change or reset).

Single circuit unit:

Signal	Connect to	On
Chiller Status	C9 – NO10	CH532 - block J16
Chiller Fault	C9 - NO9	CH532 - block J16
Chiller Reset Signal (VDC or mA)	GND – B8	CH532 - block J6

Dual circuit unit:

Signal	Connect to	On	See Notes
Chiller Status	C9 – NO10	CH532 - block J16	
Chiller Fault - Circuit 1	C9 - NO9	CH532 - block J16	1
Chiller Fault - Circuit 2	C9 - NO11	CH532 - block J16	1
Chiller Reset Signal (VDC or mA)	GND – B8	CH532 - block J6	

Note:

1. NO contacts for Chiller Faults (Circuit 1 and Circuit 2) can be wired:
   - In parallel: to report a fault on one of the two circuits or
   - In series: to report a fault on each of the two circuits

b) CH530

This controller is installed on air-cooled scroll (or screw) chillers with one or 2 refrigerant circuits.

To accept external commands (setpoint change or reset) and report status and faults, the CH530 controller needs to be equipped with **additional interface cards:**

- To report status and faults (Relay Card, ref X13650806)[1].
  Only one relay card X13650806 is needed whatever the number of the chiller circuits.
- To accept external setpoint (Analog Card, ref X13650731)[2].

The availability of these cards or modules should be insured prior to commissioning the Trane OptiPlant panel.

If adding new interface card, the CH530 Service Tool (TechView) is required to update the CH530 main processor with the new configuration

Signal	Connect to	On Card	Designation	*See Notes*
Chiller Status	10 -12	X13650806	UNIT PROGRAMMABLE RELAY (STATUS)	
Chiller Fault	7 - 9	X13650806	UNIT PROGRAMMABLE RELAY (ALARM)	
Chiller Reset Signal (VDC or mA)	2 - 3	X13650731	EXTERNAL CHILLED WATER SETPOINT	1,2

Notes:

1) Terminal 3: ground.
2) The CH530 Service Tool (TechView) may be required to:
   - Ensure the proper setting for the signal (VDC or mA) accepted by the Analog Card X13650731.
   - Set the proper range of ECWS Minimum / Maximum Temperatures (respectively -12.2°C and +18.3°C)

[1] Referred as 1A18 in the CGAM wiring diagram

[2] Referred as 1A14 in the CGAM wiring diagram

c) UCM-CLD

The UCM-CLD controller is installed on air-cooled screw chillers with two refrigerant circuits.

To accept external commands (setpoint change or reset), the UCM-CLD controller needs to be equipped with **one additional interface module** (ref X13650364040 or MOD01422)[1]

The availability of this module should be ensured prior to commissioning the Trane OptiPlant panel.

Chiller status and chiller fault report are available on a module (A1) that is supplied as standard.

Signal	Connect to	On Card	Designation	See Notes
Chiller Status	TB4-4/5	Module A1	UNIT STATUS	
Chiller Fault	TB4-1/-2	Module A1	UNIT ALARM, MANUAL AND AUTO RESET	1
Chiller Reset Signal (VDC or mA)	TB1-4/-5	Module A9	EXTERNAL CHILLED WATER SETPOINT	2, 3

Notes:

1) To recover this level of alarm (Unit Alarm, Manual and Auto Reset) ensure that the settings of Programmable Relay Setup (Service Setting Menu) is 2 or 10
2) Terminal 5: ground
3) For VDC signal, set the dipswitch SW1-1 of the module A9 to “OFF”
   For mA signal, set the dipswitch SW1-1 of the module A9 to “ON”

[1] Module CSR - External communication link and chiller water reset, referred as Module A9

Connections

d) UC800

The UC800 controller is installed on air-cooled screw chillers with two refrigerant circuits.

To accept external commands (setpoint change or reset), the UC800 controller needs to be equipped with **one additional interface card** (Analog Card, ref X13650731)[1]

The availability of this card should be ensured prior to commissioning the Trane OptiPlant panel.

If adding a new interface card, the UC800 Service Tool (TracerTM TU) is required to update the UC800 main processor with the new configuration.

Chiller status and chiller fault report comes on a card (ref X13650806)[2] that is supplied as standard.

