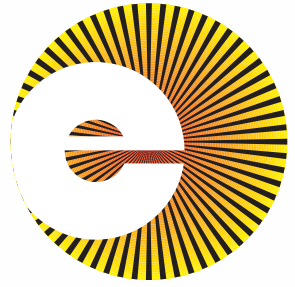


eltherm[®]
innovations in heat tracing



HEATED HOSES
HEATED LINES
HEATED TUBING BUNDLES
AND ACCESSORIES



Important information

eltherm standard heated hoses are available for temperatures up to 250°C and a pressure range up to 500 bar (depends on the diameter). Heated hoses above 250°C are available upon request.

We are also able to offer heated hoses for applications in hazardous areas. The construction of the so called Ex-Heated-Hoses differs to our standard types in the use of Ex-approved heating components. For example heating cable, heating tapes, termination kits, temperature sensors (Ex-PT100), outer sheath and devices for measurement and control. Considering the fact that applications in hazardous areas require complicated and complex solutions please contact our Eltherm engineers and they will offer individual and economical solutions to your heating problems. Upon request we send you all ex approvals and certificates including the delivery of the products.





You can find the ordering key for the heated hoses with standard length on page 20. And on page 21 the heated hoses for termination at site. Questionnaire on page 22 helps you and our engineering department to fix the specification of the heated hose.

The information and advertising statements in this product catalogue, regardless of type, in particular descriptions, illustrations, drawings, patterns, and data concerning quality, design, composition, performance, consumption and applicability as well as dimensions of the range of products are subject to alterations unless they are expressly stated as binding. They do not represent any assurances or guarantees, regardless of type. Slight deviations from the product information are regardless as authorized, as far as they are not considered to be unacceptable to the customer. The right to amend errors and technical data is reserved.

For use of customers own medium carrier we are not responsible for quality and suitability in any gurantee matter.

Fluoropolymer materials allow permeation of gases typically encountered in gas sampling and / or analysis applications. This may or may not affect the measurement accuracy attainable with the system. The buyer is responsible for system design and product specification that takes this into consideration and agrees that the seller is not responsible for problems in the buyer's system that are related to the permeation of gases through the tube wall.

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Heated Hoses at a glance

Construction and function

Heated hoses are the ideal solution for flexible transportation of liquid or gas substances without heat loss.

The necessary temperature, power, application, and outer protection material determine the choice of the heated hose technique.

Gas substances are channeled from the measurement point to the analysis instrument in the analysis technique, i.e. in trash burning ovens, refineries, chemical industry, motor exhaust analysis, etc. For these applications the gases are to be freeze protected, protected against condensation, or guarantee for constant temperatures up to 250°C.



All heated hose types from eltherm GmbH can be used in hazardous areas under certain considerations.

Under certain circumstances, terms and approvals heated hoses can be used in hazardous areas. As an **ATEX** certified company (IBExU 09 ATEX Q006) Eltherm GmbH full fills the high level security standard of the Ex-guiding rules 94/9/EC. With our **ATEX** approved heating components like heating cable, heating tapes, connection kits, temperature sensors and controllers we supply heated hoses for applications in hazardous areas. Caused by complexity of possible Ex-area applications please contact our engineering department.

Application in general

- Frost protection for different media
- Prevention of condensation
- Maintenance of liquids or gases at operational temperature
- Transportation of gas samples from the measurement point to an analyzer
- Medium transportation of high viscosity materials in a fluid state
- Medium transportation where certain temperatures are essential for the fabrication characteristic
- Medium carrier must be transportable or moveable due to a mobile supply station

Application examples

- Analysis Measurement
- Hot Melt Machines
- Polyurethane foaming equipment
- Wax processing equipment
- Bitumen processing equipment
- Heavy oil processing equipment
- Food processing equipment
- Filling Machines



Application Ranges

▶ Chemical Industry

▶ Glueing Systems

Exhaust Monitoring in power plants

▶ Cable Carrier Systems

Process gas monitoring



Application ranges

▶ Tank filling machines

▶ Car exhaust measurement

▶ Painting systems for Automotive Industry

▶ Surface Protection

▶ Glue Robots for car body compound

▶ Glue Robots for car windcreens compound

Water analysis systems

Chemical Hoses

Ex Heated Hoses for Analysis Technique Type ELH/a... up to 250°C

ELH/a ...

Transportation of gas substances from the measurement point (i.e. chimney, connection on a heated measurement probe) to the analysis measurement unit e.g. mass spectrometer, gas chromatograph etc. Installed in a system or as transportable device (i.e. exhaust measurement unit).

Background of the application

- Condensation is not allowed to build up in gas. This would cause sedimentation and clogging inside the analysis line, acidification drops are built.
- Differences in the gas temperatures on the way to the analyzer can cause inaccurate values
- Prevention of dropping below the dew point, especially by exhaust of gases. The dew point of the fossil fuel is between 100°C and 190°C, depending on the sulfur content.

Application Examples:

- Coal, oil and gas heating units
- Exhaust supervision in power supply stations
- Trash burning stations
- Process gases in refineries, petro-chemical and chemical industry
- Air condition monitoring
- Motor exhaust measurement
- Freeze protection in the water analysis

Technical Data

Heating Power 10 to 250 W/m
 Max. Length 0.3 to 110 m
 Nominal diameter 4 to 16 mm
 Operation Temperatures max. 250°C (higher temperatures upon request)
 Nominal Voltage 24 V, 110 V, 230 V, 400 V
 Temperature Sensor PT 100, thermocouples

Various Designs

ELH/a: With a fixed inner hose of PTFE
 ELH/ad: With a fixed inner hose of PTFE, steel wire braiding and RSL-fittings on both sides
 ELH/ak: With a fixed copper inner hose
 ELH/ae: With a fixed stainless steel inner hose

