



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services



Solutions

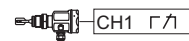
Functional Safety data sheet/Datenblatt zur Funktionalen Sicherheit

Liquiphant M, Liquiphant S + Nivotester FTL5x(H), FTL51C, FTL7x, FTL375P

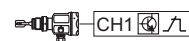


Liquiphant M FTL5x(H), FTL51C,
Liquiphant S FTL7x
+ Nivotester FTL375P-xxx1
(single channel device/
Einkanalgerät)

Relay output/
Relaisausgang

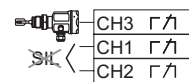


Transistor output/
Transistorausgang

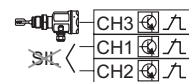


Liquiphant M FTL5x(H), FTL51C,
Liquiphant S FTL7x
+ Nivotester FTL375P-xxx3
(triple channel device in single channel mode/
Dreikanalgerät im Einkanalmodus)

Relay output/
Relaisausgang



Transistor output/
Transistorausgang



Valid configurations/Zulässige Ausprägungen	FTL5x-xxx7xx, FTL5xH-xxx7xx, FTL51C-xxx7xxx, FTL7x-xxx7xxx, FTL375P-xxx1 or/oder FTL375P-xxx3	
Electronics/Elektronik	FEL57 (PFM 2-wire/PFM 2-Draht)	
Safety-related output signal/Sicherheitsbezogenes Ausgangssignal	PFM: pulse-frequency-modulation/Puls-Frequenz-Modulation	
Safety Manual/Handbuch zur Funktionalen Sicherheit	SD113F	
Type of assessment/Art der Bewertung	IEC 61508 (full assessment/vollständige Bewertung)	
Assessor/Assessor	TÜV Rheinland (Certificate/Zertifikat: 968/EL 146.01/01)	
SIL	2	
Type/Typ	B	
HFT	0	
Mode of operation/Betriebsart	Low demand mode	
Safety function(s)/Sicherheitsfunktion(en)	Level MAX (e.g. overfill protection/z. B. Überfüllsicherung)	
Configuration Liquiphant/Einstellung Liquiphant	Density/Dichte 0.7 g/cm ³	Density/Dichte 0.5 g/cm ³
SFF	> 90 %	> 90 %
PFD _{avg} (for T ₁ = 1 year/für T ₁ = 1 Jahr)	1.5 × 10 ⁻³	2.0 × 10 ⁻³
Functional test with test button/Funktionstest mit Prüftaster	annual/jährlich	annual/jährlich
Complete functional test/Vollständiger Funktionstest	not necessary within normal lifetime/ nicht erforderlich innerhalb normaler Lebensdauer	5 years/Jahre
Voting(s)/Architektur(en)	1oo1, diverse redundant/diversitär redundant	
Valid hardware version/Gültige Hardware-Version	as of delivery date April 2001/ab Auslieferungsdatum April 2001	
Valid software version/Gültige Software-Version	as of/ab 1.0	



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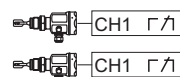
Functional Safety data sheet/Datenblatt zur Funktionalen Sicherheit

Liquiphant M, Liquiphant S + Nivotester FTL5x(H), FTL51C, FTL7x, FTL375P



2 x Liquiphant M FTL5x(H), FTL51C,
Liquiphant S FTL7x
+ 2 x Nivotester FTL375P-xxx1
(single channel device/
Einkanalgerät)

Relay output/
Relaisausgang

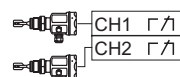


Transistor output/
Transistorausgang

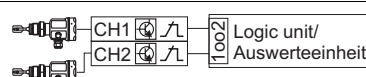


2 x Liquiphant M FTL5x(H), FTL51C,
Liquiphant S FTL7x
+ Nivotester FTL375P-xxx2
(double channel device in dual channel mode/
Zweikanalgerät im Zweikanalmodus)