Signal	Connect to	On Card	Designation	See Notes
Chiller Status	10 -12	X13650806	UNIT PROGRAMMABLE RELAY (STATUS)	
Chiller Fault	7-9	X13650806	UNIT PROGRAMMABLE RELAY (ALARM)	
Chiller Reset Signal (VDC or mA)	2-3	X13650731	EXTERNAL CHILLED WATER SETPOINT	1, 2

Notes:

1) Terminal 3: ground
2) The UC800 Service Tool (TracerTM TU) may be required to:
   - Ensure the proper setting for the signal (VDC or mA) accepted by the Analog Card X13650731.
   - Set the proper range of ECWS Minimum / Maximum Temperatures (respectively -12.2°C and +18.3°C)

[1] Referred as 1A19 in the RTAF wiring diagram

[2] Referred as 1A18 in the RTAF wiring diagram

Energy meter settings

1. When all connections are complete, power up the energy meter by powering the chiller.

   The energy meter has a function enabling errors in connection of the phases to be detected, which must be used once to avoid metering incorrect values (negative instead of positive energy, inconsistent totals).

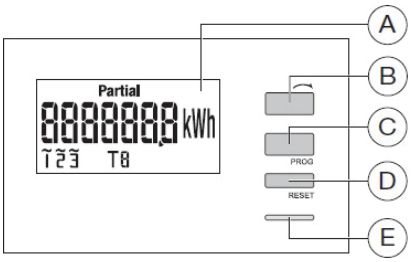
   The conditions below are necessary to ensure a satisfactory test result:

   - Presence of current and voltage on each phase on the meter
   - Power factor between 0.6 and 1
   - Minimum current drawn by the system= 20A

   Refer to the user instructions provided with the energy meter or proceed as follows:

   - Press and hold the button for scrolling through values (button B on figure 15) for more than 3 seconds
   - Refer to the “ERROR” table below for a description of wiring issues

Figure 15 - Energy meter settings

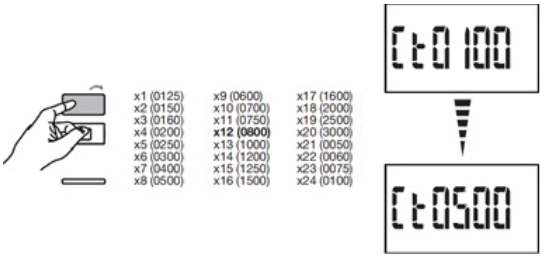


Error	Description
Err 0	No error
Err 1	Inverted current transformer connection of phase 1
Err 2	Inverted current transformer connection of phase 2
Err 3	Inverted current transformer connection of phase 3
Err 4	Voltage inversion between V1 and V2
Err 5	Voltage inversion between V2 and V3
Err 6	Voltage inversion between V3 and V1
Err 7	Voltage inversion between V1 and neutral
Err 8	Voltage inversion between V2 and neutral
Err 9	Voltage inversion between V3 and neutral

2. Configure the energy meter as follow:

   - On the meter, press the “PROG” button (button C on figure 15) for more than 3 seconds
   - The CT ratio setting is displayed (e.g. Ct0100 meaning 100A)

Figure 16 - Energy meter - current transformer setting



   - Press the key for scrolling through values (button B on figure 15) repeatedly to scroll the possible CT values
   - Choose the correct value as per the actual current transformer (from 100 to 500A)
   - Press “PROG” to confirm and switch to the next setting

Settings

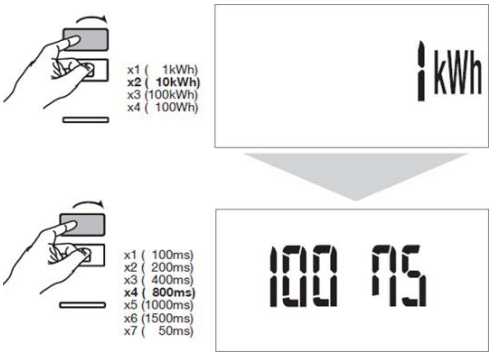
- The type of network (1L+N, 2L, 3L, 3L+N) is then displayed
  - Press the key for scrolling through values repeatedly to choose 3L

Figure 17 - Energy meter - network settings

  - Press “PROG” to confirm and switch to the next setting

- The next setting allow to configure the pulse weight and duration
  - Press the key for scrolling through values repeatedly to choose 1kWh

Figure 18 - Energy meter - pulse settings



  - Press “PROG” to confirm

- Press the “PROG” key during 3 seconds to exit the programming mode

  - Press “PROG” to confirm and switch to the next setting
  - Press the key for scrolling through values

