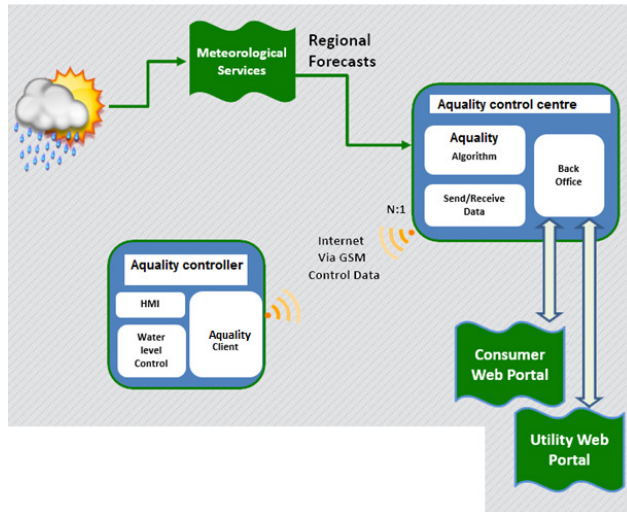


Aquality Storm Control (ASC) Lite

(Item No. G20400)



Typical Applications:

- Rainwater/ surface water harvesting
- Combined sewer overflow reduction
- Optimised weather dependent irrigation

Key Features:

- Automated control – the system will automatically control the water level in the tank through the operation of an actuating valve (binary open/ close state).
- Proportional tank draw down at 20 levels in 5% increments
- Manual control – remote, online manual control for overriding automation from a web-dashboard.
- Housing type – the controller is IP66 moisture ingress protected and has on-board temperature sensors to enable charging boosts in sub-zero conditions.
- In case of piped overflows, pump can be operated by ASC
- Fail-safe system:
 - The site controller has been carefully designed to complete a “system handshake”;
 - Issues SMS warning messages to ASC and site operators;
 - System is capable of outputting to BMS system for general fault alarms;
 - The control panel has a built-in battery backup to allow the system to continue working in the event of power failure;
 - Within all the failure scenarios, the system defaults back to a storm attenuation system (actuator valve open);

Benefits:

- Significantly reduces payback time on rainwater harvesting systems
- Reduces storm loading in combined sewer systems
- Reduced discharge rate from sites in majority of storm events
- Reduces water demand on public water supply
- Provides real-time alerts on attenuation outlet blockages

Functioning Principles:

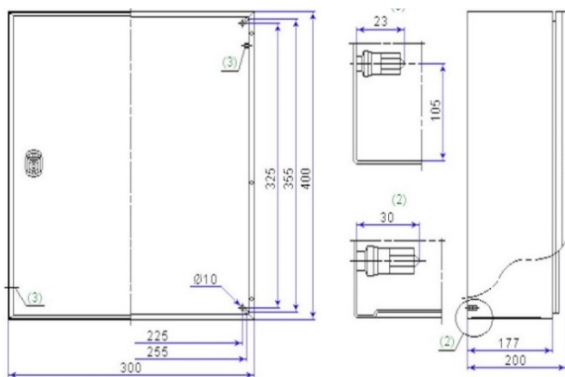
The Aquality Storm Control Lite system allows any rainwater harvesting tank volume to count towards the sites storm attenuation volume requirement. Alternatively, the system can be installed within a storm attenuation system to allow any attenuation tank to act as a rainwater harvesting system.

The system works by linking the tanks to a rainfall forecast algorithm. This allows the tanks to be drained down at the allowable discharge rate (Greenfield runoff or otherwise agreed with the lead local flood authority) prior to significant rainfall events (above a 1:5 year event typically).

The control centre receives site specific rainfall predictions from various sources including the British Met office. The controller runs this data through an algorithm estimating the likely runoff volume for the upcoming rain events. The site controller then automatically takes action to ensure civil infrastructure is adequately prepared to deal with the predicted runoff.

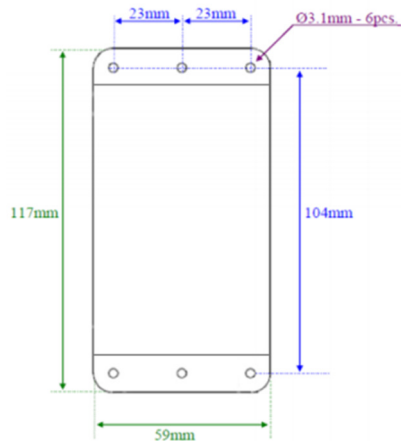
Technical Details and Drawings

Control Panel:



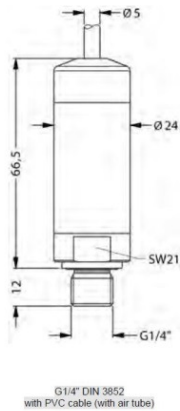
Colour	Grey (RAL 7035)	
Housing Type	Mild Steel	
	(Guaranteed IP 66 moisture resistant)	
Weight	600 grams (approx.)	
Dimensions (mm)	Width	300
	Depth	400
	Height	200

The unit should ideally be located in an above ground kiosk or plant room. The unit should NOT be directly exposed to the elements or extremes in temperatures. The unit will need to be located so access can be gained for electrical input from the water level sensor power supply and GSM aerial. Electrical output will be required to the valve/pump controller. 12m of cabling is supplied as standard from the control unit to water level sensor and 5m of cabling is supplied as standard from the control unit to GSM aerial. Longer cable lengths can be provided on request.



