CLAIMS

What is claimed is:

1. A fully-automatic immunofluorescence quantitative analyzing apparatus, characterized by comprising a support baseplate (1), a reagent strip storage and automatic loading module (3), a cuvette ring module (4), a detection module (5), a sample module (6), a sample dispensing module (7), a washing module (8) and a control system, wherein the reagent strip storage and automatic loading module (3), the cuvette ring module (4), the detection module (5), the sample module (6), the sample dispensing module (7) and the washing module (8) are sequentially arranged on the support baseplate (8); the reagent strip storage and automatic loading module (3) provides a reagent strip for the cuvette ring module (4), and the sample dispensing module (7) dispenses the sample in the sample module (6) to the cuvette ring module (4) and performs a reaction, and the sample enters the detection module (5) to complete the detection after the reaction is complete, the reagent storage and automatic loading module (3) comprises a reagent strip storage box (32), a storage box bracket (33) and an automatic loading assembly (45), the storage box bracket (33) is fixed on the support baseplate (1), and the reagent strip storage box (32) is fixed on the storage box bracket (33) by a padlock (34); the automatic loading assembly (45) consists of a second motor (35), a second timing pulley (36), a second timing belt (37) and an elastic hanging rod (38); the control system controls the second motor (35) to operate and drives the second timing pulley (36), the second timing belt (37) and the elastic hanging rod (38) to move; a reagent strip inserting slot (26) is disposed in the cuvette ring module (4), the lower bottom surface is provided with a notch (28), and the notch (28) allows the elastic hanging rod (38) to feed the reagent strip to enter the reagent strip inserting slot (26).

2. The quantitative analyzing apparatus according to claim 1, characterized in that, the reagent strip storage box (32) comprises a box body and a box cover part, which are sealed; a reagent strip lowering guide rail (46) is in the reagent strip storage box (32); the bottom of the reagent strip storage box (32) is provided with a notch (47), and a sealing elastic piece (48) is disposed on the bottom end of the side surface of the reagent strip storage box (32)

close to the notch (47); 1-3 reagent strip storage and automatic loading modules (3) are disposed.

3. The immunofluorescence quantitative analyzing apparatus according to claim 1 or 2, characterized in that, the sample dispensing module (7) comprises an XYZ motion mechanical arm, a disposable tip detector (12) and a diluter pump (42); the XYZ motion mechanism arm comprises an X arm (9), a Y arm (10) and a Z arm (11), and the X arm (9) is horizontally disposed along the sample module (6) and the cuvette ring module (4); the Y arm (10) is located on the upper part of the sample module (6), is vertically connected to the X arm (9) and can slide on the X arm; the Z arm (11) is vertically fixed in a chute of the Y arm (10), the bottom of the Z arm (11) is provided with the disposable tip detector (12), the diluter pump (42) is connected to the disposable tip detector (12) and provides sampling power for the disposable tip detector (12).

4. The quantitative analyzing apparatus according to claim 1 or 2, characterized in that, the sample module (6) comprises a disposable tip box (17), a mixing box (18), a diluent slot (19), a sample unit (20), a tip collection box (21) and a sample module box; the sample unit (20) and the diluent slot (19) are located on a bottom plate of the sample module box, the bottom plate is provided with a track (22), the bottoms of the sample unit (20) and the diluent slot (19) are provided with a clamping slot matched with the track (22), and the sample unit (20) and the diluent slot (19) slide front and back on the track of the bottom plate (22); one side of the sample module box is provided with a platform (23), the lower part of which is spaced from the ground, the tip collection box (21), the disposable tip box (17) and the mixing box (18) are arrayed on the platform (23), part of the tip collection box (21) penetrates through the platform (23), on the platform (23), the other part of the tip collection box is in the spacing space of the lower part of the platform (23), the top end of the tip collection box is provided with a recycling opening (24), the bottom end of the tip collection box is not sealed, and the sucker directly falls onto the bottom plate after entering the recycling opening.

5. The quantitative analyzing apparatus according to claim 4, characterized in that, the sample module box is set to be a drawer shape, baffles are disposed on left and right sides,

pulleys (14) are disposed outside the baffles and can slide front and back along outside slideways (15), and the front ends of the baffles are provided with fixed bolts (16) for fixing the drawer.

6. The quantitative analyzing apparatus according to claim 1 or 2, characterized in that, the cuvette ring module (4) is a disc-like device, reagent strip inserting slots (26) are fixed on the edge of the disc, and inserting slot openings correspond to a reagent strip outlet (27) of the reagent strip storage and automatic loading module (3) in position to load the reagent strip; the cuvette ring brings the reagent strip to the position corresponding to the sample dispensing module (7) to finish the sample dispensing operation; the cuvette ring brings the reagent strip to the position corresponding to the detection module (5) to finish detection operation.

7. The quantitative analyzing apparatus according to claim 6, characterized in that, the cuvette ring is connected to a first motor (29), and the first motor (29) drives the cuvette ring to rotate by driving a first timing pulley (30) and a first timing belt (31); a number of the cuvette ring reagent strip inserting slots (26) is 2N or 2N+1, and N is larger than or equal to 1.

8. The quantitative analyzing apparatus according to claim 1 or 2, characterized in that, the washing module (8) comprises a probe washing slot (41), a waste liquid bottle (44) and a washing liquid bottle (43), wherein a catheter in the probe washing slot (41) is connected to the waste liquid bottle (44) and the washing liquid bottle (43).

9. An implementation method of the fully-automatic immunofluorescence quantitative analyzing apparatus according to claim 1, characterized by comprising the following steps:

step 1: a reagent strip storage and automatic loading module loads a reagent strip to enter a reagent strip inserting slot of the reaction disc;

step 2: a cuvette ring starts to rotate, the reagent strip in a first position enters a sample dispensing region along with rotation and is paused, a sample in the sample module is sucked by the sample dispensing module to dispense into a reagent strip sample dispensing opening, and immunofluorescence reaction starts;

step 3: the cuvette ring continuously rotates, the reagent strip in the first position gets away from the sample dispensing region, and the reagent strips in the subsequent position enter the sample dispensing region one after another, and are paused one by one, thus finishing sample dispensing;

step 4: the cuvette ring continuously rotates, the reagent strip in the first position rotates to the detection module and is paused, and the detection device finishes the detection on the reagent strip in the first position and sends a result to a computer for processing.

10. The method according to claim 9, characterized in that, the sample dispensing step comprises any one of the following two conditions:

A: condition in which the sample needs no diluting: the sample dispensing device firstly picks a disposable sucker, then moves to a sample region to suck the sample, then moves to a cuvette ring region to finish a sample dispensing process, then moves to the recycling opening of a disposable tip collection box to remove the disposable sucker, and then performs a new round of sample dispensing;

B: the condition which the sample needs to be diluted: the sample dispensing device firstly picks the disposable sucker, moves to the sample region to suck the sample, then moves to a diluent slot to dispense the sample into the diluent slot, then sucks diluent to inject, repeatedly sucks in and out to dilute the sample, then moves to the cuvette ring sample dispensing region to finish the sample dispensing, then recycles the disposable sucker, and then moves to a disposable tip box to pick a new sucker for a new round of sample dispensing.