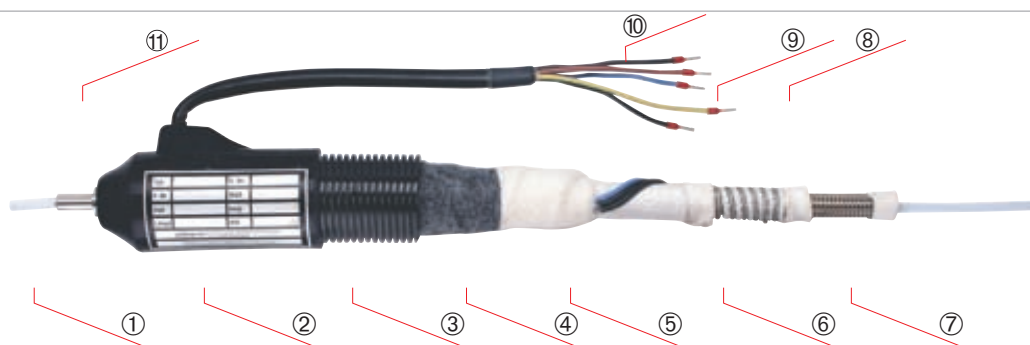


Type Supplement

ELH/ /none: Standard polyamide braiding
 ELH/ /i: Exchangeable inner hose of PTFE
 ELH/ /T: Outer protection "step-proof" metal corrugated hose with PVC cover
 ELH/ /iT: Exchangeable inner hose of PTFE and "step proof" outer protection
 ELH/ /w: Corrugated piping
 ELH/ /Ex: For hazardous areas

Termination to length

Inner hose PTFE
 Exchangeable PTFE
 PTFE with braiding and RSL fittings on both sides
 Stainless steel
 Silicone
 Tube bundle
 Outer Sheath Polyamide braiding
 Corrugated piping
 Metal braiding
 Plugs upon customer's requirements



- ① PTFE inner hose (exchangeable)
- ② Silicone end cap – End termination
- ③ Outer Sheath
- ④ + ⑤ Insulation
- ⑥ Spacer
- ⑦ Fixed inner hose
- ⑧ PTFE insulated heating cable
- ⑨ Additional cable
- ⑩ Power supply cable and Temperature sensor cable
- ⑪ Fixed stainless steel inner hose

Construction of heated hose

Technical Details for Analytic Heated Hoses

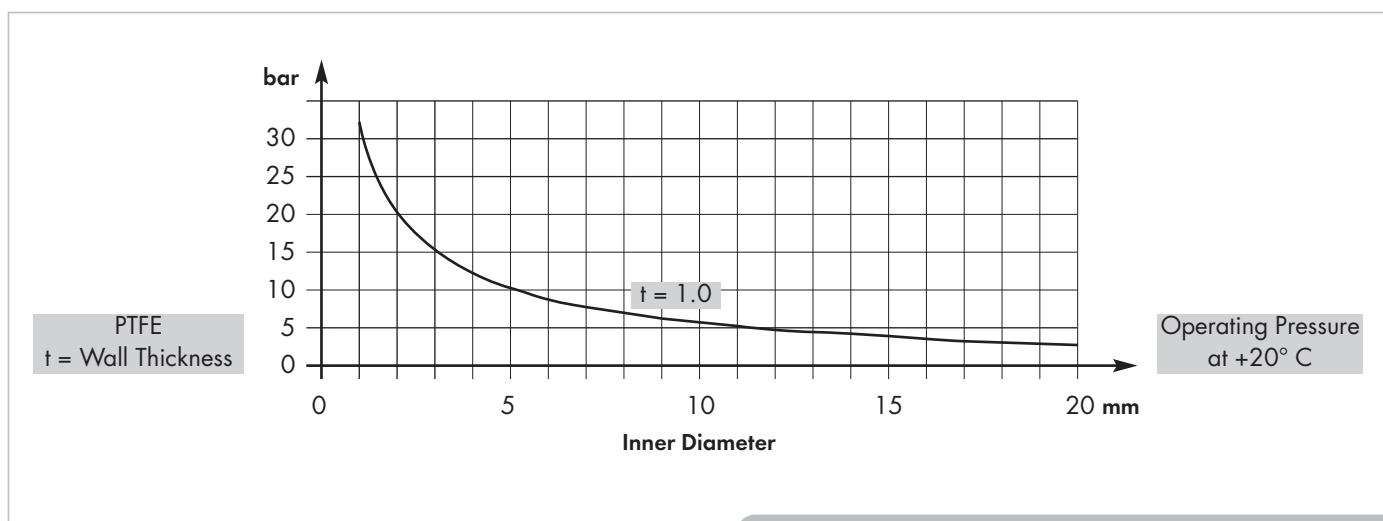
Table of heating power at 230/400 Volts for Standard Analytic Hoses

Type a/ad/ae	DN	4	6	8	10	
Heating power at 100°C	W/m	75	80	90	100	
max. Length	m	70	65	60	55	
Heating power at 200°C	W/m	80	90	100	110	additional diameters upon request
max. Length	m	65	60	55	50	
Heating power at 250°C	W/m	95	110	120	130	
max. Length	m	40	35	30	25	

Type ai/adi	DN	4	6	8	10	
Heating power at 100°C	W/m	75	80	90	100	
max. Length	m	75	70	68	55	
Heating power at 200°C	W/m	80	90	100	110	additional diameters upon request
max. Length	m	65	60	55	50	
Heating power at 250°C	W/m	95	110	120	130	
max. Length	m	40	35	30	25	

Heated Hose outer Sheath

Type	DN	4	6	8	10	
Polyamid braiding						
min. Bending radius ad	mm	125	150	170	185	
min. Bending radius a	mm	200	200	200	200	
min. Bending radius ae	mm	250	250	250	280	
Outer diameter at 200°C	mm	45	45	45	45	
Outer diameter at 250°C	mm	45	49	49	49	
Corrugated piping						
min. Bending radius ad	mm	150	170	185	210	additional diameters upon request
min. Bending radius a	mm	200	200	200	200	
min. Bending radius ae	mm	250	250	250	280	
Outer diameter at 200°C	mm	42.5	42.5	42.5	42.5	
Outer diameter at 250°C	mm	42.5	42.5	42.5	54.5	
Metal corrugated hose with PVC cover						
min. Bending radius ad	mm	230	230	230	280	
min. Bending radius a	mm	200	200	200	200	
min. Bending radius ae	mm	250	250	250	280	
Outer diameter at 200°C	mm	42	42	42	42	
Outer diameter at 250°C	mm	42	42	42	48	



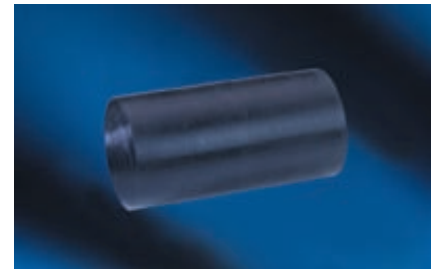
Technical Details for Analytic Heated Hoses

