

General Function

The Navigation Controller G 73650 manages the guidance of AGVs on predefined (mapped) tracks. The AGVs may differ in make and model. The commands can be generated by a superior control unit of the on-board PLC. It is also possible to manually input such commands via a keyboard or a corresponding Terminal Program (e.g. HyperTerm). Navigation Controller HG 73650 then generates the target steering angle and the target velocity, amongst other values. It is also possible to drive certain steering servos directly. For the use of the Navigation Controller HG 73650 in connection with a Transponder Positioning System or the Sky Trax solution (2-dimensional bar codes on the ceiling), an internal sensor fu-



tion is included. For all other Guidance Solutions, the Navigation Controller processes the received position information together with the received information about the vehicle velocity (e.g. via encoders).

Guidance Tracks / Mapping

The mapped Guidance Tracks consist of individual segments which again consist of different base points. The definition of Guidance Tracks in this case is: travelling paths between starting point and destination. Segments start at the starting point or a branch-off point and end at the destination or a branch-off point. The base points are distributed at constant distances across the corresponding segment (e.g. 0.5 m) and are used to reconstruct the trajectory. At

each base point the following values are stored: position, velocity and 16 bit for variable use. The Guidance Tracks can be constructed using a special CAD program, which can be purchased if this feature is used frequently. In certain cases it is also possible to make the AGV travel along the guidance tracks with a defined offset.

Position Determination

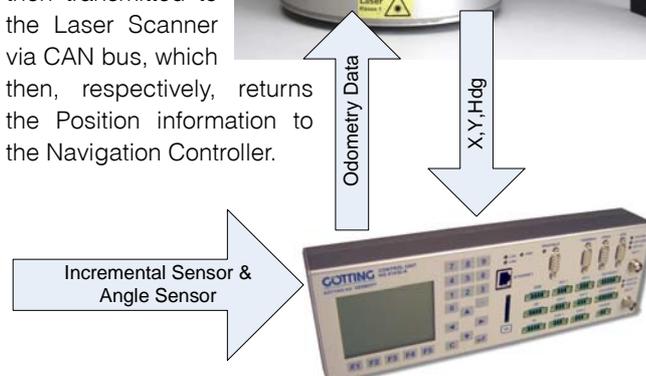
The following two options exist:

1. Position determination via internal sensor fusion
2. Position is input from an external sensor.

The internal sensors fusion connects the data from encoders with a Transponder Antenna with a Sky Trax camera. It is also possible to add the HG 84300 Gyro.

External Position input provide GPS (HG S57652ZC), Laser Scanner HG 43600XA, Guide Wire and Optical Line Tracker. When using the Laser Scanner, the

encoder signal is input directly into the Navigation Controller HG 73650, then transmitted to the Laser Scanner via CAN bus, which then, respectively, returns the Position information to the Navigation Controller.

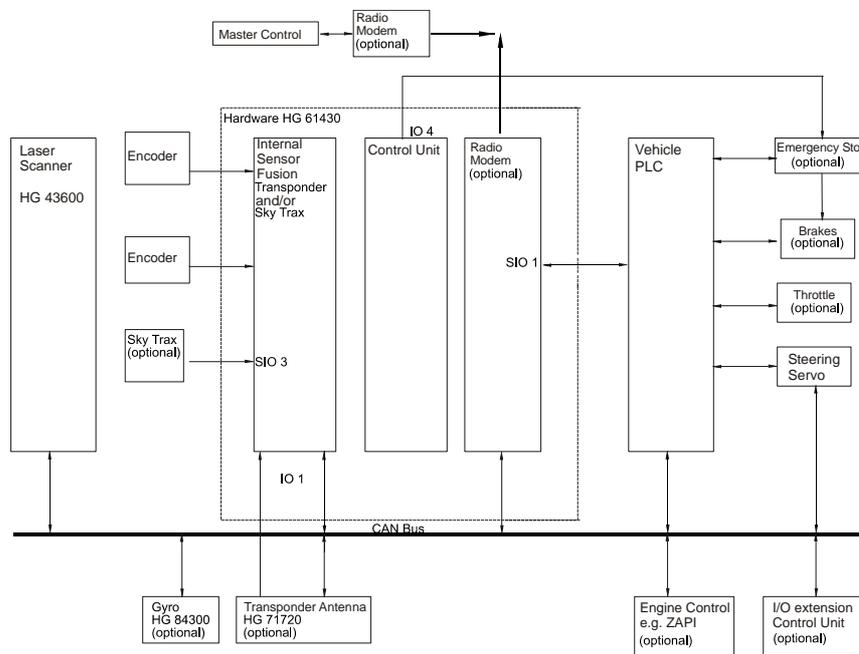


Communication

There are three RS232, two CAN Bus, a Profibus and an Ethernet (UDP) interface available.

Main Features

- up to 1000 different segments
- up to 40000 base points
- int. sensor fusion (Transp./Sky Trax)
- ext. sensor fusion (Laser, etc.)
- offset operation optional
- direct activation of steering servos possible
- communication via CAN bus, RS232, Profibus or UDP
- Tracks defined via CAD Program *Malz ++ Kassner*
- operation and parameter setting via Hyperterm Program
- Debug outputs setable
- parameter, segment file and transponder list upload / download
- test monitor for simple commissioning
- spec. functions and parameters for different types of vehicles location specific accuracy and deviation monitoring possible
- narrow-band wireless data modem can be integrated into the same casing optional software for different vehicles, e.g. trucks, forklifts trucks, or symmetrically steered vehicles
- Navigation Controller HG 73650 is housed in the Hardware HG 61430 as shown in below block diagram:



Block Diagram

Technical Data

- | | |
|-------------------------------|--|
| - Casing and dimensions | Aluminium, 320 x 105 x 65 mm (L x W x H) |
| - Weight | 1350 g |
| - Operation temperature range | 0 to 70° C |
| - Storage temperature range | -25 to 80° C |
| - Protection class | IP30 |
| - Relative humidity at 25° C | 95% (without condensation) |
| - Interfaces | RS 232 (binary, 3964R, other protocols optional)
Profibus-DP-Slave
CAN-Bus |
| - Power supply | Nominal voltage 24 Volt (18 to 30 Volt) |
| - Current consumption | 250 mA at 24 Volt |