



## SYSTEM OVERVIEW :

ELSA Liquid Leak Detection System (LLDS) is a full digital system consist of parts as below:

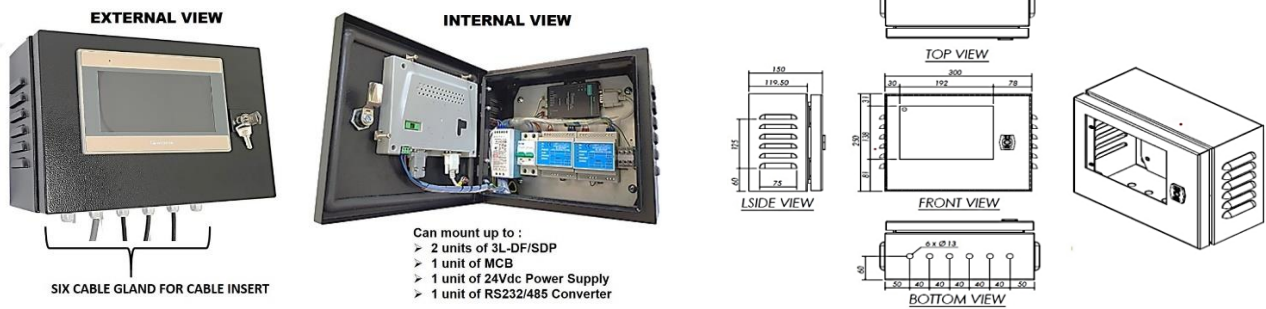
- **3L-DF/TP/07WT:** Touch screen 7" Industrial (*Optional 12"*).
  - **3L-DF/SDP:** Supervising module (Din Rail = 4 modular).
  - **3L-DF/SM50/C:** Sensing module (epoxy moulded).
  - **3L-LS/C:** Liquid sensing cable that can withstand slightly corrosive chemical, flame retardant & dust-proof design.
  - **3L-AS/C:** Liquid sensing cable that can withstand strong acid, flame retardant, UL910 & dust-proof design.
  - **3L-DF/Leader:** Leader cable (connect between 3L-DF/SDP & first 3L-DF/SM50).
  - **3L-Jumper:** Jumper cable (connect between 3L-DF/SM50 units and/or sensing cables).
  - **3L-HDC/2ST:** Hold down clip (to hold sensing cable in desire position).
  - **3L-TL:** Tag/Label (for leak location marking & warning).
- The system capable to detect multiple leaks simultaneously (total # of leaks = 3L-DF/SM50 units) and display floor plan with pin-point precision +/- 1m.
  - It has a unique feature on digital leak sensitivity level which allow remote monitoring (able to estimate water leak size without physical check at site).
  - Capable to identify cable break on the exact length of sensing cable.
  - The system capable to monitor leak even when cable break occurs at 1<sup>st</sup> meter (start point)
  - Criteria for Redundancy Design & Data Centre Tier IV.
  - The system complies with CE, ESD (IEC 61000-4-5) & EMC (IEC61000-6-3 & IEC61000-6-1).

