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KTA758

Mine Safety Coupler

版本说明

No.	Date	Version No.	Description	Reviser
01	2023.08.28	V1.6	Updated typesetting and content	Qingming Zhang

Product Overview

The mine safety coupler is a dedicated safety signal processor for mine communication, also commonly known as a safety barrier. It is a safety device that converts non-intrinsically safe signals into intrinsically safe signals. The KTA758 safety coupler is a high-performance and high-reliability mine-used safety isolation circuit developed using modern electronic technology and fully integrated circuits.

The KTA758 safety coupler is used in conjunction with intrinsically safe key telephones to form a production dispatching command telephone system for use in explosive areas. Each box of the coupler contains 32 channels of safety circuit users, with a 2U chassis, featuring simple installation and small space occupation. The signal input and output interfaces adopt DB37 connectors, and the male and female connectors are butted in a staggered manner for convenient maintenance. It is only necessary to butt the input and output DB37 connectors to determine whether the coupler is in normal condition.

The KTA758 safety coupler output box is a dedicated supporting equipment for the KTJ102 general mine-used and intrinsically safe digital program-controlled dispatching machine (a must-have for users in explosive areas).

Product Functions

1.Convert the ringer current signal, emergency call signal, call waiting signal, etc. sent by the dispatching communication system into intrinsically safe signals acceptable to intrinsically safe telephones.

2.Convert the off-hook signal, dial pulse signal, dual-tone multi-frequency (DTMF) signal, and emergency call signal sent by intrinsically safe telephones into signals acceptable to the dispatching switch.

3.Convert the non-safe feeding voltage sent by the dispatching communication system into the feeding voltage acceptable to intrinsically safe telephones.

4.Transmit two-way voice signals.

5.Realize the two-way conversion of various detection signals between the dispatching communication system and intrinsically safe telephones.

Mating Equipment and Operating Environment

1.The mating telephone must be a KTH mine-used intrinsically safe automatic telephone, which shall pass the review and inspection by the national designated explosion-proof inspection unit and obtain the "Explosion-Proof Certificate" issued by the inspection unit.

2.The ground mating equipment is a switch or dispatching machine, which must meet the following requirements:

a. The power input terminal and the ab line terminal that supplies power to the safety coupler shall be able to withstand a power frequency withstand voltage of 2U + 1000V (but not less than 1500V), where U refers to the sum of the effective values of the voltages of the intrinsically safe circuit and the non-intrinsically safe circuit.

b. Neither the positive nor negative pole of the DC power supply provided to the user is allowed to be grounded.

c. The ringer current and DC feeding of the switch or dispatching machine shall comply with the provisions of Clause 3.1.4.1.

d. The power transformer of the switch or dispatching machine shall comply with the provisions of Clause 8.1 in GB3836.4.

Hardware Specifications

Model	KTA758 Safety Coupler	
Executive Standards	GB 3836.1-2021 "Electrical Equipment for Explosive Gas Atmospheres - Part 1: General Requirements"	
	GB 3836.4-2021 "Electrical Equipment for Explosive Gas Atmospheres - Part 4: Intrinsically Safe Type "i""	
	Q/YT002-2022 Enterprise Standard for Mine Safety Couplers	
	MT 402-1995 "General Technical Conditions for Safety Couplers for Coal Mine Production Dispatching Telephones"	
Transmission Performance	Maximum distance between the coupler and underground telephones	Up to 10km with a wire diameter of 0.8mm
	DC resistance of conductor core	≤36.7Ω/km
	Capacitance compatibility	≤0.06μF/km
	Inductance	≤0.8mH/km
	Minimum insulation resistance	15kΩ ~ 20kΩ
	Transmission attenuation	Not more than 2dB

Non-intrinsically Safe Side Input Parameters	Maximum input DC operating voltage	50V
	Maximum input DC operating current	50mA
	Maximum input ringer current operating voltage	90V
	Ringer current operating frequency	25Hz
	Maximum input ringer current operating current	70mA
Intrinsically Safe Side Output Parameters	Maximum DC open-circuit voltage of downhole user lines	49V
	Maximum ringer current open-circuit voltage of downhole user lines	49V
	Maximum DC short-circuit current of downhole user lines	32mA
	Maximum ringer current short-circuit current of downhole user lines	24mA
Operating Environment Conditions	Ambient temperature	0℃～＋40℃
	Average relative humidity	5% to 95% RH (non-condensing)
	Atmospheric pressure	80kPa～106kPa
Physical Structure	Enclosure/Chassis	Industrial sheet metal material, with oxidation and spray painting treatment
	Capacity	32 channels per box
	Installation method	Rack-mounted installation
	Weight	Approximately 5.5kg
	Dimensions	480mm×338mm×133mm

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