

線性位置傳感器 Linear Position Transducer



Model code of series type:

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線性位置傳感器 內埋式

Linear Position Transducer HLT 1000-R2

Magnetostrictive	fully integrated	Resolution 100 µm
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Analogue and digital interfaces

CANopen

產品說明：

線性位置傳感器以磁致伸縮為測量原理。

利用該測量原理及計時量測，能精準偵測出位置、距離或是速度。

運作模式以非接觸性與無磨損測量系統為原則，同時，HYDAC HLT 1000-R2 具有耐壓不銹鋼材質設計，能和液壓缸完美整合成一體。

不同的輸出訊號(類比/CANopen)和所有 HYDAC 電子測量控制裝置與標準測量系統(如，PLC 控制系統)相容性佳。

應用範圍主要為作動液壓相關位置訊號傳輸領域。

主要特色：

- 高精度
例如： $\leq \pm 0.05\% \text{ FS}$ for CANopen
- 耐壓高、堅韌佳
- 耐撞、耐震度高
- 優良 EMC 特性
- 非接觸且無磨損
- 物超所值

技術資料：

Input data		
Measurement ranges	50 .. 2500 mm	
Measured variable	Position / distance	
Type	Cylinder integrated	
Hydraulic pipe	Stainless steel 1.4571	
Pressure resistance	450 bar	
Peak pressure	630 bar	
Housing	Stainless steel 1.4301	
Output data		
Output signal Analogue	Current:	4 .. 20 mA or 20 .. 4 mA
	Voltage:	0 .. 10 V or 10 .. 0 V
		0.25 .. 4.75 V or 4.75 .. 0.25 V
		0.5 .. 9.5 V
	0.5 .. 4.5 V	
Output Signal Digital	CANopen	
Measuring accuracy	Analogue	CANopen
Resolution	12 Bit, min. 0.1 mm	0.1 mm
Ohmic resistance to GND	Current: 200 .. 500Ω Spannung: > 2 kΩ	
CAN Interface		ISO/DIS 11898
Accuracy in accordance with DIN 16086	≤ ± 0.5 % FS typ.	≤ ± 0.2 % FS typ.
Non linearity	≤ ± 0.05 % FS	≤ ± 0.02 % FS
Hysteresis	≤ ± 0.1 % FS	≤ ± 0.1 mm
Repeatability	≤ ± 0.1 % FS	≤ ± 0.1 mm
Temperature coefficient	≤ ± 0.01 % FS / °C	≤ ± 0.003 % FS / °C
Sampling rate (internal)	2 ms	2 ms
Installation position and movement speed	No restrictions	
Ambient conditions		
Operating temperature range	-40 .. +85 °C	
Storage temperature range	-40 .. +100 °C, dry	
Fluid temperature range	-40 .. +120°C	
Relative humidity	90 %, non-condensing	
CE - mark	EN 61000-6-1 / 2 / 3 / 4	
Vibration resistance per DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g	
at 5 kHz	≤ 15 g	
Shock resistance to DIN EN 60068-2-27 (11 ms)	≤ 50 g	
Protection class to IEC 60529 ¹⁾	IP 67	
Other data		
Electrical connection ¹⁾	Jacketed cable (PUR) Shouldered flange connector M12x1	
Supply voltage	9 .. 36 V DC	
Residual ripple of supply voltage	≤ 250 mV _{PP}	
Current consumption without output	< 100 mA	
Weight	1000 g, depends on length	

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the complete measuring range

¹⁾ Other versions are possible.

型號代碼：

HLT 1 1 0 0 - R2 - XXX - XXX - XXXX - 000

Design/Geometry type

1 = rod

Type

R2 = Cylinder integrated

Electrical connection

Cable outlet

K01 = single lead, length 1 m

K02 = single lead, length 2 m

K05 = single lead, length 5 m

K10 = single lead, length 10 m

Shouldered flange connector M12x1

(4 pole for Signal output analogue, 5 pole for Signal Output: CANopen)

L06 = 60 mm lead length

L18 = 180 mm lead length

L24 = 240 mm lead length

Output signal

C01 = Analogue 4 .. 20 mA, 3 conductor

C02 = Analogue 20 .. 4 mA, 3 conductor

B01 = analogue 0 .. 10 V

B02 = analogue 10 .. 0 V

G01 = Analogue 0.25 .. 4.75 V

G02 = Analogue 4.75 .. 0.25 V

G03 = Analogue 0.5 .. 9.5 V

G04 = Analogue 0.5 .. 4.5 V

F11 = CANopen

Measuring range in mm (50 to 2500 mm)

Example

0150 = 150 mm

Modification

000 = Standard

003 = special assigned plug (only in conjunction with analogue output signal)

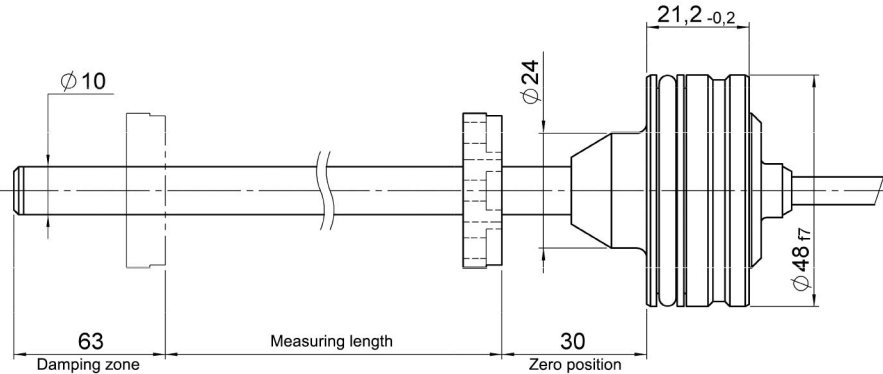
004 = special assigned plug (only in conjunction with analogue output signal)

Notes:
Special models on request.

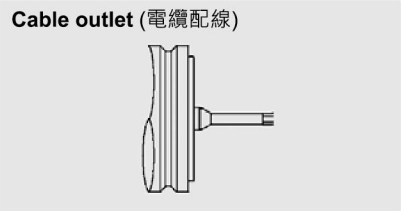
Accessories available: (not supplied with instrument)		
ZBL MR 17.4	Position magnet	Part no.: 6119372
ZBL MR22	Position magnet	Part no.: 6084453
ZBL MR33	Position magnet	Part no.: 6084207

More detailed information on accessories as well as on further accessories, such as female connectors, etc. can be found in the accessories brochure.

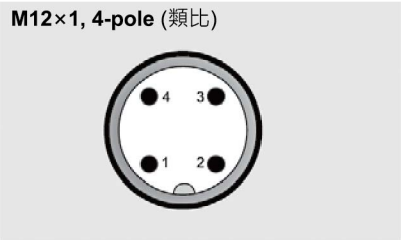
尺寸：



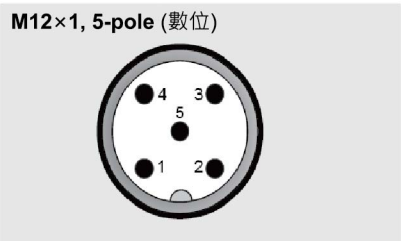
接腳規範：



Core	Analogue	CANopen
brown	+U _B	+U _B
white	0 V	0 V
green	Analogue	CAN_L
yellow	n.c.	CAN_H



Pin	Mod. 000	Mod. 003	Mod. 004
1	+U _B	+U _B	n.c.
2	n.c.	Signal	+U _B
3	0 V	0 V	0 V
4	Signal	n.c.	Signal



Pin	Signal	Description
1	n.c.	
2	+U _B	supply+
3	0 V	supply-
4	CAN_H	bus line dominant high
5	CAN_L	bus line dominant low

提醒：

此目錄為操作條件與應用說明相關訊息。
未提及的操作條件與應用說明，請向相關技術部門詢問。
以上保有技術資料修改，以最新變更為主。



產品說明：

線性位置傳感器以磁致伸縮為測量原理。

利用該測量原理及計時量測，能精準偵測出位置、距離或是速度。

利用非觸性與無磨損測量系統為原則，HYDAC HLT 2100-R1 傳感器有耐壓、管狀不銹鋼材質設計，可直接安裝於液壓缸。

不同的輸出訊號(類比/CANopen)和所有 HYDAC 電子測量控制裝置與標準測量系統(如，PLC 控制系統)相容性佳。

HLT 2100-R1 主要是用於液壓缸位置訊號傳輸半整合方案的定置型應用。

主要特色：

- 高精度
例如： $\leq \pm 0.05\%$ FS for typ.
- 耐壓高、堅韌佳
- 耐撞、耐震度高
- 優良 EMC 特性
- 非接觸且無磨損
- 物超所值

