CAN 101 – CAN Communication Guide

Glossary of terms

Branch (AKA "Node"); one or more points along a CAN communication string where the communication wires branch off the main string and go to a single component.

Note;

- *A branch may be no longer than 3 ft.*
- *Only one component per branch is allowed.*

CAN communication string; consists of two or more components wired for CAN communication by stringing CAN HIGH (blue), CAN LOW (green), and CAN SHIELD (black) wires from one component to the next in series with only two components, one at each end of the string, set to provide CAN termination.

CAN connector kit p/n 37221000; a kit available from Elkhart to provide a branch off the main CAN communication string to another component.

Gateway; a component that communicates using both RF and CAN communication and converts RF signals to CAN signals and CAN signals to RF signals.

Note;

- *The EXM monitors are always set up as a gateway*
- *An input controller configured for both RF and CAN communication is a gateway*
- *Only input controllers (except the Handheld) can be configured as a gateway*
- *There should be only one gateway per CAN communication string.*

CAN Terminated; a CAN communication setting that activates a latching relay** to engage a 120 ohm resister to provide resistance between the CAN LOW and CAN HIGH wires in an Elkhart component intended to be placed at the end of a CAN communication string.
Note;

- *All EXM monitors and Input controllers come preset to the CAN terminated setting and must have the setting changed using the configuration tool if the CAN terminated setting is not required.*
- *E3F valve controller (mounted in the gear-case cover) are not preset to the CAN terminated setting and must be changed to the CAN terminated setting using the EXM configuration tool if required. ** These controllers do not use a latching relay and require power to engage the resistor when set for CAN Termination, therefore the resistor can not be detected by measuring resistance across the CAN HIGH and CAN LOW terminals.*
- *The Position Feedback Display cannot be set to CAN Terminated and should not be used at the end of a CAN communication string.*
- *The E3F and E4F valve controllers and Position Feedback Display can only communicate via CAN. They must be wired to communicate via CAN with an input controller or a monitor.*

Examples of CAN communication strings for three different systems

One controller all CAN communication (one string) system

Since the EXM monitors and controllers are factory preset to CAN Terminated a system using an EXM monitor and one controller (Panel Mount or OEM Interface Module with Elkhart Joystick) can be installed and wired without having to use the EXM Configuration Tool to configure any of the components. Since the E3F actuated valve is factory preset to not Terminated and the Position Feedback Module can not be CAN Terminated one or the other or both may be added using CAN connector kits to branch off the CAN communication string between the EXM monitor and the controller without the need to configure the system.

More than one controller all CAN communication (one string) system

System components; Monitor, Valve, Panel mount controller, and an OEM Interface Module with Elkhart Joystick.

The two system components at each end of the CAN communication string need to be set Can Terminated and the two that are not at the ends must not be set Can Terminated. Can connector kits should be used to connect the two components not at the ends of the CAN communication string. This system will require using the EXM Configuration Tool to configure the components. Record the serial numbers for the system components and make a note of whether or not the component needs to be CAN terminated. (Note; Use the serial number from the OEM Interface module not the Joystick.) This information will be used when setting up the system configuration with the EXM Configuration Tool. See the "98317010 -- EXM Configuration Tool User Guide" available on our website.

RF & CAN communication (two string) system

System components; Monitor, Valve, Panel mount controller, Position Feedback module, and an OEM Interface Module with Elkhart Joystick.

The monitor is by default set for both RF and CAN communication. It and the valve will be connected to each other via CAN communication creating CAN communication string #1. The OEM interface module controller will be set for both RF and CAN communication (must use RF upgrade kit 7061 and possibly RF antenna kit 7062). It and the Panel mount will be connected to each other via CAN communication with the Position Feedback module branching off in between creating CAN communication string #2. A CAN connector kit should be used to connect the Position Feedback module. The two system components at each end of both of the CAN communication strings will need to be CAN Terminated. This system will require using the EXM Configuration Tool to configure the components. Record the serial numbers for the system components and make a note of whether or not the component needs to be set for RF, CAN, CAN Terminated, or all three. (Note; Use the serial number from the 7070 OEM Interface module not the Joystick.) This information will be used when setting up the system configuration using the EXM Configuration Tool. See the "98317010 -- EXM Configuration Tool User Guide" available on our website.