

1 Scope

1.1 Exclusions

The following is a list of items not discussed in this technical report. In general they are left out of this report, not because they are unimportant, but because they are already covered by another ISA-18 technical report or otherwise assumed to be part of basic alarm management.

1.1.1 Alarm rationalization and basic alarm design

This technical report assumes that alarm rationalization and basic alarm design, as discussed in ISA-18.2, are being performed. Rationalization, also discussed in dTR2, is performed at an appropriate level, basic to advanced, as determined by the alarm philosophy (see dTR1) of the site. Basic alarm design is discussed in dTR3. Together these activities include such techniques as properly chosen alarm setpoints, deadband selection, use of on and off delays, and proper range specification.

1.1.2 Process variable calculations

Most process variable calculations (analog and logical) are performed in the control system and considered as part of the basic alarm design process. PV calculations can be complex yet have basic alarming functionality. This includes such techniques as:

- a) common alarms, e.g., a common high-temperature alarm coming from multiple temperature transmitters on a tank, or a common toxic-gas alarm coming from multiple gas detectors
- b) numeric calculations within the control system used with basic alarming, such as rate calculations (producing rate-of-change alarms), statistical calculations (producing statistical alarms, such as alarming on standard deviations, etc.) and other complex calculations
- c) simple to complex models used to estimate process values online, often referred to as virtual sensors
- d) high-speed counters and accumulators, often needed in discrete manufacturing applications, which accumulate and aggregate within the control system before applying basic alarming
- e) logic calculations within the control system to create an alarm only when it is a valid alarm, e.g., a calculation including a logical AND of low pressure and the associated pump running, to create a logical PV that is alarmed

NOTE If the alarm is created by the control system, and logic is added to conditionally suppress it, this falls under the definition of advanced alarming and is discussed in Clause 6.

1.1.3 Operating displays for basic alarming strategies

Often it is important for operating display design and alarm design to go hand in hand. This may be for basic or enhanced/advanced alarm strategies. This technical report deals with some human interface design issues but only as related to the enhanced/advanced alarming strategies presented.

1.1.4 Audible indication strategies

The use of different audible alarm indications (sounds) to distinguish operating consoles for multiple console control rooms is considered to be a human interface strategy, rather than an enhanced alarm strategy. For the purposes of this technical report, the use of specialized audible sounds is not covered here.

1.1.5 Alarm shelving

As discussed in 11.7 of ISA-18.2, alarm shelving is an important recommended function and can be used in a number of ways. It is also discussed in dTR1. Its use is not considered advanced or enhanced alarming.