

# Connecting a Mobrey Hydrastep 2468 Control Unit and Remote Display using Fiber Optics

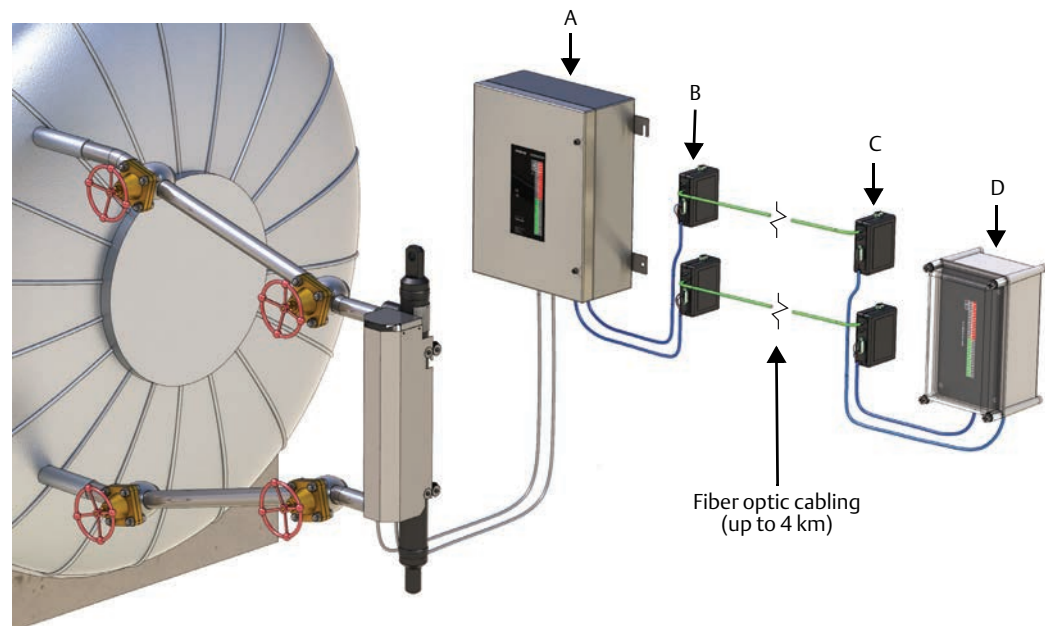
## 1.1 Introduction

Hydrastep 2468 Water/Steam Monitoring Systems are commonly used to give a high-integrity boiler drum measurement.

Regulations require operators to carefully monitor the boiler drum level, including level indication in the control room. If the control room is distant from the boiler, it could be impractical and expensive to run copper wire between the Hydrastep 2468 Control Unit (“primary control unit”) and its Hydrastep Remote Display (“remote indicator”). However, many facilities have existing fiber optic networks. By using appropriate media converters, a signal can be transmitted from the primary control unit to a distant remote indicator across fiber optics (Figure 1-1).

This technical note shows how a boiler drum level remote monitoring application uses Black Box MED101A Multi-Mode Fiber Converters to interconnect a primary control unit and a distant remote indicator with fiber-optics.

**Figure 1-1. Hydrastep 2468 System and Remote Display using Fiber Optics**



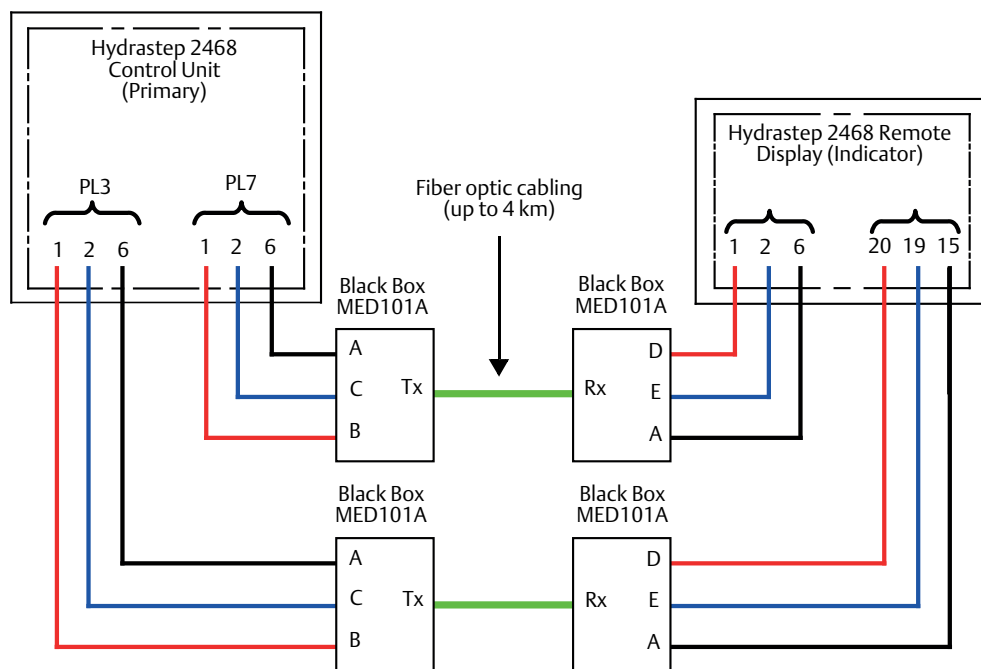
- A. Hydrastep 2468 Control Unit (Primary).
- B. Black Box MED101A Multi-Mode Fiber Converters (at Boiler).
- C. Black Box MED101A Multi-Mode Fiber Converters (at Control Room).
- D. Hydrastep 2463D Remote Display (Indicator).

## 1.2 Fiber optic link connections

Communications between the primary control unit and remote indicator use a proprietary protocol, but it is implemented at the RS485/RS422 physical layer. The transmission is unidirectional i.e. the primary control unit transmits and the remote indicator receives. There is no return communication.

To implement this architecture using Black Box MED101A Multi-Mode Fiber Converters, the converters need to be configured in RS422 four-wire mode and wired so that only the two wires needed for outbound communications are used (Figure 1-2 and Figure 1-3).

Figure 1-2. Fiber Optic Link Connections



Power connections to Black Box devices are not shown. Refer to supplier's documentation.




Figure 1-3. Jumper configuration for Transmit and Receive Black Box MED101A converters

1	2	3	4	5	6	7	8	9	10	11	12
Off	Off	Off	Off	On	On	On	Off	Off	Off	On	Off

- Jumpers 1 to 4: Configuring the first 4 jumpers to off enables RS422 mode.
- Jumper 5: Configuring jumper 5 to on enables the converter's built-in 120 Ω termination resistor.
- Jumpers 6 to 7: Configuring jumpers 6 and 7 to on disable the converter's built-in 1.2 kΩ bias resistors.
- Jumpers 8 to 11: Configuring jumpers 8, 9, and 10 to off, and 11 to on, sets the baud rate at 9600.
- Jumper 12: Configuring jumper 12 to off disables RS485 multi-drop point-to-point mode.



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