

# Acorn BASyC™ Systems

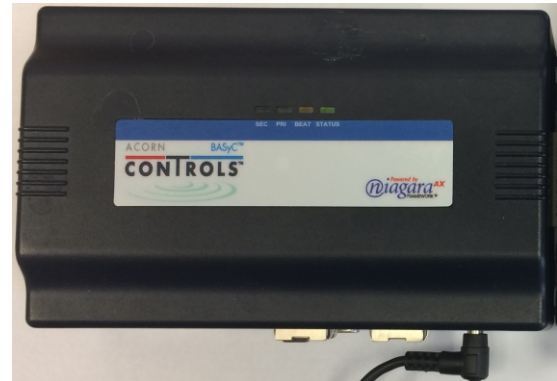
## Model AB17



### APPLICATION:

Acorn BASyC™ is ideal for any facility's recirculating domestic hot water system where optimal bather safety is desired. It provides distributed control and monitoring of Acorn Controls MV17 mixing valves and a wide variety of temperature, pressure and flow sensors.

Utilizing NiagaraAX software, the Acorn BASyC™ can aggregate information (real-time data, history, alarms, etc.) from an array of sensors. Acorn BASyC™ can connect to a facility's local area network and/or the existing BAS via industry standard network protocols.



### FEATURES/BENEFITS:

- Acorn Controls Electronically Actuated Thermostatic Mixing Valve and Multi-Valve Assemblies
  - Able to control up to (4) MV17 Valves in 2 separate temperature loops
  - Valves certified by IAPMO to ASSE 1017 with High/Low performance
  - Maintains thermostatic control of the set point during power failure and/or sensor loss
  - Provides redundant control: maintains temperature in the event of valve or actuator failure
- Honeywell/NiagaraAX hardware and software
  - The industry standard in building automation
  - Non-proprietary platform insures future support availability
  - Estimated flow and energy usage; no need for a costly flow meter
  - Does not require installation parameters prior to shipment; startup is quick and simple
- Acorn's unique control algorithm and system design achieves control accuracy that exceeds the requirements of ASSE 1017
- Effectively shuts off hot or cold water upon supply failure
- Alarms and Alerts with e-mail notification, can be linked to relay outputs
- Programmable outputs to drive a wide variety of devices
- 18 (10 relay, 8 analog) programmable outputs to drive a wide variety of devices
- 16 universal inputs will accept a wide variety types of input signals
- Expandable: Any inputs and outputs not used for BASyC™ standard features or options are available for user-defined applications. Let Acorn know how you want to utilize any available inputs and outputs and we'll quote customization costs
- Final fixture sensor
  - Eliminates estimating temperature at furthest fixture
  - Reduces energy consumption
- Programmable sanitation mode to reduce Legionella risk
- Sensors and control devices are provided with coded lead connectors virtually eliminate wiring and minimize the possibility of incorrect wiring
- Lead connectors eliminates the cost of wiring and makes sensor replacement fast and easy.
- Primary Ethernet adapter: allows access to BASyC™ system via the LAN
- Secondary Ethernet adapter: independent of the primary LAN or BAS system, this adapter is reserved for Acorn support of the BASyC™ system
- Password protection allows for multiple levels of secure access with or without control capability
- Sanitization includes a "safe start" feature with targeted time and temperature displayed from initialization to completion
- Powerful, user-defined data points. The reports are highly customizable and can be saved and/or exported in multiple formats
- Configurable to communicate data via BACNet, Modbus, Lonworks, OBix, TCP/IP IPv4, RS-485, or RS-232 protocols
- System can be installed without the need for a licensed electrician

Acorn Controls assumes no responsibility for use of void or superseded data. © Copyright Acorn Controls, City of Industry, CA, Division of Acorn Engineering Company, a member of Morris Group International. Please visit [www.acorneng.com](http://www.acorneng.com) or most current specifications.

