

How does a Vital dynamic circuit work?

The dynamic signal consists of a square wave that is transmitted through the safety circuit. The signal is inverted at each safety component and is monitored 200 times per second by Vital or Pluto.

The dynamic signal is transmitted as single channel throughout all the protection in the same safety circuit between input terminals T1 and R1. If a protection breaks, the dynamic signal is not transmitted — which is detected by Vital — which breaks its safe outputs. Even short circuits across a protection are detected since the signal is inverted in each sensor (the protection is then OK), while Vital expects a correctly inverted signal at the right time.

In this case, an even number of sensors are connected to the safety loop which means that the dynamic signal will be inverted an even number of times when it is evaluated by Vital. This is determined by the terminal inputs S1 and B1 being connected together. If an odd number of sensors have been connected together, connection of S1 is not required. As the signal is evaluated by Vital at each pulse, i.e. more than 200 times per second, faults and short circuits are detected within a few milliseconds.

