

Square Thermometers for Switch Panels

TFQS

Square case, front narrow rim black with limit switch contact assembly

This data sheet contains information on the number of the maximum possible contacts, the electrical connections, the ordering information and the options of the model TFQS with limit switch contact assembly with standard/magnetic, electronic or inductive contacts, furthermore dimensional drawings with the position of the electrical connections.

Data sheet 8225 contains all details of the available versions of the model TFQS without limit switch contact assembly. These information as well as the required ordering information are also valid for the version with limit switch contact assembly, as far as not described differently.

In **model overview 9.1000** definitions, applications and functions of the particular models of the limit switch contact assemblies are described generally and in detail. It also contains comprehensive information on the selection, switching functions and minimum spans, operating conditions, Ex-protection, options and others.



Standard Versions

Available limit switch contact assemblies

1. **Direct** (electromechanical)
 - 1.1 Standard contact **S**
 - 1.2 Magnetic contact **M**
2. **Indirect** (contactless)
 - 2.1 Electronic contacts **E**
 - 2.2 Inductive contacts **I**

Number of the maximum possible contacts

	NCS 96 x 96	NCS 144 x 144
up to 2 x S	O	O
3 x S	O	-
up to 2 x M	O	O
3 x M	O	-
up to 2 x E	O	O
3 x E	O	-
up to 2 x I	O	O
3 x I	O	-

O = available

Case Protection Type (EN 60 529 / IEC 529)
IP 43

Nominal Case Size
96 x 96, 144 x 144 (mm)(3.8" x 3.8", 5.7" x 5.7")

Window
Instrument glass

Adjusting Mechanism Limit Setting Pointer
All instruments have an adjustable lock in the window. The limit setting pointer is set to the value at which the switching operation should happen, externally by the removable key.

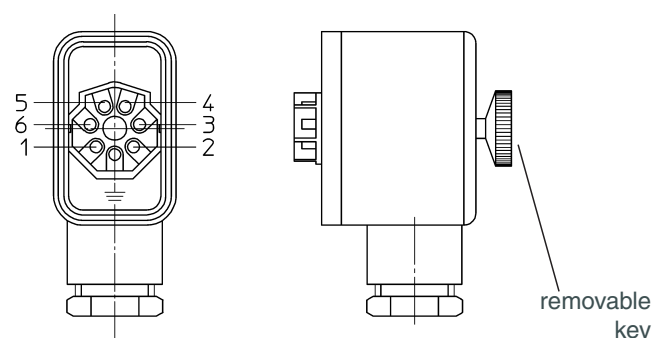
Electrical Connection

- for limit switch contact assembly (S/M): plug connector
- for limit switch contact assembly (E) : cable connection box black
- for limit switch contact assembly (I) : cable connection box blue, for identification of an intrinsically safe circuitry, otherwise as E

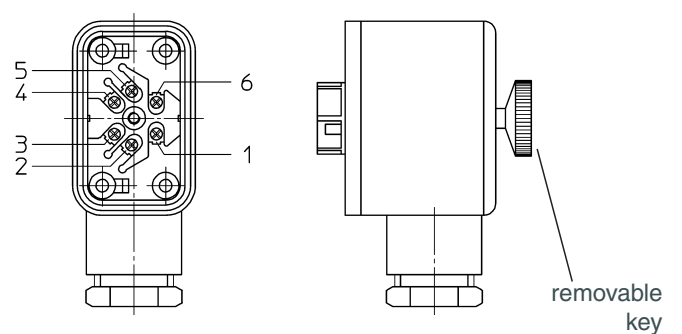
Plug Connector and Cable Connection Box

IP 65, 6-pin, with M 20 x 1.5 screwed cable gland with pull relief, terminals numbered according to wiring diagram (at the instrument), protective contact available

Plug Connector



Cable Connection Box



The position of the electrical connection can be seen on the dimensional drawings, see page 2 and page 4 (cable entry).



Sales and Export South, West, North
ARMATURENBAU GmbH
Manometerstraße 5 • D-46487 Wesel - Ginderich
Tel.: +49 (0)28 03/91 30-0 • Fax: +49 (0)28 03/10 35
armaturenbau.com • mail@armaturenbau.com

Subsidiary Company, Sales and Export East
MANOTHERM Beierfeld GmbH 8225.90
Am Gewerbepark 9 • D-08344 Grünhain-Beierfeld
Tel.: +49 (0)37 74/58-0 • Fax: +49 (0)37 74/58-545
manotherm.com • mail@manotherm.com

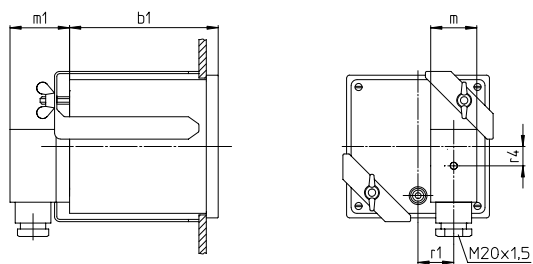
Case Configurations, Code Letters, Dimensional Data and Weights

Compared to the basic models there are deviations in the front-to-back sizes, see table.
The remaining dimensions can be seen on data sheet 8225.