線性位置傳感器

Linear Position Transducer

外露式 Rod Version

HLT 2100-R1

Magnetostrictive

partly integrated

Resolution 5 μ m

Analogue or Digital interface

Logos :
Profibus, CANopen,
DeviceNet,
SSI, EtherCAT

技術資料：

Input data	
Measurement ranges	50 .. 4000 mm
Measured variable	Distance, position, speed
Mechanical connection	Threaded flange M18x1.5
Hydraulic pipe	Stainless steel
Pressure resistance	450 bar
Peak pressure	750 bar
Housing	Aluminium
Output data	
Output signal Analogue	Current: 4 .. 20 mA or 20 .. 4 mA Voltage: 0 .. 10 V or 10 .. 0 V
Output signal Digital	Profibus, CANopen, DeviceNet, SSI, EtherCAT
Resolution	Analogue: 16 Bit; ≥ 0.005 mm Digital: 0.005 mm ¹⁾
Ohmic resistance to GND (only with analogue signal output)	Current: 200 .. 500 Ω voltage: > 2 k Ω
Accuracy	$\leq \pm 0.5\%$ FS typ.
Non linearity	± 0.1 mm to 1,500 mm ± 0.15 mm $> 1,500$ mm
Hysteresis	$\leq \pm 0.1\%$ FS
Repeatability	≤ 0.005 mm - ≤ 0.05 mm (depends on length)
Temperature coefficient	$\leq \pm 0.004\%$ FS / °C (analogue) $\leq \pm 0.0015\%$ FS / °C (digital)
Sampling rate	2 ms
Installation position and movement speed	No orientation restrictions
Ambient conditions	
Operating temperature range	0 .. +70 °C
Storage temperature range	-30 .. +85 °C, dry
Relative humidity	98 %, non-condensing
CE - mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance per DIN EN 60068-2-6 at 50 .. 2000 Hz	≤ 10 g
Shock resistance according to DIN EN 60068-2-27	$\delta 100$ g / 11 ms / half sine
Protection class to IEC 60529 ¹⁾	IP 65
Other data	
Electrical connection	
- Analogue	- Jacketed cable, length 1 m ¹⁾ - Male M16, 6 pole - Male M16, 8 pole
- CANopen, Device Net	Female M12x1, 5 pole + Male M12x1, 5 pole
- Profibus	Female M12x1, 5 pole + Male M12x1, 5 pole + Male M8, 4 pole
- Synchronous Serial Interface	CONTACT male connector, 12 pole
- EtherCAT	2 female M12x1, 4 pole + male M8, 4 pole
Supply voltage	24 V DC $\pm 10\%$
Residual ripple of supply voltage	≤ 250 mV _{PP}
Current consumption without output	< 250 mA
Weight	Depends on length

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the full measuring range
1) further variants on request

型號代碼：

HLT 2 1 0 0 – R1 – XXX – XXX – XXXX – 000

Design/Geometry type

1 = rod

Type

R1 = threaded flange M18x1.5

Electrical connection

Signal Analogue

K01 = Jacketed cable, length 1 m

M06 = male M16, 6 pole

M08 = Male M16, 8 pole

Signal CANopen, DeviceNet

C61 = Female M12x1, 5 pole + male M12x1, 5 pole

Signal Profibus

P61 = female M12x1, 5 pole + male M12x1, 5 pole
+ male M8, 4 pole

Signal Synchronous Serial Interface

S01 = CONTACT male connector, 12 pole

Signal EtherCAT

E51 = 2 female M12x1, 4 pole + male M8, 4 pole

Output signal

C01 = Analogue 4 .. 20 mA, 3 conductor

C02 = Analogue 20 .. 4 mA, 3 conductor

B01 = analogue 0 .. 10 V

B02 = analogue 10 .. 0 V

ETC = EtherCAT

SSI = Synchronous serial interface

F11 = CANopen

F41 = Profibus

DVN = Device Net

Measuring range in mm (50 to 4000 mm)

Example

0150 = 150 mm

Modification

000 = Standard

Notes:

Special models on request.

Accessories available: (not supplied with instrument)

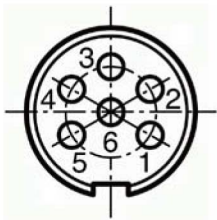
ZBL MR 17.4	Position magnet	Part no.: 6119372
ZBL MR22	Position magnet	Part no.: 6084453
ZBL MR33	Position magnet	Part no.: 6084207
Distance ring	AD 17.4 x ID 13.5x5	Part no.: 3903233
Distance ring	AD 33 x ID 13.5x5	Part no.: 3887829
ZBL MV 63	Position magnet	Part no.: 6084454
ZBL MU 38-20	Position magnet	Part no.: 6084455

More detailed information on accessories as well as on further accessories, such as female connectors, etc. can be found in the accessories brochure.

接腳規範：

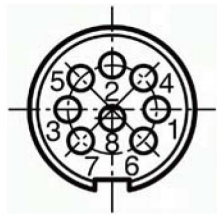
類比：

Male M16, 6 pole



Pin	
1	Signal
2	0 V (analogue output)
3	n.c.
4	n.c.
5	0 V
6	+ U _B

Male M16, 8 pole



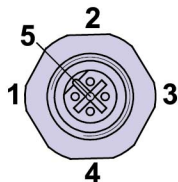
Pin	
1	n.c.
2	0 V (analogue output)
3	n.c.
4	n.c.
5	Signal
6	0 V
7	+ U _B
8	n.c.

Cable outlet (電纜配線)

Lead	
brown	0 V (analogue output)
green	n.c.
yellow	n.c.
grey	Signal
pink	0 V
blue	+ U _B

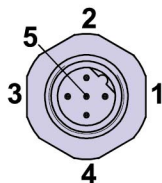
數位：
CANopen / DeviceNet:

Female M12x1, 5 pole, A encoded



Pin	CANopen_OUT	
1	Housing	Shield/housing
2	+U _B	Supply +
3	0 V	Supply -
4	CAN_H	Bus line dominant high
5	CAN_L	Bus line dominant low

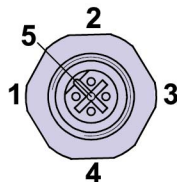
Female M12x1, 5 pole, A encoded



Pin	CANopen_IN	
1	Housing	Shield/housing
2	+U _B	Supply +
3	0 V	Supply -
4	CAN_H	Bus line dominant high
5	CAN_L	Bus line dominant low

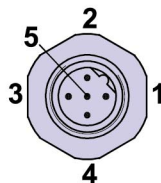
Profibus:

Female M12x1, 5 pole, B encoded



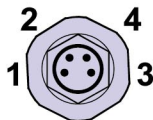
Pin	Profibus_OUT	
1	VP, +5 V DC	
2	Profibus, Data A	
3	0 V	
4	Profibus, Data B	
5	n.c.	
screw connection	Shield/housing	

Female M12x1, 5 pole, B encoded



Pin	Profibus_IN	
1	n.c.	
2	Profibus, Data A	
3	n.c.	
4	Profibus, Data B	
5	n.c.	
screw connection	Shield/housing	

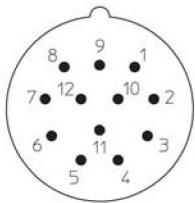
Male M 8x1, 4 pole



Pin	Profibus_IN	
1	+U _B	
2	n.c.	
3	0 V	
4	n.c.	

Synchronous Serial
Interface:

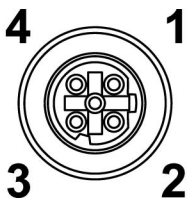
CONTACT male connector, 12 pole



Pin		
1	SSI Clock- IN	
2	SSI Clock+ IN	
3	SSI DATA+ OUT	
4	SSI DATA- OUT	
5	RS 485 + IN/OUT	
6	RS 485 - IN/OUT	
7	n.c.	
8	Direction IN	
9	Preset1 IN	
10	n.c.	
11	+U _B IN	
12	0 V IN	

EtherCAT:

Female M12x1, 4 pole, D encoded



Pin	Port IN / Port OUT	
1	Transmission data +	
2	Received data +	
3	Transmission data -	
4	Received data -	

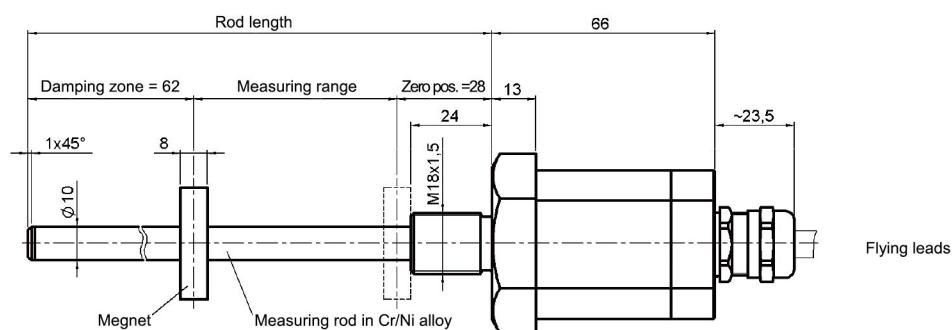
Female M8x1, 4 pole, A encoded



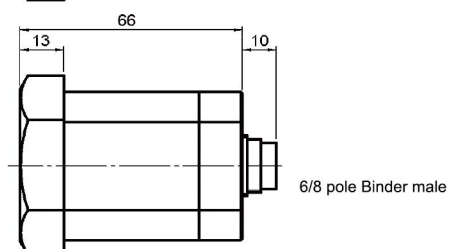
Pin		
1	+U _B	
2	n.c.	
3	0 V	
4	n.c.	

