

Kenwo industries Limited

Technical Description of Main unit (VAM5)

MCU section

The unit contains a powerful MCU (micro-controller) U2, which controls all the functions of the whole unit, a TX section sends RF signals to remote and a RX section receives RF signals from remote. A 32.768KHz crystal (X4, C70, C71 and U2) provides a time base signal for the MCU itself. MCU detects many trigger inputs to protect the car: car ignition key is turned on (Q20 and its related components), shock sensor (U7, Q24, U6 and its related components) which detects shock or tilt, perimeter sensor (an optional microwave sensor) (Q21, Q18, Q19 and its related components) detects anybody intrude nearby. On the other hand, MCU provides electronic locking mechanism to protect the car is being stolen, and generates sound and vision output to alert the intruder: unit provides a driving output (Q22 and its related components) for a anti hi-jack (an optional relay box) to cut the oil pump, unit provides a driving output (Q12, Q13, Q23, Q25, Q26, Q27, Q28, Q29, F1, F2 and its related components) for L/R lamps, also the unit (Q30, Q31, Q11, T1, BZ1 and its related components) generates beeps and alert signal to alert the user/intruder. Besides a built-in high capacity capacitor (C56, C59, C92, R44, D5 and its related components) keeps energy for backup transmission to protect the unit is being power cut.

The unit includes a 2-way remote VAK05 to control ON/OFF (ARM/DISARM) of the main unit; also the main unit will echo back or send trigger signals to remote, thus the user knows what is happening.

TX section

MCU opens the +ve power (U3, Q14, Q15 and its related components) for TX section first. MCU encode the data and the data is FM modulates (VD1 and its related components) the 433.92MHz oscillator (X3, Q8, VC3 and its related components). The modulated FM wave is amplified through driver (Q7, L13 and its related components) and PA (Q6, L11 and its related components). Then it feed to antenna (ANT1) through T/R switch (D1 and its related components).

Rx section

MCU open the +ve power (U1, Q16, Q17 and its related components) for Rx section first. The IC built-in a voltage stabilizer (U5, Q10 and its related components) provides a stable operating voltage for RF oscillation and RF circuitry. Antenna (ANT1) picks up RF signal from atmosphere. LNA (Q1, Q9 and its related components) amplify the signal and then mixed with 423.22MHz signal from local oscillator 1 (Q4, Q5, X2 and its related components). The mixer (Q2 and its related components) mix and output a 1st 10.7MHz IF signal (intermediate frequency). The 1st IF signal filter by a ceramic IF filter (CF1) and band pass amplifier (Q3 and its related components) and then fed to a IF IC (U5), which down convert to a second 455KHz IF by mixed with 10.245MHz signal from local oscillator 2 (U5, X1 and its related components). The 2nd IF signal filter by a ceramic IF filter (CF3) and FM demodulate inside the IF IC (U5, CF2 and its related components). The demodulate signal is fed to MCU (U2) for code decoding.

