

1. Scope

This Technical Specification specifies requirements for valve monitors for mounting on stop valves for automatic fire sprinkler systems and fire hydrant systems, to monitor the set position of valves. This specification details a variation of AS 4118.1.4-1994¹ (the Standard) to provide a pathway for evaluation and certification for this product category given that the Standard references several obsolete and withdrawn test method standards. Compliance with this Technical Specification, however, does not necessarily qualify the valve monitor as a Class A device as specified by AS 2118.1 which requires full compliance to AS 4118.1.4-1994. A successful application to the Building Regulation Advisory Committee (BRAC) in Victoria will be required for the product to be accredited for use in Victoria.

2. Referenced documents

Details of the documents referenced by this Technical Specification are detailed in Table 1.

Table 1 List of documents referenced by this Technical Specification

AS 4118.1.4 – 1994 (Rec 2013)	Fire sprinkler systems, Part 1.4: Components – Valve monitors
AS 2118.1:2017 +A1:2017 +A2:2020 +A3:2024	Automatic fire sprinkler systems Part 1: General systems.
AS ISO / IEC 17025:2018	General requirements for the competence of testing and calibration laboratories

3. Pre-evaluation requirements

In addition to the application requirements of CSIRO's ActivFire Scheme document AF-D001, any Applicant submitting product(s) for evaluation and certification by CSIRO shall provide the following information and documentation:

1. A full technical specification and description of the valve monitor and its capabilities.
2. Bill of Materials.

¹ Reconfirmed in 2013.

4. Evaluation procedure

4.1. Evaluation activities

Evaluation of conformity of the valve monitors, for the purposes of CSIRO's ActivFire® Scheme, requires the following activities detailed in Table 2.

Table 2 Activities required by this Technical Specification to evaluate the conformity of the valve monitors for the purposes of CSIRO's ActivFire® Scheme.

Activity	Description
1	Review of design drawings, bill of materials and data sheets.
2	Testing and assessment of the valve monitor in accordance with Section 4.3.
3	Verification of marking, data sheets and any other marketing material.
4	Identification of product limitations.

4.2. Activity 1

For this activity, the test applicant of the valve monitor is required to submit the following documents:

1. Design Drawings: All design drawings of the product, and
2. Bill of Materials: A complete bill of materials for the product, and
3. Data Sheets: Relevant data sheets.

Each document must be:

- Identifiable, in accordance with an established Quality System, and
- Written in English.

Mandatory Details:

1. A unique document ID (document name and/or number), and
2. Version number, and
3. Document issue date.

4.3. Activity 2

To meet the requirements of Activity 2 of this Technical Specification, the valve monitor shall undergo the testing and assessment requirements detailed in Table 3 by a Recognised Agency for Conformity Evaluation (RACE) in accordance with the Schedule given in Table 5.1 of AS 4118.1.4-1994.

External evidence shall be provided by laboratory accredited by the National Association of Testing Authorities (NATA) to both ISO 17025 relevant test standard/method, or as otherwise agreed with CSIRO.

Table 3 Testing and assessment requirements for the valve monitor.

Standard	Clause	Title	Notes
AS 4118.1.4	2.2	Design and construction	<p>All requirement of this clause shall be met, in accordance with the variation(s) detailed below.</p> <p>Delete “Where required to be installed in hazardous locations, the monitors and wiring shall comply with the requirements of AS 2380.” and replace with “Where required to be installed in hazardous locations, the monitors and wiring shall comply with the requirements of AS 2380.1”.</p> <p>Additionally, the following external evidence shall be supplied to the RACE:</p> <ul style="list-style-type: none"> • Test report to AS/NZS 60529 demonstrating compliance to IP65.
	2.3	Materials and components	<p>All requirement of this clause shall be met, in accordance with the variation(s) detailed below.</p> <p>Delete “<i>Plastics materials shall comply with the requirements of AS 3121.</i>” and replace with “<i>Plastics materials shall comply with the requirements of AS/NZS 3121.</i>”</p> <p>Delete “<i>Where a plastics enclosure is used, the material selected shall have ultraviolet stability or be durably coated to provide that stability</i>” and replace with “<i>Where a plastics enclosure is used, the material selected shall have ultraviolet stability or be durably coated to provide that stability and comply with ASTM G155 or ISO 4892-3</i>”.</p> <p>Additionally, the following external evidence shall be supplied to the RACE:</p> <ul style="list-style-type: none"> • Test report to AS/NZS 3121 demonstrating compliance of plastic products. • Test report to ASTM G155 or ISO 4892-3 demonstrating UV stability of plastic products.

