

ELM Luminaire IO Modules C2N00 – Switch+Dim RJ45 C2N01 – 2x Switch RJ45 C2N02 – Switch+Dim 4P con C2N03 – 2x Switch 4P con



## GENERAL SYSTEM LAYOUT

Please refer to the attached drawing "C2-ELM-NETWORK-LAYOUT" for the general system layout.

#### PREPARATION

- 1. All components connected to the ELM network must be installed so that they are safely electrically isolated from the mains voltage. This should be particularly borne in mind for the luminaire IO modules because they have both mains voltage and SELV (Safety Extra Low Voltage) connections. When mounted in a luminaire, the GreenBus<sup>TM</sup> cable must be installed so that it remains isolated from the other wiring (the 1-10V dimming connection of an electronic ballast is also to be considered as "mains voltage" because no SELV isolation is present in the electronic ballast). These isolation requirements are met if the GreenBus<sup>TM</sup> cable has a defined and isolated wiring path in the luminaire and the necessary cable clips and pull relief are used. Keep the wiring path of the GreenBus<sup>TM</sup> cabling. If you nevertheless want to make your own GreenBus<sup>TM</sup> cables, you should first read the manual "The GreenBus<sup>TM</sup> network and use of the GBDT".
- 2. Do not work on live components. Prior to installing components or making connections, switch off all mains supplies. Check that also UPS or emergency power is disconnected!
- 3. Prior to any work, make sure you fully understand and are able to follow the instructions.

### **CAUTION – WARNING – IMPORTANT**

THE GREENBUS MUST BE COMPLETELY INSTALLED AND TREATED AS A SELV CIRCUIT (SELV=SAFETY EXTRA LOW VOLTAGE).

THE GREENBUS MUST THEREFORE ALWAYS BE ADEQUATELY ISOLATED FROM THE MAINS VOLTAGE OR OTHER HIGH VOLTAGES.

INSTALL THE IO MODULES IN COMPLIANCE WITH ALL LOCAL STANDARDS AND REGULATIONS, WHICH MAY DIFFER FROM COUNTRY TO COUNTRY AND EVEN FROM REGION TO REGION

> REFER TO LOCAL REGULATIONS, AND CONTACT A RECOGNISED INSPECTION BODY IN CASE OF DOUBT

# INSTALLATION & COMMISSIONING

- 1. Mount the IO modules in a luminaire or a lowered ceiling. The modules have protection degree IP40. Where a higher protection degree is required, it must be obtained via the luminaire or a separate enclosure. Use pull reliefs in accordance with local regulations.
- Connect electrically according to the diagrams under ELECTRICAL CONNECTION. The modules (except for the RJ45 GreenBustm connections) are not designed for making branches, use a branch box for this purpose or connect via the luminaire. Refer to the manuals of the electronic ballast manufacturer for additional instructions. Watch the polarity of the dimming connection.
- 3. Do not connect more than two electronic ballasts per IO module. If you want to switch more than 2 electronic ballasts with one IO module, a power relay (power pack) has to be used because of the switch-on surge currents.
- 4. The switching contact of the IO modules has no built-in fuse or other overcurrent protection, so that external protection has to be provided.
- 5. The operation of the module has been tested with the following electronic ballast types:
  - Philips HFR-EII 1-10V
  - Osram Qti-DIM 1-10V
  - Helvar EL-sc 1-10V
  - HUCO EVG-HP A-DIM 1-10V
  - Vossloh-Schwabe ELXd 1-10V

Contact Excellum for other electronic ballast types.

- 6. Contact Excellum for combinations of individual daylight dependent controls with the ELM system.
- 7. Prior to connecting the GreenBus<sup>™</sup>, check that the module is properly isolated from the mains voltage (if the module is installed by a luminaire manufacturer, this will be his responsibility in compliance with EN 60598)!
- 8. First test each luminaire separately by applying mains voltage in the absence of any GreenBus<sup>TM</sup> connections.
- 9. Remove supply voltage from all components.
- 10. Connect the GreenBus<sup>TM</sup> connections between all modules, working channel by channel:
  - First remove any GreenBus connections already made from the ECU CAUTION: First mark the lines with the number of the GreenBus channel indicated on the ECU, so they are later reinserted into the correct position!
- Switch on the mains voltage of all components and check the Greenbus at the end of each branch of each channel as described in the manual "The GreenBus<sup>™</sup> network and use of the GBDT"
  - Notes: When you switch the mains voltage of the ECU on or off, or when you insert or remove GreenBus cables, previously connected luminaires may briefly flicker or burn at full intensity; inserting or removing a GreenBus cable may cause the ECU to restart, whereby the light will flicker and burn at full intensity for a few minutes. When power up has been applied to a GreenBus channel and is subsequently removed, the connected luminaire modules will set their relays to the "ON" position and unload the dim signal (the luminaires will light at full intensity).
- 11. For the installation instructions and checking DALI adapters and DALI lines, please refer to the manual "Installation Manual EDA", which is supplied with the C2C02 EDA (Excellum Dali Adapter).
- 12. For the installation instructions of the ELM Network Components (ECU, SSU, kWh meter, Ethernet switch), please refer to the manual "ELM Network Units".



Refer to the documentation of the electronic ballast manufacturer for additional instructions.

### TECHNICAL DATA

- Mechanical: L180xW38xH23mm (for luminaire mounting the module can be shortened to 147mm)
  - Mounting distance 140mm Material: PC and PC-ABS Glow wire resistance: 850°C as per IEC695-2-1 IP40 with covers, IP20 without covers
- Electrical: The GreenBus<sup>™</sup> connection is only suitable for SELV circuits Only for use with Excellum ECU and GreenBus<sup>™</sup> network GreenBus connection: 2x RJ45 or 1x 4-pin connector (contact Excellum for application of the 4-pin connector) Switching contacts: microcontact type (this is a functional isolation, and should not be considered a safe isolation); Max. 250V/2A, use a power relay (power pack) for higher switching currents. L1 and L2 must be of the same phase. The + and – of the dimming versions belong to the mains voltage side and should be considered as such (to be isolated as mains voltage)

Connectors suitable for 0.5-1.5mm<sup>2</sup> --- stripping length 8.5-9.5mm

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