MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with selected official ABB reference pages

AC 800M / 3BSE030220R1

CI854AK01

PROFIBUS DP INTERFACE KIT

OFFICIAL SOURCES

ABB 3BSE036351-600 A. Selected notice, safety and model pages retain their original content, color and aspect ratio.

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Safety Summary

General

In order to minimize the risk of injury to personnel and/or damage to the equipment, always comply with the following safety instructions when installing and operating an AC 800M Controller system. Local, stricter statutory regulations must always take precedence over the safety instructions given here.

The Safety Instructions are classified as mandatory reading for all suitably qualified personnel intending to operate the AC 800M Controller.

Warnings and Information Symbols in the Text Margin

Observe the symbols for warnings and information located in other Chapters and Appendices of this book. The symbols are placed in the left-hand margin, adjacent to paragraphs requiring special attention. For an explanation of the symbols, see About This User Manual - Warning, Caution, Information, and Tip Icons on page 26.

Personnel and Process Safety

TAKE CARE AT ALL TIMES – This will prevent accidents from occurring and help protect valuable equipment.

A control system is a tool used to control various processes. Responsibility for attaining and maintaining a satisfactory level of safety rests with the personnel who engineer, operate and maintain the equipment. It is important to have an extensive knowledge of all control functions, the inherent safety risks that may be involved in the process, and to possess the imaginative ability to anticipate situations in which accidents may occur.

The following Safety Instructions must be observed:

- Take care when:
  - fitting or removing units

  - connecting or disconnecting cables
  - resetting or switching units to manual operation
- For hazardous locations special restrictions apply, see Appendix E, Standards.
- Never connect the equipment to the mains power supply during installation work.
- Take extreme care when connecting the system to the mains power supply. Injury or death can be the result of incorrect procedures.
- Ensure that all personnel operating or maintaining the installation know the exact location of and how to operate the equipment isolating safety switch and the mains power supply isolating switch.
- When the process sub-sections have been checked and a test run has been performed, a person responsible must check the interlocking chains etc. All concerned personnel must be fully informed regarding test runs to be performed.
- Process technicians are to be present when testing and operating process objects.
- Never activate any System Initialization push-button if any uncertainty exists regarding exactly what occurs within the system during initialization. **ALWAYS CHECK FIRST**.
- Remember at all times, that the control system can be controlled from a remote engineering station, connected at another node via Control Network.
- Remember, the AC 800M Controller will start automatically when voltage is applied.

Taking steps to bring the process to a safe state, provides an improved level of safety when power supplies, communication links or parts of the control system fail. Such steps may require, for example, the installation of valves or relays that automatically return to a fail-safe position.

Product Safety

The following safety rules must be observed at all times:

- To avoid discharging static electricity, ground both yourself and any tools before handling printed circuit boards, batteries, memory cards, and other sensitive pieces of the equipment
- All electronic devices are sensitive to ESD (electrostatic discharge). To avoid accidental damage while handling printed circuit boards, it is recommended to wear a wrist strap, grounded to the chassis. The strap must have a built-in protective resistor
- Anti-static, conductive plastic bags must be used for storage and transport of PC boards in transit.

Safety Summary (continued)

Before replacing Units

All procedures for replacing units can be located by referring to the relevant documentation.

Removing or replacing units with system power connected can cause injury to personnel and damage to equipment. It is, therefore, of the utmost importance that the power supply be fully disconnected, on the process side, before removal or insertion of units takes place.

See Online Replacement of Unit on page 206 and I/O documentation.

Maintenance

It is recommended that a stock of suitable spare components be maintained to avoid system downtime.

Ensure that back-up copies of the current application program are made at regular, predetermined intervals to avoid system downtime.