Colour	Black	
Housing Type	ULP9 Plastic with sealing membrane (Guaranteed IP 66 moisture resistant)	
Weight	250 grams (approx.)	
Power Supply	8 to 36 VDC	
Failsafe system	The controller has a built in rechargeable battery backup pack which allows the system to continue working in the event of a power failure. This means the system can continue to operate for over 2 weeks without power. Once power is restored the system will automatically recharge the battery pack.	
Dimensions (mm)	Width	59
	Depth	30
	Height	92

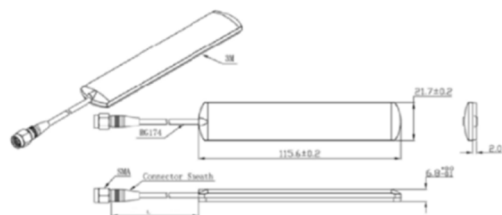
Site controller:



Housing Type	Stainless steel 1.4301 (304)	
Suitable for following media	Water	
	Fuel oil	
Weight	approx. 120 grams (without cable)	
Dimensions for cable (m)	Length	3/6/9/12 other on request
	Weight	25 g/m
Current consumption	2-wire: max 25 mA	
	3-wire ratiometric : typ. 15 mA	
	3-wire voltage: typ. 5 mA(short circuit current: max. 20mA)	

*all dimensions are shown without mounting flanges

Level sensor:



GSM



Aerial:

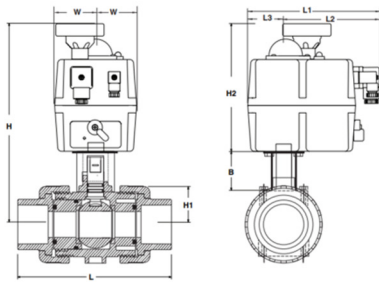
On the majority of sites, a small (22mm X 116mm) GSM aerial stuck to a plant room wall or internal kiosk wall is sufficient to operate the unit. If this is not the case a larger aerial, wiring to the building aerial or Wi-Fi connections may be required. Aquality’s engineers will determine the suitable aerial position on a site by site basis.

Actuator Valve – Type A:



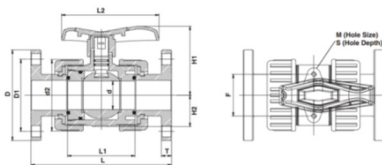
- The valve is an integral part of ASC Lite. The Aquality Type A Valve is available in sizes ranging from 12.5mm - 100mm diameter.
- The valve opens and closes, to control water levels within the tank, based on signals received from ASC Lite. The valve can be provided to suit either AC or DC power supplies for either 12V-24V or 85V-240V.
- The valve unit also contains a rechargeable battery pack which allows the system to continue operation if mains power is lost. In the event of a mains power failure an internal switch changes to immediately to draw battery power to drive the actuator as instructed by the ASC unit. The ultimate fail position of the valve is open
- The Aquality valve housing is both weatherproof (IP67) and anti-corrosive.

The valve actuator contains an internal thermostatic anti-condensation heater that prevents moisture forming within the actuator housing. The valve is usually supplied with BSP standard connections but can also be supplied with connecting flanges where required.



Nominal Size Imp	Size mm	B	H	H1	H2	PVC & CPVC L	PP & PVDF L	L1	L2	L3	W
1/2"	13	28	220	21	171	114	108	177	126	51	55
3/4"	19	40	237	26	171	135	124	177	126	51	55
1"	25	40	244	33	171	149	138	177	126	51	55
1 1/4"	32	55	265	39	171	170	155	177	126	51	55
1 1/2"	38	55	267	41	171	207	183	177	126	51	55
2"	51	55	278	52	171	207	183	177	126	51	55
2 1/2"	64	71	350	84	196	275	243	177	126	51	55
3"	76	71	357	91	196	304	269	177	126	51	55
4"	102	71	396	130	196	675	287	177	126	51	55

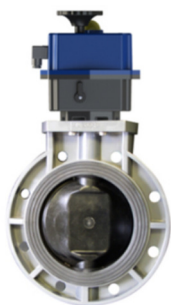
All dimensions in mm



Nominal Imp	Size mm	PVC & CPVC L	PP & PVDF L	d2	d	D	D1	L1	L2	H1	H2	F	M	S	T	# Holes	Hole Size
1/2"	13	143	157	46	13	89	61	60	77	46	21	30	5	7	13	4	16
3/4"	19	172	173	56	18	98	70	73	95	57	26	33	6	8	15	4	16
1"	25	187	194	67	23	108	79	79	110	70	33	40	6	11	15	4	16
1 1/4"	32	190	217	82	30	117	89	88	127	75	39	47	8	11	16	4	16
1 1/2"	38	212	226	99	38	127	99	95	143	91	41	52	8	11	17	4	16
2"	51	234	262	120	48	152	121	114	164	113	41	52	8	11	17	4	19
2 1/2"	64	259	320	140	61	178	140	135	180	116	65	0	0	0	18	4	19
3"	76	304	362	160	69	191	152	156	224	130	75	0	0	0	18	8	19
4"	102	372	386	225	99	229	191	176	278	178	103	0	0	0	18	8	19

