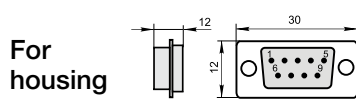
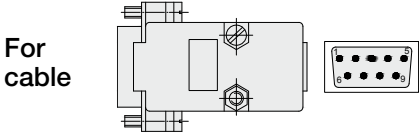


# ENCODER ELECTRICAL CONNECTION

## FOR ~ 11 μA

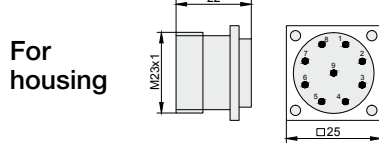
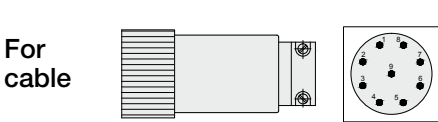
### 9-PINS FLAT CONNECTOR D9, MALE



8	4	7	3	6	2	5	9	1
I <sub>1</sub> +	I <sub>1</sub> -	I <sub>2</sub> +	I <sub>2</sub> -	I <sub>0</sub> +	I <sub>0</sub> -	+5V	0V	Shield
Green	Yellow	Blue	Red	Grey	Pink	Brown	White	Shield

\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

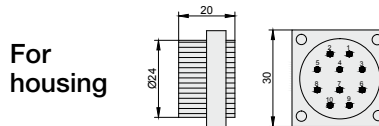
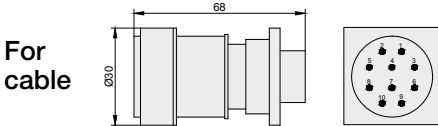
### 9-PINS ROUND CONNECTOR C9, MALE



1	2	5	6	7	8	3	4	9
I <sub>1</sub> +	I <sub>1</sub> -	I <sub>2</sub> +	I <sub>2</sub> -	I <sub>0</sub> +	I <sub>0</sub> -	+5V	0V	Shield
Green	Yellow	Blue	Red	Grey	Pink	Brown	White	Shield

\*External shield is connected to connector housing. Internal shield is connected to pin 9. When connector is placed on encoder housing the internal shield is missing.

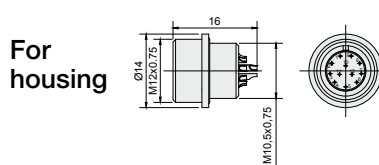
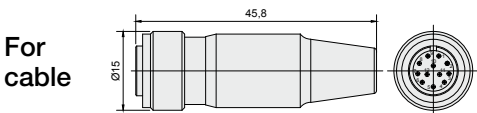
### 10-PINS ROUND CONNECTOR ONC, MALE



I <sub>1</sub> +	I <sub>1</sub> -	I <sub>2</sub> +	I <sub>2</sub> -	I <sub>0</sub> +	I <sub>0</sub> -	+5V	0V	Shield
2	5	8	7	6	10	4	9	1
Green	Yellow	Blue	Red	Grey	Pink	Brown	White	Shield

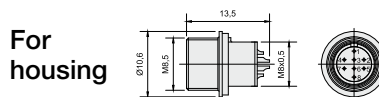
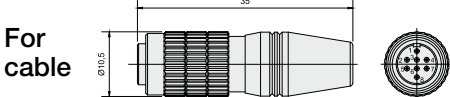
\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

### 12-PINS ROUND MINI CONNECTOR HR10A



Pin number	1	2	3	4	5	6	7	8
Color	Green	Yellow	Blue	Red	Grey	Pink	Brown	White
A	I <sub>1</sub> +	I <sub>1</sub> -	I <sub>2</sub> +	I <sub>2</sub> -	I <sub>0</sub> -	I <sub>0</sub> -	+5V	0V

