Agreement for Construction Services

This Agreement ("Agreement") between Williamson County, Texas, a political subdivision of the State of Texas ("Owner") and Aqualogic Water Consulting, LLC. ("Contractor") is entered into in accordance with the following terms and conditions:

ARTICLE 1 SCOPE OF WORK: The Owner desires to retain Contractor for the construction of Lake Creek Annex Cooling Tower (hereinafter called the "Project"). The Contractor shall have the overall responsibility for and shall provide complete construction services and furnish all materials, equipment, tools and labor as necessary or reasonably inferable to complete the Project, or any phase of the Project, in accordance with the Owner's requirements and the terms of this Agreement (hereinafter collectively referred to as the "Work").

ARTICLE 2 CONTRACT PRICE: Owner agrees to pay to the Contractor, for the satisfactory performance of the Work, the sum of **Fifteen Thousand Five Hundred Fifty-Eight Dollars ($15,558.00)** in accordance with the terms and conditions of this Agreement.

ARTICLE 3 PLANS AND SPECIFICATIONS: The Work shall be performed pursuant to and in accordance with the plans and specifications attached hereto as **Exhibit "A"**, as well as any revisions made thereto.

ARTICLE 4 CONTRACT TIME:

4.1 Contractor shall commence the Work upon instruction to do so from the Owner and shall achieve Substantial Completion within **one hundred fifty (150) calendar days** from the date the Work is commenced; provided, however, Owner may extend said time period in the event bad weather affects the progress of the Work. Unless otherwise specified in writing, Contractor shall achieve Final Completion within **thirty (30) calendar days of Substantial Completion**. Owner shall determine when the Project has been fully and finally completed to its satisfaction. The time set forth for completion of the work is an essential element of the Agreement.

4.2 Liquidated Damages.

Contractor acknowledges and recognizes that Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time and that Owner has entered into, or will enter into, binding agreements upon Contractor's achieving Substantial Completion of the Work within the Contract Time. Contractor further acknowledges and agrees that if Contractor fails to complete substantially or cause the Substantial Completion of any Phase

of the Work within the Contract Time, Owner will sustain extensive damages and serious loss as a result of such failure. In the cases of missed scheduled events, which incur exact losses of revenue and exact expenses for fees and other cancellation costs, Contractor shall be responsible for the exact amount of damages sustained by Owner. In other cases, the exact amount of such damages will be extremely difficult to ascertain. Therefore, Owner and Contractor agree as set forth below:

4.2.1 Subject to the other terms and conditions herein, if Substantial Completion is not achieved by the date specified above or by such date to which the Contract Time may be extended, the Contract Price shall be reduced by **Five Hundred Dollars ($500.) per calendar day** as liquidated damages and not as a penalty, until the date of Substantial Completion. Force majeure shall apply relative to both rain/snow delays (acts of nature) and/or supply delays over which Contractor has no control, and such force majeure delays shall not be subject to such reduction of the Contract Price.

4.2.2 Owner may deduct liquidated damages described herein from any unpaid amounts then or thereafter due Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due Contractor shall be payable by Contractor to Owner at the demand of Owner, together with the interest from the date of the demand at a rate equal to the prime interest rate as published by the Wall Street Journal on the **first (1st) business day** after such amounts are demanded.

4.2.3 Notwithstanding anything to the contrary in this Agreement, if Owner is unable to recover any portion of liquidated damages in accordance with the terms and conditions herein because it is found to be unenforceable or invalid as a penalty or otherwise, then, Owner shall be entitled to recover from Contractor all of Owner's actual damages in connection with the failure by Contractor to achieve Substantial Completion of the Work within the Contract Time, including, without limitation, direct, indirect, or consequential damages.

ARTICLE 5 PAYMENT:

5.1 Contractor shall receive one lump sum payment of the Contract Price upon completion of the Project.

ARTICLE 6 CONTRACTOR'S GENERAL RESPONSIBILITIES AND COVENANTS:

6.1 Contractor shall render, diligently and competently in accordance with the highest standards used in the profession, all Contractor services which shall be necessary or advisable for the expeditious, economical and satisfactory completion of the Project. Contractor agrees to use its best efforts, skill, judgment, and abilities to perform its obligations and to further the interests of Owner in accordance with Owner's requirements and procedures.

6.2 Contractor's duties as set forth herein shall at no time be in any way diminished by reason of any approval by the Owner nor shall the Contractor be released from any liability by reason of such approval by the Owner, it being understood that the Owner at all times is ultimately relying upon the Contractor's skill and knowledge in performing the services required hereunder.

6.3 Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

6.4 Contractor shall be responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work. The Contractor shall keep the Owner informed of the progress and quality of the Work.

6.5 Insurance. Contractor shall carry insurance in the types and amounts indicated below for the duration of the Agreement, which shall include items owned by Owner in the care, custody and control of Contractor prior to and during construction. Contractor must also complete and file the declaration pages from the insurance policies with Owner whenever a previously identified policy period expires during the term of the Agreement, as proof of continuing coverage. Contractor shall update all expired policies prior to submission of any payment requests hereunder. Failure to update policies shall be reason for payment to be withheld until evidence for renewal is provided to the Owner. If the Contractor fails to obtain, maintain or renew any insurance required by this Agreement, the Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner. All policies of insurance provided by the Contractor must comply with the requirements set forth herein, the Agreement and the laws of the State of Texas.

6.5.1 The Contractor shall provide and maintain, until the Work covered in the Agreement is completed and accepted by the Owner, the minimum insurance coverages in the minimum amounts as described below.

	Type of Coverage	Limits of Liability
.1	Worker's Compensation	Statutory
.2	Employer's Liability	
	Bodily Injury by Accident	$500,000 Ea. Accident
	Bodily Injury by Disease	$500,000 Ea. Employee
	Bodily Injury by Disease	$500,000 Policy Limit

.3 Commercial general liability including completed operations and contractual liability insurance for bodily injury, death, or property damages in the following amounts:

COVERAGE	PER OCCURRENCE
Commercial General Liability (including premises,	$1,000,000

completed operations
and contractual)

Aggregate policy limits: $2,000,000

.4 Comprehensive automobile and auto liability insurance (covering owned, hired, leased and non-owned vehicles):

COVERAGE	PER PERSON	PER OCCURRENCE
Bodily injury (including death)	$1,000,000	$1,000,000
Property damage	$1,000,000	$1,000,000
Aggregate policy limits	No aggregate limit	

.5 Damage to Rented Property/Premises (Ea. Occurrence): $100,000

.6 Builder's Risk Insurance (all-risks)

An all-risk policy, in the amount equal at all times to 100% of the Contract Price. The policy shall include coverage for loss or damage caused by certified acts of terrorism as defined in the Terrorism Risk Insurance Act. The policy shall be issued in the name of the Contractor and shall name its Subcontractors as additional insureds. The Owner shall be named as a loss payee on the policy. The builders risk policy shall have endorsements as follow:

a. This insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the present premises. If off-site storage is permitted, coverage shall include transit and storage in an amount sufficient to protect property being transported or stored.

b. For renovation projects and or portions of work contained within an existing structure, the Owner waives subrogation for damage by fire to existing building structure(s), if the Builder's Risk Policy has been endorsed to include coverage for existing building structure(s) in the amount described in the Special Conditions. However, Contractor shall not be required to obtain such an endorsement unless specifically required by the Special Conditions if any. The aforementioned waiver of subrogation shall not be effective unless such endorsement is obtained.

.7. Flood insurance when specified in Supplementary General Conditions or Special Conditions.

.8. Umbrella coverage in the amount of not less than $5,000,000.

6.5.2 Workers' Compensation Insurance Coverage:

1. Definitions:

   (a) Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the Project.
   (b) Duration of the Project - includes the time from the beginning of the work on the Project until the Contractor's/person's work on the Project has been completed and accepted by the Owner.
   (c) Coverage – Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).
   (d) Persons providing services on the Project ("subcontractor") - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

2. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, §401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.
3. The Contractor must provide a certificate of coverage prior to execution of the Agreement/Contract, and in no event later than ten (10) days from Notice of Award.
4. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.
5. The Contractor shall obtain from each person providing services on a project, and provide to the Owner:

   (a.) a certificate of coverage, prior to that person beginning work on the Project, so the Owner will have on file certificates of coverage showing coverage for all persons providing services on the Project; and

(b.) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

6. The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.
7. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.
8. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

9. The Contractor shall contractually require each person with who it contracts to provide services on a project, to:

(a) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;
(b) provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;
(c) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;
(d) obtain from each other person with whom it contracts, and provide to the Contractor:

i. a certificate of coverage, prior to the other person beginning work on the Project; and
ii. a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(e) retain all required certificate of coverage on file for the duration of the Project and for one year thereafter;
(f) notify the Owner in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

(g) contractually require each person with whom it contracts, to perform as required by paragraphs (a)-(g), with the certificates of coverage to be provided to the person for whom they are providing services.

10. By signing the Agreement/Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the Commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

11. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the Agreement/Contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Owner.

6.5.3 If insurance policies are not written for the amounts specified herein, Contractor shall carry Umbrella or Excess Liability Insurance for any differences in amounts specified. If Excess Liability Insurance is provided, it shall follow the form of primary coverage.

6.5.4 Insurance coverage required hereunder shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A- or better by A.M. Best Company, or otherwise acceptable to Owner.

6.5.5 **The Owner ("Williamson County, Texas"), its officials, employees and volunteers shall be named as an additional insured on all required policies.** These insurance policies shall contain the appropriate additional insured endorsement signed by a person authorized by that insurer to bind coverage on its behalf.

6.5.6 The furnishing of the above listed insurance coverage, as may be modified by the Agreement, must be tendered prior to execution of the Agreement/Contract, and in no event later than ten (10) days from Notice of Award.

6.5.7 Owner reserves the right to review the insurance requirements set forth herein during the Agreement and to make reasonable adjustments to the insurance coverage and their limits when deemed necessary and prudent by the Owner based upon changes in statutory law, court decisions, or the claims history of the industry as well as the Contractor.

6.5.8 Owner shall be entitled, upon request, and without expense, to receive complete copies of the policies with all endorsements and may make any reasonable requests for deletion, or revision or modification of particular policy terms, conditions, limitations, or exclusions, except where policy provisions are established by law or regulation binding upon the

Parties or the underwriter of any of such polices. Damages caused by the Contractor and not covered by insurance shall be paid by the Contractor.