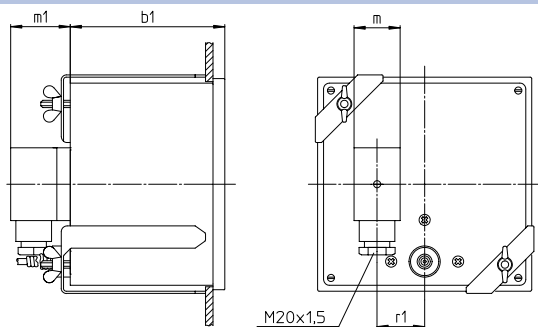
Lower Back Capillary Line Position

without code letters

NCS 96 x 96



NCS 144 x 144



Dimensional Data (mm / inches) and Weights (kg / lb)

NCS/model		b1	m	m1	r1	r4	approx. weight ¹⁾ TFQS
96 x 96	1, 2 and 3 contacts	100	31	42	24	13	1.00
		3.94	1.22	1.65	0.94	0.51	2.20
144 x 144	1 and 2 contacts	104	31	42	32	—	1.55
		4.09	1.22	1.65	1.26		3.42

¹⁾ The information is an example an relates to model TFQS, A3, dF 12, L= 200 mm, L_{rl} = 1 m, G½, M2

Ordering Information, Limit Setting Pointer

Basic Model:	Square Thermometers for switch panels with limit switch contact assembly	TFQS
---------------------	---	-------------

Ordering information		
	When installing limit switch contact assemblies, the ordering code of the basic model is extended by	
code letters	S standard contact	
	M magnetic contact	e.g. M
	E electronic contact	
	I inductive contact	
code number	1 making contact	
for the swithing function	2 breaking contact	e.g. 2
(clockwise direction of action, that means for pressure gauges at rising pressure)	3 single change-over contact as standard or magnetic contact	
	11 1. and 2. making contact	
	12 1. making contact / 2. breaking contact	
	21 1. breaking contact / 2. making contact	
	22 1. and 2. breaking contact	
Details	For an optimal function of the instruments with limit switch contact assemblies you have to add the following to the ordering information: - switching temperature(s) - switching range(s) that are beyond the adjustment ranges that are defined by us - if an anticlockwise switching direction is requested	
Options	for all limit switch contact assembly models adjustable lock with non-removable key	<i>(order at the moment still as clear text)</i>
S/M contacts	switching distance fixing (2 contacts and above) upon request	
	separated circuitries	
	wire break control (parallely switched resistor for each contact)	
	contact pins made of special materials upon request	
E-contacts	PNP switching output as 2-wire connection	
I-contacts	safety version SN or S1N	
	interval switching reactionless for NCS 144 with 2 contacts, interval relay required	
	options of electrical connection see page 4	
	other position of the electrical connection upon request	

Example: TFQS 96, 0 - 300 °C, A5, dF 12, L= 200 mm, L_{FL} = 3 m, G¹/₂, M2

Information on limit switch contact assemblies with 3 contacts

Compared to thermometers with 2 contacts the limit setting pointers of thermometers with 3 contacts are not adjustable one above the other in every case.

Behaviour of the limit setting pointers to each other	
Model	3 limit setting pointers
Limit switch contact assembly	NCS 100
S, M	adjustment one above the other
E, I	only 2 adjustable one above the other in each case

Switching functions

The limit setting pointers, that are not adjustable one above the other are separated by a point when indicating the switching function.
Example: E 1.22 3-fold; only the two pointers in the back are adjustable one above the other

Minimum distance of the not adjustable (one above the other) limit setting pointers in angular degrees

Model	NCS 100
Limit switch contact assembly	
E, I	35

Options

Electrical Connection

Cable entry

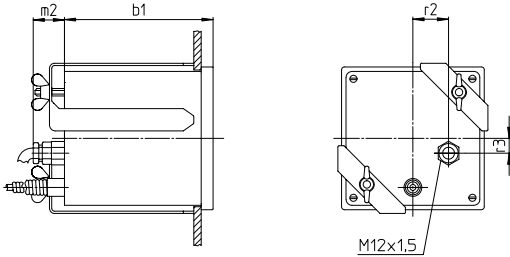
- IP 65
- cable entry M 12 x 1.5 with pull relief and 1 m connection cable
- available for models S / M

more than 1 m connection cable upon request

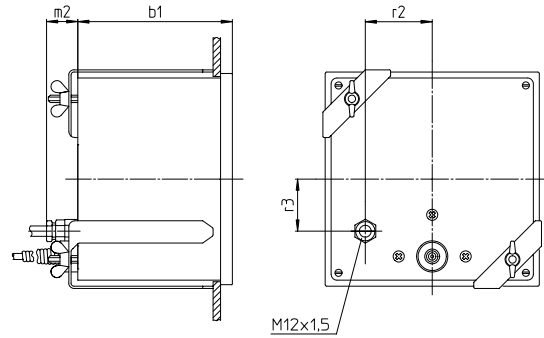
Lower Back Capillary Line Position

without code letters

NCS 96 x 96



NCS 144 x 144



Dimensional Data (mm / inches) and Weights (kg / lb)

NCS/model		b1	m2	r2	r3	approx. weight ¹⁾ TFQS
96 x 96	1, 2 and 3 contacts	100	21	24	10	1.00
		3.94	0.83	0.94	0.4	2.20
144 x 144	1 and 2 contacts	104	21	45	35	1.55
		4.09	0.83	1.77	1.38	3.42

Plug connector DIN EN 17 5301-803

- IP 65, 3-pin and protective contact
- available for max. 2x S / M or 1x E / I
- resp. 2x E for option PNP-switching output as 2-wire connection

The plug connectors DIN EN 17 5301-803 have approximately the same position of connection as the plug connectors resp. the cable connection boxes, see page 2.

construction type A



construction type C



Circular plug connector M 12 x 1.5

- IP 67, 4-pin without protective contact
- available for max. 2 x E/I
- with 2 m die casted cable upon request

The circular plug connectors have approximately the same position of connection as the cable entries, see above.

angular cable box



straight cable box upon request



¹⁾ The information is an example and relates on model TFQS, A3, dF 12, L= 200 mm, L_{PI} = 1 m, G½, M2