Relay output/
Relaisausgang



Transistor output/
Transistorausgang



Valid configurations/Zulässige Ausprägungen	FTL5x-xxx7xx, FTL5xH-xxx7xx, FTL51C-xxx7xxx, FTL7x-xxx7xxx, FTL375P-xxx1 or/oder FTL375P-xxx2	
Electronics/Elektronik	FEL57 (PFM 2-wire/PFM 2-Draht)	
Safety-related output signal/Sicherheitsbezogenes Ausgangssignal	PFM: pulse-frequency-modulation/Puls-Frequenz-Modulation	
Safety Manual/Handbuch zur Funktionalen Sicherheit	SD113F	
Type of assessment/Art der Bewertung	IEC 61508 (full assessment/vollständige Bewertung)	
Assessor/Assessor	TÜV Rheinland (Certificate/Zertifikat: 968/EL 146.01/01)	
SIL	3	
Type/Typ	B	
HFT	1	
Mode of operation/Betriebsart	Low demand mode	
Safety function(s)/Sicherheitsfunktion(en)	Level MAX (e.g. overfill protection/z. B. Überfüllsicherung)	
Configuration Liquiphant/Einstellung Liquiphant	Density/Dichte 0.7 g/cm ³	Density/Dichte 0.5 g/cm ³
SFF	> 90 %	> 90 %
PFD _{avg} (for T ₁ = 1 year/für T ₁ = 1 Jahr)	1.0 × 10 ⁻⁴	1.5 × 10 ⁻⁴
Functional test with test button/Funktionstest mit Prüftaster	annual/jährlich	annual/jährlich
Complete functional test/Vollständiger Funktionstest	not necessary within normal lifetime/ nicht erforderlich innerhalb normaler Lebensdauer	5 years/Jahre
Voting(s)/Architektur(en)	1oo2	
Valid hardware version/Gültige Hardware-Version	as of delivery date April 2001/ab Auslieferungsdatum April 2001	
Valid software version/Gültige Software-Version	as of/ab 1.0	

Endress+Hauser

People for Process Automation



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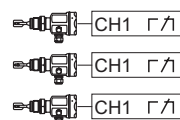
Functional Safety data sheet/Datenblatt zur Funktionalen Sicherheit

Liquiphant M, Liquiphant S + Nivotester FTL5x(H), FTL51C, FTL7x, FTL375P

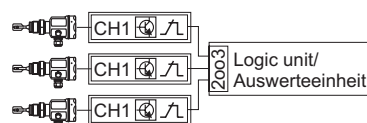


3 x Liquiphant M FTL5x(H), FTL51C,
Liquiphant S FTL7x
+ 3 x Nivotester FTL375P-xxx1
(single channel device/
Einkanalgerät)

Relay output/
Relaisausgang



Transistor output/
Transistorausgang



Valid configurations/Zulässige Ausprägungen	FTL5x-xxx7xx, FTL5xH-xxx7xx, FTL51C-xxx7xxx, FTL7x-xxx7xxx, FTL375P-xxx1	
Electronics/Elektronik	FEL57 (PFM 2-wire/PFM 2-Draht)	
Safety-related output signal/Sicherheitsbezogenes Ausgangssignal	PFM: pulse-frequency-modulation/Puls-Frequenz-Modulation	
Safety Manual/Handbuch zur Funktionalen Sicherheit	SD113F	
Type of assessment/Art der Bewertung	IEC 61508 (full assessment/vollständige Bewertung)	
Assessor/Assessor	TÜV Rheinland (Certificate/Zertifikat: 968/EL 146.01/01)	
SIL	3	
Type/Typ	B	
HFT	1	
Mode of operation/Betriebsart	Low demand mode	
Safety function(s)/Sicherheitsfunktion(en)	Level MAX (e.g. overflow protection/z. B. Überfüllsicherung)	
Configuration Liquiphant/Einstellung Liquiphant	Density/Dichte 0.7 g/cm ³	Density/Dichte 0.5 g/cm ³
SFF	> 90 %	> 90 %
PFD _{avg} (for T ₁ = 1 year/für T ₁ = 1 Jahr)	1.0 × 10 ⁻⁴	2.0 × 10 ⁻⁴
Functional test with test button/Funktionstest mit Prüftaster	annual/jährlich	annual/jährlich
Complete functional test/Vollständiger Funktionstest	not necessary within normal lifetime/ nicht erforderlich innerhalb normaler Lebensdauer	5 years/Jahre
Voting(s)/Architektur(en)	2oo3	
Valid hardware version/Gültige Hardware-Version	as of delivery date April 2001/ab Auslieferungsdatum April 2001	
Valid software version/Gültige Software-Version	as of/ab 1.0	

Endress+Hauser

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