6.5.9 Contractor shall be responsible for payment of premiums for all of the insurance coverages required hereunder. Contractor further agrees that for each claim, suit or action made against insurance provided hereunder, with respect to all matters for which the Contractor is responsible hereunder, Contractor shall be solely responsible for all deductibles and self-insured retentions. Any deductibles or self-insured retentions over $75,000 in the Contractor's insurance must be declared and approved in writing by Owner in advance.

6.5.10 Contractor shall contractually require each person or entity with whom it contracts to provide services in relation to the Work, to comply with every insurance requirement that Contractor must comply with hereunder. More specifically, each person or entity with whom Contractor contracts to provide services on the in relation to the Work must comply with each insurance requirement hereunder just as if such person or entity was the Contractor. Thus, every reference to Contractor under each insurance requirement hereunder shall mean and include each person or entity with whom Contractor contracts to provide services in relation to the Work. If any such person or entity with whom Contractor contracts to provide services in relation to the Work fails to obtain, maintain or renew any insurance required by this Agreement, Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

ARTICLE 7 INDEMNITY:

7.1 INDEMNIFICATION - EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, Contractor SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") AND SHALL ASSUME ENTIRE RESPONSIBILITY AND LIABILITY (OTHER THAN AS A RESULT OF INDEMNITEES' GROSS NEGLIGENCE) FOR ANY CLAIM OR ACTION BASED ON OR ARISING OUT OF THE PERSONAL INJURY, OR DEATH, OF ANY EMPLOYEE OF CONTRACTOR, OR OF ANY SUBCONTRACTOR, OR OF ANY OTHER ENTITY FOR WHOSE ACTS THEY MAY BE LIABLE, WHICH OCCURRED OR WAS ALLEGED TO HAVE OCCURRED ON THE PROJECT SITE OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK. CONTRACTOR HEREBY INDEMNIFIES THE INDEMNITEES EVEN TO THE EXTENT THAT SUCH PERSONAL INJURY WAS CAUSED OR ALLEGED TO HAVE BEEN CAUSED BY THE SOLE, COMPARATIVE OR CONCURRENT NEGLIGENCE OR THE STRICT LIABILITY OF ANY INDEMNIFIED PARTY. THIS INDEMNIFICATION SHALL NOT BE LIMITED TO DAMAGES, COMPENSATION, OR BENEFITS PAYABLE UNDER INSURANCE POLICIES, WORKERS COMPENSATION ACTS, DISABILITY BENEFITS ACTS, OR OTHER EMPLOYEES BENEFIT ACTS.

INDEMNIFICATION - OTHER THAN EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES,

ARISING OUT OF OR ALLEGED TO BE RESULTING FROM THE PERFORMANCE OF THIS AGREEMENT OR THE WORK DESCRIBED HEREIN, TO THE EXTENT CAUSED BY THE NEGLIGENCE, ACTS, ERRORS, OR OMISSIONS OF CONTRACTOR OR ITS SUBCONTRACTORS, ANYONE EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY A PARTY INDEMNIFIED HEREUNDER.

7.2 Except for the obligation of Owner to pay Contractor the Contract Price pursuant to the terms of this Agreement, and to perform certain other obligations pursuant to the terms and conditions explicitly set forth herein, Owner shall have no liability to Contractor or to anyone claiming through or under Contractor by reason of the execution or performance of this Agreement. Notwithstanding any obligation or liability of Owner to Contractor, no present or future partner or affiliate of Owner or any agent, officer, director, or employee of Owner, or of the various departments comprising Owner, or anyone claiming under Owner has or shall have any personal liability to Contractor or to anyone claiming through or under Contractor by reason of the execution or performance of this Agreement.

ARTICLE 8 WARRANTY:

8.1 Contractor hereby warrants that the materials and equipment provided for the Work will be of good quality and new unless otherwise required or permitted by the Owner; that the construction will be free from faults and defects; and that the construction will conform with the requirements of the plans, specifications, drawings and the terms of this Agreement.

8.2 Contractor shall provide warranty services for the Work for a **full twelve (12) months** following Final Completion and final payment. Just before the warranty period expires, Contractor shall attend an on-site meeting with the Owner to ensure that all warranty issues have been identified and properly remedied.

ARTICLE 9 PREVAILING WAGE RATE:

9.1 Duty to Pay Prevailing Wage Rates. The Contractor shall pay not less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule", as defined below. The specified wage rates are minimum rates only, and are not representations that qualified labor adequate to perform the Work is available locally at the prevailing wage rates. The Owner is not bound to pay—and will not consider—any claims for additional compensation made by any Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Agreement. The "Prevailing Wage Schedule" is not a representation that quantities of qualified labor adequate to perform the Work may be found locally at the specified wage rates.

9.1.2 For classifications not shown, workers shall not be paid less than the wage indicated for Laborers. The Contractor shall notify each worker commencing work on the Project of the worker's job classification and the established minimum wage rate required to be paid, as well as the actual amount being paid. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the monetary wages and fringe benefits to be paid or furnished for each classification in which the

worker is assigned duties. When requested by Owner, competent evidence of compliance with the Texas Prevailing Wage Law shall be furnished by Contractor.

9.1.3 A copy of each worker wage rate notification shall be submitted to the Owner with the Application for Payment for the period during which the worker began on-site activities.

9.2 Prevailing Wage Schedule. Pursuant to Texas Government Code Section 2258.022(2), the general prevailing rate of per diem wages for each craft or type of worker needed to execute the Contract and the prevailing rate for legal holiday and overtime work shall be the most recent prevailing wage rate for Williamson County, Texas for building construction as determined by the United States Department of Labor in accordance with the Davis-Bacon Act (40 U.S.C. Section 276a et seq.), and its subsequent amendments, which are published and can be obtained online at https://sam.gov/search/?index=dbra (the "Prevailing Wage Schedule"). Should the Contractor at any time become aware that a particular skill or trade not reflected on the Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a subcontractor, the Contractor shall promptly inform the Owner and shall specify a wage rate for that skill or trade, which shall bind the Contractor.

9.3 Penalty for Violation. The Contractor and any Subcontractor shall pay to the Owner a penalty of sixty dollars ($60.00) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule or any supplement or update thereto pursuant to previsions above. The Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all workers employed in connection with the Work, and showing the actual per diem wages paid to each worker, which records shall be open at all reasonable hours for the inspection by the Owner.

9.4 Complaints of Violations of Prevailing Wage Rates. Within thirty-one (31) days of receipt of information concerning a violation of Texas Government Code, Chapter 2258, the Owner shall make an initial determination as to whether good cause exists to believe a violation occurred. The Owner's decision on the initial determination shall be reduced to writing and sent to the Contractor or Subcontractor against whom the violation was alleged, and to the affected worker. When a good cause finding is made, the Owner shall retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

9.5 Arbitration Required if Violation not Resolved. After the Owner makes its initial determination, the affected Contractor or Subcontractor and worker have fourteen (14) days in which to resolve the issue of whether a violation occurred, including the amount that should be retained by Owner or paid to the affected worker. If the Contractor or Subcontractor and affected worker reach an agreement concerning the worker's claim, the Contractor shall promptly notify the Owner in a written document signed by the worker. If the Contractor or Subcontractor and affected worker do not agree before the fifteenth (15^{th}) day after the Owner's determination, the Contractor or Subcontractor and affected worker must participate in binding arbitration in

accordance with the Texas General Arbitration Act, Chapter 171, Tex. Civ. Prac. & Rem. Code. The parties to the arbitration have ten (10) days after the expiration of the fifteen (15) days referred to above, to agree on an arbitrator; if by the eleventh (11^{th}) day there is no agreement to an arbitrator, a district court shall appoint an arbitrator on the petition of any of the parties to the arbitration.

9.6 Arbitration Award. If an arbitrator determines that a violation has occurred, the arbitrator shall assess and award against the Contractor or Subcontractor the amount of penalty as provided herein and the amount owed the worker. The Owner may use any amounts retained hereunder to pay the worker the amount as designated in the arbitration award. If the Owner has not retained enough from the Contractor or Subcontractor to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor and Subcontractor as appropriate, and the surety of either to receive the amount owed, attorneys' fees and court costs. The Contractor shall promptly furnish a copy of the arbitration award to the Owner.

9.7 Prevailing Wage Retainage. Money retained pursuant to this section shall be used to pay the claimant or claimants the difference between the amount the worker received in wages for labor on the Project at the rate paid by the Contractor or Subcontractor and the amount the worker would have received at the general prevailing wage rate as provided by the agreement of the claimant and the Contractor or Subcontractor affected, or in the arbitrator's award. The full statutory penalty of sixty dollars ($60.00) per day of violation per worker shall be retained by the Owner to offset its administrative costs, pursuant to Texas Government Code, §2258.023. Any retained funds in excess of these amounts shall be paid to the Contractor on the earlier of the next progress payment or final payment. Provided, however, that the Owner shall have no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award as provided in this section.

9.8 No Extension of Time. If the Owner determines that good cause exists to believe a violation has occurred, the Contractor shall not be entitled to an extension of time for any delay arising directly or indirectly from of the procedures set forth in this section.

ARTICLE 10 INTENTIONALLY DELETED

ARTICLE 11 TERMINATION OR SUSPENSION OF THE AGREEMENT

11.1 Termination by Contractor

If one of the reasons described below exists, the Contractor may, upon thirty (30) business days written notice to the Owner, terminate the Agreement and recover from the Owner payment for Work executed, including reasonable overhead, profit, and costs incurred by reason of such termination:

11.1.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

11.1.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped; or

11.1.3 If the Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Agreement.

11.2 Termination by the Owner for Cause

11.2.1 The Owner may terminate the Agreement if the Contractor:

11.2.1.1 Fails to commence the Work in accordance with the provisions of the Agreement;
11.2.1.2 Fails to prosecute the Work to completion thereof in a diligent, efficient, timely, workmanlike, skillful and careful manner and in strict accordance with the provisions of the Agreement;
11.2.1.3 Fails to use an adequate amount or quality of personnel or equipment to complete the Work without undue delay;
11.2.1.4 Fails to perform any of its obligations under the Agreement;
11.2.1.5 Fails to make prompt payments when due to its Subcontractors and Suppliers, or as required by **Texas Government Code, Chapter 2251**;
11.2.1.6 Files any petition or other pleading seeking any relief under any provisions of the Federal Bankruptcy Act, as amended, or any other federal or state statute or law providing for reorganization of debts or other relief from creditors, permits a receiver or other person to be appointed on account of its insolvency or financial condition, or becomes insolvent;
11.2.1.7 Creates any situation or state of facts which would authorize or permit an involuntary petition in bankruptcy to be filed against Contractor; or
11.2.1.8 Has not met or in Owner's opinion will not meet the dates of Substantial Completion set forth in the Agreement.

