INSTALLATION MANUAL

K111D

Dual insulated output frequency divider and repeater

EN



SENECA s.r.l.
Via Austria, 26 – 35127 – PADOVA – ITALY
Tel. +39.049.8705355 - 8705359 - Fax +39.049.8706287

Manuals and configuration software are available at website: www.seneca.it/products/k111d

This document is property of SENECA Srl. Duplication and reproduction are forbidden, if not authorized. Contents of the present documentation refers to products and technologies described in it. This informations may be modified or integrated for technical and / or commercial requirements

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

MODULE DESCRIPTION

K111D is a dual output galvanic insulated frequency divider for specific ON / OFF sensors, with input repeater function.
The input section allows many adjustment options and has an isolated stabilized power supply, that makes it suitable for 2 and 3-wire sensors.
The module is PC configurable through S117P1 or EASY-USB interfaces, it has three LED on frontal panel and internally protected PNP outputs with high-current.

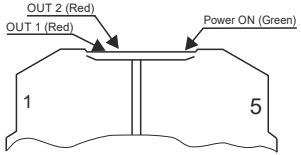
GENERAL CHARACTERISTICS

- Input frequency divider up to 256.
- The device allows outputs configuration as divider or repeater.
- Isolated, stabilized and protected sensor side power supply.
- The device allows pulse input from the most common types of sensor: mechanical contact, IEC1131, NAMUR, Reed, photocell and two or three NPN / PNP wires with 12 V or 22 V voltages.
- Two configurable PNP outputs up to 200 mA, shot-circuit protected.
- 1500 V galvanic insulation between input and two outputs.
- Dedicated PC software and custom programming interface (Optional S117P1 / EASY USB).
- The device allows out-board programming when not powered.
- Frequency up to 20 kHz.
- A LED indicates the power supply presence and two LEDs, the outputs status.
- Programmable input filter with adjustable frequency.
- Input setting through 4 DIP-Switches.
- Spring terminals K case with SMART SUPPLY system.

LED SIGNALLING ON FRONT PANEL

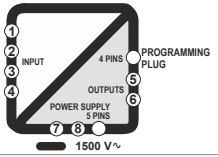
LED	Status	LED's meaning
PWR (Green)	ON	Power supply presence
	OFF	Device is powered off
LED1 (Red)	ON	Output 1 state is HIGH
	OFF	Output 1 state is LOW
LED2 (Red)	ON	Output 2 state is HIGH
	OFF	Output 2 state is LOW

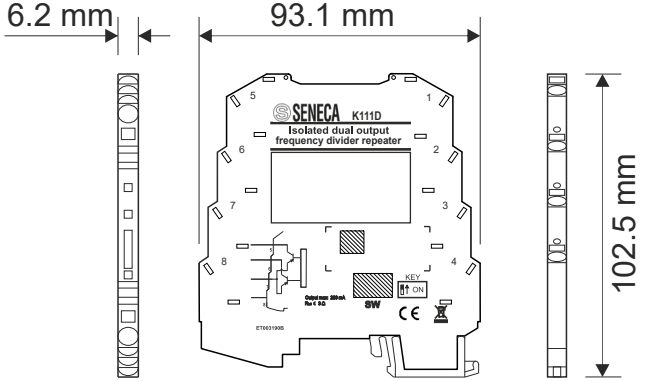
LEDs position



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

TECHNICAL SPECIFICATIONS

STANDARDS	**EN61000-6-4** Electromagnetic emission, industrial environment **EN61000-6-2** Electromagnetic immunity, industrial environment **EN61010-1** Safety
INSULATION	
ENVIRONMENTAL COND.	
Temperature	-20 – + 65°C.
Humidity	30% – 90% not condensing.
Storage temperature	-20 – + 85°C.
Protection degree	IP20.
MOUNTING	IEC EN60715 DIN rail.
CONNECTIONS	8 spring terminals for 0.2 – 2.5 mm^2 cable, suggested cable stripping about 8 mm, 1 rear K-BUS 5 pins connector.
COMMUNICATION PORT	1 Frontal panel configuration connector 4 pins step 2.54 mm



Dimension (L×H×P)	6.2 x 102.5 x 93.1 mm
Weight	50 g.
Case	Material PBT, black color.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