Main-tenance temp. (°C)	Inner-Diameter (mm)	Nominal Voltage (V)	Power at 0°C (W/m)	Power at +10°C (W/m)	Power at operating temp. (W/m)	Hose length *		Outer sheath			Temp. Ex-Zone 1 +2
						at -20°C (m)	at +10°C (m)	Polyamid-braiding	PA-corrugated	Metal corrugated	
5	4 up to 12	230	13	9.2	11.5	109	161	45 mm	43 mm		T6
30			37	30	20	52	84	45 mm	43 mm		T6
50			40	38	28	65	75	45 mm	43 mm	1 1/4"	T3 (T4)
80			49.5	47	30.5	55	60	45 mm	43 mm		T3
100			49.5	47	26	55	60	45 mm	43 mm		T3
120			66	63	35	40	45	55 mm	55 mm	1 1/2"	T2

Accessories

Termination technique at site for type ELH/sb

Termination set SBA 1
Shrink technique



Termination set SBA 2
Silicone cap with cable entry



Termination set SBA 3
Connection box



Termination set SBA 4
Plastic end cap



Description:
Each set includes the instruction manual.

Ex Standard Heated Pressure for Analysis Technique up to 250° C

Type ELH/md
Type ELH/hd
Type ELH/shd

Function: ELH/md, /hd, /shd

These types are used to heat maintain temperature and transport media without heat loss. For Example oil, fat, wax, sap, tar, paint, water, carbon dioxide, plastic, moulding material, glue, liquid food. Mostly mounted on moveable machine parts (Robots) or units.

Reason of application

- The medium is only free-flowing at a certain temperature and achieves its specific fabrication characteristics at a certain temperature range.
- The medium can only be treated at a certain temperature.
- The medium carrier must be transportable or moveable due to a mobile supply station.

Application Examples

- Compound machinery / hot glue, packaging, label machinery
- Surface protection / tar and painting machinery
- Food processing industry, fill machinery
- Foam machinery, PU-foaming, roof renewal, packaging machinery
- Epoxy sap machinery
- Washing benches, steam cleaner, pipe cleaning
- Fill tubing and silo tubes
- Tanker tubing
- Glass industry, for coating and glueing from thermo glass panels

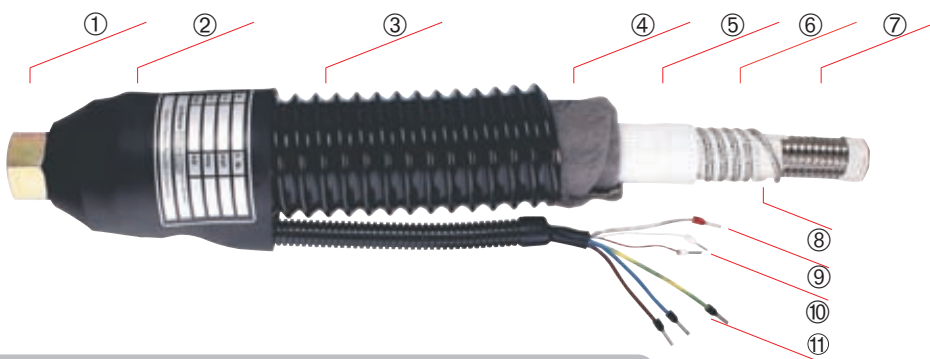
Technical Data

Heating Power	up to 310 W/m (higher power upon request)
Max. Length	0.3 up to 60 m (DN 4) 16 m (DN 25)
Nominal diameter	4 up to 25 mm
Operation Temperatures	up to 250°C (higher temperatures upon request)
Operating Pressure	80 bar (T1, DN 25) 500 bar (T3, DN 6)
Nominal Voltage	12 V, 24 V, 110 V, 230 V, 400 V
Temperature Sensor	PT 100, Thermo couple



Various Designs

Inner hose	PTFE with stainless steelbraiding single=T1, double=T2, triple=T3
Fittings	Steel bichromate coated Stainless steel (see Fitting table page12)
Outer Sheath	PA corrugated PU spirally wound corrugated Polyamide braiding Galvanized steel braiding Stainless steel (AISI 303)
End Cap	Silicone EPDM without silicone Plastic Metal
Cable exit	lateral to the front Led back Front side Under end cap led back Lateral Combinations
Glands	Fixed glands Moveable glands
Additional Cable	On customer's request 0.5 up to 4 mm ² Max. 15 additional cables
Plugs	upon customer's requirements
Controller	ELTC-H-Controller



- ① Fitting
- ② End cap termination
- ③ Outer Sheath
- ④+⑤ Insulation
- ⑥ PTFE-insulated heating cable
- ⑦ PTFE inner hose with pressure layer single, double or triple
- ⑧ Spacer
- ⑨ Temperature sensor
- ⑩ Additional Cables
- ⑪ Connection cable – power supply

Construction of heated hose

Technical Details for Pressure Hoses

Type	DN	4	6	8	10	13	16	20	25
max. Operating Pressure md	bar	275	240	200	175	150	135	100	80
max. Operating Pressure hd	bar	/	275	250	225	200	175	150	130
max. Operating Pressure shd	bar	/	500	475	475	450	363	275	225

Operating Pressure valid for operating temperatures in the range of +20°C to +50°C

Temperature coefficient of correction ELH/md/hd/shd	100°C	150°C	200°C	250°C
	0.98	0.9	0.83	0.6

