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CTU

Combined Termination Unit

The Tunnel Sensors CTU is a rugged termination unit, designed for installation alongside compatible Tunnel Sensors instruments, such as VICONOX, AIRFLOW, and CROSSFLOW, within the tunnel bore.

Most Acoem Dynoptic monitors are supplied with short interface cables which require local termination and junction with tunnel infrastructure cables. The standard CTU variant is designed to fulfil this role. Acoem Dynoptic instruments are predominantly 24Vdc powered. Consequently, a local PSU is frequently required in addition to local cable termination. The CTU-P variant includes an integral PSU to fulfil this role.

CTU can be deployed with a variety of different Tunnel Sensors monitors, each with differing outputs, in stand-alone or networked configurations. In some cases, one CTU can be installed in conjunction with two local monitors; whilst at other times enhanced Over Voltage Protection (OVP) will be deployed within the CTU to protect analogue outputs and RS485.

Such diverse applications place differing requirements on the type and quantity of wiring terminals required, and therefore the CTU adopts a modular design philosophy in which enclosures and terminal packs are offered separately, so that customers can specify and populate terminals as required. Two CTU enclosure variants are available: CTU (DIN rail only – no PSU and no terminals); and CTU-P (DIN rail with PSU and power terminals).

Additional DIN rail terminals (standard or OVP) are offered separately, as optional accessory packs. OVP terminals provide increased protection against voltage spikes and transient voltages on lengthy cables. OVP terminal packs are available for RS485 and analogue outputs.

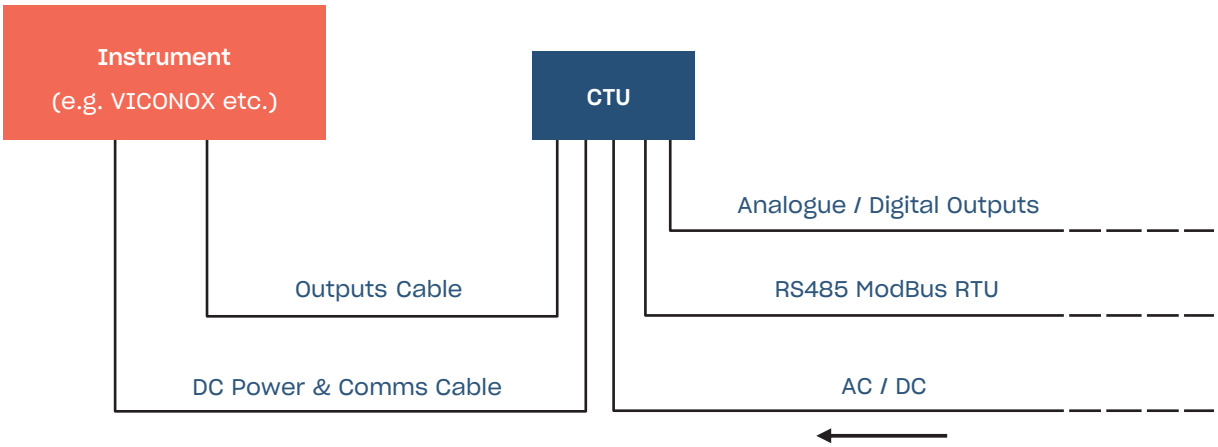
Note that OVP terminals are sacrificial and that, in protecting the CTU and any local instruments, individual OVP terminals may be damaged and require replacement. All OVP terminals are available from Acoem Dynoptic and are easily replaced on site.

CTU enclosures are manufactured from 316L stainless steel and achieve IP67 protection rating. They are designed to be wall mounted and include quick fit mounting lugs. Enclosure lids benefit from a silicone sealing gasket; quick release catches; and a security lock screw to prevent unintended access.

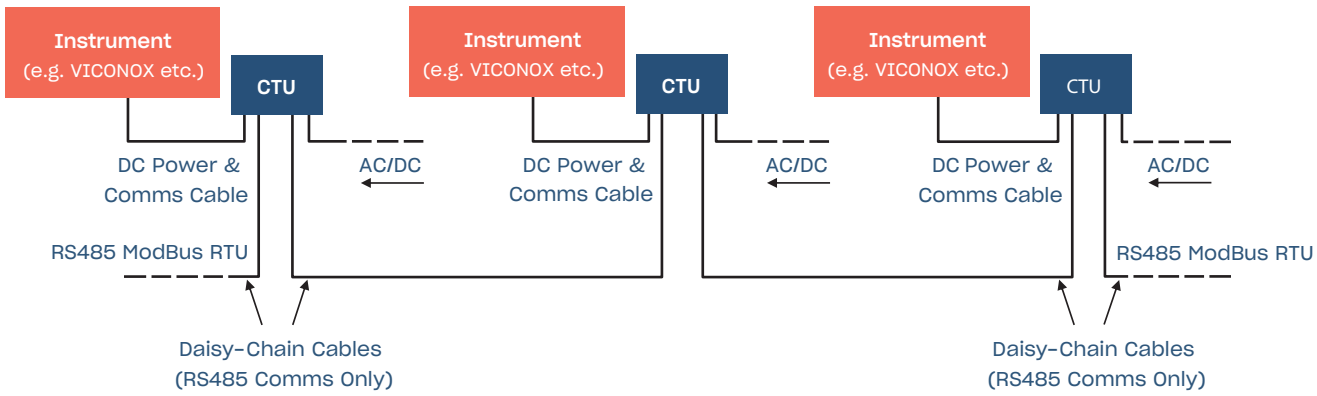
Benefits

- **Wall mounted termination unit**
- **316L stainless steel construction**
- **IP67 ingress protection**
- **Pre-installed cable glands**
- **DIN rail ready to accept terminals**
- **Optional integrated PSU**
- **Optional terminal packs**
- **Optional Over Voltage Protection (OVP)**

