



Exertherm MCC 'In drawer' 24x7 Thermal Monitoring

Predicting MCC Critical Connection Failures



The Problem

Within the electrical infrastructure the critical Motor Control Centres (MCC) represent a major source of failure.

These failures are caused by a number of different factors including:

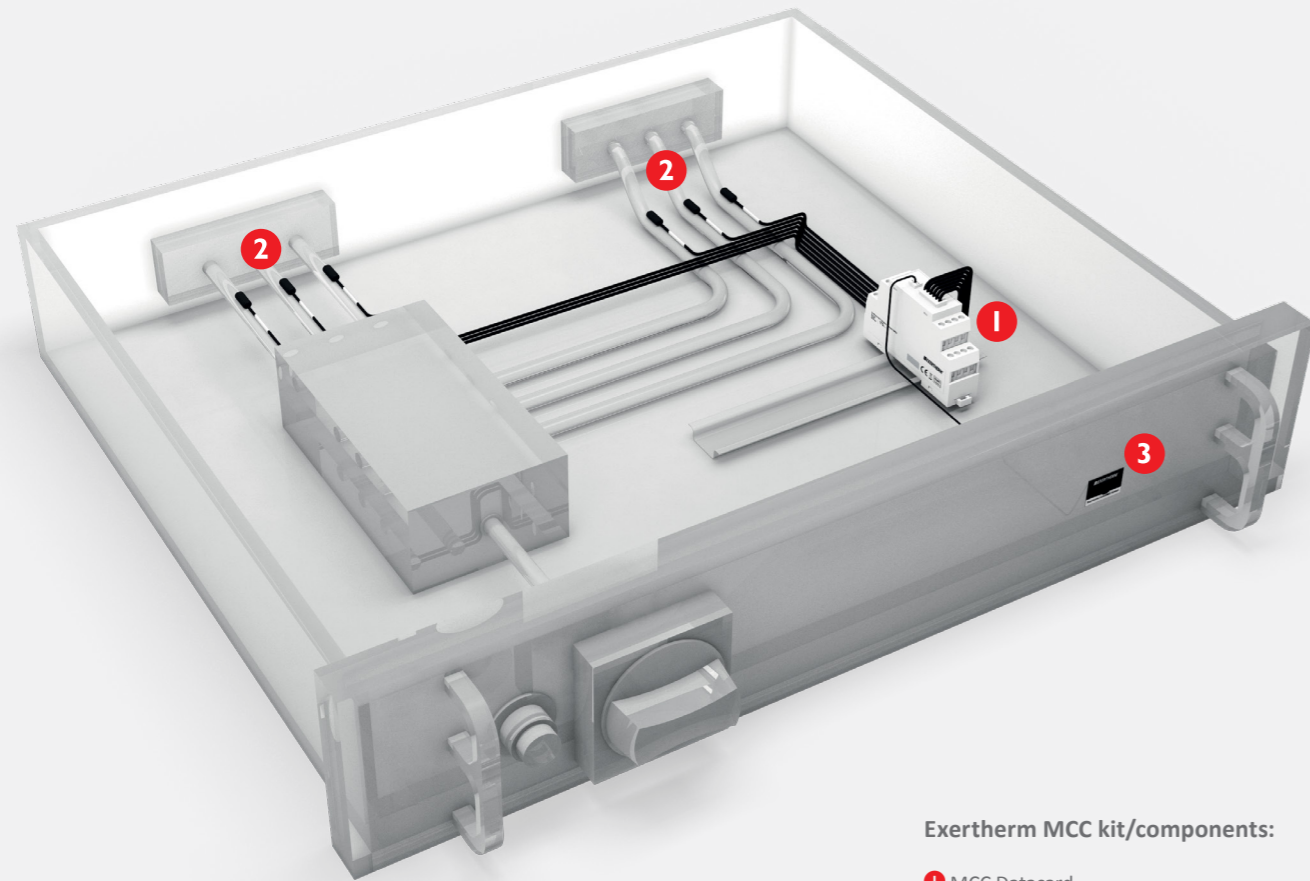
- the effect of constant thermal cycling on the joints;
- weakening of spring-type connectors (jaws);
- the high number of site made terminations; and
- the impact of these factors is multiplied by difficulty in maintaining these locations.

