

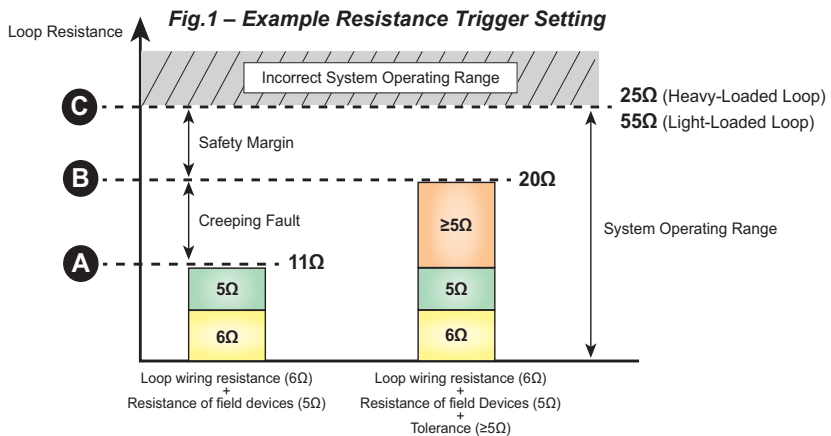
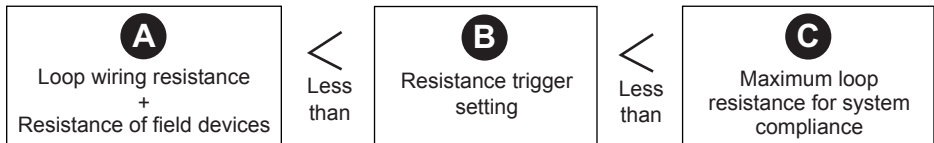
How to Calculate the CA742's Resistance Trigger Setting and Configure the CAST ZFP Panel to Work with the CA742

Important Note: Refer to the CA742 Installer's Guide (DFU0007420) for a product description, installation guidance and technical specification.

Calculate the CA742's Resistance Trigger Setting

The CA742's resistance trigger setting, i.e., **B** must satisfy the following two requirements:

It must be greater than the loop wiring resistance plus the resistance of the field devices, i.e., **A** but lower than the maximum loop resistance for system compliance, i.e., **C**.
See diagrams and Fig.1 below:



A Calculate the loop wiring resistance and the resistance of the field devices

Calculate the loop wiring resistance by measurement. Unplug the loop END A & END B at the CIE. Using a calibrated multimeter, measure the resistance of the loop -Ve connections, which is A- to B-. Assume it is the same resistance for the loop +Ve connections. Note that you cannot measure the +Ve connections directly due to the electronic isolators built into the devices. Also note that the loop wiring resistance should be within predicted values for the installed cable length.

For example:

3Ω measured in the loop -Ve, assume loop +Ve is also 3Ω = 6Ω total loop wiring resistance.

Add in the resistance of the field devices' isolators. As a general rule, this will be 0.1Ω per device, so 50 devices (50 x 0.1Ω) = 5Ω total resistance of the devices.

Therefore, the total loop wiring & device resistance is 6Ω + 5Ω = 11Ω

B Calculate the resistance trigger setting

Select a tolerance for the resistance trigger setting that is at least 5Ω or greater than the total loop wiring & device resistance.

Therefore, if the total loop & device resistance = 11Ω (as calculated in this example), add an allowance of 5Ω. Then, select a suitable resistance trigger setting, in this case, 20Ω.

C Calculate the maximum loop resistance for system compliance

Heavy-loaded loop example:

Maximum loop current = 20 devices x 22mA = 440mA*

Loop voltage from the CIE = 38V

Minimum device operating voltage = 27V**

Maximum allowable volt drop = 38V - 27V = 11V

Therefore, at a maximum load of 440mA, a loop resistance of volts/current = 11V/0.44A = 25Ω will result in a volt drop of 11V.

25Ω is greater than the resistance trigger setting of 20Ω (as calculated in this example), so the system will signal an over-resistance fault before the volt drop becomes unacceptably high and the system stops working.

Light-loaded loop example:

Maximum loop current = 20 devices x 10mA = 200mA*

Loop voltage from the CIE = 38V

Minimum device operating voltage = 27V**

Maximum allowable volt drop = 38V - 27V = 11V

Therefore, at a maximum load of 200mA, a loop resistance of volts/current = 11V/0.2A = 55Ω will result in a volt drop of 11V.

55Ω is greater than the resistance trigger setting of 20Ω (as calculated in this example), so the system will signal an over-resistance fault before the volt drop becomes unacceptably high and the system stops working.

* When field devices are in alarm or drawing max current.