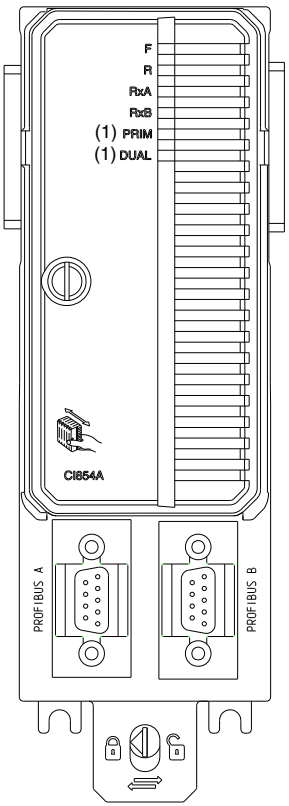
Operating Environment

Before the AC 800M Controller system is brought online, investigate which environmental conditions are applicable. Take note in particular of the following:

CI854/CI854A and TP854 – PROFIBUS DP Interface

Key Features

- PROFIBUS DP with redundant line interface (two DB9 female connector located on the TP854 Baseplate).
- Simple DIN-rail mounting.
- In addition to the cyclic data transfer the CI854/CI854A supports acyclic DP communication and slave redundancy.
- By using repeaters it is possible to connect a maximum of 124 nodes to one PROFIBUS DP (32 nodes are permitted on one segment).
- Pre-set, two-letter Alpha code locking device installed in unit base prevents mounting of incompatible components.
- Transmission speed selectable between 9.6 kbit/s and 12 Mbit/s.
- Support of PROFIBUS DP master redundancy (CI854A).
- Supports hot swap (CI854A).



(1) CI854A only

Description

The CI854/CI854A/TP854 connects PROFIBUS DP to AC 800M. PRODFIBUS DP slave devices like the remote I/Os S800 and S900 can be connected directly. PROFIBUS PA slave devices can be connected via the PROFIBUS linking device LD 800P.

The Baseplate TP854 has two female DB9 connectors for connecting PROFIBUS DP with support of line redundancy. The baseplate has a code lock, see Table 4 on page 81, that prevents the installation of an incorrect type of unit onto the TP854 Baseplate.

The CI854/CI854A expansion unit contains the CEX-Bus logic, the CPU-kernel with memory, the PROFIBUS interface with line redundancy unit and a DC/DC converter that supplies the appropriate voltages from the +24V supply, via the CEX-Bus.

The PROFIBUS DP must always be terminated at the two outer nodes. This is usually done by using connectors with built-in termination. To guarantee a correct working termination the connector has to be plugged and power supplied.

The PROFIBUS DP requirements for screening/earthing have to be fulfilled. The PROFIBUS DP installation guideline requires that the cable shield should be connected to ground at both ends of the cable. This has to be done although the CI854/CI854A already connects the shield to ground via the connectors.