TECHNICAL SPECIFICATIONS

POWERSUPPLY	
Terminals	M7 (+) and M8 (-) or rear K-BUS
Voltage	19.2 – 30 V⎓
Absorbed current	Max. 23 mA at 24 V with 2 wires input devices. Max. 40 mA at 24 V with 3 wires input devices.
DIGITAL INPUT	
Terminal	M1 (S_{S+}), M2 (PNP_{IN}), M3 (NPN_{IN}), M4 (S_{S-})
Input type	mechanical contact, contact according to IEC1131.2 type 1, NAMUR DIN 19234, EN60947-5-6, two and three NPN / PNP wires with 12 V or 22 V voltages, Reed and photocell.
Switching threshold	M2 (NAMUR, std, PNP): about 1.6 mA. M3 (std, NPn): about 3 mA.
Hysteresis	about 0.2 mA.
Max. current	M2 (NAMUR): about 8 mA. M2 (std, PNP): about 3.6 mA. M3 (std, NPn): about 5 mA.
Frequency range	DC (0 Hz) – 20 kHz.
Min. active time	10µs.
Max. voltage	± 28 V.
SENSOR POWER SUPPLY	
Available voltages	8 ± 0.6 V, 12 ± 1 V, 22 ± 2 V.
Internal source impedance	NAMUR: about 1kΩ. Photocell: about 1kΩ. M1 – M4 (sensor power supply): about 40Ω.
3 wires current (M1 –M4)	Max. continuous current: 22 mA. Short-circuit current: about 35 mA (peak 500 mA).
DIGITAL OUTPUT	
Type	Input divider or repeater.
Terminals	M6: programmable output 1 PNP «source» (connect to positive M7). M5: programmable output 2 PNP «source» (connect to positive M7).
Max. current	200 mA (each output).
Protection	Self-restoring fuses.
Max. voltage	-30 V continuous, -50 V peak.

PRELIMINARY WARNINGS

	**Before performing any operation is mandatory to read the full contents of this manual.** The module may only be used by qualified and skilled technicians in the field of electric installation. Specific documentation is available for download at website: www.seneca.it/products/k111d.
	Only the Manufacturer is authorized to repair the module or to replace damaged parts. The product is susceptible to electrostatic discharge, take appropriate countermeasures during any operation.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

PRELIMINARY WARNINGS

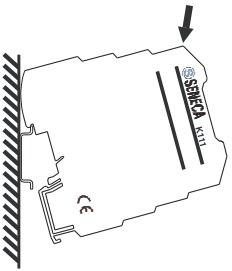
No warranty is guaranteed in connection with faults resulting from improper use, from modifications or repairs carried out by Manufacturer-unauthorized personnel on the device, or if the content of this user Manual is not followed.

Disposal of electrical & electronic equipment (applicable throughout the EU and other countries with separate collection programs). The symbol found on this product or on its packaging, indicates that this product it must be handed over to an applicable collection point for **the recycling of electrical and electronic equipments.**

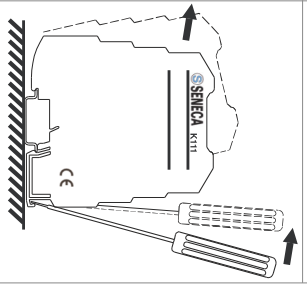
INSTALLATION RULES

In order to ensure optimum performance and a longest working life, the module(s) must be provided with adequate ventilation and no raceways or other objects that obstruct the ventilation slots.
Never install the modules near heat sources.
We recommend installation in the lower part of the control panel.

INSTALLATION ON AND REMOVAL FROM IEC EN 60715 DIN RAIL



Insertion into the IEC EN 60715 DIN rail:
1) Hook the module at the upper side of the rail as shown in the picture.
2) Press the module downwards as shown by the arrow.



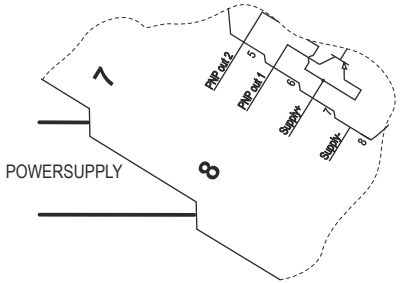
Removal from IEC EN 60715 DIN rail:
1) Apply leverage with a screwdriver as shown in the picture
2) Turn the module upwards as shown by the arrow and extract the module from the rail.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

ELECTRICAL CONNECTIONS

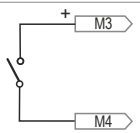
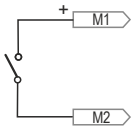
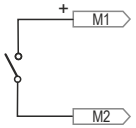
In order to satisfy the electromagnetic compliance requirements:
- Use shielded cables for the signals transmission.
- Connect the shield to a preferential ground for devices.
- Space the shielded cables from other cables used for power installations. (transformers, inverters, motors, induction ovens, etc...).