Submission # **BASyC™**  
New: 11/28/18

Page 1 of 5

### Certifications:



ASSE 1017  
CSA B125.3



Est. 1954  
**ACORN ENGINEERING COMPANY**  
Manufacturer of Engineered Products

Member of Morris Group International™

ACORN ENGINEERING  
COMPANY  
P.O. BOX 3527  
City of Industry, CA  
91744, U.S.A.  
Phone 800-488-8999  
626-336-4561  
Fax 626-961-2200  
[www.acorneng.com](http://www.acorneng.com)

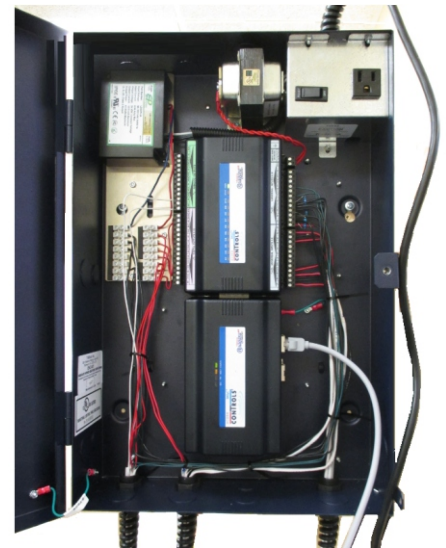
**SPECIFICATIONS:**

- Valve: See MV17 Series submittal at [www.acorneng.com/uploads/filelibrary/MV17Series.pdf](http://www.acorneng.com/uploads/filelibrary/MV17Series.pdf).
- Actuator:
  - Brushless DC Motor
  - 340 lb. Force
  - Manual Override
  - Auto-Adaptable during replacement setup
  - Replaceable with one hex key and two bolts disconnects
  - Two bolt attachment allows for quick and easy actuator replacement
  - Coded/Keyed connector eliminates wiring
- Agency Listings
  - cUL, cUPC, CSA, CE, FCC and ASSE
- Controller/I/O Module
  - Powered by NiagaraAX Framework
  - 32°F - 122°F (0°C - 100°C)
  - 5% - 95% RH non-condensing
- Communications (optional)
  - BACnet, Modbus, Lonworks, OBix, TCP/IP IPv4, RS-485, RS-232
- Portable Operator LCD Display Panel (optional)
- Access to BASyC™ via Java webstart launcher
- Temperature Sensors
  - 32°F - 122°F (0°C - 100°C)
  - 10K Thermistor
  - Coded/Keyed connector eliminates wiring
- Pressure Sensors
  - Heavy Duty
  - 4-20 mA, 0-150 PSI
  - Coded/Keyed connector eliminates wiring
- Recirculation Pump (optional), per specification
  - Relay option rated per specified pump
  - Relay/"Aquastat" programmable pump control
- Flow meter (optional) per specification
- Control algorithm minimizes risk associated with HW/CW failure



**CSMV-44-1"**

**CSMV-55-2"**



**Controller Box**

**GUIDE SPECIFICATION:**

The Tempering Valve System shall be based on Honeywell FrameworkAX hardware and software and a non-proprietary mixing valve actuator. Inlet and outlet temperature and pressure and return temperature sensors shall be provided. Set point control must be maintained and controlled thermostatically in the event of a power failure, the loss of the actuator signal or output temperature sensor loss. Auto-control set point adjustments, based on an advanced control algorithm that's user-activated during setup, must be provided to improve control accuracy. Temperature, pressure, flow usage and energy data must be displayed and stored. System shall provide user adjustable alerts and alarms, optionally tied to a relay output. The I/O module shall have 34 input/output capacity, 16 inputs and 18 outputs. The mixing valve or valves shall be Acorn MV17 and the system shall be Acorn BASyC™.

Acorn Controls assumes no responsibility for use of void or superseded data. © Copyright Acorn Controls, City of Industry, CA, Division of Acorn Engineering Company, a member of Morris Group International. Please visit [www.acorneng.com](http://www.acorneng.com) or most current specifications.

Submittal # **BASyC™**  
 New: 11/28/18

**Certifications:**



ASSE 1017  
 CSA B125.3

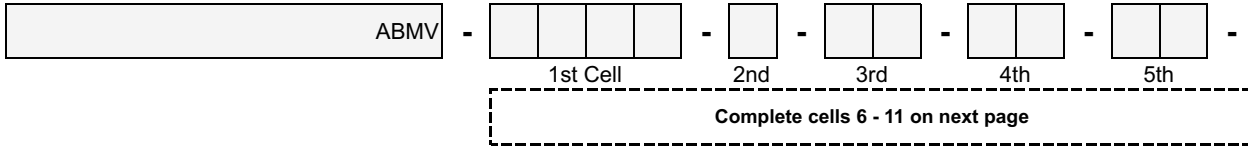


Est. 1954  
**ACORN ENGINEERING COMPANY**  
 Manufacturer of Engineered Products

Member of Morris Group International™

ACORN ENGINEERING COMPANY  
 P.O. BOX 3527  
 City of Industry, CA  
 91744, U.S.A.  
 Phone 800-488-8999  
 626-336-4561  
 Fax 626-961-2200  
[www.acorneng.com](http://www.acorneng.com)