Standard	Clause	Title	Notes
	2.4	Connecting facilities	All requirement of this clause shall be met.
	2.5	Internal wiring	<p>All requirement of this clause shall be met, in accordance with the variation(s) detailed below.</p> <p>Delete “Where the maximum working voltage exceeds extra-low voltage, the device shall comply with the appropriate requirements of AS 3100” and replace with “Where the maximum working voltage exceeds extra-low voltage, the device shall comply with the appropriate requirements of AS/NZS 3100”.</p> <p>Additionally, the following external evidence shall be supplied to the RACE:</p> <ul style="list-style-type: none"> Declaration by the applicant that internal wiring complies with AS/NZS 3100.
	2.6	Contacts	All requirement of this clause shall be met.
	2.7	Connection of multiple monitors	All requirement of this clause shall be met.
	3.2.1	Temper resistance	All requirement of this clause shall be met.
	3.2.2	Integrity of signalling path	All requirement of this clause shall be met.
	3.2.3	Subversion by physical damage.	All requirement of this clause shall be met.
	3.3	Normal operation	All requirement of this clause shall be met.
	3.4	Electrical requirements	<p>Delete all text and replace with the following: <i>“After pre-conditioning at 23°C for 24 h, valve monitor samples shall comply with AS/NZS 62368.1:2022 and IEC 62599-2. Following testing, the sample(s) shall meet the requirements of the Normal Operation Test of Clause 3.3”.</i></p> <p>Additionally, the following external evidence shall be supplied to the RACE:</p> <ul style="list-style-type: none"> Test report to AS/NZS 62368.1:2022². Test report to IEC 62599-2³.
	3.5	Environmental requirements	All requirements of this clause shall be met.

² AS/NZS 62368.1:2022 is the current standard for electrical safety for audio/video, information and communication technology equipment.

³ IEC 62599-2 is the current standard for electromagnetic compatibility for components of fire and security alarm systems.

Standard	Clause	Title	Notes
	3.5.1	Low temperature	Delete all text and replace with <i>“During conditioning at $-10 \pm 2^{\circ}\text{C}$ for 16 h in accordance with Test Ab of AS 60068.2.1:2023⁴, the valve monitor shall not enter into an alarm initiation state.”</i>
	3.5.2	Damp heat	Delete all text and replace with <i>“During conditioning at $+40 \pm 2^{\circ}\text{C}$ and $93 \pm 2\%$ relative humidity for 96 hours to Test Cab of AS 60068.2.78:2023⁴, the valve monitor shall not enter into an alarm initiation state.”</i>
	3.5.3	Dry heat	Delete all text and replace with <i>“During conditioning at $+50 \pm 2^{\circ}\text{C}$ for 16 hours to Test Bb of AS 60068.2.2:2023⁴, the valve monitor shall not enter into an alarm initiation state.”</i>
	3.5.4	Corrosion	Delete all text and replace with <i>“During conditioning for 21 days to Test Kc of AS 60068.2.42-2004⁴, the valve monitor shall not enter into an alarm initiation state.”</i>
	3.5.5	Salt mist	Delete all text and replace with <i>“During conditioning for 168 h to Test Ka of AS 60068.2.11:2023⁴, the valve monitor shall not enter into an alarm initiation state when subsequently re-energised.”</i>
	3.5.6	Dust	The requirements of this clause are not required to be met. A classification of IP65 is deemed sufficient to meet dust exclusion performance requirements. The first digit “6” in the IP rating indicates that the product is verified to be dust-tight.

⁴ AS 60068 series are the latest standards for environmental testing.

