



SEMINAR B

Brugine
March 2002

CAREL

CAREL SENSOR RANGE



New
PROBES

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Carel Business



The sensor range is composed of several solutions for the control and monitoring of temperature humidity and pressure:

- AS*
- NTC*
- SST*
- PT*
- SPK*

The
range

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AS series

Active probe for duct:

- ASD*

Active probe for I. E.

- ASP*

Active ambient probe :

- ASW*

Active probe for immersion:

- ASI*

Active probe for universal use:

- ASE*



Active sensor characteristics



- wide power supply (from 9 to 30Vdc and from 12 to 24Vac)
- selectable output signal (0/1Vdc and 4/20mA)
- temperature range: according to the application
- humidity range: 10/90%r.H. or 0/100%r.H.

NTC* PT* series



NTC sensor:

- $-50 \div 50^{\circ} \text{C}$
- $-50 \div 105^{\circ} \text{C}$

PTC sensor:

- $0 \div 150^{\circ} \text{C}$
- $-50 \div 100^{\circ} \text{C}$

PT100 sensor:

- $-50 \div 250^{\circ} \text{C}$
- $-50 \div 400^{\circ} \text{C}$

PT1000 sensor:

- $-100 \div 200^{\circ} \text{C}$



Passive
sensors

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Customising possibilities

For ASW* series it is possible to customize the aesthetics of the sensor, such as the logo, when the volume exceeds 2000 pieces per year.



Some clarifications

For pCO¹:

- Pressure transducer: ratiometric
- Temperature sensor: NTC
- High temperature sensor: ASET030002 used in 4÷20mA



pCO1

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Some clarifications

For pCO_2 :

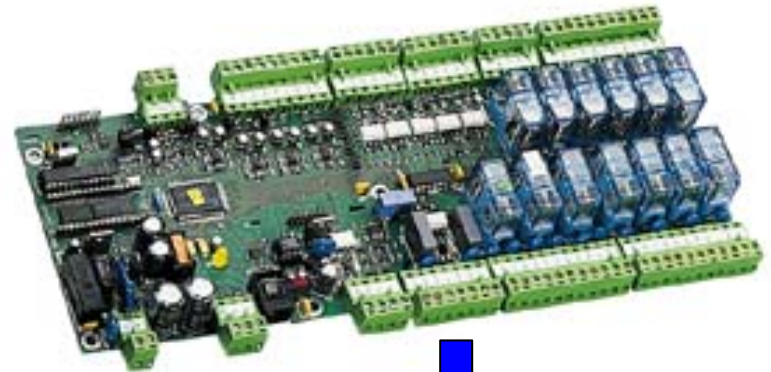
- Pressure transducer: 4–20mA
- Temperature sensor: NTC
- High temperature sensor: PT1000



Some clarifications

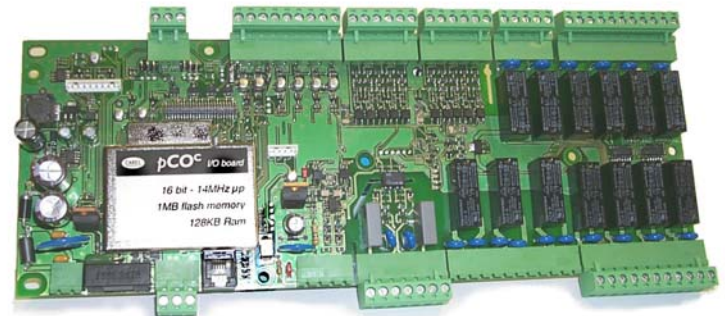
For pCO^b :

- Pressure transducer: $4 \div 20mA$
- Temperature sensor: NTC
- High temperature sensor: ASET030002



For pCO^c :

- Pressure transducer: $4 \div 20mA$
- Temperature sensor: NTC
- High temperature sensor: ASET030002 used in $4 \div 20mA$.