43.00 mm

13.50 mm

SCORPIO

2-Way FM Tranceiver Model SR-i500

FCC ID: MKFARI51

Made In China

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,

INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

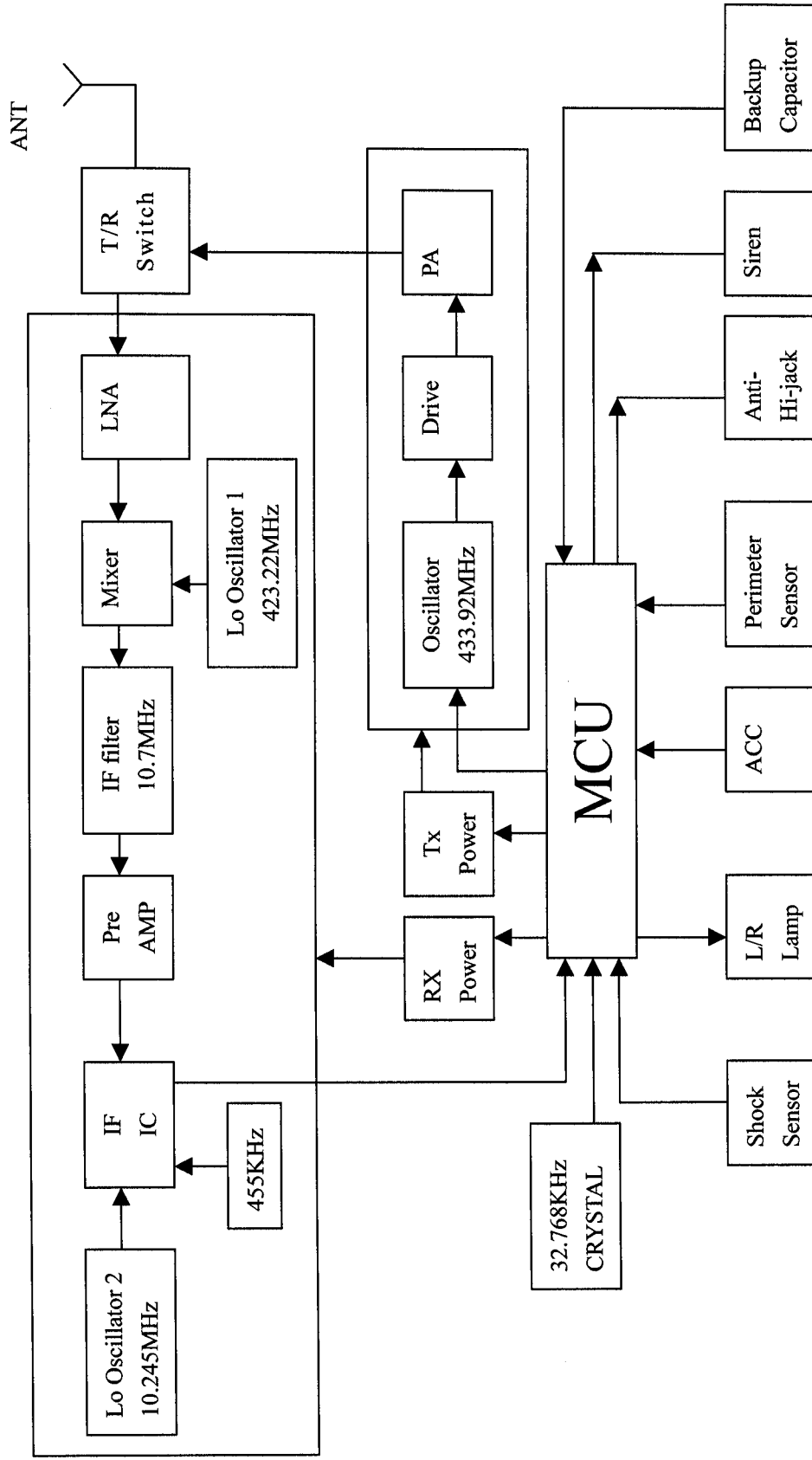
[800] 428-0440

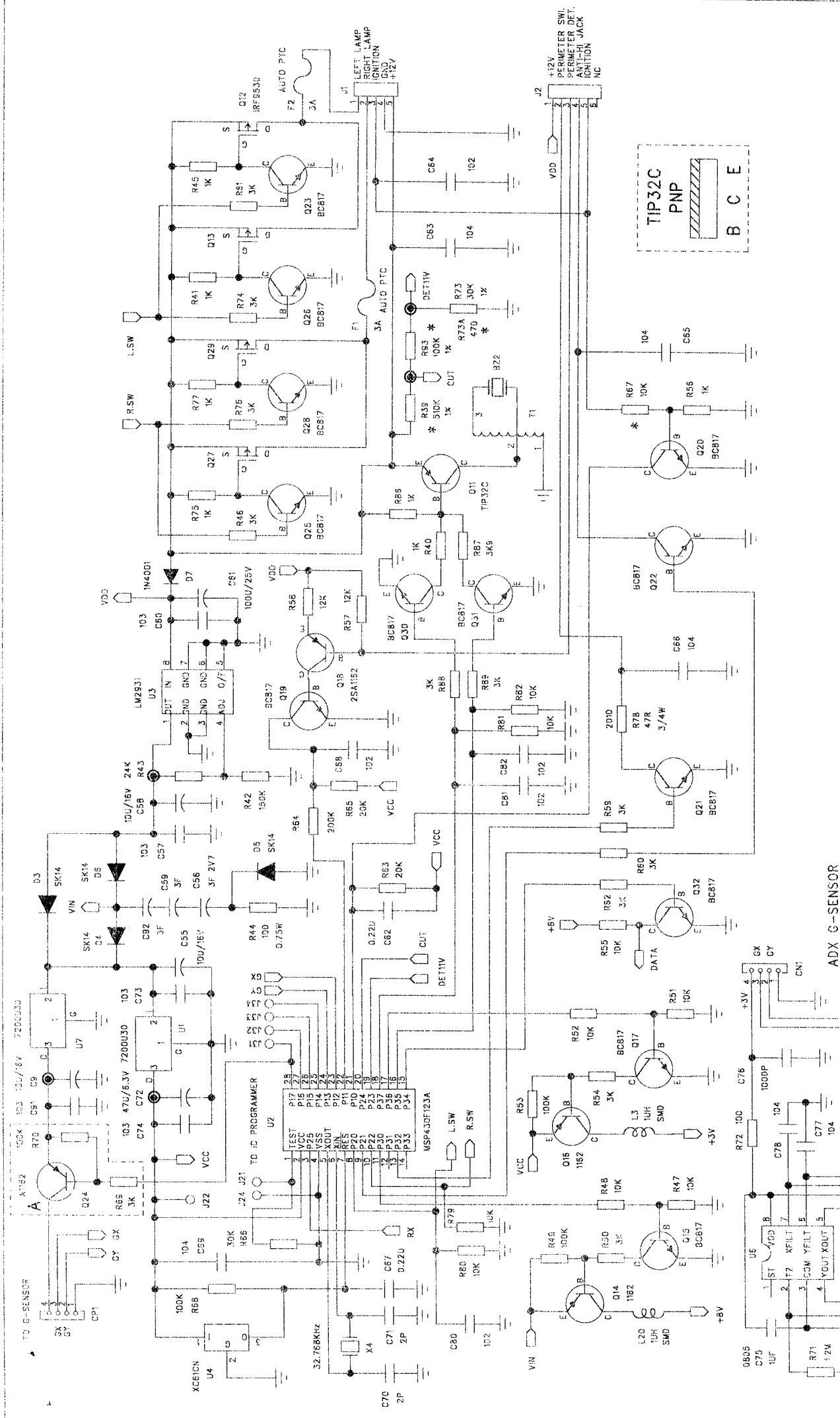
TRANSMIT LABEL

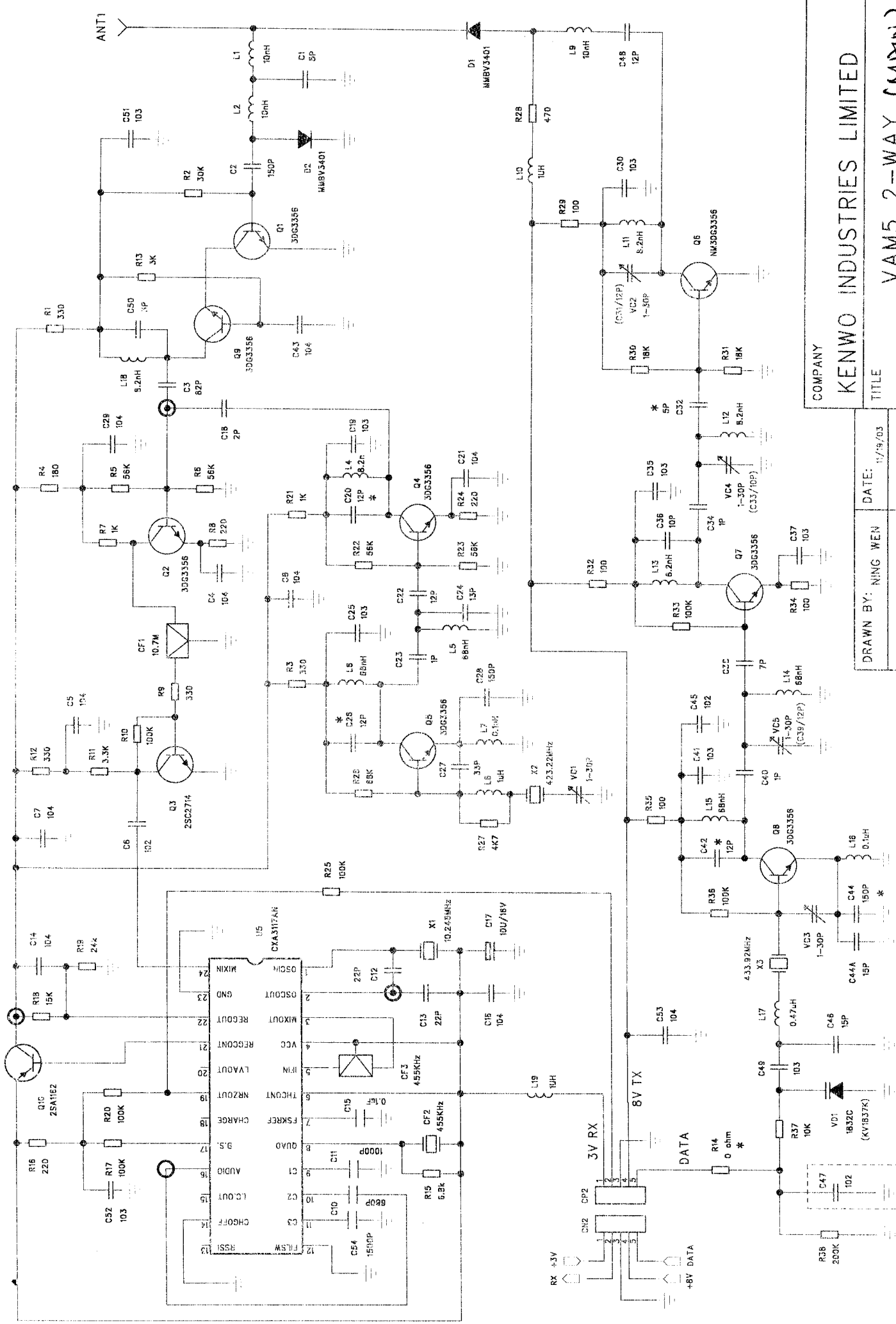
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KENWO INDUSTRIES LIMITED

VA-55 BLOCK DIAGRAM (MAIN)







COMPANY

KENWO INDUSTRIES LIMITED

TITLE

VAM5 2-WAY (MAIN)

DRAWN BY: NING WEN DATE: 11/19/03

CHECKED BY: DATE:

APPROVED BY: DATE: 11/19/03

SIZE: DOCUMENT NUMBER E1-ED-2120

SHEET 2 OF 2

REV: A 01

Setting Clock Time

1. Enter the programming mode.
2. Press button #4 repeatedly until the **88:88** icon begins to flash.
3. Press button #1 to select and enter clock setting mode.
4. Press button #1 to scroll through 'hour', 'minute', 'am/pm' settings. The selected item will be flashing.
5. Press button #2 to adjust the setting of the selected item.
6. Press button #4 to save setting and exit, or press button #3 to abort.

