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(54) Title: IRRIGATION CONTROLLER WITH SELECTOR MEANS FOR DISPLAYING SELECTED GROUPS OF PARAMETER VALUES

(57) Abstract

An irrigation controller (10) includes microprocessor means (30) for controlling a plurality of watering stations under program control according to a plurality of stored parameter values, a display module (24) operationally connected to the microprocessor means (30) for displaying the parameter values, and a plurality of selector switches (70-97) initiating the display of a selected one of a plurality of predefined groups of the parameter values. Each one of the switches corresponds to a respective one of the groups, and the display module (24) includes both a first plurality of display elements (56-63) configured to produce images of the parameter values and a second plurality of display elements (41-55) configured to produce images identifying the selected group. One embodiment includes a liquid crystal display having the second plurality of display elements (41-55) configured as arrowheads pointing toward panel labeling that extends to a corresponding one of the switches.
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1. An irrigation controller, comprising:
   microprocessor means for controlling a plurality of
   watering stations under program control according to a
   plurality of parameter values;
   display means operationally connected to the
   microprocessor means for displaying the parameter values;
   selector means for initiating the display of a
   selected one of a plurality of predefined groups of the
   parameter values, including a first plurality of randomly
   actuable switches operationally connected to the
   microprocessor means, each one of the switches corresponding
   to a respective one of the groups;
   the display means including a display module having
   a first plurality of display elements configured to produce
   images of the parameter values and a second plurality of
   display elements configured to produce images usable in
   identifying the selected group; and
   parameter-changing means for enabling the user to
   change the value of selected ones of the selected group of
   parameter values as the group is displayed, including a second
   plurality of randomly actuable switches operationally
   connected to the microprocessor means.

2. A controller as recited in Claim 1, further
   comprising:
   a panel on which the display module and the first
   plurality of switches are mounted; and
   a plurality of identifying indicia on the panel
   adjacent to the display module, each one of which indicia
elements includes a display element configured to produce an image indicating the occurrence of a fault condition.

5. A controller as recited in Claim 1, wherein the display module includes:
   a liquid crystal display module with a fixed pattern of display elements.

6. A controller as recited in Claim 1, wherein the second plurality of switches includes:
   incrementing switch means for incrementing selected ones of the selected group of parameter values; and
   decrementing switch means for decrementing selected ones of the selected group of parameter values.

7. An irrigation controller, comprising:
   microprocessor means for controlling a plurality of watering stations under program control according to a plurality of parameter values;
   a panel;
   selector means for initiating the display of a selected one of a plurality of predefined groups of the parameter values, including a first plurality of switches that are mounted on the panel and operationally connected to the microprocessor means, each one of the switches corresponding to a respective one of the groups;
   display means mounted on the panel and operationally connected to the microprocessor means for displaying the selected group, including a display module having a second plurality of display elements that each correspond to a respective one of the groups; and
   a plurality of identifying indicia on the panel, each one of the indicia extending intermediate a respective one of the second plurality of display elements and the one
of the first plurality of switches that corresponds to the same group of parameter values as said display element.

8. A controller as recited in Claim 7, wherein:

the display module includes a first plurality of display elements configured to produce images of the parameter values;

each one of the indicia extends to a position adjacent to a corresponding one of the second plurality of display elements to identify the group of parameter values to which that display element corresponds;

each one of the second plurality of display elements is disposed along a marginal edge portion of the display module; and

each one of the indicia extends to a position alongside the marginal edge portion of the display module, adjacent to the respective one of the second plurality of display elements.

9. An irrigation controller comprising:

microprocessor means for controlling a plurality of functions of watering stations under program control;

display means operationally connected to the microprocessor means for displaying information related to the functions;

selector means for selecting one of the functions and for initiating the display on said display means of information relating to the selected function, said selector means including a first plurality of switches operationally connected to the microprocessor means and corresponding, respectively, to said functions;

the display means including display module means for producing and displaying alphanumeric information related to
the selected function and for producing and displaying images usable in identifying the selected function; and

a second plurality of switches operationally connected to the microprocessor means for changing the alphanumeric information with each of the second plurality of switches controlling the display in an adjacent alphanumeric character location.

10. A controller as recited in claim 9 wherein the display module means has a plurality of sides and the second plurality of switches are located along one of said sides and at least some of the first plurality of switches are located along another of said sides.

11. A controller as recited in claim 9 wherein the first and second plurality of switches are randomly actuatatable.

12. An irrigation controller comprising:

- microprocessor means for controlling a plurality of functions of watering stations under program control;
- display means operationally connected to the microprocessor means for displaying information related to the functions;
- selector means for selecting one of the functions and for initiating the display on said display means of information relating to the selected function, said selector means including a first plurality of randomly actuatatable switches operationally connected to the microprocessor means and corresponding, respectively, to said functions;
- the display means including display module means for producing and displaying information related to the selected function and for producing and displaying images which associate the information displayed by said display means with the selected function; and
a second plurality of randomly actuable switches operationally connected to the microprocessor means for changing the information displayed by said display means.