FX-SPIDER-X

Central control unit with 40 I/O's

- Linux-based controller
- 40 integrated I/O-points
- 10.1" touch screen
- Webserver, history logging, energy reports, user management, ...

- Modbus and M-bus communication Integrated WiFi router (802.11b/g/n) with TOSIBOX® Readiness

Fast, intelligent, clear, and easy-to-use local control

The Linux-based FX-SPIDER-X central controlling unit for building automation is a special version of it's brother, the FX-3000-X. Dedicated for small processes, narrow spaces and all-in-one solutions, it features a 10.1" touch screen showing HTML-graphics, a powerful processor to run your programs, and 40 built-in I/O-points, thus being everything you need to get your project up and running.

The integrated TOSIBOX® Readiness feature enables an easy and secure remote access solution through VPN without the need for additional hardware.
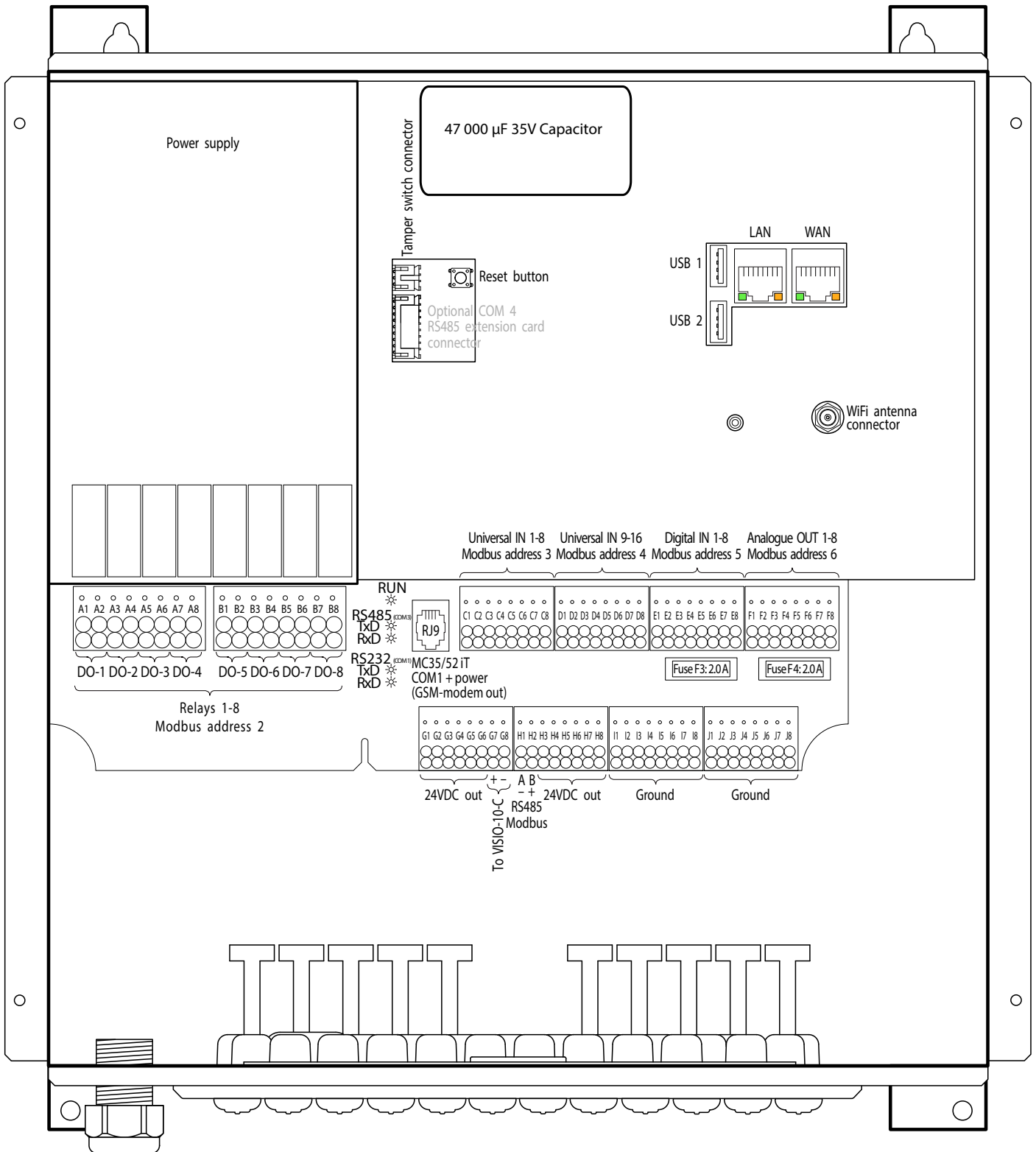
The FX-SPIDER-X uses the IEC-61131-3 standard for PLC programming.

