Transmitter for Numerical Counter Signals
Type FFD 1680

Dupline® Fieldbus Installationbus



- **Transmitter with counter input**
- **4-digit totalizing up-counter**
- **Overflow indication**
- **Reset input**
- **D-housing**
- **Plug-in type module**
- **LED-indication for supply**
- **AC or DC power supply**

Product Description

Dupline® transmitters with pulse input and 4-digit totalizing up-counter. Reset and disable inputs. Detection, up-counting and transmission of low-frequency events for readout, control, logging etc.

Ordering Key

FFD 1680 024

Type: Dupline®
Input signal
Supply

Type Selection

Supply	Ordering no. 4-digit counter
24 VAC	**FFD 1680 024**
120 VAC	**FFD 1680 120**
220 VAC	**FFD 1680 220**
10 to 30 VDC*	
Code module	**FMK A-B to O-P**

* All AC types may be supplied with 10 to 30 VDC at pins 3 & 9

Input Specifications

Count input	1 contact or NPN transistor
Open loop voltage	8 VDC
Short-circuit current	2 mA
Counting range	0 to 9999
Counting direction	Up
Input frequency	≤ 25 Hz
Contact resistance	≤ 100 Ω
Dielectric voltage	
Input - Dupline®	None
Reset input	1 contact or NPN transistor
Open loop voltage	8 VDC
Short-circuit current	2 mA
Operating time for signal "1"	≤ 1 pulse train + 20 ms
Operating time for signal "0"	≤ 1 pulse train + 20 ms
Contract resistance	≤ 100 Ω
Cable length	≤ 3 m
Dielectric voltage	
Input - Dupline®	None

Transmission disable input	1 contact or NPN transistor
Open loop voltage	8 VDC
Short-circuit current	2 mA
Operating time for signal "1"	≤ 1 pulse train + 10 ms
Operating time for signal "0"	≤ 1 pulse train + 10 ms
Contact resistance	≤ 100 Ω
Cable length	≤ 3 m
Dielectric voltage	
Input - Dupline®	None

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Supply Specifications

Power supply AC types		Overvoltage cat. III (IEC 60664)
Rated operational voltage		
through pins A1 & A2	220	230 VAC +6%, -15% (IEC 60038)
	120	120 VAC ± 10% (IEC 60038)
	024	24 VAC ± 10%
Frequency		45 to 65 Hz
Voltage interruption		≤ 40 ms
Rated operational power		Typ. 2.5 VA
Rated operational withstand voltage	220	4 kV
	120	2.5 kV
	024	800 V
Dielectric voltage		
Supply - Dupline®		≥ 2 kVAC (rms)
Supply - Count input		≥ 2 kVAC (rms)
Supply - Reset/Disable input		≥ 2 kVAC (rms)
Alternative DC supply		Overvoltage cat. III (IEC 60664)
Supply voltage (V_{DD} in) through pins 3 & 9		10 to 30 VDC (ripple included)
Ripple		≤ 3 V
Reverse polarity protection		Yes
Rated operational current		≤ 20 mA
Inrush current		≤ 1 A
Rated operational withstand voltage		800 V
Dielectric voltage		
Supply - Dupline®		None
Supply - Count input		None
Supply - Reset/Disable input		None

General Specifications

Power ON delay	Undefined, ≤ 1 s
Indication for	
Supply ON	LED, green
Environment	
Degree of protection	IP 20 B
Pollution degree	3 (IEC 60664)
Operating temperature	-20° to +50°C (-4° to +122°F)
Storage temperature	-50° to +85°C (-58° to +185°F)
Humidity (non-condensing)	20 to 80%
Mechanical resistance	
Shock	15 G (11 ms)
Vibration	2 G (6 to 55 Hz)
Dimensions	
Material	
(see "Technical Information")	D-Housing
Weight	200 g
Approvals	CSA

Mode of Operation

Transmitters with 4-digit pulse counting function. The module features reset and transmission disable inputs.

The accumulated counting value is transmitted in BCD representation on the Dupline. This implies that every digit uses 4 channels. The-digit-to-channel allocation is as follows (example with FFD 1680 and FMK C-D plugged in):

10^0 on highest 4 selected channels (e.g. D5-8).
10^1 on lower 4 channels of higher group (e.g. D1-4).
10^2 on higher 4 channels of lower group (e.g. C5-8).
10^3 on lowest 4 selected channels (e.g. C1-4).

For every digit the most significant bit of the BCD equivalent influences the lowest of the 4 allocated channels.

Activation of the reset function (pin 3 connected to pin 1) always resets the internal counter to 0, irrespective of the disable and counting inputs.

When the transmission disable function is activated (pin 3 connected to pin 5), the transmitter does not transmit its value via the Dupline® whereas the internal counter can still operate.

A Dupline® system can have several FFD 1x80s coded to the same channel groups. In this case the counting values may only be emitted from one transmitter at a time, the other transmitters must be disabled in the meantime. This feature is best obtained by using Dupline® receivers with demultiplex output type D 1230 5111 connected to the transmission disable inputs. FK3C 7640 and FL3C 7640 or D 6369 6475 can be used for display of FFD 1680 values. FK3C 7760 and FL3C 7760 can be used for display of FFD 1780 values.

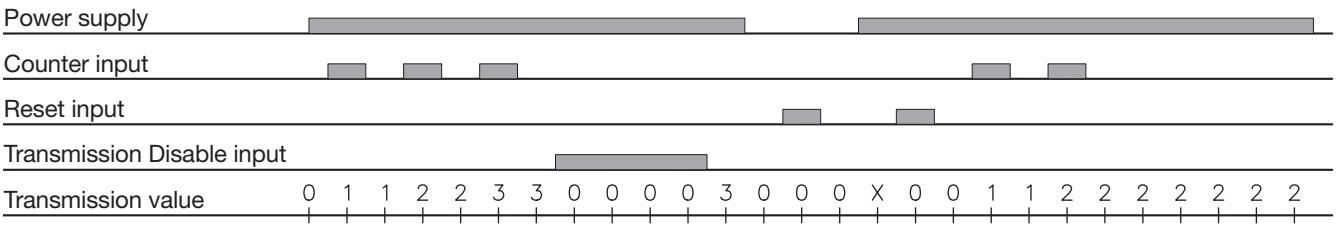
Overflow: When the counter reaches 9999 (999999), the transmitter activates all coded channels, thereby causing Dupline® displays to become dark.

Note: If DC-supplied FFD .... transmitters are used, the length of the supply bus must not exceed 3 m in order to avoid disturbances unbalancing the Dupline®.

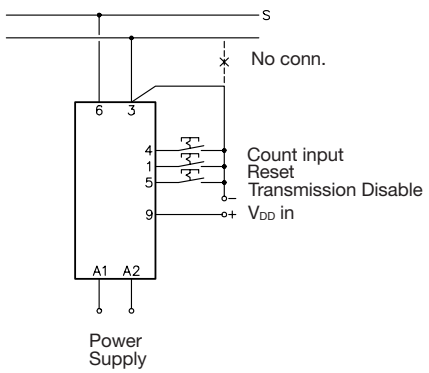
Note: Transmitters for numerical signals must not be used in systems where channel generators with 2 or 3 sequences are installed.

Specifications are subject to change without notice (28.09.99)
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Operation Diagram



Wiring Diagram



S: signal wire.

Accessories

Socket◊	D 411
Socket cover	BB 5
Hold down spring◊	HF
Front mounting bezel	FRS 2
DIN-rail for D 411	FMD 411

For further information refer to "Accessories".