尺寸：

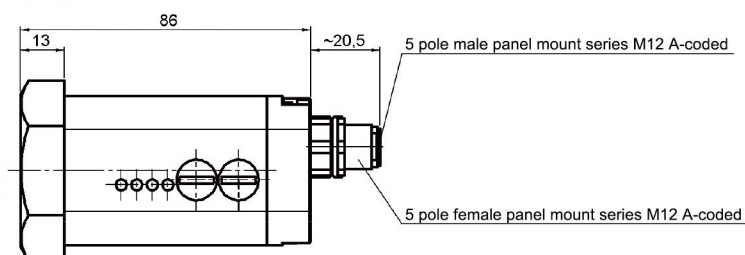
Signal output: analogue (K01)



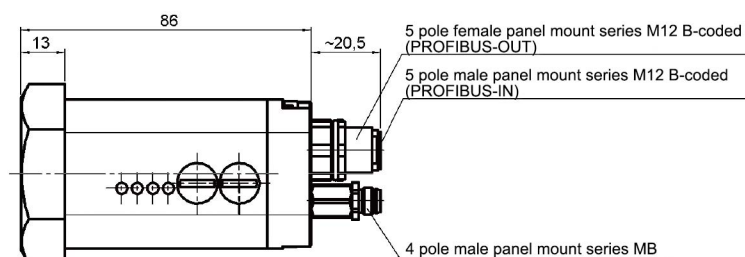
Signal output: analogue (M06, M08)



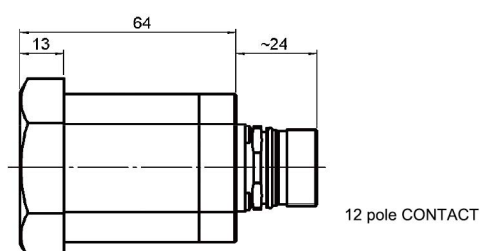
Signal output CANopen, Device Net (C61)



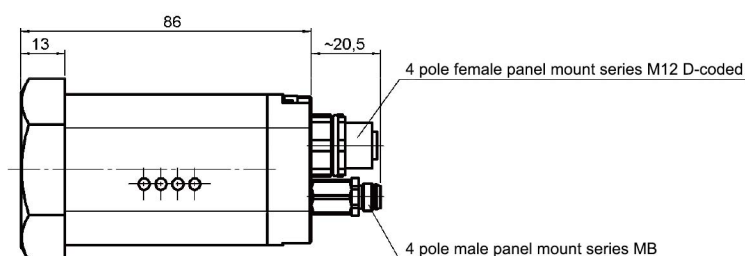
Signal output: Profibus (P61)



Signal output: synchronous serial interface (S01)



Signal output: EtherCAT (E51)



提醒：

此目錄為操作條件與應用說明相關訊息。
未提及的操作條件與應用說明，請向相關技術部門詢問。
以上保有技術資料修改，以最新變更為主。



線性位置傳感器

Linear Position Transducer

浮動式 Flat Housing Design

HLT 2500-F1

Magnetostrictive	Flat profile	Resolution 5 μ m
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Analogue or Digital interface

Logos :
Profibus, CANopen,
DeviceNet,
SSI, EtherCAT

產品說明：

線性位置傳感器以磁致伸縮為測量原理。

利用該測量原理及立時量測，能精準偵測出位置、距離或是速度。

利用非接觸性與無磨損測量系統為原則，HYDACHLT 2500-F1 為平滑鋁製外殼。

不同的輸出訊號(類比/數位)和所有 HYDAC 電子測量控制裝置與標準測量系統(如，PLC 控制系統)相容性佳。

HLT 2500-F1 主要是位置訊號傳輸定置型應用，特別是液壓缸半整合方案不可行時。

主要特色：

- 高精度
例如： $\leq \pm 0.05\%$ FS for typ.
- 外殼堅韌
- 耐撞、耐震度高
- 優良 EMC 特性
- 非接觸且無磨損
- 物超所值

技術資料：

Input data	
Measurement ranges	50 .. 4000 mm
Measured variable	Distance, position, speed
Mechanical Connection	Flat profile, without magnetic guidance
Housing	Aluminium
Output data	
Output signal Analogue	Current: 4 .. 20 mA or 20 .. 4 mA Voltage: 0 .. 10 V or 10 .. 0 V
Output signal Digital	Profibus, CANopen, Device Net, SSI, EtherCAT
Resolution	Analogue: 16 Bit; ≥ 0.005 mm Digital: 0.005 mm ¹⁾
Ohmic resistance to GND (only with analogue signal output)	Current: 200 .. 500 Ω voltage: > 2 k Ω
Accuracy	$\leq \pm 0.5\%$ FS typ.
Non linearity	± 0.1 mm to 1,500 mm ± 0.15 mm > 1,500 mm
Hysteresis	$\leq \pm 0.1\%$ FS
Repeatability	≤ 0.005 mm - ≤ 0.05 mm (depends on length)
Temperature coefficient	$\leq \pm 0.004\%$ FS / °C (analogue) $\leq \pm 0.0015\%$ FS / °C (digital)
Sampling rate	2 ms
Installation position and movement speed	
No orientation restrictions	
Ambient conditions	
Operating temperature range	0 .. +70 °C
Storage temperature range	-30 .. +85 °C, dry
Relative humidity	98 %, non-condensing
CE - mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance per DIN EN 60068-2-6 at 50 .. 2000 Hz	≤ 10 g
Shock resistance according to DIN EN 60068-2-27	≤ 100 g / 11 ms / half sine
Protection class to IEC 60529 ¹⁾	IP 65
Other data	
Electrical connection	- Jacketed cable, length 1 m ¹⁾ - Male M16, 6 pole - Male M16, 8 pole
- CANopen, Device Net	Female M12x1, 5 pole + Male M12x1, 5 pole
- Profibus	Female M12x1, 5 pole + Male M12x1, 5 pole + Male M8, 4 pole
- Synchronous Serial Interface	CONTACT male connector, 12 pole
- EtherCAT	2 female M12x1, 4 pole + male M8, 4 pole
Supply voltage	24 V DC $\pm 10\%$
Residual ripple of supply voltage	≤ 250 mV _{pp}
Current consumption without output	< 250 mA
Weight	Depends on length

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the full measuring range

1) further variants on request

型號代碼：

HLT 2 5 0 0 – F1 – XXX – XXX – XXXX – 000

Design/Geometry type

5 = profile

Type

F1 = Flat profile, without magnetic guidance

Electrical connection

Signal Analogue

K01 = Jacketed cable, length 1 m

M06 = male M16, 6 pole

M08 = Male M16, 8 pole

Signal CANopen, DeviceNet

C61 = Female M12x1, 5 pole + male M12x1, 5 pole

Signal Profibus

P61 = female M12x1, 5 pole + male M12x1, 5 pole
+ male M8, 4 pole

Signal Synchronous Serial Interface

S01 = CONTACT male connector, 12 pole

Signal EtherCAT

E51 = 2 female M12x1, 4 pole + male M8, 4 pole

Output signal

C01 = Analogue 4 .. 20 mA, 3 conductor

C02 = Analogue 20 .. 4 mA, 3 conductor

B01 = analogue 0 .. 10 V

B02 = analogue 10 .. 0 V

ETC = EtherCAT

SSI = Synchronous serial interface

F11 = CANopen

F41 = Profibus

DVN = Device Net

Measuring range in mm (50 to 4000 mm)

Example

0150 = 150 mm

Modification

000 = Standard

Notes:

Special models on request.

Accessories available: (not supplied with instrument)

ZBL Mounting kit

Part no.: 6105653

ZBL MU 38-18 Position magnet

Part no.: 6084456

ZBL MF 55-20 Position magnet

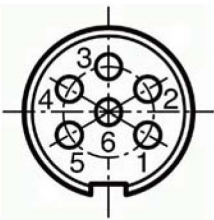
Part no.: 6084457

More detailed information on accessories as well as on further accessories, such as female connectors, etc. can be found in the accessories brochure.

接腳規範：

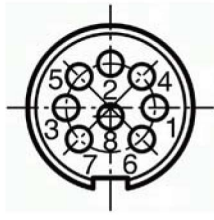
類比：

Male M16, 6 pole



Pin	
1	Signal
2	0 V (analogue output)
3	n.c.
4	n.c.
5	0 V
6	+ U _B

Male M16, 8 pole



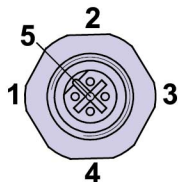
Pin	
1	n.c.
2	0 V (analogue output)
3	n.c.
4	n.c.
5	Signal
6	0 V
7	+ U _B
8	n.c.

Cable outlet (電纜配線)

Lead	
brown	0 V (analogue output)
green	n.c.
yellow	n.c.
grey	Signal
pink	0 V
blue	+ U _B

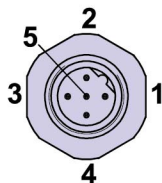
數位：
CANopen / DeviceNet:

Female M12x1, 5 pole, A encoded



Pin	CANopen_OUT	
1	Housing	Shield/housing
2	+U _B	Supply +
3	0 V	Supply -
4	CAN_H	Bus line dominant high
5	CAN_L	Bus line dominant low

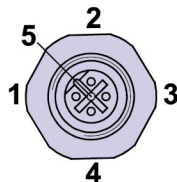
Female M12x1, 5 pole, A encoded



Pin	CANopen_IN	
1	Housing	Shield/housing
2	+U _B	Supply +
3	0 V	Supply -
4	CAN_H	Bus line dominant high
5	CAN_L	Bus line dominant low

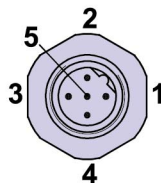
Profibus:

Female M12x1, 5 pole, B encoded



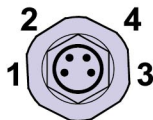
Pin	Profibus_OUT	
1	VP, +5 V DC	
2	Profibus, Data A	
3	0 V	
4	Profibus, Data B	
5	n.c.	
screw connection	Shield/housing	

Female M12x1, 5 pole, B encoded



Pin	Profibus_IN	
1	n.c.	
2	Profibus, Data A	
3	n.c.	
4	Profibus, Data B	
5	n.c.	
screw connection	Shield/housing	

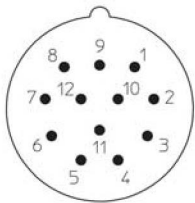
Male M 8x1, 4 pole



Pin	Profibus_IN	
1	+U _B	
2	n.c.	
3	0 V	
4	n.c.	