• POWERSUPPLY



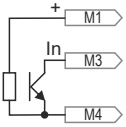
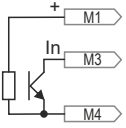
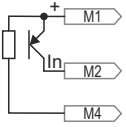
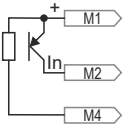
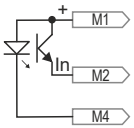
In addition to terminals 7 and 8, the power supply can also be supplied by the five-pole rear connector that through the K-BUS accessory allows connection to the power supply K-SUPPLY

• DIGITAL INPUT

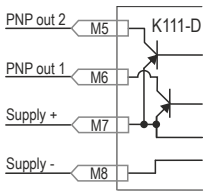
Type	Connection	Configuration
Contact according to IEC1131 - Type 1 Vs = 21 ± 2 V Isw = 3 mA IinMax = 5 mA		DIP SWITCHES: 1 OFF, 2 ON, 3 ON, 4 OFF KEY: ↑ ON, ↓ OFF
NAMUR Vs = 8.0 ± 0.6 V Isw = 1.6 mA IinMax = 8 mA		DIP SWITCHES: 1 ON, 2 ON, 3 OFF, 4 ON
Reed (12 V) Vs = 12 ± 1 V Isw = 1.6 mA IinMax = 3.6 mA		DIP SWITCHES: 1 OFF, 2 ON, 3 OFF, 4 ON

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

ELECTRICAL CONNECTIONS

Type	Connection	Configuration
NPN 24 V (21 V) Vs = 21 ± 2 V Is < 22 mA Isw = 3 mA IinMax = 5 mA		DIP SWITCHES: 1 = –, 2 = ↑, 3 = ↑, 4 = – KEY: ↑ = ON, ↓ = OFF
NPN 12 V Vs = 12 ± 1 V Is < 22 mA Isw = 3 mA IinMax = 5 mA		DIP SWITCHES: 1 = –, 2 = ↑, 3 = –, 4 = ↑
PNP 24 V (21 V) Vs = 21 ± 2 V Is < 22 mA Isw = 1.6 mA IinMax = 3.6 mA		DIP SWITCHES: 1 = –, 2 = ↑, 3 = ↑, 4 = –
PNP 12 V Vs = 12 ± 1 V Is < 22 mA Isw = 1.6 mA IinMax = 3.6 mA		DIP SWITCHES: 1 = –, 2 = ↑, 3 = –, 4 = ↑
Photo Vs = 21 ± 2 V Rs = 1kΩ Isw = 1.6 mA IinMax = 3.6 mA		DIP SWITCHES: 1 = –, 2 = –, 3 = ↑, 4 = –

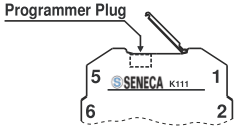
• DIGITAL OUTPUTS

PNP | Vsw Max. | = 50 V Rsw < 3Ω Isw Max.= 200 mA each channel	

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

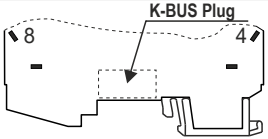
COMMUNICATION PORTS

• PROGRAMMER PLUG (ON FRONTAL PANEL)



K111D has a 4 pins frontal port for device configuration, as shown in the picture.

• REAR PORT



K111D has a 5 pins rear connector, for module power supply, that allows connection to K-SUPPLY through K-BUS accessory.

DIP-SWITCHES CONFIGURATION

SWITCH				TERMINAL				INPUT TYPE
1	2	3	4	M1	M2	M3	M4	
↑	↑		↑	+	-			NAMUR 8V (DIN19234, EN60947-5-6)
	↑	↑				+	-	Standard switch (IEC1131.2 type1)
	↑	↑		+		S	-	NPN 21V
	↑	↑		+	S		-	PNP 21V
	↑		↑	+		S	-	NPN 12V
	↑		↑	+	S		-	PNP 12V
	↑		↑	+	-			Reed 12 V
		↑		+	S		-	Photocell

KEY		
↑	ON	↑
	OFF	↓

ORDER CODES

Code	Description
K-BUS	Support with two slot for rear K-BUS connector of K devices.
K-SUPPLY	Redundant power supply module for K-devices.
EASY USB	USB-UART TTL converter with CD and programming software.
S117P1	USB-RS232-TTL-RS485 converter.

CONTACTS

Technical support	support@seneca.it	Product Informations	sales@seneca.it

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000