Setting Alarm Clock

1. Enter the programming mode.
2. Press button #4 repeatedly until  icon begins to flash.
3. Press button #1 to select and enter alarm clock setting mode.
4. Press button #1 to scroll through 'alarm on/off', 'hour', 'minute', 'am/pm' settings. The selected item will be flashing.
5. Press button #2 to adjust the setting of the selected item.
6. Press button #4 to save setting and exit, or press button #3 to abort.

FCC Notice

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the receiving antenna.
- ☐ Increase the separation between the equipment and receiver.
- ☐ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ☐ Consult the dealer or an experienced radio/TV technician for help.

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14435 N. Scottsdale Rd #500
Scottsdale, AZ 85254
Technical Assistance (480)951-1109

148-164002110

SCORPIO

SR-i500

FM 2-Way Security System

INSTALLATION MANUAL AND USER'S GUIDE



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Standard Features

- 2-Way FM Transceiver
- Alphanumeric LCD display with backlight
- Ultra low power drain MCM
- Built-in Analog Devices ADXL202 accelerometer
- Ignition protection
- Range Confirmation Signal (RCS)
- Remote sensor control
- Battery safeguard with "sleep mode"
- Clock w/ alarm
- Violation display with time stamp
- Passive arming
- Selectable arming / disarming
- Automatic reset
- Flashing lights with memory display
- Long range paging transmitter
- Programmable multi-tone siren
- Selectable siren duration
- Arming confirmation
- Low battery indication
- Remote panic feature
- Soft chirp arming

Optional Accessories

- **Perimeter sensor** – A miniature multi stage microwave sensor that detects motion in mass around the motorcycle, and uniquely protects its parts and accessories. Detects any attempt to tamper with saddlebags, luggage or accessories.
- **Ignition disable and anti-hijack kit**– Allows remote disabling of the motorcycle's electrical system, should someone force you off your bike. Also prevents the engine from being started when the system is armed.
- **Back-up battery Transmitter**–Built in back up power capacitors with voltage sensing circuitry will ensure operation of the paging system even if wires are cut or battery is disconnected.
- **Factory Connector Kits**–OEM style connectors that simply plug into the motorcycle's factory wiring harness. Connector kits are available for select motorcycle models.

Selecting Auto/Manual Arming

Enter the programming mode. Scroll to the  icon and Press Button #1 to enter the arming selection screen. The LCD will display the current setting ([Act] or [PAS]) and the siren will chirp two or three times. To program follow these steps:

1. Press button 2 to toggle between the alert options
2. Press button #4 to save and exit

When entering the arming program mode, the siren and turn signals will confirm the current mode

- Manual arming- siren chirps 2 times, lights flash 2 times
- Auto arming- siren chirps 3 times, lights flash 3 times (In this mode the system will automatically arm itself 60 seconds after the ignition is turned off)

Selecting Siren Tone and Alarm Duration

Enter the programming mode. Scroll to the  icon and Press Button #1 to select. The screen will display all of the sensor icons. To program follow these steps:

1. Press button 1 to scroll between the sensor icons
2. Press button 1 to select sensor icon
3. Press button 1 to toggle between sound and duration
4. Press button 2 to adjust
5. Press button 4 to save and exit

There are 5 siren tones and 3 cycle duration settings for each sensor

Adjusting the ADL202 Accelerometer (Impact/Shock) Sensor

Enter the programming mode. Scroll to the  icon and press Button #1 to select. The screen will display the current shock setting, and the siren will chirp 1-5 times to confirm sensitivity level. To program follow these steps:

1. Press button 1 to toggle between On/Off and sensitivity levels
2. Press button 2 to adjust. Siren will chirp to confirm sensitivity level 1-5
3. Press button 4 to save and exit

To test sensitivity bump motorcycle while in sensitivity adjustment mode, a siren chirp will indicate an alarm trigger

Programming Instructions

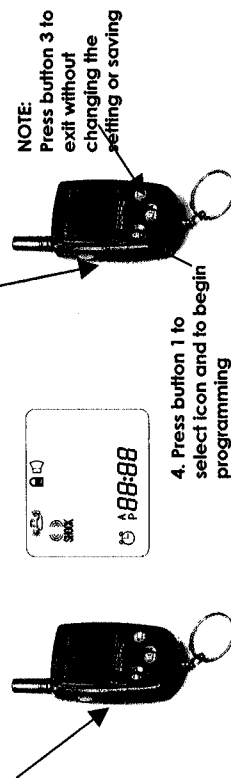
There are two types of programming mode:

- 1) Programming the Transceiver- To program the transceiver the MCM does not have to be installed or be within range. The programmable modes for the Transceiver are:
 - Transceiver Alert Type (Audible/Silent Vibrate).
 - Alarm Clock.
 - Clock.
- 2) Programming the MCM- To program the MCM the system must be **installed, with in range, and in the disarmed mode**. The programmable modes for the MCM are:
 - Auto/Manual Arming.
 - Siren Tones and Siren Duration.
 - Adjusting ADL202 Accelerometer (Impact/shock sensor).