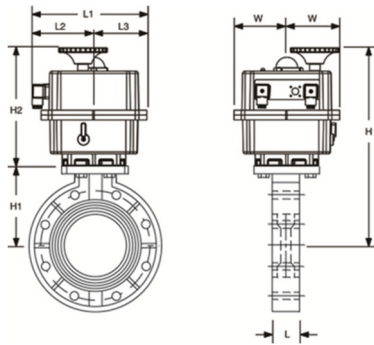
All dimensions in mm

Actuator Valve – Type B:



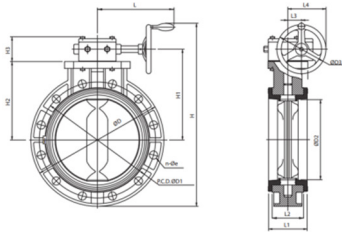
- The Aquality Type B Valve is available in sizes ranging from 100mm-600mm diameter;
- The valve opens and closes, to control water levels within the tank, based on signals received from the Aquality site controller;
- The valve can be provided to suit either AC or DC power supplies for either 12V-24V or 85V-240V. The valve unit also contains a rechargeable battery pack which allows the system to continue operation if mains power is lost.
- The Aquality valve housing is both weatherproof (IP67) and anti-corrosive.

The valve actuator contains an internal thermostatic anti-condensation heater that prevents moisture forming within the actuator housing. The valve is usually supplied with standard flanged connections.



	100mm	150mm	200mm	250mm	300mm	350mm	400mm	450mm	500mm	600mm
Hole Size (mm)	19	22	22	25	25	29	29	32	32	35
H1 (mm)	138	179	211	283.5	340					
H (mm)	334	433	465	538.5	596					
H2 (mm)	196	254	254	255	256					
L (mm)	57	70	85	109	131.5					
L1 (mm)	177	235	235	235	235					
L2 (mm)	126	107	107	107	107					
L3 (mm)	51	128	128	128	128					
W (mm)	55	214	214	214	214					
Size	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
End Connection	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer	Flanged Wafer
Seals	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM
Liner/Seals	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM	EPDM
Material Body / Disc	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP	PVC/PP
Actuation Type	Electric	Electric	Electric	Electric	Electric	Electric	Electric	Electric	Electric	Electric
Torque: Operating (N/mm)	70.1	105.1	175.1	315.2	367.8	741.1	855.1	969.2	1,083.20	1,254.10

All dimensions in mm



Nom Imp	Size	D	D1	D2	D3	H	H1	H2	H3	L	L1	L2	L3	L4	# Holes	Hole Size
4"	102	229	191	103	200	324	173	138	71	120	57	47	39	139	8	19
6"	152	288	241	153	200	394	214	179	71	120	70	65	39	139	8	22
8"	152	343	298	203	202	524	255	210	77	284	85	73	60	161	8	22
10"	254	411	362	255	202	588	283	240	77	284	109	96	60	161	8	22
12"	305	490	432	310	250	702	340	298	78	330	132	116	60	185	12	25
14"	356	530	476	355	252	733	342	300	78	330	127	116	60	185	12	29
16"	406	596	540	398	300	870	420	345	120	353	166	152	81	231	16	29
18"	457	630	578	452	300	885	445	370	120	353	179	163	81	231	16	32
20"	457	696	635	500	406	1037	486	410	143	390	189	172	120	323	20	32
24"	610	813	750	602	406	1166	556	480	143	390	209	194	120	323	20	35

All dimensions in mm

The Aquality valve should be located on a pipe discharging from the invert of the active attenuation tank. Care should be taken to ensure the Aquality valve is located so as not to intrude on the operation of the discharge control valve (Vortex Flow control) which is used to restrict the flow off the site to the allowable discharge rate. The valve should be located within a suitably designed inspection chamber or manhole to allow for ease of access to the valve for future maintenance purposes.

Specification clause:

The real time flow control system using continuous monitoring and adaptive control shall be Aqua Storm Control Lite by Aquality Ltd, Wadsworth Rd, Perivale, London UB6 7JJ. The system shall comprise of Control panel with GSM aerial, actuated valve type A/B xxxmm diameter, level sensor, GSM Aerial, site controller, and connected to geocellular data capable of reading and predicting weather data to manage flow rates out of the drainage structure.

NBS Specification:

The Aqua Storm Control real time flow control should be specified in NBS section R12:315 Below ground drainage systems. Assistance in completing this clause can be found in the Aquality Trading and Consulting Ltd entry in NBS Plus or a model specification can be downloaded from www.aqua-lity.co.uk. For further assistance, please contact the Aquality Engineering Team.