Synchronous Serial
Interface:

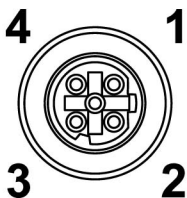
CONTACT male connector, 12 pole



Pin		
1	SSI Clock- IN	
2	SSI Clock+ IN	
3	SSI DATA+ OUT	
4	SSI DATA- OUT	
5	RS 485 + IN/OUT	
6	RS 485 - IN/OUT	
7	n.c.	
8	Direction IN	
9	Preset1 IN	
10	n.c.	
11	+U _B IN	
12	0 V IN	

EtherCAT:

Female M12x1, 4 pole, D encoded



Pin	Port IN / Port OUT	
1	Transmission data +	
2	Received data +	
3	Transmission data -	
4	Received data -	

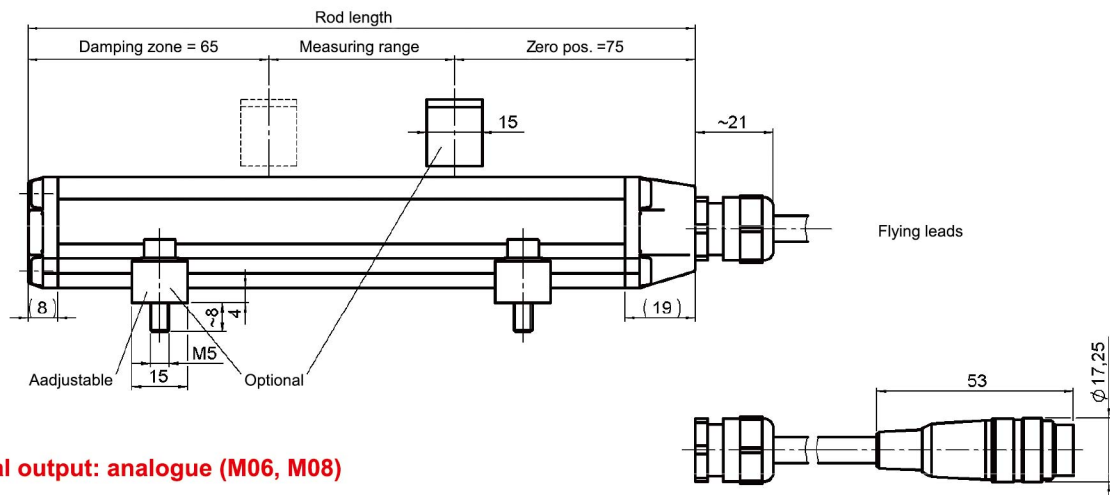
Female M8x1, 4 pole, A encoded



Pin		
1	+U _B	
2	n.c.	
3	0 V	
4	n.c.	

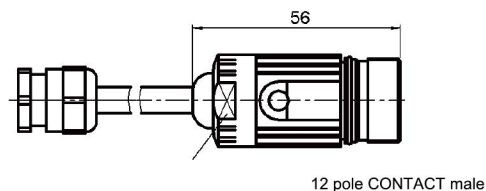
尺寸：

Signal output: analogue (K01)

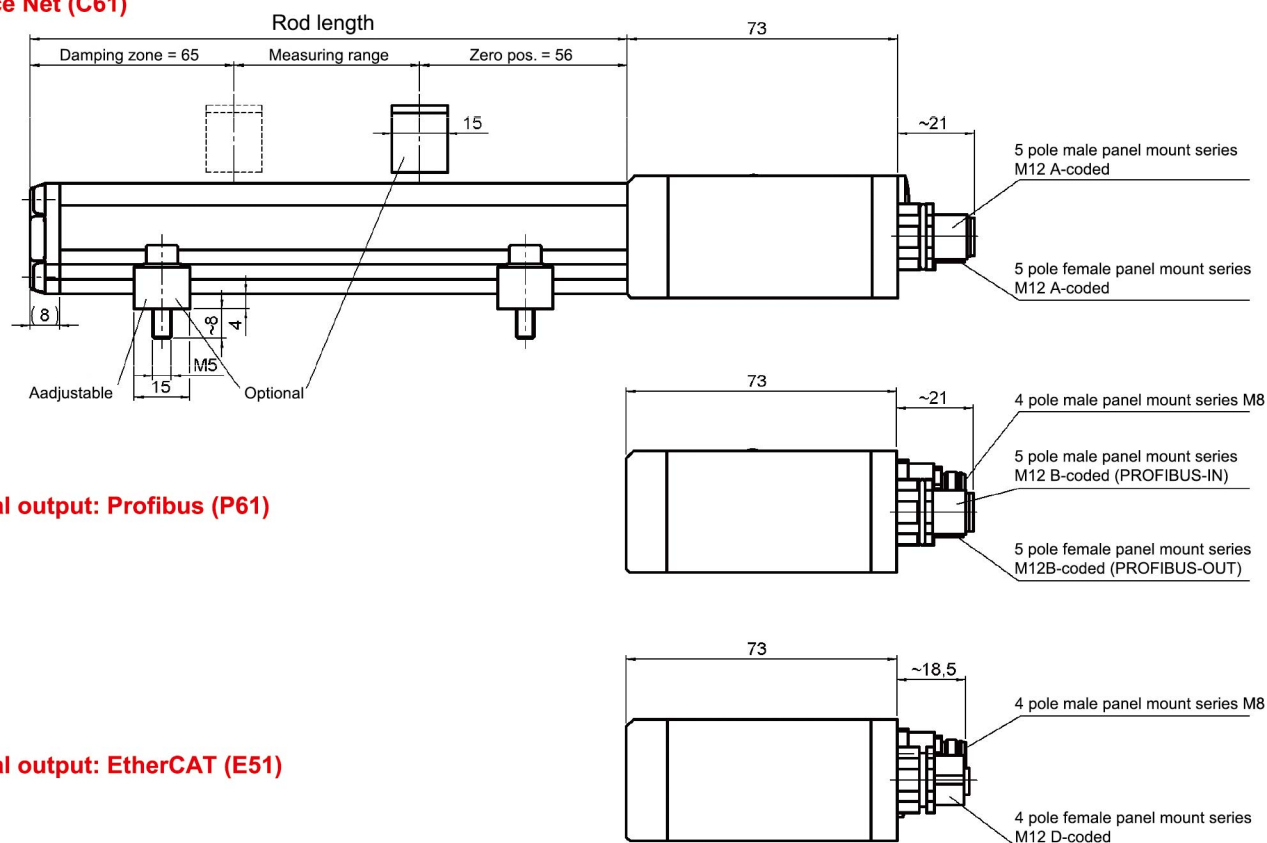


Signal output: analogue (M06, M08)

Signal output: synchronous serial interface (S01)



Signal output CANopen, Device Net (C61)



Signal output: Profibus (P61)

Signal output: EtherCAT (E51)

提醒：

此目錄為操作條件與應用說明相關訊息。

未提及的操作條件與應用說明，請向相關技術部門詢問。

以上保有技術資料修改，以最新變更為主。



線性位置傳感器

Linear Position Transducer

滑動式 Profile Design

HLT 2500-L2

Magnetostrictive

Flat profile

Resolution 5 μ m

Analogue or Digital interface

Logos :
Profibus, CANopen,
DeviceNet,
SSI, EtherCAT

產品說明：

線性位置傳感器以磁致伸縮為測量原理。

利用該測量原理及計時量測，能精準偵測出位置、距離或是速度。

利用非觸性與無磨損測量系統為原則，HYDAC HLT 2500-L2 傳感器有提供輪廓嵌入滑動的位置感應器(magnet)，也有可外部輪廓滑動的位置感應器(magnet)，方便操作人員定位。

不同的輸出訊號(類比/數位)和所有 HYDAC 電子測量控制裝置與標準測量系統(如，PLC 控制系統)相容性佳。

HLT 2500-L2 主要是定置型應用，特別是液壓缸半整合方案不可行時。

主要特色：

- 高精度
例如： $\leq \pm 0.05\%$ FS for typ.
- 外殼堅韌
- 耐撞、耐震度高
- 優良 EMC 特性
- 非接觸且無磨損
- 物超所值