## GENERAL FEATURES:

- Touch screen 7" panel with CE marked & UL Listed.
- Proprietary software designed to operate on a 32 bits RISC Cortex A8 processor chip.
- User-friendly setting up of system configuration and zones names directly at install sites.
- History/Event Log: 5,000 events based on a FIFO basis.
- Communication Protocol:
  - Modbus/RTU.
  - Modbus/TCP.
  - SNMP & SMTP/Email.
- Up to 16 pages of floor-plan maps storage.
- Built-in maps editor allows efficiency work by direct map creation/editing at the panel.
- Flexible in design and configuration to match specific applications:
  - i. The system support  $\leq$  (3L-LS/C and/or 3L-AS/C) x 1.6km (2 x 16 x 50m).
  - ii. Each 3L-DF/TP/07WT interface  $\leq$  3L-DF/SDP x 2 units.
  - iii. Each 3L-DF/SDP support  $\leq$  3L-DF/SM50/C x 16 units.
  - iv. Each 3L-DF/SM50/C support  $\leq$  (3L-LS or 3L-AS) x 50m.
  - v. 3L-LS/C or 3L-AS/C standard length: 3m, 7m & 15m, custom length upon request.
  - vi. Association of zones by 3L-DF/TP/07WT setting menu.
- True Digital Leak sensitivity setting (Setting level: 1 ~ 9).
  - Example: Level 1 ~ 3cm; Level 9 ~ 50cm (liquid size).
- Modbus address store leak sensitivity level data in real time, thus the user able to estimate water leak size instantly without the presence at actual install site.
- Long life design as each 3L-DF/SM50/C unit only turn ON when interfacing with 3L-DF/SDP unit.
- Built-in Buzzer sound for alarm.
- Redundancy: Failed-Safe Loop Back or Token Ring connection feature built-in (*continues to detect leaks even cable break at 1st meter of sensing cable - Optional connection*).
- Enclosure Box: Rugged black powdered coated metal enclosure for indoor application only (optional IP65 rating).

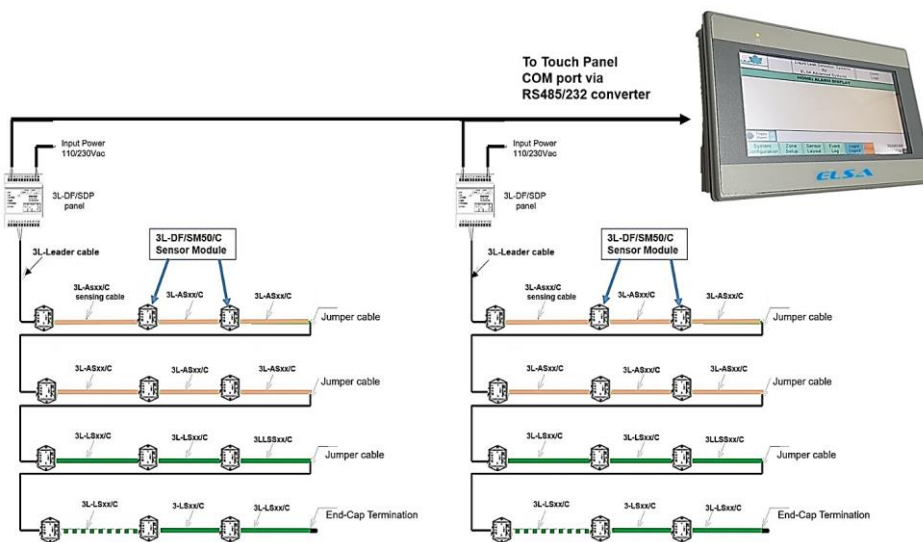
## METAL ENCLOSURE BOX :

