

Dual Cab Switching Unit

by Unipart Rail



Resolving Obsolescence

The pre-2021 DCSU has now been deemed as obsolete due to a component obsolescence issue. This new DCSU will enable all the TPWS equipment from both cabs to work with just one control unit. A cab select switch is required to select the state of the TPWS equipment in each cab. The change of state in the DCSU will select all the TPWS equipment to be operational for that selected cab. This device is used on locomotives where only one control unit is required for operating cab equipment either ends of the vehicle.

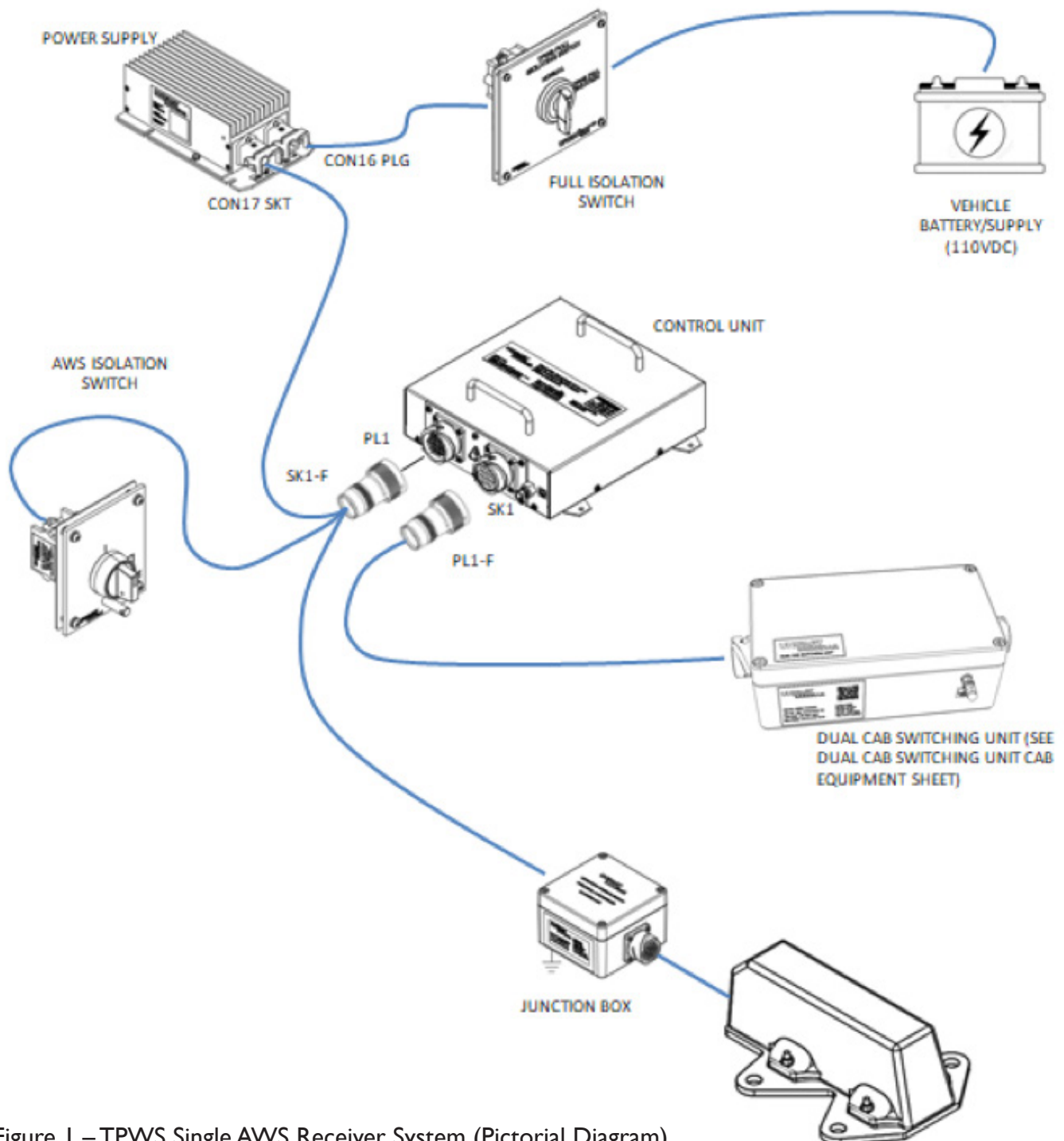


Figure I – TPWS Single AWS Receiver System (Pictorial Diagram)