技術資料：

Input data	
Measurement ranges	50 .. 4000 mm
Measured variable	Distance, position, speed
Mechanical Connection	Flat profile, with magnetic guidance
Housing	Aluminium
Output data	
Output signal Analogue	Current: 4 .. 20 mA or 20 .. 4 mA Voltage: 0 .. 10 V or 10 .. 0 V
Output signal Digital	Profibus, CANopen, Device Net, SSI, EtherCAT
Resolution	Analogue: 16 Bit; ≥ 0.005 mm Digital: 0.005 mm ¹⁾
Ohmic resistance to GND (only with analogue signal output)	Current: 200 .. 500 Ω voltage: > 2 k Ω
Accuracy	$\leq \pm 0.5\%$ FS typ.
Non linearity	± 0.1 mm to 1,500 mm ± 0.15 mm $> 1,500$ mm
Hysteresis	$\leq \pm 0.1\%$ FS
Repeatability	≤ 0.005 mm - ≤ 0.05 mm (depends on length)
Temperature coefficient	$\leq \pm 0.004\%$ FS / $^{\circ}$ C (analogue) $\leq \pm 0.0015\%$ FS / $^{\circ}$ C (digital)
Sampling rate	2 ms
Installation position and movement speed	
No orientation restrictions	
Ambient conditions	
Operating temperature range	0 .. $+70^{\circ}$ C
Storage temperature range	-30 .. $+85^{\circ}$ C, dry
Relative humidity	98 %, non-condensing
CE - mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance per DIN EN 60068-2-6 at 50 .. 2000 Hz	≤ 10 g
Shock resistance according to DIN EN 60068-2-27	≤ 100 g / 11 ms / half sine
Protection class to IEC 60529 ¹⁾	IP 65
Other data	
Electrical connection	
- Analogue	- Jacketed cable, length 1 m ¹⁾ - Male M16, 6 pole - Male M16, 8 pole
- CANopen, Device Net	Female M12x1, 5 pole + Male M12x1, 5 pole
- Profibus	Female M12x1, 5 pole + Male M12x1, 5 pole + Male M8, 4 pole
- Synchronous Serial Interface	CONTACT male plug, 12 pole
- EtherCAT	2 female M12x1, 4 pole + male M8, 4 pole
Supply voltage	24 V DC $\pm 10\%$
Residual ripple of supply voltage	≤ 250 mV _{PP}
Current consumption without output	< 250 mA
Weight	Depends on length

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the full measuring range
1) further variants on request

型號代碼：

HLT 2 5 0 0 – L2 – XXX – XXX – XXXX – 000

Design/Geometry type

5 = profile

Type

L2 = Flat profile, with magnetic guidance

Electrical connection

Signal Analogue

K01 = Jacketed cable, length 1 m

M06 = male M16, 6 pole

M08 = Male M16, 8 pole

Signal CANopen, DeviceNet

C61 = Female M12x1, 5 pole + male M12x1, 5 pole

Signal Profibus

P61 = female M12x1, 5 pole + male M12x1, 5 pole
+ male M8, 4 pole

Signal Synchronous Serial Interface

S01 = CONTACT male connector, 12 pole

Signal EtherCAT

E51 = 2 female M12x1, 4 pole + male M8, 4 pole

Output signal

C01 = Analogue 4 .. 20 mA, 3 conductor

C02 = Analogue 20 .. 4 mA, 3 conductor

B01 = Analogue 0 .. 10 V

B02 = Analogue 10 .. 0 V

ETC = EtherCAT

SSI = Synchronous serial interface

F11 = CANopen

F41 = Profibus

DVN = Device Net

Measuring range in mm (50 to 4000 mm)

Example

0150 = 150 mm

Modification

000 = Standard

Notes:

Special models on request.

Accessories: (supplied with the instrument)

ZBL MS35-39 Magnet slide

Part no.: 6105654

Accessories: (not supplied with the instrument)

ZBL MV 63 Position magnet

Part no.: 6084454

ZBL Mounting kit

Part no.: 6105653

ZBL MU 38-20 Position magnet

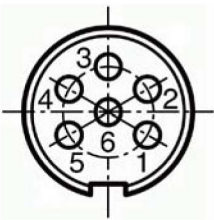
Part no.: 6084454

More detailed information on accessories as well as on further accessories, such as female connectors, etc. can be found in the accessories brochure.

接腳規範：

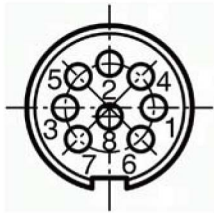
類比：

Male M16, 6 pole



Pin	
1	Signal
2	0 V (analogue output)
3	start point
4	end point
5	0 V
6	+ U _B

Male M16, 8 pole



Pin	
1	n.c.
2	0 V (analogue output)
3	Startpoint
4	end point
5	Signal
6	0 V
7	+ U _B
8	n.c.

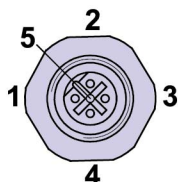
Cable outlet (電纜配線)

Lead	
brown	0 V (analogue output)
green	Startpoint
yellow	end point
grey	Signal
pink	0 V
blue	+ U _B

數位：

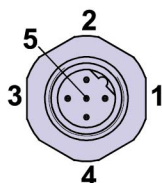
CANopen / DeviceNet:

Female M12x1, 5 pole, A encoded



Pin	CANopen_OUT
1	Housing Shield/housing
2	+U _B Supply +
3	0 V Supply -
4	CAN_H Bus line dominant high
5	CAN_L Bus line dominant low

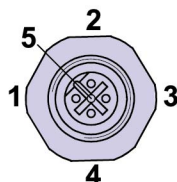
Female M12x1, 5 pole, A encoded



Pin	CANopen_IN
1	Housing Shield/housing
2	+U _B Supply +
3	0 V Supply -
4	CAN_H Bus line dominant high
5	CAN_L Bus line dominant low

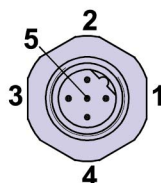
Profibus:

Female M12x1, 5 pole, B encoded



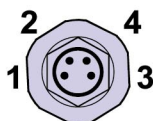
Pin	Profibus_OUT
1	VP, +5 V DC
2	Profibus, Data A
3	0 V
4	Profibus, Data B
5	n.c.
screw connection	Shield/housing

Female M12x1, 5 pole, B encoded



Pin	Profibus_IN
1	n.c.
2	Profibus, Data A
3	n.c.
4	Profibus, Data B
5	n.c.
screw connection	Shield/housing

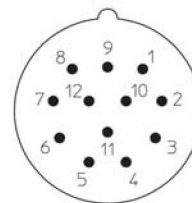
Male M 8x1, 4 pole



Pin	Profibus_IN
1	+U _B
2	n.c.
3	0 V
4	n.c.

Synchronous Serial Interface:

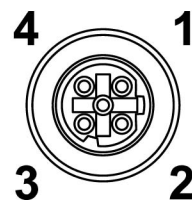
CONTACT male connector, 12 pole



Pin	
1	SSI Clock- IN
2	SSI Clock+ IN
3	SSI DATA+ OUT
4	SSI DATA- OUT
5	RS 485 + IN/OUT
6	RS 485 - IN/OUT
7	n.c.
8	Direction IN
9	Preset1 IN
10	n.c.
11	+U _B IN
12	0 V IN

EtherCAT:

Female M12x1, 4 pole, D encoded



Pin	Port IN / Port OUT
1	Transmission data +
2	Received data +
3	Transmission data -
4	Received data -

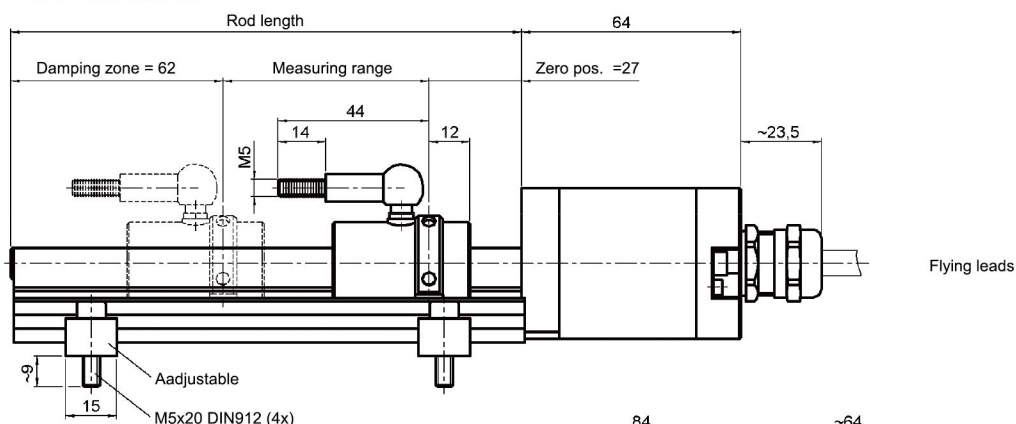
Female M8x1, 4 pole, A encoded



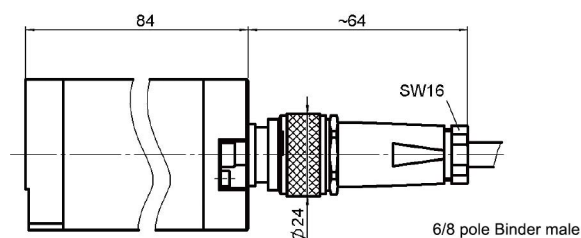
Pin	
1	+U _B
2	n.c.
3	0 V
4	n.c.