**Metal Enclosure Dimension: 300mm(L)\*250mm(H)\*150mm(D)**

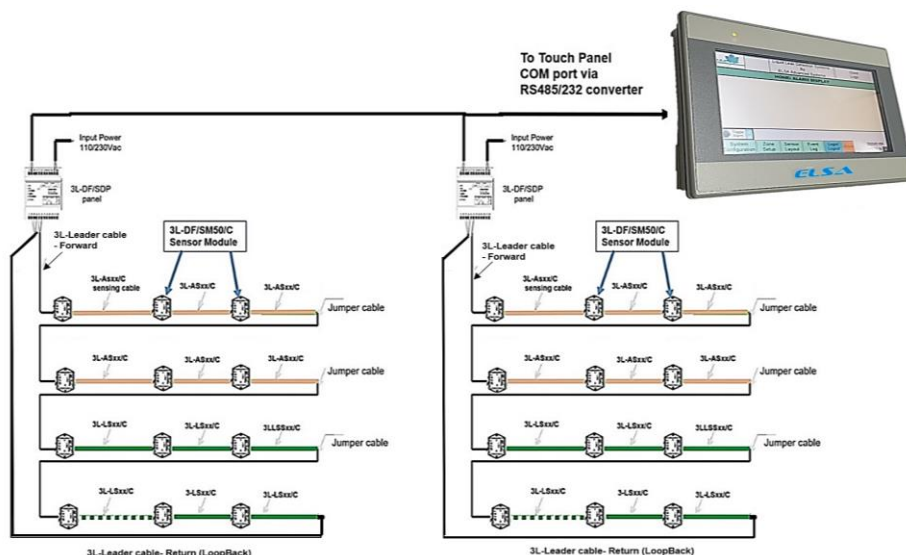


## TYPICAL DIGI-FLEX SYSTEM CONFIGURATION









### • End-Cap Termination Configuration



### • Fail-Safe Loop-Back Configuration



## MATERIAL LIST DETAILS:

Parts:	PART-NUMBER/ DESCRIPTION:
	<p><b>3L-DF/TP/07WT</b></p> <ul style="list-style-type: none"> <li>7" Touch panel (store up to 16 pages floor plan)</li> <li>Interface up to 3L-DF/SDP x 2 units (<b>800m x 2</b> = 3L-LS/C and/or 3L-AS/C).</li> <li>History/Event Log: 5,000 events based on a FIFO basis.</li> <li>Dimension: 200.3mm (L) x 146.3mm (H) x 34mm (W).</li> </ul>
	<p><b>3L-DF/SDP</b></p> <ul style="list-style-type: none"> <li>Digi-Flex Supervising module (Din Rail 4 modular).</li> <li>Monitor up to 16 units of Sensor modules 3L-DF/SM50.</li> <li>1x Relay (Common Alarm) &amp; RS485 Modbus RTU.</li> <li>Dimension: 86mm (L) x 58mm (H) x 70mm (W).</li> </ul>
	<p><b>3L-DF/SM50/C</b></p> <ul style="list-style-type: none"> <li>Digi-Flex Sensor Module with M12 connector.</li> <li>Each module monitor &lt;= 50m of sensing cable 3L-LS and/or 3L-AS.</li> <li>Status indicator by LED.</li> <li>Dimension: 50mm (L) x 25mm (H) x 38mm (W). (Connector not inclusive).</li> </ul>
	<p><b>3L-LSxx/C (xx = length in metre)</b></p> <ul style="list-style-type: none"> <li>Liquid sensing cable with M12 connector.</li> <li>For water or slightly corrosive conductive liquids.</li> </ul> <p><b>3L- ASxx/C (xx = length in metre)</b></p> <ul style="list-style-type: none"> <li>Acid sensing cable with M12 Connector, UL910</li> <li>Withstand highly corrosive conductive liquids such as 100% Sulfuric Acid.</li> </ul> <p><i>Note: 3L-LS &amp; 3L-AS both may combine as a single system.</i></p>
	<p><b>3L- DF/Leaderxx/EC/C (xx = length in metre)</b></p> <ul style="list-style-type: none"> <li>Communication leader cable with M12 connector and End-cap as termination.</li> <li><i>OPTIONAL: Failed-Safe Loopback configuration with additional leader loopback cable in connection replacing End-cap.</i></li> </ul>
	<p><b>3L- Jumperxx/C (xx = length in metre)</b></p> <ul style="list-style-type: none"> <li>Communication jumper cable with M12 connector for extension between cables.</li> </ul>
	<p><b>3L-HDC/2ST</b></p> <ul style="list-style-type: none"> <li>Hold down clips (double sided tape) to clamp and secure sensing cables to the floor or tray.</li> <li>Typical 1m per clip.</li> </ul>
	<p><b>3L-TL</b></p> <ul style="list-style-type: none"> <li>Tag or Label to mark leak location.</li> <li>Typical 3m per Tag or Label.</li> </ul>



**COMPANY ADDRESS & CONTACT INFORMATION:**

**ELSA ADVANCED SYSTEMS PTE LTD**

**Address: 1004, TOA PAYOH NORTH  
#04-01, SINGAPORE 318995.**

**Tel: +65 6258 1598**

**Website: [www.elsaadv.com](http://www.elsaadv.com)**

**Email: [enquiry@elsaadv.com](mailto:enquiry@elsaadv.com)**



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