SIEMENS

Speed Monitoring Relay

CE **7UG0**
IEC 60947-5-1

7UG0583-1CU20

Please read and understand these instructions before installing, operating, or maintaining the equipment.

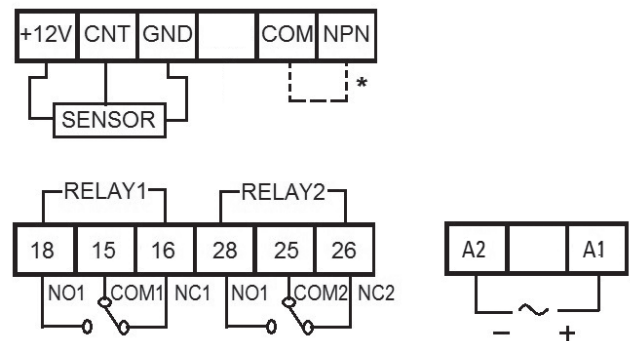|	
⚠ ✋	**DANGER** Hazardous voltage can cause death or serious injury. Disconnect power before working on equipment.
⚡	**CAUTION** Reliable functioning of the equipment is only ensured with certified components. Overvoltage category II (Refer IEC 60947-1)

NOTICE
This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures.
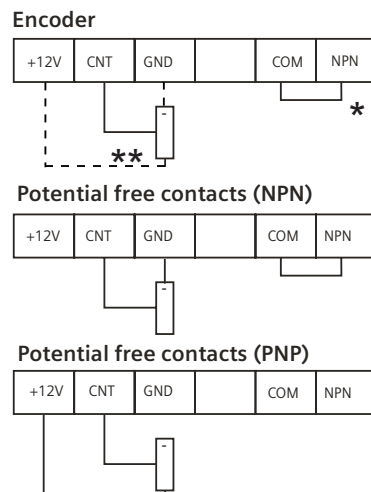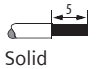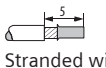
Technical Data

Designation	7UG0583-1CU20
Type	Speed monitoring relays
Control voltage (Uc)	110 - 240V AC/DC
Tolerance on Control supply	0.85x Uc... 1.1x Uc
Frequency	50/60Hz
Operating temperature	0 to 50℃ , 95%RH (non-condensing)
Sensor Supply	12VDC, 30mA (±10%) (Short circuit protected)
Count inputs	5 to 30VDC from proximity switches, encoders, solid state devices or potential free contacts
Trip Time delay	0 to 99.9 sec (programmable)
Rate Range	Auto ranging resolution User selectable : RPS / RPM / RPH
Operating modes	Under speed, Over speed and Dual speed
Scale factor	Programmable from 0.001 to 9.999 x 10^n where n = -3, -2, -1, 0, 1, 2.
Measurement range	4 - 9999 RPM
Rated output relay current	5A (AC12)
Relative metering precision	±15 %
Accuracy of digital display	±1 RPM
Pulse duration minimum	3 ms
Pulse interval minimum	3 ms
Max. Power consumption	3.2 VA

Terminal connections

+12V	CNT	GND		COM	NPN

SENSOR

*

RELAY1			RELAY2		
18	15	16	28	25	26
NO1	COM1	NC1	NO1	COM2	NC2

A2		A1
−	∼	+

WIRING DIAGRAM FOR COUNT INPUT

Encoder

+12V	CNT	GND		COM	NPN

** *

Potential free contacts (NPN)

+12V	CNT	GND		COM	NPN

Potential free contacts (PNP)

+12V	CNT	GND		COM	NPN

|	7UG0583 - 1CU20
screwdriver	0.5 Nm
Solid	1 x (0.75 to 2.5) mm² 2 x 0.5 to 2 x 1.5 mm²
Stranded with end sleeve	1 x (0.5 to 2.5) mm² 2 x 0.5 to 2 x 1.5 mm²

From Page 1.
* By default, Sensor type will be considered as PNP.
In case of NPN sensor type, NPN-COM to be shorted.
** For three wire sensor, connect the sensor to internal +12V as shown or use external supply (5 to 30V) if required.

Note: If the sensors require more than 30mA current, use external power supply to power the sensors. To reduce noise, Use of Snubber across load is recommended.