**ORDERING CODE FOR BASyC™ Systems**



**INSTRUCTIONS:** Create your custom ABMV ordering code using this guide to complete **11 cells**, the first 5 on this page, the rest on the next page. Single temp. (Zone One) systems require a "0" response to digits that apply to Zone Two.

**1st CELL - 4 DIGITS**

**Valve(s) Sizes**  
Use 0, 00, or 000 as needed (see examples)

MV17-2	0
MV17-3	2
MV17-4	3
MV17-5	4

Up to 4 Valves, One or Two Temp. Zones, IN ANY COMBINATION

**EXAMPLES FOR CELLS 1 and 2**

One MV17-4 Valve, Single Zone System.....	<b>4000</b>	2nd position = <b>1</b>
Two MV17-4 Valves, both in Zone One.....	<b>4400</b>	2nd position = <b>2</b>
Two MV17-4 Valves, 1 in each Zone.....	<b>4004</b>	2nd position = <b>1</b>
Three MV17-4 Valves in Zone One.....	<b>4440</b>	2nd position = <b>3</b>
Three MV17-4 Valves, (2) Zone One, (1) Zone Two...	<b>4404</b>	2nd position = <b>2</b>
Four MV17-4 Valves, 2 in each Zone.....	<b>4444</b>	2nd position = <b>2</b>
Four MV17-4 Valves, (3) Zone One, (1) Zone Two.....	<b>4444</b>	2nd position = <b>3</b>
Four MV17-4 Valves in Zone One.....	<b>4444</b>	2nd position = <b>4</b>

**2nd CELL - 1 DIGIT**

**Number of Valves in Zone One**

One (1)	1
Two (2)	2
Three (3)	3
Four (4)	4

If you include recirculation pump (4th digit is 1,2 or 3) then return pipe size must be provided.

If you include a recirculation pump (4th digit is 1,2 or 3) then return pipe size must be provided.

Return piping includes check valves, ball valves, drain valve and circuit setter.

**EXAMPLES FOR CELL 3**

Include Return 1" Piping in Zone One, Single Zone System.....	<b>E0</b>	
Include Return 1" Piping in Zone One and Zone Two.....	<b>EE</b>	

**3rd CELL - 2 DIGITS**

**Return Pipe Size - Zone One and Zone Two**

Do Not Include Return Piping	0
1/2"	C
3/4"	D
1"	E
1-1/4"	F
1-1/2"	G
2"	H

**4th CELL - 2 DIGITS**

**Recirc Pump, Pump Cntrl, Zone One & Zone Two**

No Pump and No Pump Control	0
Pump with AquaStat Control	1
Pump and Pump Control Relay	2
Pump with No Control	3
No Pump, Include Pump Control Relay	4

**EXAMPLES FOR CELL 4**

Incl. Pump, Cntrl Relay, Single Zone.....	<b>20</b>	PUMP DETAILS: MAKE/MODEL _____
Incl. Cntrl Relay Only, Two Zones.....	<b>44</b>	OR
Incl. Pump w/AquaStat, Zone Two.....	<b>01</b>	_____ GPM @ _____ FT. HEAD

**5th CELL - 2 DIGITS**

**Auto Balancing Valve(s) - Zone One & Zone Two**

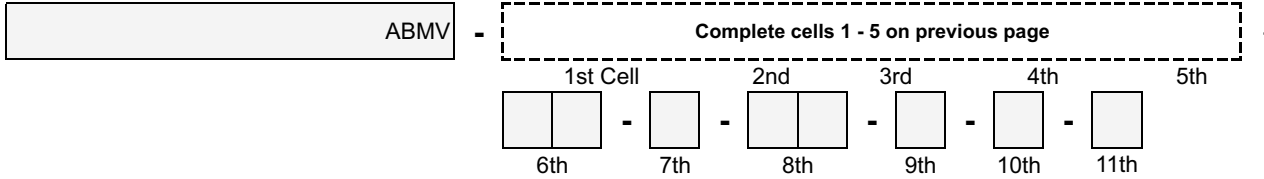
No Automatic Balancing Valve	0
Thermostatic Balancing Valve (TBV)	5
Thermostatic Limiting Valve (TLV)	6

