Product Information Packet

Model TLC-702

Solid State Liquid Chiller with TC-3300

Temperature Controller and RS-232 Communications

Part #6-A0D2-0-005

Thank you for your purchase. Information has been enclosed regarding the installation, specifications, and wiring of your solid state assembly.

Please read and follow all instructions carefully before installation. Only qualified technicians should install this equipment.

If you have any questions with your equipment, please do not hesitate to call us toll free at (888) TECA-USA (832-2872), we will be happy to assist. We are open from 8:00 am to 4:30 pm Central Time.

Included in this packet you will find:

Getting Started

Product Literature and Specifications

Wiring Drawing # SK010909

Temperature Control Literature Set-Up and Communications Information

Warranty Information

TC-3300 Manual

teca

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Ph: 773/342-4900 Fx: 773/342-0191
sales@thermoelectric.com www.thermoelectric.com

GETTING STARTED:

(Read entire instructions before operating)

STEP #1 This unit should operate with the bottom feet resting on a flat surface. The internal heat exchanger is cooled by a tubeaxial fan. It is necessary to keep the inlet/outlet air path free from any restrictions that may impede your cooling performance. A 6" minimum spacing from the rear of the unit to any obstruction is required. External tubing with insulation has been provided for a total of 12' plumbing line. Trim the tubing and insulation as necessary to minimize the ambient thermal load. 4 clamps have been provided to attach the tubing (2 to the quick connectors provided and 2 for your load connectors). The tubing lines are a 3/8" inner diameter. Connect the external plumbing lines to the device(s) being cooled.

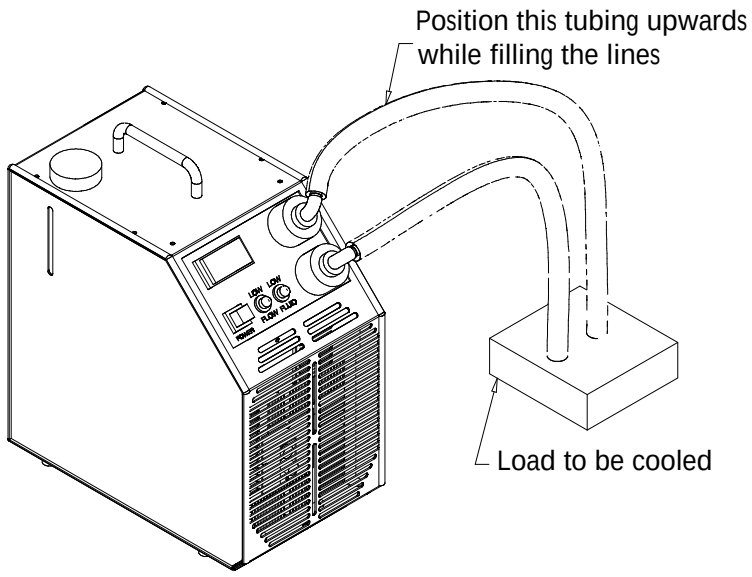
STEP #2 Low fluid and low flow indicators have been provided on the front panel. It is necessary to fill the internal reservoir before you apply power. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE PUMP The internal reservoir holds approximately 500 ml of fluid. The "add fluid" light will come on when the reservoir is approximately ½ full. There is a visual indicator of the water level on the side of the unit. Distilled water is the recommended fluid for temperatures to 5EC. For temperatures below 5EC, a 30% glycol 70% distilled water mix is suggested. Remove the reservoir cap located at the top left corner of the unit and fill the reservoir. Keep the reservoir cap off until the external plumbing is filled and the reservoir is topped off.

STEP #3 Connect the power cord to an appropriate outlet. The power cord must be connected to a receptacle protected by a circuit protected per local and or national codes. While you are filling the external lines, position the supply quick connect upwards. (See Figure A) This will assist in removing air trapped in the lines. At this point, depress the power switch on the front panel to turn the system on. For a 12' plumbing line, it should take about 30 seconds before the "add fluid" light illuminates. At this point, turn the power off and add additional fluid. Re-apply power. Another 30 seconds or so should be enough time to completely fill the lines. Turn off the power switch and top off the reservoir. Reattach the reservoir cap securely.