Front panel key functions

SIEMENS

○ R1

○ R2

7UG0583-1CU20

▶ ▲ OK
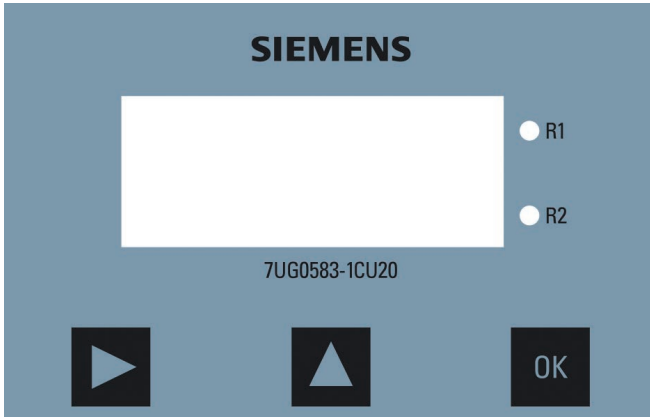
To view programmed modes

| OK **Key** : Press once to view operating mode and rate |
|---|
| ▲ **Key** : Press once to de-energize relays in manual mode. |

To enter Configuration settings:

| OK **Key** : Press for 3sec to enter/ exit configuration mode OR to enter next configuration. |
|---|
| ▲ **Key** : Increments the blinking digit after every key press and rolls over from 0 to 9 |
| ▶ **Key** : Shifts the blinking to next digit for ever key press |

| Configuration Parameter	Display	Description
To program Low Set-point & High Set-point		
▶ **Key :** Press for 3 sec. From default page. ▲ **Key :** Increments the blinking digit after every key press and rolls over from 0 to 9 ▶ **Key :** Shifts the blinking to next digit (right) for every key press OK **Key :** To complete programming. Press for 3 seconds to exit programming mode.		
Set-Point Low	Blinking for 3 seconds *LOY*	OK **Key** : To go to next page before 3 seconds is complete
	0100	▲ **Key** : Increments value blinking digit Note: This page is only displayed when operating mode is dual / under
Set-Point High	Blinking for 3 seconds *HIGH*	OK **Key** : To go to next page before 3 seconds is complete
	0150	▲ **Key** : Increments value blinking digit Note: This page is only displayed when operating mode is dual / over

Note:
1. In Configuration mode, Both the relays will turn OFF.

2. Set-Point High will only accept values greater than Set-Point Low. Also, both values should be Integer.

CONFIGURATION SCHEME (Parameter setting)

Press the OK (OK) key for 3 seconds to enter/ exit the configuration settings.   **Both the relays will turn OFF.**

| Configuration. Parameter	Display	Description
Initial Time Delay	∗ Blinking for 3 seconds `ltd`	**OK** Key : To go to next page before 3 seconds is complete
	`00.0`	▲ Key : Increments the blinking digit after every key. press and rolls over from 0 to 9 ▶ Key : Shift the blinking to next digit (right) for every key press
Trip Time Delay	∗ Blinking for 3 seconds `ntd`	**OK** Key : To go to next page before 3 seconds is complete
	`00.0`	▲ Key : Increments the blinking digit after every key. press and rolls over from 0 to 9 ▶ Key : Shift the blinking to next digit (right) for every key press
Operating Mode	∗ Blinking for 3 seconds `nOdE`	**OK** Key : To go to next page before 3 seconds is complete
	`dUAL`	▲ Key : Changes mode of operating **Range: Dual, Under, Over**
Rate Mode	∗ Blinking for 3 seconds `rAtE`	**OK** Key : To go to next page before 3 seconds is complete
	`rPn`	▲ Key : Changes factor of rate **Range: RPM, RPS, RPH Default: RPM**
Relay Reset Mode	∗ Blinking for 3 seconds `rSt`	**OK** Key : To go to next page before 3 seconds is complete
	`AUtO`	▲ Key : Changes relay reset mode **Range: Auto, Manual Default: Auto**
Scale Factor Mantissa	∗ Blinking for 3 seconds `SCL`	**OK** Key : To go to next page before 3 seconds is complete
	`1.000`	▲ Key : Increments the blinking digit after every key. press and rolls over from 0 to 9 ▶ Key : Shift the blinking to next digit (right) for every key press
Exponent	∗ Blinking for 3 seconds `EPn`	**OK** Key : To go to next page before 3 seconds is complete
	`0`	▲ Key : Increments the blinking digit after every key press n = -3, -2, -1, 0, 1, 2
Factory reset	∗ Blinking for 3 seconds `FrSt`	**OK** Key : To go to next page before 3 seconds is complete
	`0`	▲ Key : Increments value (0-5). No action from 0-4. Factory reset when ENT is pressed at 5.

