

Series 8040

B|W Controls

Control Panels

ALARM PANELS

B|W Signal and Alarm panels are available in many standard packaged units designed for use in a wide range of high, low and intermediate level alarm applications as well as for remote control signalling. Each contains the proper B|W level sensing relays and operates from electrodes set at desired alarm levels.

These panels can also be furnished with one or more B|W pump control relays included in the package to perform any desired level control function. Also these alarm systems can be incorporated into any of the other control systems shown in this catalog.

Contact us for assistance to meet your specific needs.

Catalog Number Example

8040-SC1H-H-L1-N1-1500-S7

ENCLOSURE

N1	Nema 1
N4	Nema 4
N12	Nema 12

LINE VOLTAGE

L1	115 Volt 50/60 Hz
L2	208-230 Volt 50/60 Hz

OPTIONAL FEATURES

X	None
H	Horn instead of Bell

RELAY SENSITIVITY

S1-S11	Select from Chart Sec. 1500
LF1,HF2	Select from Chart Section 5200
LV1-2 HV3-4-5	Select from Chart Section 5200
V	Select from Chart Section 5300
F1-F8	Select from Chart Section 5300

RELAY TYPE

1500	Induction Type 1500
5200-L	Series 5200-low sensitivity
5200-H	Series 5200-high sensitivity
5300-P	Series 5300-25 amp contacts

	NUMBER OF ELECTRODES	TYPE OF OPERATION	
SV1H	2	High Level Signal	VISUAL SIGNALS AND ALARMS Signal Lights Only
SV1L	2	Low Level Signal	
SV2	3	High and Low Level Signal	
SV3	4	Three Level Signals	
SV4	5	Four Level Signals	
SV5	6	Five Level Signals	
SA1H	2	High Level Alarm	AUDIBLE SIGNALS AND ALARMS *Bell or Horn Only
SA1L	2	Low Level Alarm	
SA2	3	High and Low Level Alarm	
SASH	2	High Level Alarm	
SASL	2	Low Level Alarm	
SC1S	0	Operates from single pole pivot device to indicate any off-normal condition	COMBINATION VISUAL AND AUDIBLE SIGNALS AND ALARMS Signal Lights *Bell or Horn, Pushbutton Silence Switch Automatic Reset
SC1H	2	High Level Signal and Alarm	
SC1L	2	Low Level Signal and Alarm	
SC2	3	High and Low Signal and Alarm	
SC3	4	High and Low Signal and Alarm Intermediate Level Signal	

NOTE: A common electrode is included and it may be omitted if a dependable ground return connection to the liquid is provided by other means.

*Bell with 4 inch gong is standard
85 db. at 10 ft.
Horn is optional
Adjustable 70 to 103 db.



FIXED SEQUENCE PANELS

These arrangements minimize installation time and costs by combining 2 or 3 control functions into a single control panel. All wiring connections between the BIW relays are made in our shop. Field wiring is made to the rugged terminals of the BIW relays and a system wiring diagram is provided which clearly shows all required external connections to the electrodes and other devices.

The standard enclosure is rated Nema 3R for location indoors or outdoors. It is made of steel with baked enamel finish and has knockouts in the bottom for conduit fittings. The Nema 4 watertight

enclosure is fiberglass. It meets the Nema 4X corrosion resistance standards and suitable aluminum conduit hubs are furnished loose for field mounting. Nema 12 enclosures are available to meet industrial requirements, or the relays can be furnished as open chassis on a back plate for field mounting into an electrical panel.

Several of the most common control combinations are listed below and identified with catalog numbers. However, any combination of relays can be provided. Just tell us what you want.

