Raychem xl trace installation guide manual free pdf

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GECKODRIVE MOTOR CONTROLS

G320 BRUSH SERVO DRIVE

REV 7: July 15, 2010

GECKODRIVE, INC.
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Thank you for purchasing the G320 drive. The G320 DC servo drive is warranted to be free of manufacturing defects for 1 year from the date of purchase. Any customer who is dissatisfied with it or is unable to make it work will be cheerfully refunded the purchase price if the G320 is returned within 15 days of the purchase date.

PLEASE READ FIRST BEFORE USING THE G320:

If you are not familiar with DC servo drives please do the following setup instructions with the motor on the bench before mounting it on the mechanism it will eventually run. This will allow you to get a baseline motor behavior of what to expect.

Before you start, you must have a suitable encoder mounted and properly aligned on the motor. **Follow the manufacturer's instructions on mounting and aligning the encoder if the motor doesn't already come with one.**

Next you must have a DC power supply suitable for the motor. The power supply current rating must equal the maximum current you expect to run the motor at.

Finally, have a STEP and DIRECTION pulse source available.

Before going on, turn the current LIMIT trimpot a quarter to half of full scale. Turn the GAIN trimpot fully off and turn the DAMP trimpot to a quarter of full scale. The trimpots are single-turn so be careful not to over-torque them.

G320 PINOUT

TERMINAL 1	Power Ground Connect the negative (black) lead of your power supply to this terminal.
TERMINAL 2	Power (+) Connect the positive (red) lead of your power supply to this terminal. It must be between +18VDC to +80VDC.
TERMINAL 3	Armature (-) Connect the black lead of your motor to this terminal.
TERMINAL 4	Armature (+) Connect the red lead of your motor to this terminal.
TERMINAL 5	ERR/RES This is the ERROR and RESET pin. **For a full explanation read the section titled "ERROR/RESET PIN" on page 5.**
TERMINAL 6	Encoder Ground Connect the encoder power supply ground to this terminal.
TERMINAL 7	Encoder +5VDC Connect the encoder +5VDC pin to this terminal.
TERMINAL 8	Channel A Connect the Channel A pin of your encoder to this terminal.
TERMINAL 9	Channel B Connect the Channel B pin of your encoder to this terminal.
TERMINAL 10	Direction Connect the DIRECTION signal to this terminal.
TERMINAL 11	Step Connect the STEP signal to this terminal.
TERMINAL 12	S/D Common Connect this terminal to +5VDC.

IMPORTANT: When first testing the G320, connect ERR/RES (term. 5) to ENC+ (term. 7). Please follow the next steps in the sequence they are given.

PENTAIR

Raychem QuickStat-TC

INSTALLATION AND OPERATION MANUAL

APPROVALS

TECHNICAL DATA

Supply voltage	120 V, 208 V, 240 V, 60 Hz
Maximum switching current	15 A
GFCI	Class A, 5 mA trip level
Ambient setpoint range	40°F to 86°F (5°C to 30°C) (A/AF mode)
Floor setpoint range (F mode)	40°F to 104°F (5°C to 40°C)
Floor limit setpoint range	40°F to 104°F (5°C to 40°C) (AF mode)
Operating temperature range	32°F to 120°F (0°C to 50°C)
Storage temperature range	–4°F to 120°F (–20°C to 50°C)

KIT CONTENTS

Item	Qty	Description
A	1	QuickStat-TC thermostat
B	2	Mounting screws
C	1	Floor temperature sensor 15 ft (4.6m)
D	5	Wire nuts
E	1	Screwdriver

GENERAL INFORMATION

Use of this Manual

This manual covers the installation and operation of the Raychem QuickStat-TC thermostat and must be used with the following documents:

- QuickNet System Installation Manual (H57704)
- CeraPro System Installation Manual (H58956)

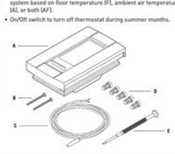
Important: For the Pentair Thermal Management warranty and agency approvals to apply, the instructions included in this manual and product packages must be followed.

