ELM Sensor IO Modules
C2N10 – RJ45 9P CON
C2N13 – 4PGB 9P FLATCABLE

Excellum
EXCELLENT LIGHTING, SAVING ENERGY

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. The sensors used as standard by Excellum are powered via the GreenBus™. This should be borne in mind when mains voltage or differently powered sensors are used. The GreenBus™ 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). It is recommended to use the Excellum GreenBus™ cabling. If you nevertheless want to make your own GreenBus™ cables, you should first read the manual "The GreenBus™ 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

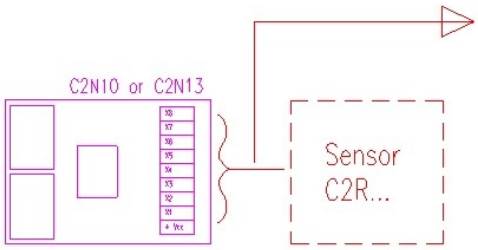
1. Mount the IO-modules in a junction box, behind the pushbuttons in a wall box or in any other suitable location. The modules have protection degree IP20. Where a higher protection degree is required, it must be provided via the luminaire or a separate enclosure. Use pull reliefs in accordance with local regulations.
2. Connect electrically according to the diagrams under ELECTRICAL CONNECTION. The modules (except for the RJ45 GreenBus™ connections) are not designed for making branches, use a branch box for this purpose.
3. Refer to the sensor manuals for additional instructions. Watch the polarity.
4. The sensor IO module can supply up to 40Ma to the connected sensors via the Vcc connection. This module is, however, default set to low current, so at the time of installation the sensor may not have enough power to function properly. This is normal, setting of the module is carried out as part of the system commissioning.
5. The operation of the module has been tested with the following sensors provided by Excellum:
    - C2RL2: light sensor
    - C2RM0: recess mounted PIR sensor
    - C2RM1: surface mounted PIR sensor
    - C2RM2: surface mounted PIR+US sensor
    - C2RM3: wall mounted PIR sensor
    - C2RP2: pushbutton panel, 2 buttons
    - C2RP4: pushbutton panel, 4 buttons
    - C2RP6: pushbutton panel, 6 buttons

    Contact Excellum for other sensor types and combinations of individual daylight dependent controls with the ELM system.
6. Prior to connecting the GreenBus™, check that the module is properly isolated from the mains voltage! Then de-energise all components again.
7. Connect the GreenBus™ 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™ 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 flash or light up at full intensity; inserting or removing a GreenBus cable may cause the ECU to restart, whereby the light will flash and light up 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 dimming signal (the luminaires will light at full intensity).*

8. 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).
9. For the installation instructions of the ELM Network Components (ECU, SSU, kWh meter, Ethernet switch), please refer to the manual “ELM Network Units”.
10. For the installation instructions of the luminaire IO modules, please refer to the manual “ELM Luminaire IO Modules”.

ELECTRICAL CONNECTION



C2N10 C2N13 Sensor IOM	C2RL2 Light Sensor	C2RM0 PIR Sensor Recessed	C2RM1 PIR Sensor Surf. mnt	C2RM2 PIR+US Sensor Surf. mnt	C2RM3 PIR Sensor Wall mnt	C2RP2 Push Button Panel	C2RP4 Push Button Panel	C2RP6 Push Button Panel
X8								
X7								
X6								F
X5								E
X4							D	D
X3							C	C
X2	- (2)	Black (2)	Black (4)	Black (4)	- (2)	B	B	B
X1	-> (3)	Blue (6)	Blue (3)	Blue (3)	-> (4)	A	A	A
+Vcc	+ (1)	White (1)	Red (1)	Red (1)	+ (1)	C1	C1	C1

Maximum cable length between C2N1x and sensor: 3m for unshielded cable.
Refer to the technical data below and the sensor documentation for additional instructions.

