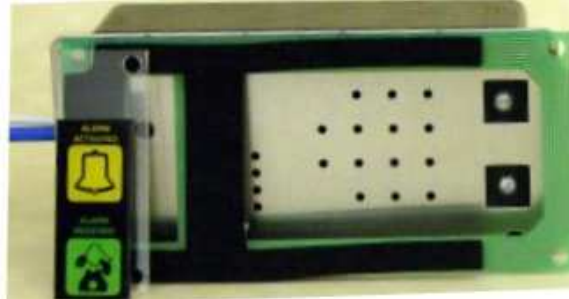


Inductive Loop Systems



Low Power Inductive Loop: ILO1



Medium Power Inductive Loop: ILO 2 / 7

Introduction

An inductive loop amplifier is often used to improve the sound volume and quality of sound to a person with a hearing aid. Under normal situations, the hearing aid is set to pick up sound and amplify sound which is picked up by its internal microphone and present it to the person who is wearing the hearing aid. However, in a noisy environment or when the volume is low, the amplification of sound picked up by the microphone may not be good enough. To improve the general quality and volume of sound presented to the person with a hearing aid, he would place the hearing aid in the "T" position and pick up the signal from an inductive amplifier.

The Inductive amplifier simply converts the audio sounds to a magnetic field which is picked up by the hearing aid which there after reproduces the original audio. This process tends to improve the sound quality and allows the hearing aid wearer to adjust the volume to his requirement.

Windcrest has various Inductive Amplifiers which will produce the necessary magnetic field which can be picked up by the hearing aid. The range of detection of the magnetic field is dependent on the amplifier power output and the local environment; as ferrous magnetic materials tend to absorb magnetic fields and reduce the effectiveness of the magnetic field.

Low Power Inductive Loop – IL01 for Phone Line only

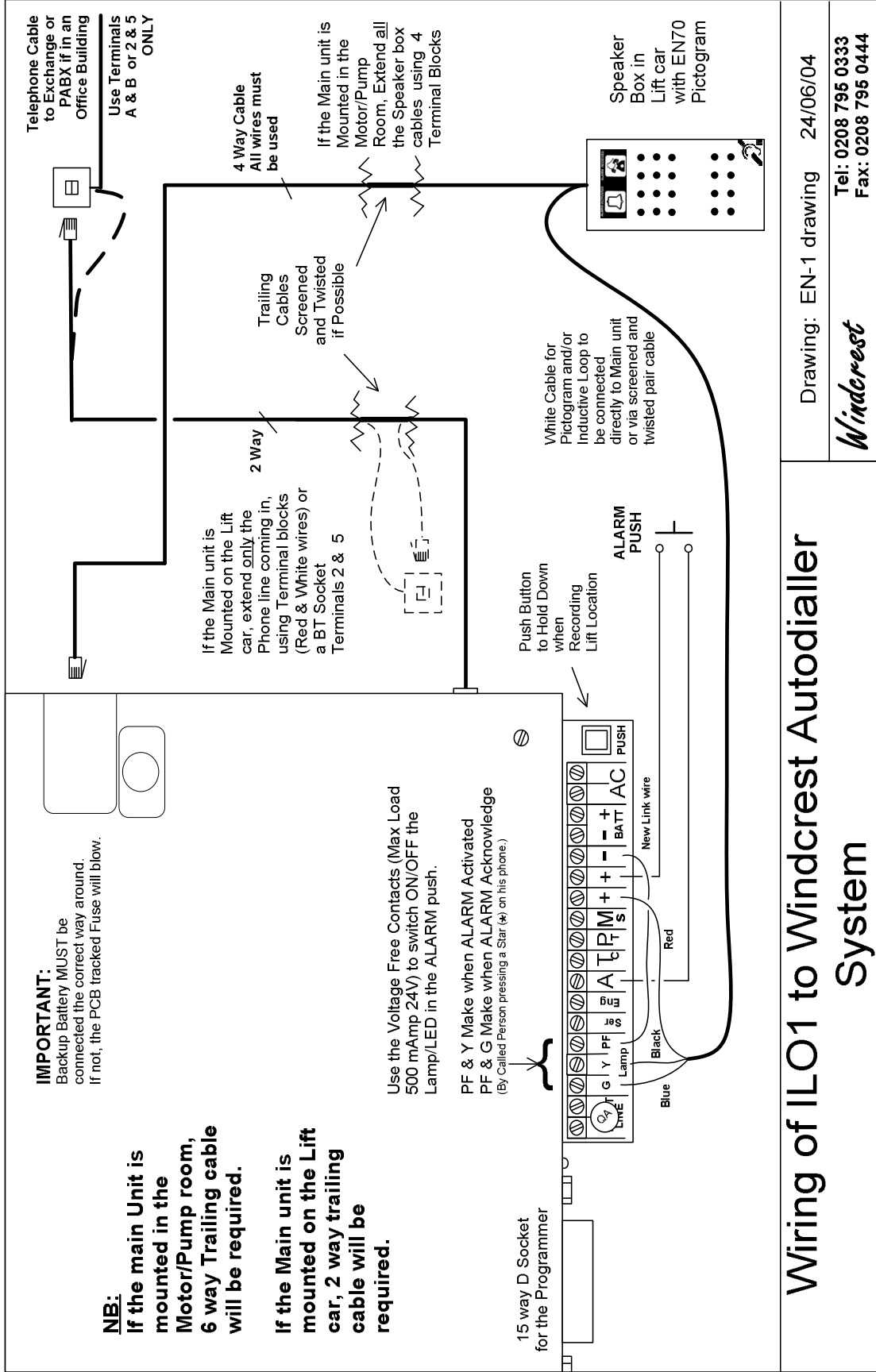
The standard speaker box, as used with a Windcrest Autodialler, can accommodate a low power inductive amplifier which amplifies the sound on the BT phone line. This amplifier is connected to a loop formed by the tracks of a PCB, which in turn is sandwiched between the speaker box assembly and the car operating face plate. On the basis that the face plate is made of a non ferrous material, ie stainless steel, **a range of approximately 300mm is possible.**