Example Use in a Stand-Alone Configuration



Example Use in a Modbus Network (Daisy-chained)



Specification

Physical

Item	Parameter	Units	Min	Max	Comment
1	Materials (enclosure)				AISI/SAE 316L stainless steel.
2	Ingress Protection			IP67	
3	Operating Temperature	°C	-30*	+50	*operational
4	Operating Humidity	%		100	
5	Dimensions	mm	305 x 168 x 120		
6	Weight	kg		3	

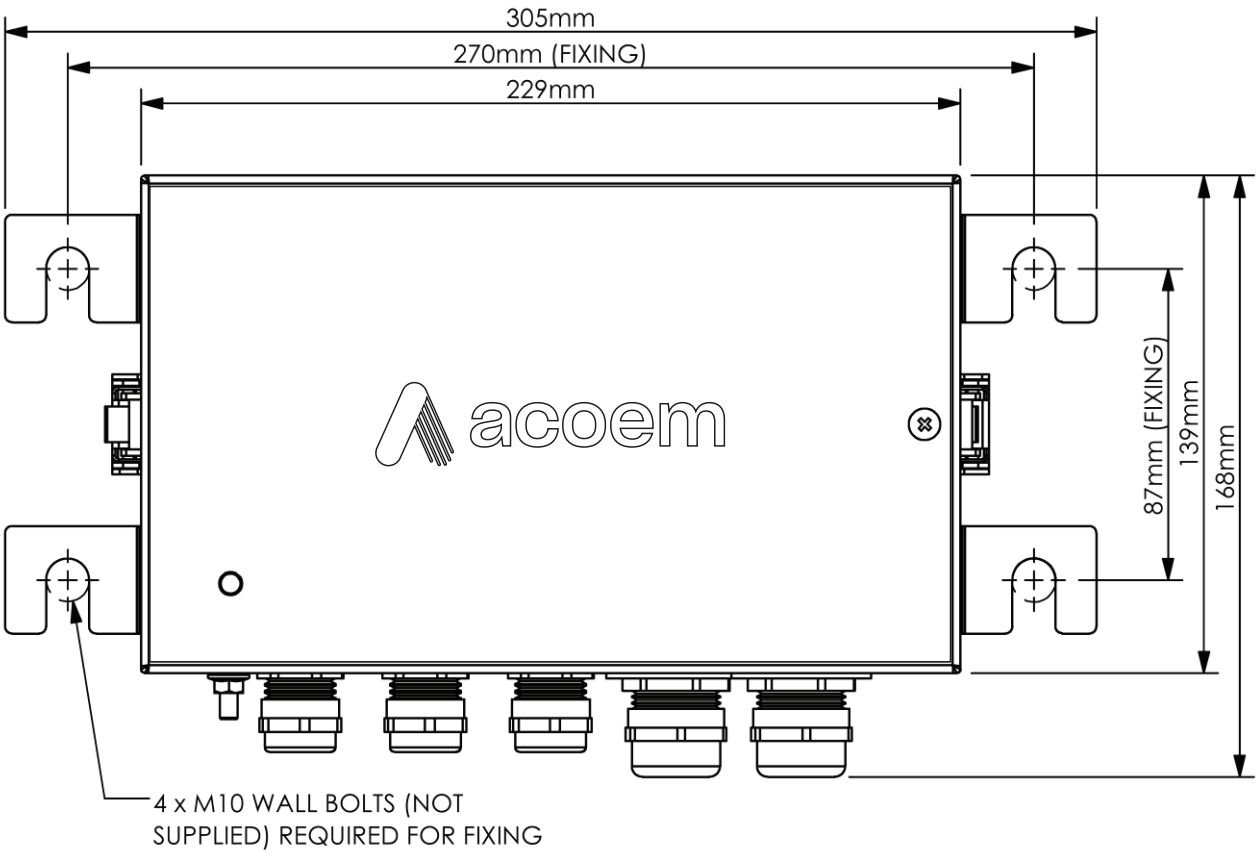
Electrical

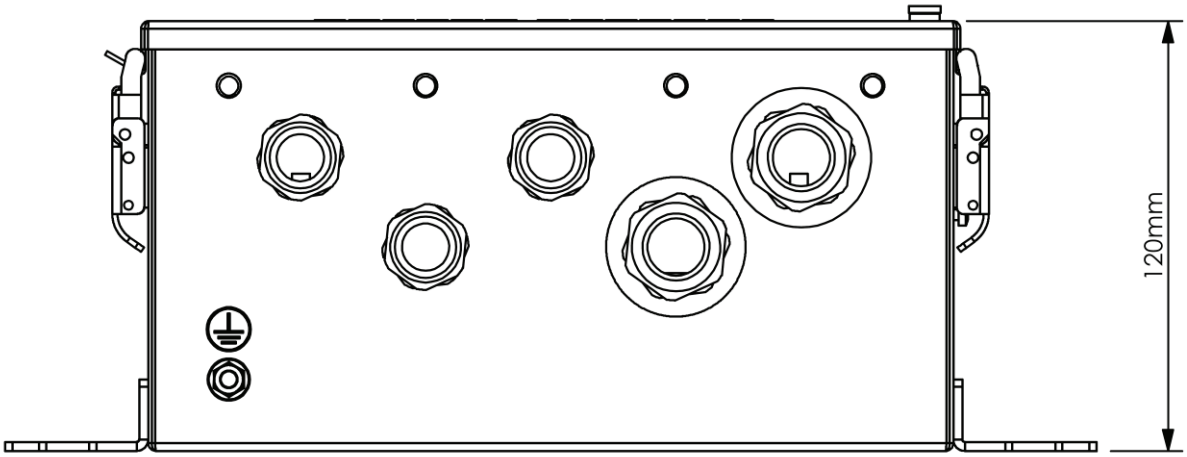
7	AC Input Voltage	Vac	85	264	Nominal 100-240Vac. CTU-P version ONLY.
8	AC Input Frequency	Hz	47	63	Nominal 50-60Hz. CTU-P version ONLY.
9	AC Input Current	A	1.4		CTU-P version ONLY.
10	AC Input Fuse	A		2.0(T)	CTU-P version ONLY. 2A (T), 250Vac, 20mm
11	DC Output Voltage	Vdc	22	26	CTU-P version ONLY. Nominally set to 24Vdc
12	DC Output Current	A		2.9	CTU-P version ONLY.
13	RS485 (Modbus) OVP Limit	Vdc		12	Optional.
14	Analogue Output OVP Limit	Vdc		24	Optional.
15	Terminal Wire Gauge	AWG	22	12	
16	Terminal Wire Conductor Area	mm^2	0.5	4	
17	Cable Gland Entry Quantity			5	
18	Cable Gland Entry Size	mm	8	13	3off. Thread: M20 x 1.5.
19	Cable Gland Entry Size	mm	11 (15)	16 (21)	2off. Thread: M25 x 1.5. (can be replaced with M32 x 1.5, supplied loose)
20	Cable Gland Material				Nickel plated brass.

Compliance & Design

21	CE Compliant				Yes. See DoC for details.
22	Design Life	Years	20		
23	MTBF	Hours	500,000		CTU-P version ONLY.
24	Warranty	Months	24		Return to base warranty. Extensions available.

Dimensions (mm):