TECHNICAL DATA

Mechanical: L42xW40xH35mm (H30mm without cover and screws)
Length including mounting lugs 72mm
Mounting distance of lugs 61mm
Material: PC and PC-ABS
Glow wire resistance: 850°C as per IEC695-2-1
IP20

Electrical: Designed exclusively for use in SELV circuits
Only for use with Excellum ECU and GreenBus™ network
Vcc 24VDC (min. 14V – max. 28V), max. 40mA for sensors
X1 through X8 programmable inputs/outputs (are set during commissioning)

- Input: relay contact (suitable for small currents, typical 0.05mA; e.g. gold contacts) or NPN output of sensor (X1 also suitable for analog in 0-10V)
- Output: low-current LED output (typical 0.85mA current sink); X2 can also be configured as GND connection for the sensors

GreenBus connection: 2x RJ45 or 1x 4-pin connector
Sensor connections: 1x 9-pin connector or 9-wire flatcable,
max. 3m unshielded cable;
>3m requires shielded cable, shielding to be connected to +Vcc on module side and to be isolated on sensor side
Connectors suitable for 0.2-0.5mm² --- stripping length 8.5-9.5mm
Connect the sensors as shown in the above table, contact Excellum for other sensor types.

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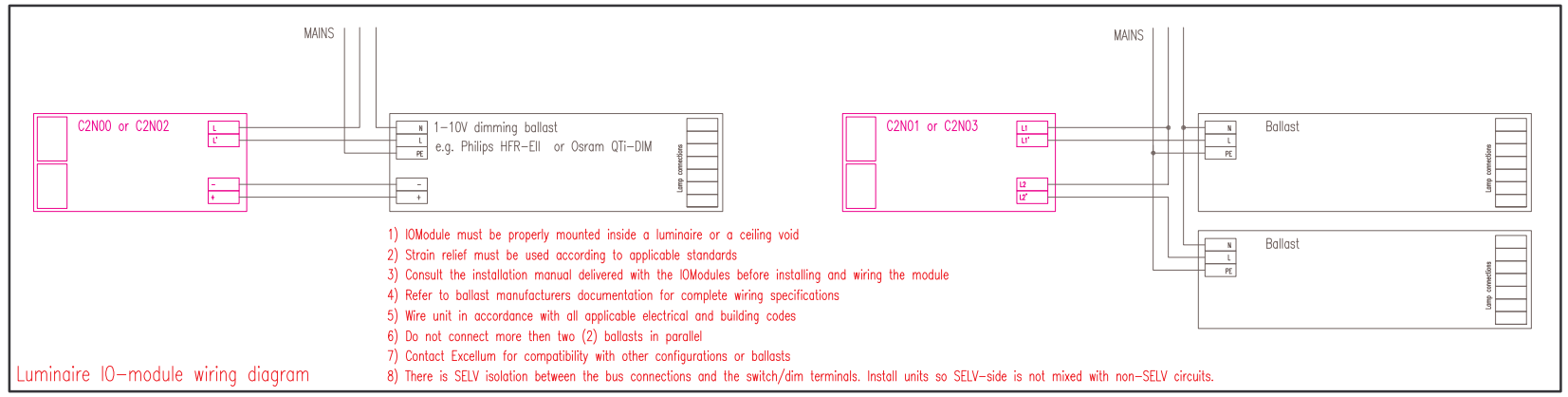
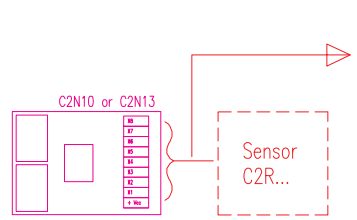