The Solution: Unique 'in-drawer' 24x7 Thermal Monitoring

As the world leader in Thermal Monitoring of electrical and mechanical infrastructure QHi have developed the unique, low cost Exertherm MCC 24x7 Thermal Monitoring Solution. Simple and easy to fit & situated completely within the drawer, this solution provides the ability to permanently thermally monitor the critical connections at the rear of the drawer, via specifically designed measurement techniques (patent pending) for this challenging MCC application, which is globally recognised as a major source of power outages.

MCC In-drawer Thermal Monitoring benefits:

- Reduces risk of outages;
- Increases safety;
- No on-going maintenance; and
- Suitable for new-build or retrofit



Exertherm MCC kit/components:

- 1 MCC Datacard
- 2 MCC Sensor Loom
- 3 MCC LED Unit

Situated completely within the drawer, the special thermal Sensors are attached to the incoming and outgoing cables (or busbar) at the rear of the compartment. The ability of the system to fit within the drawer/bucket is of particular advantage where this is removable. The output from the Sensors is analysed by the MCC Modbus Datacard (MMD) for two key failure modes a) failing or compromised termination/joints and b) phase imbalance.

Alarms:

Temperature alarms: For the failing termination there are two alarms generated, first the low warning level thermal alarm and should the temperature continue to increase then a high or critical alarm is triggered.

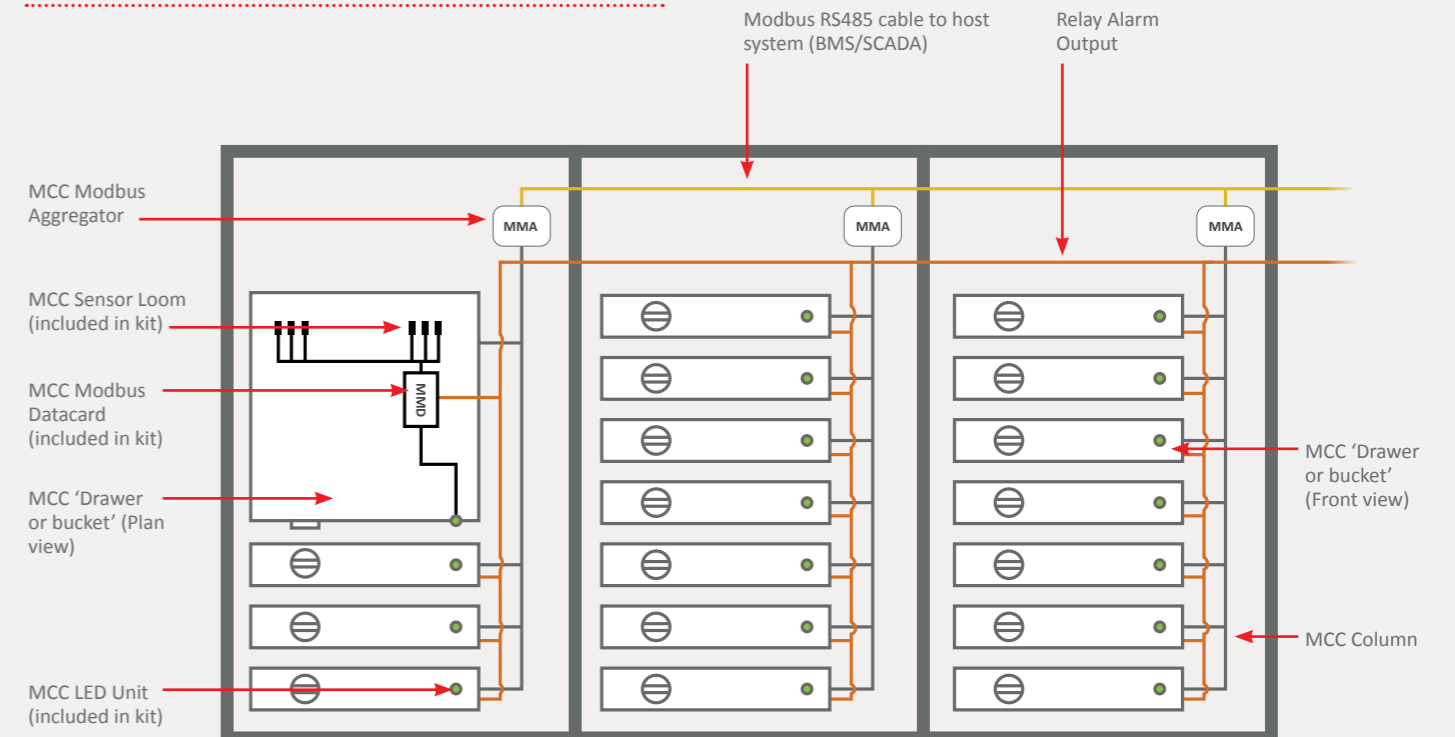
These alarms are visible via a LED status light on the front of the drawer. This provides system status, alarm type and location. Remote alarms are also available through both a volt free relay contact and via Modbus 485.