Features

The QuickStat-TC is an electronic thermostat that must be used with the Raychem QuickNet floor heating mats and CeraPro floor heating cables.

QuickStat-TC provides the following features:

- Integrated Class A, Ground-Fault Circuit Interrupter (GFCI).
- Operates at 120 V, 208 V, and 240 V at 60 Hz
- Switches on your heating system at predetermined times on different days of the week.
- Offers 4 periods each day that you can set at different temperatures.
- Comes with a preprogrammed schedule that is suitable for most installations. However, you can customize this program any time you wish.
- Allows you to reset the thermostat to factory settings.
- Changes the start time of a heating period automatically so that the desired temperature is reached at the time that you set.
- Multiple temperature control options so users can control the system based on floor temperature (F), ambient air temperature (A), or both (AF).
- On/Off switch to turn off thermostat during summer months.



THERMAL BUILDING SOLUTIONS | EN-RaychemQuickStatTCthermostat-IM-H58517 10/14 1 / 6

Raychem xl-trace installation guide.

rewoP BSU hAm034,3 gnigrahc sseleriw iQ 0.2 yrevileD rewoP BSU hAm007,3 yrettaB 86PI 86PI ecnatsiser retaW eviticapac raer ,seY daetsni noitingocer laicaf ,oN rosnes tnirpregniF C-BSU C-BSU stroP 0.5 htooteulB 0.5 htooteulB noisrev htooteulB spf 042 ta ta p027 , SPF 021 TA P0801, SPF 03 TA P0612 SPFF 069 TA P027, SPF 042 TA P0801, DNOES REP SEMARF 06 TA P0612 Oediv TNorf Sesnel PM8 Laud, Raer PM21 Snel-Elgnis Tnorf ¢lexiP-lauDÂÂ¢ lexipagem-21 snel lauD aremaC BG4 BG6 MAR 548 nogardpanS mmoclauQ 558 nogardpanS mmoclauQ rossecorP yaP elgooG yaP elgooG secivres yap-ot-paT oN oN tols drac DSorciM BGB821 ,BG46 BG821 ,BG46 ecaps egarotS 11 diordnA 11 Diordna Metsys Gnitarepo) HCNI Rep Slexip 325 (Slexip 0441 â-0692) HCNI Rep Slexip 735 (Slexip 0441 â-0403 Noituloser HCNI HCNI HCNI HCNI HCNI HCNIRCS DELI-PP) Secnuo 18.6 (SMARG 391 THGIGEW) Sehcni 3.0 â - 2 â - 2 â - 2.6 (MM9.7 â - - 7.67 â - 851) Sehcni 3.0 Â - Â -âf 3.6 (MM2.8 â-1.57 â-4f 4.061 Ezis LX 3 Lexip LX 4 Lexip ElGOOP ElGOOP ELGOOP SCEPS .SNOITSUQ TNatropmi ESEHT REWSNA OT DAEH-DEWHT EWSNA OT DAEH-DAEH SENOHP EWSNA? Ruoy Htrow Lx 4 Lexip Eht Si, Lexip Reggib a ot edargpu na gnireredisnoc erâ € € € ã ã ã ã ã ¢ ¢ ¢ ¢ ¢ ¢ ¢ ¢ o â â sa deunitnocsid saw LX 3 lexiP ehT .snoitavonni tnatsissA elgooG tsetal eht dna ,aremac dedargpu na ,ngised taerg sti ot sknaht ,revird yliad tnellecxe na llits sÂÂÃ¢ti ,enohp redlo na sÂÂÃ¢ti hguoht neve tuB .5 lexiP eht fo esaeler eht htiw ti hserfer tÂÂÃ¢ndid dna ,9102 fo llaf eht ni LX 4 lexiP eht desaeler ynapmoc ehT :tniop siht ta ,lla ta wen taht lla tÂÂÃ¢nsi LX tsewen sâ ™ € € €