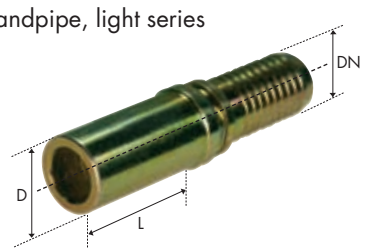
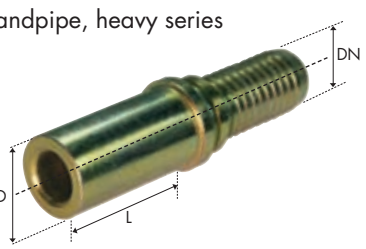
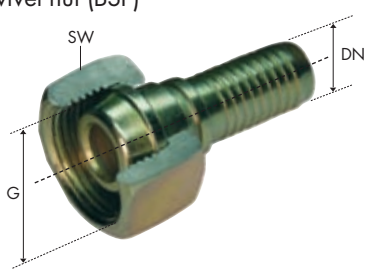
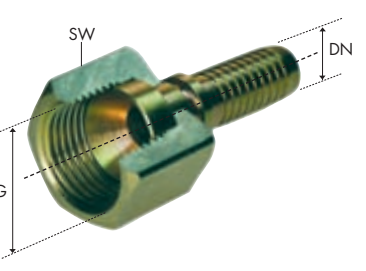
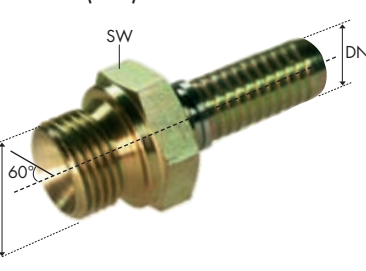
Standard Heating Power at 230/400 Volts

Type	DN	4	6	8	10	13	16	20	25
Heating Power at 100°C	W/m	85	100	110	135	160	180	210	240
max. Length	m	60	55	50	40	35	30	25	20
Heating Power at 200°C	W/m	110	120	130	150	180	225	260	290
max. Length	m	50	45	40	35	30	23	20	18
Heating Power at 250°C	W/m	110	130	150	180	210	240	270	310
max. Length	m	45	40	35	30	25	20	18	16

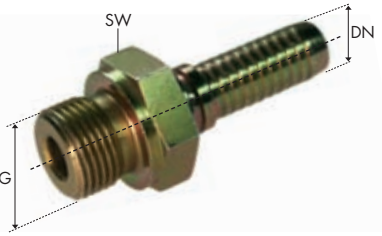
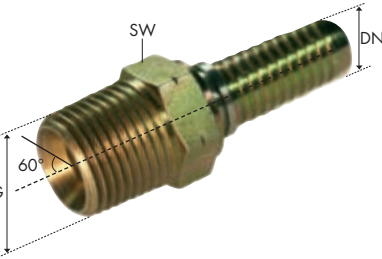
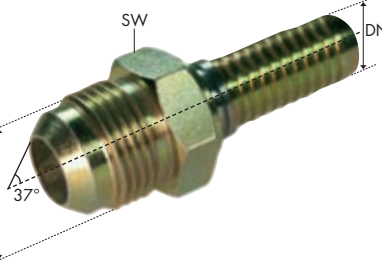
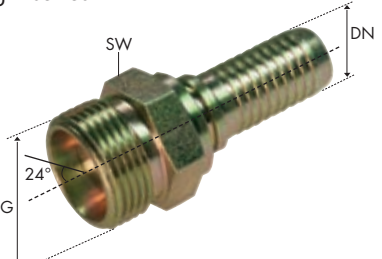
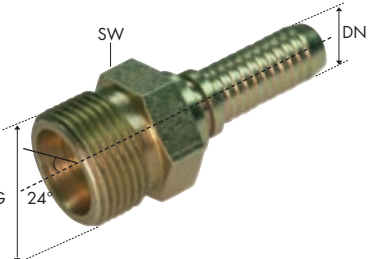
Outer Sheath

Type	DN	4	6	8	10	13	16	20	25
Polyamide Braiding									
min. Bending radius	mm	125	150	170	185	210	250	300	300
Outer diameter at 200°C	mm	45	45	45	45	49	55	61	61
Outer diameter at 250°C	mm	45	49	49	49	55	61	61	68
Stainless steel braiding									
min. Bending radius	mm	135	170	195	200	230	260	300	300
Outer diameter at 200°C	mm	45	45	45	45	49	55	61	61
Outer diameter at 250°C	mm	45	49	49	49	55	61	61	68
Corrugated Piping									
min. Bending radius	mm	150	170	185	210	210	250	300	300
Outer diameter at 200°C	mm	42.5	42.5	42.5	42.5	42.5	54.5	54.5	82.5
Outer diameter at 200–250°C	mm	42.5	42.5	42.5	54.5	54.5	82.5	82.5	82.5
Robot-Corrugated piping									
min. Bending radius	mm	150	170	185	210	210	250	300	300
Outer diameter at 200°C	mm	42.5	42.5	42.5	42.5	42.5	54.5	54.5	82.5
Outer diameter at 200–250°C	mm	42.5	42.5	42.5	54.5	54.5	82.5	82.5	82.5
Polyurethane corrugated piping									
min. Bending radius	mm	125	150	170	185	210	250	300	
Outer diameter at 100°C	mm	42	42	42	42	50	50	60	
Metal corrugated hose with PVC cover									
min. Bending radius	mm	280	280	280	320	320	405	535	535
Outer diameter at 200°C	mm	42	42	42	42	48	48	60	72.6
Outer diameter at 200–250°C	mm	42	42	42	48	48	60	72.5	72.6

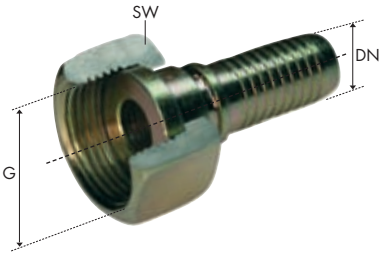
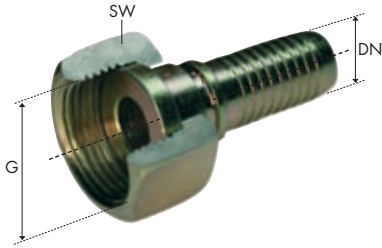
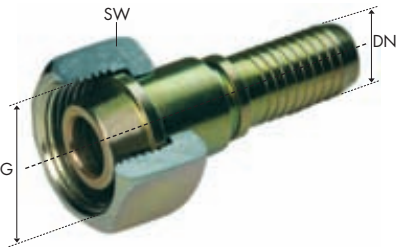
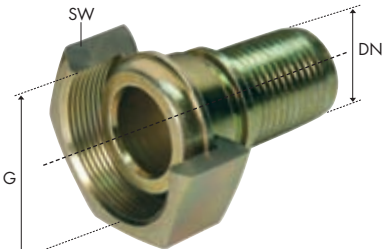