11.2.2 When any of the reasons under **Paragraph 11.2.1** exist, the Owner, in its sole and absolute discretion, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, **thirty (30) calendar days** written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety, exclude the Contractor from the Project site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor; accept assignment of subcontracts of Contractors subcontractors; and finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

11.2.3 When the Owner terminates the Agreement for one of the reasons stated in **Paragraph 11.2.1**, the Contractor shall not be entitled to receive payment until the Work is finished. In the event that it is determined that sufficient cause did not exist for termination under this **Section 11.2**, then the termination shall be considered a termination for convenience, under **Section 11.4**, below.

11.2.4 If the unpaid balance of the Contract Price exceeds costs of finishing the Work, including compensation for expenses made necessary thereby, and other damages and costs incurred by the

Owner in finishing the Work and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner.

11.3 Suspension by the Owner for Convenience

11.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

11.3.2 The Contract Price and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in **Paragraph 11.3.1**. Adjustment of the Contract Price shall include profit. No adjustment shall be made to the extent:

11.3.2.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

11.3.2.2 that an equitable adjustment is made or denied under another provision of the Agreement.

11.4 Termination by the Owner for Convenience

11.4.1 The Owner may, at any time, terminate the Agreement for the Owner's convenience and without cause.

11.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

11.4.2.1 Cease operations as directed by the Owner in the notice;

11.4.2.2 Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

11.4.2.3 Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

11.4.3 Upon Owner's termination for convenience, costs of the Work executed, including reasonable overhead and profit, incurred to and including the date of termination, will be due and payable to Contractor in accordance with the Agreement.

ARTICLE 12 MISCELLANEOUS PROVISIONS:

12.1 Interest and Late Payments. Owner's payment for goods and services shall be governed by Chapter 2251 of the Texas Government Code. Interest charges for any overdue payments shall be paid by Owner in accordance with Texas Government Code Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of Owner's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one percent (1%); and (2) the prime rate published in the Wall Street

Journal on the first day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice/application for payment submitted by Contractor, Owner shall notify Contractor of the error not later than the twenty first (21st) day after the date Owner receives the invoice/application for payment. If the error is resolved in favor of Contractor, Contractor shall be entitled to receive interest on the unpaid balance of the invoice/application for payment submitted by Contractor beginning on the date that the payment for the invoice/application for payment became overdue. If the error is resolved in favor of the Owner, Contractor shall submit a corrected invoice/application for payment that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by Chapter 2251 of the Texas Government Code if the corrected invoice/application for payment is not paid by the appropriate date.

12.2 Audits. Contractor agrees that Owner or its duly authorized representatives shall, until the expiration of three (3) years after final payment under this Agreement, have access to and the right to examine and photocopy any and all books, documents, papers and records of Contractor which are directly pertinent to the services to be performed under this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions. Contractor agrees that Owner shall have access during normal working hours to all necessary Contractor facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. Owner shall give Contractor reasonable advance notice of intended audits.

12.3 Assignment. This Agreement is a personal service contract for the services of Contractor, and Contractor's interest in this Agreement, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party.

12.4 Governing Law and Venue. This Agreement and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. Williamson County, Texas where the Project is located shall be the sole place of venue for any legal action arising from or related to this Agreement or the Project in which the Owner is a party.

12.5 Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

12.6 Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of the Contractor or Owner for whom it is intended; or sent by U. S. Mail to the last known business address of the designated representative.

12.7 Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this

Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

12.8 Relationship of the Parties. Contractor shall be an independent contractor under this agreement and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions in this agreement which may appear to give Owner the right to direct Contractor as to details of doing the Work herein covered or to exercise a measure of control over the Work shall be deemed to mean that Contractor shall follow the desires of Owner in the results of the Work only. Owner shall not retain or have the right to control the Contractor's means, methods or details pertaining to the Contractor's performance of the Work described herein, nor shall Owner have the power to direct the order in which Contractor's Work is performed under this agreement. Owner and Contractor hereby agree and declare that Contractor is an Independent Contractor and as such meets the qualifications of an Independent Contractor under Texas Worker's Compensation Act, Texas Labor Code, Section 406.141, that the Contractor is not an employee of Owner for purposes of this Agreement, and that the Contractor and its employees, agents and sub-subcontractors shall not be entitled to worker's compensation coverage or any other type of insurance coverage held by Owner.

12.9 Force Majeure. If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance of this Agreement. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

12.10 No Waiver of Sovereign Immunity. Nothing herein shall be construed as a waiver of sovereign immunity by Owner.

12.11 Current Revenues. Under Texas law, a contract with a governmental entity that contains a claim against future revenues is void; therefore, each party paying for the performance of governmental functions or services must make those payments from current revenues available to the paying party.

12.12 Compliance with Laws. Contractor shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required, Contractor shall furnish the Owner with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees above specified.

12.13 Entire Agreement & Incorporated Documents; Conflicting Terms. This Agreement constitutes the entire agreement between the parties and may not be modified or amended other than by a written instrument executed by both parties.

The following documents shall comprise the Contract Documents:

1. This Agreement between Owner and Contractor;
2. Exhibit "A" – Plans and Specifications;
3. Addenda issued prior to the Effective Date of this Agreement; and
4. All Change Orders and any other Modifications issued after the Effective Date of this Agreement.

In the event of a dispute or conflict relating to the terms and conditions of the Contract Documents, applicable documents will be referred to for the purpose of clarification, conflict resolution or for additional detail in the following order of precedence:

1. This Agreement between Owner and Contractor;
2. Exhibit "A" – Plans and Specifications;
3. Addenda issued prior to the Effective Date of this Agreement; and
4. All Change Orders and any other Modifications issued after the Effective Date of this Agreement.

BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement to be effective as of the date of the last party's execution hereof.

OWNER:	**CONTRACTOR:**
WILLIAMSON COUNTY, TEXAS, a political subdivision of the state of Texas	AquaLogic Water Consulting, LLC.
By: _____	By: Nina Helburn
Printed Name: _____	Printed Name: Nina Helburn
Title: _____	Title: President
Date: _____	Date: March 17, 2025

Exhibit “A”

Plans and Specifications

Location of Project: Williamson County Lake Creek Annex, 9500 Lake Creek Pkwy., Austin, TX 78717

Scope of Work:
Provide and install internal chemical equipment to feed cooling tower.

Equipment & Installation:

- All Pumps
- Controllers
- Sensors
- Corrosion Study Station
- Injection Point

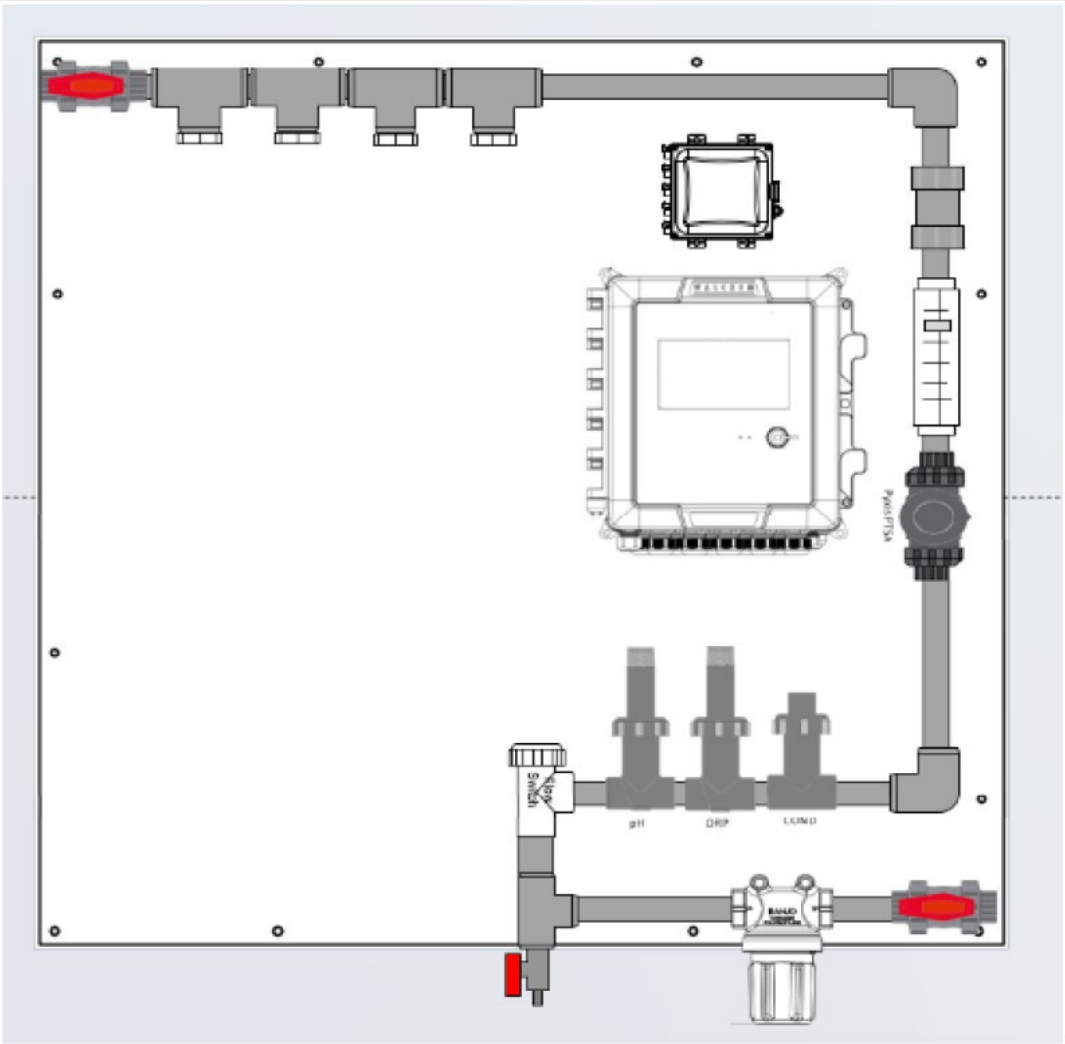


Exhibit A
Williamson County Lake Creek Annex - Cooling Tower

AQUALOGIC WATER CONSULTING

EQUIPMENT INFORMATION

Conductivity, pH/ORP & Disinfection

Intuition-6™ Series
Water Treatment Controllers

Enjoy unparalleled versatility and a collection of sensors and powerful built-in algorithms for control of chemical metering pumps and valves in a broad range of water treatment applications

KEY BENEFITS

- Large touchscreen display with icon based programming makes setup easy
- Universal sensor input provides extraordinary flexibility; the same controller can be used with almost any type of sensor needed
- Six relay control outputs
- Combination sensor input & analog input board that adds even more flexibility
- Lead/Lag control of relays
- Optional dual analog (4-20 mA) input for Fluorometers or nearly any other process value
- Multiple language support allows simple setup no matter where your business takes you
- Economical wall-mount package for easy installation
- On-screen and web page graphing of sensor values and control output status
- The Intuition-6™ with amperometric chlorine sensors can be used for reporting chlorine

Chemical Injection Pump

EJ Series
Metering Pump

The EJ Series provides precise chemical injection at an economical price.