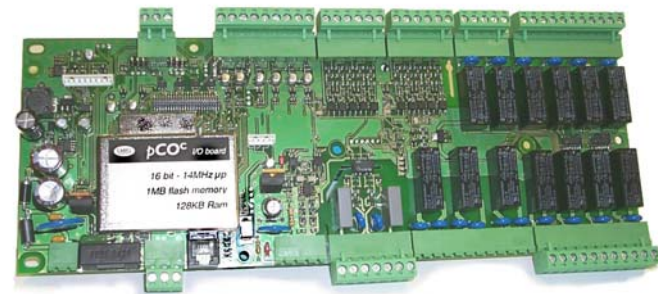


pCO^b
 pCO^c

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Advertising

- For pCO^1 and pCO^c , we strongly suggest the use of NTC sensors for normal temperatures and ASET* probes for high temperatures *used in 4 ÷ 20mA*, otherwise in 0 ÷ 1V the negative values will be shown as 0° C.



pCO1
pCOc

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The new products

- SPKT* automotive ratiometric and 4÷20mA
- NTC* fast



New
sensors

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The NTC fast

- NTC015WF00:
 - $-50 \div 105^{\circ}$ C with 1,5m cable
- NTC030WF00
 - $-50 \div 105^{\circ}$ C with 3m cable
- NTC060WF00
 - $-50 \div 105^{\circ}$ C with 6m cable



NTC fast advantages

The background features a blurred image of a green printed circuit board (PCB) with various electronic components. In the upper right corner, three different types of NTC (Negative Temperature Coefficient) sensors are displayed. One is a small, cylindrical component with a metal base. Another is a larger, more complex component with a metal base and a plastic housing. The third is a long, cylindrical component with a metal base and a plastic housing, labeled with 'date: 13', '10000', and 'NTC Brown'.

- Suitable for antifreeze operation
- Suitable for advanced temperature control algorithm with feedback
- Suitable for EVD driver

Transducer families

Brass Ratiometric (0 ÷ 5Vdc)

- Female

Steel 4 ÷ 20mA

- Female (replaces the current one)
- Male

Cables (Packard connection)

- 2m
- 5m



4÷20mA range



- Steel Female transducer with Packard connection:

- -0.5 ÷ 7Bar

- 0 ÷ 10Bar

- 0 ÷ 30Bar



probes
SPKT

This model replaces

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4 ÷ 20mA range

Steel Male
transducer
with 2m cable:

- -0.5 ÷ 7Bar
- 0 ÷ 25Bar
- 0 ÷ 30Bar

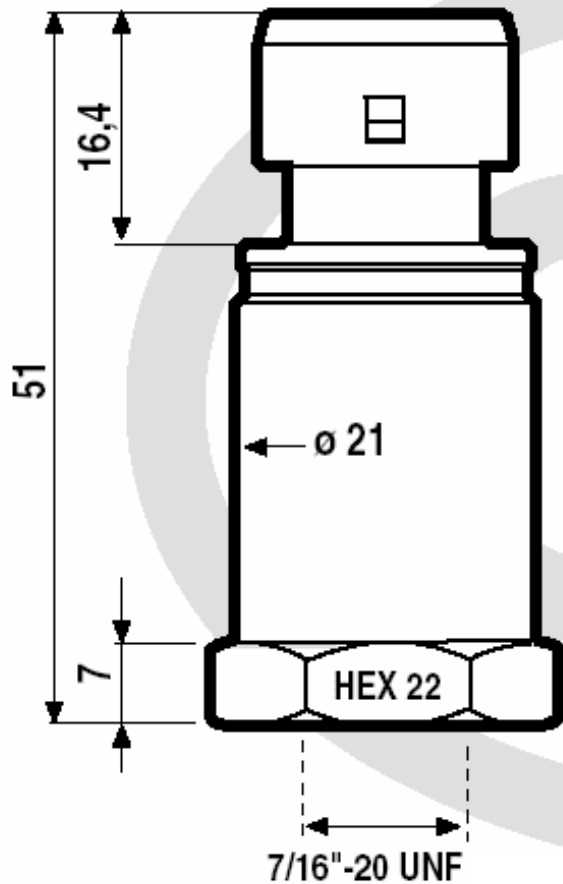


4÷20mA Female advantages

- Smaller dimensions
- Automotive electrical Packard connection (new world standard)
- IP67 index of protection
- Lower price



4-20 Female aspect



probes
SPKT

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Ratiometric range

- Brass Female Ratiometric with Packard connection:

- 0 ÷ 75psi (0 ÷ 5, 17Bar)
- 0 ÷ 150psi (0 ÷ 10, 34Bar)
- 0 ÷ 500psi (0 ÷ 34, 5Bar)

