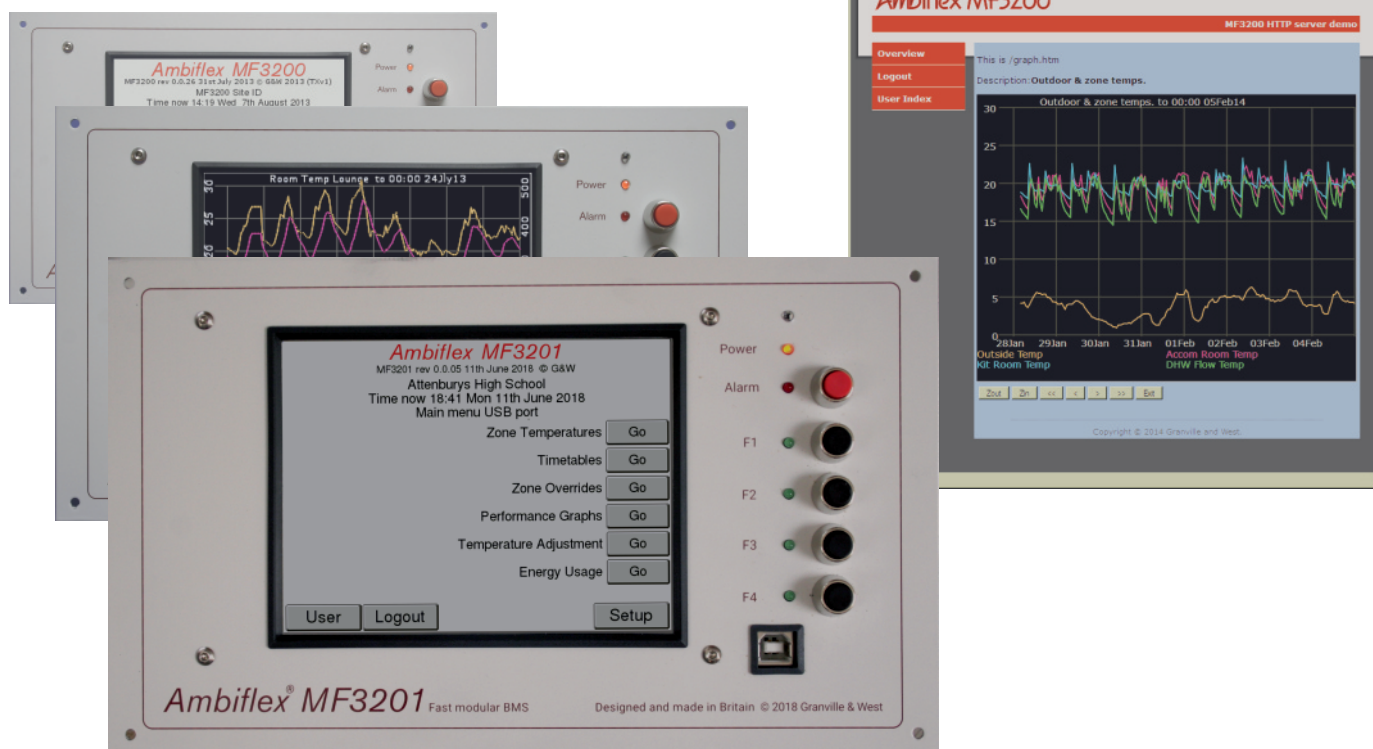


Ambiflex MF3201

Touchscreen BMS controller with integral ethernet TCP/IP

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The Ambiflex MF3201 is a fully programmable modular BMS controller with integral 10/100 ethernet. Local user interface is a 5.7inch VGA colour touchscreen supplemented by programmable dedicated user pushbuttons and alarm indication, with multi level password access control. Remote communications support password controlled remote supervision, application engineering and exception reporting. Direct web level services include user web access and email / SMS relay exception reporting.

MF3201 improves on the earlier MF3200 with a high definition touchscreen and uprated CPU.

A robust RS485 input-output bus is expandable according to system requirements up to 16 LDCX i/o modules providing up to 256 input and 224 output points per MF3201. Each controller also supports up to 96 metering accumulators each of which may be derived from pulse counting inputs on the i/o cards, via Modbus/RTU over the dedicated metering buses or from remote sources via Modbus/TCP. It can also support up to 224 analogue and binary Modbus data points. Up to 32 MF3201 can share realtime control parameters through the DSN data sharing bus.