Options & Accessories

Description	Order Code	Notes
CTU Variants Instrument 	TSL-CTU	Termination unit with cable glands, DIN rail & end clamps, but no PSU or terminals.
	TSL-CTU-P	Termination unit with cable glands, DIN rail, end clamps, 24Vdc PSU, and AC/DC terminals
Terminal Packs 	TSL-CTU-TP-DC	24Vdc Terminal Pack - 2 Terminals & 1 End Plate
	TSL-CTU-TP-E-2	Earth Terminal Pack - 2 Terminals & 1 End Plate
	TSL-CTU-TP-E-5	Earth Terminal Pack - 5 Terminals & 1 End Plate
	TSL-CTU-TP-AO-2	Analogue Output Terminal Pack - 2 Terminals & 1 End Plate
	TSL-CTU-TP-AO-4	Analogue Output Terminal Pack - 4 Terminals & 1 End Plate
	TSL-CTU-TP-AO-8	Analogue Output Terminal Pack - 8 Terminals & 1 End Plate
	TSL-CTU-TP-DO-3	Digital Output Terminal Pack - 3 Terminals & 1 End Plate
	TSL-CTU-TP-DO-5	Digital Output Terminal Pack - 5 Terminals & 1 End Plate
	TSL-CTU-TP-DO-10	Digital Output Terminal Pack - 10 Terminals & 1 End Plate
	TSL-CTU-TP-RS485	RS485 Terminal Pack - 3 Terminals & 1 End Plate

Options & Accessories

Description	Order Code	Notes
OVP Terminal Packs 	TSL-CTU-OVP-AO-2	Analogue Output OVP Terminal Pack - 2 Terminals & 1 End Plate
	TSL-CTU-OVP-AO-4	Analogue Output OVP Terminal Pack - 4 Terminals & 1 End Plate
	TSL-CTU-OVP-AO-8	Analogue Output OVP Terminal Pack - 8 Terminals & 1 End Plate
	TSL-CTU-OVP-RS485	RS485 OVP Terminal Pack - 1 Base & 1 Module

Note that the actual part may differ from the above representative pictures.

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