Entering Programming Mode

Follow the steps below to enter the programming mode:

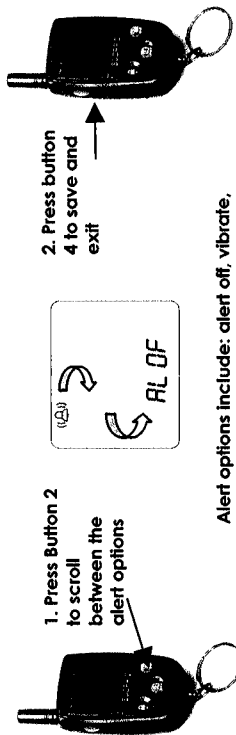
1. Press button 4 twice to enter programming mode
2. Available programmable options will be displayed. The selected icon will flash
3. Press button 4 repeatedly to scroll through the programmable icons
4. Press button 1 to select icon and to begin programming



Note. At any time during programming press button # 3 to exit without saving and return to the main screen

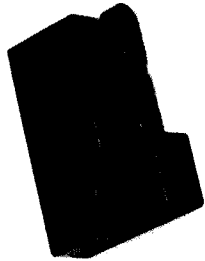
Selecting Transceiver Alert Type (Audible/Silent Vibrate)

1. Enter programming mode. The icon will begin to flash, press button # 1 to select. The LCD will display the current settings. To program follow these steps:



Components List

MCM (Main Control Module)



Remote Transceiver



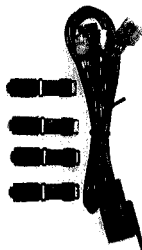
Accessory Harness



Main Harness (HAR-1)



Generic Installation Kit (GEN-1)



Planning the Installation

It is very important that before starting the installation of the security system, you carefully read the installation instructions and spend time planning the installation. By planning ahead you will be able to select the best approach in placing, securing and wiring the system to your specific motorcycle. Although the installation is not difficult, there are a number of steps that must be taken for the system to operate properly. We suggest the following steps:

1. Check that your motorcycle battery is fully charged and that all electrical circuits are in good working condition.
2. Check the layout and construction of the motorcycle to decide what space is available to place components.
3. Verify that no moving parts interfere with the components or their wires.
4. Do not route wires near sharp edges, which could cause a short.
5. Do not mount components near extreme heat areas such as exhaust pipes etc.
6. Allow at least an inch or two of slack at all connection points to reduce the chance that a connection will break apart due to vibration.
7. Do not use a drill. Mount the components with the provided Velcro and cable ties.

Mounting the Components

Select a suitable location under the seat or in a side cover. Mount the MCM using Velcro or cable ties. Make sure that it is not exposed or easily reached.

Note: Although the system will work in any position or mounting bangle, try to avoid placing the MCM with the bell of the siren facing toward either side of the bike. This may reduce sensitivity

Routing the Antenna Wire

The MCM includes an 18" antenna wire. The first 12" is a coaxial wire; the remaining 6" is the actual antenna wire. When routing, try to avoid running the antenna along or near metal. For best performance, try to have at least a portion of the antenna wire exposed.

Wire Connections

The MCM is equipped with two connectors. One is for the main harness (HAR-1) and the other is for the optional accessories.

Accessory Harness

Plug in the accessory harness to the matching connector on the MCM. Note: each one of the connectors on the accessory harness is unique and can only be connected into the correct corresponding accessory. If no options are being used, plug in the supplied dust cover.

Main Harness

If the optional factory connector kit is being used, please disregard this section of the instructions and refer to the instructions that were supplied with the factory connector kit.

The main harness consists of two harnesses. One is labeled (HAR-1) and the second is labeled (GEN-1). Plug in the white 4 pin connector from the (HAR-1) into the matching 4 pin connector from the (GEN-1). The (HAR-1) also has a waterproof connector that plugs into the MCM. The wires should be connected as follows:

HAR-1

Black wire with fuse and ring terminal – To battery Positive (+).

GEN-1

Black wire – To ground (-).

Grey wire – To turn signal power wire (Left).

Grey wire – To turn signal power wire (Right).

Orange wire – To tail light wire or any other wire that is hot (+) when ignition is "ON" (NOTE: this is an input to the alarm this connection is not designed to flash the tail light).

Note: When the main harness (HAR-1) is plugged in, the siren should chirp and turn signals should flash twice. If the siren does not chirp: check the fuse, and battery (+) and ground (-) connections.

