APPROVAL REPORT

CAPACITIVE LEVEL LIMIT SWITCH
TYPE MINICAP FTC 260 SERIES

for

HAZARDOUS (CLASSIFIED) LOCATIONS

Prepared For:

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J.I. 3001232
(3600, 3616)

November 5, 1998

FACTORY MUTUAL | Factory Mutual System

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from
ENDRESS + HAUSER GmbH + Company
HAUPTSTRASSE 1
D-79689 MAULBURG, GERMANY

I INTRODUCTION

1.1 **Approval Standards** - Endress + Hauser GmbH + Co. requested Approval of the apparatus listed in Section 1.2 to be in compliance with the applicable requirements of the following standards:

Title	FMRC No.	Issue Date
Electrical Equipment for Use in Hazardous (Classified) Locations General Requirements	Class No. 3600	August 1998
Dust-Ignitionproof Electrical Equipment for Hazardous (Classified) Locations.	Class No. 3616	Proposed
Electrical and Electronic Test, Measuring, and Process Control Equipment	Class No. 3810	1989 Supp. 1, 1995
Enclosures for Electrical Equipment (1000V max)	NEMA Pub. 250	1991

1.2 **Approval Guide Listing** - The following was evaluated as dust-ignitionproof for Class II and III, Division 1, Group(s) E, F and G hazardous (classified) outdoor (NEMA Type 4X) locations and will appear in the Approval Guide as follows:

MINICAP Type FTC260-FMbcde. Capacitive Level Limit Switch.
DIP/II,III/E,F,G/T5 Ta=80°C; Type 4X

b = Process connection B (NPT 1").
c = Electronic insert 2 or 4.
d = Enclosure/conduit entry B (F14 encl, NPT ½)
e = Option 4 (process connection G 1-1/2)

II DESCRIPTION

MINICAP Capacitive Level Limit Switch - This apparatus is a level switch for solids implemented only in a compact version. The capacitive electrode assembly has three electrodes within a polymeric (PPS 40% GF material) probe shell which forms a special kind of capacitor when the probe is uncovered. When material covers the probe a parallel circuit is formed consisting of a larger capacitance and the impedance of the material, electronically activating a contact-free PNP signal (DC version) or a SPST relay contact signal (AC/DC version). The process connection is an integral part of the probe shell and guarantees dust and water tightness. The electronics enclosure (F14) is an "end-of-line" enclosure made of polyester (Valox 375X) and houses the electronic inserts. The AC/DC version is powered at 20 to 253 Vac or 20V to 55Vdc, while the DC version is powered at 10.8 to 45Vdc. Ambient temperature range of the electronics enclosure is -40°C to +60°C. The process temperature range at the sensor is -40°C to +80°C.