Please Note: It may be necessary to add fluid to the reservoir from time to time. The "add fluid" indicator will illuminate if the reservoir requires a refill. If the "low flow" indicator light appears, check to see if there are any obstructions or leaks within the plumbing lines.
The "low flow" indicator appears when the flow is approximately 0.3 liter/min or less.

STEP #4 A digital temperature controller has been provided. Hold the * button and adjust ?> to adjust the set point. More detailed temperature control information has been included with your product information packet. We suggest changing the temperature controllers programming to a PID control method and then performing an autotune for better temperature control.

We hope you enjoy your new Ameritemp™ series liquid chiller. If you have any questions, please do not hesitate to call our technical department @ 888-TECA-USA (888-832-2872).



TLC-700 | Liquid Chiller

Air Cooled | 120 VAC, 230 VAC and 24 VDC
215 Watts

FEATURES

- Compact (only 15.5" X 7.6" bench top footprint)
- Easy prime pump design
- Integral PID "tunable" temperature control
- No compressor, fluorocarbons or filters
- Un-cooled, 500mL reservoir
- Front to back air-flow system
- Stainless steel exterior housing
- Ergonomic sloping front design
- Low fluid level and low flow warning
- Integral power supply
- Self priming pump/reservoir
- Cool and Heat/Cool versions

TC-3300 FEATURES

- RS-232 communications (optional)
- Communications Software (optional)

INCLUDES

- 3/8" ID Hose (12')
- Hose insulation (12')
- 3/8" CPC low pressure drop shut off finttings

SPECIFICATIONS

MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING AMBIENT	HEATING OPTION (HC SUFFIX)	TEMP. CONTROL	FLUID TEMP RANGE °C	AGENCY APPROVALS (ETL)
TLC-700	6-A0D0-0-000	730-800	120 VAC	4.2	32(14.5)	50 °C(+122 F)		TC-3300	-5/65	UL3101-1/CSA22.2, CE
TLC-700HC	6-A0D0-1-000	730-800	120 VAC	4.2	32(14.5)	50 °C(+122 F)	200 Watt	TC-3300	-5/65	UL3101-1/CSA22.2, CE
TLC-702	6-A0D2-0-000	730-800	230 VAC*	3.3	42(19)	50 °C(+122 F)		TC-3300	-5/65	UL3101-1/CSA22.2, CE
TLC-702HC	6-A0D2-1-000	730-800	230 VAC*	3.3	42(19)	50 °C(+122 F)	200 Watt	TC-3300	-5/65	UL3101-1/CSA22.2, CE

