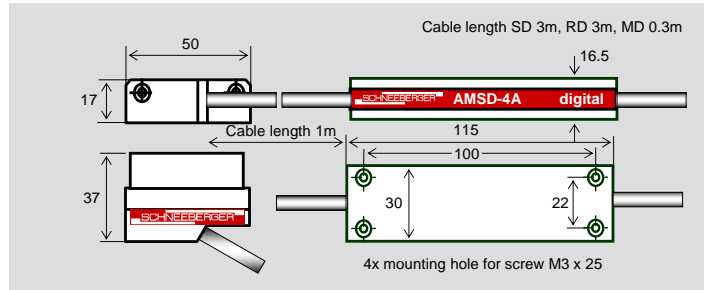


## Dimensions of Read Head



## Ordering Information

|                 |        |   |      |      |    |     |         |
|-----------------|--------|---|------|------|----|-----|---------|
| <b>System</b>   | 1      | AMSD-4A   | - 25 | -948 | -C | -SD | -010-80 |
| Number          |        |   |      |      |    |     |         |
| Type            |        | AMSD-4A   |      |      |    |     |         |
| Size            |        | 15, 20, 25, 30, 35, 45                                    |      |      |    |     |         |
| Length in mm    |        | (magnetized length )                                      |      |      |    |     |         |
| Reference mark  | S      | Reference marks every 50mm                                |      |      |    |     |         |
|                 | C      | Distance coded  |      |      |    |     |         |
|                 | K      | Customer specific (drawing is necessary)                  |      |      |    |     |         |
| Cable interface | MD     | 0.3m cable with mounting base and flange socket           |      |      |    |     |         |
|                 | SD     | 3m cable with male connector with flange ring             |      |      |    |     |         |
|                 | RD     | 3m cable with male connector with external thread         |      |      |    |     |         |
|                 | OO     | System is to be supplied without read head                |      |      |    |     |         |
| Resolution      | 010-80 | 5µm, interpolation rate 10, max. output frequency 8MHz    |      |      |    |     |         |
|                 | 050-80 | 1µm, interpolation rate 50, max. output frequency 8MHz    |      |      |    |     |         |
|                 | 250-80 | 0.2µm, interpolation rate 250, max. output frequency 8MHz |      |      |    |     |         |

|                  |        |   |     |         |
|------------------|--------|---|-----|---------|
| <b>Read Head</b> |        | SMD-4A  | -SD | -010-80 |
| Type             |        | SMD-4A  |     |         |
| Cable interface  | MD     | 0.3m cable with mounting base and flange socket           |     |         |
|                  | SD     | 3m cable with male connector with flange ring             |     |         |
|                  | RD     | 3m cable with male connector with external thread         |     |         |
| Resolution       | 010-80 | 5µm, interpolation rate 10, max. output frequency 8MHz    |     |         |
|                  | 050-80 | 1µm, interpolation rate 50, max. output frequency 8MHz    |     |         |
|                  | 250-80 | 0.2µm, interpolation rate 250, max. output frequency 8MHz |     |         |

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**SCHNEEBERGER**  
LINEAR TECHNOLOGY



## MONORAIL AMSD-4A

### Integrated Linear Distance Measuring System

A complete package providing high precision and reliability, with significant design advantages.

## The integrated digital measuring system for Ball Monorail BM

### AMSD-4A from Schneberger

With AMSD-4A the proven magnetoresistive measuring technology for Ball Monorail is now available with digital interface RS422.

- Digital signals direct from the read head without additional interpolation electronics.
- Different resolutions from 0.2µm to 5µm available.
- Maximum output frequency and hysteresis selectable to customers demand.
- Special reference pulse for Fanuc controls.
- A service LED indicates different modes of operation.
- One read head for all sizes from BM15 - BM45.
- Operation without central lubrication by use of the Schneberger self lubrication plate.
- Lengths up to 6000mm available (BM20 - BM45).

The used sensors, magnetization and electronics are based on the product AMSA-4A. The magnetic scale is identical for analog and digital systems. All dimensions are also the same like AMSA-4A.

