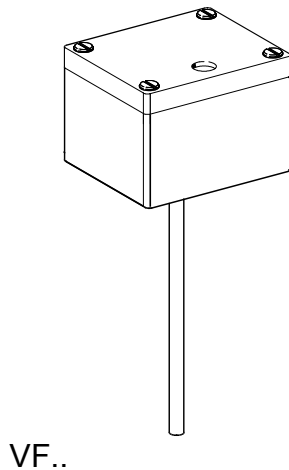


## Fitting and Operating Instruction



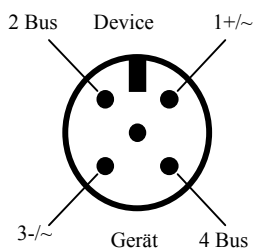
### Temperature Sensors

VF20..-L

### General

**A qualified installer has to carry out and to supervise mounting and first operation of the appliance**

Connection diagramm



### Description

The FEMA LON series is provided with default configuration settings from the factory (figure 2). The NTC 20 characteristic is approximated with 12 straight lines in the range  $-30$  to  $+110^{\circ}\text{C}$ . Using standard Echelon configuration tool or LNS based tools, the sensor can be configured with job-specific settings. The power and bus connection is provided by a M12 plug (included in delivery).

### Safety Instruction

### Mounting

- You never use housing as lever arm and do not turn the housing.

### Electrical wiring and power

- The unit is supplied with 24VAC or 24 to 36VDC. With a DC power supply pay attention to correct polarity. The device can be destroyed if the connection is faulty. Connect the appliance to the plug as shown in connection diagramm.
- You never apply a voltage higher 48 V to one of the terminals.
- 

### Installation

The series VF..-L sensors are fitted directly to the pipeline with an immersion tube

### Protection class

IP 54 (with vertical sensor position)

## Operation LED (green)

LED task, error handling:	priority	set nvo_press invalid	set nvo_limit invalid	LED blink quantity (*) 1 = on 0 = off (16 steps)
LP_Status.VrefFail (1)	1	y	y	1010000000000000
LP_Status.LimitError (2)	2	n	y	1010100000000000
wink command active	3	n	n	1111111100000000
normal run	4	n	n	1111111111111111

(\*) The duration of one step is: 150ms

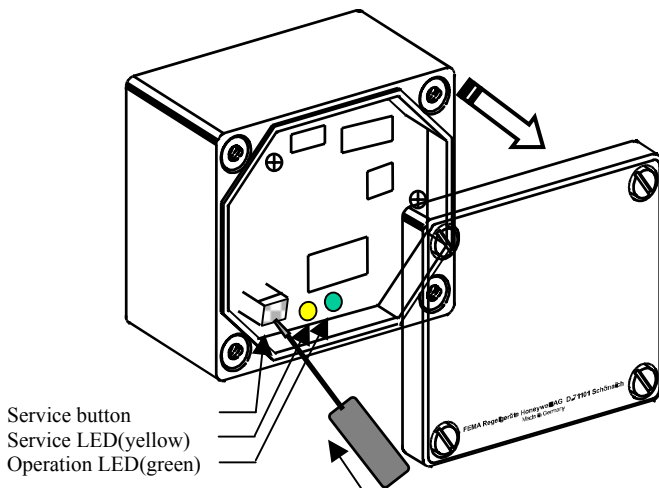
(1) Operation power to low

In this case the sensor element is measuring wrong values.

All values are set to invalid.

(2) Low limit (nciLimitLow) is set higher than a high limit (nciLimitHigh).

For function of service LED and service button see Echelon documentation.



### Safety Instruction

Do not touch the plane with the screw driver.