* 215-230 VAC input range for 50 Hz
220-240 VAC input range for 60 Hz

Liquid Chiller - Air Cooled

TLC-700

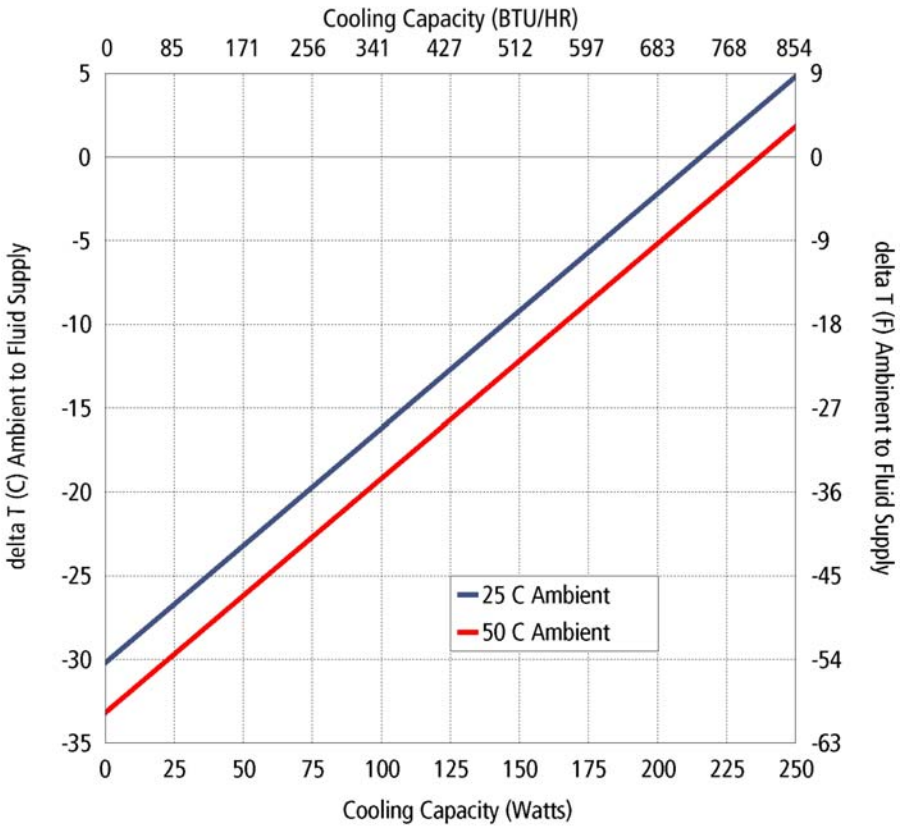
ENVIRONMENTS

Bench top
Laboratory
Industrial

COOLING CAPACITY

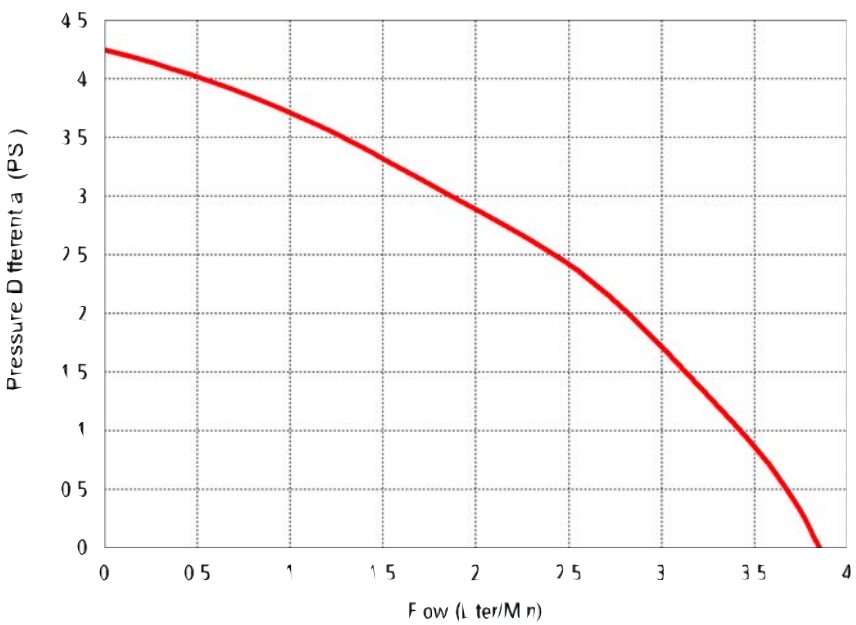
215 Watts @ 0 °C ΔT

PERFORMANCE CURVE

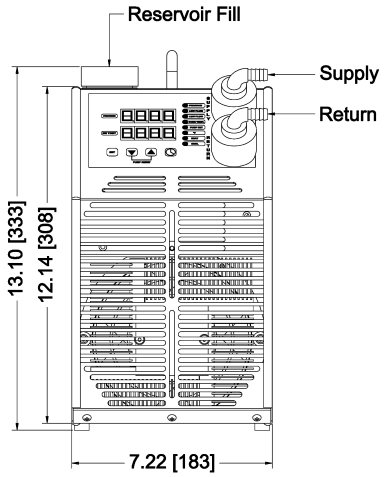


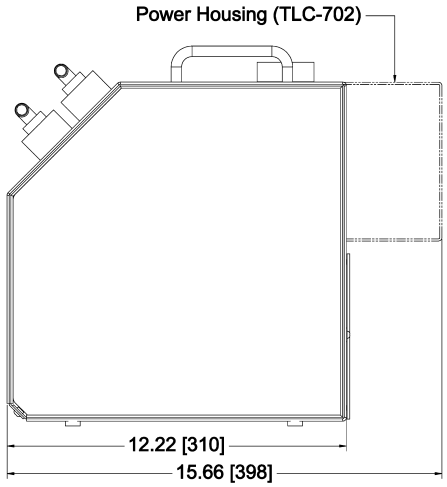
Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Fluid Supply	y=.14x-30.2	y=.14x-33.2