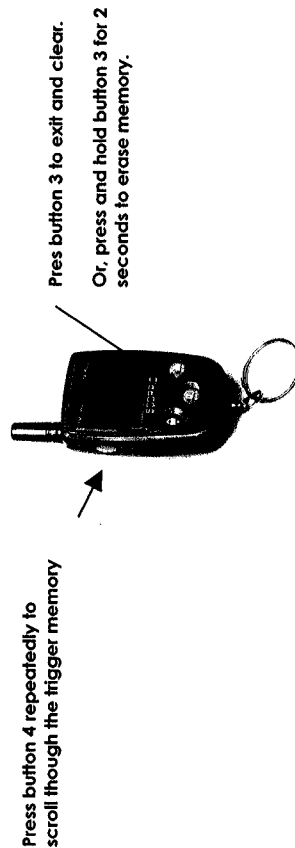
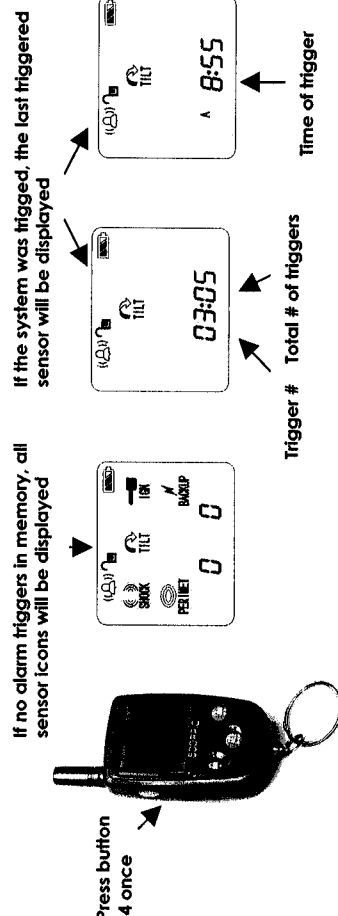
If the turn signal lights do not flash, make sure that the Grey wires are connected to the turn signal power (+) wires. Connecting these wires incorrectly may damage the system.

Color Codes:

	Ground (-)	Tail Light	Left Turn Signal	Right Turn Signal
Honda	Green wire	Brown wire	Orange wire	Blue wire
Kawasaki	Black wire	Red wire	Green wire	Grey wire
Suzuki	Black/White	Brown wire	Green or Black	Grey wire
Yamaha	Black wire	Blue wire	Green wire	Brown wire
Harley Davidson	Black wire	Blue wire	Brown wire	Purple wire

Checking Motorcycle Status and Violation Display with Time Stamp

1. Press button #4. The back light and the memory screen will be displayed. If the alarm was not triggered, all the sensor icons will come on and the # 0 0 will be displayed.
2. If there was an alarm trigger, the last triggered sensor will flash. Press button #4 repeatedly to scroll through all the triggered sensors in the Transceiver's memory.
3. The alternating numeric display shows the current trigger, numbering of triggers in memory, and the time the trigger occurred. For Example: tilt [03 05] + [A 8:55] means the tilt sensor was triggered. It was the 3rd sensor violated out of a total of 5 alarm triggers and the event occurred at 8:55am.
4. Press button #3 to exit.
5. To clear memory, press and hold down button #3 for 2 seconds.



Encoding a Transceiver

Note: Transceivers are programmed from the factory. Encoding is only necessary should the Transceiver loses its code and will not arm or disarm the security system.

1. Plug in the MCM, the siren will chirp 2 times and the lights will flash 2 times. Within 6 seconds turn ignition switch "ON" and "OFF" 3 times.
2. If the sequence is done correctly and within the time allowed, the siren will chirp 2 times and the lights will flash an additional 2 times to confirm that the system is in "Learn Mode"
3. Press and hold button # 1 for 5 seconds, system will chirp 2 times and the lights will flash 2 times to indicate that the MCM has learned the code.
4. The Transceiver echoes 4 chirps and the LCD displays [Learn done] to confirm that the Transceiver is encoded.
5. Turn ignition "ON" and "OFF" to exit "Learn Mode"

Sensor Memory Display

1. When the system is disarmed the turn signals will flash to indicate if there has been an alarm trigger. The lights will flash once to indicate that the system has been disarmed, additional flashes indicate that the following trigger has occurred:

1 flash then 1 additional flash = Shock Trigger
 1 flash then 2 additional flashes = Tilt Trigger
 1 flash then 3 additional flashes = Perimeter Sensor Trigger
 1 flash then 5 additional flashes = Ignition Trigger

RCS (Range Confirmation Signal)

1. If the Transceiver is within range of the MCM the LCD displays  icon
2. If the Transceiver does not receive the RCS signal the  icon will not appear.

Transceiver Battery Status

1. The LCD will display 3 different  icons to show the Transceivers battery status.

Motorcycle Battery Status

1. When the voltage on the motorcycle battery drops below 11.2 volts The LCD displays  icon.

Battery Safeguard with "Sleep Mode"

1. If the alarm is armed for more than 30 days, it will automatically disable the MCM's receiver. In this mode the Transceiver will no longer be able to operate the system. Note: In this mode, the system is still armed and protecting the bike.
2. To disarm, trigger the alarm, and press button #2.