** Minimum working voltage of loop powered sounder (other devices may have different minimum voltages).

Configure the CAST ZFP Panel to work with the CA742

Pre-Checks

Ensure the commissioning engineer has attended C-TEC's CAST ZFP training course. Before configuring the CAST ZFP panel to work with the CA742, ensure the following has been carried out:

1. The CA742 has been installed as the **last** device on END B of the CAST loop (see CA742 Instructions DFU0007420). The CA742 END A connections are wired to the field loop and the CA742 END B connections are wired to the CIE's END B loop connections.
2. The CA742's resistance trigger setting has been calculated (see pages 1 to 2).

Compatibility with CAST ZFP Systems

The CA742 is designed to be compatible with the following CAST ZFP firmware and programming tools: CAST ZFP Main Module 10A25 or above; CAST ZFP Loop Module 15A30 or above; ZFP Programming Tools V 3.7.8.1 or above (enabling remote PC configuration).

Please contact C-TEC Technical Support for panels with lower firmware versions.

IMPORTANT NOTE: The CA742 can be configured in the default enhanced mode via DIP switch setting 0000, where the resistance threshold is set using the ZFP programming tools (see below, left and pages 4 to 6). For enhanced mode, utilising the firmware listed above enables configuration using the programming tools and on-screen panel confirmation checks.

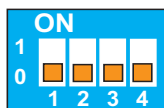
Alternatively, the CA742 can be configured in basic mode, where the resistance threshold is manually set via DIP switch settings 0001 to 1111 (see below, right). Only use basic mode if the firmware compatibility criteria cannot be met. For basic mode, configuration using the programming tools and on-screen panel confirmation checks are not available.

Enhanced Mode (Default)

Ensure a laptop has the correct version of the ZFP programming tools installed and is connected to the panel, enabling communication.

Ensure the CA742's DIP switch is set to '0 0 0 0', shown below:

DIP Switch Setting	1	2	3	4
ONLY USE THIS SETTING!	0	0	0	0



DOWN (OFF) = 0

Basic Mode

25Ω setting shown in the example below



UP (ON) = 1

↑
DOWN (OFF) = 0

Resistance Trigger Setting (Ω)	1	2	3	4
Enhanced Mode	0	0	0	0
5	0	0	0	1
10	0	0	1	0
15	0	0	1	1
20	0	1	0	0
25	0	1	0	1
30	0	1	1	0
35	0	1	1	1
40	1	0	0	0
45	1	0	0	1
50	1	0	1	0
55	1	0	1	1
60	1	1	0	0
65	1	1	0	1
70	1	1	1	0
75	1	1	1	1

Enhanced Mode Only

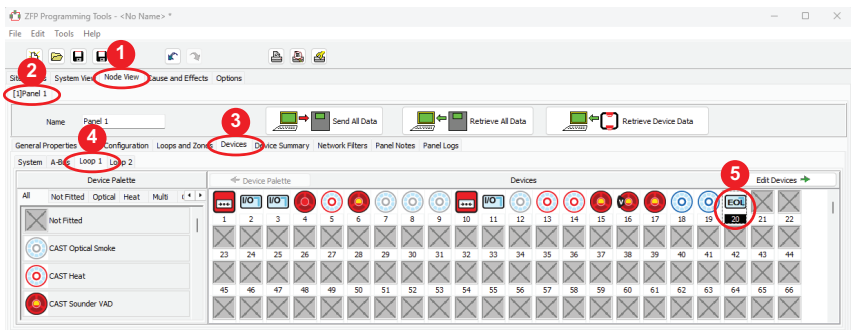
Configuring the CAST ZFP Panel using the Programming Tools

To configure the CAST ZFP panel, perform the following:

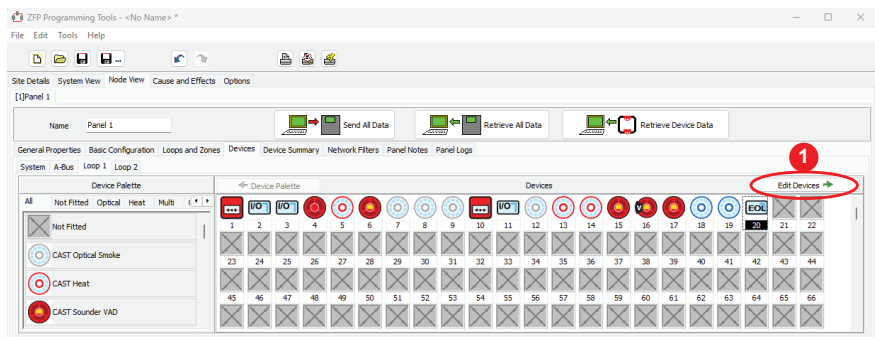
STEP 1: At the panel, enter access level 3, commissioning functions and perform either a loop learn or auto address.