Functional Block Diagram

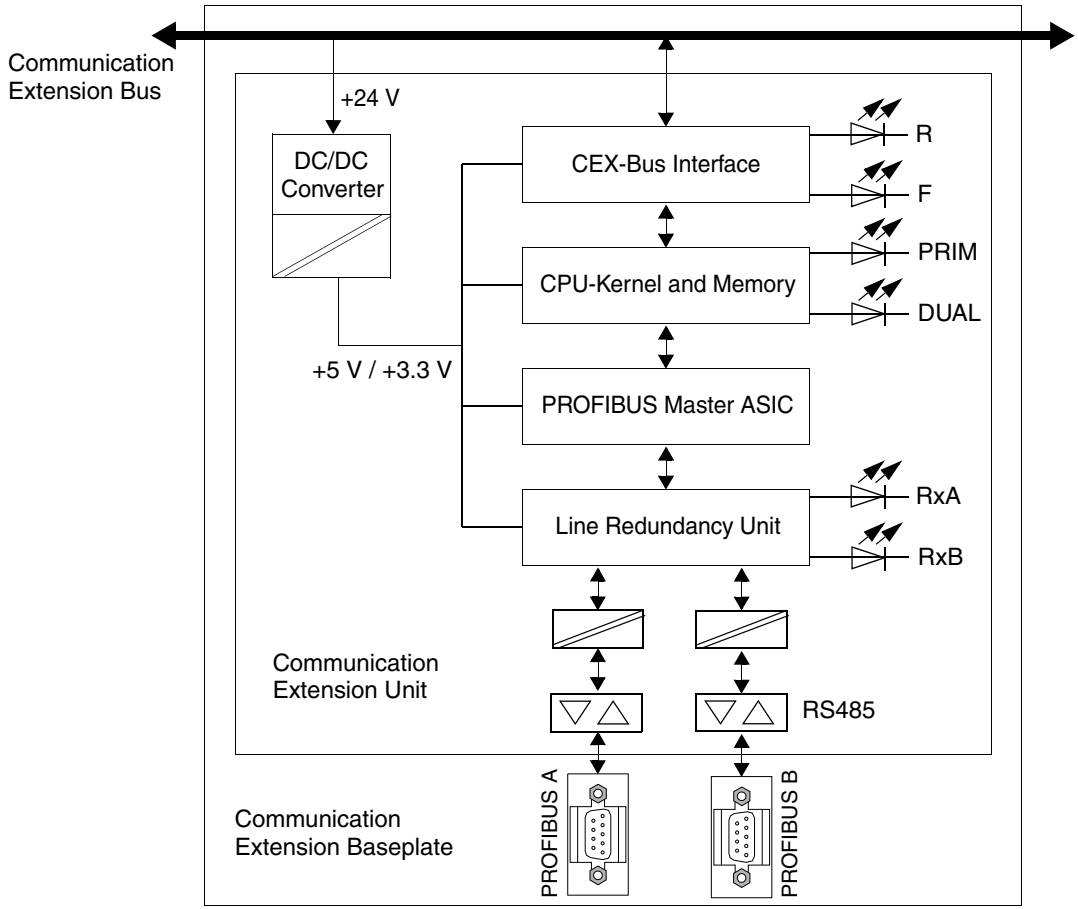


Figure 77. Block Diagram – CI854A (CI854, same diagram without PRIM/DUAL LEDs)

Indicators

Table 88. CI854/CI854A – PROFIBUS DP LED Indicators

Designation/Color	Function
F(ault) /Red	Unit error detected. Set by the Hardware during controller Reset. Controlled by the Control Software after Reset.
R(un) /Green	Operating. Cleared by the Hardware during controller Reset. Controlled by the Control Software after Reset.
RxA /Yellow	Receive Data on Line A. For each telegram received the LED flashes. In normal operation is seen as static on.
RxB /Yellow	Receive Data on Line B. For each telegram received the LED flashes. In normal operation is seen as static on.
PRIM(ary) /Yellow (CI854A)	This LED is on in single and redundant configuration. Indicates Primary CI854A in redundant configuration.
DUAL /Yellow (CI854A)	This LED is on when CI854A is running in redundant configuration.

Technical Data

Table 89. CI854/CI854A PROFIBUS DP Interface Specifications

Item	Value
Type	DP Master Class 1and 2 for DP Services DP Master Class 2 for DP Services
Protocol	PROFIBUS DP
Communication speed	9.6, 19.2, 93.75, 187.5, 500, 1500, 3000, 6000 or 12000 kbit/s

Table 89. CI854/CI854A PROFIBUS DP Interface Specifications (Continued)

Item	Value
Galvanic isolation	Yes
Status indicators	Running normally: Green. Exceptional fault: Red. Two traffic indictors - RxA and RxB - controlled by traffic pace: Flashing yellow. Running as primary: Yellow. Running in a redundant configuration: Yellow.
Connectors	Two DB9, female on TP854.
Current consumption (from CEX-Bus 24 V DC)	190 mA typical (max. 240 mA).
Power dissipation	4.6 W typical.
Capacity	Max 32 nodes on PROFIBUS without repeater.
Protection Rating	IP20 according to EN60529, IEC 529.
Weight	700 g (1.5 lb) (package CI854K01 with CI854 and TP854). 700 g (1.5 lb) (package CI854AK01 with CI854A and TP854).
Dimensions	W 59 x H 185 x D 127.5 mm (W 2.9 x H 7.3 x D 5.0 in)