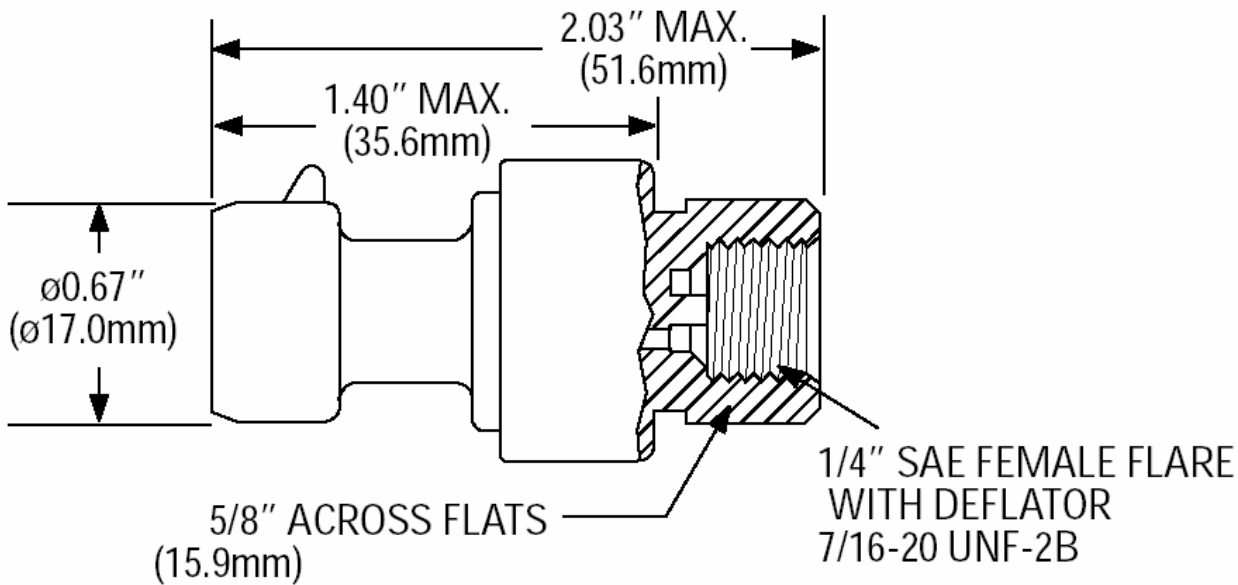


Ratiometric advantages

- Smaller dimensions
- Automotive electrical Packard connection (new world standard)
- IP65 index of protection
- New standard signal $0 \div 5\text{Vdc}$
($0,5 \div 4,5\text{Vdc}$)
- Lower price
- MGE compatible



Ratiometric aspect



probes
SPKT

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Codes and price list for ratiometric



Carel code	Characteristics	List price in €	List price in \$
SPKT0053R0	0 ÷ 75psi (5bar)	39,00€	37,10\$
SPKT0013R0	0 ÷ 150psi (10bar)	39,00€	37,10\$
SPKT0033R0	0 ÷ 500psi (34bar)	39,00€	37,10\$

Codes and price list for 4÷20mA



Carel code	Characteristics	List price in €	List price in \$
SPKT0021C0	-0.5 ÷ 7Bar	58,00€	55,10\$
SPKT0011C0	0 ÷ 10Bar	58,00€	55,10\$
SPKT0031C0	0 ÷ 30Bar	58,00€	55,10\$
SPK1000000	-0.5 ÷ 7Bar	85,00€	80,80\$
SPK2500000	0 ÷ 25Bar	85,00€	80,80\$
SPK3000000	0 ÷ 30Bar	85,00€	80,80\$