STEP 2: Open the ZFP programming tools on the laptop and ensure the loop protocol is set to 'CAST'. 'Retrieve All Data' from the panel to the laptop.

STEP 3: View the loop devices in the Devices window and confirm the CA742 has been installed as the EOL/last device on the loop. The CA742's icon, i.e. EN54.13 'EOL', is shown in the example below:



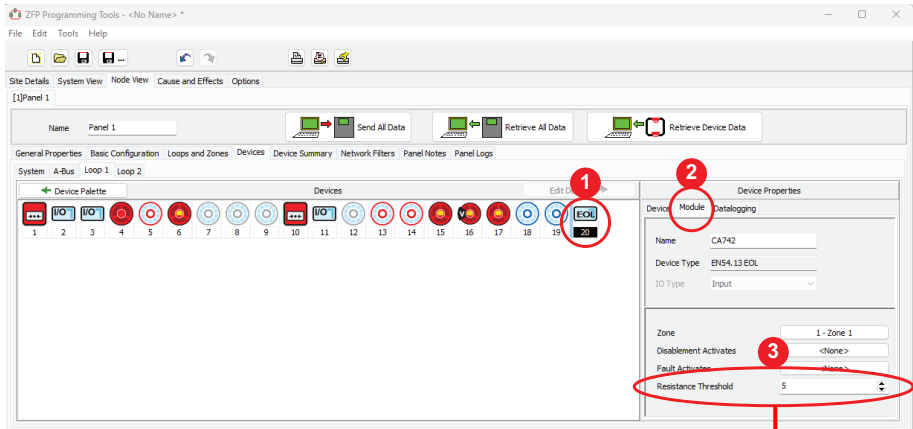
STEP 4: Click the 'Edit Devices' tab, shown below:



Enhanced Mode Only

STEP 5: Click the EOL icon, then under Device Properties click the Module tab. In the 'Resistance Threshold' field, use the scroll buttons to set the CA742's resistance trigger setting previously calculated. Settings 1 to 15 correspond to 5Ω to 75Ω.

In the example below, a resistance threshold setting of '5' corresponds to a resistance trigger setting of '25Ω'.



Resistance Threshold Setting	Resistance Trigger Setting
1	5Ω
2	10Ω
3	15Ω
4	20Ω
5	25Ω
6	30Ω
7	35Ω
8	40Ω
9	45Ω
10	50Ω
11	55Ω
12	60Ω
13	65Ω
14	70Ω
15	75Ω

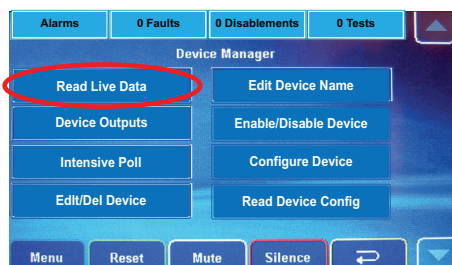
STEP 6: Finally, save the config file to the laptop and 'Send All Data' to the panel.

THE CAST ZFP PANEL IS NOW CONFIGURED TO WORK WITH THE CA742 EOL.

Enhanced Mode Only**Confirmation Checks at the CAST ZFP Panel**

The following on screen confirmation checks are performed at the CAST ZFP panel using the access level 3 menu functions. The confirmation checks are only available when the CA742 has been configured in enhanced mode.

Enter **Access Level 3 (4444) > Engineering Functions > Device Manager (select a loop & select the EOL device) > Read Live Data.**

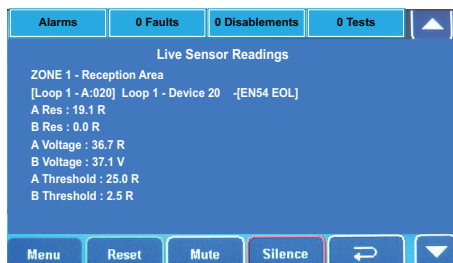


Read Live Data will show live sensor readings from the monitoring CA742 module.

In the Live Sensor Readings example shown below:

- 'A Res:19.1R' shows the loop wiring resistance + resistance of field devices, i.e., 19.1Ω.
- 'A Threshold:25.0 R' shows the resistance trigger setting, i.e., 25Ω.

Therefore, a loop resistance fault will be generated if 'A Res' is greater than 'A Threshold' and similarly if 'B Res' is greater than 'B Threshold'.



Manufacturer: Computationics Limited (C-TEC), Challenge Way, Martland Park, Wigan, Lancashire WN5 0LD. www.c-tec.com
E&OE. No responsibility can be accepted by the manufacturer or distributors of these devices for any misinterpretation of this instruction or the compliance of the system as a whole. The manufacturer's policy is one of continuous improvement, and we reserve the right to make changes to product specifications at our discretion and without prior notice.