NOTE: If the optional perimeter sensor is being used and the alarm is armed for more than 10 days the system will automatically disable the perimeter sensor.

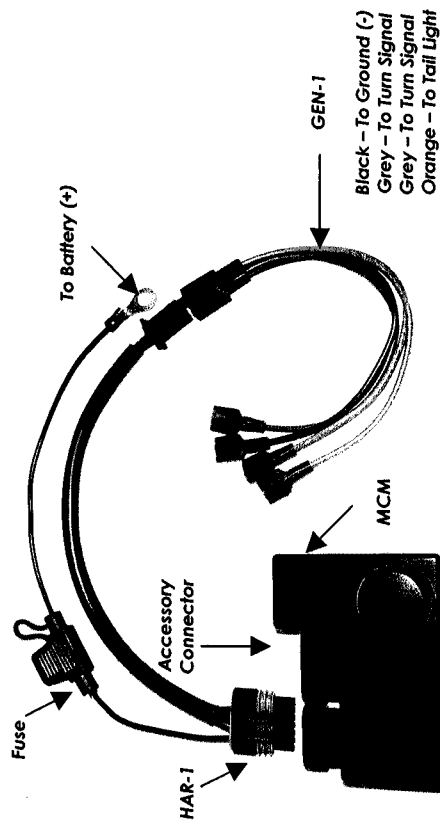
Locking the Transceiver's buttons

1. To "lock", press button #4 for 2 sec. The Transceiver will beep and buttons will lock
2. To "unlock", press button #4 for 2 sec. The Transceiver will beep and buttons will unlock.

Turning the Transceiver On/Off

1. To turn "off", press button #4 for 4 seconds. The Transceiver will beep two times to indicate that the unit has been turned "off".
2. To turn "on", press button #4 for 2 seconds. The Transceiver will beep two times to indicate that the unit is turned back "on".

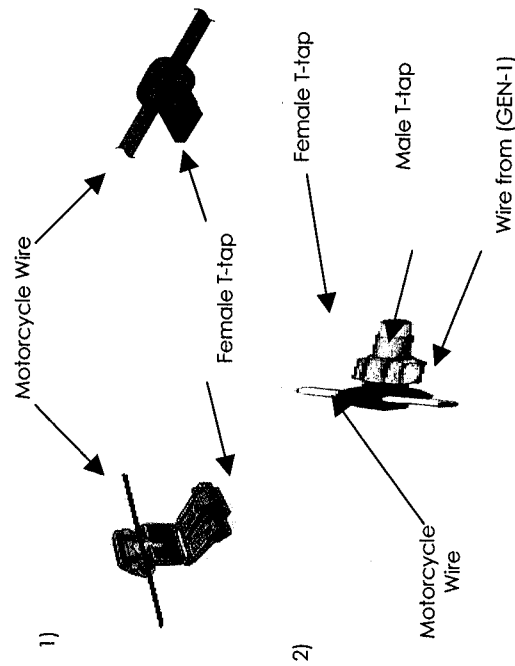
Note: When the Transceiver is in the "Off" mode the clock will still be displayed



Note: Connect the (HAR-1) harness to the MCM only after installation is completed. If the battery is to be removed, disconnect this connector first. Reconnect only after battery terminals are reconnected.

Using the T-tap Connectors

- 1) Place female T-tap connector over wire to be tapped, close and squeeze until it snaps close.
- 2) Now slip male T-tap connector over hinged end of the female connector to make a connection.



Operating Instructions

Arm

1. Press button #1, siren chirps 3 times and the turn signal lights flash 1 time.
2. The Transceiver echoes 3 chirps and the LCD displays  and  icons.

Disarm

1. Press button #2, siren chirps 1 time and lights flash 1 time.
2. The Transceiver echoes 1 chirp and the LCD displays  icon.

Arming Without Perimeter Sensor (optional)

1. Press button #3, siren chirps 4 times and turn signal lights flash 1 time.
2. The Transceiver echoes 4 chirps and the LCD displays ,  and  icons.
3. The system is armed but the Perimeter Sensor is disabled.

Arming Without Siren / Paging Only

1. Press buttons #1 and #3 at the same time, siren chirps 5 times and the turn signal lights flash 1 time.
2. The Transceiver echoes 5 chirps and the LCD displays ,  and  icons.
3. The system is armed but the siren and turn signal lights are disabled for a silent paging only alert.

Arming Without Siren or Perimeter Sensor (optional) / Paging Only

1. Press buttons #2 and #3 at the same time, siren chirps 6 times and the turn signal lights flash 1 time.
2. The Transceiver echoes 6 chirps and the LCD displays ,  and  icons.
3. The system is armed but the siren, turn signal lights and perimeter sensor are disabled.

Panic/ Stop Trigger

1. When system is armed press button #3 for Panic feature.
2. Pressing button #3 during an alarm trigger stops the alarm cycle but keeps the system armed.