Catalog Number Example

8040-FS2B-X-L1-N12-5200-L-LF1

LINE VOLTAGE	
L1	115 Volt 50/60 Hz
L2	208-230 Volt 50/60 Hz
L3	460 Volt 50/60 Hz*
L4	575 Volt 50/60 Hz*

*Not available for Solid State

OPTIONAL FEATURES

X

None

ENCLOSURE

OC	Open Chassis
N1	Nema 1 & 3R
N4	Nema 4 or 4X
N12	Nema 12

RELAY SENSITIVITY

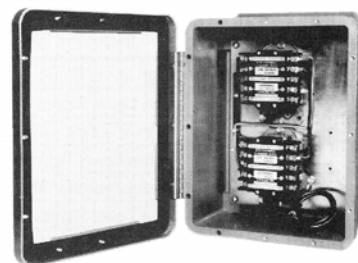
S1-S11	Select from Chart Sec. 1500
LF1, HF2	Select from Chart Section 5200
LV1-2 HV3-4-5	Select from Chart Section 5200
V	Select from Chart Section 5300
F1-F8	Select from Chart Section 5300

RELAY TYPE

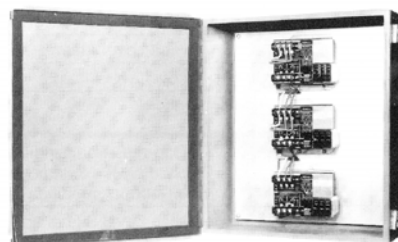
1500	Induction Type 1500
5200-L	Series 5200-low sensitivity
5200-H	Series 5200-high sensitivity
5300-P	Series 5300-25 amp contacts
5510	Series 5510-10 amp contacts

	NUMBER OF ELECTRODES ¹	TYPICAL CONTROLS WITH 2 RELAYS
FS2A	4	Single pump up with high level alarm contact
FS2B	4	Single pump up with low level alarm contact
FS2C	3 & 3	Single pump up control for reservoir with low level cut-off in suction tank or well
FS2D	4	Two pump, pump up fixed sequence-common stop
FS2E	5	Two pump, pump up fixed sequence-separate stops
FS2F	3	Two pump, pump up common stop for ice free electrodes
FS2G	5	Make-up valve control with low level cut-off
FS2H	4	Make-up valve control with low level cut-off and alarm contact
FS2I	4	Hydropneumatic tank control for one pump with low level alarm contact
FS2J	4	Single pump down with high level alarm contact
FS2K	4	Two pump, down fixed sequence with common stop
FS2L	5	Two pump, down fixed sequence with separate stops
FS2M	3	Single pump down with heater cut-off for ice-free electrodes
FS2N	3	High and low level alarm, 1 N.O. and 1 N.C. contact
FS2O	2	High and low alarm contacts for ice-free electrodes

	NUMBER OF ELECTRODES ¹	TYPICAL CONTROLS WITH 3 RELAYS
FS3A	5	Single pump up with high and low level alarm contacts
FS3B	6	Single pump up with high level alarm contact and low level cut-off and alarm contacts
FS3C	5	Single pump up with high and low level alarm contacts for ice-free electrode assembly
FS3D	5	Three pump, pump up with common stop electrode
FS3E	5	Single pump down with high and low level alarm contacts
FS3F	5	Two pump down common stop with high level alarm contact
FS3G	5	Three pump down fixed sequence with high level alarm contact when third pump is required
FS3H	5	Make-up valve control with high and low level alarm contacts
FS3I	4	Make-up valve control with high and low level alarm contacts for shallow tank ice-free electrode assembly
FS3J	4	Make-up valve control with high and low level alarm contacts for standard ice-free electrode assembly
FS3K	4	Three level indication with 1 N.O. and 1 N.C. contacts