PUMP CURVE



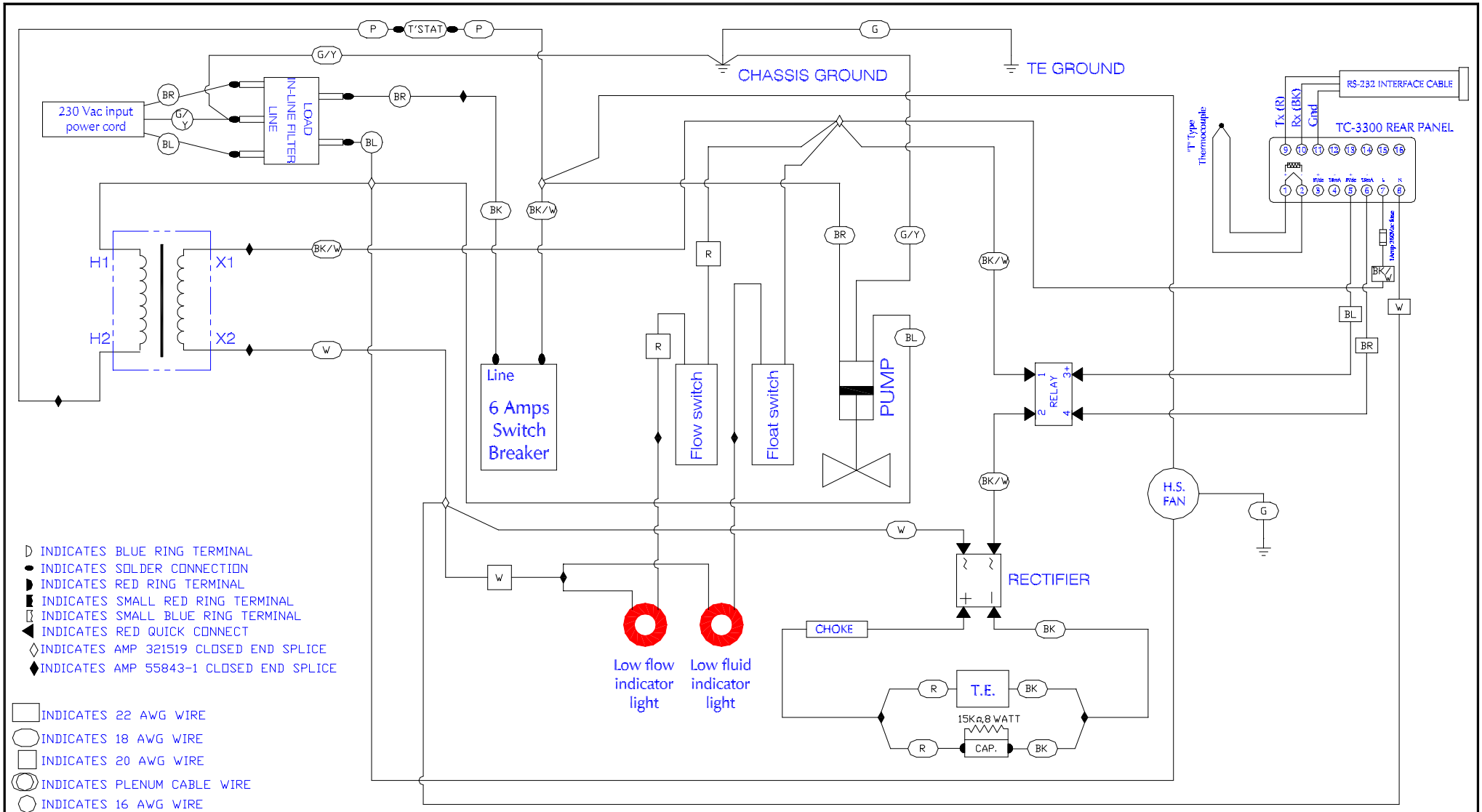
DIMENSIONS





Dimensions: Inches [Millimeters]

Ambient Air Path



REV	DESCRIPTION	Date	APPROVED

INFORMATION DISCLOSED HEREIN IS THE CONFIDENTIAL PROPERTY OF TECA CORP. RECIPIENT SHALL NOT USE THE INFORMATION IN ANY UNAUTHORIZED MANNER.

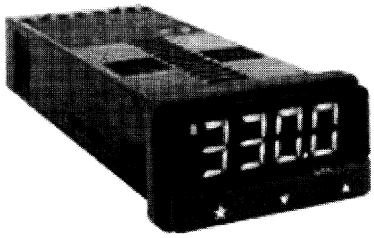
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
DECIMALS .XX +/- .XXX +/-
ANGLE +/-
FRACTION +/-
FINISH:
MATERIAL:

THERMOELECTRIC COOLING AMERICA CORP.

AMERITEMP LIQUID CHILLER
TLC-702 W/TC-3300 & RS-232
WIRING DIAGRAM

DRAWN BY:	DRAWING #	REV LEVEL
AA	SK010909	
DATE: 09/21/01		
D5721	SCALE	MASTER: SK990502 SHEET

Temperature Controllers



Featuring

Front panel display	**000.0 Digital High Brightness Display**
Operator lockout	**Included**
Ramp/Soak	**Included**
Type	**P.I.D.**
Auto tuning	**Included**
Data retention	**Included**
Size (1/32 DIN)	**2" w x 1.2" h x 4.57" d**
Weight	**3.9 oz**
Power Input	**AC & DC Models**
Sensor (Provided)	**T-Type (6' Length cable)**
Calibration Accuracy	**+/- 0.25% of span +/- 1 LSD**
Control Stability	**Application Dependant Typically < +/- 1°C**
Ambient Range	**0-50°C (32-130°F)**
Approvals (pending)	**UL873, EN 61010, CSA 22.2 No. 1010.1-92**
EMC Emission:	**EN50081-1 FCC Rules 15 subpart J Class A**
EMC Immunity:	**EN50082-2**
Sensor Range (T-Type)	**-200°C to +250°C**

PC Compatible

Communications and communications software are available for PC supervision, offering remote adjustment, instrument configuration, cloning, saving and retrieving instrument settings to files together with logging and charting in real time.

To gain the full benefit of the COMMS software, it is recommended that the PC is fitted with a Pentium© Processor and is running Windows™ 95/98 Windows™ NT programs. A minimum of 16 Mb Ram is recommended, together with 20 Mb of hard disc space, to allow ample space for logging files.

Model 3300 is a digital, microprocessor based temperature controller designed to be used in conjunction with TECA heat pumps. When ordering a complete package, simply plug in the control cable and with factory preset tuning already provided, you are ready to go!

All models are designed with a Nema-4X front panel for corrosion and water resistance. This is ideal for applications such as food processing and food packaging, where equipment needs to be cleaned frequently. Features such as auto-tuning, dual output, and single input are available from these controllers. Each unit comes with factory default programming, but can be user modified through a setup menu.