RegisterInspection. 8. Repeat steps 4 7 to 1000 and 500 VDC. 9. Turn off the megohmmeter. 10. If the megohmmeter does not self-dislike, the discharge phase connection to the ground with an adequate earth bar. Disconnect the megohmmeter. 11. Repeat this test between braided and tube. 1. Reconnect Autobãºs A a A #### ## TC-LX8 dna RC-LX8)V 01(TC-1LX8 dna RC-1LX8)7(08)V 80(TC-LX5 dna RC-LX5)V 01(♪ I'm gonna go ♪The location of a short bus cable. A short-circuit heating cable could result in a circuit breaker. If the resistance can be read in a standard ohm meter, this method can also be used to find a flaw brace from a bus cable to the earth braid. This type of short tropy would be with a GFPD and would show a failed isolation of a B resistance reading. Measure the resistance to the heating cable from bus to bus at each end (measure A and measurement b) of the suspicious section. A Trend Figure 33: Low resistance failure test. : A = 1. ohms b = 1.8 ohms Failure location: d = 1. / () x 100 = 40% B Failure is 40% on the circuit measured from the front end. A Figure 3: Resistance measurement test The approximate location of the fault, expressed as a percentage of the heating cable length from the front end, is: Failure Location: D = A x 100 (A + B) Example: A = 1. Ohms B = 1.8 ohms Failure location: d = 1. / () x 100 = 40% To locate a low resistance fault, measure between bus and braid. B Method of Conduct The method of conductance uses the central heating cable resistance to approximate the location of a fault when the heating cable has been cut and the bus cables have not been cut together. A cut-up heating cable can cause a cold section of pipe and can't trip with the circuit breaker. Measure the resistance to the heating cable from bus to bus at each end (measure A and measurement b) of the suspicious section. Since self-regulatory heating cables are a parallel resistance, the ratio calculations should be done using the heating cable behavior. A FIGURA 34: Resistance measurement B braid A B 40 4124 7 Test procedures 7 Test procedures TheApproximate of the fault, expressed as a percentage of the length of the heating cable from the front end, is: failure failure etroc o kciN .opmeit odaisamed otiucric ed sedutignoL .lanif la otiucricotroc ne n¡Âtse sesubotua sol ed selbac soL .otcerid otroc nu odnasuac ¡Âtse otneimatnelac ed elbac la ocisÃf o±Ãad lE .natroc es etnetsisnocni o ajab otneimalsia ed aicnetsiser ed semlapme o/y senoixenoc saL .otcerrocni o±Ãamat ed o osoutcefed se is otiucric ed rotpurretni le ecalpmeeR .odazilitu otneimatnelac ed elbac le arap otiucric led amix¡Âm dutignol al adecxe oN .etneirroc ed sagrac sal y oicini ed arutarepmet al arap o±Ãesid le racifirev a avleuV .o±Ãamat ronem ed nevleuv es otiucric ed rotpurretni led sejaiv soL avitcerroc n³Âicca ed otiucriC selbaborp sasuaC samotnÃS samelborp ed n³Âiculoser ed aÃuG 8 5234 4)B + A(001 x A = C :allaf al ed n³ÂicacibU .aicnaticapac ed serotcaf renetbo arap ,93 anig¡Âp ,01 albaT al etlusnoC .elbac ed otiucric led dutignoL latot otneimatnelac led ejatnecrop nu omoc odaserpxe ,omertxe remirp le edsed aicnatsid al ed sotneimidner 001 rop odacilpitlum ogeul y)B + A(B y A ed amus al rop odidivid)a(omertxe