### 8-PINS ROUND MINI CONNECTOR HR25



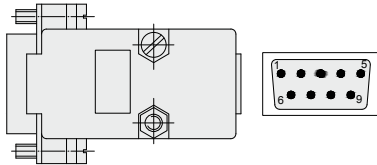
Pin number	1	2	3	4	5	6	7	8
Color	Green	Yellow	Blue	Red	Grey	Pink	Brown	White
A	I <sub>1</sub> +	I <sub>1</sub> -	I <sub>2</sub> +	I <sub>2</sub> -	I <sub>0</sub> -	I <sub>0</sub> -	+5V	0V

# ENCODER ELECTRICAL CONNECTION

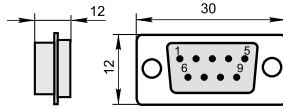
## FOR ~ 1Vpp; TTL; HTL

### 9-PINS FLAT CONNECTOR D9, MALE

For cable



For housing

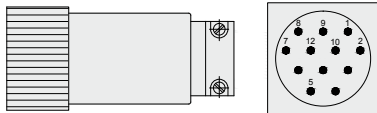


Pin number	8	4	7	3	6	2	5	9	1
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	Shield
AV (~ 1V)	A+	A-	B+	B-	R+	R-	+5V	0V	Shield
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	Shield
HTL U = +(10...30)V	U1	Ū1	U2	Ū2	U0	Ū0	+(10...30)V	0V	-

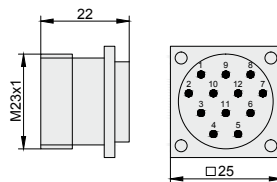
\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

### 12-PINS ROUND CONNECTOR C12, MALE

For cable



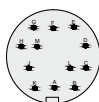
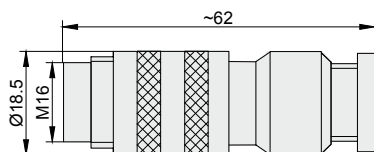
For housing



Pin number	5	6	8	1	3	4	12	10	2	11
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	Black	Violet
AV (~ 1V)	A+	A-	B+	B-	R+	R-	+5V	0V	Sensor +5V	Sensor 0V
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	Sensor +5V	Sensor 0V
HTL U = +(10...30)V	U1	Ū1	U2	Ū2	U0	Ū0	+(10...30)V	0V	Sensor +(10...30)V	Sensor 0V

\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

### 12-PINS ROUND CONNECTOR B12, MALE



Pin number	C	D	E	L	G	H	K	B	A
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	shield
AV (~ 1V)	A+	A-	B+	B-	R+	R-	+5V	0V	shield
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	shield
HTL U = +(10...30)V	U1	Ū1	U2	Ū2	U0	Ū0	+(10...30)V	0V	shield

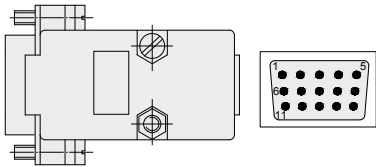
\*External shield is connected to connector housing. Internal shield is connected to 0V.

# ENCODER ELECTRICAL CONNECTION

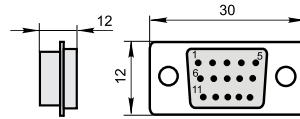
## FOR ~ 1V<sub>pp</sub>; TTL; HTL

### 15-PINS FLAT CONNECTOR D15, MALE

For cable



For housing

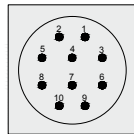
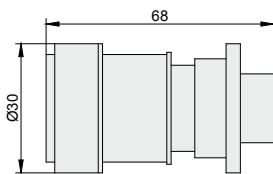


Pin number	3	13	4	14	5	15	1	2	6
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	Shield
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	Shield

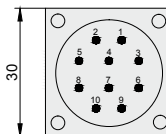
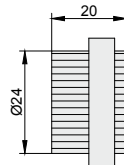
\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

### 10-PINS ROUND CONNECTOR ONC, MALE

For cable



For housing



U = +5V±5%

Pin number	1	2	3	4	10	9	5	6	7
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	Shield
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	Shield

\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

\*\*For encoder A58B voltage supply +5V is on pin 8.