尺寸：

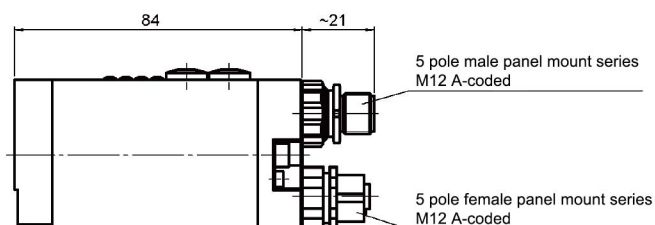
Signal output: analogue (K01)



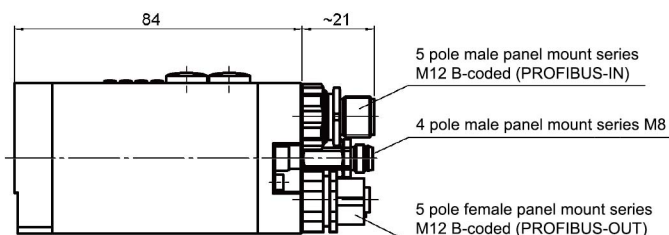
Signal output: analogue (M06, M08)



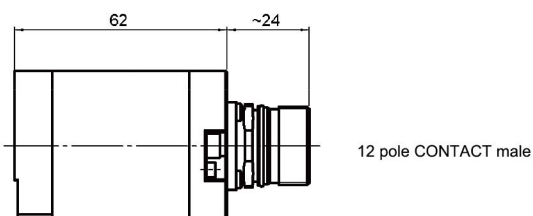
Signal output CANopen, Device Net (C61)



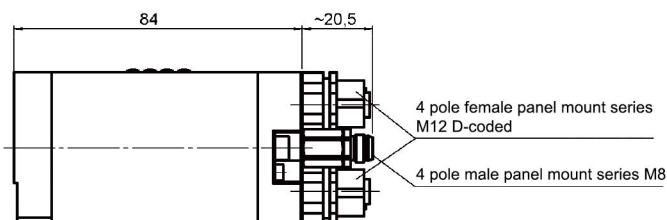
Signal output: Profibus (P61)



Signal output: synchronous serial interface (S01)



Signal output: EtherCAT (E51)



提醒：

此目錄為操作條件與應用說明相關訊息。
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以上保有技術資料修改，以最新變更為主。



線性位置傳感器

Linear Position Transducer

滑動式與浮動式

Flat Profile Design, with Magnetic Guidance

HLT 2550-L2

Magnetostrictive

Flat profile

Resolution 50 μ m

Analogue or Digital interface

Logos :
CANopen,
SSI

產品說明：

由於 HLT 2550-L2 線性位置傳感器的精巧設計，特別適合空間受限的應用領域。依照量測的外形尺寸，HLT 2550-L2 的量測面可以採用不同間隔板(space)，可適用於各種安裝條件。

HLT 2550-L2 的適用量測範圍可達 3m，並且有多種訊號輸出版本(類比、CANopen、SSI)，解析度 50 μ m，全行程(FS)非線性值 $\leq 0.02\%$ 。

HLT 2550-L2 的主要應用範圍，例如，機械工程與液壓工業的一般定位作業；或可當作現有位置量測傳感器(如電阻尺)的無磨損替代品。

主要特色：

- 精巧設計
- 適合空間受限的應用領域
- 適用各種安裝條件
- 量測範圍可達 3 m
- 非接觸且無磨損
- 物超所值

技術資料：

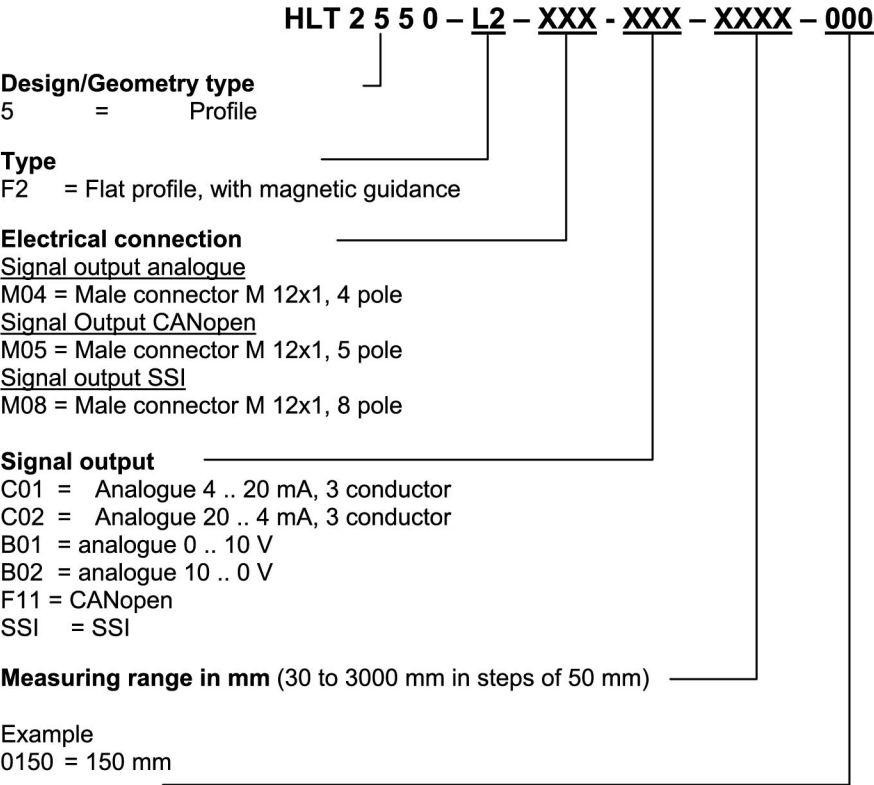
Input data	
Measuring ranges ¹⁾	30 .. 3000 mm in steps of 50 mm
Housing	Measuring body: aluminium
Output data	
Output signal Analogue	Current: 4 .. 20 mA or 20 .. 4 mA Voltage: 0 .. 10 V or 10 .. 0 V
Output signal Digital	CANopen SSI
Resolution	12 bit, ≥ 0.05 mm
Ohmic resistance to GND (only with analogue signal output)	Current: 200 ... 500 Ω Voltage: > 2 k Ω
Non linearity	$\leq \pm 0.02$ % FS, ≥ 0.06 mm
Hysteresis	$\leq \pm 0.1$ mm
Repeatability	$\leq \pm 0.005$ % FS, ≥ 0.05 mm
Temperature coefficient	$\leq \pm 0.01$ % FS / $^{\circ}$ C typ.
Sampling rate (internal)	0.5 ms to 1,200 mm 1.0 ms to 2,400 mm 2.0 ms to 3,000 mm
Installation position and movement speed	No restrictions
Ambient conditions	
Operating temperature range	-20 .. +75 $^{\circ}$ C, optionally -40 .. +75 $^{\circ}$ C
Storage temperature range	-30 .. +85 $^{\circ}$ C, dry
Relative humidity	98 %, non-condensing
CE - mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 50 .. 2000 Hz	≤ 10 g
Shock resistance to DIN EN 60068-2-27	≤ 100 g / 11 ms / half sine
Protection class to IEC 60529	IP 67
Other data	
Electrical connection	M12x1 plug
Supply voltage	24 V DC ± 20 %
Residual ripple of supply voltage	≤ 250 mVpp
Current consumption without output	max. 100 mA
Weight	Depends on length

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the complete measuring range

¹⁾ Other measuring ranges on request.

型號代碼：



Modification
000 = Standard

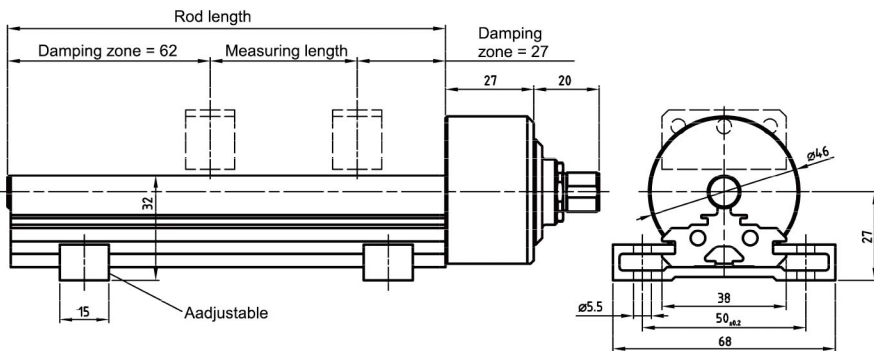
Notes:
Special models on request.
The position magnet must be ordered separately.

Items supplied:

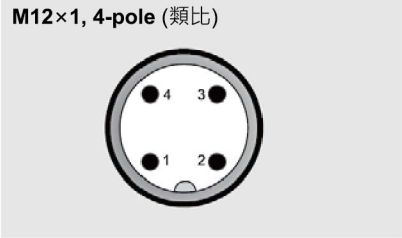
- HLT 2550
- Operating Instructions

Accessories:
Appropriate accessories, such as position magnets, magnet slides or spacers, can be found in the Accessories section of the Electronics brochure.