The IL01 is powered by the Windcrest Autodialler and hence it is battery backed.

Installation of IL01

The installation of the IL01 consists of connecting the three wires to three terminals on the Windcrest Main unit. (If Pictograms are used, the Inductive loop amplifier will operate at the same time and no additional wiring is required).

The cable interconnecting the main unit to the inductive loop should be as short as possible or twisted screen cables must be used. Even though screen and twisted cable is used RFI interference may enter the inductive amplifier and cause degradation in the strength of inductive signal and or distortion. Additional filtering and isolating equipments such as INVERTER FILTER are available to improve the situation.



Wiring of ILO1 to Windcrest Autodialler System

Drawing: EN-1 drawing 24/06/04

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Windcrest

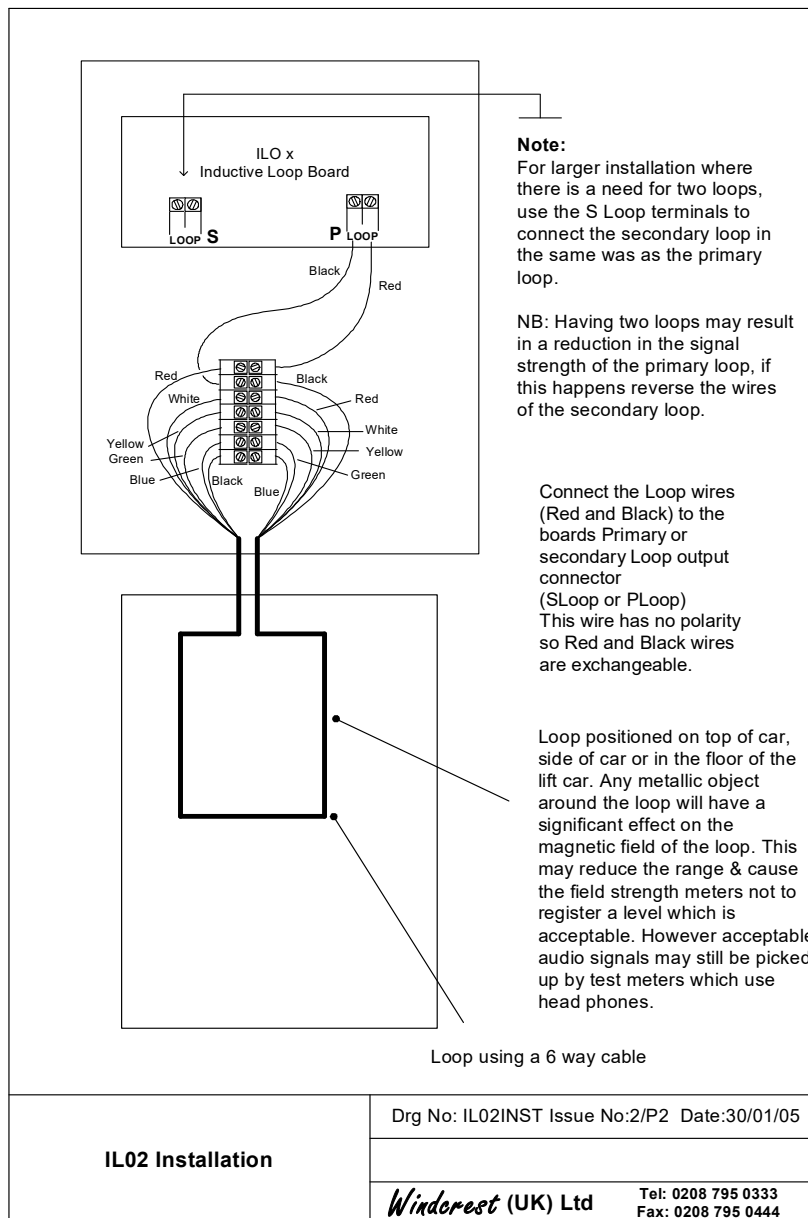
Medium Power Inductive Loop – ILO7 for Phone line and Speech Synthesis unit

For applications where a greater coverage is required and where a speech synthesis unit is installed, the ILO7 solution is offered.

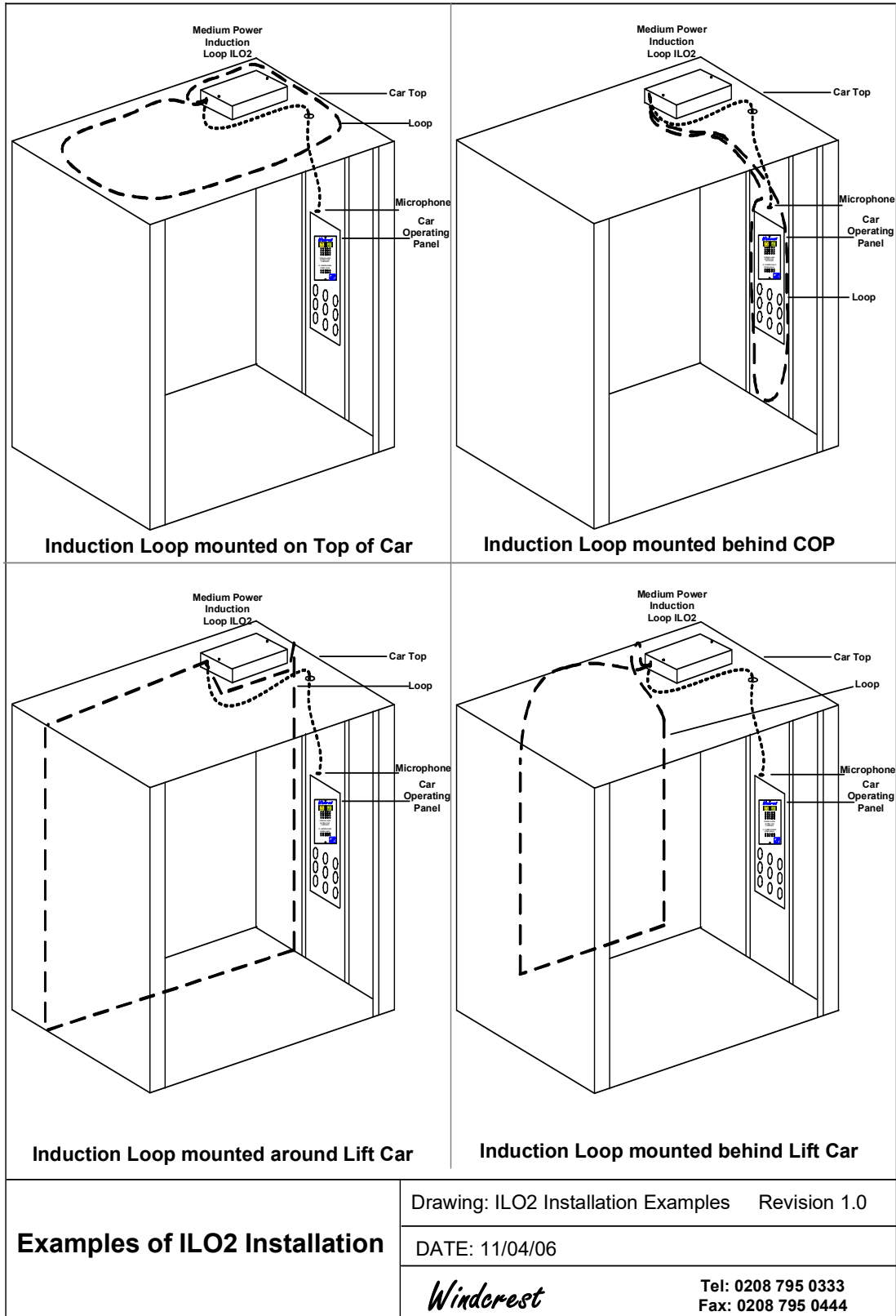
This unit is mains powered with battery back up and a higher current drive capability. It can be connected to larger loops made of wire and there by provide a more consistent magnetic field.