Connect the standard European plug to a wall socket and get going in no time to discover the true meaning of plug and play!

Technical features

Dimensions:	327 x 349 x 134 mm
Operating voltage:	100-240 VAC
Power consumption:	max 200 W
Operating temperature:	0 to +40°C
IP-Class:	54
I/O ports:	8 DO, 16 UI, 8 DI, 8 AO
Voltage outputs:	24 VDC (1.5A), optional 24 VAC (1.0A), 0(2)-10 V for AO's

Power supply

47 000 µF 35V Capacitor

Tamper switch connector

Reset button

Optional COM 4
RS485 extension card
connector

USB 1

USB 2

LAN   WAN

WiFi antenna
connector

A1 A2 A3 A4 A5 A6 A7 A8   B1 B2 B3 B4 B5 B6 B7 B8

DO-1 DO-2 DO-3 DO-4   DO-5 DO-6 DO-7 DO-8

Relays 1-8
Modbus address 2

RUN
RS485 (COM3)
TxD
RxD

RJ9

RS232 (COM1)
TxD
RxD

MC35/52 iT
COM1 + power
(GSM-modem out)

Universal IN 1-8   Universal IN 9-16   Digital IN 1-8   Analogue OUT 1-8
Modbus address 3   Modbus address 4   Modbus address 5   Modbus address 6

C1 C2 C3 C4 C5 C6 C7 C8   D1 D2 D3 D4 D5 D6 D7 D8   E1 E2 E3 E4 E5 E6 E7 E8   F1 F2 F3 F4 F5 F6 F7 F8

Fuse F3: 2.0A   Fuse F4: 2.0A

G1 G2 G3 G4 G5 G6 G7 G8   H1 H2 H3 H4 H5 H6 H7 H8   I1 I2 I3 I4 I5 I6 I7 I8   J1 J2 J3 J4 J5 J6 J7 J8

24VDC out   + −   A B   24VDC out   Ground   Ground
             − +
To VISIO-10-C   RS485
                 Modbus

Power supply: The FX-SPIDER-X controller comes with a standard European CEE 7/7 plug and is thus powered with 230 VAC. There is an adapter inside the encasing that powers all internal equipment, and also offers 24 VDC through connectors G1..G7 and H3..H8.

The controller has a backup capacitor. The capacitor is used -when the power is interrupted- to allow for a controlled shutdown of the controller. The controller will save all point data and close all running processes correctly, preventing possible data loss upon power interruptions.