Universal voltage capability enables operation from 100 - 240 VAC in virtually all countries. The EJ Series are compact, simple to operate and have outputs to 3.2 GPH (12.0 LPH) and a maximum pressure of 175 PSI (1.2 MPa).

KEY BENEFITS

High Speed Performance
The EJ Series operate at 360 strokes-per-minute, providing high resolution chemical feed and high turndown capability. Most competitive products operate at slower speeds, resulting in slug feeding, accelerated diaphragm wear and poor feed control.

Universal Voltage
The Universal Voltage Function enables the EJ Series to operate at any AC voltage. The EJ Series also conform to global standards.

External Control
The EJ Series have both digital input and Stop/Start inputs built into the pump, enabling either proportional or On/Off control.

IP65 Equivalent Protection
A robust housing protects the pump from normal wear. Mounting the Digital Display and Key Pad control within the drive housing creates a highly water resistant design. A clear cover further protects the pump from liquids.

SPECIFICATIONS

MEASUREMENT PERFORMANCE

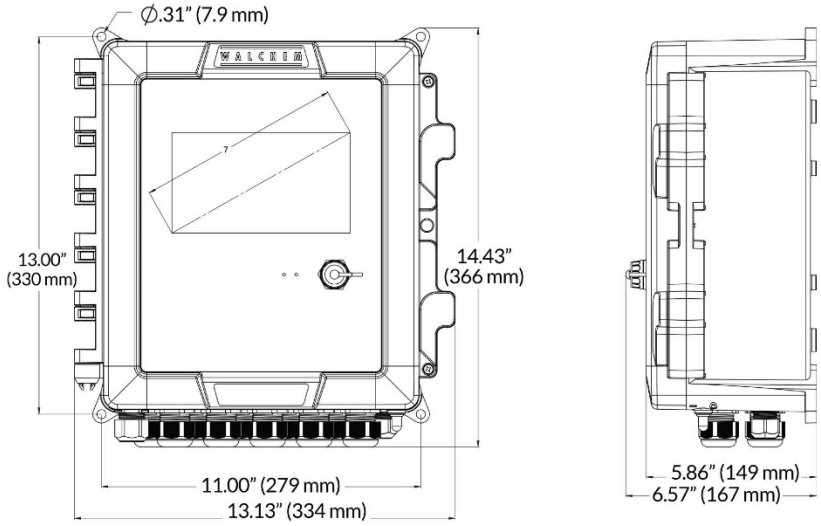
	Range	Resolution	Accuracy
0.01 Cell Contacting Conductivity	0-300 µS/cm	0.01 µS/cm, 0.0001 mS/cm, 0.001 mS/m, 0.0001 S/m, 0.01 ppm	±1% of reading
0.1 Cell Contacting Conductivity	0-3,000 µS/cm	0.1 µS/cm, 0.0001 mS/cm, 0.01 mS/m, 0.0001 S/m, 0.1 ppm	±1% of reading
1.0 Cell Contacting Conductivity	0-30,000 µS/cm	1 µS/cm, 0.001 mS/cm, 0.1 mS/m, 0.0001 S/m, 1 ppm	±1% of reading
10.0 Cell Contacting Conductivity	0-300,000 µS/cm	10 µS/cm, 0.01 mS/cm, 1 mS/m, 0.001 S/m, 10 ppm	±1% of reading
pH	-2 to 16 pH units	0.01 pH units	±0.01% of reading
ORP/Ion Selective Electrode	-1500 to 1500 mV	0.1 mV	±1 mV
Disinfection sensors	-2000 to 1500 mV	0.1 mV	±1 mV
	0 - 2 ppm to 0 - 20,000 ppm	Varies with range and slope	Varies with range and slope
Electrodeless Conductivity	500 - 12,000 µS/cm	1 µS/cm, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm	±1% of reading
	3,000-40,000 µS/cm	1 µS/cm, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm	±1% of reading
	10,000-150,000 µS/cm	10 µS/cm, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm	±1% of reading
	50,000-500,000 µS/cm	10 µS/cm, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm	±1% of reading
	200,000-2,000,000 µS/cm	100 µS/cm, 0.1 mS/cm, 1 mS/m, 0.1 S/m, 100 ppm	±1% of reading
Temperature	23 to 500°F (-5 to 260°C)	0.1°F (0.1°C)	±1% of reading within range

Temp.°C	Range Multiplier%
0	181.3
10	139.9
15	124.2
20	111.1
25	100.0
30	90.6
35	82.5
40	75.5
50	64.3
60	55.6
70	48.9

Temp.°C	Range Multiplier%
80	43.5
90	39.2
100	35.7
110	32.8
120	30.4
130	28.5
140	26.9
150	25.5
160	24.4
170	23.6
180	22.9

Note: Conductivity ranges above apply at 25°C. At higher temperatures, the range is reduced per the range multiplier chart.

DIMENSIONS



SPECIFICATIONS

INPUTS

Power
(model code dependent)
Relay Board Option 9: 100 to 240 VAC +/- 10%, 50 or 60 Hz, 20 A max
All other options: 100 to 240 VAC +/- 10%, 50 or 60 Hz, 15 A max

Optional Auxiliary DC Power
12V or 24V, 10 Watts, fully isolated with short circuit protection

Sensor Input Signals (0-8 depending on model code)
Contacting Conductivity: 0.01, 0.1, 1.0, or 10.0 cell constant, or
Electrodeless Conductivity or
Disinfection or
Amplified pH, ORP, or Ion Selective Electrode which requires a preamplified signal. ±5VDC power available for external preamps. Walchem WEL or WDS series pH/ORP sensors recommended.
Each sensor input card contains a temperature input.
Temperature: 100 or 1000 ohm RTD, 10K or 100K Thermistor

Analog (4-20 mA) Sensor Input (0-24 depending on model code)
2-wire loop powered and self-powered transmitters supported
3-wire and 4-wire transmitters supported
All Channels fully isolated, input and power
Channel 1, 130 ohm input resistance, Channel 2-6, 280 ohm input resistance
Available Power: One independently isolated 24 VDC ±15% supply per channel. 2.0 W (83 mA at 24 VDC) maximum for each channel. Total maximum power consumption for all channels on an input board (up to 6 inputs per board) is 9 W. Total maximum power consumption per controller is 36 W or 32 W (if the optional auxiliary power board is installed).

Digital Input Signals (12):
State-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 12V power with a nominal 2.5 mA current when the digital input switch is closed. Typical response time: < 2 seconds. Devices supported: Any isolated dry contact (i.e. relay, reed switch). Types: DI State

Low Speed Counter-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 12V power with a nominal 2.5 mA current when the digital input switch is closed, 0-20 Hz, 25 msec minimum width. Devices supported: Any device with isolated open drain, open collector, transistor or reed switch.
Types: Contacting Flowmeter

High Speed Counter-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 12V power with a nominal 2.5 mA current when the digital input switch is closed, 0-500 Hz, 1.0 msec minimum width. Devices supported: Any device with isolated open drain, open collector, transistor or reed switch.
Types: Paddlewheel Flowmeter

AGENCY CERTIFICATION

Safety:	UL 61010-1:2012 3rd Ed + Rev:2019
	CSA C22.2 No. 61010-1:2012 3rd Ed. + U1; U2
	IEC 61010-1:2010 3rd Ed. + A1:2016
	EN 61010-1:2010 3rd Ed. + A1:2019
	BS EN 61010-1:2010 + A1:2019
EMC:	IEC 61326-1:2020
	EN 61326-1:2013
	BS EN 61326-1:2013

Notes:
For EN 61000-4-3 Radiated RF Immunity, the controller meets Performance Criteria B. In environments where severe radio-frequency interference (RFI) is present, the pH electrode and the WiFi module can be affected. If this occurs, the controller should be relocated away from the electromagnetic interference (EMI) source.

For EN 61000-4-6 Conducted RF Immunity, the controller meets Performance Criteria B. In environments where severe radio-frequency interference (RFI) is present, the pH electrode and the contacting conductivity sensor can be effected. If this occurs, the controller should be relocated away from the electromagnetic interference (EMI) source.

OUTPUTS

Powered Mechanical Relays
(0-12 model code dependent)
Pre-powered on circuit board switching line voltage
Two, three or four relays are fused together (depending on model code) as one group, total current must not exceed 6.A (resistive), 1/8 HP (93W)

Dry Contact Mechanical Relays
(0-12 model code dependent)
6 A (resistive), 1/8 HP (93W)
Dry contact relays are not fuse protected.