## The application

The graph in figure 1 shows the software application

In this range four limit values can be activated:

nciLimitLowP1, nciLimitLowP2, nciLimitHighP1, nciLimitHighP2

When the LimitHigh values are reached (coming from low temperature) a relating alarm value (network output variable) is set:

nciLimitHighP1 sets nvoLimitHigh1,

nciLimitHighP2 sets nvoLimitHigh2,

When the LimitLow values are reached (coming from high temperature) a relating alarm value (network output variable) is set:

nciLimitLowP1 sets nvoLimitLow1

nciLimitLowP2 sets nvoLimitLow2

The alarm values for the LimitHighs is reset when the temperature value falls under the limit an ist hysteresis:

nciHystHighP1 belongs to nciLimitHighP1,

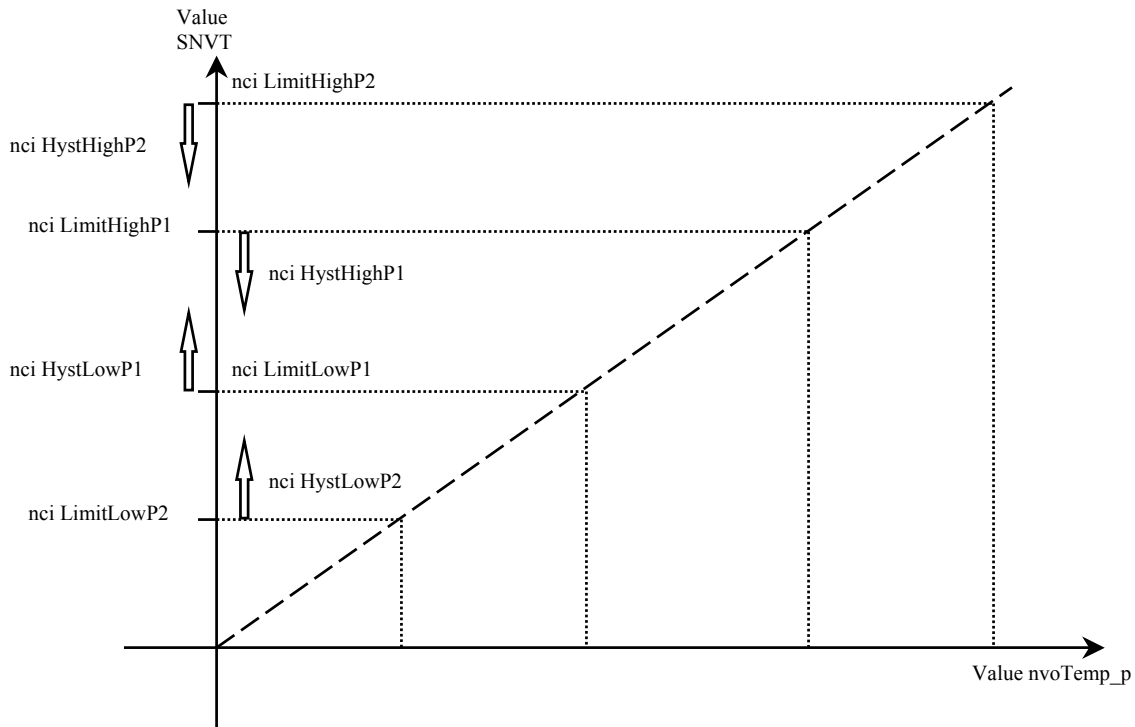
nciHystHighP2 belongs to nciLimitHighP2

The alarm values for the LimitLows is reset when the temperature value rises over the limit an ist hysteresis:

nciHystHighP1 belongs to nciLimitHighP1,

nciHystHighP2 belongs to nciLimitHighP2

**Limits and Hysteresis (figure 1)**



**Description of the used SNVT/ SCPT (figure 2)**

This table shows all used standard network variables.