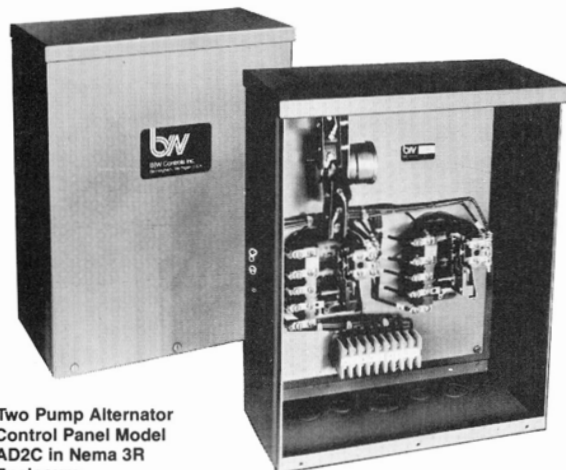


Two Type 1500 Relays
In NEMA 4 Enclosure



Three Type 5200 Relays
In NEMA 12 Enclosure

- NOTES: 1. A common electrode is included and it may be omitted if a dependable ground return connection to the liquid is provided by other means.
2. The alarm contacts provided close on alarm condition. Other controls can be furnished with contacts that open on alarm condition.

AUTOMATIC ALTERNATOR PANELS

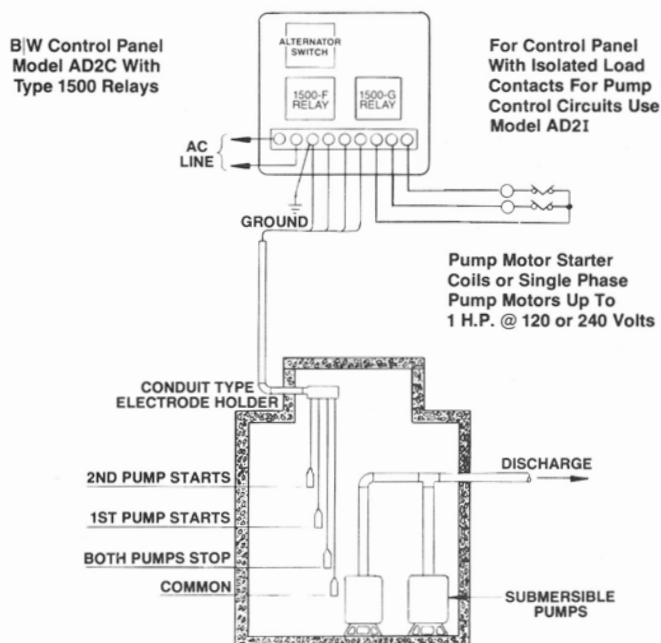
Two Pump Alternator
Control Panel Model
AD2C in Nema 3R
Enclosure

TYPICAL PUMP DOWN SYSTEM

The diagram below illustrates a basic pump down control used on systems for storm drainage condensate return, septic tank effluent, sewage lift stations, water soluble machine tool coolants, and cooling tower sumps.

While any of the B|W relays can be furnished, the Type 1500 induction relays are indicated. These have heavy duty load contacts that are capable of directly operating single phase pumps up to 1 H.P. @ 120 or 240 Volts A.C., or up to size 5 motor starter coils.

The Model AD2C for pump down (or AU2C for pump up) has a common power supply thru the B|W panel to energize the pump control circuits. For many applications it is desirable to have the pump motors and/or their motor starters on their own power supplies. For these situations Model AD2I for pump down or AU2I for pump up) has an isolated load contact for each pump control circuit and should be used.



BIW Alternators are compact packaged units designed to provide automatic change in the operating sequence of any number of pumps on either "pump down" or "pump up" level control applications. They provide uniform usage of all pumps under normal operating conditions—yet permit use of full pumping capacity during peak load periods.

DESIGN FEATURES

Sequence changing is accomplished with a motor operated switch that has proved its reliability on thousands of applications. This alternator provides momentary time delay to prevent false operation or rapid cycling, and it retains proper sequencing even after a power failure. In addition there are two BIW level detecting relays and all controls are wired to barrier type terminal blocks.

Enclosures are available to meet all indoor and outdoor location requirements. A complete easy to read system wiring diagram is provided showing all of the field connections so that installation is quick and easy.

EXTRA FEATURES

Models can quickly be furnished to meet special application requirements. Extra features include: selector switches, pilot lights, and additional control functions. Alternators can be combined with signals and alarms. Systems complete with motor starters are shown on the following pages.