Luminaire IO–module wiring diagram

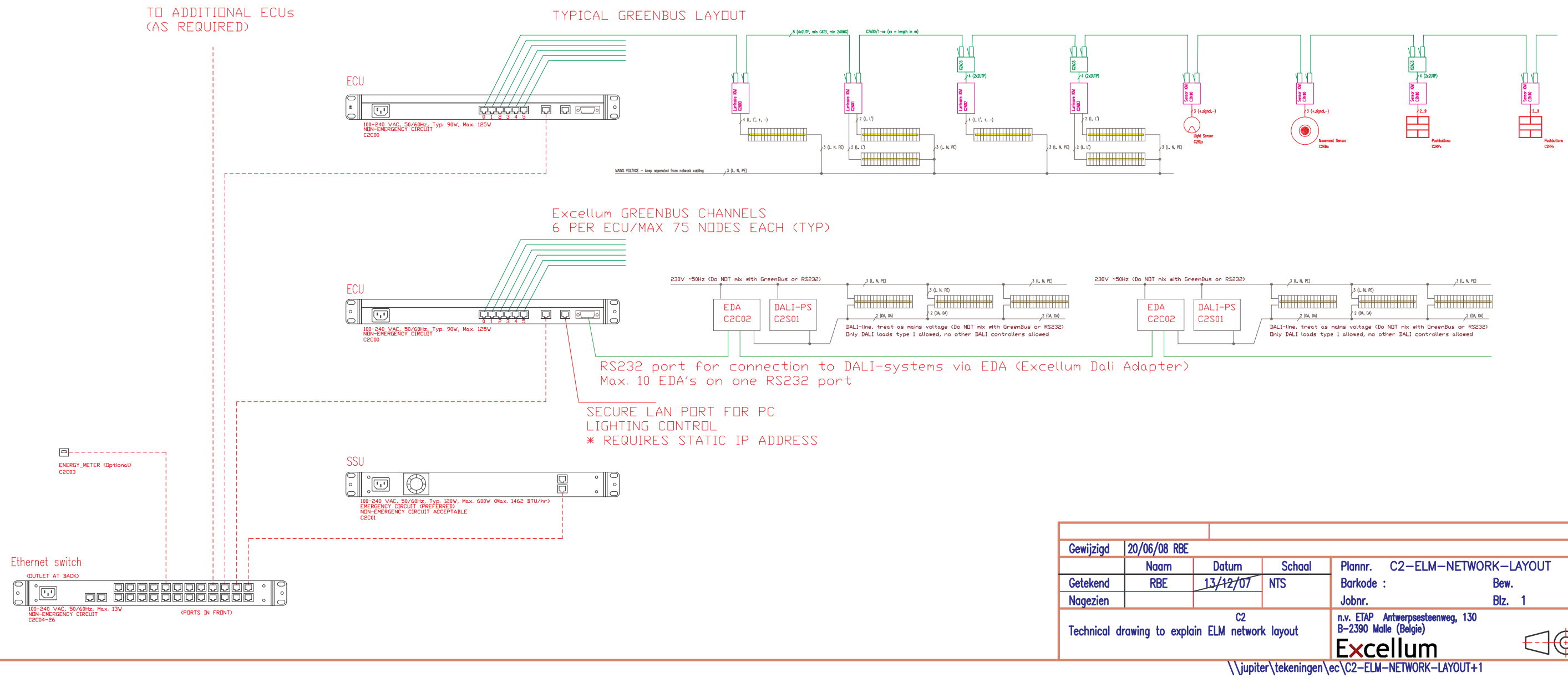
1) IOModule must be properly mounted inside a luminaire or a ceiling void
2) Strain relief must be used according to applicable standards
3) Consult the installation manual delivered with the IOModules before installing and wiring the module
4) Refer to ballast manufacturers documentation for complete wiring specifications
5) Wire unit in accordance with all applicable electrical and building codes
6) Do not connect more then two (2) ballasts in parallel
7) Contact Excellum for compatibility with other configurations or ballasts
8) There is SELV isolation between the bus connections and the switch/dim terminals. Install units so SELV–side is not mixed with non–SELV circuits.



C2N10 C2N13 Sensor IOM	C2RL2 Light Sensor	C2RM0 PIR Sensor Recessed	C2RM1 PIR Sensor Surf. mnt	C2RM2 PIR+US Sensor Surf. mnt	C2RM3 PIR Sensor Wall mnt	C2RP2 Push Button Panel	C2RP4 Push Button Panel	C2RP6 Push Button Panel
X8								
X7								
X6								F
X5								E
X4							D	D
X3							C	C
X2	– (2)	Black (2)	Black (4)	Black (4)	– (2)	B	B	B
X1	–> (3)	Blue (6)	Blue (3)	Blue (3)	–> (4)	A	A	A
+Vcc	+ (1)	White (1)	Red (1)	Red (1)	+ (1)	C1	C1	C1

Sensor IOmodule wiring diagram

1) IOModule must be properly mounted inside a luminaire, ceiling void or distribution box according to your local electrical and building codes.
2) Strain relief must be used according to applicable standards
3) Consult the installation manual delivered with the IOModules before installing and wiring the module
4) Refer to sensor wiring instructions for complete wiring specifications
5) Wire unit in accordance with all applicable electrical and building codes
6) Do not connect sensors in parallel
7) Contact Excellum for compatibility with other configurations or sensors
8) Sensor IOModules en sensors are to be used in SELV circuits only, do not mix with mains circuits.



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Nagezien			

Plannr. C2–ELM–NETWORK–LAYOUT
Barkode :
Bew.
Jobnr.
Blz. 1

C2
Technical drawing to explain ELM network layout

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Excellum

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