LEIT® X and XRC Controller Specifications
Section 02810

Part 1 Introduction

1.1 The LEIT X and XRC series irrigation controllers are an advanced water-management irrigation control system. The controller utilizes ambient light as the source of energy to operate up to 28 valves using a low voltage, high efficiency, watertight, 2-way magnetic solenoid actuator that operates at 5-volts alternating pulse. The LEIT X and XRC controllers have a menu-based program with straightforward features allowing for a wide range of irrigation applications. The LEIT X and XRC features includes 4 programs with 3 start times per program, run time up to 5 hours and 59 minutes per valve, budget, rain delay, status report, history reports and manual run. The controller’s power comes from an advanced time-tested photo voltaic module, which harnesses light energy day and night, anytime, anyplace and in any weather conditions. The LEIT X and XRC controllers are commercial quality, heavy-duty water management controllers used for any type of environment.

Part 2 Typical Installation

2.1 Drawing File no.: LEIT X.exe
3.1 Automatic Irrigation Controller [Light]

Irrigation controllers shall be single, solid-state independent controllers confirming to the following:

The LEIT automatic irrigation controllers shall come with four to twenty eight stations with master valve or pump start without AC power hookup, batteries or conventional solar panels. The LEIT controller’s power shall be provided by an internal, ultrahigh efficiency photo voltaic module and microelectronic energy management system fueled by ambient light. The LEIT controller shall require a LEIT Key to enter, change or modify the controller programming. The LEIT controller shall be programmed using a self-guiding menu and four durable sealed buttons for navigation. Entering the program a password shall be used to eliminate potential user error. The password can be changed at any time during program setup activation. The LEIT controller shall have a non-volatile memory holding programs indefinitely without batteries or AC power. The LEIT controller shall operate in a temperature range of 14-140°F (–10-60°C).

3.1.1 Controller Features

a. Controller model X shall operate 10, 12, 16, 20, 24, 28 stations and a master valve.
b. Controller model XRC with a 2-way radio shall operate 4, 6, 8, 10, 12, 16, 20, 24, 28 stations and a master valve.
c. The controllers shall operate and use a micro-powered solenoid actuator with globe valve or a micro-powered solenoid actuator with the correct adapter to be mounted on any other valve.
d. Controller shall have bilingual software in English and Spanish.
e. The controller LCD screen shall be activated with a special key powered by a 9-volt alkaline battery to provide access and security to a simple 4-button programming pad, the LCD shall display all the schedule information.
f. The controller shall have 4 independent programs with 3 start times per station.
g. The controller shall allow custom grouping, allowing the controller to operate any number of stations within a group sequentially (if hydraulic limitations are not exceeded).
h. Ability to program in one minute increments up to 5 hours and 59 minutes with a separate setting for hours and minutes.
i. The LEIT XRC controller shall have a 2-way radio capability using the ISM band 900-928 MHz to communicate with a LEIT Link radio from a distance of up to 800’ line of sight.
j. A programmable watering calendar with a choice of a 1-39 day interval, odd/even days or any day(s) of the week.
k. A feature that shall include password protection for added security.
l. Rain stop from 1-99 days with automatic restart.
m. A 12 month budget adjustment from 10% to 200% in 10% increments.
n. A manual feature that allows a single desired station to cycle start for any preset with preferred duration.
o. The controller shall have the option to operate automatic, semi-automatic and manual cycle via the controller.
p. The controller shall have a monthly off feature that enables turning off any month of the year.
q. Status and history reports to review controller functions and the amount of watering time applied during current and previous month.
r. The controller shall have the option to assign any switch type rain sensor, moisture sensor or freeze sensor to an individual valve or to the entire system using a SKIT adapter. (Rain sensor is recommended)
s. The controller shall activate the micro-powered solenoid actuator LEMA 1600HE to a distance of up to 7500’ (2270m) using NFPA 70 copper conductor 12-gauge (1.6 mm) irrigation wire type UF.
t. The controller shall be capable of operating pump start relay or a master valve using a RKIT 8810S relay interface.
u. The XRC controller shall use a 2-way radio remote handset that can operate in the ISM band 900-928 MHz. To use a 2-way radio communication in the ISM band 900-928 MHz, the controller shall use a LEIT Link 2-way Radio Remote Handset.
v. The controller shall have lightning protection to fully isolate the controller from electrical ground, and offer virtual immunity to ground currents from overhead power lines and/or close proximity lightning strikes.
w. The controller shall have a full 3-year repair or replacement warranty, prorated from in-service date.
x. The controller shall have a lifetime lightning warranty.
y. The controller and its components shall be manufactured by DIG Corporation, Vista, CA.