Codes and price list for cables

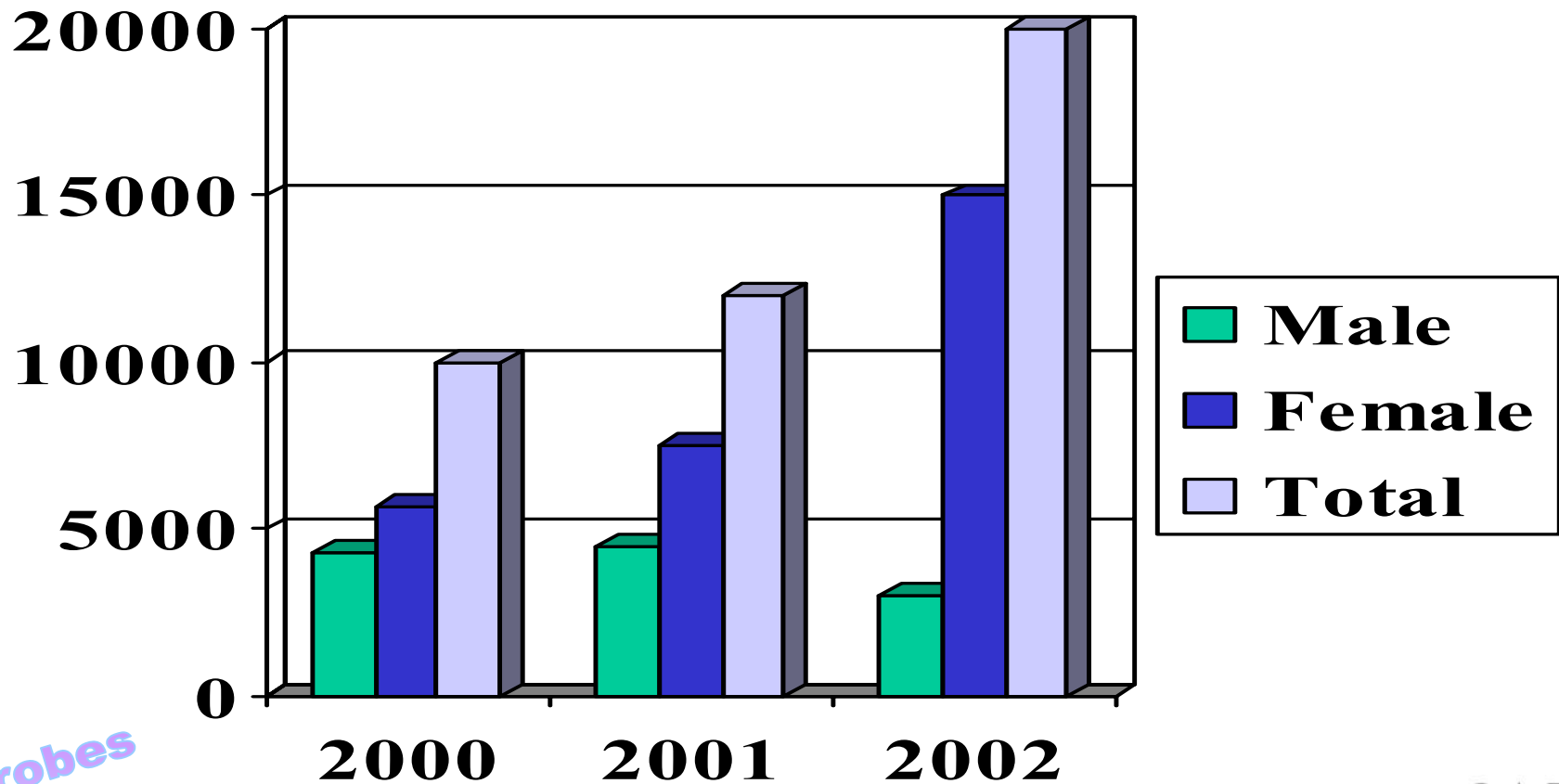


Carel code	Characteristics	List price in €	List price in \$
SPKC002300	2m	4, 10€	3, 90\$
SPKC005300	5m	6, 80€	6, 50\$

The target

- The target for the transducer families, is to be more aggressive
- in the market
 - increasing the volumes and reducing the number of codes (standardizing)
 - reducing the price
 - keeping the same turnover
 - supplying OMEs directly: for example Carel is supplying Trane directly with 9000 pieces per year!