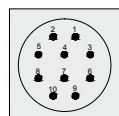
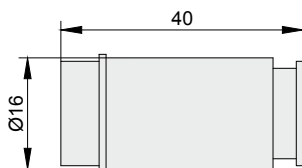
U = +5 and +15V

Pin number	1	2	3	4	10	9	8	5	6	7
TTL U = 5/15V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	+15V	0V	Shield

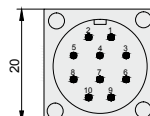
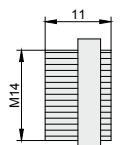
\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

### 10-PINS ROUND CONNECTOR RS10, MALE

For cable



For housing



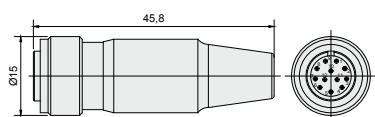
Pin number	5	8	3	6	10	1	2	9	4
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue	Shield*
TTL U = +5V	U1	Ū1	U2	Ū2	U0	Ū0	+5V	0V	Shield

\*External shield is connected to connector housing. Internal shield is connected to 0V. When connector is placed on encoder housing the internal shield is missing.

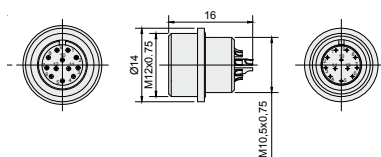
\*\*For voltage supply +(10...30)V is used pin 7.

## 12-PINS ROUND MINI CONNECTOR HR10A

For cable



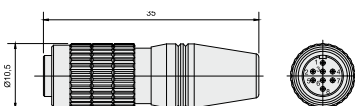
For housing



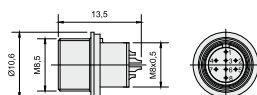
Pin number	1	2	3	4	5	6	7	8
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue
AV	A+	A-	B+	B-	R+	R-	+5V	0V
TTL	U <sub>1+</sub>	U <sub>1-</sub>	U <sub>2+</sub>	U <sub>2-</sub>	U <sub>0-</sub>	U <sub>0-</sub>	+5V	0V
HTL	U <sub>1+</sub>	U <sub>1-</sub>	U <sub>2+</sub>	U <sub>2-</sub>	U <sub>0-</sub>	U <sub>0-</sub>	+10...30V	0V

## 8-PINS ROUND MINI CONNECTOR HR25

For cable



For housing



Pin number	1	2	3	4	5	6	7	8
Color	Pink	Grey	White	Brown	Yellow	Green	Red	Blue
AV	A+	A-	B+	B-	R+	R-	+5V	0V
TTL	U <sub>1+</sub>	U <sub>1-</sub>	U <sub>2+</sub>	U <sub>2-</sub>	U <sub>0-</sub>	U <sub>0-</sub>	+5V	0V
HTL	U <sub>1+</sub>	U <sub>1-</sub>	U <sub>2+</sub>	U <sub>2-</sub>	U <sub>0-</sub>	U <sub>0-</sub>	+10...30V	0V

## CABLE LENGTHS

Maximal encoder (linear or rotary) cable length depending on output signal type is:

- sine-wave current signal A (~ 11 µA) – 5 m;
- sine-wave voltage signal AV (~ 1V) – 25 m;
- square-wave signal F (TTL) – 25 m;
- square-wave signal F (HTL) – 25 m.

The encoders can be equipped with additional prolonging cable (diameter 7 mm) with different cable connectors ONC, RS10, D9, C9, C12, B12 depending on customer requirements. This cable has an additional sensor circuits U and 0V. Linear encoder cable can be protected by metal hose with additional plastic cover (IP64) type SYLVIN. Metal hose has diameter of 10 mm.