Pulse Outputs
(0-12 model code dependent)
Opto-isolated, solid-state relay, 200mA, 40V DC
VLOWMAX = 0.05V @ 18mA

4 - 20 mA
(0-16 model code dependent)
Internally powered, 15VDC, Fully isolated
600 ohm max resistive load
Resolution 0.0015% of span
Accuracy ± 0.5% of reading

Ethernet
10/100 802.3-2005
Auto MDIX support
Auto Negotiation

WiFi
Radio Protocol: IEEE 802.11 b/g/n
Security Protocols (Ad-Hoc Mode): WPA2-Personal
Security Protocols (Infrastructure Mode): WPA/WPA2-Personal, WEP Certifications and Compliance: FCC, IC TELEC, CE/ETSI, RoHS, WiFi Certified

NOTE on WiFi:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which casethe user will be required to correct the interference at his own expense

USB
Connector: Type A receptacle
Speed: High speed (480 Mbit)
Power: 0.5 A maximum

Battery (Real-Time Clock)
Model BR2032, 3-volt Lithium Coin Cell 20 mm diameter

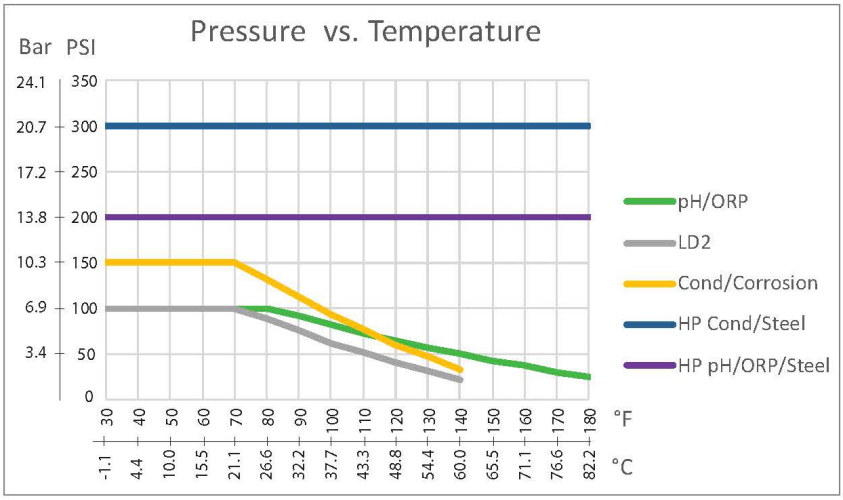
MECHANICAL (PERFORMANCE)

Enclosure Material	Polycarbonate
Enclosure Rating	Certified to UL 50 and UL 50E Type 4X IEC 60529 meets IP66
Environmental Conditions	Can be installed indoors and outdoors. Suitable for wet location
Dimensions	13.13"W x 14.43"H x 6.7"D (333 mm x 367mm x 167 mm)
Display	7.0"TFT Color Display1024x3 (RGB) x 600 pixels with capacitive touchscreen
Ambient Temperature	-4 to 122°F (-20 to 50°C)
Storage Temperature	-4 to 176°F (-20 to 80°C)
Humidity	10 to 90%, non-condensing
Pollution Degree	2
Overvoltage Category	II
Altitude	2000 m (6560 ft) max

SPECIFICATIONS

MECHANICAL (SENSORS) (*see graph)

Sensor	Pressure	Temperature	Materials	Process Connections
Electrodeless conductivity	0-150 psi (0-10 bar)*	CPVC: 32-158°F (0 to 70°C)* PEEK: 32-190°F (0 to 88°C)	CPVC, FKM in-line o-ring PEEK, 316 SS in-line adapter	1" NPTM submersion 2" NPTM in-line adapter
pH	0-100 psi (0-7 bar)*	50-158°F (10-70°C)*	CPVC, Glass, FKM o-rings, HDPE, Titanium rod, glass-filled PP tee	1" NPTM submersion 3/4" NPTF in-line tee
ORP	0-100 psi (0-7bar)*	32-158°F (0-70°C)*		
Contacting conductivity (Condensate)	0-200 psi (0-14 bar)	32-248°F (0-120°C)	316SS, PEEK	3/4" NPTM
Contacting conductivity Graphite (Cooling Tower)	0-150 psi (0-10 bar)*	32-158°F (0-70°C)*	Graphite, Glass-filled PP, FKM o-ring	3/4" NPTM
Contacting conductivity SS (Cooling Tower)	0-150 psi (0-10 bar)*	32-158°F (0-70°C)*	316SS, Glass-filled PP, FKM o-ring	3/4" NPTM
Contacting conductivity (Boiler)	0-250 psi (0-17 bar)	32-401°F (0-205°C)	316SS, PEEK	3/4" NPTM
Contacting conductivity (High Pressure Tower)	0-300 psi (0-21 bar)*	32-158°F (0-70°C)*	316SS, PEEK	3/4" NPTM
pH (High Pressure)	0-300 psi (0-21 bar)*	32-275°F (0-135°C)*	Glass, Polymer, PTFE, 316SS, FKM	1/2" NPTM gland
ORP (High Pressure)	0-300 psi (0-21 bar)*	32-275°F (0-135°C)*	Platinum, Polymer, PTFE, 316SS, FKM	1/2" NPTM gland
Free Chlorine/Bromine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)	PVC, Polycarbonate silcone rubber, SS PEEK, FKM, Isoplast	1/4" NPTF Inlet 3/4" NPTF Outlet
Extended pH Range Free Chlorine/Bromine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Total Chlorine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Chlorine Dioxide	0-14.7 psi (0-1 bar)	32-122°F (0-50°C)		
Ozone	0-14.7 psi (0-1 bar)	32-131°F (0-55°C)		
Peracetic Acid	0-14.7 psi (0-1 bar)	32-131°F (0-55°C)		
Hydrogen Peroxide	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Corrosion	0-150 psi (0-10 bar)	32-158°F (0-70°C)*	Glass-filled PP, FKM o-ring	3/4" NPTM
Flow switch manifold	0-150 psi (0-10 bar) up to 100°F (38°C)* 0-50 psi (0-3 bar) at 140°F (60°C)	32-140°F (0-60°C)*	GFRPP, PVC, FKM, Isoplast	3/4" NPTF
Flow switch manifold (High Pressure)	0-300 psi (0-21 bar)*	32-158°F (0-70°C)*	Carbon steel, Brass, 316SS, FKM	3/4" NPTF
Little Dipper 2	0-100 psi (0-7 bar)*	32-122°F (0-50°C)*	PVC, GRFPP, FKM	3/4" NPTF in-line tee
Pyxis	0-100 psi (0-7 bar)*	40-104°F (4-40°C)*	CPVC, Quartz, FKM	3/4" NPTF in-line tee



MODEL CODES FOR FIXED RELAYS

W	CT9	0000	P	AADE	W	M	H	S	ANNNN
Label	Base	Relay Board/Pigtails	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Mounting	Sensor Option

W	IN9	0000	P	AADE	W	M	H	S	ANNNN
Label	Base	Relay Board/Pigtails	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Mounting	Sensor Option

W	BL9	0000	P	AADE	W	M	H	ANNNNN
Label	Base	Relay Board/Pigtails	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Option

LABEL

W	Walchem

BASE

CT9	Cooling Tower
BL9	Boiler
IN9	pH, Disinfection, Conductivity

RELAY BOARD/PIGTAILS

0000	8 Powered Relays
1000	7 Powered 1 Dry Relays
2000	2 Opto 6 Dry Relays
3000	4 Powered 4 Dry Relays
4000	4 Opto 4 Dry Relays
5000	4 Opto 4 Powered Relays
6000	2 Opto 6 Powered Relays
7000	8 Dry Relays
A000	8 Powered Relays with USA Pigtails Prewired
B000	7 Powered Relays with USA Pigtails Prewired, 1 Dry Relay
C000	4 Powered Relays with USA Pigtails Prewired, 4 Dry Relays
D000	4 Powered Relays with USA Pigtails Prewired, 4 Opto Relays with 20ft Pulse Cables
E000	6 Powered Relays with USA Pigtails Prewired, 2 Opto Relays with 20ft Pulse Cables
F000	4 Dry Relays, 4 Opto Relays with 20 ft Pulse Cables
G000	6 Dry Relays, 2 Opto Relays with 20 ft Pulse Cables

POWER CORD

B	Brazil Power Cord, 15 Amp
D	DIN Power Cord, 15 Amp
H	Hardwired - No Power Cord
P	USA Power Cord, 15 Amp

I/O MODULES #1-4 (MUST BE IN ALPHABETICAL ORDER)

N	No Input Output Module
A	Dual Sensor Inputs
B	Dual Analog Inputs
C	Four Analog Inputs
D	Six Analog Inputs
E	Dual Analog Inputs + Four Analog Outputs
F	Dual Analog Outputs
G	Four Analog Outputs
H	Dual Corrosion Inputs

WiFi

N	None
W	Single Connection, WiFi only
D	Dual Connection, Ethernet and WiFi

COMMUNICATIONS PROTOCOL

N	None
M	Modbus TCP and BACnet

AUXILIARY POWER

N	No Auxiliary Power
L	12 VDC Auxiliary Power Board
H	24 VDC Auxiliary Power Board

SENSOR MOUNTING

N	None
S	Submersion
I	Inline
L	Loose flow switch manifold
P	Flow switch manifold on panel
F	Loose high pressure flow switch manifold
H	High Pressure flow switch manifold on panel*
S	Submersion
I	Inline
L	Loose flow switch manifold
P	Flow switch manifold on panel

SENSORS #1-5 (must be in alphabetical order)

Only one sensor of the same type can be selected for any manifold mounting style.

N	None
A	Graphite/PP cooling tower contacting conductivity
B	316SS/PP cooling tower contacting conductivity
C	Cooling tower, electrodeless conductivity
D	High pressure conductivity
E	Makeup conductivity
F	Flat pH
G	High pressure pH
H	Rod ORP
I	Flat ORP
J	High pressure ORP
K	Chlorine**
L	ClO_2**
M	Little Dipper**
O	One Corrosion Sensor (electrodes purchased separately)**
P	Pyxis PTSA**
R	Two Corrosion Sensors (electrodes purchased separately)**
S	Disinfection, No Sensor
T	Pyxis Polymer**
U	Pyxis PTSA+Polymer**
V	Flat surface WEL pH, 4-20 mA
W	Rod style WEL ORP, 4-20 mA
X	Flat surface WEL ORP, 4-20 mA
A	External Preamp
B	Flat pH with ATC
C	Disinfection, no sensor
D	PEEK electrodeless
E	CPVC electrodeless
F	CCond, K=1.0, 100psi
G	CCond, K=0.1, 100psi
H	CCond, K=10, 100psi
I	CCond, K=0.01, 100psi
J	CCond, K=1.0, 200psi
K	CCond, K=0.1, 200psi
L	CCond, K=10, 200psi
M	CCond, K=0.01, 200psi

SENSORS #1-6 (must be in alphabetical order)

* If a high pressure manifold is selected, only Hi P sensors and Makeup available.

