January, 2006

SIL Declaration of Conformity

Functional safety according to IEC 61508

Magnetrol International Inc., 5300 Belmont Road, Downers Grove, Il 60515-4499 and Magnetrol International N.V., Heikensstraat 6 , 9240 Zele (Belgium**) ,**
Confirm that the level switches:

Thermatel TD1 and TD2

are suited for use in safety-instrumented loops according to IEC 61508, on condition that the "the good practice of engineering rules" as described in the IEC standards and the following parameters of the instrument are applied.

Series	Thermatel TD1	Thermatel TD2
SIL class as per IEC 61508	1 as 1oo1 / 2 as 1oo2	
Type of instrument	Type "B" instrument – see 7.4.3.1.3 of IEC 61508-2	
Proof test interval	≤ 1 year	
SFF	69,3%	73,0%
PFDavg	6,13E-04	7,05E-04
Fail Dangerous detected - λ_{dd}	252	390
Fail detected (by internal diagnostics)	72	72
Fail Fail-Safe (inherently or by logic server)	180	318
Fail dangerous Undetected -λ_{du}	140	161
No Effect	65	46

1. Fail detected (internal diagnostic) and Fail-Safe (inherently) failures cause the relay to de-energize. Therefore, both the types of failures look the same on the logic server.
2. The logic server needs to be configured to detect over – and under currents. Failure rate is expressed in FIT's (Failure in time: $1x10^{-9}$ failures per hour).
3. The full FMEDA report should be consulted for a complete list of related assumptions and operating conditions.

M.J. Mulrooney
Director of Engineering, Q.A. & Quality Control

Marcel Adriaens
Engineering Manager - Europe