nu ed odamot aicnaticapac ed rolav nu ed n³Âicaler aL)m 46(seip 11 = FN/seip 0.5 x FN .4 = allaf ed n³ÂicacibU FN/seip 0.5 = FN aicnaticapac ed rotcaF .61 = RC-LX5 :olpmejE :olpmeje etneiugis le ne aremune es omoc S otneimatnelac ed elbac led aicnaticapac ed rotcaf le noc adidem aicnaticapac al euqilpitluM .)ovitagen omolp(aznert al y)ovitisop omolp(sodicroter sub led selbac sobma ertne esridem ebed aicnaticapac ed arutcel aL .n³Âiccafelac ed elbac led omertxe nu ed aicnaticapac ed arutcel al ertsigeR .n³Âixenoc ed tik nu odatcenoc ah es on o n³Âiccafelac ed elbac le odatroc ah es ednod allaf anu ed n³Âicacibu al ramixorpa arap ,73 anig¡Âp al ne ebircsed es omoc)FN(aicnaticapac ed n³Âicidem al azilitu odot©Ãm etsE aicnaticapac ed odot©ÃM .otiucric led latnorf omertxe le edsed %0 artneucne es allaf aL %0 = 001 x)5//1(/)001/1(= d :allaf ed n³ÂicacibU soimho 5 = b soimho 001 = a :olpmejE)b/1 + a/1(001 x a/1 = D in heating cable or feeding wire with present humidity or moisture in connections. GFPD is smaller (5 mA used instead of 30 mA) or poorly wired. Wire or cuts on the heating cable. Short between the braid and the core of the heating cable or the braid and the pipe. Arcing due to damaged heating cable)C 4(F 04)C 81 (F 0)C 9 (F 0 ahcram ne atseup ed aminÃm arutarepmeT V 01 renetnaM]C 4[F 04 :ecnanetniaM wolF eniL leuF dna noitcetorP ezeerF epiP rof gniziS rekaerB tiucriC 1A ecidn©ÂpA 9 62raicinier y abeurp al ed o±Ãamat LV 5 XV 80 o±Ãamat LV 5 .)etnemavitacifingis esricuder edeup n³Âiccafelac ed elbac led aicnetop al euq ay ,etneicifus se on n³Âiccafelac ed elbac le rearT(.n³Âiccafelac ed elbac le esayºÂtitsus ,auga ed sedaditnac sednarg a sotseupxe n¡Âtse sºÂbotua ed serbmala sol o n³Âiccafelac ed oelcºÂn le iS .aÃgrene ed n³Âixenoc ed sajac rartne edeup on otcudnoc ne odasnednoc euq y ,sadalles n¡Âtse otcudnoc ed sadartne sal sadot euq ed eserºÂgesA .atiper y senoixenoc sal euqes ,etneserp ¡Âtse dademuh al iS .oda±Ãad n³Âiccafelac ed senoicces razalpmeeR .ada±Ãad n³Âicces al ralsia arap onu rop onu n³Âixenoc ed stik sol eriter ,odalsia ¡Âtse ametsis le iS .saluvl¡Âv sal ed rodederla y sadirb sal ne sodoc sol ne etnemlaicepxe ,o±Ãad le arap dutignol al adot etnemlausiv enoiccepsni ,odalsia ¡Âtse on aÃvadot n³Âiccafelac ed elbac le iS DPFG odaelbac ed senoiccurtsni sal ebeurpmoC .DPFG Am 03 rop roirefni o±Ãamat ed DPFG esayºÂtitsuS .otneimalsia la aicnetsiser al atiper ,retemmhogem nu odnasU .semlapme sol y n³Âixenoc al ralles y raceS .oirasecen aes nºÂges ,n³Âiccafelac ed elbac le razalpmeeR .tlucric ed samix¡Âm sedutignol sal nerepus on euq sotiucric selpitlºÂm ne otiucric le rarapeS .odazalpmeer res oirasecen res edeup y avisecxe etneirroc al rop etnemetnenamrep oda±Ãad odis rebah edeup n³Âiccafelac ed elbac le ,otroc nu artneucne es iS .natroca es on sºÂbotua ed serbmala sol euq ed esrarugesa arap lanif olles le ebeurpmoC .n³Âiccafelac ed elbac ed sada±Ãad senoicces razalpmeeR .otneiminetnam ed ojabart odibah ayah ednod aer¡Â reiuqlauc y saluvl¡Âv sal ed rodederla so±Ãad sol ebeurpmoC .oirasecen se is razalpmeeR .n³Âixenoc ed stik sol etnemlausiv enoiccepsnI .n³Âinu ed ajac al racot a avell abeurP .n³Âixenoc ed stik sol ne etneserp erutsioM 40, 77 v ft m ft m ft m