** Dipper, Pyxis, Chlorine, ClO2, Corrosion sensors NOT available with Submersion mounting

N	None
A	Boiler sensor with ATC, 250 psi, K=1.0, 20ft.cable
B	Boiler sensor no ATC, 250 psi, K=1.0, 20ft.cable
C	Condensate sensor with ATC, 200 psi, K=0.1, 10ft.cable
D	Boiler sensor with ATC, 250 psi, K=10, 20ft.cable

MODEL CODES FOR FIELD CONFIGURABLE RELAYS

W	CT9	8	CGH	P	AADE	W	M	H	S	ANNNN
Label	Base	Relay Board	Relay Board/Pigtails #1-3	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Mounting	Sensor Option

W	IN9	8	CGH	P	AADE	W	M	H	S	ANNNN
Label	Base	Relay Board	Relay Board/Pigtails #1-3	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Mounting	Sensor Option

W	BL9	8	CGH	P	AADE	W	M	H	ANNNNN
Label	Base	Relay Board	Relay Board/Pigtails #1-3	Power Cord	I/O Module#1-4	WiFi	Protocol	Auxiliary Power	Sensor Option

LABEL

W	Walchem

BASE

CT9	Cooling Tower
BL9	Boiler
IN9	pH, Disinfection, Conductivity

FIELD CONFIGURABLE RELAYS

Relay Board	
8	Flexible relay board with 3 relay slots, 15 Amp
9	Flexible relay board with 3 relay slots, 20 Amp
Relay Module/Pigtail Options #1-#3 (must be in alphabetical order)	
Example, CGH for three modules: a 4-opto, a 3-Form C, and a 4-Powered with USA pigtails	
A	4 Powered Relays
B	4 Dry Relays
C	4 Opto Relays
D	2 Powered and 2 Dry Relays
E	2 Powered and 2 Opto Relays
F	2 Dry and 2 Opto Relays
G	3 Form C Dry Relays
H	4 Powered Relays with USA Pigtails Prewired
I	2 Powered Relays with USA Pigtails Prewired and 2 Dry Relays
J	2 Powered Relays with USA Pigtails Prewired and 2 Opto Relays with 20ft Pulse Cables
K	4 Opto Relay with 20ft Pulse Cables
L	2 Dry Relays, 2 Opto Relays with 20ft Pulse Cables
N	No Relay Module

POWER CORD

B	Brazil Power Cord, 15 Amp, Not Avail. for Relay Board 9
D	DIN Power Cord, 15 Amp, Not Avail. for Relay Board 9
H	Hardwired - No Power Cord
P	USA Power Cord, 15 Amp, Not Avail. for Relay Boad 9
T	USA Power Cord, 20 Amp, ONLY Avail. for Relay Board 9

I/O MODULES #1-4 (MUST BE IN ALPHABETICAL ORDER)

N	No input output module
A	Dual Sensor Inputs
B	Dual Analog Inputs
C	Four Analog Inputs
D	Six Analog Inputs
E	Dual Analog Inputs + Four Analog Outputs
F	Dual Analog Outputs
G	Four Analog Outputs
H	Dual Corrosion Inputs

WiFi

N	None
W	Single Connection, WiFi only
D	Dual Connection, Ethernet and WiFi

COMMUNICATIONS PROTOCOL

N	None
M	Modbus TCP and BACnet

AUXILIARY POWER

N	No Auxiliary Power
L	12 VDC Auxiliary Power Board
H	24 VDC Auxiliary Power Board

SENSOR MOUNTING

N	None
S	Submersion
I	Inline
L	Loose flow switch manifold
P	Flow switch manifold on panel
F	Loose high pressure flow switch manifold
H	High Pressure flow switch manifold on panel*
S	Submersion
I	Inline
L	Loose flow switch manifold
P	Flow switch manifold on panel

SENSORS #1-5 (must be in alphabetical order)

Only one sensor of the same type can be selected for any manifold mounting style.

N	None
A	Graphite/PP cooling tower contacting conductivity
B	316SS/PP cooling tower contacting conductivity
C	Cooling tower, electrodeless conductivity
D	High pressure conductivity
E	Makeup conductivity
F	Flat pH
G	High pressure pH
H	Rod ORP
I	Flat ORP
J	High pressure ORP
K	Chlorine**
L	ClO_2**
M	Little Dipper**
O	One Corrosion Sensor (electrodes purchased separately)**
P	Pyxis PTSA**
R	Two Corrosion Sensors (electrodes purchased separately)**
S	Disinfection, No Sensor
T	Pyxis Polymer**
U	Pyxis PTSA+Polymer**
V	Flat surface WEL pH, 4-20 mA
W	Rod style WEL ORP, 4-20 mA
X	Flat surface WEL ORP, 4-20 mA
A	External Preamp
B	Flat pH with ATC
C	Disinfection, no sensor
D	PEEK electrodeless
E	CPVC electrodeless
F	CCond, K=1.0, 100psi
G	CCond, K=0.1, 100psi
H	CCond, K=10, 100psi
I	CCond, K=0.01, 100psi
J	CCond, K=1.0, 200psi
K	CCond, K=0.1, 200psi
L	CCond, K=10, 200psi
M	CCond, K=0.01, 200psi

SENSORS #1-6 (must be in alphabetical order)

* If a high pressure manifold is selected, only Hi P sensors and Makeup available.

** Dipper, Pyxis, Chlorine, ClO2, Corrosion sensors NOT available with Submersion mounting

N	None
A	Boiler sensor with ATC, 250 psi, K=1.0, 20ft.cable
B	Boiler sensor no ATC, 250 psi, K=1.0, 20ft.cable
C	Condensate sensor with ATC, 200 psi, K=0.1, 10ft.cable
D	Boiler sensor with ATC, 250 psi, K=10, 20ft.cable

Cloud-based water treatment management software tool that amplifies the value of Walchem controllers

WALCHEM Fluent®

Key Benefits

- Real-Time Access to Your Process
- Mobile Device Friendly
- Alarm Notification with Escalation
- Data Graphing and Storage

Customer + Facilities Management

- Full management of customers and their facilities to access the information you need as quickly as possible
- Flag priority customers and facilities for quick access to help plan your upcoming work week

Process Monitoring + Control

- Anywhere access to customer's real-time controller data
- Link directly to LiveConnect to make changes on your controllers remotely

Data Management + Visualizations

- Assess key parameters at-a-glance with customizable dashboard
- Easy-access to alarms organized by priority levels with acknowledgment features
- Bookmark customers, facilities and controllers for a user-customized dashboard experience
- Visualize recent and historical controller data trends on easy-to-read, interactive graphs
- Compare graphs across multiple controller channels
- Access historical data and export your graphs to PDF and CSV file for your reporting needs

Alarms + Custom Notifications

- Manage workflow by notifying workers of triggered alarms
- Customize the escalation process including first party notified
- Notify two unique groups of users
- Manage alarm settings by controller channel
- Set alarm levels to quickly identify the most critical issues
- Alarm email summaries

Team Management

- Create admin, technician, and view-only user roles
- Set custom visibility permissions for users so they only see the customers they need to access

Sensors + Accessories

High quality accessories for cooling tower, boiler, potable water, and wastewater applications

Carefully designed accessories and selected for compatibility with our pumps and controllers to enable our customers to provide a complete system solution. Here is just a sampling of the sensors and accessories available from Walchem:

Disinfection Sensors

Amperometric disinfection sensors offer a cost effective and reliable solution to your disinfection control requirements. We offer sensors, in varying ranges of concentration, for free chlorine/bromine, total chlorine, chlorine dioxide, ozone, peracetic acid and hydrogen peroxide. Whether the application is cooling tower, food and beverage, drinking water, wastewater or swimming pool, these sensors are the ideal solution.

Fluorometers

The Little Dipper 2 and Pyxis in-line fluorometers are rugged, 24/7 sampling devices that provide maximum performance, minimal maintenance and solid state reliability. They can be used with data collection systems to monitor and control the level of treatment chemicals for cooling tower and boiler applications. The handheld Little Dipper is a small, lightweight and highly durable fluorometer ideal for quick measurements in the field.

Contacting Conductivity Sensors

Contacting conductivity sensors are ideal for use in cooling towers and boilers, reverse osmosis equipment, and other non-oily applications. A variety of cell constants are available to handle a range of conductivities.

pH/ORP Sensors

Cost-effective differential pH/ORP electrodes for industrial and municipal applications.

Electrodeless Conductivity Sensors

Electrodeless conductivity sensors may be installed in a variety of very harsh chemical control applications, including oily cleaner baths, chromates, rinse tanks, fume scrubbers and other concentrated chemicals up to a conductivity of 1000 mS/cm (range varies with solution temperature).

Water Meters

WFM Series water meters have earned a reputation for design simplicity, wide range of applications and accuracy in low-quality water. The WFM Series uses the widely recognized multi-jet principle, which has been accepted as an international standard for many years. These meters are available with either a two-wire reed switch, or a solid state, three-wire Hall effect sensor.

Metering Pumps

The E-Class is the most innovative and comprehensive metering pump product line in the world. Over 60 years of pump experience and a commitment to superior mechanical design has led to development of many industry firsts, including 360 stroke-per-minute technology, and the world's highest capacity solenoid metering pumps.

Accessories

To complete your system, Walchem provides high quality accessories that are required for cooling tower, boiler, potable water, and wastewater applications. All of Walchem's accessories are carefully designed and selected for compatibility with our pumps and controllers to enable our customers to provide a complete system solution.

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180901.E August 2023

Walchem, Iwaki America Inc.

Five Boynton Road Hopping Brook Park | Holliston, MA 01746 USA | Phone 508-429-1110 | walchem.com

Electromagnetic Metering Pumps

EWN-R Series
Metering Pump

The EWN-R Series electronic metering pumps offer superior high speed dosing capability with more standard features.

The flexibility of the EWN-R pump enable it be integrated into virtually any chemical feed application using a universal-voltage, digital controller with an expanded set of control features. Superb valve performance and advanced solenoid engineering combine to make a highly precise pump for the most demanding applications

EWN pumps have outputs to 6.7 GPH (25.2 L/h) and a maximum pressure of 290 PSI (20 bar). The high speed of operation results in high resolution chemical feed and long service life. Quiet and compact, the EWN pumps prime in seconds and hold prime reliably.

KEY BENEFITS

High Speed Performance

E-Series pumps operate up to 360 strokes-per-minute with adjustments in 1 spm increments, providing high resolution chemical feed. Adjustable stroke length further increases the ability to refine the output, making the E-Series one of the most versatile solenoid metering pumps on the market.

Multi-function Digital Controller

The controller in the EWN-R pump provides for flexible pump control including scalable Analog control, Digital Input with both Multiply and Divide capability, external stop control, or simple speed and stroke length control. Display can be adjusted between flow rate units or % speed for easy-to-read output and quick adjustment. The controller is universal voltage so it can be used anywhere in the world.

Engineered Longevity

All E-Series pumps feature dual bearing support. The armature and shaft are supported with a bearing on each end, which ensures proper axial movement, enabling the E-Series to operate at 360 SPM while extending the life of the diaphragm.