Fitting Table

End Fitting	DN	Thread	to tube mm	Hex	Order Number
RSL standpipe, light series 	05		D 6	L 25 mm	RSL-05
	06		D 8	L 25 mm	RSL-06
	08		D 10	L 26 mm	RSL-08
	10		D 12	L 26 mm	RSL-10
	13		D 15	L 28 mm	RSL-13
	16		D 18	L 30 mm	RSL-16
	20		D 22	L 32 mm	RSL-20
	25		D 28	L 30 mm	RSL-25
	32		D 35	L 35 mm	RSL-32
	40		D 42	L 38 mm	RSL-40
RSS standpipe, heavy series 	05		D 8	L 27 mm	RSS-05
	06		D 10	L 29 mm	RSS-06
	08		D 12	L 29 mm	RSS-08
	10		D 14	L 29 mm	RSS-10
	13		D 16	L 33 mm	RSS-13
	16		D 20	L 39 mm	RSS-16
	20		D 25	L 44 mm	RSS-20
	25		D 30	L 44 mm	RSS-25
	32		D 38	L 41 mm	RSS-32
	DKR Female Sealing head, swivel nut (BSP) 	05	G 1/4"		17
06		G 1/4"		17	DKR-06
08		G 3/8"		19	DKR-08
10		G 3/8"		19	DKR-10
10		G 1/2"		27/24	DKR-10-1/2"
13		G 1/2"		27/24	DKR-13
16		G 3/4"		32	DKR-16
20		G 1"		41	DKR-20
25		G 1"		41	DKR-25
25		G 1 1/4"		50	DKR-25-1 1/4"
32		G 1 1/4"		50	DKR-32
40		G 1 1/2"		56	DKR-40
DKJ Female swivel sealing head 37° (UNF) 	06	UNF 7/16 - 20		14	DKJ-06-7/16
	06	UNF 1/2 - 20		17	DKJ-06
	06	UNF 9/16 - 18		17	DKJ-06-9/16
	08	UNF 9/16 - 18		17	DKJ-08
	10	UNF 3/4 - 16		24	DKJ-10
	13	UNF 3/4 - 16		22/24	DKJ-13
	13	UNF 7/8 - 14		27/32	DKJ-13-7/8
	16	UNF 7/8 - 14		27/32	DKJ-16
	16	UNF 1 1/16 - 12		32	DKJ-16-1 1/16
	20	UNF 1 1/16 - 12		32	DKJ-20
	25	UNF 1 5/16 - 12		41	DKJ-25
	32	UNF 1 5/8 - 12		51	DKJ-32
	40	UNF 1 7/8 - 12		56	DKJ-40
	AGR Male 60° (BSP) 	05	G 1/8"		14
06		G 1/4"		17	AGR-06
08		G 3/8"		22	AGR-08
10		G 3/8"		22	AGR-10
10		G 1/2"		27	AGR-10-1/2"
13		G 1/2"		27	AGR-13
16		G 3/4"		32	AGR-16
20		G 3/4"		32	AGR-20-3/4"
20		G 1"		36	AGR-20
25		G 1"		41	AGR-25
32		G 1 1/4"		50	AGR-32
40		G 1 1/2"		55	AGR-40


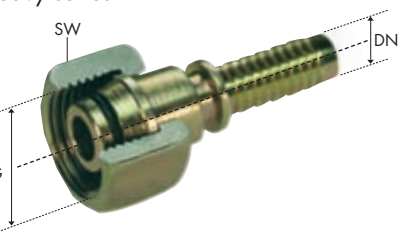
Fitting Table

End Fitting	DN	Thread	to tube mm	Hex	Order Number
AGR F Male flat sealing 	05	G 1/8"		14	AGR-05-flid
	06	G 1/4"		17	AGR-06-flid
	08	G 3/8"		22	AGR-08-flid
	10	G 3/8"		22	AGR-10-flid
	10	G 1/2"		27	AGR-10-flid-1/2"
	13	G 1/2"		27	AGR-13-flid
	16	G 3/4"		32	AGR-16-flid
	20	G 3/4"		32	AGR-20-flid-3/4"
AGN/NPT Male 	06	1/4" 18 NPT		14	AGN-06
	08	3/8" 18 NPT		17	AGN-08
	10	3/8" 18 NPT		19	AGN-10
	10	1/2" 14 NPT		22	AGN-10-1/2"
	13	1/2" 14 NPT		22	AGN-13
	16	3/4" 14 NPT		27	AGN-16
	20	3/4" 14 NPT		27	AGN-20
	20	1" 11 1/2 NPT		36	AGN-20-1
	25	1" 11 1/2 NPT		36	AGN-25
	32	1 1/4" 11 1/2 NPT		46	AGN-32
40	1 1/2" 11 1/2 NPT		50	AGN-40	
AGJ Male UNF 37° 	06	UNF 7/16 - 20		14	AGJ-06-7/16"
	06	UNF 1/2 - 20		14	AGJ-06
	08	UNF 1/2 - 21		14	AGJ-08-1/2"
	08	UNF 9/16 - 18		17	AGJ-08
	10	UNF 9/16 - 18		17	AGJ-10
	13	UNF 3/4 - 16		22	AGJ-13
	16	UNF 7/8 - 14		24	AGJ-16
	20	UNF 1 1/16 - 12		27	AGJ-20
	25	UNF 1 5/16 - 12		36	AGJ-25
	32	UNF 1 5/8 - 12		46	AGJ-32
	40	UNF 1 7/8 - 12		50	AGJ-40
	CEL Metric Male 24° light series 	05	M 12 x 1.5	6	12
06		M 14 x 1.5	8	14	CEL-06
08		M 16 x 1.5	10	17	CEL-08
10		M 18 x 1.5	12	19	CEL-10
13		M 22 x 1.5	15	22	CEL-13
16		M 26 x 1.5	18	27	CEL-16
20		M 30 x 2	22	32	CEL-20
25		M 36 x 2	28	36	CEL-25
32		M 45 x 2	35	46	CEL-32
40		M 52 x 2	42	55	CEL-40
CES Metric Male 24° heavy series 	05	M 16 x 1.5	8	17	CES-05
	06	M 18 x 1.5	10	19	CES-06
	08	M 20 x 1.5	12	22	CES-08
	10	M 22 x 1.5	14	22	CES-10
	13	M 24 x 1.5	16	24	CES-13
	16	M 30 x 2	20	30	CES-16
	20	M 36 x 2	25	36	CES-20
	25	M 42 x 2	30	46	CES-25
	32	M 52 x 2	38	55	CES-32