3.1.2 Controller Components Descriptions

a. Mounting Column – The LEIT controller shall be mounted on a galvanized mounting column with a length of either 35” or 51” with curved sweep at the bottom to permit ease of wire pull.
b. Micro-Powered Solenoid Actuator
   
   b1. Micro-Powered Solenoid Actuator with Globe Valve – The remote control valve shall be a globe type, normally closed using 5-volts alternating pulse micro-powered solenoid actuator with electronic control built in. The valve shall be pressure rated up to 150 PSI and have balanced opening and closing. The valve’s body shall be constructed of weather resistant, high impact glass-reinforced nylon and a stainless steel spring (303). The valve’s one-piece diaphragm shall be nylon fabric reinforced natural rubber (NR). The valve shall have a flow control and internal manual bleed within the solenoid and allow for manual operation by turning the manual bleed handle a ¼ turn. The valve shall provide easy access for removing all parts from the top of the valve without disturbing normal valve installation. The remote control valve shall have a 3/4” FNPT inlet and outlet connection and shall be manufactured by DIG Corporation.

   b2. Micro-Powered Solenoid Actuator only – The LEIT controller shall use a micro-powered solenoid actuator with electronic control built in. The micro-powered actuator shall use a bipolar pulse and operate at 5-volts alternating pulse. The plunger and spring shall be encapsulated for reliable operation. The micro-powered solenoid actuator shall have an 11/16”-12 UN thread connection and connect to any globe valve via one of the solenoid adapters. The micro-powered solenoid shall use 1 of the 7 DIG valve adapters compatible with the following valves:
c. An expansion curl shall be provided so that in case of repairs the valve may be brought to the surface to be serviced without disconnecting the control valve.

a. Control wire for LEIT operated valve with LEMA 1600HE shall be NFPA 70 copper conductor, 14-gauge [1.8 mm] irrigation wire, type UF and shall be

Install irrigation wires at least six inches below finish grade and lay to the side and below main line.

Part 5 Installation

Install irrigation wires at least six inches below finish grade and lay to the side and below main line.

a. Control wire for LEIT operated valve with LEMA 1600HE shall be NFPA 70 copper conductor, 14-gauge [1.8 mm] irrigation wire, type UF and shall be

used for station wire with length up to 4500' (1360 m). NFPA 70 copper conductor 12 gauge [1.6 mm] irrigation wire, type UF, shall be used for station wire with runs up to 7500' (2270 m).

b. ELECTRICAL SPLICES SHALL BE WATERPROOF and shall be located inside the valve box.

c. An expansion curl shall be used in case of repairs the valve may be brought to the surface to be serviced without disconnecting the control valve.
LEIT® X and XRC Radio Series Controllers System