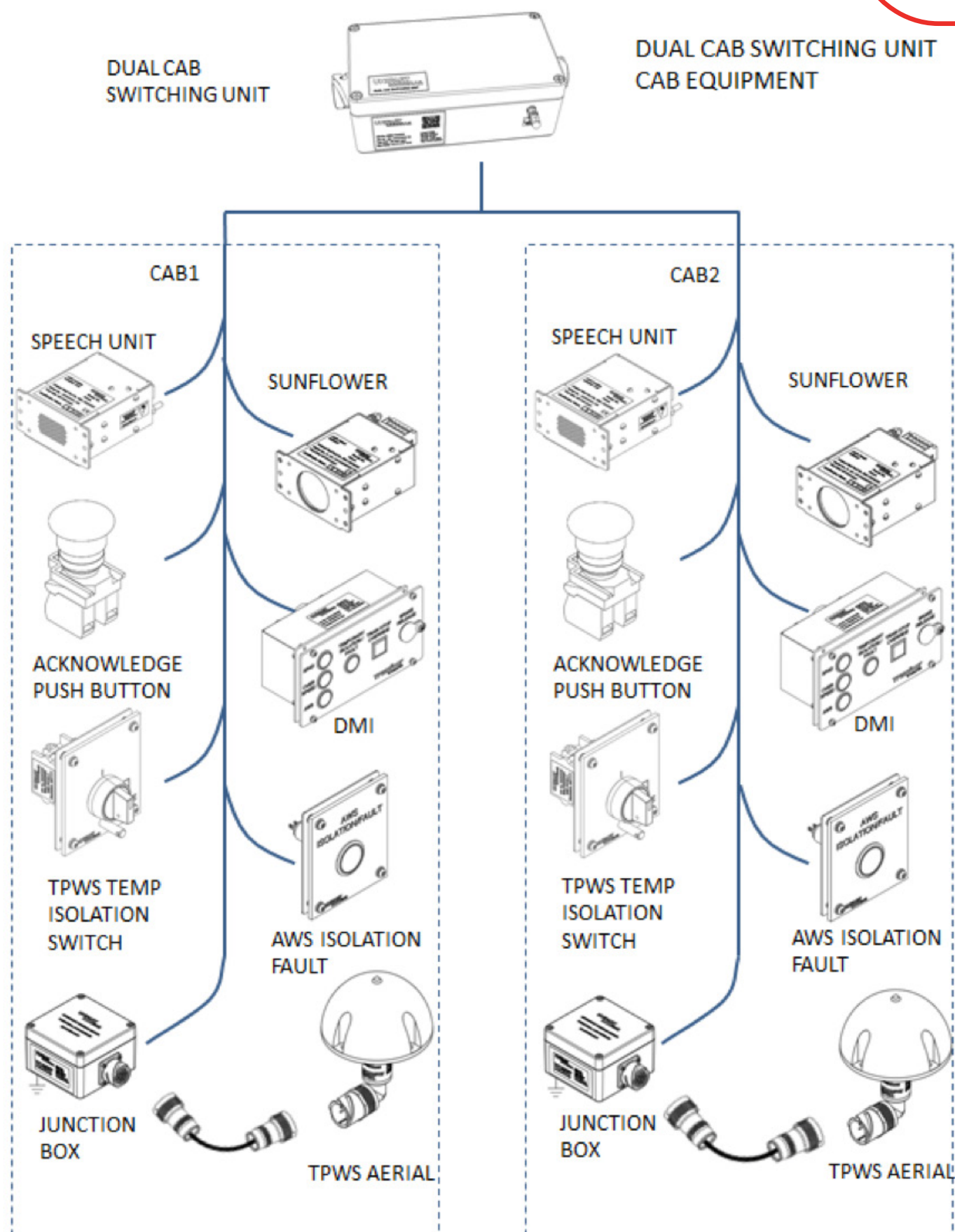


Figure 2: TPWS Dual Cab Switchng Equipment (Pictorial Diagram)

Technical Information

Function

The DCSU works as part of the TPWS system.