Alarm Triggers

When the system is triggered, the siren will sound and the turn signal lights will flash. The Transceiver's LCD will display the following messages:

1. If bike is bumped, the LCD displays  icon.
2. If the bike is tilted, the LCD displays  icon.
3. If the ignition switch is turned on or tampered with, the LCD displays  icon.

4. If the perimeter sensor triggers a full alarm cycle, the LCD displays  icon. (Note: The turn signal lights will not flash for a perimeter sensor trigger).

5. With the optional back up system installed, the LCD displays  icon if the main harness or battery power supply is disconnected. The MCM will still continue to operate and transmit from its internal power source.

6. The Transceiver will continue to flash the triggered icon until any button is pressed.

Note: The Transceiver will sound a unique tone to correspond with the triggered sensor

Remote Transceiver Icons and Message Displays



74

MKA 336.3 KHz

AT 10 dB

- .17 dB

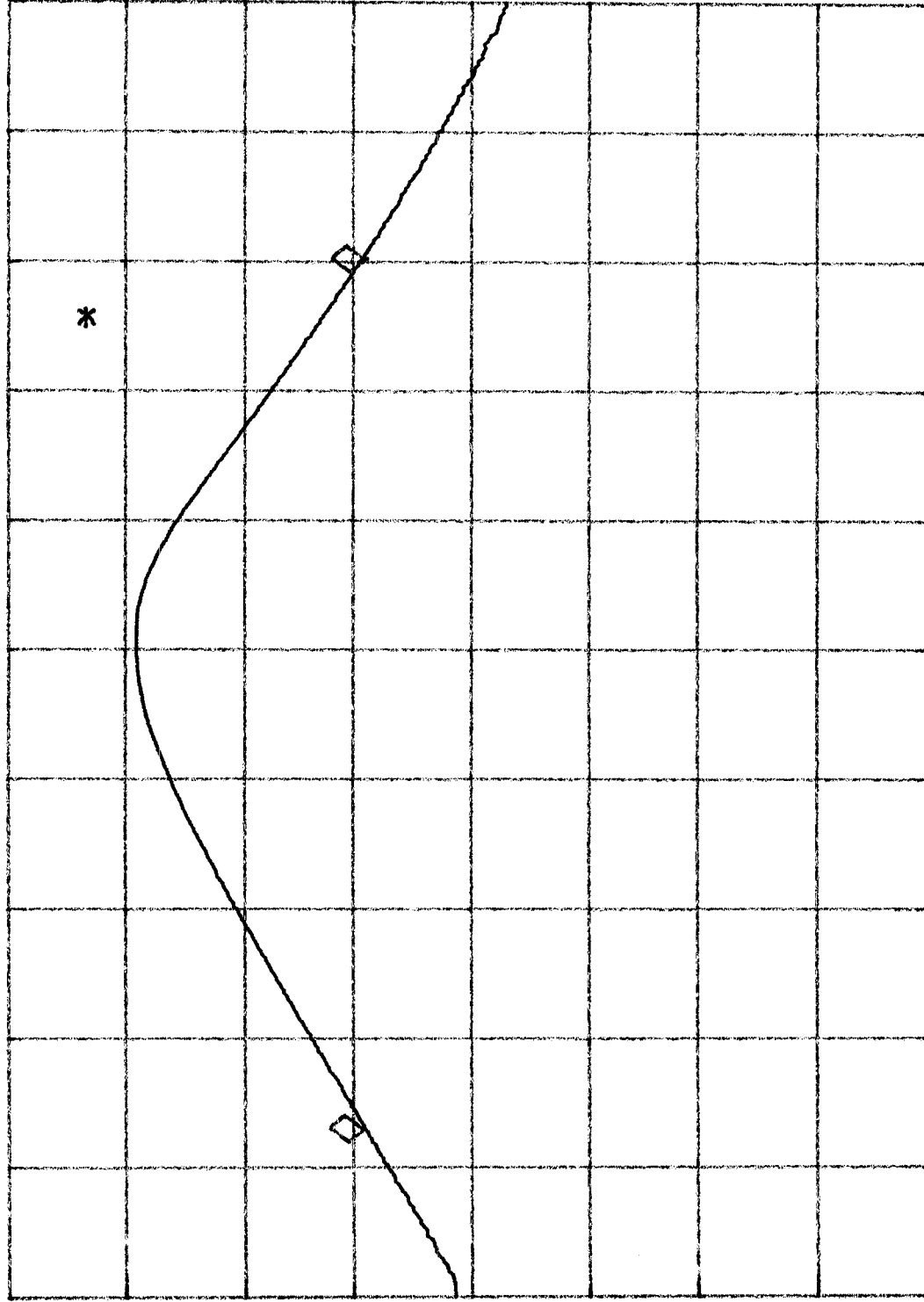
REF -30.0 dBm

PEAK

LOG

10

dB/



VA SB
SC FC
CORR

CENTER 433.9290 MHz

#RES BW 100 KHz

#VBW 100 KHz

SPAN 500.0 KHz

SWP 20.0 msec