IMPORTANT! As the power supply wire also serves as a power strip separator for the controller, **the lead power cable may ONLY be plugged into an easily accessible and GROUNDED socket.**
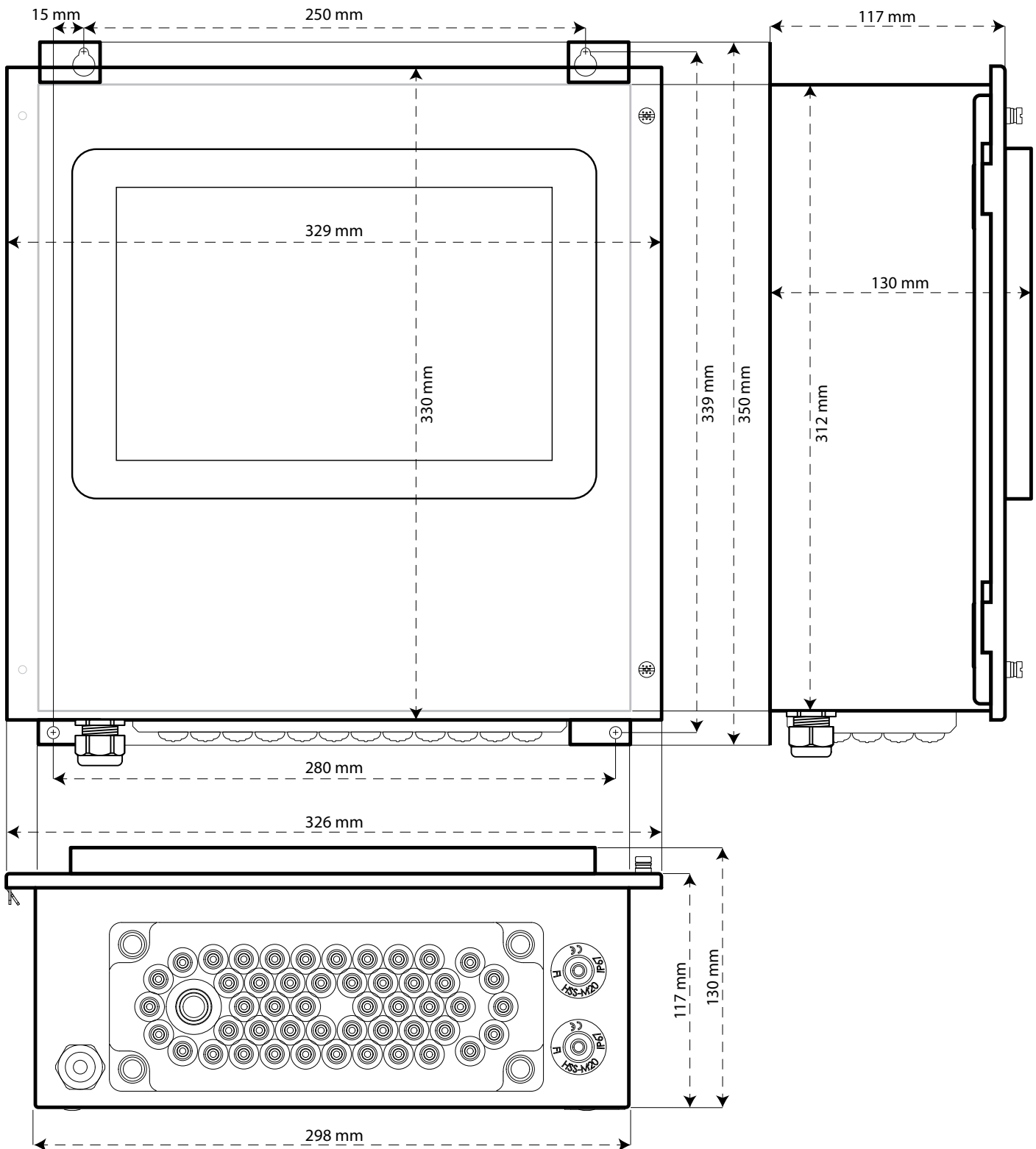
Fuses: The FX-SPIDER-X has two fuses marked F3 and F4. They are Fast Acting Fuses (Flink) of 2.0 Ampère. F3 is connected to outputs G1..G7, F4 is connected to outputs H3..H8.

USB: The Spider has 2 USB ports. The USB1 port can be used to update, consult or reset certain settings that require local intervention using the Update Tool software.

The USB2 port is allocated to the internal router and is used to connect a 4G-modem and match TOSIBOX® Key(s) to the device if the TOSIBOX® Readiness functionality is activated.

