8 Operation and maintenance

The operation of a system comprises all activities from delivery to the customer to the commissioning of the system (DIN 32541). This includes servicing and maintenance.
This demands the existence of a person responsible for the system, the system manager. Both the system manager and the operator must be in possession of the entire system documentation (see chapter 5.7).
If the system manager is replaced, the documentation must be handed over to the new system manager. The same goes for a change in operators.
The documentation also includes a maintenance plan, if such a plan is required for the system. If there is a maintenance plan there is usually an accompanying contract. This is recommended for larger systems. Even without a maintenance contract however, the necessary service is available through the system manager or a suitably *EIB* trained electrician.
All changes made within the framework of maintenance and servicing must be incorporated into the documentation.

8.1 System upkeep

8.1.1 Maintenance

Maintenance contract

The work carried out in accordance with the maintenance contract increases the reliability of the system by means of prevention.
Usually, the operator signs the maintenance contract with the system manager. The system manager is familiar with the handling and functionality of all installed bus devices. In addition, he also has the necessary commissioning and diagnostic tools as well as a team of suitably trained staff.

8.1.2 How to proceed when errors arise

8.1.2.1 Advice for operators

If there is a maintenance contract, the operator will usually inform the service department when an error occurs.
Warning! The behaviour of the system under certain operational conditions may sometimes be wrongly perceived as an error.
For example:
For safety reasons, certain actuators must take on a defined (safe) state following a mains interruption. It may be necessary therefore, to press certain touch sensors to return these actuators to the state they were in before the interruption.
If there is definitely a fault, the following points should be noted:

– Work should only be carried out on electrical systems by skilled electricians.
– The operator should contact the relevant system manager.
– In his own interests the operator should try to describe the fault in as much detail as possible to the system manager or service department. Get the documentation ready.
– Determine the area of the building in which the error occurred and find out what the consequences were.
– Check for a power failure or the triggering of a protective device.
– Any operating voltage LEDs that may be provided on the bus devices can help the operator to detect the failure of the bus voltage.

8.1.2.2 Advice for electricians

Systematic trouble-shooting

During diagnosis and error removal the DIN VDE 0105-1 regulations must be upheld (mainly the five safety rules).

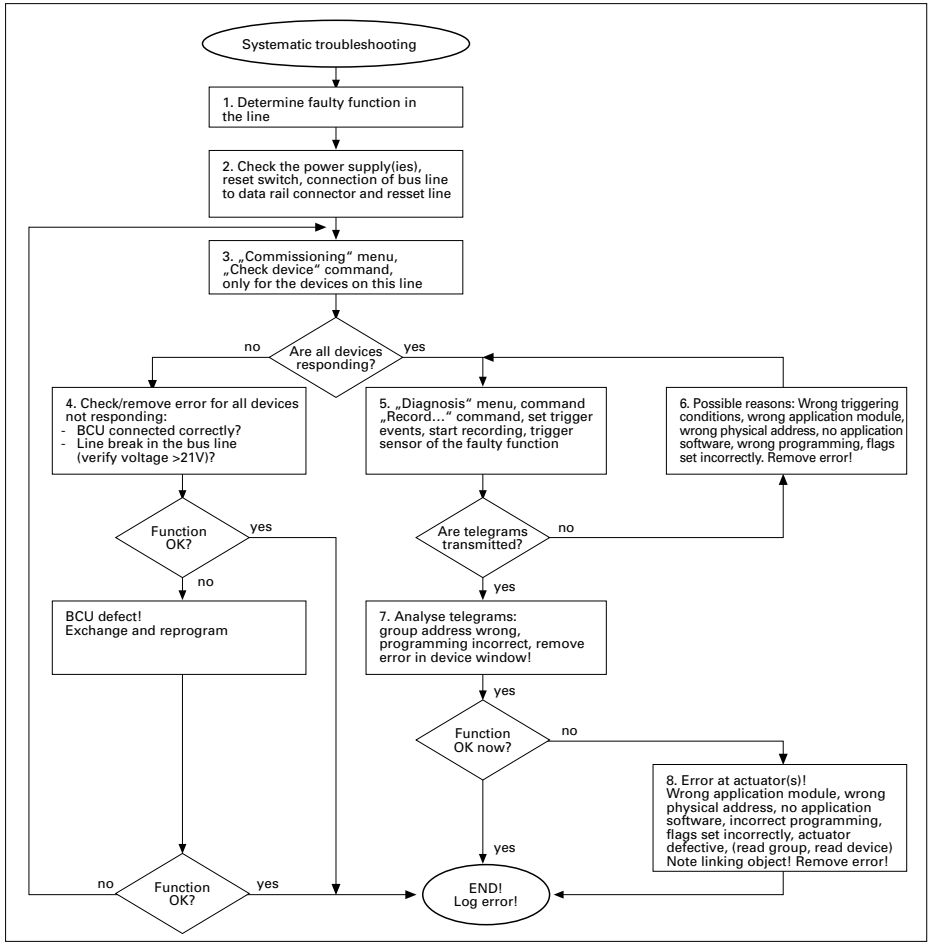

Fig. 8.1-1 Systematic troubleshooting

1. Localise the error by a visual check and/or based on the information given by the operator. Identify the bus line(s) used for that particular section/application/function. Does it involve an actuator? Are there any associated sensors involved? Does it involve a single bus device or several devices within the line(s)?

2. Check the bus voltage(s) on the *EIB* power supply(ies) of the relevant line(s).
Only for *EIB-TP*!:

- If the green LED is lit up on the *EIB* power supply, then this is working correctly.
- If the yellow LED is lit up, indicating "overvoltage" (not provided for all EIB power supply devices), the bus voltage needs to be checked and the device changed.
- If the red LED is lit up indicating "excess current", then a short circuit has occurred in the bus line.
- If only the green LED on the *EIB* power supply is lit up then you can try to remove the error by activating reset.
- The switch on the choke should be moved to reset (red LED on the choke illuminates) and then moved back after about 2-3 seconds.
- Afterwards check whether the error has been removed. Check the connection of the bus lines on the data rail connector.

3. With the commissioning software check that all bus devices on the relevant lines are responding. Check any that are not:

- Does the physical address established with the software match the label on the device and the documentation?
- Press the programming button on the bus coupling unit. Does the red LED light up?
- If yes, press the programming button again. The light will extinguish.
- If no, check the connection of the bus coupling unit and operating voltage and check the operating voltage on the bus device.
- Establish whether the sensor(s) associated with the relevant function(s) is (are) working properly. Set the corresponding triggering conditions with the diagnosis software and press the sensor(s).

4. If no telegrams are recorded by the diagnosis software, the causes must be clarified and any errors removed. Possible causes are:

- The triggering conditions have been wrongly specified.
- The application module does not match the application software of the bus coupling unit.
- The physical address of the sensor does not match the physical address of the triggering conditions.
- No application software has been loaded into the bus coupling unit.
- The application software has been incorrectly programmed.
- The flag settings are wrong.

5. If telegrams have been recorded by the diagnosis software these must be analysed and if applicable, the programming of the relevant bus devices modified.

6. Do the transmitted group addresses correspond to the planned group addresses?

7. Is the programming correct?

8. If no errors were established for the sensors, or the established errors have been removed and the overall functioning is still faulty, the relevant actuators must be checked. Possible causes of error are:

- Wrong application module.
- Wrong physical address.
- No application software in the bus coupling unit.
- Conditions for any possible links are not met.
- Actuator is defective or there is no operating voltage.