OPTIONAL SEQUENCING ARRANGEMENTS

The standard method of alternation automatically changes the sequence after each pumping operation after all pumps have stopped. Sometimes other methods of operation may be desirable and Ametek offers a choice. When manual sequence selection is desired, a rotary selector switch is provided and it can be located either on the cover or on the backplate inside the enclosure.

Many systems have continuous flow, and multiple pumps are used to handle the varying load conditions. For these applications BIW has a rotating sequence alternator that will change the pumps in operation whenever there is a significant change in the reservoir level. The pump that has been idle the longest will be added to those running, or the pump that has been running the longest will be stopped. Systems are available for up to 10 pumps.

In addition, BIW alternators can be built to operate fewer pumps than the maximum design number—with provisions made for easy conversion in the field to add the additional pumps when the need arises.

Contact us for assistance to meet your special requirements.

AUTOMATIC ALTERNATOR PANELS

Catalog Number Example

8040-AU2I-X-L2-N4-1500-S8

ENCLOSURE	
OC	Open Chassis
N1	NEMA 1
N3R	NEMA 3R — Only for 2 Pump Alternators
N4	NEMA 4
N12	NEMA 12

LINE VOLTAGE	
L1	115 Volt 50/60 Hz
L2	208-230 Volt 50/60 Hz
L3	460 Volt 50/60 Hz
L4	575 Volt 50/60 Hz

OPTIONAL FEATURES	
X	None
HOA	Hand-off-Auto Switches, one for each pump mounted on cover with data plate
MA	Manual Alteration with sequence selector switch mounted on cover (specify detailed function of selector switch)
ROT	Rotating Sequence Alternation. For 4 or more pumps to equalize flow.

RELAY SENSITIVITY	
S1-S11	Select from Chart Sec. 1500
LF1, HF2	Select from Chart Section 5200
LV1-2 HV3-4-5	Select from Chart Section 5200
V	Select from Chart Section 5300
F1-F8	Select from Chart Section 5300

RELAY TYPE	
1500	Induction Type 1500
5200-L	Series 5200-low sensitivity
5200-H	Series 5200-high sensitivity
5300-P	Series 5300-25 amp contacts
5510	Series 5510-10 amp contacts

STANDARD PUMP DOWN ALTERNATORS

	NUMBER OF PUMPS	NUMBER OF ELECTRODES ¹	CONTROL DESCRIPTION	STANDARD OPERATION
AS2C ²	2	None	Operates from single pole control devices such as relays, pressure switches, etc. Power for motor starter coils comes from B W control panel. (See Note ²)	Pumps are started one at a time on "rising" level and all are stopped simultaneously at the desired "low" level. The starting sequence is then changed for the next cycle of operation.
AD2C	2	4	Power for the starter coils comes from B W control panel.	
AD2I	2	4	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices.	
AD3I	3	5	Same as AD2I except for number of pumps and electrodes.	
AD4I	4	6	Same as AD2I except for number of pumps and electrodes.	

STANDARD PUMP UP ALTERNATORS

	NUMBER OF PUMPS	NUMBER OF ELECTRODES ¹	CONTROL DESCRIPTION	STANDARD OPERATION
AS2C ²	2	None	Operates from single pole control devices such as relays, pressure switches, etc. Power for motor starter coils comes from B W control panel. (See Note ²)	Pumps are started one at a time on "falling" level and all are stoppepd simultaneously at the desired "high" level. The starting sequence is then changed for the next cycle of operation.
AU2C	2	4	Power for the starter coils comes from B W control panel.	
AU2I	2	4	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices. Designed for use with either standard or Ice Free electrode assemblies. Also, for hydropneumatic tank control as well as ordinary pump up systems.	
AU3I	3	5	Has isolated load contacts which provide for standard two wire control of motor starters or remote control devices.	
AU4I	4	6	Same as AU3I except for number of pumps and electrodes.	

Note¹: All alternators listed above are designed for use with one electrode to *start each pump* and one electrode to *stop all pumps*. A common electrode is included and it may be omitted if a dependable ground return connection to the liquid is provided by other means.

Note²: No "Relay Type" or "Relay Sensitivity" option available.