Network Variable / Self documentation string	SNVT type {Default value}	Range	Network Outputs: Send conditions / Service	Description
<i>Temperature Sensor (Profile 1040)</i>				
nvoHVACTemp ("@0   1;")	SNVT_temp_p {temperature for delivery}	-273,17 ... 327,66°C 0x7FFF = 327,67°C = Invalid	nciSendOnDelta, nciMaxSendTime, nciMinSendTime, change of nvoLimitHigh,Low / unack. Service	Actual temperature value
nciSendOnDelta ("&1, 0, 0\x80, 64;")	SNVT_temp_p {0,3°C}	-273,17 ... 327,66°C 0 = Send any change		
nciMinSendTime ("&1, 0, 0\x80, 52;")	SNVT_time_sec {0 sec for factory} {5 sec for delivery}	0..6553,4 sec 0 = Maximum refresh rate		for delivery = 5 sec
nciMaxSendTime ("&1, 0-1, 0\x80, 49;")	SNVT_time_sec {300 sec}	0..6553,4 sec 0 = No automatic update		

## Temperature application

nvoTempPercent ("@0 # 1;")	SNVT_lev_percent {percent temperature for delivery}	-163,84%...163,83% (res.=0,005%) 0x7FFF = Invalid	nciSendOnDelta, nciMaxSendTime, nciMinSendTime, change of nvoLimitHigh,Low / unack. Service	Actual temperature value in % of total range
nciLimitLowP1 ("&1,0,0\x80,18;")	SNVT_temp_p {Invalid for factory} {No Limit Check for delivery}	-273,17 ... 327,66°C -50,05°C = No Limit Check		
nciLimitHighP1 ("&1,0,0\x80,9;")	SNVT_temp_p {Invalid for factory} {No Limit Check for delivery}	-273,17 ... 327,66°C +150,1°C = No Limit Check		
nciLimitLowP2 ("&1,0,0\x80,19;")	SNVT_temp_p {Invalid for factory} {No Limit Check for delivery}	-273,17 ... 327,66°C -50,05°C = No Limit Check		
nciLimitHighP2 ("&1,0,0\x80,10;")	SNVT_temp_p {Invalid for factory} {No Limit Check for delivery}	-273,17 ... 327,66°C +150,1°C = No Limit Check		
nciHystHighP1 ("&1,0,0\x80,11;")	SNVT_temp_p {0 K}	-273,17 ... 327,66°C 0 = No Hysteresis		Delivery default = 0
nciHystHighP2 ("&1,0,0\x80,12;")	SNVT_temp_p {0 K}	-273,17 ... 327,66°C 0 = No Hysteresis		Delivery default = 0
nciHystLowP1 ("&1,0,0\x80,13;")	SNVT_temp_p {0 K}	-273,17 ... 327,66°C 0 = No Hysteresis		Delivery default = 0
nciHystLowP2 ("&1,0,0\x80,14;")	SNVT_temp_p {0 K}	-273,17 ... 327,66°C 0 = No Hysteresis		Delivery default = 0

### Alarming

nvoLimitHigh1 ("@0 # 2;")	SNVT_switch {Invalid for factory} {OFF for delivery}	OFF = {0, false} ON = {200, true} invalid = {x, 255}	Any Change / ackd. Service	for delivery = off
nvoLimitLow1 ("@0 # 4;")	SNVT_switch {Invalid for factory} {OFF for delivery}	OFF = {0, false} ON = {200, true} invalid = {x, 255}	Any Change / ackd. Service	for delivery = off
nvoLimitHigh2 ("@0 # 3;")	SNVT_switch {Invalid for factory} {OFF for delivery}	OFF = {0, false} ON = {200, true} invalid = {x, 255}	Any Change / ackd. Service	for delivery = off
nvoLimitLow2 ("@0 # 5;")	SNVT_switch {Invalid for factory} {OFF for delivery}	OFF = {0, false} ON = {200, true} invalid = {x, 255}	Any Change / ackd. Service	for delivery = off
nvoRaw ("@0 # 6;")	UWORD	raw value of A/Dconverter: 0...4095	polled / not acknowledged	only for factory
nvoSWversion ("@0 # 7;")	SNVT_char_ascii	software version number 0...255	polled	Software version number

#pragma set\_node\_sd\_string "3.0@0,1040"

#pragma set\_std\_prog\_id 80:00:0C:0A:28:04:04:00 (for Temperature application)

### Transceiver and profile

FTT 10A

Profile 1040#

### Ambient temperature

0...+50°C

### Accessories included in delivery

Plug M12 five-pole