Phase alarms: The Phase imbalance alarm is generated when, if connected to circuits controlling motors, there is difference in the temperature between the phases. A 10°C differential can identify a phase imbalance which, if not rectified, can half the life of the motor.

Connectivity:

In addition to the standard remote alarms being provided by both the relay and Modbus RS485 protocol. The Modbus output gives you not only the alarms, but also the 'raw temperature data' for storage and trending, in other systems, for any future analysis.

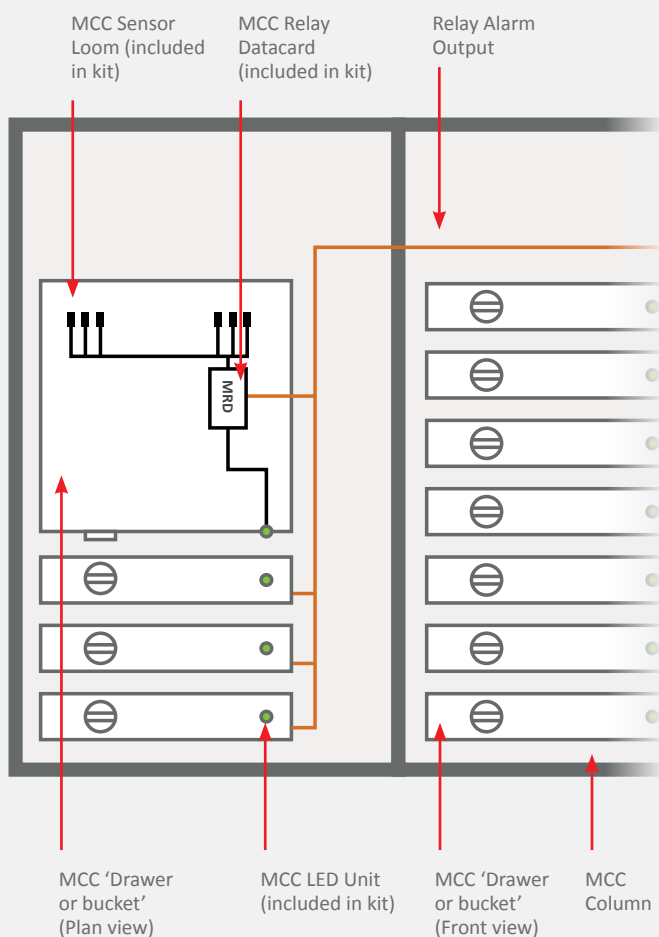
MCC Modbus Solution (MMS) Topology



As an alternative to the MMS, the MCC Relay Solution provides the same ‘in-drawer’ high quality, permanently installed 24x7 monitoring of the MMS but without the option of a Modbus output.

This version is particularly suited to retrofit within existing aging switchgear where there is no available communication infrastructure to allow the export of the alarms and raw temperature data to a host system. All other alarm functionality remains the same as the MMS.

MCC Relay Solution (MRS) Topology



Feature matrix

	MCC Modbus Solution (MMS)	MCC Relay Solution (MRS)
Quick & Easy fit to any MCC	✓	✓
‘In-drawer’ solution disconnects and removes with drawer	✓	✓
Supplied in kit form per MCC drawer	✓	✓
Full, half, quarter drawer cable lengths	✓	✓
Warning and critical thermal alarms	✓	✓
Phase imbalance alarm for motors	✓	✓
Monitors critical 3input/3 output drawer connections	✓	✓
Drawer mounted LED provides local visual condition status	✓	✓
Dry contact relay alarm enables remote alarm on client network	✓	✓
Alarms & Temp Data available in Modbus Protocol for pass through to client system	✓	✗
The MCC Modbus Aggregator (MMA) “gateway” enables network connection of all sensors in MCC column via a single Modbus device	✓	✗