It uses only the TPWS power source.

It will switch the TPWS 12V, AWS 40V Acknowledge, TPWS 0V and TPWS aerial signals.

Configuration

The unit can be configured to work with either 12V or 0V cab select.

It can be fitted with aerial sensitivity selection for fine tuning of the aerial calibration once fitted to the vehicle performed at First in Class testing.

RAMS information

- Relay can typically perform 10 million operations
- MTBF = 111,389.769 Hrs (0.1 Million Hours)
- MTTR = 4 Hrs
- MDT = 81 Hrs
- Internet Availability = 99.99640913%
- Operational Availability = 99.92733521%

It is suggested that service/replacement of the DCSU is undertaken every 18 years of vehicle service operation.

Unit characteristics

- IP66 rating
- runs from 12V DC
- energised power consumption:
 - Cab1 mode = 0W,
 - Cab2 mode = 2.04W
- 16A
- Mil connectors used ABCIRH 22-14
- Weight 2.65kg
- -25 to +70 °C operating

Standards

- EMC complaint to BS EN 50121-1:2017 and BS EN 50121-3-2:2016+A1:2019
- Environmental complaint to BS EN 50155:2017

Improvements from the old unit

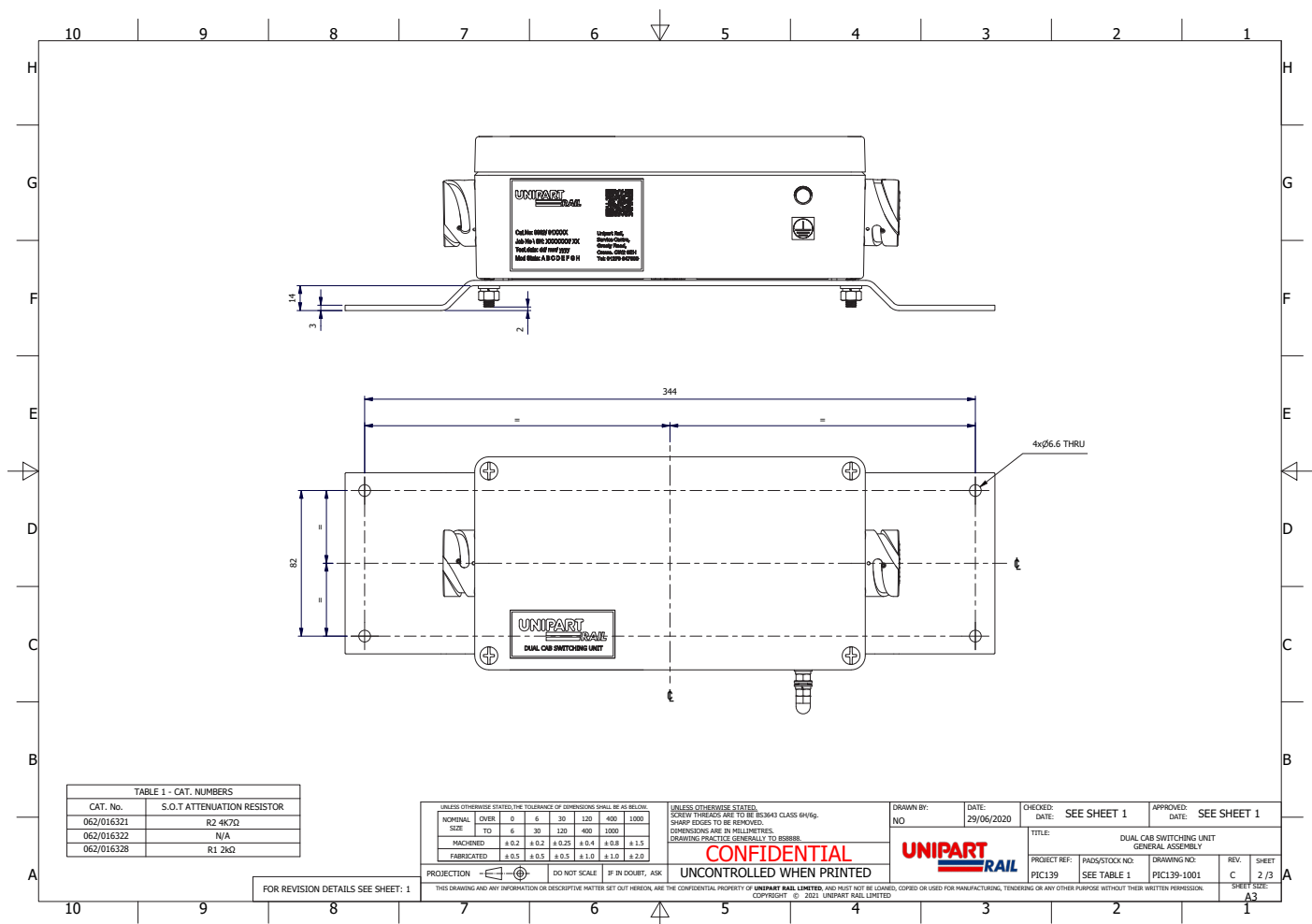
- Switching Signals and Terminations ‘
- Like for like replacement
- No need for the OSS passenger or freight switching as the control unit does this
- No requirement for 24V, 72V or 110V version
- Same connectors and terminations as the old unit
- Fits the same mounting holes
- No need to access the new unit
- Unused terminals are connected to 0V for EMC grounding
- Improved Reliability, Availability, Maintainability and Safety of the product
- Design For Manufacture and Design For Testing implementations
- Relay coil protection from surges
- Input/output protection on 12V and 40V lines