Fitting Table

End Fitting	DN	Thread	to tube mm	Hex	Order Number
BDN Female swivel flat sealing 	05	G 1/4"		17	BDN-05-G
	06	G 1/4"		17	BDN-06-G
	08	G 3/8"		19	BDN-08-G
	10	G 3/8"		19	BDN-10-G
	10	G 1/2"		27	BDN-10-G-1/2"
	13	G 1/2"		27	BDN-13-G
	16	G 3/4"		32	BDN-16-G
	20	G 1"		41	BDN-20-G
	25	G 1"		41	BDN-25-G
	25	G 1 1/4"		50	BDN-25-G-1 1/4"
	32	G 1 1/4"		50	BDN-32-G
40	G 1 1/2"		56	BDN-40-G	
BDN M Female swivel flat sealing, metric 	05	M 12 x 1.5	6	14	BDN-05-M
	06	M 14 x 1.5	8	17	BDN-06-M
	08	M 16 x 1.5	10	19	BDN-08-M
	10	M 18 x 1.5	12	22	BDN-10-M
	13	M 22 x 1.5	15	27	BDN-13-M
	16	M 26 x 1.5	18	32	BDN-16-M
	20	M 30 x 2	22	36	BDN-20-M
	25	M 36 x 2	28	41	BDN-25-M
	32	M 45 x 2	35	50	BDN-32-M
	40	M 52 x 2	42	60	BDN-32-M
DKL Female sealing head, metric 	05	M 12 x 1.5	6	14	DKL-05
	06	M 14 x 1.5	8	17	DKL-06
	08	M 16 x 1.5	10	19	DKL-08
	10	M 18 x 1.5	12	22	DKL-10
	13	M 22 x 1.5	15	27	DKL-13
	16	M 26 x 1.5	18	32	DKL-16
	20	M 30 x 2	22	36	DKL-20
	25	M 36 x 2	28	41	DKL-25
	32	M 45 x 2	35	50	DKL-32
	40	M 52 x 2	42	60	DKL-40
DKM Female sealing head, metric 	20	M 30 x 1.5	22	36	DKM-20
	25	M 38 x 1.5	28	46	DKM-25
	32	M 45 x 1.5	35	55	DKM-32
	40	M 52 x 1.5	42	60	DKM-40
	50	M 65 x 2	52	75	DKM-50
DKS Female sealing head, metric, heavy series 	06	M 18 x 1.5	10	22	DKS-06
	08	M 20 x 1.5	12	24	DKS-08
	10	M 22 x 1.5	14	27	DKS-10
	13	M 24 x 1.5	16	30	DKS-13
	16	M 30 x 2	20	36	DKS-16
	20	M 36 x 2	25	46	DKS-20
	25	M 42 x 2	30	50	DKS-25
	32	M 52 x 2	38	60	DKS-32

Fitting Table

End Fitting	DN	Thread	to tube mm	Hex	Order Number
DKOL Female swivel light series 	06	M 14 x 1.5	8	17	DKOL-06
	08	M 16 x 1.5	10	19	DKOL-08
	10	M 18 x 1.5	12	22	DKOL-10
	13	M 22 x 1.5	15	27	DKOL-13
	16	M 26 x 1.5	18	32	DKOL-16
	20	M 30 x 2	22	36	DKOL-20
	25	M 36 x 2	28	41	DKOL-25
	32	M 45 x 2	35	50	DKOL-32
	40	M 52 x 2	42	60	DKOL-40
	DKOS Female swivel heavy series 	05	M 16 x 1.5	8	19
06		M 18 x 1.5	10	22	DKOS-06
08		M 20 x 1.5	12	24	DKOS-08
10		M 22 x 1.5	14	27	DKOS-10
13		M 24 x 1.5	16	30	DKOS-13
16		M 30 x 2	20	36	DKOS-16
20		M 36 x 2	25	46	DKOS-20
25		M 42 x 2	30	50	DKOS-25
32		M 52 x 2	38	60	DKOS-32

Material: – Stainless Steel
 – Steel bichromate coated
 – Special materials upon request

Special materials and fittings upon request

Temperature elements, Outer Sheath and End Caps

Temperature controlling and over temperature protection

PT 100, 2-, 3- and 4-wires

Thermocouple Fe-CuNi

Thermocouple NiCr-Ni

PTC

Temperature switch (break contact/make contact) 150....200°C

Option:

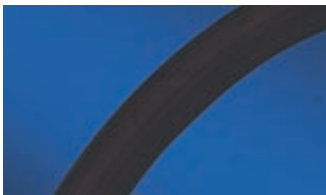
Temperature sensor

Sensor and/or switch exchangeable

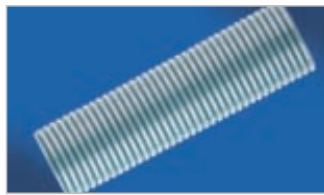


Outer Sheath

Polyamide black



PA corrugated hose



Galvanized steel or stainless steel braiding



PU spirally wound corrugated hose



End Cap

Metal end cap



Silicone/EPDM end cap



Plastic end cap



Connection cable exit

Lateral



Lateral to the front



Front side



Led back



Combination



Measurement and Control



GP3

Description

The controller can be configured for various functions in the factory.

The following types of controller are available from the factory:

- 2-position controller (conventional or PID) with hysteresis (normal case)
- PID-controller with PWM (= Pulse-Width-Modulation) output (quasi-continuous)
- PID-continuous controller
- Limiter

Function

The temperature controller switches the connected heating based on a given set-point. The limiter ensures that the heating is switched off when reaching the over temperature. Further temperature limits can be monitored. If a limit is exceeded or not reached, potential free contacts are switched (K3/K4)

Technical data GP3

Electronic temperature controller

Nominal Voltage230 V, 50 Hz

Power consumptionmax. 5 VA

Temperature range0° C up to 400° C

Switching capacity16A

Accuracy:

- with Pt100 $\pm(0.5^\circ\text{C} + 0.5\% \text{ v.M.})$

- with thermocouple type KT

- with thermocouple type J $\pm(1.5^\circ\text{C} + 1.5\% \text{ v.M.})$

Resolution (internal)0.1° C (Pt100)
0.4° C (Thermocouples)

HousingPlastic-walled housing with transparent cover, cable gland

IP ratingIP67

Ambient temperature . . .0° C to 40° C

Dimensions213 x 185 x 117 mm (B x H x T)

Connections30 cage pull-terminal screws à 2.5 mm²

Cable glands1 x M20; 3 x M16; 2 x M12; in addition 1 x M20 optional



ex-box DIS



Description

The new eltherm ex-box is a hazardous location temperature controller developed from and by eltherm for customer needs. This product may either be used separately as a controller or limiter or as a controller-limiter combination.

