



ULC-G-5.2
ULC Subject 217, 864
ULC-S524

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STANDARDS BULLETIN 2012-03

CAN/ULC-S524-06 (Amd1-2011) Installation of Fire Alarm Systems

INTERPRETATION OF REQUIREMENTS ON WATERFLOW DEVICES AND FAULT ISOLATORS (CLAUSES 5.3.2, 5.14.2 AND 5.14.5)

The following is an interpretation of Clauses 5.3.2, 5.14.2 and 5.14.5 of CAN/ULC-S524-06 (Including Amendment 1, 2011), Installation of Fire Alarm System, by the ULC Subcommittee on Installation, Inspection & Testing and Verification of Fire Alarm Systems. These interpretations are being issued in response to requests for interpretations received by ULC Standards

Issue #1:

Clause 5.3.2 of CAN/ULC-S524-06, states:

5.3.2 *Waterflow devices* incorporating an adjustable time delay shall be set with a sufficient time delay not exceeding 90 s to reduce the possibility of a false indication (e.g. caused by water hammer).

Background:

During a building inspection, a flow test was performed on a sprinkler system which was being monitored by a fire alarm system. It was noted that once the water began to flow on the sprinkler system, it took approximately 5 min for the fire alarm to activate and produce an audible signal. It was questioned whether this performance requirement was covered by CAN/ULC-S524 on the Installation of Fire Alarm Systems, or NFPA 13, Installation of Sprinkler Systems. Both standards are referenced in the 2010 National Building Code of Canada for the performance of fire alarm systems and sprinkler systems respectively, in buildings.

Question:

The request for clarification was:

Is it the intent of CAN/ULC-S524-06 clause 5.3.2 to ensure that there is no delay in fire alarm activation greater than 90 seconds once the sprinkler system begins to flow regardless of the type of device you are using (adjustable time delay or not)?

Interpretation by the ULC Subcommittee on Installation, Inspection & Testing and Verification of Fire Alarm Systems:**No.****Rationale:**

Clause 5.3.2 of CAN/ULC-S524-06 deals only with waterflow devices incorporating an adjustable time delay (maximum 90 seconds), which, when activated, transmits an alarm signal to the fire alarm control unit. It does not deal with the collective response time of the fire alarm system and the sprinkler system. The Clause was intended to reduce the occurrence of false alarms caused by water hammer.

Table 2 (System Response Times for Control Units & Transponders) of CAN/ULC-S524, specifies a maximum of 10 seconds between when a device latches into an alarm condition and subsequent output signal (e.g an audible alarm signal). Therefore, the aggregate response time between when the adjustable waterflow device is activated and the activation of the fire alarm system is a total of the maximum adjustable time delay (90 seconds) plus fire alarm system response time (10 seconds) = 100 seconds. The sequence of events can be described as follows:

- a) The device senses the activation of the sprinkler system through a change in pressure or water flow, and latches into an alarm condition;
- b) Where the waterflow device has an adjustable time delay feature, the switch can be adjusted such that it may take up to 90 seconds to transmit an alarm signal to the fire alarm control unit;
- c) The control unit activates an audible signal device;
- d) The time from when the waterflow device latches into an alarm condition to the activation of an audible signal device is a maximum of 10 seconds, in accordance with Table 2;
- e) The aggregate maximum time for the activation of the fire alarm signals is b) plus c) = 100 seconds.

Clause 5.3.2 does not specifically address non-adjustable waterflow devices. However, it is intended that there would be no delay for non-adjustable waterflow devices to latch into an alarm condition and transmit an alarm signal to the fire alarm control unit, which activates an audible signal device. The time from when the adjustable waterflow device latches into an alarm condition to the activation of an audible signal device is a maximum of 10 seconds, in accordance with Table 2

This issue will be further reviewed and clarified during the development of the next edition of CAN/ULC-S524.

Issue #2:

Clauses 5.14.2 and 5.14.5 of CAN/ULC-S524-06, state:

5.14.2 *Fault isolation modules* shall be utilized when entering and leaving each fire alarm zone, as required by the National Building Code of Canada.

5.14.5 Where a fire separation is provided, *fault isolation modules* required by Clause 5.14.2 shall be installed on each side of that fire separation.

Question:

Is it the intent of Clause 5.14.5 to provide fault isolators on both sides of fire separations regardless of whether the fire separations form separate NBC required fire alarm zones?

Interpretation by the ULC Subcommittee on Installation, Inspection & Testing and Verification of Fire Alarm Systems:

No.

Rationale:

In accordance with Clause 5.14.2, data communication fault isolation modules need to be installed at the point of transition each time the DCL leaves one fire alarm zone and enters another fire alarm zone, as described in the NBCC except as described in the note to this Clause. This provision of fault isolation modules at transitions between fire alarm zones is necessary to achieve the performance survivability objective required to limit the effect of a fault to one fire alarm zone.

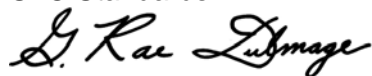
Since each isolator has data link wiring for two fire alarm zones, exposure of the isolator to a single fire event could result in the data link wiring for two fire zones being compromised. The application of two isolators is therefore necessary to meet the performance level of the installation standard: one at the last wired location prior to the data line leaving the fire alarm zone and one at the first wire location entering the next fire alarm zone.

Clause 5.14.5 refers only to those fault isolators modules required by sentence 5.14.2 and not fire separations in general.

As noted in Clause 5.14.7, the exception to requiring pairs of fault isolation modules occurs when an area is considered to be more than one fire alarm zone by virtue of its size, for instance in a large warehouse. If there is no fire separation, only one fault isolation module mounted at the division of the fire alarm zones is sufficient.

Should you require additional information, please contact Tess Espejo at (416) 757-5250 ext. 61212 or by email at Theresa.Espejo@ul.com.

Yours truly,
ULC Standards



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