**EXAMPLES FOR CELL 5**

Include TBV, Single Zone System.....	<b>50</b>	
Include TLV, Zones One and Two.....	<b>66</b>	
Include TLV, Zone Two only.....	<b>06</b>	

TBV or TLV requires return piping (3rd Cell) and replaces Circuit Setter. Pump details determine if the TBV or TLV can be supplied.

**ORDERING CODE FOR BASyC™ Systems (Continued)**



**INSTRUCTIONS:** Create your custom ABMV ordering code using this guide to complete 11 cells, the first 5 on this page, the rest on the next page. Single temp. (Zone One) systems require a "0" response to digits that apply to Zone Two.

6th CELL - 2 DIGITS			
<b>Flow/BTU Data - Zone One and Zone Two</b>			<b>EXAMPLES FOR CELL 6</b>
Do Not Include	0		Choosing 8 for either zone, requires choice "C" for 7th digit. Choosing "9" eliminates the choice of "C" for 7th digit.
Calculated BTU and Flow Data	8	Calculated Flow/BTU, Single Zone System.....	
Flowmeter with Flow/BTU Data	9	Flowmeter for Flow/BTU Data, Both Zones.....	

7th CELL - 1 DIGIT		
<b>Inlet Temperature and/or Pressure Sensors</b>		
Standard Outlet Sensor(s) only	0	Outlet temp. sensor is included on all systems. With multi-valve systems, outlet temp. sensors for each valve and another for their common outlet is standard. Inlet temp. sensors are installed on the supply piping common to all valves in a multi-valve system as well as multi-zone systems utilizing a single mixing station. See note for cell 6 regarding limitations affecting this selection.
Inlet Temp. Sensors	B	
Inlet Temp. and Inlet/Outlet Press. Sensors	C	

8th CELL - 2 DIGITS		
<b>Return Temp Data - Zone One and Zone Two</b>		
Do Not Include	0	If ordered, the Return Sensor temp. data typically controls the pump relay based on a target temperature. This is configurable within BASyC™. Please contact your local Acorn Representative for more information and a quote on the Final Fixture Sensor .
Sensor on Return Line at Recirc Pump	1	
Sensor at final fixture	2	

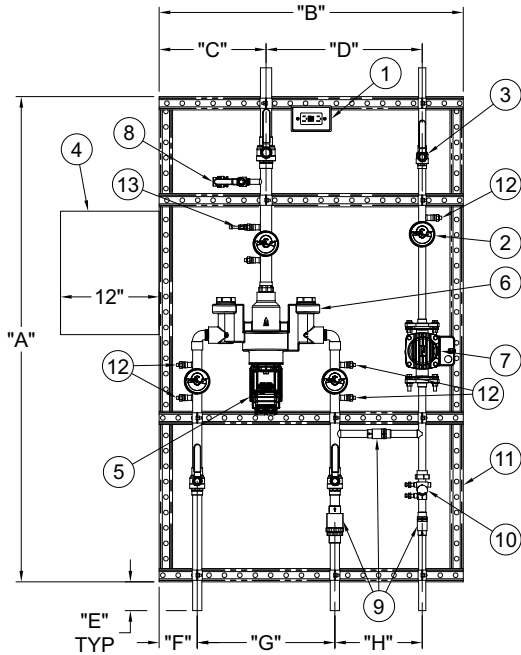
9th CELL - 1 DIGIT		
<b>LCD Display</b>		
Do Not Include	0	The LCD display is portable. It can be used with multiple BASyC™ systems .
Include	L	

10th CELL - 1 DIGIT		
<b>BAS Protocol Adapter</b>		
Do Not Include	0	Rs485, RS232, Primary LAN & Secondary LAN are standard with BASyC™
BACNet I/P	M	
BACNET MTSP	N	
Modbus MSTP	P	
Lonworks MSTP	R	
OBIX	S	