Superior Check Valve Performance

Dual Check Valve Assemblies in both suction and discharge fittings feature precision ball guides and tapered seats. Precise machining and molding of parts limit valve ball travel, ensuring that balls fully seat and seal with every stroke. This superior check valve design guarantees fast priming and reliable performance.

Flexible Connections

A removable tubing insert provides flexibility of tubing sizes and eliminates twisting of the tubing during connection. A threaded insert can be used in place of the tubing adapter to easily convert any connection to NPT.

High Compression Ratio

The compression ratio of a metering pump is important because it affects the pump's ability to prime and vent. The compression ratio is raised when you reduce the dead volume of the pump head during operation. All E-Series pumps feature a very high compression ratio that ensures proper feed especially with off-gassing products (i.e. Sodium Hypochlorite).

WALCHEM
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SPECIFICATIONS

CONTROLLER SPECIFICATIONS

Operational mode	MAN	0.1 to 100% stroke rate		
	EXT control	DIV (Dividing)		/1 to 9999
		MULT (Multiply)		x1 to 9999
		ANA. R (Analog, rigid)		4 to 20, 0 to 20, 20 to 4, 20 to 0 mA
		ANA. V (Analog, variable)		2 points 0.0 to 20.0 mA range 0.0 to 100% stroke rate
Display	LCD	14 segment 5 digits		%, ml/m, L/H, GPH, STOP, PRIME, AUX etc
	LED	ON	Green	Green lights when ON blinks OFF synchronous with stroke.
		STOP	Orange/Red	Orange lights when Pre-STOP is made, red when STOP is made.
Keypad	5 keys	START/STOP, EXT, ▲(UP), ▼(DOWN), Disp		
Control function	STOP/Pre-STOP	Pump keeps running when Pre-STOP is made. Pump stops when STOP is made.		
	Prime	Pump runs at max. stroke rate while up and down keys are pressed.		
	Key lock	Keypad can be locked and unlocked.		
	Calibration	Discharge capacity per shot is calculated automatically by operating and stopping pump in the calibration mode to determine the flow rate.		
	Buffer memory	ON or OFF selectable. Max. 65535 stroke pulses are stored in memory.		
Input	Pulse	No voltage contact or open collector. Max 200 Hz. NO/NC selectable		
	Current	DC0 - 20mA (Input resistance 200 Ω)		
	Stop/Pre-stop	No Voltage contact or open collector		
	AUX	Pump runs at max.stroke rate when made. No Voltage contact or open collector		
Output	Photo-MOS relay AC/DC24V 0.1A			
	STOP, Synchronous with stroke			

Note 1: If the max. stroke rate by calculation exceeds 100% stroke rate because of the relation between the setting and input signal when the pump is in EXT operation, the operation is fixed at Maximum stroke rate speed of manual operation.
Note 2: By changing the setting, the pump can run when the contact signal comes in.
Note 3: The max. frequency of input pulse is 200 Hz. ON time of input pulse is 10 to 100 mS.
Note 4: The max. potential voltage at a contact is 12V and current is 0.1mA. If a contact such as relay is used, the minimum application load should be 0.1mA or less.

ELECTRICAL SPECIFICATIONS

EWN	EWN-B	EWN-C
50/60 Hz, 1 phase	20 Watt avg.	24 Watt avg.
100-240VAC ±10%	0.8 Amp max.	1.2 Amp max.

SHIPPING WEIGHT

EWN-B: 10 lbs (4.5 kg)
EWN-C: 12 lbs (5.5 kg)
*SH liquid ends increase weight up to 50%

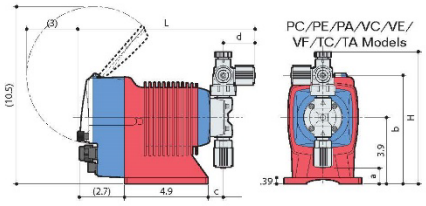
SAFETY CERTIFICATIONS

The EWN series metering pumps* are WQA tested and certified to NSF/ANSI/CAN Standard 61.

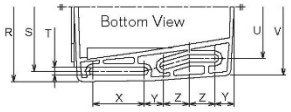
*See WWW.WQA.ORG for certified chemicals, parameters and MUL levels. NSF/ANSI/CAN 61 addresses health effects only. It does not address disinfection efficacy of the product.

The EWN series metering pumps are tested by Intertek to UL and CSA standards.

DIMENSIONS (in inches)

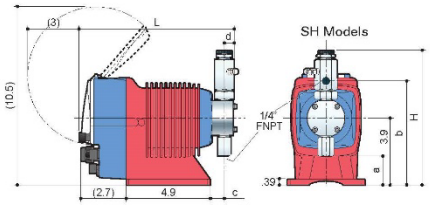


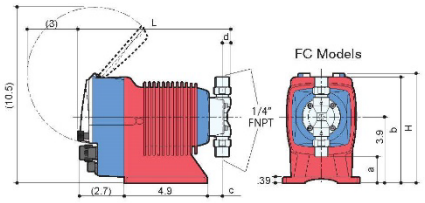
Material	Model	H	L	a	b	c	d
PC/PE/PA VC/VE/VF TC/TA	EWN-11,16, 21	7.83	10.43	0.94	6.45	0.90	1.85
	EWN-31	8.34	10.51	0.23	6.97	0.98	1.89
	EWN-36	8.30	10.51	0.27	6.93	0.94	1.89
SH	EWN-11,16, 21	7.91	9.13	1.73	6.10	0.86	0.59
	EWN-31	8.38	9.17	1.34	6.49	0.90	0.59
	EWN-36	8.50	9.17	1.26	6.69	0.90	0.59
FC	EWN-11,16, 21	6.53	9.09	1.57	6.31	0.90	0.51
	EWN-31	6.97	9.29	0.90	6.97	0.98	0.63
	EWN-36	6.97	9.25	0.90	6.97	0.94	0.63



MOUNTING DIMENSIONS

EW Model	R	S	T	U	V	X	Y	Z
11,16, 21	4.57	3.94	0.24	3.15	4.17	1.57	0.59	0.79
31, 36								





SPECIFICATIONS

MODEL IDENTIFICATION

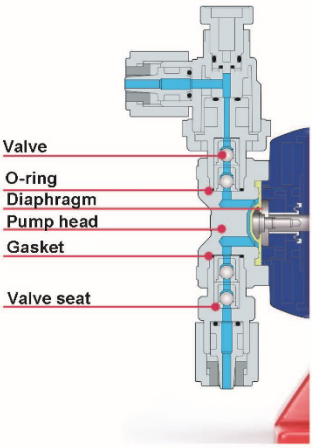
EWN - B 11 VC □ U R □

- **Series Symbol**
  EWN-R series
- **Drive Unit Symbol**
  Average power consumption
  B: 20W **C:** 24W
- **Diaphragm Diameter**
  Effective diaphragm dia.
  09: 8mm **11:** 10mm **16:** 15mm
  21: 20mm **31:** 30mm **36:** 35mm
- **Wet-End Material Symbol**
  For details, see the table of materials
- **Tubing Connection** (For other options, contact your distributor)
  Blank: 1/4" x 3/8" (B09, B11, B16, B21, C16, C21)
  3/8" x 1/2" (B31, C31, C36)
  1/4" FNPT (SH models)
- **Power Code**
  U: 115V US plug
  2: 230V US plug
- **Controller Function Code**
  R: Standard type
- **Options**
  C: High compression version + ADV (available on 09-21-VC/VE)
  H: High pressure version (250 PSI) (available on B11/C16-PC/PE/PA/SH)
  H2: High pressure version (290 PSI) (available on B11-PC/PE/PA/SH)
  A: Auto Degassing valve included (available on 11-21-VC/VE)
  M: Multifunction valve included (available on all models except FC/SH or with other options)
  V: High Viscosity version (available on C31-PC/P6)
  N: No Manual Air Vent Valve (SH only)

WET END MATERIALS

	Pump Head	Diaphragm	Valve Balls	Valve Seat	O-ring Seal	Gasket
VC	PVC	PTFE +EPDM	CE	FKM	FKM	PTFE
VE				EPDM	EPDM	
VF			PTFE	EPDM	EPDM	
PC	GFRPP		CE	FKM	FKM	
PE				EPDM	EPDM	
PA				PCTFE	AFLAS®	
FC	PVDF			PCTFE	PTFE	
TC				FKM	FKM	
TA				PCTFE	AFLAS®	
SH	316SS		HC	316SS	PTFE	

CE	Alumina ceramic	GFRPP	Glass fiber reinforced polypropylene
FKM	Fluoroelastomer	PVC	Polyvinylchloride (translucent)
PTFE	Polytetrafluoroethylene	HC	Hastelloy C276
PVDF	Polyvinylideneflouride	316SS	316 Stainless Steel
EPDM	Ethylene propylene diene monomer	AFLAS®	Tetrafluoroethylene/propylene



PUMP SPECIFICATIONS (Standard pumps and pumps with MFV)

Model		B11	B16	B21	B31	C16	C21	C31	C36	
									VC/VE/PC/PE	FC/SH/TC
Maximum output capacity	GPH	0.6	1.0	1.6	3.2	1.3	2.1	4.3	6.7	6.5
	mL/min	38	65	100	200	80	130	270	420	410
	mL/shot	0.02-0.11	0.04-0.18	0.06-0.28	0.11-0.56	0.04-0.22	0.07-0.36	0.15-0.75	0.23-1.17	0.23-1.14
Maximum rated discharge pressure	PSI	150	105	60	30	150	105	50	30	30
Maximum useable pressure	PSI	203	116	73	30	174	116	50	30	30
Stroke rate	% (spm)	0.1 to 100 (1 to 360)								
Stroke length rate	% (mm)	20 to 100 (0.2 to 1.0)				20 to 100 (0.25 to 1.25)				

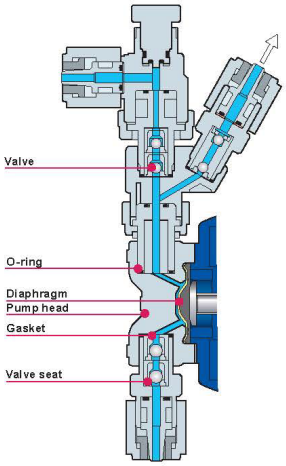
Note 1: Maximum output capacity shown is at Maximum Rated Discharge Pressure (stroke length 100%, stroke rate 100%) and increases as a discharge pressure reduces.
Note 2: Maximum Useable pressure rating is the maximum useable capability of the pump. Maximum output capacities may be lower than published at pressures higher than Maximum Rated Discharge Pressure. Maximum pressure of PVC type is 174 PSI. Please contact your distributor for more information.
Note 3: The performance is based on pumping clean water at ambient temperature at rated discharge pressure and voltage.
Note 4: Liquid temperature: PVC liquid ends: 14 to 104°F (-10 to 40°C) GRFPP/PVDF/SS liquid ends: 14 to 140°F (-10 to 60°C)
Note 5: Ambient temperature: 32 to 122°F (0 to 50°C) Relative humidity: to 85% (non-condensing)
Note 6: All pumps include a manual air vent valve except FC/SHN/HV models. All pumps include one foot valve, injection valve, 20 ft. of PE tubing and ceramic weight except for SH/H2/HV models.