Part Number

3	3	0	0	-	▲	-	○	●	¤

☼ (Standard)

▲ OUTPUT

0	**Single Output (Cool Only)**	☼
1	**Dual Output (Cool/Heat)**	

○ INPUT

0	**AC Input 100-240 VAC**	☼
1	**DC Input 12-24 VDC**	

● SOLID STATE RELAY

0	**Internal Relay(s) *Choose this option if ordering with AC input TECA units. Relay(s) are contained within the power supply.**	☼
1	**External Relay(s) AC load (10 amp)**	
2	**External Relay(s) DC load (20 amp)**	

¤ COMMUNICATIONS

0	**No Communications**	☼
1	**RS-232**	
2	**RS-485**	

SOFTWARE (ORDER SEPARATELY)
Windows™ Based, Includes Software Manual

Part Number: 100-1GB-300

teca™

Call us toll free at 888-TECA-USA (832-2872)

ThermoElectric Cooling America Corporation • 4048 W. Schubert Ave. • Chicago IL (USA) 60639
Phone: 773-342-4900 Fax: 773-342-0191 • www.thermoelectric.com • teca@thermoelectric.com

TC-3300 SET UP (ON/OFF STYLE)

To access the set up menu push and hold **UP** and **DOWN** buttons simultaneously for 3 seconds.
Press and hold **UP** or **DOWN** button to navigate through the menu.
To change settings: Press and hold ***** button, then use **UP** or **DOWN** buttons to enter new values.
Press and hold **UP** and **DOWN** buttons simultaneously for 3 seconds to exit the set up menu.
To set the main temperature: Press and hold ***** button, then use **UP** or **DOWN** buttons to enter the new value.

LEVEL 1:

tune	off
bAnd	0.5
int.t	5.0
dEr.t	25
dAc	1.5
cyc.t	on.off
oFst	0
sp.Lk	off
sprr	0
sprn	off
soAk	- -
sEt.2	0.2
bAnd.2	0.5
cyc.2	on.off

LEVEL 2:

Manual control modes

sp1.p	(as is)
hAnd	off
pL.1	100
pL.2	100
sp2.A	dv.hi
sp2.b	nonE
disp	0.1
hisc	70
Lo.sc	-10
inpt	tc t
unit	c

LEVEL 3:

Output configuration

sp1.d	ssd1
sp2.d	ssd2
burn	1u.2d
rEu.d	1r.2r
reu.L	1n.2n
spAn	0.0
zEro	0.0
chEk	off
rEAd	Var
tEch	ctA
uEr	(see note)
rsEt	nonE

LEVEL 4:

Lock	nonE
Prog	Auto
no.AL	on
dis.s	6
dEr.s	0.5

LEVEL C:

COMMS menu

Addr	1
bAud	9600
dAtA	18n1
dbuG	off

Note: "uEr" value is preset and can not be changed, however it provides access to LEVEL 4. Press and hold UP and DOWN buttons for 10 seconds to access LEVEL 4.

LEVEL C only visible when COMMS option fitted.

Set SP1 (main temperature set point) to 10 C.

Rev A: Changed SP1 from 25C to 10C. 11/02/99/AA

TC-3300 SET UP (PID STYLE) FOR COOL ONLY.

To access the set up menu push and hold **UP** and **DOWN** buttons simultaneously for 3 seconds.
Press and hold **UP** or **DOWN** button to navigate through the menu.
To change settings: Press and hold ***** button, then use **UP** or **DOWN** buttons to enter new values.
Press and hold **UP** and **DOWN** buttons simultaneously for 3 seconds to exit the set up menu.
To set the main temperature: Press and hold ***** button, then use **UP** or **DOWN** buttons to enter the new value.