Hardware Specification

Power Supply

230/240 50Hz, 10VA approx.

Configuration

CPU module with ethernet, colour touchscreen, USB-B local update port, RS485 i/o bus, Modbus/RTU metering bus, DSN controller data sharing bus, RS232 gateway port. Max 16 i/o card, 96 Modbus meters, 160 Modbus read and 64 Modbus write data points per controller; data sharing between up to 32 CPU.

Electrical

3/4 core 120ohm screened cable for RS485 i/o, Modbus-RTU and DSN bus.

RJ45 cat5 ethernet.

USB-B CDC for on-site data collection and application updates, firmware updates.

9D male RS232 port with support for optional external M-bus metering interface.

Dimensions

CPU module 250mm x 150mm x 70 mm

Control I/O points

Isolated RS485 i/o interface bus supporting up to 16 external LDCX cards giving up to:

- 128 measured analogue values - NTC or voltage
- 128 LV AC/DC binary input points
- 128 binary (power c/o relay) output points
- 96 analogue (0..10V) output points
- 96 local DDC control loops

RS485 bus 2 is a Modbus/RTU bus capable of accessing up to 124 low power Modbus/RTU devices.

RS485 bus 3 is configurable either as a second Modbus/RTU bus or alternatively as an Ambiflex-DSN X2 inter-controller data sharing bus, compatible with existing Ambiflex X2 type DSN networks and capable of sharing realtime control data between up to 32 MF3200 controllers.

Local User interface:

5.7inch VGA colour LCD touchscreen

Screen user functions include:

- Display of any current operating values and control zone status
- 12 x user graphs each displaying up to 6 data series from any log
- Classified user information and status points
- 16 x customised user data and control pages
- 32 x fully configurable override functions
- 32 x user adjust points
- Time schedule review and edit
- Diary schedule review and edit
- Alarm / fault / event list review
- Commissioning overrides of input and output points
- Application configuration and engineering settings

Access to all screen functions is controlled by a multi level password system.

Dedicated hardware alarm event view pushbutton
Alarm LED and AWD

4 x programmable hardware user page buttons

Optional EM200B bus-connected timer override and adjust modules.

Control functions

- Up to 384 total weekly time schedule cycles in 16 time channels each with up to 12 different timetables
- Up to 128 total diary schedule cycles in 12 event types
- Up to 16 pre-engineered time control zones with standard functions including:
 - Pre-occupancy timing
 - Start optimisation with self adaption
 - Stop optimisation
 - Duty Cycling with optional reset
 - Protection and economy limit controls from up to 30 setpoints
 - Comprehensive override options at each scheduling level

Additional general purpose control modules which can be interconnected to create most possible control functions include:

- 64 x P+I analogue control modules (SPG)
- 40 x analogue function / switching modules (AFG)
- 12 x multiplying reset generator (RSG)
- 6 x analogue profile generator (PFG)
- 400 x multi-input combination logic nodes each with with latch and timers
- 56 x analogue comparator with differential and setpoint offset
- 24 x accumulator threshold detectors
- 32 x user override controls
- 32 x user analogue adjustment points

Metering

- 96 x general purpose accumulators configurable for:
 - Pulse counting using any binary input with programmable scaling
 - Hours run from any internal logic state
 - Degree-days integrator from any analogue variables with programmable reference temperature
 - Modbus/RTU or Modbus/TCP meter value with scaling
 - M-bus meter value (requires additional M-bus interface hardware)

Logging

- 12 x energy logs, sampling intervals 15 minutes to 1 month, capacity 10 fields x 558 records each
- 4 x performance monitoring logs, sampling from 1 to 120 minute intervals, up to 20 fields x 1581 records each
- 8 x analysis logs, sampling interval from 1 to 120 minutes, 10 fields x 1518 records each
- 1 x default energy log, 2 analogue (min and max), 8 binary state, 7 accumulator, 776 daily samples
- 1 x default GP log, 18 x analogue value, 8 x binary state, 5 x accumulator, 3008 samples at 30 minute intervals

All logs can be downloaded for offboard archiving and analysis and used as data sources for onboard graphing.

