

CR1A-DS-MS Technical Description

Major Components

1) Processor & elements	H8-325, MAX1232, 74HC04
2) Wiegand interface	LM339
3) RS232 interface	MAX232
4) Rx/Tx loop	
5) Shaper & Switch*	MC33079D
6) Power amplifier	L2750
7) Receivers & demodulators*	MC33079D, MC33078D, 74HC74, 74HC4066, HEF4066, LM339, TLC272, 75HC157
8) Data memory	24C02
9) Serial interface	74HC14
10) Power regulation	LM2904, LM7805, LM393

* hybrid modules

Operation

The processor (1) controls the interrogation of tags within the reader field, processes and formats the tag data and outputs the data via the two wiegand interfaces (2) and the RS232 serial interface (3). An optional display is available (11) and power is conditioned by voltage regulators(10).

Data transmitted to the tags in the field created by the transmitter loops (4) is in the form of bursts of a 100% phase modulated 1543.6Khz magnetic field. The slave transmitter is delayed by 90 degrees (13) which forms a rotating field. The modulated 153.6 kHz carrier is derived by division from the processor internal clock using an internal divider which is under software control contained within the processor structure. The resultant modulated square wave bursts are shaped and amplified in the shaper and switch block (5) and directed to the tuned transmitter loops (4) through the power amplifiers (6). The individual pair of loops are selected by the processor.

Data from the tags in the field is in the form of bursts of a 100% phase modulated 115.2kHz magnetic field. The 115.2kHz carrier is derived by multiplication from a 38.4kHz crystal oscillator in each tag and is very nearly locked to the reader 153.6kHz carrier. The 115.2kHz signal received by pair of loops are multiplexed together (12) and then directed by the shaper and switchback (5) to the selected receiver and phase demodulator (7) where it is amplified, frequency shifted and filtered and the data recovered using a 76.8kHz reference signal derived by division from the processor clock.

Transmitter/receiver outputs are selected alternatively by the processor to allow determination of the direction of tags passing through the reader field.

Tag identities are deduced by processing the results of a data exchange between the reader and tag in the field using a modified binary tree search. Tag identities are either used directly in the formatted output data streams, or mapped into the data streams using information contained within the EEPROM data memory (8). The required Wiegand and RS232 serial data formats are defined by parameters also contain within the EEPROM data memory.

For loading and diagnostic purposes the EEPROM data memory may be accessed through the bidirectional TTL level serial interface (9)

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Data from the tags in the field is in the form of bursts of a 100% phase modulated 115.2kHz magnetic field. The 115.2kHz carrier is derived by multiplication from a 38.4kHz crystal oscillator in each tag and is very nearly locked to the reader 153.6kHz carrier. The 115.2kHz signal received by pair of loops are multiplexed together (12) and then directed by the shaper and switchback (5) to the receiver and phase demodulator (7) where it is amplified, frequency shifted and filtered and the data recovered using a 76.8kHz reference signal derived by division from the processor clock.

Tag identities are deduced by processing the results of a data exchange between the reader and tag in the field using a modified binary tree search. Tag identities are either used directly in the formatted output data streams, or mapped into the data streams using information contained within the EEPROM data memory (8). The required Wiegand and RS232 serial data formats are defined by parameters also contain within the EEPROM data memory.

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CR1A-DS1 Technical Description

Major Components

1) Processor & elements	H8-325, MAX1232, 74HC04
2) Wiegand interface	LM339
3) RS232 interface	MAX232
4) Tx loop	
5) Shaper & Switch*	MC33079D
6) Power amplifier	L2750
7) Receivers & demodulators*	MC33079D, MC33078D, 74HC74, 74HC4066, HEF4066, LM339, TLC272, 75HC157
8) Data memory	24C02
9) Serial interface	74HC14
10) Power regulation	LM2904, LM7805, LM393

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Operation

The processor (1) controls the interrogation of tags within the reader field, processes and formats the tag data and outputs the data via the two wiegand interfaces (2) and the RS232 serial interface (3). An optional display is available (11) and power is conditioned by voltage regulators(10).

Data is transmitted to the tags in the field created by the transmitter loop (4) in the form of bursts of a 100% phase modulated 1543.6Khz magnetic field. The modulated 153.6 kHz carrier is derived by division from the processor internal clock using an internal divider which is under software control contained within the processor structure. The resultant modulated square wave bursts are shaped and amplified in the shaper and switch block (5) and directed to the tuned transmitter loop (4) through a power amplifier (6).

Data from the tags in the field is in the form of bursts of a 100% phase modulated 115.2kHz magnetic field. The 115.2kHz carrier is derived by multiplication from a 38.4kHz crystal oscillator in each tag and is very nearly locked to the reader 153.6kHz carrier. The 115.2kHz signal received by receiver pods are multiplexed together (12) and then directed to the selected receiver and phase demodulator (7) where it is amplified, frequency shifted and filtered and the data recovered using a 76.8kHz reference signal derived by division from the processor clock.

Tag identities are deduced by processing the results of a data exchange between the reader and tag in the field using a modified binary tree search. Tag identities are either used directly in the formatted output data streams, or mapped into the data streams using information contained within the EEPROM data memory (8). The required Wiegand and RS232 serial data formats are defined by parameters also contain within the EEPROM data memory.

Receiver channels are selected alternatively by the processor to allow determination of the direction of tags passing through the reader field.

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Data is transmitted to the tags in the field created by the transmitter loop (4) in the form of bursts of a 100% phase modulated 1543.6Khz magnetic field. The modulated 153.6 kHz carrier is derived by division from the processor internal clock using an internal divider which is under software control contained within the processor structure. The resultant modulated square wave bursts are shaped and amplified in the shaper and switch block (5) and directed to the selected tuned transmitter loop (4) through a power amplifier (6).

Data from the tags in the field is in the form of bursts of a 100% phase modulated 115.2kHz magnetic field. The 115.2kHz carrier is derived by multiplication from a 38.4kHz crystal oscillator in each tag and is very nearly locked to the reader 153.6kHz carrier. The 115.2kHz signal received by a selected loop is directed by the shaper and switchback (5) to the selected receiver and phase demodulator (7) where it is amplified, frequency shifted and filtered and the data recovered using a 76.8kHz reference signal derived by division from the processor clock.

Transmitter/receiver loops are selected alternatively by the processor to allow determination of the direction of tags passing through the reader field.

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