Table 2 - Female Receptacle Connections (Con 5)		Table 3 - Male Receptacle Connections (Con 4)	
Contact	Function	Contact	Function
CON2-A	DMI AWS/TEMP/A+I ISO CAB2	CON1-A	REFERENCE 0V
CON2-B	DMI AWS/TEMP/A+I ISO CAB2	CON1-B	AWS ACK IP CAB2
CON2-C	0V	CON1-C	AWS ACK IP CAB1
CON2-D	DMI AWS/TEMP/A+I ISO CAB1	CON1-D	PASSENGER, FREIGHT +VE
CON2-E	DMI AWS/TEMP/A+I ISO CAB1	CON1-E	0V
CON2-F	0V	CON1-F	OVDC IP
CON2-G	DMI 0VDC OP CAB2	CON1-G	0V
CON2-H	DMI 0VDC OP CAB1	CON1-H	PASSENGER, FREIGHT -VE
CON2-J	0V	CON1-J	AERIAL TEST -VE OP CAB2
CON2-K	AERIAL -VE OP CU	CON1-K	AERIAL TEST -VE OP CAB1
CON2-L	AERIAL TEST +VE IP CU	CON1-L	0V
CON2-M	0V	CON1-M	12VDC
CON2-N	AERIAL TEST -VE IP CU	CON1-N	AERIAL +VE IP CAB2
CON2-P	0V	CON1-P	AERIAL +VE IP CAB1
CON2-R	AERIAL +VE OP CU	CON1-R	AERIAL -VE IP CAB2
CON2-S	AWS ACK OP CU	CON1-S	AERIAL -VE IP CAB1
CON2-T	0V	CON1-T	AERIAL TEST +VE OP CAB2
CON2-U	OSS LINK TO CU	CON1-U	AERIAL TEST +VE OP CAB1
CON2-V	0V	CON1-V	CAB SELECT

New Unit Cat Number	R1 and R2 fitted	Replaces
062/016321	R1 Not fitted, R2 4k7 ohm	062/015778, 062/015751
062/016322	R1 and R2 not fitted	062/016100, 062/015750, 062/016098, 062/016099, 062/015907, 062/015908, 062/015983
062/016328	R1 2k ohm, R2 not fitted	062/016108

About Unipart

The Unipart Group is a leading UK manufacturer, full service logistics provider and consultant in operational excellence. Operating across a range of market sectors, including automotive, manufacturing, mobile telecoms, rail, retail and technology, Unipart offers a breadth of services to a wide range of blue chip clients internationally.



Drawing showing mounting holes

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