Communications

- Integrated 10/100 ethernet supporting:
 - Exception reporting client
 - Email / SMS relay exception reporting client
 - Remote inspection and engineering server
 - RLD data point server
 - MODbus/TCP data exchange server
 - MODbus/TCP data exchange client
 - HTTP server

Front panel USB-B port:

- Firmware update as HID
- Application inspection and engineering as CDC

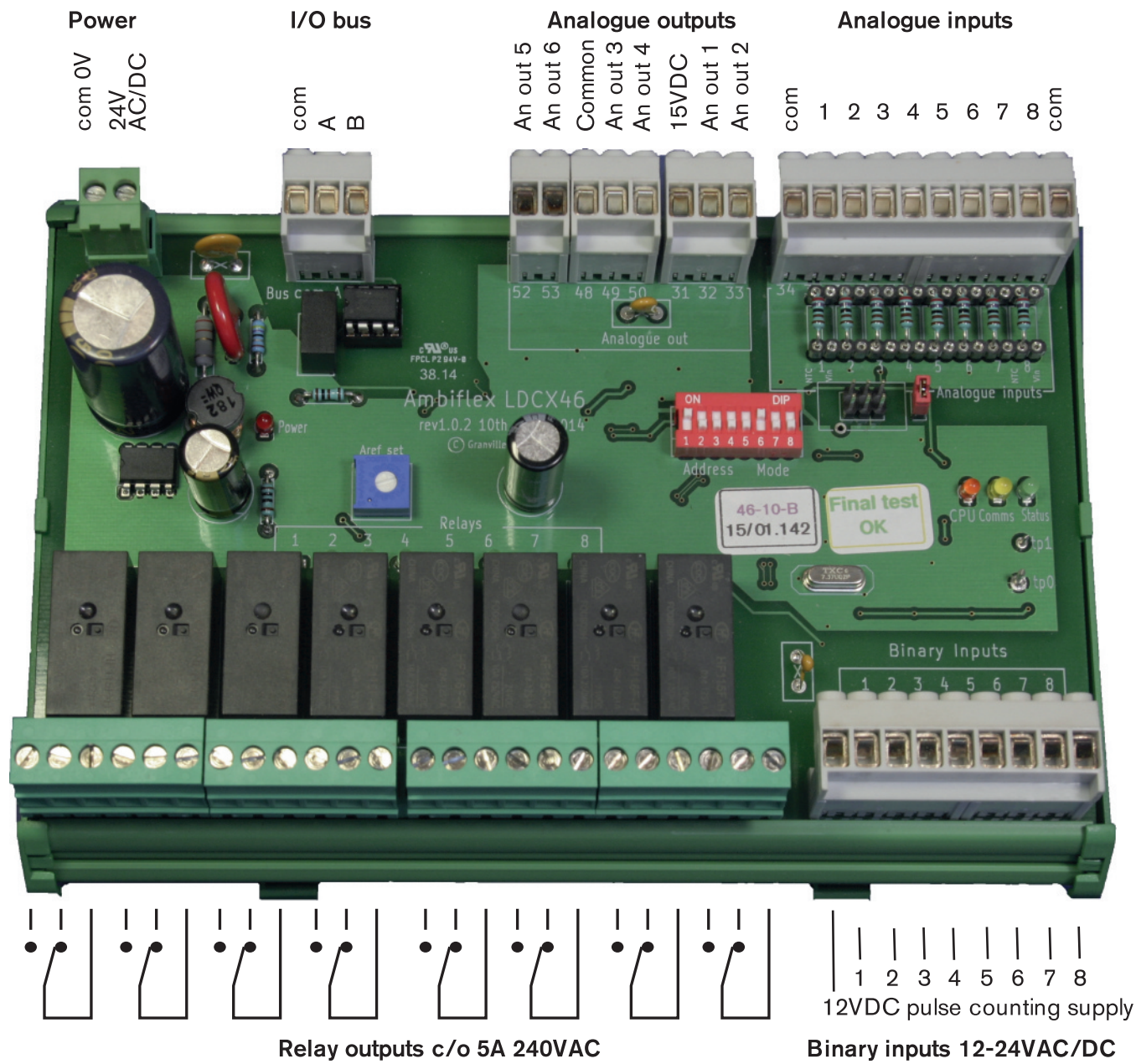
Online Security

- Remote logon protected with second level passcode
- Multi user HTTP logon with preset access level control.
- Optional peer whitelisting and bad passcode lockout on IP functions
- CMT architecture minimises operating system vulnerabilities
- Firmware can only be modified by physical access.

Application and data storage:

- 32 bit high integration RISC CPU
- 2 x 128MB flash, data retention > 10 years
- 1 x 128x8 Quantum Trap nvSRAM with RTC, data retention > 20 years
- Power-down clock backup: replaceable onboard lithium cell, est life > 10 years

Termination detail for LDCX46 input - output card. 1 of up to 16.