The unit uses a microphone mounted in the car operating panel not only to pick up the audio from the BT Phone line but also from the speech synthesis. (However, if a direct wired connection is required, the version ILO7 will provide this facility; Please call our technical department for assistance).

Installation of ILO7

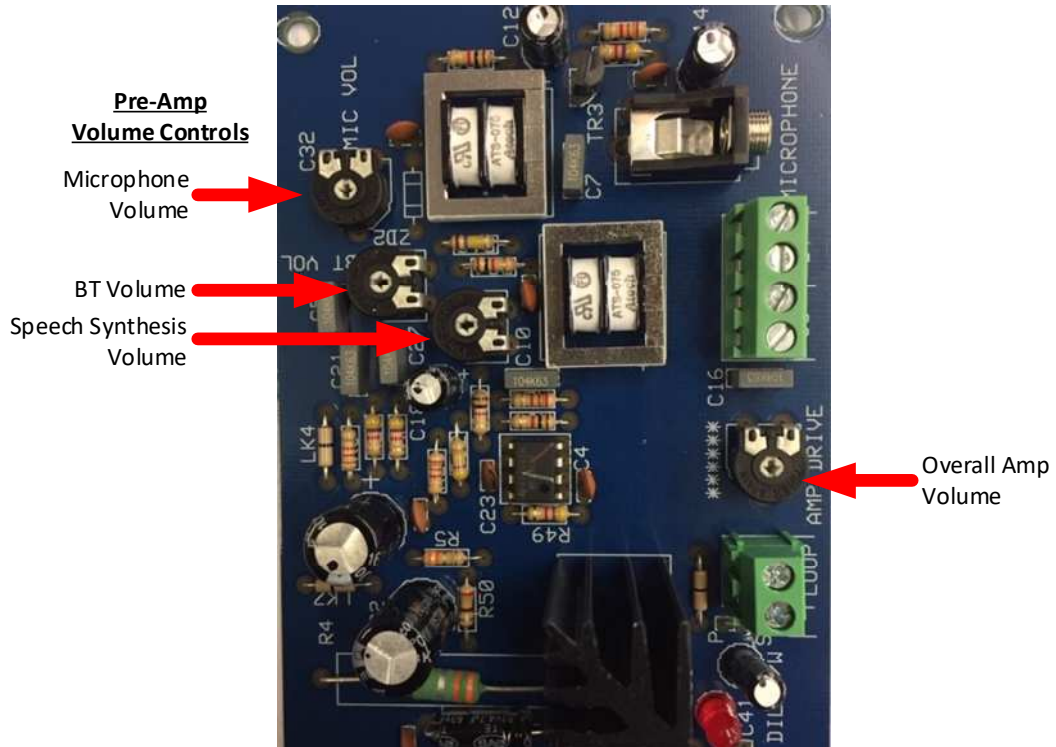


Examples showing Loop Wire installation for full lift coverage



Testing the Inductive Loop system

As mentioned, the inductive loop amplifiers produce the magnetic field which corresponds to the sound. The ILO7 system has a facility to **adjust volume** in case distortion is encountered in the speech. Adjust the volume so that the LED on the board just starts flickering when speech is on.