Attributes

- Rugged housing IP 65
- Operation and programming in hazardous area
- Optional hand held controller (ex-control)
- Optional as controller or limiter
- Information transfer with a personal computer
- Fail alarm, high safety
- Switch rating 16A
- Integrated heating circuit monitoring

Technical data ex-box DIS

with ex-box enclosed operation panel:

CertificateIBExU 04 ATEX 1165X

ClassificationII 2G Ex emb [ib] IIC T4

II 2D Ex tD A21 IP 65 T100°C

Housing dimensions170 x 130 x 140 mm (wxhxd)
(incl. cooling device and mounting bracket)

Housing materialAluminium

IP ratingIP 65

Ambient temperature . . .- 32 to 60°C

Cable entrances2 x M20
1 x M25

Display2 x 4 35-Segment LED

Supply Voltage230V +/- 10%

Power Supply230V / 16A, 2-pole

Alarm outputoptically separated 100mA

Bus-cardcurrent loop, intrinsically safe

Measurement entrance . .Pt-100 2/3 core, intrinsically safe

Measurement range . . .-40° C to +300°C

Control rangeover entire measurement range

Control characteristics . .Dual mode controller

Weightapprox. 3.5 kg (without mounting bracket)



ex-box LED



Description

ex-box LED: Same as the ex-box DIS with ex-control except for the following: no personal computer bus-card, but interface and supply (8.2 V 100mA)

green: ok, no heating

orange: ok, heating on

red blinking: Alarm or fault but still ready for operation

red: severe fault, separation from supply

Technical Data ex-box LED

Certificate	IBExU 04 ATEX 1165X
Classification	II 2G Ex emb [ib] IIC T4 II 2D Ex tD A21 IP 65 T100°C
Housing dimensions	170 x 130 x 140 mm (wxhxd) (incl. cooling device and mounting bracket)
Housing material	Aluminium
IP rating	IP 65
Ambient temperature	-32 to 60°C
Cable entrances	2 x M20 1 x M25
Supply Voltage	230V +/- 10%
Power Supply	230V / 16A, 2-pole
Alarm output	optically separated 100mA
Bus-card	intrinsically safe for ex-control
Measurement entrance	Pt-100 2/3 core, intrinsically safe
Measurement range	-40 C° to +300°C
Control range	over entire measurement range
Control characteristics	Dual mode controller
Weight	approx. 3.5 kg (without mounting bracket)

ex-control



Description

Intrinsically safe hand held controller pad, without local power supply, power supply from ex-box, to connection on ex-box.

Technical Data ex-control

Dimensions	135 x 80 x 35 mm (l x w x h)
Classification	II 2G Ex ib IIC T4 II 2D Ex tD A21 IP65 T100°C
IP rating	IP 65
Cable entrance	1.5 m connection cable with 5-pole plug
Display	2 x 4 35-Segment LED with back lighting
Bus-card	intrinsically safe for ex-box LED
Weight	0.5 kg

Programmable Parameters

- Upper set point of adjustable temperature range
- Temperature set point
- Alarm, under-temperature
- Alarm, over-temperature
- Loaded disconnecting
- Bus address 1 – 32
- Adjusting point PT100
- Degree Unit °C and °F

Fault display

- Sensor short
- Sensor cut
- Over-temperature at PT100
- Under-temperature at PT100
- Over-temperature internal
- External Bus fault
- Internal Bus fault
- Internal Hardware fault
- Operation supply fault
- Supply voltage fault

Ordering Key

Ordering Key for Heated Hoses

Heated Hose Type

- md = T1 Medium Pressure Heated Hose
- hd = T2 High Pressure Heated Hose
- shd = T3 Super High Pressure Heated Hose
- a = Analytic Hose, inner hose PTFE
- ai = Analytic Hose, exchangeable inner hose of PTFE
- ad = Analytic Hose, fixed stainless steel inner hose
- adi = Analytic Hose, fixed stainless steel inner hose and exchangeable inner hose of PTFE
- ae = Analytic Hose, stainless steel inner hose

Outer Sheath

- N = Polyamide braiding, black
- gs = Tinned steel braiding
- ss = Stainless steel braiding
- w = PA corrugated hose, black
- T = Metal corrugated hose with PVC cover
- m = Tinned metal corrugated hose
- S = Special types

ELH- **a d i** / **N** / **200** / **25** / **0Ex** / **1** / **12** / **2** / **13.5**

Operating Temperature in °C

Diameter Carrier Hose

Heating Cable type

- Standard = 0
- Standard Ex-Area = 0 Ex
- Self regulating = sb
- Self regulating Ex-Area = sb Ex

Nominal Voltage

- 230 = 1
- 400 = 2
- 110 = 3
- 24 = 4
- 48 = 5
- Special Voltage = S

Temperature Sensor

- Without Sensor = 0
- PT 100 2-wire = 1
- PT 100 3-wire = 2
- Thermocouple type J = 3
- Thermocouple type K = 4
- 2 x PT100 Exi = 5
- 2 x PT100 Exe = 6
- Special sensor type = S

Number of assembled temperature sensors

1-4

Electric supply

- Standard = 1
- Ordering key termination = 2

Length in meter

e.g. 13.5 m

Ordering Key

Ordering Key Termination

Connection side

- Si = Silicone cap without kink protection
- SiK = Silicone cap with kink protection
- Ka = Plastic cap with junction box
- Kav = Plastic cap with junction box and gland to the front side
- Ks = Plastic cap with plug connection
- Ksv = Plastic cap with plug connection and gland to the front side
- Ms = Metal cap, tinned
- Sch = Shrunked end cap
- SBA = Termination set
- S = Special type