### Reduced complexity and minimized process costs

With the MONORAIL AMSD-4A Schneberger provides you a complete integrated solution with unique advantages in ...

#### Accuracy

- Measuring close to the working process
- Perfect alignment of the measuring system with MONORAIL precision
- Good thermal coupling to the machine base
- The expansion coefficient is the same like steel.

#### Installation and set-up

- Delivered complete to the customers specification and ready for installation
- Service LED indicates proper installation and function of the system
- No alignment required

#### Construction

- Space-saving system
- Short construction time, no special fitting is necessary

#### Service and maintenance

- Service LED indicates malfunctions of the system
- The system is sealed against dust and liquids
- Resistant to oils, greases and coolants.

### Technical data

#### System characteristics

Scale hardmagnetic, periodic N-S division  
 Reference marks every 50mm, distance coded or customer specific  
 Maximum length 6000mm

#### Accuracy

Accuracy class +/- 5µm / 1000mm, +/-2µm / 40mm  
 Periodic deviation +/- 1µm  
 Resolution 0.2µm, 1µm, 5µm (other values upon request)  
 Hysteresis < 0.5µm or digitally selectable

#### Movement

Max. speed 3m/s, 1m/s with 0.2µm resolution  
 Max. acceleration 30g

#### Environment

Protection class IP 67  
 Operating temperature 0° - +70°C  
 Storage temperature -20° - +70°C  
 Vibration / Shock 30g

#### Interface

Digital A quad B signals RS422 with reference and error signal, reference pulse width 90° or 500µs (for FANUC-CNC)  
 Supply voltage 5V +/- 10%  
 Current demand typ. 110mA per read head (no load on outputs)

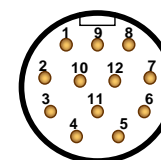
### Service-LED

The LED indicates different modes of operation:

- green continuous System works in specifications.
- green blinking Signal too high, system works with reduced accuracy, error signal -Uas active (low).
- green-red blinking Signal too low, system works with reduced accuracy, error signal -Uas active (low).
- green-red flashing No input signal, no output, error signal -Uas active (low).  
Too high travelling speed, error signal -Uas active (low).
- red flashing Supply voltage out of range (<4.5V or >5.5V), error signal -Uas active (low).
- red continuous Hardware defect, no output, error signal -Uas active (low).

### Pin connection

Drawing shows -MD, 12-pole male plug



- 1 -Ua2 A quad B signal
- 2 +5V sense Supply voltage feed back
- 3 +Ua0 Reference signal synchronized to Ua1/Ua2
- 4 -Ua0 Reference signal synchronized to Ua1/Ua2
- 5 +Ua1 A quad B signal
- 6 -Ua1 A quad B signal
- 7 -Uas Error signal active low, minimal duration 20msec
- 8 +Ua2 A quad B signal
- 9 - NC
- 10 0V GND Supply voltage
- 11 0V sense Supply voltage feed back
- 12 +5V Supply voltage

For restricted time short circuit to 0V is permissible for all signals.

### Dimensions

| BM size | LW BMA/BMC | LW BMB/BMD | LS   | L9 BMA/BMC | L9 BMB/BMD | L10  | A1   | A2   | A3   |
|---------|------------|------------|------|------------|------------|------|------|------|------|
| 15      | 42.8       | -          | 8.5  | 117.3      | -          | 66   | 16.5 | 21.5 | 18.7 |
| 20      | 53.5       | 69.5       | 11   | 133.5      | 149.5      | 69   | 23   | 23   | 18.7 |
| 25      | 64.3       | 83.3       | 12.5 | 145.5      | 164.5      | 68.7 | 23.5 | 23.5 | 18.9 |
| 30      | 75         | 97         | 14   | 161        | 183        | 72   | 29.3 | 29.3 | 15.6 |
| 35      | 86         | 111.5      | 16   | 176        | 201.5      | 74   | 34   | 34   | 1.2  |
| 45      | 107        | 138.5      | 19   | 204        | 235.5      | 78   | 42   | 42   | 6.1  |