Various test units are available which provided a means of testing the effectiveness of the loop.

Audio Pick up Unit

A test unit which acts like a hearing aid and simply converts the magnetic field into sound which is played through a pair of headphones.

LED indicator type

A test unit which indicates the presence and the level of a magnetic field by means of a set of LEDs. The general guide is to ensure there is an average level of magnetic field which corresponds to 0dB. However, the main thing is to ensure that the LED indicator responds to speech rather than simply a steady level. (Electric motors, door gear etc will produce a magnetic field and it may mask the speech from the inductive loop).



Inductive Loop Field Strength Meters

Pre-testing of Inductive Loops (Factory Test)

Prior to the dispatch of Inductive loops, each loop is tested with the Audio pick up Unit in the factory with a preinstalled loop cable. Each system is checked for the strength/range. The low power inductive loop i.e. ILO1 covers a distance of approx. 300mm from the Windcrest ILO1 Speaker box. The high power inductive loop i.e. ILO2/7 can cover the complete lift car provided the material used in construction does not affect the magnetic field & considering the microphone is placed in a close proximity of the car speaker and proper installation of loop cable (see installation example drawings).

During the final test, an audio pickup unit along with headphones are used to check the functionality & strength of the signal. If the strength of the signal is acceptable the unit is dispatched.

Post-testing of Inductive Loops (On-site Test)

Please follow the instructions on the previous pages for installation of inductive loops. Once installation is complete the inductive loop system should be checked with either an audio pickup unit along with a pair of headphones or with LED indicator unit.

In order to test an inductive loop system, the tester should be in the range of inductive loop coverage area. The inductive loop test unit i.e. audio pickup or LED indicator unit should be switched ON. At this point the tester should trigger the autodialler unit by pressing the alarm button & wait for announcement & audio communication. Audio signals which come out of the speaker are transformed into magnetic field which will be picked up by the test meters. In case of audio pickup unit the sound can be heard in the headphones and in the LED indicator unit the LEDs will indicate the strength of signal in db.

ILO 1 Specification

Power

Supplied from Windcrest Autodialler

Inputs

Connected to Autodialler

Output

Type: Current Mode Peak 100 mAmp into Loop Resistance minimum loop resistance 20hms. Average 75 mAmp

Performance

Frequency Response: 300Hz – 3.4KHz + - 3dB

Distortion : Less than 0.6%

Dimensions

As per Windcrest Lift Car Speaker

ILO2/7 Specification

Power

230-240VAC Mains 1Amp (20mm Fuse)

Inputs

3 Inputs are available.

Input Impedance : 10K

Sensitivity : 200mV – 2.5VRMS balanced or unbalanced.

Microphones

Sensitivity : 1 – 8 mV

Input Impedance : 10K

Output

Type: Current Mode Peak 4Amp into Loop Resistance minimum loop resistance 40hms. Average 3 Amps

Performance

Frequency Response: 60Hz – 12KHz + - 3dB

Distortion : Less than 0.4%

Dimensions

270mm X 165mm X 70mm

Weight

2.2KG

Declaration of Conformity

Related Standards:

BS7594 - Audio Frequency Induction Loop System

EN60118-4 – Magnetic Field Strength in audio frequency induction loop systems for hearing aid purposes

Safety: EN 41003:2008 Particular safety requirements for equipment to be connected to telecommunications networks and/or a cable distribution system.

EN 60950-1:2006 Information technology equipment safety. General requirements.

EMC:

EN 301 489-1 V1.8.1 Electromagnetic compatibility for radio equipment and services common technical requirements.

EN 55016-2-3:2006 Radiated emission, Class B.

EN 55022:2006 Conducted emissions, Class B.

EN 61000-3-2:2006+A2:2009 Harmonic current emissions Class A

EN 61000-3-3:2008 Voltage changes fluctuations and flicker.



D Williamson

Quality Manager – Derek Williamson Date – 03-11-2003

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