Standard	Clause	Title	Notes
	3.6.1	Vibration	<ul style="list-style-type: none"> Delete all text and replace with “<i>During conditioning</i> at 10 Hz to 150 Hz, peak acceleration of 10 m/s², 3 axes, 1 octave/min sweep rate and 20 sweep cycles per axis to Endurance (unpowered): Test Fc of AS 60068.2.6:2023⁴, the valve monitor shall not enter into an alarm initiation state, or when subsequently re-energised. Delete all text and replace with “<i>During conditioning</i> at peak acceleration of 5 m/s², 3 axes, 1 octave/min sweep rate and 1 sweep cycle per axis to Operational (powered); Test Fc of AS 60068.2.6:2023⁴, the valve monitor shall not enter into an alarm initiation state, or when subsequently re-energised.
	3.6.2	Impact	All requirement of this clause shall be met.
	3.6.3	Endurance requirement	All requirement of this clause shall be met.

4.4. Activity 3

To meet the requirements of Activity 3 of this Technical Specification, the valve monitor shall undergo the assessment requirements detailed in Table 4 by the same RACE as Activity 2.

Table 4 Assessment requirements for the valve monitor.

Standard	Clause	Title	Notes
AS 4118.1.4	4.2	Marking	All requirement of this clause shall be met.
	4.3	Information	All requirement of this clause shall be met.
	4.4	Point of sale information	All requirement of this clause shall be met, with the following addition: “(h) Reference to this Technical Specification.”
N/A	N/A	Collateral (e.g. marketing material)	Any collateral which includes the ActivFire® mark (including websites) shall be reviewed to ensure the accuracy of information contained therein.

4.5. Activity 4

The RACE shall identify any product limitation from their evaluation activities.

4.6. Suitability of external evidence

Evidence of conformity, in the form of endorsed test reports written in English, are required to be submitted in full and shall be provided by a National Association of Testing Authorities (NATA) ISO 17025 accredited laboratory and the relevant test standard, or as agreed with CSIRO.

Where test reports were originally produced in a language other than English, suitable translations may be supplied in addition. Submitted external test reports must provide sufficient detail to describe the product being evaluated in full and in detail and establish that an evaluation schedule was designed and applied to each component submitted to the external agency.

External evidence can only be accepted where verification between the product submitted for evaluation and the specimens in the endorsed test report is considered a critical requirement. Where external reports do not provide sufficient product identification, additional evaluation to specified requirements may be required.

4.7. Reporting

The evaluation of conformity report shall include the following information:

- a. A statement of conformity with reference to CSIRO-TS-021 and unambiguous designation that the product has been evaluated in accordance with this technical specification.
- b. A description of the product including photographs of the product.
- c. Limitation of the product, including that a successful application to the Building Regulation Advisory Committee (BRAC) in Victoria will be required for the product to be accredited for use in Victoria.
- d. List of documentation used for the evaluation of conformity including the document ID, version number, and issue date.
- e. Software and firmware version, if applicable.
- f. All other information in accordance with the reporting requirements of AS ISO/IEC 17025:2018.

5. Ongoing Verification of Conformity

5.1. Ongoing verification of conformity activities

To maintain ongoing certification of a valve monitor with CSIRO's ActivFire® Scheme, the Producer at the Primary Manufacturing Unit (PMU) shall be subject to a post-certification audits 12 months after the initial issue date of the Certificate of Conformity and every 24 months thereafter. The audit shall be in accordance with CSIRO ActivFire® Scheme document number AF-D008.

The requirements for ongoing verification of conformity of BRAC-accredited products shall be determined by BRAC.

5.2. Reporting

An ongoing verification of conformity report shall be provided by CSIRO's ActivFire® Scheme upon completion of the relevant ongoing verification of conformity activities. Following completion of a satisfactory audit, the Certificate of Conformity shall be revalidated for a further 24 months.



Document Review

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Authorised by: Kai Loh

Document version no:	Issued date:	Change description:
1	28-Mar-2025	<ul style="list-style-type: none">Initial issue
2	8-May-2025	<ul style="list-style-type: none">Updated to include information regarding BRAC submission.