Features

• Series X operates 10, 12, 16, 20, 24 and 28 stations plus a master valve or pump start without AC power hookup, batteries or conventional solar panels
• Series XRC using 900-928 MHz, 2-way radio operates 4, 6, 8, 10, 12, 16, 20, 24 and 28 stations plus a master valve or pump start without AC power hookup, batteries or conventional solar panels
• Bilingual software in English and Spanish
• Controller functions and operations are 100% tested
• Controller waterproofing is 100% tested
• Built to the highest quality control standard (ISO 9002)
• Non-volatile memory holds programs indefinitely without batteries
• Functions day or night and in any weather in most outdoor locations
• All power is provided by an internal, ultrahigh efficiency photovoltaic module and microelectronic energy management system fueled by ambient light
• Can replace any LEIT 8000 or Solatrol controller with 1500S or 1500E actuator or older
• Compatible with most brands, styles and sizes of valves (refer to LEMA 1500HE series actuator specification sheet)
• LEIT XRC has remote programming and management capability separate from LEIT Link remote controller handset
• LEIT XRC 2-way radio frequency module operates in the ISM band 900-928 MHz
• Programming is easy, using a self-guiding menu and 4 durable sealed buttons
• Assign rain, moisture or freeze sensors to an individual valve or to the entire system using the SKIT 8821-4 adaptor
• Liquid crystal display is easy to read under almost any daylight condition
• Simple to install, easy access wire connector accommodates standard irrigation wire up to 12 gauge
• Terminal strip can handle 28 hot wire stations, 2 MV/P wires and 2 common wires

• Lightening protection, the controller is fully isolated from electrical ground, offering virtual immunity to ground currents from overhead power lines and/or close proximity lightning strikes
• Manual watering or semi-automatic cycle by station with quick override

Programming Features

• 4 independent programs per valve and 3-start times per program allow for mixed irrigation applications
• Duration’s from 1 minute to 5 hours and 59 minutes to operate drip or sprinkler systems
• Custom programming with 7-day calendar or interval of 1 to 39 days in odd/even or every day rotation
• Individual monthly water budgeting from 10% to 200% in 10% increments
• Rain delay up to 99 days with auto-restart
• History report for each valve verifies actual watering time for the last and current months
• Station custom grouping allows the controller to operate more than one group and any number of stations per group together (if hydraulic limitations are not exceeded)

Ordering Information

Model X10 10-stations plus MV/P
Model X12 12-stations plus MV/P
Model X16 16-stations plus MV/P
Model X20 20-stations plus MV/P
Model X24 24-stations plus MV/P
Model X28 28-stations plus MV/P
Model XRC04 4-stations plus MV/P
Model XRC06 6-stations plus MV/P
Model XRC08 8-stations plus MV/P
Model XRC10 10-stations plus MV/P
Model XRC12 12-stations plus MV/P
Model XRC16 16-stations plus MV/P
Model XRC20 20-stations plus MV/P
Model XRC24 24-stations plus MV/P
Model XRC28 28-stations plus MV/P

LEIT Link Handset
LEIT Multi-Pro Remote with up to 99 controllers
LEIT Link Master Remote with up to 99 groups, 99 controllers per group

Valves
160HE-075 3/4” plastic valve with flow control
160HE-100 1” plastic valve with flow control
160HE-150 1 1/2” plastic valve with flow control
160HE-200 2” plastic valve with flow control

Actuator
LEMA 1600HE solenoid actuator

Valve Adapters
DIG valve adapters are compatible with the following valves:
300-920 BERMAD series 200, HIT series 500, DOROT series 80, GRISWOLD series 2000, DW and BUCKNER series 8 valves
300-921 RAIN BIRD DV, DVF, PGA, PEB (3/4” and 1” only), GB, EFB-CP, BPE, PESB (3/4” and 1” only) and ASVF valves
300-922 HUNTER series ASV, HPV, ICV, PGV, SRV, IBV and ASVF valves
300-923 WEATHERMATIC series 12000, 21000 valves
300-924 IRRITROL series 100, 200B, 205, 217B, 700, 2400, 2500, 2600 and TORO series 220, 2220 valves
300-925 SUPERIOR series 950, HUNTER HBV and TORO series 252 valves (1.5” and larger)
300-926 RAIN BIRD series PEB and PESB (1 1/2” and 2” only) valves