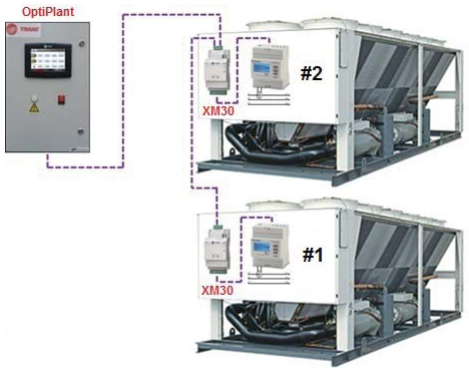
  - Press “PROG” to confirm and switch to the next setting
  - Press the key for scrolling through values repeatedly to choose 100 MS

XM30 expansion module settings

Based on the below schematic, set the rotary dial on the front of the XM30 to identify the chiller number:

- Address 01 for XM30 in chiller #1
- Address 02 for XM30 in chiller #2

Figure 19 - XM30 settings

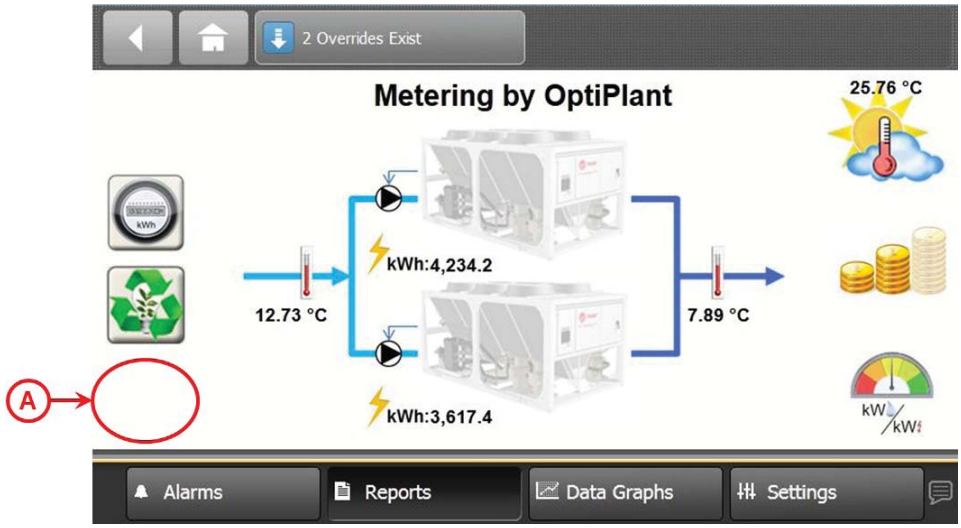


OptiPlant settings

This is done through two separate parameter screens accessible from the TD7 display.

To access the ***System Parameters*** screen, open the home page and press the bottom left area of the screen as shown in frame A on the below figure:

Figure 20 - Accessing the System Parameters screen



Enter the following in the System Parameters screen (refer to figure 21):

- **Chiller Capacity (%)**

  Enter the relative size (percentage of the total installed capacity) of unit #1 in ***A***

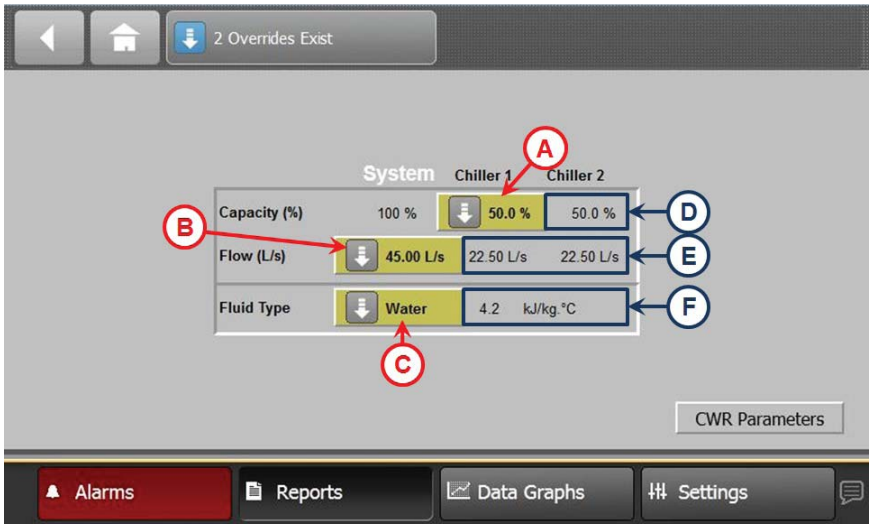
  The unit #2 capacity will then be calculated (as a percentage of the total installed capacity) in ***D***
- **System flow (l/s)**

  Enter the total design flow delivered to the system in ***B***.