LEVEL 1:

tune	off
bAnd	4.0
int.t	20
dEr.t	10
dAc	1.0
cyc.t	10
oFst	0
sp.Lk	off
sprr	0
sprn	off
soAk	- -
sEt.2	0.0
bAnd.2	2.0
cyc.2	on.off

LEVEL 2:

Manual control modes

sp1.p	(as is)
hAnd	off
pL.1	100
pL.2	100
sp2.A	nonE
sp2.b	nonE
disp	0.1
hisc	70
Lo.sc	-10
inpt	tc t
unit	c

LEVEL 3:

Output configuration

sp1.d	rLy2
sp2.d	rLy1
burn	dn.sc
rEu.d	1d.2d
reu.L	1i.2n
spAn	0.0
zEro	0.0
chEk	off
rEAd	Var
tEch	ctA
uEr	(see note)
rsEt	nonE

LEVEL 4:

Lock	nonE
Prog	Auto
no.AL	on
dis.s	6
dEr.s	0.5

LEVEL C:

COMMS menu

Addr	1
bAud	9600
dAtA	18n1
dbuG	off

Note: "uEr" value is preset and can not be changed, however it provides access to LEVEL 4. Press and hold UP and DOWN buttons for 10 seconds to access LEVEL 4.

LEVEL C only visible when COMMS option fitted.

Set SP1 (main temperature set point) to 10 C.

In order to use **tune** option with the controller for cool only set up, the controller should be set up with **PID STYLE COOL ONLY** settings. Follow the steps outlined below to change the controller settings from **ON/OFF STYLE** to **PID STYLE COOL ONLY** .

Method 1:

- In **LEVEL 3** change the **rsEt** value to **All**.

rsEt	All

- Change the settings in **LEVEL 1** through **LEVEL 4** to match the settings in the **PID STYLE COOL ONLY** set up.

Method 2:

- In **LEVEL 2** change the **unit** value to **nonE**.

unit	nonE

- In **LEVEL 3** change the **sp1.d** value to **rLy2** and **sp2.d** to **rLy1**.

sp1.d	rLy2
sp2.d	rLy1

- Change the settings in **LEVEL 1** through **LEVEL 3** to match the settings outlined in **PID STYLE COOL ONLY** set up.

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DECLARATION OF CONFORMITY

TYPE OF EQUIPMENT	Electrical Heat Pump, Liquid Chiller, Solid State Cooling Device
BRAND NAME	TLC
TYPE DESIGNATION	700, 702
YEAR OF MANUFACTURE	Refer to the first two digits of the serial number on the manufacturers ID label
MANUFACTURER	TECA Corporation 4048 W. Schubert Ave. Chicago, IL, 60639 U.S.A.

APPLIED STANDARDS

Application of Council directive:	Machinery Directive (89/336/EEC)
Standards to which conformity is declared:	EN61326:1997, Class A EN61326:1997, Industrial Location
Report number:	J20022721.011
Low voltage directive	73/23/EEC - European union (EU)
Standards to which conformity is declared:	EN61010-1-A1:97 EN61010-2-010-A1:97
Report number:	J20022721.L01

TESTING AGENCY	ITS Intertek Testing Services ETL SEMKO

VP of Engineering
Andy Brecklin

June 19, 2003

LIMITED WARRANTY

In the event a defect in material or workmanship is discovered in any of TECA's products within one year after the date they are delivered to Buyer, and if: (a) TECA is notified of the defect in writing by certified mail within 14 days of the date of discovery; (b) TECA may then either, at its sole discretion, inspect the product at Buyer's location, or require that the product be made available at Buyer's expense at TECA's premises for TECA's inspection within 14 days of the date of notification; and (c) the products are defective and the defects result from faulty materials and/or workmanship and not in any way from accident, misuse, misapplication, mishandling, modification, or alteration by the Buyer or the shipper, then TECA shall, at its sole option, repair or exchange defective products free of charge to Buyer, or credit to buyer the price of the defective products. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARE EXCLUDED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL TECA BE LIABLE FOR ANY CLAIM BASED UPON BREACH OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER DAMAGES WHETHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOST PROFITS, BUSINESS INTERRUPTION, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

RETURNED GOODS, RESTOCKING CHARGES

In order to return merchandise for any reason (repair, replacement, or credit) a return authorization number must be issued by TECA. New merchandise may not be returned for credit beyond 60 days from shipment. Charges for incidental or other damages may also be made. All returned goods must be sent freight prepaid. A restocking charge of 15% will apply. On special equipment and custom modified equipment orders, additional incremental cancellation charges may be made.