Modes of Operation:

i) Under-speed Mode: The relay checks whether the speed of the monitored system is lower than a particular set-point, defined as Set-point Low. R2 is energized when the frequency of rotation becomes lower than Set-Point Low.

ii) Over-Speed Mode: The relay checks whether the speed of the monitored system is greater than a particular set-point, defined as Set-Point High. R1 is energized when the frequency of rotation becomes greater than Set-Point High

iii) Dual-speed Mode: The relay checks whether the speed of the monitored system is within a particular range, defined as Set-Point Low to Set-Point High. R2 is energized when the frequency of rotation becomes lower than Set-point Low. R1 is energized when the frequency of rotation becomes greater than Set-point High.

Note: Relay 1 has been assigned for Over-speed and Relay 2 has been assigned for Under-speed by default. These cannot be interchanged.

Both the relays are NOT energized when the connected motor is operating within the preset range.

Scale Factor:

The user programmable scale factor facilitates the direct reading in desired engineering unit. The counter multiplies the number of pulses received at the count input with the scale factor, and displays the result.

Rate display = Number of pulses received per minute x scale factor or No. of pulses received per hour x scale factor.

The scale factor consists of two parts, mantissa and exponent. The mantissa can be set from 0.001 to 9.999 and the exponent can be set from -3 to +2.

The scale factor is arrived at as:
Scale factor = Mantissa X 10$^{\text{Exponent}}$
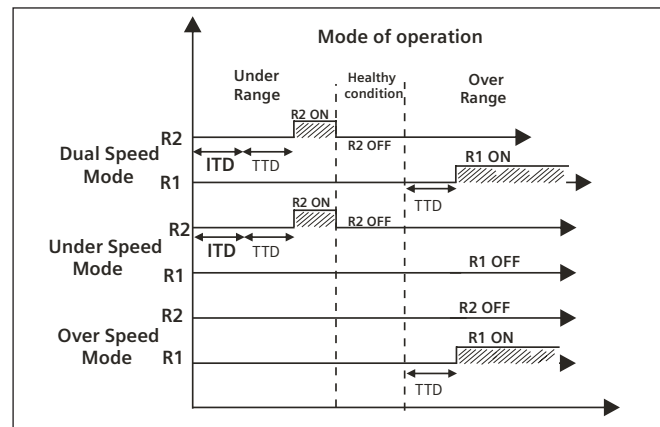Scale Factor cannot be 0 for obvious reasons.

Initial Time Delay (ITD): It is the time required by the motor to gain optimum speed. When the ITD is entered and unit is powered ON, the unit waits for the ITD to elapse (in addition to TTD) before switching the relay outputs in case of any unhealthy condition.

Trip Time Delay (TTD): Sometimes the motor speed can go out of range for a while. In order to avoid the relay tripping due to such momentary changes in frequency, Trip time delay is provided. The relay trips only if unhealthy speed ensues after TTD has elapsed.
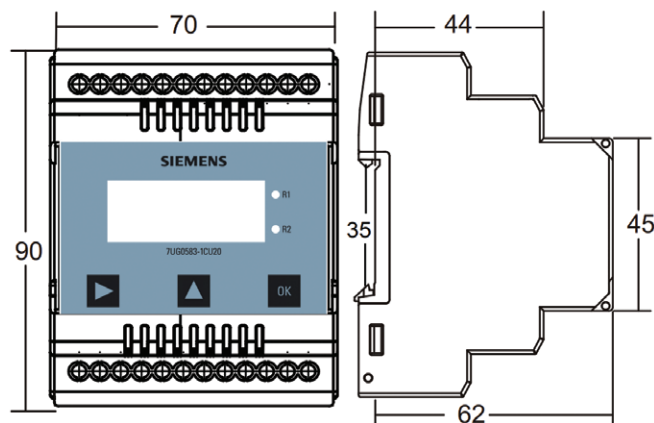
Relay reset modes: This feature allows one to customize the operating of both the relay outputs R1 and R2, according to one's requirement.

Auto-reset: The relay outputs R1 and R2 become de-energized when the speed of the connected equipment comes back to the prescribed range.

Manual-reset: Once the relay outputs R1 and/ R2 become energized, they stay energized even after the connected motor or any supported equipment comes back to healthy speed. In order to de-energize the relays, the user will have to press the assigned key.

Dimensional drawings

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