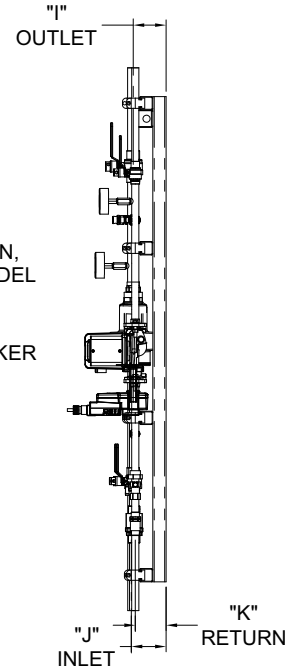
11th CELL		
<b>SPECIAL FEATURES</b> - If applicable		
Includes Special Features	SP	If <b>SP</b> is selected, the Special Features included with this system must be <u>detailed below.</u>
No Special Features Included	Blank	

**Details on Special Features:**

## Single Acorn BASyC™ Valve System



- ① 120V GFCI RECEPTACLE
- ② TEMPERATURE/PRESSURE GAUGE
- ③ LOCKABLE BALL VALVES (TYPICAL)
- ④ CONTROLLER & I/O MODULE(S)
- ⑤ ACTUATOR
- ⑥ MIXING VALVE
- ⑦ OPTIONAL RECIRCULATION PUMP SHOWN, MUST PROVIDE SPECIFICATIONS OR MODEL NUMBER BELOW IF REQUIRED
- ⑧ 1/2" LOCKABLE BALL VALVE WITH 3/4" HOSE CONNECTION AND VACUUM BREAKER
- ⑨ CHECK VALVES
- ⑩ CIRCUIT SETTER
- ⑪ MOUNTING FRAME
- ⑫ SENSOR PORTS FOR ACORN BASyC™ SYSTEM
- ⑬ OUTLET TEMPERATURE PROBE



	INLET	OUTLET	"A"	"B" 1	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"
ABMV-1	1/2" NCT	1/2" NCT	53-7/8" (1368)	29-1/2" (749)	8" (203)	14-7/8" (378)	3-1/2" (89)	4-1/4" (108)	7-1/2" (191)	11-1/8" (283)	2-1/8" (54)	2-1/8" (54)	2-1/8" (54)
ABMV-2	3/4" NCT	1" NCT	52-1/2" (1336)	30-1/2" (775)	9-1/2" (241)	15" (381)	3-1/2" (89)	4-1/4" (108)	10-1/2" (267)	9-3/4" (248)	2-1/4" (57)	2-1/4" (57)	2-1/4" (57)
ABMV-3	1" NCT	1-1/4" NCT	59" (1500)	37" (940)	13" (330)	19" (483)	3-1/2" (89)	4-5/8" (117)	16-3/4" (425)	10-5/8" (270)	4" (102)	4" (102)	3-3/4" (95)
ABMV-4	1-1/4" NCT	1-1/2" NCT	59" (1500)	37" (940)	13" (330)	19" (483)	3-1/2" (89)	4-3/8" (111)	17-1/4" (438)	10-3/8" (264)	3-3/4" (95)	3-3/4" (95)	3-3/4" (95)
ABMV-5	1-1/2" NCT	2" NCT	59" (1500)	37" (940)	13" (330)	18-3/4" (476)	3-1/2" (89)	4" (102)	17-7/8" (454)	9-7/8" (251)	4" (102)	4" (102)	3-3/4" (95)

# BASyC™ New: 11/28/18

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Page 5 of 5

Acorn Controls warrants that its products are free from defects in material or workmanship under normal use and service for a period of one year from date of shipment. Acorn's liability under this warranty shall be discharged solely by replacement or repair of defective material, provided Acorn is notified in writing within one year from date of shipment, F.O.B. Industry, California.

SELECTION SUMMARY & APPROVAL FOR MANUFACTURING

Model Number & Options \_\_\_\_\_ Quantity \_\_\_\_\_

Company \_\_\_\_\_

Contact \_\_\_\_\_ Title \_\_\_\_\_

Signature (Approval for Manufacturing) \_\_\_\_\_ Date \_\_\_\_\_

ACORN  
**CONTROLS™**

800-488-8999  
or 626-336-4561  
www.acorneng.com