Plastic cap up to DN 10 available

Termination side

- = Si
- = SiK
- = Ka
- = Kav
- = Ks
- = Ksv
- = Ms
- = Sch
- = SBA
- = S

Connection Cable

- 1 = Heating and sensor cable led together
- 2 = Heating and sensor cable led different
- 3 = Heating cable exit for sb- and sbEx-Type
- 4 = Termination set SBA 1 for Type ELH/sb
- 5 = Termination set SBA 2 for Type ELH/sb
- 6 = Termination set SBA 3 for Type ELH/sb
- 7 = Termination set SBA 4 for Type ELH/sb
- S = Special Type

Cable Insulation

- 1 = PVC
- 2 = Silicone
- 3 = PTFE
- 4 = Glass cloth
- 5 = Insulation ELSR heating Cable
- S = Special type

ELH- **K a v** / **1** / **1** / **2.5** / **0.5** / **3 3** / **1 5** / **1** / **S i K**

Length of connection cable (m)

Extension inner hose on both sides in m

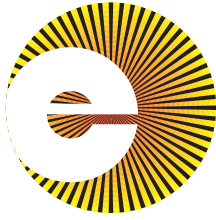
- Plugs**
- No plug = 0
 - 7-pol. = 1
 - 4-pol. only heating = 2
 - Shock-proof-plug = 3
 - no sensor = 0
 - 2-pol. for sensor = 1
 - 3-pol. for sensor = 2
 - Thermocouple plug = 3

- Additional cables**
- without = 0
 - with 1 mm² = 1
 - with 1,5 mm² = 2
 - with 2,5 mm² = 3
 - Total number = Pieces

- without plug for additional cables = 0
- with plug for additional cables (specify type) = 1

Questionnaire

eltherm[®]
innovations in heat tracing



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Questionnaire for Heated Hoses send to: Fax +49 (0) 27 36/44 13-50

Company.:

Address.:

Contact Person/Phone/Fax:

Industrial range:

Project engineer: Date:

Already supplied: Order-no.:

Type of heated hose: ELH/md ELH/hd ELH/shd ELH/a ELH/a/i ELH/ae
 ELH/ad ELH/ad/i ELH/sb..... addition T addition w

Inner Hose: DNmm Material:

Length:mm

Operation temperature: °C

Max. operation press at: °C bar

Burstin pressure:bar

Min. bending radiusmm

Wattage: watts total watts/m

Voltage: volts

Temp.-sensor: type installation position:

Length of conn. cable:mm

Cable exit: lateral to the front to the back

Outer protection sheath: corrugated hose spirally corrugated hose nylon braiding galvanized steel

stainless steel step-proof others

Type of fitting:

material fitting: free-cutting steel, bichromated coated stainless steel AISI 303

stainless steel AISI 316 Ti

Customers delivered additional cables:mm²total number of wires

Time of delivery:

Remarks:

Description

Some applications require a very special construction of the heated hose. eltherm's range of products for production of heat tracing systems combines high quality heating cables and components in the early planning phase already. This ensures that all heated hoses are exactly tuned to the system requirements and the expectation our customers. Whenever there is a problem with heated hoses eltherm will find a solution which meets the specification, time frame and budget of the project.

Analytic heated hose with heating jacket

To maintain the operating temperature on heated hoses connectors or t-Connectors, the optimal solution is our flexible heating jacket. You can service the connection line after you have opened the Velcro stripes. The heating jacket can also be manufactured for complex forms and shapes of the connector or T-Connector. For the heated line is no extra temperature control necessary.



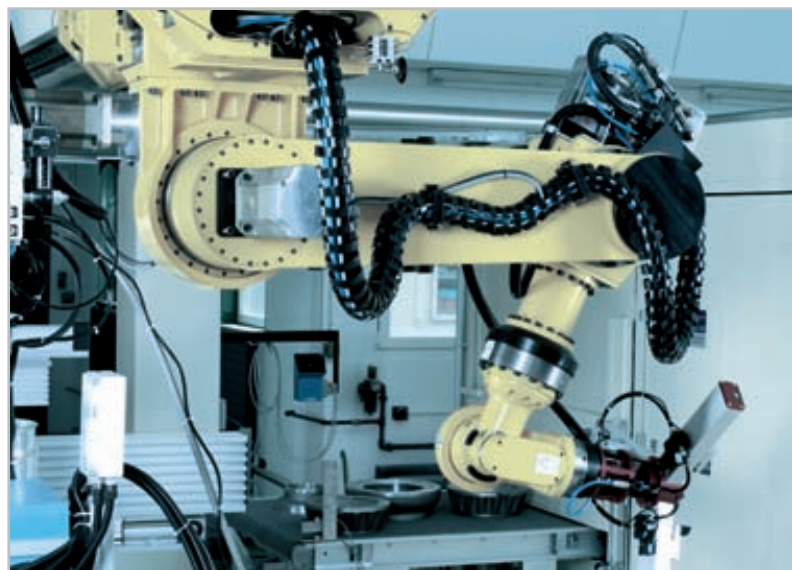
Heated hoses for hazardous areas

Under certain circumstances terms and approvals heated hoses can be used in hazardous areas. As an ATEX certified company (IBExU 09 ATEX Q006) Eltherm Elektrowaermetechnik GmbH full fills the high level security standard of the Ex-guiding rules 94/9/EC. With our ATEX approved heating components like heating cable, heating tapes, connection kits, temperature sensors and controllers we supply heated hoses for applications in hazardous areas. Caused by complexity of possible Ex-area applications please contact our engineering department.

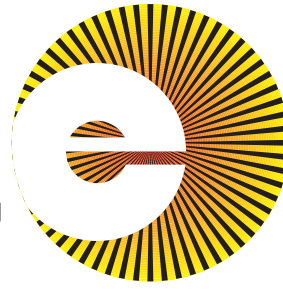


Heated Hoses in the automotive industry

Today adhesive bonding of parts is the reliable standard in the automotive industry and has nearly completely replaced welding. The used adhesives contribute to the rigidity of the car body and therefore as well to the safety. It is not possible to weld high-strength steels, aluminium, magnesium, metal sheets and plastic components. So it is necessary to fix them with glue. To have it hardened in the demanded way, a controlled heating of the glue is needed. This is a typical application for heated hoses. eltherm developed high standard solutions for adhesive bonding in the automotive industry.



eltherm[®]
innovations in heat tracing



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