  The flow for each chiller will be recalculated in ***E*** based on their configured capacity percentage
- **Fluid type**

  In C, choose from the list the percentage of glycol in the system (0 to 40%) in order for the system to calculate the correct specific heat of water in ***F***

Figure 21 - System Parameters screen



Settings

If the chilled water reset option is enabled, click on the ***CWR Parameters*** button on the bottom right corner of the ***System Parameters*** screen to open the ***Chilled Water Reset Parameters*** screen.

Note: This button is not available if the option is not activated

Enter the following in the ***Chilled Water Reset Parameters*** screen (refer to figure 22):

A. System Chilled Water Temperatures

Base System Setpoint (°C)

Temperature of chilled water desired in the system at design operating conditions.

This temperature is not always the temperature of the chilled water delivered in the system.

Temperature reset may apply.

Design Chilled Water Temperature Difference (K)

Actual design water temperature difference between the system chilled water return temperature and the system chilled water supply temperature, when the system is at maximum design load.

Setpoint - High Limit (°C)

Upper value that can be set for the base system setpoint.

See also Chiller Controllers Settings

Setpoint - Low Limit (°C)

Lower value that can be set for the base system setpoint.

See also Chiller Controllers Settings

B. Chiller Controllers

Required to correctly change and reset the chilled water setpoint of the chillers.

Chiller #1 // Chiller #2 Controller

Chiller controller to be selected: CH530 or CH532 or UCM-CLD or UC800.

Chiller controllers to be checked on site.

C. Chiller #1 // Chiller #2 Reset Signal Type

Type of signal set (or to be set) within the chiller controller for chilled water setpoint modification.

Not editable and limited to 4-20 mA.

See also Chiller Controllers Settings.

D. Chilled Water Reset

Function which modifies (upward) the chilled water setpoint of the chillers, assuming a reduced non-sensitive cooling load can be satisfied with warmer chilled water temperature.

This function is used to improve the chiller efficiency.

In HVAC applications, the usual reference for cooling load reduction is the outside air temperature or the return chilled water temperature.

Reset Based on

The reset base (or the variable used as reference to reflect the load reduction) can be selected within two choices: AOT (Outside Air Temperature) or RWT (system Return chilled Water Temperature).

A third choice, NONE, disables the function.

Max Desired Reset: Max Desired Chilled Water Temperature Reset (%).

Percentage of the Design Chilled Water Temperature Difference. This percentage is converted in temperature on the graph. The temperature value will be the maximum reset increase. The Chilled Water Reset function will apply on the Base System Setpoint.

Any value above 0% enables the Chilled Water Reset function.

A value of 0% disables the function.

CW Reset Starting: Chilled Water Reset Starting Temperature (°C)

Outdoor air temperature or return chilled water temperature -depending of the reference used in the former selection (Reset Based on) below which the Chilled Water Reset function starts modifying the setpoint.

Above this temperature, no modification is made to the Base Setpoint.

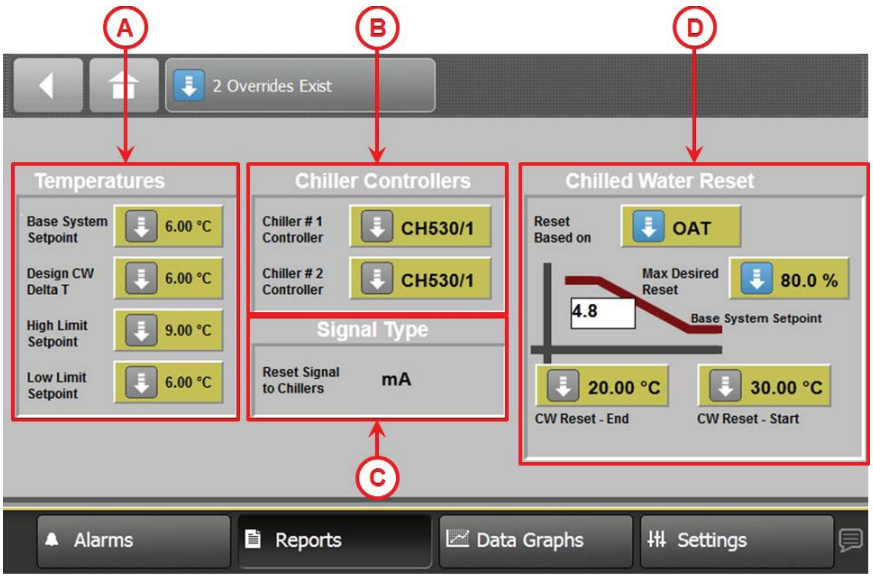
CW Reset Ending: Chilled Water Reset Ending Temperature (°C)

Outdoor air temperature or return chilled water temperature -depending of the reference used in the former selection (Reset Based on)- at which the Chilled Water Reset function has reached the maximum set point modification.