Input/Output Connectors (Sold Separately):
E90495 5-pin connector: Use for Analog, Pulse & AUX inputs + Output Relay on EWN-R
E90496 5-pin reverse key connector: Use for Stop & Pre-Stop inputs on EWN-R

OPTIONS

Auto Degassing Valve Model

Chemicals that outgas, such as Sodium Hypochlorite or Hydrogen Peroxide, can generate enough gas to gas lock metering pumps. Using a dual check valve system, the Auto Degassing Valve vents any gas to atmosphere to eliminate gas lock conditions and keep the pump primed.

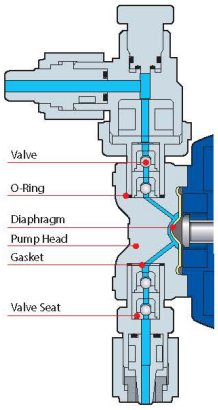


Wet-end material

Material code	VC-A	VE-A
Pump head	PVC	
Valve	CE	
Valve seat	FKM	EPDM
Gasket	PTFE	
O-ring	FKM	EPDM
Diaphragm	PTFE+EPDM	

High Compression Model

Increasing the compression ratio by minimizing dead volume in the liquid end combined with the auto degassing valve further helps to eliminate gas in the pump heads. In addition to reducing air lock conditions, the increased compression ratio helps with accuracy at low output ranges.



Wet-end material

Material code	VC-C	VE-C
Pump head	PVC	
Valve	CE	
Valve seat	FKM	EPDM
Gasket	PTFE	
O-ring	FKM	EPDM
Diaphragm	PTFE+EPDM	

High Pressure Model

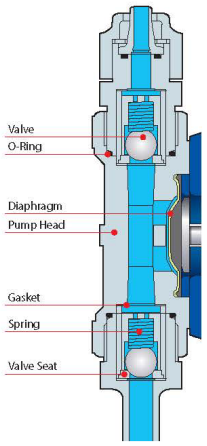
The high pressure models are capable of operating at flow rates up to 0.6GPH (40mL/min) at a maximum discharge pressure up to 290PSI. This makes it suitable for applications such as chemical injection into boiler makeup water.

Wet-end material

Material code	PC-H	PE-H	SH-H
Pump head	GFRPP		SUS316
Valve	CE		HC
Valve seat	FKM	EPDM	SUS316
Gasket	PTFE		
O-ring	FKM	EPDM	—
Diaphragm	PTFE+EPDM		

High Viscosity Model

The High Viscosity pump has a uniquely designed liquid end with oversized flow paths and spring loaded valve checks. Coupled with a reduced max speed, the HV pumps are designed for polymer/coagulant injection in water treatment applications.



Wet-end material

Material code	PC-V	P6-V
Pump head	GFRPP	
Valve	CE	316 SS
Valve seat	PCTFE	
Spring	Hastelloy C276	316 SS
Gasket	PTFE	
O-ring	FKM	EPDM
Diaphragm	PTFE+EPDM	

Specifications (Special versions)

		Auto Degassing Valve					High Compression Models (ADV Included)					
Model		B11	B16	B21	C16	C21	B09	B11	B16	B21	C16	C21
Max. Output Capacity	GPH	0.5	0.9	1.4	1.0	1.7	0.2	0.4	0.6	1.0	0.9	1.2
	mL/min	30	55	86	65	110	12	23	40	63	54	78
	mL/shot	0.02 - 0.08	0.03 - 0.15	0.05 - 0.24	0.04 - 0.18	0.06 - 0.31	0.01 - 0.07	0.03 - 0.13	0.04 - 0.22	0.07 - 0.35	0.06 - 0.30	0.09 - 0.43
Rated Discharge Pressure	PSI	150	105	60	150	105	150	150	105	60	150	105
Stroke Rate	% (spm)	0.1 - 100 (1-360)					0.1 - 100 (1-180)					
Stroke Length Range	% (mm)	20 - 100 (0.2 - 1.0)			20 - 100 (0.25 - 1.25)		20 - 100 (0.25 - 1.25)			20 - 100 (0.3 - 1.50)		

Model		High Pressure Models		High Pressure Models (290 psi)	High Viscosity Models
		B11	C16	B11	C31
Max. Output Capacity	GPH	0.4	0.6	0.3	2.4
	mL/min	25	40	17	150
	mL/shot	0.02 - 0.1	0.03 - 0.17	0.05 - 0.07	0.13 - 0.63
Rated Discharge Pressure	PSI	250	250	290	73
Stroke Rate	% (spm)	0.1 - 100 (1-240)		0.1 - 100 (1-240)	0.1 - 100 (1-240)
Stroke Length Range	% (mm)	20 - 100 (0.2 - 1.0)	20 - 100 (0.25 - 1.25)	70 - 100 (0.5 - 0.9)	20 - 100 (0.25 - 1.25)

Note 1: Max. output capacity shown is at **Rated Discharge Pressure** (stroke length 100%, stroke rate 100%) and increases as a discharge pressure reduces.
Note 2: The performance is based on pumping clean water at ambient temperature at rated voltage.

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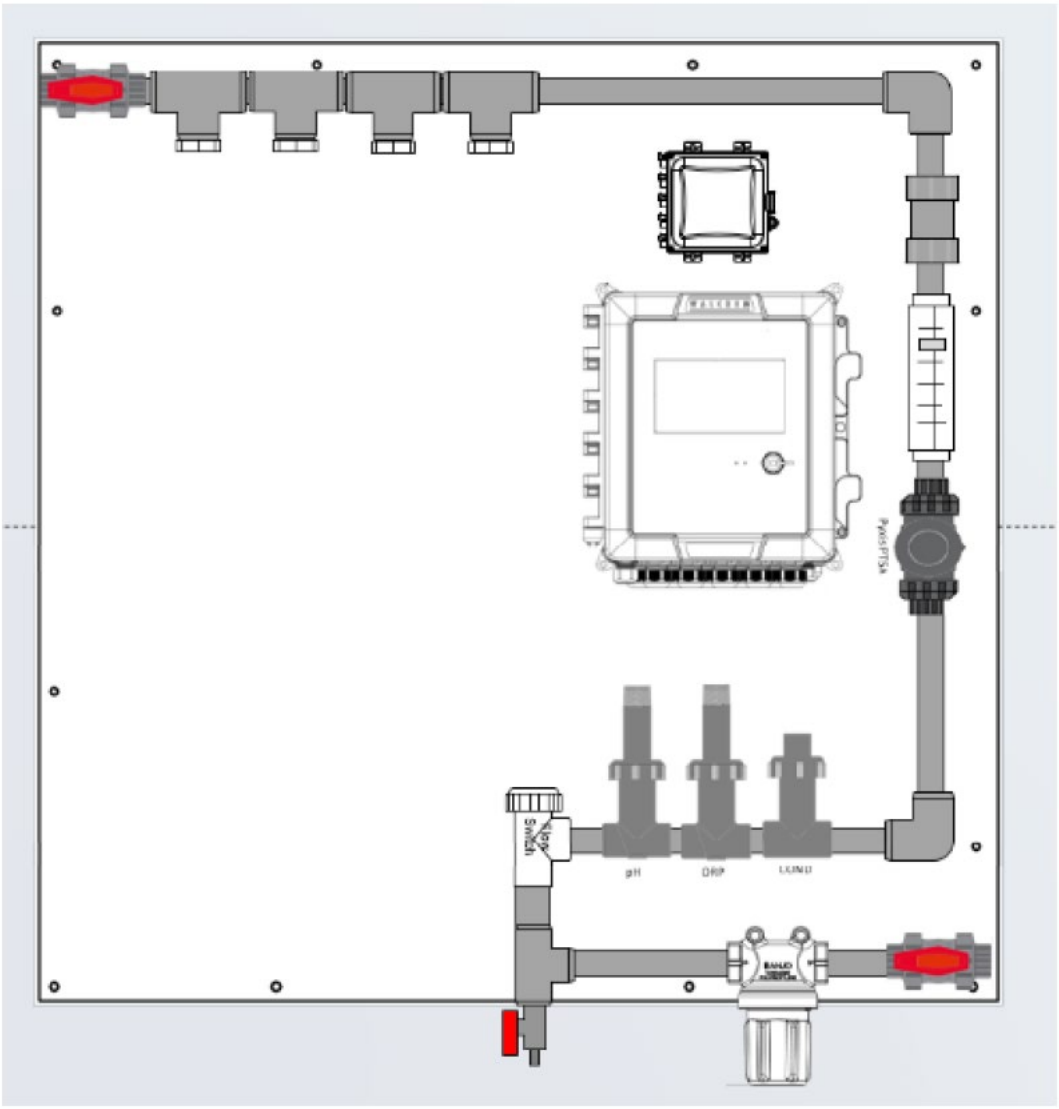
WALCHEM
IWAKI America Inc.

Walchem, Iwaki America Inc.
Five Boynton Road Hopping Brook Park | Holliston, MA 01746 USA | Phone 508-429-1110 | walchem.com

ModemMillie™

Plug & Play with your controller, PLC or RTU
Easy set-up:

- No programming required: just call us - we do ALL the setup
- ModemMillie is compatible with Walchem's I-900, I-600 series
- AquaPhoenix carries three different models of the modemMillie™ system. Each differs slightly in size and specifications so you can select the best system for your needs.
- These are the three versions available at AquaPhoenix:
- MM-T10: This unit features a 1-port industrial-grade cellular modemMillie™ with optional Wi-Fi and a compact enclosure


Flow Switch
pH
ORP
LEVEL

Construction Plan for Williamson County

Control Equipment	$15,558.00 once

Included

- All Pumps
- Controller
- Corrosion study station
- Injection point
- Installation

NOTES:

- Lead times can be up to 8 weeks
- AquaLogic will provide all equipment, labor, and parts required for professional completion of this installation
- AquaLogic will provide all programming and support for proper operation of this equipment