Network: The controller has one Ethernet port marked 'WAN', to connect the controller to an external network. The other port, marked as 'LAN', can be used to connect a VISIO-10-X touchscreen display, extend the local network, connect multiLINK modules, or to connect field devices. Both ports operate at 10/100 Mbit/sec and have automatic speed negotiation (MDI / MDI-X). The built-in router operates fully independently and offers IEEE 802.1X support. The default IP address of the controller on the WAN port is 10.100.1.198, the default address on the LAN port is 192.168.11.1.

Wi-Fi: The wireless network is hosted by a chip with 1T1R at 2.4GHz and offers a 150 Mbps connection via 802.11b/g/n modes. The default IP address of the controller on the Wi-Fi network is 192.168.12.1.

15 mm **250 mm** **117 mm**

329 mm

330 mm

339 mm **350 mm** **312 mm** **130 mm**

280 mm

326 mm

298 mm **117 mm** **130 mm**

Network ports LEDs: The orange LEDs indicate network activity for each port. The green LED of the LAN port is the controller's "heart beat"; slow blinking with 2 second intervals indicates normal CPU operation.

Web server: The FX-SPIDER-X has an embedded FTP and web server. This means that the user interface shown on the VISIO-10-X touchscreen display is the exact same as what is shown remotely in a browser.

GSM-modem: The RJ9-port offers an RS232 interface to the COM1 port of the controller. This is used to send out alarms as SMS messages via a serial modem.

Serial communication: The internal I/O's on the FX-SPIDER-X are connected internally to serial port COM3 of the controller using a Modbus RTU protocol. The I/O's occupy fixed addresses 1..6. The Modbus loop can be continued from connectors H1/H2, from where it uses RS485 as its physical layer. Optionally, an additonal RS485 card can be attached to the COM4 port. This allows for the controller to operate two separate serial ports on different speeds or with different communication protocols.

µSD memory card: The FX-SPIDER-X has a µSD card-slot. This is used to store system backups. The controller automatically makes weekly backups to the µSD card. It is located underneath the metal cover that is protecting the circuit board.

Battery: The internal real time clock is powered by a replaceble CR2032 battery when the controller's power supply is not connected. It is located underneath the metal cover that is protecting the circuit board.

Chip: The FX-SPIDER-X controller has dual core ARM Cortex-A9, 1.0 GHz processor, 512 MB DDR3 RAM memory (64 bit), 4 GB eMMC Flash memory and runs Embedded Linux.

Connecting the I/O's: Connect 0.2-2.5 mm^2 cables to connectors A and B, and 0.2-1.5 mm^2 cables to connectors C-J.