Increase volumes, reduce codes



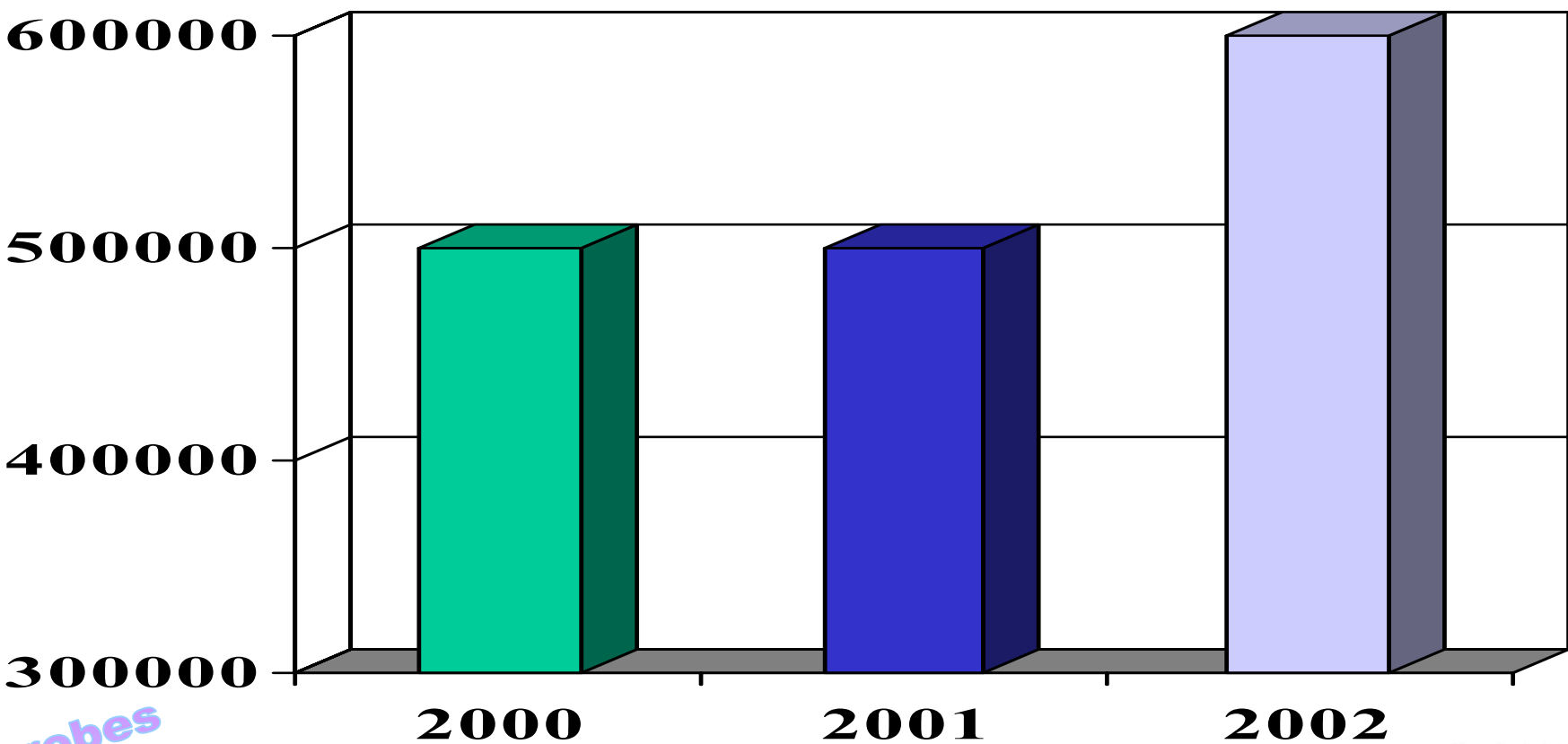
probes
SPKT

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Keep the turnover



Turnover in €



probes
SPKT

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Price reduction



Sensor type	Old price	→	New price
Male 4 ÷ 20mA	99€	→	85€
Female 4 ÷ 20mA	78,10	→	58€

Availability

Carel code	Substitute code	Price list validity	Availability	Last order date for old codes
SPKT0053R0	-	March 2002	Under evaluation	-
SPKT0013R0	-	March 2002	March 2002	-
SPKT0033R0	-	March 2002	March 2002	-
SPKT0021C0	SPK4000001	March 2002	March 2002	Jun 2002
SPKT0011C0	SPK4500001	March 2002	March 2002	Jun 2002
SPKT0031C0	SPK5000001 SPK6000001	March 2002	March 2002	Jun 2002
SPK1000000	-	March 2002	Immediately	-
SPK2500000	-	March 2002	Immediately	-
SPK3000000	-	March 2002	Immediately	-
SPKC002300	-	March 2002	Immediately	-
SPKC005300	-	March 2002	Immediately	-



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