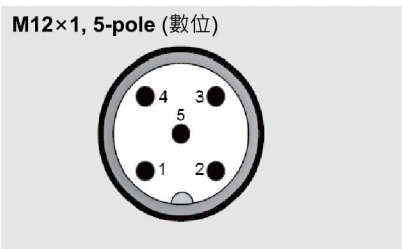
尺寸:



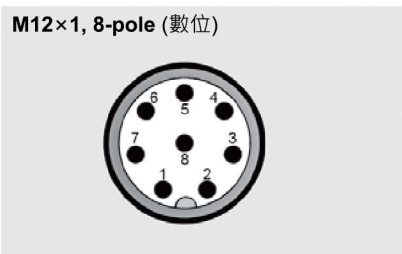
接腳規範：



Pin	
1	+U _B
2	n.c.
3	0 V
4	Signal



Pin	Signal	Description
1	n.c.	
2	+U _B	supply+
3	0 V	supply-
4	CAN_H	bus line dominant high
5	CAN_L	bus line dominant low



Pin	Description
1	Clock input +
2	Clock input -
3	Data output +
4	Data output -
5	n.c.
6	n.c.
7	+U _B
8	0 V

提醒：

此目錄為操作條件與應用說明相關訊息。
未提及的操作條件與應用說明，請向相關技術部門詢問。
以上保有技術資料修改，以最新變更為主。



線性位置傳感器

Linear Position Transducer

圓桿狀外露型 Rod Version

端子連結整合(類比、數位)

Partly-Integrated

HLT 2150-R1

Magnetostrictive

Partly integrated

Resolution 100 μ m

Analogue or Digital interface

產品說明：

HLT 2150-R1 線性位置傳感器的精巧設計，特別適合空間受限的應用領域。各類零配件，諸如位置感應器度(magnet)，可各別設計適用於各特別應用領域。

HLT 2150-R1 的適用量測範圍可達2.5 m，並且有多種訊號輸出(類比、CANopen) 和所有HYDAC電子測量控制產品與標準量測系(如，PLC控制系統)相容性佳。

HLT 2150-R1 的主要應用範圍，例如，應用於機械工程與液壓傳動工業的一般定位作業，亦可與液壓缸整合成具有位置訊號傳輸的油缸單元。

主要特色：

- 精巧設計
- 耐撞、耐振佳
- 優良 EMC 特性
- 量測範圍可達 2.5 m
- 非接觸且無磨損
- 物超所值

技術資料：



Input data		
Measurement ranges	50 .. 2500 mm	
Pressure resistance	450 bar	
Peak pressure	630 bar	
Housing	stainless steel (1.4301 / 1.4571)	
Output data		
Output Signal Analogue	Current: 4 .. 20 mA or 20 .. 4 mA Voltage: 0 .. 10 V or 10 .. 0 V 0.25 .. 4.75 V or 4.75 .. 0.25 V 0.5 .. 9.5 V 0.5 .. 4.5 V	
Output signal Digital	CANopen	
Measuring accuracy	Analogue	CANopen
Resolution	12 bit, ≥ 0.1 mm	0.1 mm
Ohmic resistance to GND	Current: 200 .. 500 Ω Spannung:> 2 k Ω	
Non linearity	$\leq \pm 0.05$ % FS	$\leq \pm 0.02$ % FS
Hysteresis	$\leq \pm 0.1$ % FS	$\leq \pm 0.1$ mm
Repeatability	$\leq \pm 0.1$ % FS	$\leq \pm 0.1$ mm
Temperature coefficient	$\leq \pm 0.01$ % FS / $^{\circ}\text{C}$	$\leq \pm 0.003$ % FS / $^{\circ}\text{C}$
Sampling rate (internal)	2 ms	2 ms
Installation position and movement speed	No restrictions	
Ambient conditions		
Operating temperature range	-40 .. +85 $^{\circ}\text{C}$	
Storage temperature range	-40 .. +100 $^{\circ}\text{C}$, dry	
Fluid temperature range	-40 .. +120 $^{\circ}\text{C}$	
Relative humidity	90 %, non-condensing	
CE - mark	EN 61000-6-1 / 2 / 3 / 4	
Vibration resistance per		
DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g	
at 5 kHz	≤ 15 g	
Shock resistance to	≤ 50 g	
DIN EN 60068-2-27 (11 ms)		
Protection class to IEC 60529	IP 67	
Other data		
Electrical connection	M12x1 plug	
Supply voltage	12 .. 30 V DC	
Residual ripple of supply voltage	≤ 250 mVpp	
Current consumption without output	max. 100 mA	
Weight	Depends on length	

Note: Reverse polarity protection of the supply voltage, excess voltage and short circuit protection are provided.

FS (Full Scale) = relative to the complete measuring range

型號代碼：

HLT 2 1 5 0 – R1 – XXX – XXX – XXXX – 000

Design/Geometry type

1 = rod

Type

R1 = threaded flange M18 x 1.5

Electrical connection

Signal output analogue

M04 = Male connector M 12x1, 4 pole

Signal Output CANopen

M05 = Male connector M 12x1, 5 pole

Signal output

C01 = Analogue 4 .. 20 mA, 3 conductor

C02 = Analogue 20 .. 4 mA, 3 conductor

B01 = analogue 0 .. 10 V

B02 = analogue 10 .. 0 V

F11 = CANopen

G01 = Analogue 0.25 .. 4.75 V

G02 = Analogue 4.75 .. 0.25 V

G03 = Analogue 0.5 .. 9.5 V

G04 = Analogue 0.5 .. 4.5 V

Measuring range in mm (50 to 2500 mm)

Example

0150 = 150 mm

Modification

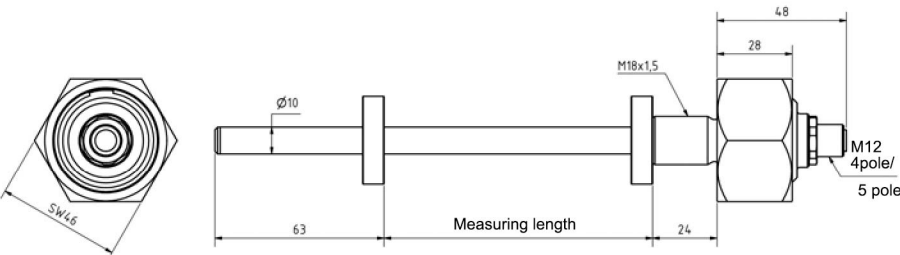
000 = Standard

Notes:
Special models on request.
The position magnet must be ordered separately.

- Items supplied:**
- HLT 2150
 - Operating Instructions

Accessories:
Appropriate accessories, such as position magnets, etc. can be found in the Accessories section of the Electronics brochure.

尺寸：



接腳規範：

M12×1, 4-pole (類比)

Pin	
1	+U _B
2	n.c.
3	0 V
4	Signal

M12×1, 5-pole (數位)

Pin	Signal	Description
1	n.c.	
2	+U _B	supply+
3	0 V	supply-
4	CAN_H	bus line dominant high
5	CAN_L	bus line dominant low

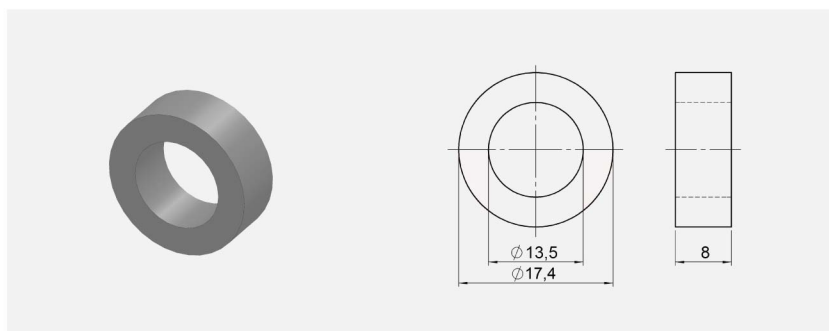
提醒：
此目錄為操作條件與應用說明相關訊息。
未提及的操作條件與應用說明，請向相關技術部門詢問。
以上保有技術資料修改，以最新變更為主。

零配件 位置感應器 (magnet)