Relays: All relays are of the Normal Open type. Please leave one relay empty between the relays to which high and the ones to which low voltage is connected. The maximum load per relay is 6A at 230 VAC or 5A at 30 VDC.
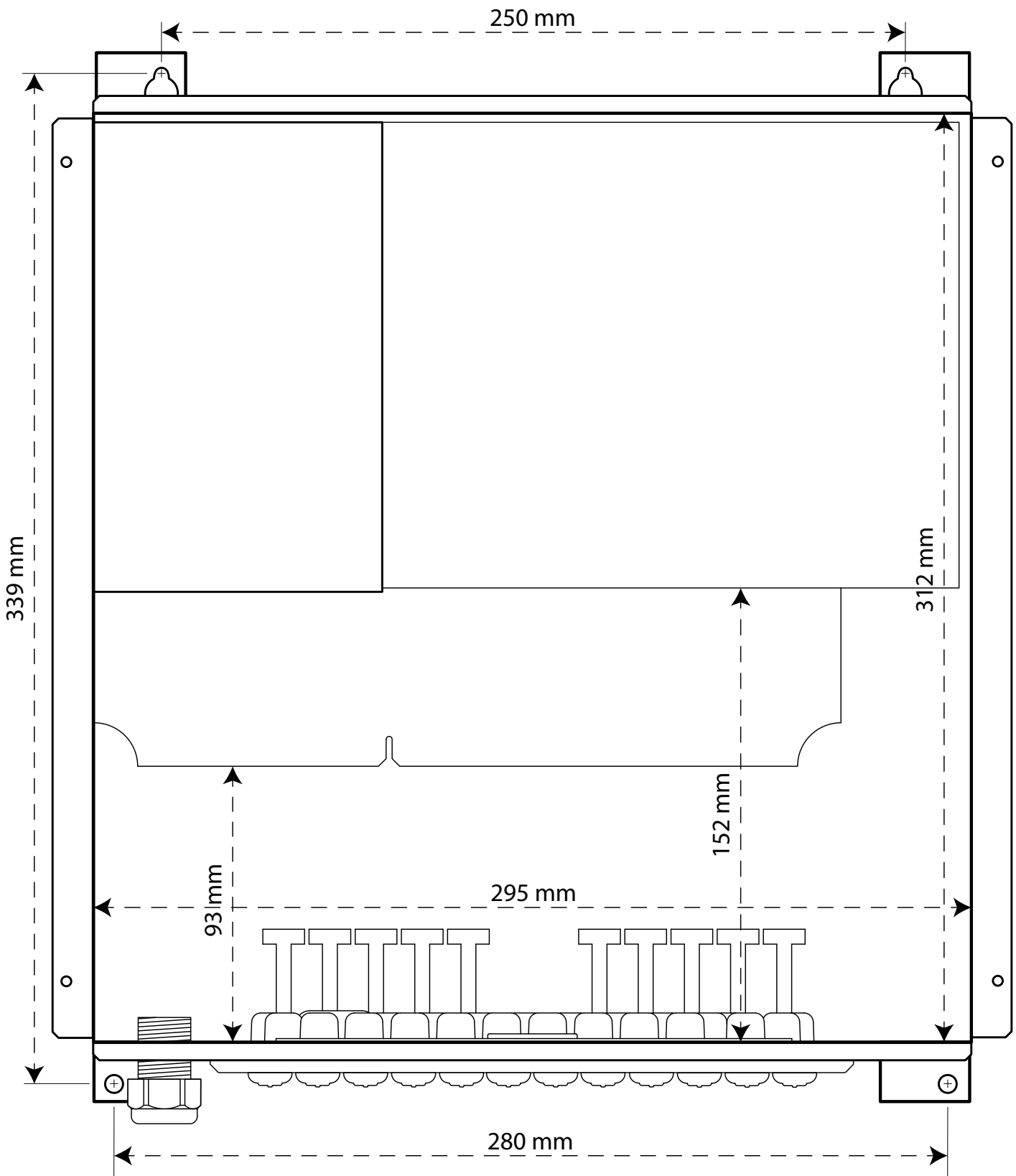
0..10 V Analogue Outputs: Analogue Outputs F1..F8 send out 0-10V signals with an impedance of 1kΩ, at maximum 10 mA.

Inputs: Selection of the type of analogue input is done in the point-programming of the selected conversion table. Connect resistive sensors between connectors C1..D8 (reference) and I1..J8 (ground). Active sensors need only be connected to connectors C1..D8. Make sure to keep the ground level of sensor and controller at the same level.

24 VDC out: The FX-SPIDER-X has 13 connectors (G1..G7 and H3..H8) at which it offers 24 VDC out to power field equipment. Aside the VISIO-10-X touchscreen display (500 mA reserved), the maximum total load of all devices connected to these outputs is 36 Watt or 1.50 A.

G7-G8: The FX-SPIDER-X is by default equipped with a 10.1" VISIO-10-X touchscreen display. For reasons of convenience, the G7+G8 connectors (24 VDC and GND) are especially practical to connect the display's power supply.

Display: The FX-SPIDER-X can be ordered with or without the 10.1" VISIO-10-X touch screen display. Consult the VISIO-10-X datasheet and manual for more details. When ordered with a display, the VISIO-10-X display will be attached into the door of the FX-SPIDER-X. When ordered without display, the door will be a full metal plate.

Programming: The FX-SPIDER-X uses the industrial automation standard IEC-61131-3 for its programming. Use our software suite FX-Editor, offering a clear and efficient project overview, to program the controller. It makes programming not only an easy, but also a speedy process.