All terminations are pluggable two part connectors for easy testing and maintenance.

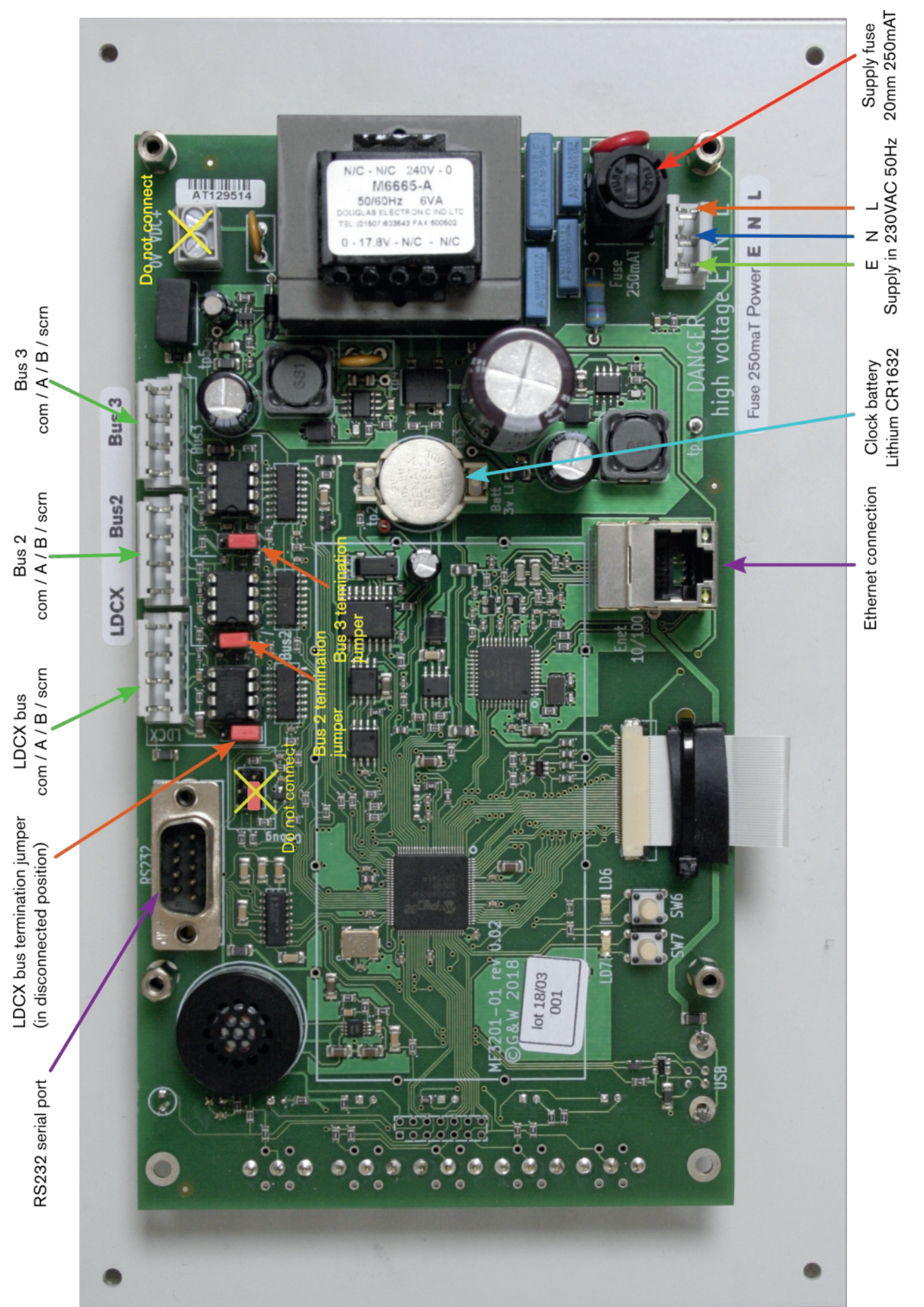
Relay outputs and binary inputs have individual state LEDs, together with card level power, CPU, comms activity and status indicators.

Onboard energy-limited low voltage supply for pulse count metering applications in critical areas.

Hardware and software configurable analogue inputs support linearised NTC or user-rangeable voltage/current input signals.

Integral power relays eliminate need for most external 3-point control and relay interface cards.

Termination detail for MF3201 main controller card - view on rear.



Notes:

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