HLT 1000、HLT 2000、HNT 1000 位置感應器配件

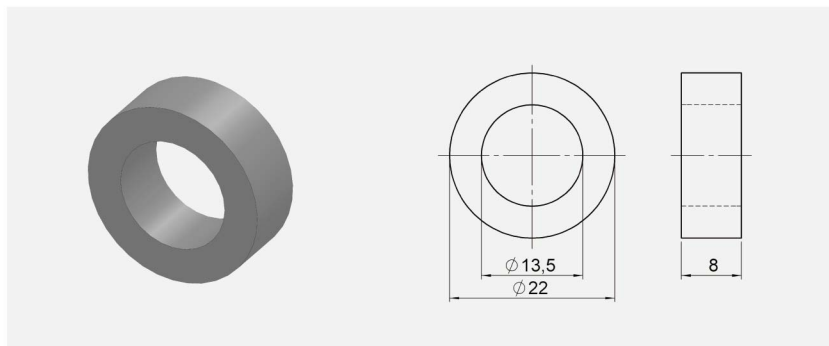
ZBL MR17

Position magnet for HLT 1000,
HLT 2150 and HLT 2100
Part No.: 6119372



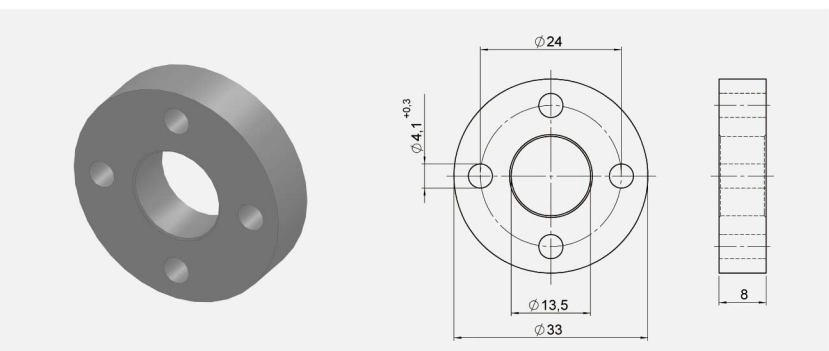
ZBL MR22

Position magnet for HLT 1000,
HLT 2150 and HLT 2100
Part No.: 6084453



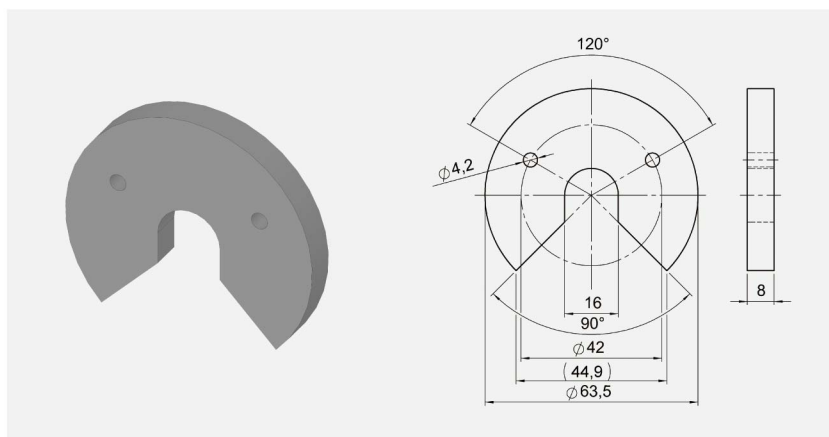
ZBL MR33

Position magnet for HLT 1000,
HLT 2150 and HLT 2100
Part No.: 6084207



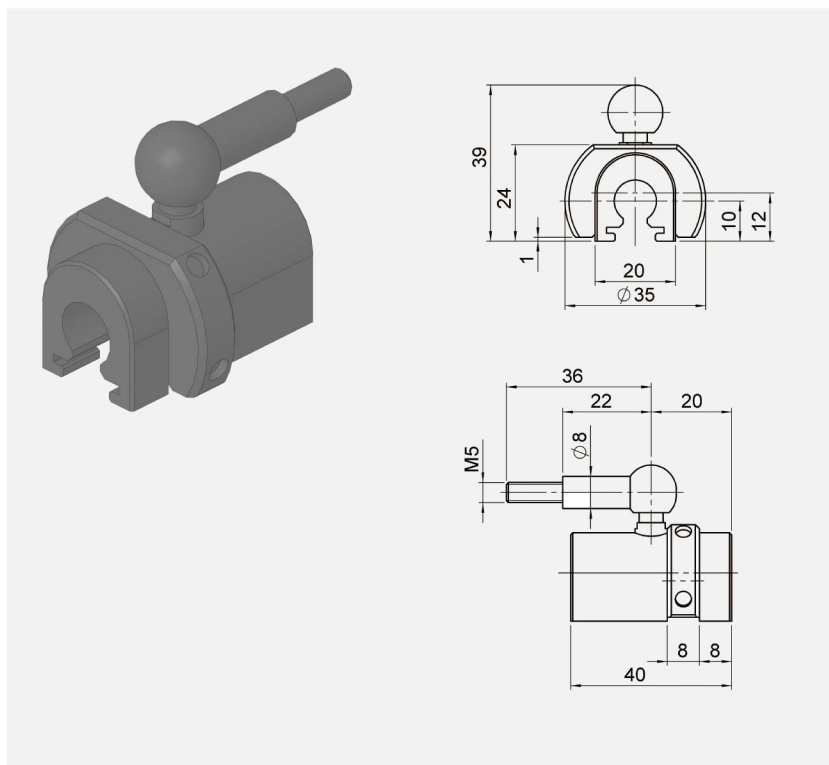
ZBL MV63

Position magnet for HLT 1000,
HLT 2150 and HLT 2100 and
HLT 2500-L2
Part No.: 6084454



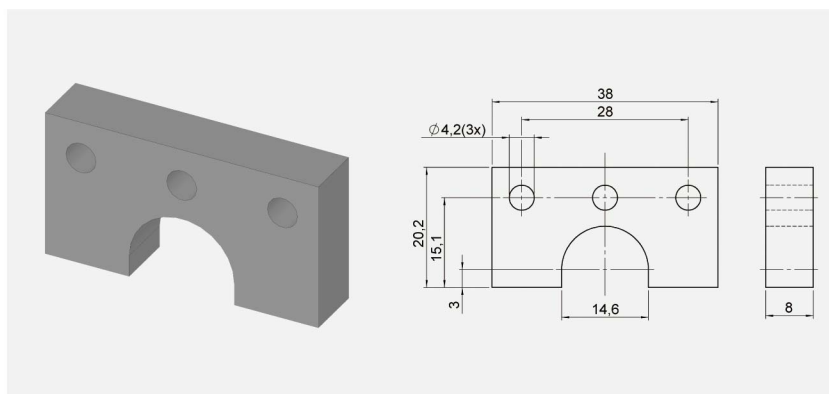
ZBL MS35-39

Position magnet slide for HLT
2500-L2 and HLT 2550
Part No.: 6105654



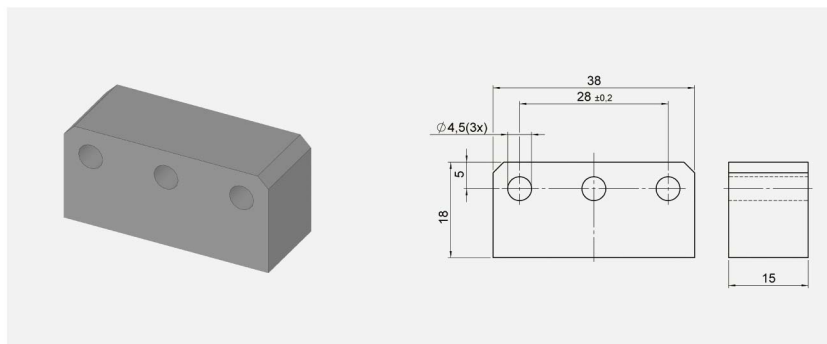
ZBL MU38-20

Position magnet for HLT 1000,
HLT 2150, HLT2100, HLT 2500-
L2 and HLT2550
Part No.: 6084455



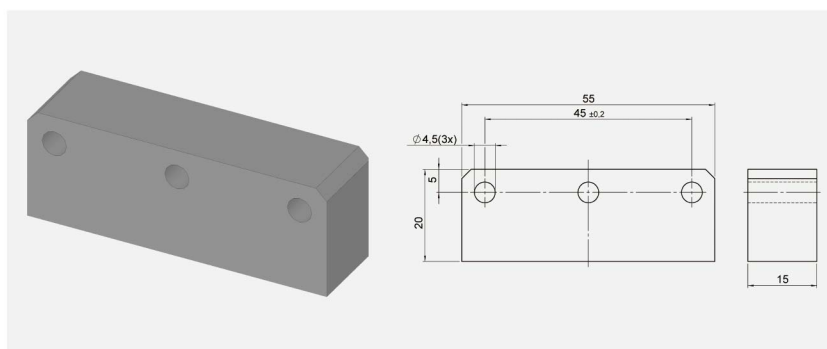
ZBL MF38-18

Position magnet for HLT 2500-F1 and HLT 2550
Part No.: 6084456



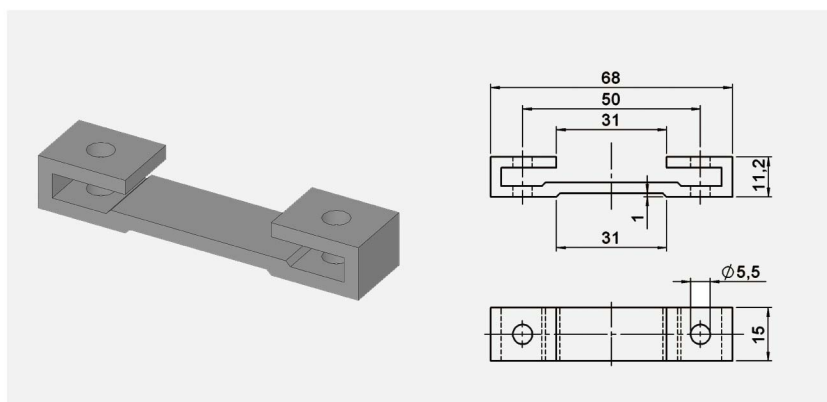
ZBL MF55-20

Position magnet for HLT 2500-F1 and HLT 2550
Part No.: 6084457



ZBL Mounting set

Position magnet for HLT 2500 and HLT 2550
Part No.: 6105653



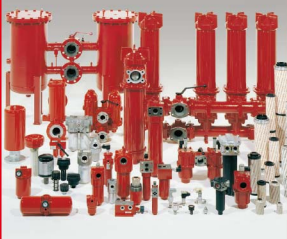
HLT 2000 電子零配件

Electrical connection	Signal output	HYDAC description	Part Number
M06	Analogue	Cable connector C091, 6 pole, straight	654653
M08	Analogue	Cable connector C091, 8 pole, straight	6123255
C61	CAN / DVN	ZBE 08 cable connector M12x1, 5 pole, right-angle	6006786
S01	SSI	Cable connector M23, 12 pole, straight	6120462
S01	SSI	Cable connector M23, 12 pole, right-angle	6120463

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蓄壓器產品總型錄
編號：DEF 3.000



過濾器產品總型錄
編號：DEF 7.000



工業水過濾技術
編號：DEF 7.700



系統化液體服務
編號：DEF 7.929



小型液壓動力設備
編號：DEF 5.300



配件總型錄 編號：DEF 6.100



電子量測元件 編號：E18.000.0



冷卻系統 編號：DEF 5.7000



- HYDAC 總部
- HYDAC 分公司
- HYDAC 代理商

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