Below this temperature, the setpoint remains at a fixed value.

Ending Temperature should be lower than the Starting Temperature.

Figure 22 - System Parameters screen



Chiller Controller settings

Setting the chiller controller is needed to apply Chilled Water Setpoint change or reset.

The change or reset signal issued to the chiller is in mA only.

Ensure proper settings on the chiller controllers.

a) CH530

Refer to user guide CG-SVU06, Tracer CH530 for Air-Cooled Scroll Chillers

- Set the input signal type for the External Chilled Water Setpoint
- Ensure proper arbitration between various chilled water setpoint sources

b) CH532

Refer to user guide CG-SVU01, Tracer CH532 Chiller Controller

- Set the input signal type for the External Chilled Water Setpoint
- Set the Chiller Chilled Water Front Panel Setpoint at the minimum permitted value, defined at the Chilled Water Reset panel, for local Chilled Water Setpoint.

  The Front Panel setpoint shall correspond to the value set in the Parameter screen for Setpoint - Low Limit, as CH532 applies reset as an offset on the Front Panel setpoint.
- *Ensure proper arbitration between various chilled water setpoint sources if applicable*

c) UCM-CLD

Refer to Engineering Bulletin EB542E UCM—CLD: Unit Control Module with Clear Language Display for Screw compressor

Using the Clear Language display:

- Set " Programmable Relay Setup" (Service Setting Menu) to "2" or "10"
- If needed, set "External Chilled Water Setpoint " (Operator Settings Menu) to "E"

d) UC800

Refer to user guide RLC-SVU007, Tracer™ TD7 with UC 800

- Set the input signal type for the External Chilled Water Setpoint
- Ensure proper arbitration between various chilled water setpoint sources

The installation, connections and setting procedure is now complete.

Troubleshooting

The section provides troubleshooting solutions for problems that may occur after installing the metering option.

Communication Problems

Problem: No energy data are shown on the OptiPlant TD7 display.

Possible cause 1: The energy meter and its current transformer are not properly wired.

Solution:

1. Run a test to detect connection errors as described in the *Energy meter settings* section

2. Ensure the Metrological LED on the energy meter is flashing (0.1Wh/pulse)

Possible cause 2: The rotary switches on the XM30s are not set properly or both devices are set to the same rotary address.

Solution: Verify that the rotary address is correct (refer to figure 14). If not, change the address and cycle power.

Possible cause 3: Incorrect wiring between the energy meter, the XM30 and the UC600 in the OptiPlant panel.

Solution: Verify all wiring as per the Connections section, and particularly the type of wire used, terminations, and maximum wiring length

Incorrect energy data readings on TD7 display

Problem: The energy data (chillers kWh) shown on the TD7 touchscreen are different from the ones shown on the energy meter display.

Possible cause 1: The energy meter is not properly configured.

Solution: Ensure the CT ratio, type of network and pulse weight and duration are configured on the meter as described in the *Energy meter settings section*

Possible cause 2: The pulse output signal is not reaching the UC600 controller of the OptiPlant panel.

Solution: Check the wiring of the system as explained in the Communication Problems

Incorrect cooling load and system efficiency values on TD7 display

Problem: The cooling load and system efficiency data shown on the TD7 display do not appear to be correct.

Possible cause 1: OptiPlant settings are not properly configured.

Solution: Ensure the system flow and fluid type are accurate (refer to the *OptiPlant Settings* section for more information).

Possible cause 2: Incorrect water temperature measures.

Solution: Check the displayed supply and return water temperatures, and ensure the temperature sensors are calibrated.

Chilled Water Reset option not installed

Problem: The TD7 display indicates that the chilled water reset option is not installed.

Possible cause: The chilled water reset option has not been enabled in the OptiPlant panel.

Solution: Contact your local Trane office to get the chilled water reset option enabled.

Notes

Notes

Notes

Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services and parts. For more information visit www.Trane.com

Ingersoll-Rand International Limited - 170/175 Lakeview Drive, Airside Business Park, Swords, Co. Dublin, Ireland

BAS-SVN019A-GB 03 2015

We are committed to using environmentally conscious print practices that reduce waste.